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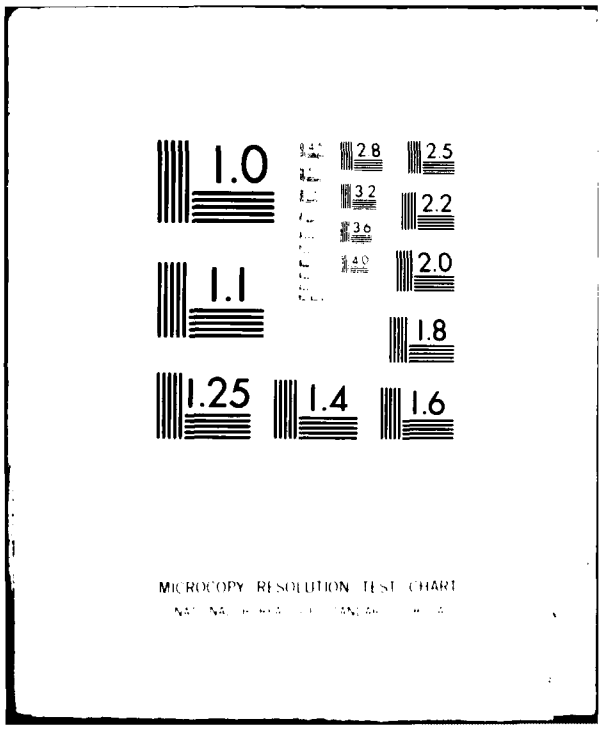
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MICROCOPY RESOLUTION TEST CHART

CR 82.014

NAVAL CIVIL ENGINEERING LABORATORY
Port Hueneme, California

Sponsored by
NAVAL FACILITIES ENGINEERING COMMAND

TEST CASES FOR SEADYN VERIFICATION

April 1982

An Investigation Conducted by
Western Instruments Corp.
540 Maulhardt Avenue
Oxnard, California

N68305-80-C-0004

Approved for public release; distribution unlimited

METRIC CONVERSION FACTORS

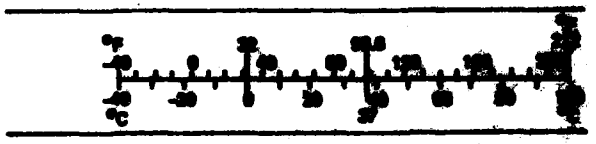
Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
in	inches	*2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
		AREA		
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
		MASS (weight)		
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2,000 lb)	0.9	tonnes	t
		VOLUME		
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
		TEMPERATURE (exact)		
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

*1 in = 2.54 (exactly). For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures, Price $2.25, SD Catalog No. C13.10:286.

Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
		AREA		
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10,000 m^2)	2.5	acres	
		MASS (weight)		
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1,000 kg)	1.1	short tons	
		VOLUME		
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
		TEMPERATURE (exact)		
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



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SEADYN test cases; SEADYN verification; SEADYN configuration management

20 ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report includes actual input decks and associated outputs for demonstration of the SEADYN cable dynamics computer model. The input problems are intended to allow for the verification of the model if it is transferred for operation on non-CDC® computers.

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Unclassified

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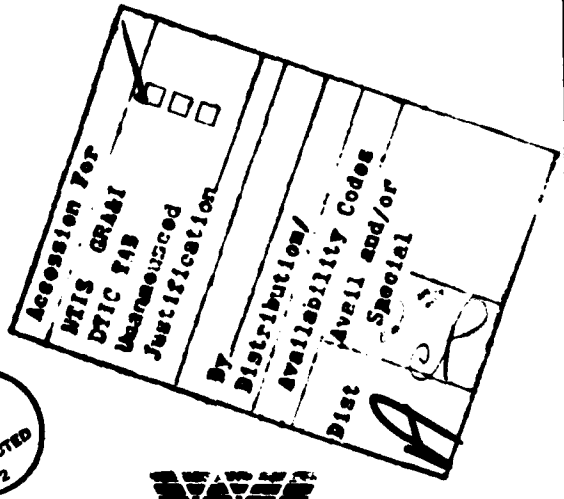


SEADYN CONFIGURATION MANAGEMENT

1.0 INTRODUCTION

The SEADYN configuration management plan described herein was developed for the Naval Civil Engineering Laboratory under contract No. N68305-80-C-0004, entitled "Engineering Services for Cable Dynamics." A statement of work may be found in Appendix A.

1.1 SEADYN Development History

In the early 1970's, the U.S. Navy gained increasing interest in complex undersea cable structures. This interest led, in 1974, to the development of the SEADYN Ocean Cable Systems Analysis Program. The early development of SEADYN was based upon existing non-linear structural dynamics programs and the developments from that point introduced program capabilities specifically directed at supporting the Navy's Suspended Array development. This early work was sponsored by the Naval Facilities Engineering Command and the Naval Electronics Systems Command.

Following this early developmental work, the Civil Engineering Laboratory assumed leadership in bringing the SEADYN program to an operational status. This included the addition of program capabilities which expanded the scope of the simulation and which improved the ease of program application. This work also incorporated extensive verification and validation tests and thorough program documentation.

The SEADYN program has over the past four years been exercised, verified, and validated on a wide range of structural applications for the Navy and

for the Offshore Oil Industry. Typical examples of the structural configurations addressed are shown in Figure 1.

1.2 Purpose of Present Effort

As the SEADYN program undergoes continual modification and revision, the need to define current program capabilities is apparent. The present effort is aimed at defining which SEADYN capabilities are currently available. This has been done through the development of a set of test problems which have been used to comprehensively test a wide range of SEADYN capabilities. These test cases have been devised in such a way that they may be used to verify updated versions of SEADYN.

As the SEADYN program is introduced to wider application and public dissemination, new program features will be incorporated into the program and programming errors will be found and corrected in the present code. It is important that the incorporation of new program features and the correction of errors in the code be effected in a controlled fashion. Proper check-out of the new code must be performed prior to introduction into the operational and publicly available program. To this end, a configuration management plan has been prepared which defines a mechanism for controlling program revisions and updates before incorporating them into the standard operational version.

2.0 BASELINE CAPABILITY DEFINITION

At present there exist two configurations of the SEADYN program, fixed format and free format. The fixed format version was developed first and has been used in the analysis of a full range of Navy and Oil Industry undersea compliant structure applications. The free format version is based on the original fixed format, but the input has been modified so as to be far less restrictive to the user. Along with the development of the free format input, various modifications have been made to fundamental as well as optional program capabilities. The free format version of SEADYN has replaced the fixed input version, primarily due to increased programming flexibility and simplicity. The fixed format version has been verified previously. The objective of the test problems in this report is to verify the free format version.

The SEADYN program is capable of analyzing a wide range of offshore compliant structures, primarily those that incorporate cable elements. The present verification effort addresses such simulations as the resultant structural loadings associated with displacements induced by platform motions, displacements and tensions caused by current and gravity, and behavior of a cable system during payout or reel-in. The analytical capabilities of SEADYN can be divided into three major types: static analysis, dynamic analysis, and mode analysis.

2.1 Static Analysis Capability

A major emphasis in the testing of the SEADYN static solution capability is the demonstration of the ease with which a static configuration can be developed. There are several approaches to arriving at a static configuration,

including the input of a known loaded structural shape and its associated tensions, the input of a guessed loaded configuration and unknown pretensions, and the input of an unstressed configuration that will be moved into a deformed position during the subsequent analysis. Only the relative element lengths, weights, and attachment coordinates need to be known in order to arrive at a good static solution. Static solution tests have also been aimed at verifying the several numerical solution methods available in the SEADYN program.

2.2 Dynamic Analysis Capability

SEADYN is capable of simulating almost any dynamic loading that might occur offshore. Dynamic loadings are primarily accomplished through the use of the moving boundary and point load options, where any time function may be defined by the user. The amplitude of the motion may be input as displacement, velocity, or acceleration. Dynamic loadings other than specified boundary motions can be handled by program options that model such things as fluid flow fields and payout and reel-in. The dynamic effects of gravity can also be incorporated into any analysis, for example, in the analysis of a free falling anchor. The program is expected to provide information concerning dynamic tension variations in the cable elements, displacements of each node point during the analysis period, and behavior of lumped bodies such as anchors and buoys as they interact with the seafloor and the water surface. Dynamic response is analyzed in a time domain solution. The user has control over time steps, printout periods, and specific solution method parameters such as numerical damping and convergence tolerances. Solution parameters will vary with the nature of the problem being solved, and their

definition is often arrived at by educated guess. The test cases included in this report utilize various methods of arriving at solutions to difficult numerical problems. They should be used as a guide in obtaining similar solutions in the further verification of SEADYN configurations.

2.3 Mode Solution

The MODE analysis option is available to enable the user to identify significant modes of structural response for any structural configuration. This information directs the analyst toward identifying the worst loading conditions and possible structural mechanisms. This becomes of major importance when dealing with complex systems.

2.4 Baseline Capability Matrix

The baseline capability matrix is included as Table 1. The first column identifies those capabilities that currently exist in the free format version of SEADYN. Each of the capabilities listed have been tested by the baseline problems. The second column indicates the appropriate reference in the most recent input manual, dated May, 1981. A detailed explanation of each capability can be found in the notes of the references. The third column indicates which options have been verified by the five test cases. A capability is considered to be operational when the results of the analysis show a clear and intended system response. This is to say that generated catenaries should show continuity in configuration and internal loading, that an imposed displacement should result in the intended boundary locations, and that the variation of physical parameters should affect the system in a manner that can be anticipated. Verification of numerical solution methods

is more difficult, especially with regard to dynamic analysis. Once the MODE analysis was verified on a simple system it was used as an aid in interpreting the dynamic response attained during the analysis. Clear verification of more complex analyses was not entirely possible. Because of this, the simpler test cases were used to verify the solution option capabilities.

The manual dated May, 1981, is not entirely accurate with respect to input data. Several significant changes have been made in the last few months, so that a new manual should be issued. The capabilities discussed in the manual and as included in the matrix of Table 1 are working with the exception of modelling a cylinder. The program finds no solution when a cylinder is used in place of a sphere. The solution tends to diverge. This capability was tested in Case number 3.

One inconsistency in the manual that should be noted is that the payout length as defined in the manual is not correct. The manual states that a node will be payed out when the length of the payout element equals twice the mitosis length. In fact, payout occurs when the payout element equals the original element length plus the mitosis length. The listings that are included in Appendix B represent cases that successfully verify specific capabilities.

3.0 TEST CASES

The test cases are intended to demonstrate current capabilities of the program. These cases can be used for comparison when verifying future versions of the program. Listings of the input and output for each problem may be found in Appendix B. Descriptive sketches have been provided in Figures 2-4.

3.1 Single D.O.F. Test Case - Sudden Release

The primary objectives of this test are to exercise the various numerical solutions in dead load analysis and dynamic analysis, and to test the restart capabilities of SEADYN. The initial configuration is input as a stretched condition with pretensions in the two cable elements know. The weignt at the center is released under gravity loading during the dynamic analysis. The Direct Integration method was most successful in reaching a solution, even when the analysis was begun with no previous dead load solution. The Modified Newton-Raphson method was good only for dead load analysis, and in fact necessary before the Residual Feedback method could produce a dynamic solution. Restart capabilities checked out as expected.

3.2 Single D.O.F. Test Case - Imposed Displacement

The intent of this case was to continue testing the Viscous Relaxation Technique. The model was the same configuration used in Test Case number 1, with one anchor point being moved past the second support. The imposed displacement response in static analysis behaved as intended.

3.3 Single D.O.F. Test Case - Pendulum

This test case was used to test many miscellaneous capabilities because of

its inherent simplicity. The reference case consists of a submerged pendulum, formed by a spherical mass. A uniform current acts along the length of the cable element and mass, while an opposing point load is applied at the sphere. The TFNUSR subroutine is used to input a sine motion to the point load. Variations on this problem are listed in Figure 3. The attempt to replace the sphere with a cylinder failed. The program did not converge for this simple case. Dr. Webster has been informed of this problem.

3.4 Cable Laying Test Case

The major purpose of this test case was to check out the payout capability of the program and to verify the catenary generation option. The first payout problem involved payout from a moving vessel. The catenary was generated by the program, given the first and last nodal positions. The program estimated pretensions from the material properties of the cable elements and the given nodal positions. The payout capability worked correctly, except as noted in Section 2.4.

3.5 Catenary Test Case

The objectives of this case were to test catenary generation, allowing the cable to sag, to test motion inputs at a surface buoy and to test the release of anchors near the seafloor. A catenary that was supported at one end by a surface buoy and the other by a submerged fixed point was generated successfully by the program. Imposed displacements were applied to the buoy dynamically using TFNUSR. The moving boundary option performed correctly. The top node representing the buoy was held fixed in order to find a dead load solution for the catenary. The buoy was then freed in the horizontal direction and an harmonic function was input successfully.

4.0 CONFIGURATION MANAGEMENT PLAN

The purpose of a configuration management plan is to document a mecnanism by which corrections, additions and updates to the SEADYN program may be introduced to the publicly available versions in an orderly fashion. Three distinct configurations of the program should be maintained by NCEL. In order of decreasing permanence, these may be defined as an operational version, a test version and a developmental version.

4.1 Support of Operational Capability

An operational version of the program must be maintained which exhibits only those capabilities that have been verified. This is the version of the program that will be used on a daily basis by NCEL and public users for structural analysis. It is important that one verified version always be available. Through continued use of the program, program errors will probably be discovered. Corrections to the coding should be made on test versions of the program and later introduced to the main operational program. Support work will involve continued verification of the present operational version, identification of coding errors found through internal and public usage, and the introduction of corrections, updates, and new developments to the operational version.

4.2 Application of Test Cases

A test version of the program is required for two purposes, one being the testing of major revisions as they become available from the developmental configuration; the other purpose being the testing of minor coding error corrections, which can be corrected directly on this version.

4.3 Program Development Support

Program development will be geared toward accommodating operational requirements for new solution capabilities, and toward providing better program efficiency. This may include major restructuring of the present configuration, affecting input specifications as well as internal subroutine solutions. It is important that a separate file be available for major modifications and additions. It is equally important that new developments be well documented in so far as their effect on the existing program and input specification is concerned. Support for program development involves identification of required new capabilities, evaluation of present program efficiency, implementation of these changes, and documentation of all changes to the original version of the program.

4.4 Configuration Management Structure

SEADYN management should be based on a three version system as described above. NCEL would designate an in-house or contract coordinator who would receive input from users concerning desired new capabilities, errors found in the operational version, and the degree of program efficiency. This coordinator would perform the operational support functions presented in Section 4.1 and coordinate the activities of a configuration management contractor with the needs of the users.

The configuration management coordinator will work with a program development contractor, presumably the author of SEADYN, to update and correct the program using the developmental and test versions. After modifications have been completed at the developmental level, the configuration management coordinator

will be responsible for completing documentation of the modifications, and thoroughly testing the revised program using the test version. During the verification work there will no doubt be extensive interaction between the coordinator and the development contractor until the new configuration is completely verified. The configuration management coordinator should have responsibility for introducing the revised operational version and distributing the updated user's manuals.

5.0 SUMMARY

Within the scope of the present effort a baseline capability has been defined for the SEADYN program fixed format version. These capabilities, as itemized in matrix form, have been verified by test cases, designed to exercise all user accessed options. The test problems are intended to be used as a standard in the verification of future program modifications.

A plan for implementing these modifications in a controlled manner has been suggested. The plan is based on the recognition of the need to continually maintain a verified operational version of SEADYN. Implementing a configuration management plan which incorporates standard tests should enable NCEL to meet the requirements of its SEADYN users with a minimum amount of effort.

APPENDIX A

WORK STATEMENT

STATEMENT OF WORK
ENGINEERING SERVICES FOR CABLE DYNAMICS

80-0004
31 January 1980

1.0 Introduction. The Civil Engineering Laboratory is the Navy's activity with responsibility for research and development related to the siting, design, installation, operation and maintenance of fixed ocean facilities. Many of these facilities take the form of suspended cable structures. CEL has been engaged in a major program of research into the dynamic bahavior of cables and moored cable structures in the ocean. A variety of computer simulation models have been developed for analysis and design of these structures. The models are generally complex and specialized and require large main-frame computers for their execution.

2.0 Scope. The contractor shall furnish the necessary services to perform tasks related to the siting, design, construction, installation, inspection, operation, maintenance, and repair of ocean-based facilities. Also, included may be concept formulation, preliminary design, development of plans for experiments, program/project documentation, and reduction of test data. These services shall be for a period of twelve months or until the $90,000 limit is reached.

3.0 Performance Requirements. Services to be provided shall be accomplished at the contractor's office with the exception of such engineering field investigations or surveys as may be required. No direct supervision of the contractor's employees will be provided by the government.

3.1 Services. Services on the definition and demonstration of the baseline capabilities of the SEADYN computer program by establishment of test cases that: (a) define and test present SEADYN capabilities, and (b) define and test new capabilities before they are added to the baseline shall be provided as follows:

The contractor shall prepare a matrix of present and planned SEADYN capabilities and indicate which of the capabilities have been verified and which have not. The baseline version of the program is defined by the list of present capabilities which have been verified by exercising those capabilities on actual or test problems.

The contractor shall define a set of test cases that, when taken together, will comprehensively exercise the various optional capabilities of SEADYN. The test cases are to be used by the Government to manage program changes, debugging and updating operations by providing a standard means for testing the program. The test cases shall address the existing capabilities of the program (i.e. baseline version) and additional new capabilities separately. The baseline version test cases shall be demonstrated by executing the SEADYN program on those cases.

The contractor shall prepare a configuration management plan for implementing the test cases as part of an overall computer simulation testing and validation program. The plan shall define a mechanism for utilization of the test cases in control of program revisions, updates and debugging.

3.2 Reports. The results of this effort shall be submitted to the Officer in Charge of Contracts, Civil Engineering Laboratory in the form of letter reports. An original (1) and three (3) copies of each report shall be submitted as follows:

(a) Matrix of present and planned capabilities	45 days after award
(b) Definition of test cases	
(i) Present capabilities (including demonstration)	60 days after award
(ii) New capabilities	150 days after award
(c) Configuration management plan	120 days after award

3.3 Computer Usage. The Government will bear directly the cost of computer usage by the contractor for this effort by assigning to the contractor an account number held by the Government on a commercial computing network. The contractor is authorized to make computer simulations required by this contract not to exceed a total cost of $6,000.

The contractor shall monitor his computer usage under this contract to insure that the authorized computing cost limit is not exceeded and report weekly to the Officer in Charge of Contracts. The report shall consist of either actual dayfiles from the preceeding seven days or an equivalent written itemization of the pertinent dayfile cost and accounting information in $500 increments.

3.4 "Open-End" Provisions. This is an open-end contract; the total amount of this contract shall not exceed $90,000 without further authorization. The Minimum contract price will be that negotiated price for the specific services of paragraph 3.1. The additional services which the contractor may be required to furnish and the government to accept hereunder from time to time shall be as ordered by the government during the period of this contract. In any event, however, the government shall order services hereunder having an aggregate value based on the rates specified herein not less than $100. No single task will exceed $20,000 per authorization. All task assignments and authorizations to proceed will be issued by the Officer in Charge of Contracts on Standard Form 30 and shall include:

(1) The date and number of the modification,

(2) The contract number,

(3) Description of services, "Statement of Work",

(4) Delivery dates,

(5) Accounting and appropriation data.

Prior to issuing the Standard Form 30, the Officer in Charge of Contracts, or his designated representative, shall furnish and discuss with the contractor the statement of work for the task. After which, the contractor, using the predetermined labor classifications and rates set forth in the contract shall submit a firm fixed-price proposal to the Officer in Charge of Contracts. Upon receipt of the contractor's proposal a price for the proposed task will be negotiated. Issuance of a notice to proceed is not authorized, except by Standard Form 30.

An hourly rate plus overhead and profit for personnel in the appropriate categories will be established as part of the contract and will be applicable for the period of the contract.

APPENDIX B

INPUT AND OUTPUT LISTINGS

TABLE 1.

SEADYN BASELINE CAPABILITY (10/80)

CAPABILITY	MANUAL REFERENCE	TEST CASE REFERENCE	VERIFICATION STATUS	REMARKS
GLOBAL CONTROLS				
1. USER DRAG OVERRIDE	6.3	3	✓	
2. GRAVITY DIRECTION	6.3	1	✓	
3. NO FLUID	6.8	3	✓	Must use parameters to specify zero properties. Moving medium limits doesn't do it.
NODE DEFINITION				
1. IMPLIED GENERATION	6.14	4	✓	
BOUNDARY CONDITION COPY		4	✓	
2. LINE GENERATION	6.11			
STRAIGHT LINE		4	✓	
FIRST GENERATED NODE GIVEN/NOT GIVEN		4	✓	
BOUND. COND. COPY/NOT COPY		4	✓	
3. CATENARY	6.11			
NO SAG		4	✓	
SAG HI-LO/LO-HI		5	✓	
LINE ON BOTTOM		4	✓	
4. CODES: INPUT CONSTRAINTS	6.14	all	✓	
GENERATED CONSTRAINTS		4, 5		
ALTERED CONSTRAINTS	7.1.2, 7.1.3			
ELEMENT DEFINITIONS	6.6			
1. IMPLIED GENERATION		4	✓	
2. ELEMENT INCREMENT GIVEN		4	✓	
3. TENSIONS FROM CAT. GEN.	6.17	5		

SEADYN BASELINE CAPABILITY (10/80)

CAPABILITY	MANUAL REFERENCE	TEST CASE REFERENCE	VERIFICATION STATUS	REMARKS
ELEMENT DEFINITIONS (CONT.)	6.6			
4. START-UP PROCEDURE				
COMPATIBLE STRETCHED		1	✓	
COMPATIBLE UNSTRETCHED		4	✓	
GUESSED UNSTRETCHED			✓	Verified in other applications
MATERIAL DESCRIPTIONS	6.13			
LINEAR MATERIALS		3	✓	
NON-LINEAR TABLE		3	✓	
MEDIUM/WEIGHT/MASS/ADDED MASS		3	✓	
DAMPING PARAMETERS		3	✓	
LUMPED BODIES				
1. USER DEFINED DRAG	6.5	3	✓	
2. SPHERICAL BUOYS/ANCHORS	6.4, 6.5	3	✓	
WEIGHT/MASS/ADDED MASS	6.5	3	✓	
BUOY ON SURFACE DYNAMICS	7.1.9	5	✓	
HOLDING FACTOR	6.10	4	✓	
ANCHOR FIXITY OPTIONS	6.10	4		
SURFACE/BOTTOM LIMITS	6.10, 6.12	4, 5	✓	
3. CYLINDRICAL BUOY (SPECIFICS)	6.5	3	✓	Cylinder option does not work
LINE ORIENTATION	6.5	5		

SEADYN BASELINE CAPABILITY (10/80)

LOADING DEFINITIONS

CAPABILITY	MANUAL REFERENCE	TEST CASE REFERENCE	VERIFICATION STATUS	REMARKS
GRAVITY LOADS				
INCREMENTED/NOT INCREMENTED	7.1.15	2	✓	
POINT LOADS				
LOAD SET VARIATIONS	7.1.7	3	✓	
TIME VARIATION CONTROLS	7.1.8, 6.18	3	✓	TFNUSR
CURRENTS				
UNIFORM	7.1.1	3	✓	
USER OVERRIDE	7.1.1	3	✓	CURUSR
DRAG DEFINITIONS (DEFAULT)				
SPHERE	6.5	3		
CYLINDER NORMAL		3		
CYLINDER TANGENTIAL		3		

SEADYN BASELINE CAPABILITY (10/80)

BOUNDARY CONDITIONS

CAPABILITY	MANUAL REFERENCE	TEST CASE REFERENCE	VERIFICATION STATUS	REMARKS
IMPOSED DISPLACEMENTS				
1. STATIC SOLUTION		2	✓	
2. MODE SOLUTION		3		
3. DYNAMIC MOVED BOUNDARY	6.18, 7.19			TFNUSR
ACCELERATION		4	✓	
VELOCITY		4	✓	
DISPLACEMENT		5	✓	
		5		
4. PAYOUT/REEL-IN	7.1.11	4	✓	

SEADYN BASELINE CAPABILITY (10/80)

SOLUTION FORMS

CAPABILITY	MANUAL REFERENCE	TEST CASE REFERENCE	VERIFICATION STATUS	REMARKS
SOLUTION FORMS	7.1.14			
1. DEAD				
MNR		1	✓	
RFB		1	×	Not Accurate
VRR		2	✓	
2. LIVE				
MNR		3		
VRR			✓	
3. DYN				
MNR		1	✓	Poor Solution
RFB (2)		1	✓	Must Start From Dead Solution
DI		1	✓	
TIME STEP SELECTION	7.1.17	1	✓	
INITIAL VELOCITY START	7.1.5	3	✓	

SEADYN BASELINE CAPABILITY (10/80)

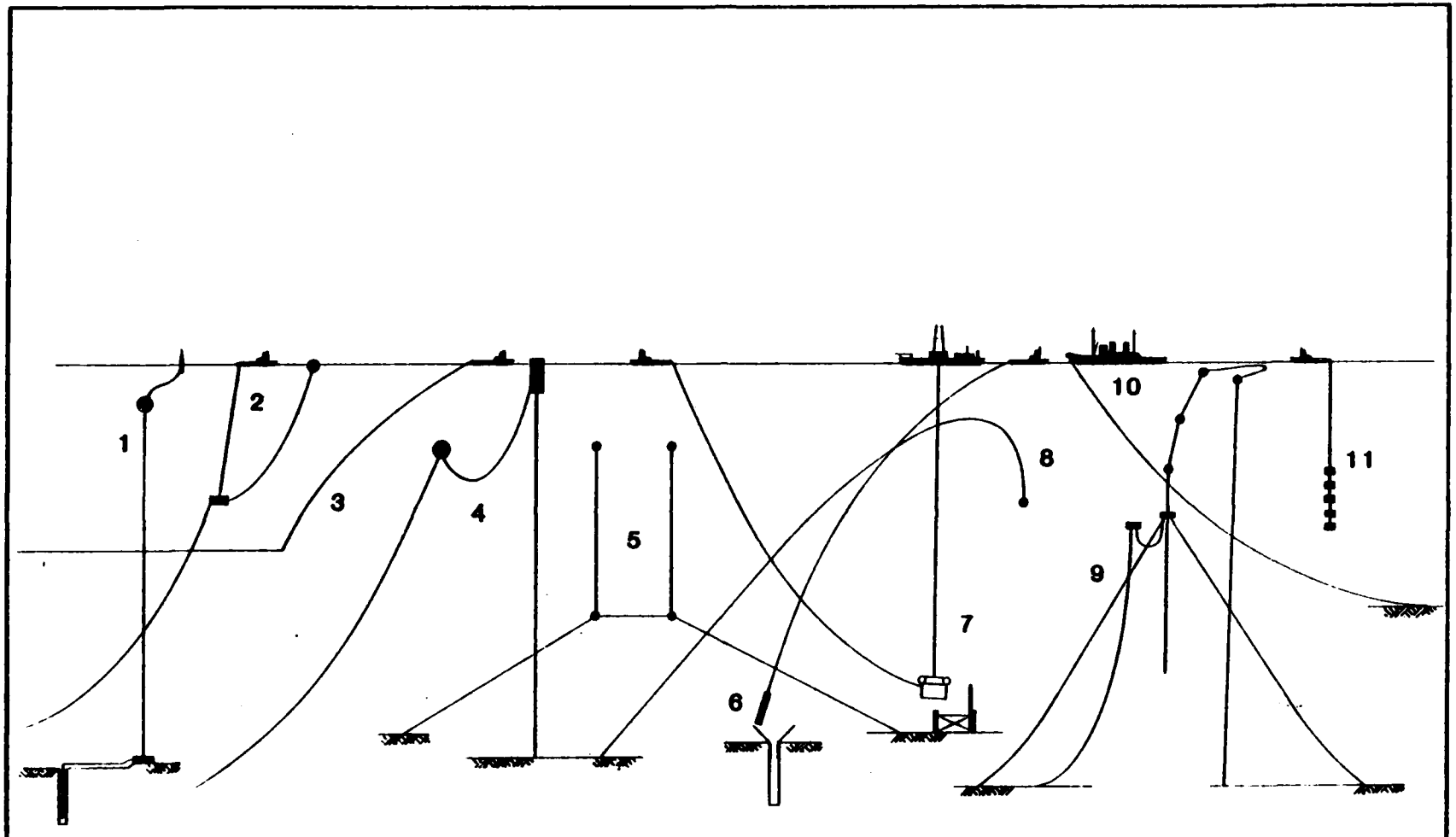
OUTPUT CONTROLS

CAPABILITY	MANUAL REFERENCE	TEST CASE REFERENCE	VERIFICATION STATUS	REMARKS
INPUT DATA ECHO & INTERPR.	6.3	all	✓	
STEPS BETWEEN PRINTING	7.1.10			
STATIC		4	✓	
TIME DOMAIN		4	✓	
STEP CONTROLLED		—	✓	
TIME CONTROLLED		—	✓	

SEADYN BASELINE CAPABILITY (10/80)

RESTART

CAPABILITY	MANUAL REFERENCE	TEST CASE REFERENCE	VERIFICATION STATUS	REMARKS
CONTINUE SOLUTION OPTION	6.2	1	✓	
START NEW SOLUTION OPTION		1	✓	
RESTART AT LAST OUTPUT RECORD		1	✓	



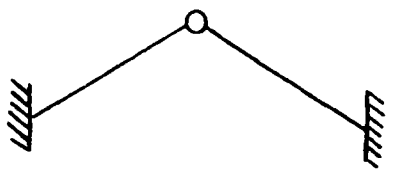
1 DEEP OCEAN SEISMIC SENSING SYSTEM
2 LOWERING OF SUBSEA EQUIPMENT
3 DEEP TOWED GEOPHYSICAL ARRAY
4 POWER CABLE SUSPENSION
5 DEEP WATER RANGE
6 INSTRUMENT PACKAGE REENTRY
7 MANIFOLD STRUCTURE SUSPENSION
8 RECOVERY LINE FREEFALL
9 ACOUSTIC ARRAY
10 CABLE SYSTEM DEPLOYMENT
11 SUSPENDED SOUND SOURCE

WESTERN INSTRUMENT CORPORATION

CABLE SYSTEM ANALYSIS

Figure 1

SEADYN TEST CASE DEFINITIONS



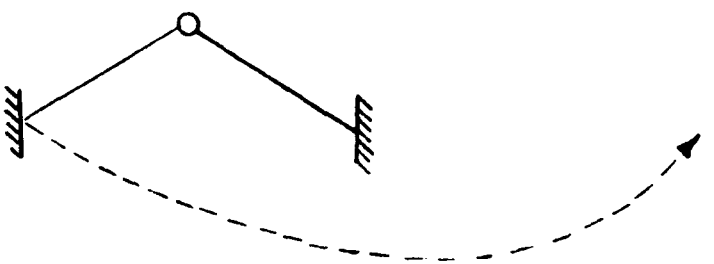
1. SINGLE D.O.F. TEST CASE - SUDDEN RELEASE

Gravity Direction

MNR Solution
SLI Solution DEAD/DYN
RFB Solution

DI Solution - DYN

Time Step Selection
New Solution Option

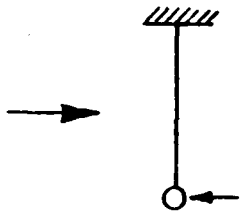


2. SINGLE D.O.F. TEST CASE - IMPOSED DISPLACEMENT

VR/SLI Solution
BR/RFG Solution DEAD

FIGURE 2

SEADYN TEST CASE DEFINITIONS

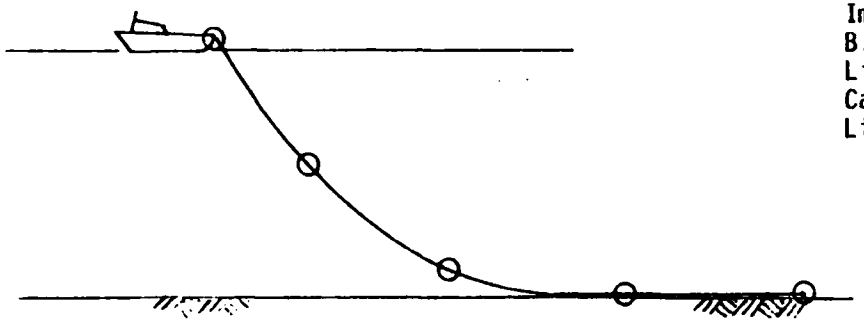


3. SINGLE D.O.F. TEST CASE - PENDULUM

User Drag Override
Default Drag Definitions
Material Descriptions
- Linear
- Non-Linear Table
- Medium/Weight/Mass/Added Mass
- Damping Parameters

Lumped Bodies
- User Defined Drag
- Cyl. & Sph. Buoys/Anchors

Point Loads Variations
Uniform Current
Initial Velocity Start
No Fluid



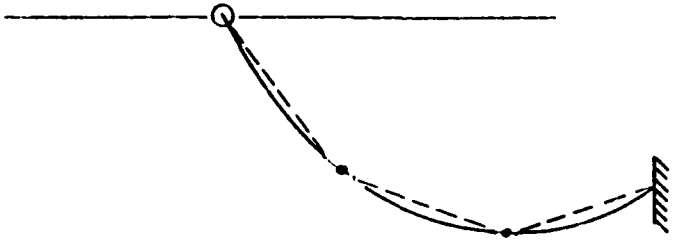
4. CABLE LAYING TEST CASE

Node Generation
Implied Generation (elements
B.C. Copy
Line Generation
Catenary No-Sag
Line On Bottom

All Start-Up Procedures
Surface/Bottom Limits
Anchor Holding Factor
Anchor Fixity Options

FIGURE 3

SEADYN TEST CASE DEFINITIONS



5. CATENARY TEST CASE

Catenary Generation - Sag
Constraint Codes From Catenary Generation
Tensions From Catenary Generation
Buoy on Surface Dynamics
Alter Constraint Codes

FIGURE 4

```
LINE   DIRECT LIST OF INPUT DATA

   1   SEADYN FREE FORM - TEST CASE NO. 1 - SUDDEN RELEASES
   2 PROB
   3 3,2,-2,1,1
   4 FLUI
   5 1000.,1
   6 NODE
   7 1,0,0.,20.,0.
   8 2,0,-100.,0.,0.,1,1,1
   9 3,0,100.,0.,0.,1,1,1
  10 ELEM
  11 1,2,1,,1,,,,20052.
  12 2,3,1,,1,,,,20052.
  13 BLOC
  14 1,1,1
  15 BODY
  16 1,,-5.,10.
  17 MATE
  18 1,,1.E9,1.E06,1.
  19 DEAD
  20       SOLU,M12,-1
  21       LOAD,1,,7870.,,,1,1
  22       LVAR,1
  23       OUTP,1
  24 DYN
  25       SOLU,M12,-1
  26       TIME,,.00044,,.011
  27       SAVE,-25,,.011,1
  28 NEW
  29   RESTART TO TEST NEXT SOLUTION OPTION
  30 REST
  31 NEW,3,1,-25
  32 DYN
  33       SOLU,RFB
  34 END
```

```
LINE   DIRECT LIST OF INPUT DATA

   1  SEADYN FREE FORM - TEST CASE NO. 2 - IMPOSED DISPLACEMENTS
   2 PROB
   3 3,2,-2,1,1
   4 FLUI
   5 1000.,1
   6 NODE
   7 1,0,0.,20.,0.
   8 2,0,-100.,0.,0.,1,1,1
   9 3,0,100.,0.,0.,1,1,1
  10 ELEM
  11 1,2,1,,1,,,,20052.
  12 2,3,1,,1,,,,20052.
  13 BLOC
  14 1,1,1
  15 BODY
  16 1,,-7870.,10.
  17 MATE
  18 1,,1.E9,1.E06,1.
  19 DEAD
  20        SOLU,VKR,M12,-1
  21        STEP,10
  22        MOVE,2,1,1,400.
  23 END
```

LINE DIRECT LIST OF INPUT DATA

REFERENCE CASE

```
 1  SEADYN FREE FORM - TEST CASE NO. 3 - PENDULUM S
 2 PROB
 3 2,1,-2,1,1
 4 FLUI
 5 250.,1
 6 NODE
 7 1,,,,,1,1,1
 8 2,,0.,-50.,0.
 9 ELEM
10 1,1,2,,1,,,,34600.
11 BLOC
12 1,2,2
13 BODY
14 1,,-34000.,10.
15 RATE
16 1,,,25,13.7W8,2,36000.,,15,,,45000.,,24
17 FLOW
18 1,1,8.4
19 TFUN
20 1,-1,1.
21 DEAD
22        SOLU,VRR
23        OUTP,500
24 LIVE
25        SOLU,MNR
26        STEP,5,5
27        LOAD,1,-8000.,,,2,2
28        LVAR,1
29        CURR,1
30        OUTP,500
31 DYN
32        CURR,1
33        TIME,,005,20.
34        LOAD,1,-8000.,,2,2
35        LVAR,1
36        OUTP,200
37 MODE
38 END
```

LINE DIRECT LIST OF INPUT DATA

MATERIAL DAMPING

```
  1 SEADYN FREE FORM - TEST CASE NO. 3 - PENDULUM S
  2 PROB
  3 2,1,-2,1,1
  4 FLUI
  5 250.,1
  6 NODE
  7 1,,,,,1,1,1
  8 2,,0.,-50.,0.
  9 ELEM
 10 1,1,2,,1,,,,34600.
 11 BLOC
 12 1,2,2
 13 BODY
 14 1,,-34000.,10.
 15 MATE
 16 1,,,25,13.7W9,36000.,1.,1000.
 17 FLOW
 18 1,1,8.4
 19 FFUN
 20 1,-1,1.
 21 DEAD
 22       SOLU,VRR
 23       OUTP,500
 24 LIVE
 25       SOLU,MNR
 26       STEP,5,5
 27       LOAD,1,-8000.,,,,2,2
 28       LVAR,1
 29       CURN,1
 30       OUTP,500
 31 DYN
 32       CURR,1
 33       TIME,.005,20.
 34       LOAD,1,-8000.,,,2,2
 35       LVAR,1
 36       OUTP,200
 37
```

ADDED MASS

```
LINE   DIRECT LIST OF INPUT DATA
   1  SEADYN FREE FORM - TEST CASE NO. 3 - PENDULUM 6
   2 PROB
   3 2,1,-2,1,1
   4 FLUI
   5 250.,1
   6 NODE
   7 1,,,,,1,1,1
   8 2,,0.,-50.,0.
   9 ELEM
  10 1,1,2,,1,,,,34600.
  11 BLOC
  12 1,2,2
  13 BODY
  14 1,,-34000.,10.,,2.
  15 MATE
  16 1,,,25,13.7W8,2,36000.,,15,,,45000.,,24
  17 FLOW
  18 1,1,8.4
  19 TFUN
  20 1,-1,1.
  21 DEAD
  22       SOLU,VRR
  23       OUTP,500
  24 LIVE
  25       SOLU,RNR
  26       STEP,5,5
  27       LOAD,1,-8000.,,,2,2
  28       LVAR,1
  29       CURR,1
  30       OUTP,500
  31 DYN
  32       CURR,1
  33       TIME,.005,20.
  34       LOAD,1,-8000.,,2,2
  35       LVAR,1
  36       OUTP,200
```

```
LINE    DIRECT LIST OF INPUT DATA                                    NO FLUID
    1  SEADYN FREE FORM - TEST CASE NO. 3 - PENDULUM 5
    2 PROB
    3 2,1,-2,1,1
    4 FLUI
    5 250.,2
    6 NODE
    7 1,,,,,1,1,1
    8 2,,0.,-50.,0.
    9 ELEM
   10 1,1,2,,1,,,,34600.
   11 BLOC
   12 1,2,2
   13 BODY
   14 1,,-34000.,10.
   15 MATE
   16 1,,,25,13.7M8,2,36000.,,.15,,,45000.,,.24
   17 FLOW
   18 1,1,8.4
   19 TFUN
   20 1,-1,1.
   21 DEAD
   22        SOLU,VNR
   23        OUTP,500
   24 LIVE
   25        SOLU,MNR
   26        STEP,5,5
   27        LOAD,1,-8000.,,,2,2
   28        LVAR,1
   29        CURR,1
   30        OUTP,500
   31 DYN
   32        CURR,1
   33        TIME,.005,20.
   34        LOAD,1,-8000.,,2,2
   35        LVAR,1
   36        OUTP,200

    3  END
```

```
LINE   DIRECT LIST OF INPUT DATA

   1  FREE FORMAT TEST CASE - CABLE LAYINGS
   2 PROB
   3 7,6,-2,1,1
   4 FLUID
   5 1200.,1
   6 2000.,2
   7 BLOC
   8 1,2,5,1,1
   9 BODY
  10 1,,-100.,4.
  11 ELEM
  12 1,1,2,,1,,,-1
  13 2,2,3,,1
  14 3,3,4,,2
  15 4,4,5,,1
  16 6,6,7,,1,,1
  17 LIMIT
  18 1,0.,1.,,1
  19 MATE
  20 1,0.,.25,13.7,,,,,5.E06,1.
  21 2,0.,.25,13.7W8,3,140[illegible].,.0014,10.,,16000.,.003,,,17000.,.006
  22 NODE
  23 1,,0.,0.,0.,1,1,1
  24 5,,-1400.,1200.,0.,2,2,1
  25 6,,-1400.,1200.,0.,2,2,1
  26 7,,-1400.,1200.,0.,1,1,1
  27 LINE
  28 3,1,5,1,0,2,1,13.7,9800.,1
  29 DEAD
  30       OUTP,10
  31       SOLU,VRR,.1
  32 DYN
  33       SOLU,DIMN12,-1
  34       MOVE,5,2,0,-2.,2,0,0.,2,0,0.
  35       MOVE,6,2,0,-2.,2,0,0.,2,0,0.
  36       MOVE,7,2,0,-2.,2,0,0.,2,0,0.
  37       PAYO,5,4,2.,60.,2,0,1,0
  38       TIME,0.1,40.
  39       OUTP,10,1.
  40 DYN
  41       FREE,11,12
  42       MOVE,7,2,0,-2.,2,0,0.,2,0,0.
  43       TIME,0.1,50.,40.
  44       OUTP,10,1.
  45 END
```

```
LINE   DIRECT LIST OF INPUT DATA

   1  SEADYN FREE FORM - TEST CASE NO. 5 - CATENARY5
   2 PROB
   3 4,3,-2,1,1
   4 FLUI
   5 0.,1
   6 NODE
   7 1,,0.,-100.,0.,1,1,1
   8 4,,-150.,0.,0.,1,1,1
   9 LINE
  10 2,1,4,1,0,2,1,2,,40.
  11 ELEM
  12 1,1,2,,1,,,-1
  13 3,3,4,,1,,,-1
  14 TENS
  15 1,3,1,1
  16 MATE
  17 1,,.25,2.E9,1.E06,1.
  18 ELOC
  19 1,1,3,1
  20 LIMIT
  21 1,-120.,2,,,1
  22 TRUN
  23 1,-1,6.
  24 READ
  25        SOLC,VNR
  26        OUTP,10
  27 DYN
  28        SOLU,,,,,,0001N12,-2
  29        TIME,,01,8.
  30        FREE,41
  31        MOVE,4,,,,1,1,6.
  32        OUTP,50
  33 END
```

N E W P R O B L E M D A T A

NUMBER OF NODES	= 3		
NUMBER OF ELEMENTS	= 2	NBASE =	260
GRAVITY DIRECTION	= -2		
DYNAMIC OPTION FLAG	= 1		
INPUT ECHO FLAG	= 1		
DRAG MODEL OVERRIDE	= 0		
SHIP LOAD FILE FLAG	= 0		

GRAVITATIONAL ACCELERATION = .321700E+02

FLUID MEDIA DEFINITIONS

	INTERFACE DEPTH	KINEMATIC VISCOSITY	SPECIFIC WEIGHT
1	.10000E+04	.17700E-04	.64000E+02

NODE DATA

NODE	CODE	X	Y	Z	CONSTRAINTS		
1	0	0.	.20000E+02	0.	0	0	0
2	0	-.10000E+03	0.	0.	1	1	1
3	0	.10000E+03	0.	0.	1	1	1

ELEMENT INPUT DATA

EL	N1	N2	N3	MAT	KOMP	FLAG	TENSION	LENGTH	MEDIUM
1	2	1	0	1	0	0	.20052E+05	0.	1
2	3	1	0	1	0	0	.20052E+05	0.	1

BODY LOCATION DATA

BEGIN	END	INCR	BODY NO.	LIMIT SET
1	1	1	1	0

BODY DATA TABLE

BODY NO.	DRAG FN.NO.	BUOYANCY	DIAMETER	LENGTH	ADDED MASS COEF	WIND DRAG COEF	SUR COR DRAG	MOM OF INERTIA	MID
1	0	-.50000E+01	.10000E+02	0.	.10000E+01	0.	0.	0.	1

CABLE MATERIAL PROPERTY DATA

PROPERTY SET NO. = 1
DRAG COEF. NO. = 0
DIAMETER = .100000E+01
WEIGHT PER UNIT LENGTH = 0.
ADDED MASS COEFFICIENT = .100000E+01
REFERENCE MEDIUM CODE = 1
ULTIMATE TENSION = 0.
MASS PER UNIT LENGTH = .156250E+01

NO. OF POINTS ON TENSION/STRAIN CURVE = 0

EXPONENT FORM COEFICIENTS .10000E+07 .10000E+01

NODE-POINT DATA SUMMARY

NODE NO.	INITIAL COORDINATES X	Y	Z	FIXITY CODES X	Y	Z	LIMIT SET	BODY NO.	GRAVITY LOADS X	Y	Z	VIRTUAL MASSES X	Y	Z
1	0.	.2000E+02	0.	0	0	0	0	1 0.		-.5000E+01 0.		.2396E+04	.2396E+04	.2396E+04
2	-.1000E+03	0.	0.	1	1	1	0	0 0.		0.	0.	.1562E+03	.1562E+03	.1562E+03
3	.1000E+03	0.	0.	1	1	1	0	0 0.		0.	0.	.1562E+03	.1562E+03	.1562E+03

ELEMENT SUMMARY DATA

ELT NO.	CONNECTION DATA N1	N2	N3	MAT NO.	COMP CODE	MED. CODE	INITIAL TENSION	UNSTRETCHED LENGTH	INITIAL LENGTH	RESIDUAL MASS
1	2	1		1	0	1	.20052E+05	.99995E+02	.10198E+03	.78121E+02
2	3	1		1	0	1	.20052E+05	.99995E+02	.10198E+03	.78121E+02

ADDITIONAL ELEMENT DATA

ELEMENT		SLOPES		TRANSIT TIME(APPROX)
1	.98058E+00	.19612E+00	0.	.12499E+00
2	-.98058E+00	.19612E+00	0.	.12499E+00

HALF-BANDWIDTH = 9

L O A D C A S E P A R A M E T E R S

SUBANALYSIS TYPE = DEAD

SOLUTION DATA RESET DEF
POINT LOADS DATA

LOAD SET		LOAD COMPONENTS		BEGIN	END	INC
1	0.	.78700E+04	0.	1	1	1

LOAD SET VARIATION CODES
SET 1 = 1
SET 2 = 0
SET 3 = 0
GRAVITY = 1
OUTPUT DATA SELECTIONS
STEP NUMBER INTERVAL = 1
PARAMETER INTERVAL = 0.
DEBUG OUTPUT FLAG = 0

S O L U T I O N O P T I O N S U M M A R Y

ANALYSIS TYPE = DEAD
SOLUTION FORM = MNK

NO. OF STATIC STEPS	=	1
OUTPUT INTERVAL	=	1
DEBUG PRINT CODE	=	0
RESTART FILE FLAG	=	0
UPDATE OPTION	=	1
START UP OPTION	=	0
NO. OF POINT LOADS	=	1
FLOW FIELD NUMBER	=	0

MODIFIED NEWTON-RAPHSON SOLUTION PARAMETERS

STEP SIZE CONTROL NO.	=	-1
ITERATION LIMIT	=	200
NO. OF CONV. TRIALS	=	3
MNK UPDATE INTERVAL	=	205
NUMERICAL DAMPING	=	0.
RESIDUAL ERROR TOLERANCE	=	.10000E-02
DEFLECT. ERROR TOLERANCE	=	.10000E-02
1-D SEARCH FACTOR	=	0.
EXTRAPOLATION PARAMETER	=	.50000E+00

DEAD LOAD INCREMENT = 0 LOAD FACTOR 0.

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.200000E+02	0.	0.	0.	0.	1	.200520E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200520E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 0

DEAD LOAD INCREMENT = 1 LOAD FACTOR .10000E+01

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.200000E+02	0.	0.	0.	0.	1	.200519E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200519E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 1

L O A D C A S E P A R A M E T E R S

SUBANALYSIS TYPE = DYN

SOLUTION DATA RESET DEF
TIME STEP DATA
INITIAL TIME STEP = .44000E-03
MAXIMUM TIME = .11000E-01
BEGINNING TIME = 0.
UPDATE TIME = .44000E-03
ALPHA,BETA,GAMMA = 0. .83333E-01 .50000E+00
RESTART OUTPUT CONTROLS
RESTART FILE FLAG = -25
SAVE TIME INTERVAL = .11000E-01
SUPPRESS RESTART OUTPUT

S O L U T I O N O P T I O N S U M M A R Y

ANALYSIS TYPE = DYN
SOLUTION FORM = DIM

DYN. INIT. COND. CODE = 0
OUTPUT INTERVAL = 9
DEBUG PRINT CODE = 0
RESTART FILE FLAG = -25
UPDATE OPTION = 1
START UP OPTION = 0
NO. OF POINT LOADS = 0
FLOW FIELD NUMBER = 0

DIRECT ITERATION METHOD DYNAMIC PARAMETERS
DEFLECT. ERROR TOLERANCE = .10000E-02

ELEMENT	EA	UNIT MASS	LENGTH	TIME STEP
1	.10000E+07	.15317BE+01	.10198OE+03	.12371E+00
2	.10000E+07	.15317BE+01	.10198OE+03	.12371E+00

TIME STEP DATA
INITIAL TIME STEP = .44000E-03
MAXIMUM TIME = .11000E-01
BEGINNING TIME = 0.
UPDATE TIME = .44000E-03
ALPHA,BETA,GAMMA = 0. .83333E-01 .50000E+00

OUTPUT TIME INTERVAL = .440000E-03
RESTART TIME INTERVAL = .110000E-02

TIME = 0. DYNAMIC INCREMENT = 0 TAPE 3 FILE NO. = 1

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.200000E+02	0.	0.	0.	0.	1	.200519E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200519E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 0

TIME = .440000E-03 DYNAMIC INCREMENT = 1

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.200000E+02	0.	0.	-.724448E-03	0.	1	.200519E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200519E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 3

TIME = .880000E-03 DYNAMIC INCREMENT = 2

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.200000E+02	0.	0.	-.217334E-02	0.	1	.200519E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200519E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 2

TIME = .132000E-02 DYNAMIC INCREMENT = 3

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.200000E+02	0.	0.	-.362224E-02	0.	1	.200519E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200519E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 2

TIME = .176000E-02 DYNAMIC INCREMENT = 4

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.200000E+02	0.	0.	-.507114E-02	0.	1	.200519E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200519E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 2

TIME = .22000E-02 DYNAMIC INCREMENT = 5

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.200000E+02	0.	0.	-.652003E-02	0.	1	.200519E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200519E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 2

TIME = .26400E-02 DYNAMIC INCREMENT = 6

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.200000E+02	0.	0.	-.796892E-02	0.	1	.200519E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200519E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 2

TIME = .30800E-02 DYNAMIC INCREMENT = 7

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.200000E+02	0.	0.	-.941781E-02	0.	1	.200519E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200519E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 2

TIME = .35200E-02 DYNAMIC INCREMENT = 8

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199999E+02	0.	0.	-.108667E-01	0.	1	.200519E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200519E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 2

TIME = .39600E-02 DYNAMIC INCREMENT = 9

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199999E+02	0.	0.	-.123156E-01	0.	1	.200519E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200519E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 2

TIME = .44000E-02 DYNAMIC INCREMENT = 10

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199999E+02	0.	0.	-.137645E-01	0.	1	.200519E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200519E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 2

TIME = .48400E-02 DYNAMIC INCREMENT = 11

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199999E+02	0.	0.	-.152134E-01	0.	1	.200519E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200519E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 2

TIME = .52800E-02 DYNAMIC INCREMENT = 12

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199999E+02	0.	0.	-.166622E-01	0.	1	.200518E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200518E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 2

TIME = .57200E-02 DYNAMIC INCREMENT = 13

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199999E+02	0.	0.	-.181111E-01	0.	1	.200518E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200518E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 2

TIME = .61600E-02 DYNAMIC INCREMENT = 14

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199999E+02	0.	0.	-.195600E-01	0.	1	.200518E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200518E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 2

TIME = .66000E-02 DYNAMIC INCREMENT = 15

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199999E+02	0.	0.	-.210049E-01	0.	1	.200518E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200518E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 2

TIME = .70400E-02 DYNAMIC INCREMENT = 16

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199999E+02	0.	0.	-.224577E-01	0.	1	.200518E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200518E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 2

TIME = .74800E-02 DYNAMIC INCREMENT = 17

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199999E+02	0.	0.	-.239066E-01	0.	1	.200518E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200518E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 2

TIME = .79200E-02 DYNAMIC INCREMENT = 18

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199999E+02	0.	0.	-.253555E-01	0.	1	.200517E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200517E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 2

TIME = .83600E-02 DYNAMIC INCREMENT = 19

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199999E+02	0.	0.	-.268043E-01	0.	1	.200517E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200517E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 2

TIME = .88000E-02 DYNAMIC INCREMENT = 20

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199998E+02	0.	0.	-.2825326-01	0.	1	.200517E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200517E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 2

TIME = .92400E-02 DYNAMIC INCREMENT = 21

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199998E+02	0.	0.	-.2970206-01	0.	1	.200517E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200517E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 2

TIME = .96800E-02 DYNAMIC INCREMENT = 22

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199998E+02	0.	0.	-.3115086-01	0.	1	.200516E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200516E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 2

TIME = .10120E-01 DYNAMIC INCREMENT = 23

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199998E+02	0.	0.	-.3259976-01	0.	1	.200516E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200516E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 2

TIME = .10560E-01 DYNAMIC INCREMENT = 24

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199998E+02	0.	0.	-.3404856-01	0.	1	.200516E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200516E+05
3	.100000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 2

TIME = .11000E-01 DYNAMIC INCREMENT = 26

NODE	X	Y	Z	VX	VY	VZ
1	0.	.199998E+02	0.	0.	-.354973E-01	0.
2	-.100000E+03	0.	0.	0.	0.	0.
3	.100000E+03	0.	0.	0.	0.	0.

ELT	TENSION
1	.200515E+05
2	.200515E+05

NUMBER OF ITERATIONS 2

RESTART TO TEST NEXT SOLUTION OPTION

RESTART OPTION NEW

RESTART	FILE	NO. =	3
RESTART	RECORD	NO. =	1
RESTART	FILE	FLAG =	-25
CHECK	WORD	FLAG =	0
OUTPUT	INTERVAL	FLAG =	0
DEBUG	OUTPUT	FLAG =	0

RESTART TAPE LABEL

SEADYN FREE FORM - TEST CASE NO. 1 - SUDDEN RELEASE

L O A D C A S E P A R A M E T E R S

SUBANALYSIS TYPE = DYN

SOLUTION DATA RESET RFB

S O L U T I O N O P T I O N S U M M A R Y

ANALYSIS TYPE = DYN
SOLUTION FORM = REG

DYN. INIT. COND. CODE = 0
OUTPUT INTERVAL = 0
DEBUG PRINT CODE = 0
RESTART FILE FLAG = 0
UPDATE OPTION = 1
START UP OPTION = 0
NO. OF POINT LOADS = 0
FLOW FIELD NUMBER = 0

ELEMENT	EA	UNIT MASS	LENGTH	TIME STEP
1	.100000E+07	.153178E+01	.101980E+03	.123713E+00
2	.100000E+07	.153178E+01	.101980E+03	.123713E+00

TIME STEP DATA
INITIAL TIME STEP = .44000E-03
MAXIMUM TIME = .11000E-01
BEGINNING TIME = 0.
UPDATE TIME = .44000E-03
ALPHA,BETA,GAMMA = 0. .83333E-01 .50000E+00

OUTPUT TIME INTERVAL = .440000E-03

TIME = 0. DYNAMIC INCREMENT = 0

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.200000E+02	0.	0.	0.	0.	1	.200519E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200519E+05
3	.100000E+03	0.	0.	0.	0.	0.		

TIME = .440000E-03 DYNAMIC INCREMENT = 1

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.200000E+02	0.	0.	-.724448E-03	0.	1	.200519E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200519E+05
3	.100000E+03	0.	0.	0.	0.	0.		

TIME = .880000E-03 DYNAMIC INCREMENT = 2

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.200000E+02	0.	0.	-.219338E-02	0.	1	.200519E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200519E+05
3	.100000E+03	0.	0.	0.	0.	0.		

TIME = .132000E-02 DYNAMIC INCREMENT = 3

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.200000E+02	0.	0.	-.370476E-02	0.	1	.200519E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200519E+05
3	.100000E+03	0.	0.	0.	0.	0.		

TIME = .176000E-02 DYNAMIC INCREMENT = 4

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.200000E+02	0.	0.	-.526104E-02	0.	1	.200519E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200519E+05
3	.100000E+03	0.	0.	0.	0.	0.		

TIME = .220000E-02 DYNAMIC INCREMENT = 5

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.200000E+02	0.	0.	-.686538E-02	0.	1	.200519E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200519E+05
3	.100000E+03	0.	0.	0.	0.	0.		

TIME = .26400E-02 DYNAMIC INCREMENT = 6

NODE	X	Y	Z	VX	VY	VZ
1	0.	.200000E+02	0.	0.	-.851739E-02	0.
2	-.100000E+03	0.	0.	0.	0.	0.
3	.100000E+03	0.	0.	0.	0.	0.

ELT	TENSION
1	.200519E+05
2	.200519E+05

TIME = .30800E-02 DYNAMIC INCREMENT = 7

NODE	X	Y	Z	VX	VY	VZ
1	0.	.200000E+02	0.	0.	-.102171E-01	0.
2	-.100000E+03	0.	0.	0.	0.	0.
3	.100000E+03	0.	0.	0.	0.	0.

ELT	TENSION
1	.200519E+05
2	.200519E+05

TIME = .35200E-02 DYNAMIC INCREMENT = 8

NODE	X	Y	Z	VX	VY	VZ
1	0.	.199999E+02	0.	0.	-.119721E-01	0.
2	-.100000E+03	0.	0.	0.	0.	0.
3	.100000E+03	0.	0.	0.	0.	0.

ELT	TENSION
1	.200519E+05
2	.200519E+05

TIME = .39600E-02 DYNAMIC INCREMENT = 9

NODE	X	Y	Z	VX	VY	VZ
1	0.	.199999E+02	0.	0.	-.137778E-01	0.
2	-.100000E+03	0.	0.	0.	0.	0.
3	.100000E+03	0.	0.	0.	0.	0.

ELT	TENSION
1	.200519E+05
2	.200519E+05

TIME = .44000E-02 DYNAMIC INCREMENT = 10

NODE	X	Y	Z	VX	VY	VZ
1	0.	.199999E+02	0.	0.	-.156378E-01	0.
2	-.100000E+03	0.	0.	0.	0.	0.
3	.100000E+03	0.	0.	0.	0.	0.

ELT	TENSION
1	.200519E+05
2	.200519E+05

TIME = .48400E-02 DYNAMIC INCREMENT = 11

NODE	X	Y	Z	VX	VY	VZ
1	0.	.199999E+02	0.	0.	-.175539E-01	0.
2	-.100000E+03	0.	0.	0.	0.	0.
3	.100000E+03	0.	0.	0.	0.	0.

ELT	TENSION
1	.200519E+05
2	.200519E+05

TIME = .52800E-02 DYNAMIC INCREMENT = 12

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199999E+02	0.	0.	-.195276E-01	0.	1	.200518E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200518E+05
3	.100000E+03	0.	0.	0.	0.	0.		

TIME = .57200E-02 DYNAMIC INCREMENT = 13

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199999E+02	0.	0.	-.215607E-01	0.	1	.200518E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200518E+05
3	.100000E+03	0.	0.	0.	0.	0.		

TIME = .61600E-02 DYNAMIC INCREMENT = 14

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199999E+02	0.	0.	-.236550E-01	0.	1	.200518E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200518E+05
3	.100000E+03	0.	0.	0.	0.	0.		

TIME = .66000E-02 DYNAMIC INCREMENT = 15

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199999E+02	0.	0.	-.258123E-01	0.	1	.200518E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200518E+05
3	.100000E+03	0.	0.	0.	0.	0.		

TIME = .70400E-02 DYNAMIC INCREMENT = 16

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199999E+02	0.	0.	-.280346E-01	0.	1	.200518E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200518E+05
3	.100000E+03	0.	0.	0.	0.	0.		

TIME = .74800E-02 DYNAMIC INCREMENT = 17

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199999E+02	0.	0.	-.303217E-01	0.	1	.200517E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200517E+05
3	.100000E+03	0.	0.	0.	0.	0.		

TIME = .79200E-02 DYNAMIC INCREMENT = 18

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199998E+02	0.	0.	-.326817E-01	0.	1	.200517E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200517E+05
3	.100000E+03	0.	0.	0.	0.	0.		

TIME = .83600E-02 DYNAMIC INCREMENT = 19

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199998E+02	0.	0.	-.351107E-01	0.	1	.200517E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200517E+05
3	.100000E+03	0.	0.	0.	0.	0.		

TIME = .88000E-02 DYNAMIC INCREMENT = 20

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199998E+02	0.	0.	-.376128E-01	0.	1	.200516E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200516E+05
3	.100000E+03	0.	0.	0.	0.	0.		

TIME = .92400E-02 DYNAMIC INCREMENT = 21

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199998E+02	0.	0.	-.401902E-01	0.	1	.200516E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200516E+05
3	.100000E+03	0.	0.	0.	0.	0.		

TIME = .96800E-02 DYNAMIC INCREMENT = 22

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199998E+02	0.	0.	-.428452E-01	0.	1	.200516E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200516E+05
3	.100000E+03	0.	0.	0.	0.	0.		

TIME = .10120E-01 DYNAMIC INCREMENT = 23

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199998E+02	0.	0.	-.455801E-01	0.	1	.200515E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200515E+05
3	.100000E+03	0.	0.	0.	0.	0.		

TIME = .10560E-01 DYNAMIC INCREMENT = 24

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199997E+02	0.	0.	-.483972E-01	0.	1	.200515E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200515E+05
3	.100000E+03	0.	0.	0.	0.	0.		

TIME = .11000E-01 DYNAMIC INCREMENT = 25

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199997E+02	0.	0.	-.512992E-01	0.	1	.200514E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200514E+05
3	.100000E+03	0.	0.	0.	0.	0.		

TIME = .11000E-01 DYNAMIC INCREMENT = 26

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.199997E+02	0.	0.	-.520731E-01	0.	1	.200514E+05
2	-.100000E+03	0.	0.	0.	0.	0.	2	.200514E+05
3	.100000E+03	0.	0.	0.	0.	0.		

N E W P R O B L E M D A T A

NUMBER OF NODES	=	3		
NUMBER OF ELEMENTS	=	2	NPHASE =	260
GRAVITY DIRECTION	=	-2		
DYNAMIC OPTION FLAG	=	1		
INPUT ECHO FLAG	=	1		
DRAG MODEL OVERRIDE	=	0		
SHIP LOAD FILE FLAG	=	0		

GRAVITATIONAL ACCELERATION = .321700E+02

FLUID MEDIA DEFINITIONS

	INTERFACE DEPTH	KINEMATIC VISCOSITY	SPECIFIC WEIGHT
1	.10000E+04	.17700E-04	.64000E+02

NODE DATA

NODE	CODE	X	Y	Z	CONSTRAINTS		
1	0	0.	.20000E+02	0.	0	0	0
2	0	-.10000E+03	0.	0.	1	1	1
3	0	.10000E+03	0.	0.	1	1	1

ELEMENT INPUT DATA

EL	N1	N2	N3	MAT	KOMP	FLAG	TENSION	LENGTH	MEDIUM
1	2	1	0	1	0	0	.20052E+05	0.	1
2	1	1	0	1	0	0	.20052E+05	0.	1

BODY LOCATION DATA

BEGIN	END	INCR	BODY NO.	LIMIT SET
1	1	1	1	0

BODY DATA TABLE

BODY NO.	DRAG FN.NO.	BOUYANCY	DIAMETER	LENGTH	ADDED MASS COEF	AXIAL DRAG COEF	SIDE FOR DRAG	MOM OF INERTIA	MTD
1	0	-.78700E+04	.10000E+02	0.	.10000E+01	0.	0.	0.	1

CABLE MATERIAL PROPERTY DATA

PROPERTY SET NO. = 1
DRAG COEF. NO. = 0
DIAMETER = .100000E+01
WEIGHT PER UNIT LENGTH = 0.
ADDED MASS COEFFICIENT = .100000E+01
REFERENCE MEDIUM CODE = 1
ULTIMATE TENSION = 0.
MASS PER UNIT LENGTH = .156250E+01

NO. OF POINTS ON TENSION/STRAIN CURVE = 0

EXPONENT FORM COEFICIENTS .10000E+07 .10000E+01

NODE POINT DATA SUMMARY

NODE NO.	INITIAL COORDINATES X	Y	Z	FIXITY CODES X	Y	Z	LIMIT SET	BUOY NO.	GRAVITY LOADS X	Y	Z	VIRTUAL MASSES X	Y	Z
1	0.	.2000E+02	0.	0	0	0	0	1 0.		-.7870E+04	0.	.2640E+04	.2640E+04	.2640E+04
2	-.1000E+03	0.	0.	1	1	1	0	0 0.		0.	0.	.1562E+03	.1562E+03	.1562E+03
3	.1000E+03	0.	0.	1	1	1	0	0 0.		0.	0.	.1562E+03	.1562E+03	.1562E+03

ELEMENT SUMMARY DATA

ELT NO.	CONNECTION DATA N1	N2	N3	MAT NO.	COMP CODE	MED. CODE	INITIAL TENSION	UNSTRETCHED LENGTH	INITIAL LENGTH	RESIDUAL MASS
1	2	1		1	0	1	.20052E+05	.99995E+02	.10198E+03	.78127E+02
2	3	1		1	0	1	.20052E+05	.99995E+02	.10198E+03	.78127E+02

ADDITIONAL ELEMENT DATA

ELEMENT		SLOPES		TRANSIT TIME(APPROX)
1	.98058E+00	.19612E+00	0.	.12499E+00
2	-.98058E+00	.19612E+00	0.	.12499E+00

HALF-BANDWIDTH = 9

L O A D C A S E P A R A M E T E R S

SUBANALYSIS TYPE = DEAD

SOLUTION DATA RESET VRR
STATIC STEP DATA
NUMBER OF STEPS = 10
START UP OPTION = 0
HEADING INCREMENT = 0.
TOTAL HEADING CHANGE = 0.
NODE COMPONENT MOVEMENT DATA

NODE	TYPE	VARY CODE	AMPLITUDE	TYPE	VARY CODE	AMPLITUDE	TYPE	VARY CODE	AMPLITUDE
2	1	1	.40000E+03	0	0	0.	0	0	0.

S O L U T I O N O P T I O N S U M M A R Y

ANALYSIS TYPE = DEAD
SOLUTION FORM = VAR

NO. OF STATIC STEPS	=	10
OUTPUT INTERVAL	=	0
DEBUG PRINT CODE	=	0
RESTART FILE FLAG	=	0
UPDATE OPTION	=	1
START UP OPTION	=	0
NO. OF POINT LOADS	=	0
FLOW FIELD NUMBER	=	0
NUMBER OF DISP. INPUT	=	1

VISCOUS RELAXATION SOLUTION PARAMETERS

INTEGRATION PARAMETER	=	.10000E+01
INITIAL STEP SIZE	=	.10000E+01
INITIAL DAMPING	=	.10000E-02
ITERATION LIMIT	=	200

DEAD LOAD INCREMENT = 0 LOAD FACTOR 0.

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	.2000000E+02	0.	0.	0.	0.	1	.2005208E+05
2	-.1000000E+03	0.	0.	0.	0.	0.	2	.2005208E+05
3	.1000000E+03	0.	0.	0.	0.	0.		

DEAD LOAD INCREMENT = 18 LOAD FACTOR .1000000E+01

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	.2000000E+03	-.2000438E+02	0.	0.	0.	0.	1	.2006052E+05
2	.3000000E+03	0.	0.	0.	0.	0.	2	.2006052E+05
3	.1000000E+03	0.	0.	0.	0.	0.		

N E W P R O B L E M D A T A

NUMBER OF NODES	= 2		
NUMBER OF ELEMENTS	= 1	NBASE =	163
GRAVITY DIRECTION	= -2		
DYNAMIC OPTION FLAG	= 1		
INPUT ECHO FLAG	= 1		
DRAG MODEL OVERRIDE	= 0		
SHIP LOAD FILE FLAG	= 0		

GRAVITATIONAL ACCELERATION = .321700E+02

FLUID MEDIA DEFINITIONS

	INTERFACE DEPTH	KINEMATIC VISCOSITY	SPECIFIC WEIGHT
1	.25000E+03	.17700E-04	.64000E+02

NODE DATA

NODE	CODE	X	Y	Z	CONSTRAINTS		
1	0	0.	0.	0.	1	1	1
2	0	0.	-.50000E+02	0.	0	0	0

ELEMENT INPUT DATA

EL	N1	N2	N3	MAT	KOMP	FLAG	TENSION	LENGTH	MEDIUM
1	1	2	0	1	0	0	.34600E+05	0.	1

BODY LOCATION DATA

BEGIN	END	INCR	BODY NO.	LIMIT SET
2	2	1	1	0

BODY DATA TABLE

BODY NO.	DRAG FN.NO.	BUOYANCY	DIAMETER	LENGTH	ADDED MASS COEF	WIND DRAG COEF	SUR CUR DRAG	MOM OF INERTIA	REF
1	0	-.340000E+05	.100000E+02	0.	.100000E+01	0.	0.	0.	1

CABLE MATERIAL PROPERTY DATA

PROPERTY SET NO. = 1
DRAG COEF. NO. = 0
DIAMETER = .250000E+00
WEIGHT PER UNIT LENGTH = .137000E+02
ADDED MASS COEFFICIENT = .100000E+01
REFERENCE MEDIUM CODE = 1
ULTIMATE TENSION = 0.
MASS PER UNIT LENGTH = .523519E+00

NO. OF POINTS ON TENSION/STRAIN CURVE = 2

I	TENSION	STRAIN	EA
1	.360000E+05	.150000E+00	.240000E+06
2	.450000E+05	.240000E+00	.100000E+06

FLOW FIELD DATA SETS

SET	CODE	PARAMETERS				
1	1	.84000E+01	0.	0.	0.	0.
		0.	0.	0.	0.	0.

TIME FUNCTION DEFINITIONS

FN. NUMBER	CODE	PARAMETERS				
1	-1	.10000E+01	0.	0.	0.	0.
		0.	0.	0.	0.	0.
		0.	0.	0.	0.	0.
		0.	0.	0.	0.	0.

NODE POINT DATA SUMMARY

NODE NO.	INITIAL COORDINATES X	Y	Z	FIXITY CODES X	Y	Z	LIMIT SET	BODY NO.	GRAVITY LOADS X	Y	Z	VIRTUAL MASSES X	Y	Z
1	0.	0.	0.	1	1	1	0	0	0.	-.3017E+03	0.	.1368E+02	.1368E+02	.1368E+02
2	0.	-.5000E+02	0.	0	0	0	0	1	0.	-.3430E+05	0.	.3154E+04	.3154E+04	.3154E+04

ELEMENT SUMMARY DATA

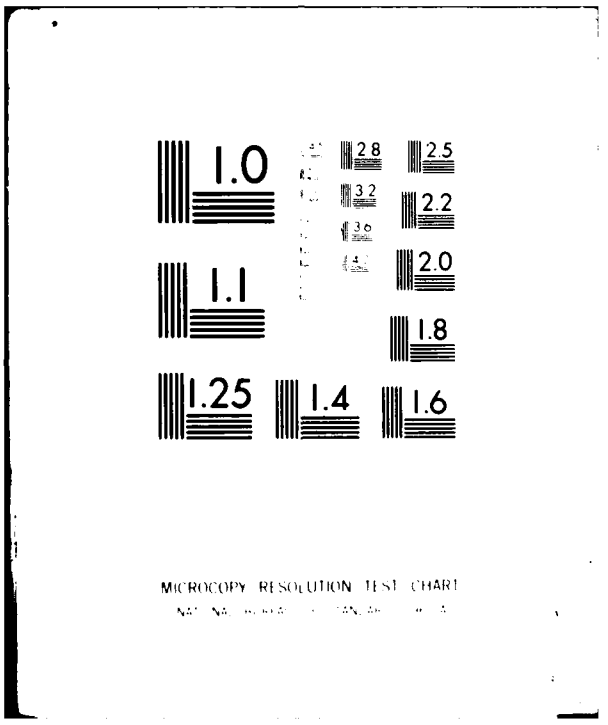
ELT NO.	CONNECTION N1	N2	DATA N3	MAT NO.	COMP CODE	MED. CODE	INITIAL TENSION	UNSTRETCHED LENGTH	INITIAL LENGTH	RESIDUAL MASS
1	1	2		1	0	1	.34600E+05	.44051E+02	.50000E+02	.21504E+01

ADDITIONAL ELEMENT DATA

ELEMENT		SLOPES		TRANSIT TIME(APPROX)
1	0.	-.10000E+01	0.	.65060E-01

HALF-BANDWIDTH = 6

AD-A114 978 WESTERN INSTRUMENTS CORP OXNARD CA F/G 13/13
TEST CASES FOR SEADYN VERIFICATION.(U)
APR 82 P E NORDSTROM, H OTTSEN N68305-80-C-0004
UNCLASSIFIED NCEL-CR-82.014 NL


1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
MICROCOPY RESOLUTION TEST CHART

L O A D C A S E P A R A M E T E R S

SUBANALYSIS TYPE = DEAD

SOLUTION DATA RESET VRR
OUTPUT DATA SELECTIONS
STEP NUMBER INTERVAL = 500
PARAMETER INTERVAL = 0.
DEBUG OUTPUT FLAG = 0

S O L U T I O N O P T I O N S U M M A R Y

ANALYSIS TYPE = DEAD
SOLUTION FORM = VRR

NO. OF STATIC STEPS	=	1
OUTPUT INTERVAL	=	500
DEBUG PRINT CODE	=	0
RESTART FILE FLAG	=	0
UPDATE OPTION	=	1
START UP OPTION	=	0
NO. OF POINT LOADS	=	0
FLOW FIELD NUMBER	=	0

VISCOUS RELAXATION SOLUTION PARAMETERS

INTEGRATION PARAMETER	=	.10000E+01
INITIAL STEP SIZE	=	.10000E+01
INITIAL DAMPING	=	.10000E-02
ITERATION LIMIT	=	200

DEAD LOAD INCREMENT = 0 LOAD FACTOR 0.

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.346000E+05
2	0.	-.500000E+02	0.	0.	0.	0.		

SLOW CONVERGENCE ON STEP 4
LAST FOUR VELOCITY NORMS .203619E+01 .160132E+01 .469673E+00 .136027E-01
LAST RESIDUAL NORMS .596342E+04 .158761E+04 .932798E+02

NEW STEP SIZE = .20000E+01

DEAD LOAD INCREMENT = 4 LOAD FACTOR .10000E+01

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.343017E+05
2	0.	-.499517E+02	0.	0.	0.	0.		

LOAD CASE PARAMETERS

SUBANALYSIS TYPE = LIVE

SOLUTION DATA RESET MNK
STATIC STEP DATA
NUMBER OF STEPS = 5
START UP OPTION = 5
HEADING INCREMENT = 0.
TOTAL HEADING CHANGE = 0.
POINT LOADS DATA

LOAD SET	LOAD COMPONENTS			BEGIN	END	INC
1	-.80000E+04	0.	0.	2	2	1

LOAD SET VARIATION CODES
SET 1 = 1
SET 2 = 0
SET 3 = 0
GRAVITY = 0
CURRENT FIELD DATA
FLOW FIELD NUMBER = 1
FLOW FIELD MULTIPLIER = .10000E+01
FLOW VARIATION CODE = 0
OUTPUT DATA SELECTIONS
STEP NUMBER INTERVAL = 500
PARAMETER INTERVAL = 0.
DEBUG OUTPUT FLAG = 0

S O L U T I O N O P T I O N S U M M A R Y

ANALYSIS TYPE = LIVE
SOLUTION FORM = MNR

NO. OF STATIC STEPS	=	5
OUTPUT INTERVAL	=	500
DEBUG PRINT CODE	=	0
RESTART FILE FLAG	=	0
UPDATE OPTION	=	1
START UP OPTION	=	5
NO. OF POINT LOADS	=	1
FLOW FIELD NUMBER	=	1

MODIFIED NEWTON-RAPHSON SOLUTION PARAMETERS

STEP SIZE CONTROL NO.	=	2
ITERATION LIMIT	=	200
NO. OF CONV. TRIALS	=	3
MNR UPDATE INTERVAL	=	205
NUMERICAL DAMPING	=	0.
RESIDUAL ERROR TOLERANCE	=	.10000E-02
DEFLECT. ERROR TOLERANCE	=	.10000E-02
1-D SEARCH FACTOR	=	0.
EXTRAPOLATION PARAMETER	=	.50000E+00

STEADY STATE INCREMENT = 0 LOAD FACTOR 0.

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.345017E+03
2	0.	-.499517E+02	0.	0.	0.	0.		

NUMBER OF ITERATIONS 0

STEADY STATE INCREMENT = 9 LOAD FACTOR .10000E+01

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.350806E+03
2	-.102974E+02	-.490075E+02	0.	0.	0.	0.		

NUMBER OF ITERATIONS 3

L O A D C A S E P A R A M E T E R S

SUBANALYSIS TYPE = DYN

CURRENT FIELD DATA
FLOW FIELD NUMBER = 1
FLOW FIELD MULTIPLIER = .10000E+01
FLOW VARIATION CODE = 0
TIME STEP DATA
INITIAL TIME STEP = .50000E-02
MAXIMUM TIME = .20000E+02
BEGINNING TIME = 0.
UPDATE TIME = .50000E-02
ALPHA,BETA,GAMMA = 0. .83333E-01 .50000E+00
POINT LOADS DATA

LOAD SET	LOAD COMPONENTS			BEGIN	END	INC
1	-.80000E+04	0.	.20000E+01	2	2	1

LOAD SET VARIATION CODES
SET 1 = 1
SET 2 = 0
SET 3 = 0
GRAVITY = 0
OUTPUT DATA SELECTIONS
STEP NUMBER INTERVAL = 200
PARAMETER INTERVAL = 0.
DEBUG OUTPUT FLAG = 0

S O L U T I O N O P T I O N S U M M A R Y

ANALYSIS TYPE = DYN
SOLUTION FORM = DIR

DYN. INIT. COND. CODE = 0
OUTPUT INTERVAL = 200
DEBUG POINT CODE = 0
RESTART FILE FLAG = 0
UPDATE OPTION = 1
START UP OPTION = 0
NO. OF POINT LOADS = 1
FLOW FIELD NUMBER = 1

DIRECT ITERATION METHOD DYNAMIC PARAMETERS
DEFLECT. ERROR TOLERANCE = .10000E-02

ELEMENT	EA	UNIT MASS	LENGTH	TIME STEP
1	.240000E+06	.456755E+00	.500777E+02	.638806E-01

TIME STEP DATA
INITIAL TIME STEP = .50000E-02
MAXIMUM TIME = .20000E+02
BEGINNING TIME = 0.
UPDATE TIME = .50000E-02
ALPHA,BETA,GAMMA = 0. .83333E-01 .50000E+00

OUTPUT TIME INTERVAL = .100000E+01

TIME = 0. DYNAMIC INCREMENT = 0

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.350806E+05
2	-.102974E+02	-.490075E+02	0.	0.	0.	0.		

NUMBER OF ITERATIONS 0

TIME = .10000E+01 DYNAMIC INCREMENT = 200

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.351489E+05
2	-.946087E+01	-.490223E+02	.963813E-04	.244741E+01	-.691057E-01	-.136821E-04		

NUMBER OF ITERATIONS 3

STEP 251 CONVERGED IN 2 ITERATIONS. NEW DT AND DTU = .10000E-01 .10000E-01

STEP 300 CONVERGED IN 2 ITERATIONS. NEW DT AND DTU = .20000E-01 .20000E-01

TIME = .20050E+01 DYNAMIC INCREMENT = 313

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.326460E+05
2	-.639332E+01	-.493028E+02	.169602E-03	.432752E+01	-.534880E+00	-.446331E-04		

NUMBER OF ITERATIONS 3

STEP 350 CONVERGED IN 2 ITERATIONS. NEW DT AND DTU = .40000E-01 .40000E-01

TIME = .29850E+01 DYNAMIC INCREMENT = 356

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.349695E+05
2	-.200600E+01	-.500156E+02	.207791E-03	.529811E+01	-.792071E+00	-.849095E-04		

NUMBER OF ITERATIONS 3

TIME = .39850E+01 DYNAMIC INCREMENT = 381

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.370628E+05
2	.296000E+01	-.505480E+02	.199866E-03	.524865E+01	-.171927E+00	-.131942E-03		

NUMBER OF ITERATIONS 3

TIME = .49850E+01 DYNAMIC INCREMENT = 406

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.374720E+03
2	.732072E+01	-.502610E+02	.147397E-03	.411311E+01	.748323E+00	-.171894E-03		

NUMBER OF ITERATIONS 3

TIME = .59850E+01 DYNAMIC INCREMENT = 431

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.357358E+03
2	.101287E+02	-.491506E+02	.631849E-04	.222771E+01	.136511E+01	-.193949E-03		

NUMBER OF ITERATIONS 3

TIME = .69850E+01 DYNAMIC INCREMENT = 456

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.299543E+03
2	.109376E+02	-.480130E+02	-.318934E-04	.229269E+00	.585172E+00	-.194050E-03		

NUMBER OF ITERATIONS 3

TIME = .79850E+01 DYNAMIC INCREMENT = 481

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.303780E+03
2	.989439E+01	-.483097E+02	-.118079E-03	-.146142E+01	-.114805E+01	-.176432E-03		

NUMBER OF ITERATIONS 3

TIME = .89850E+01 DYNAMIC INCREMENT = 506

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.363365E+03
2	.729571E+01	-.498244E+02	-.178043E-03	-.287166E+01	-.153022E+01	-.141666E-03		

NUMBER OF ITERATIONS 3

TIME = .99850E+01 DYNAMIC INCREMENT = 531

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3415196+05
2	.3569768+01	-.5092546+02	-.1965986-03	-.3626386+01	-.5666856+00	-.4596276-04		

NUMBER OF ITERATIONS 3

TIME = .10985E+02 DYNAMIC INCREMENT = 556

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3769746+05
2	-.4460426+00	-.5087556+02	-.1695716-03	-.3442896+01	.6378486+00	-.5266586-04		

NUMBER OF ITERATIONS 3

TIME = .11985E+02 DYNAMIC INCREMENT = 581

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3446436+05
2	-.3844166+01	-.4983006+02	-.1052646-03	-.2436996+01	.1290906+01	-.2290156-04		

NUMBER OF ITERATIONS 3

TIME = .12985E+02 DYNAMIC INCREMENT = 606

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.2991046+05
2	-.5992556+01	-.4886986+02	-.2090086-04	-.1022086+01	.3843316+00	-.1206226-04		

NUMBER OF ITERATIONS 3

TIME = .13985E+02 DYNAMIC INCREMENT = 631

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3235466+05
2	-.6648566+01	-.4918836+02	.6482816-04	.5360126+00	-.8802536+00	-.1974326-04		

NUMBER OF ITERATIONS 3

TIME = .14985E+02 DYNAMIC INCREMENT = 656

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.365983E+05
2	-.570499E+01	-.501329E+02	.134887E-03	.215100E+01	-.765309E+00	-.441363E-04		

NUMBER OF ITERATIONS 3

TIME = .15985E+02 DYNAMIC INCREMENT = 681

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.370273E+05
2	-.327458E+01	-.505135E+02	.173302E-03	.340937E+01	.347319E-01	-.815881E-04		

NUMBER OF ITERATIONS 3

TIME = .16985E+02 DYNAMIC INCREMENT = 706

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.352886E+05
2	.599495E-01	-.501112E+02	.172056E-03	.393024E+01	.692498E+00	-.121651E-03		

NUMBER OF ITERATIONS 3

TIME = .17985E+02 DYNAMIC INCREMENT = 731

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.321465E+05
2	.352216E+01	-.494769E+02	.133970E-03	.368230E+01	.400957E+00	-.153579E-03		

NUMBER OF ITERATIONS 3

TIME = .18985E+02 DYNAMIC INCREMENT = 756

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.335759E+05
2	.641017E+01	-.494201E+02	.700757E-04	.279921E+01	-.220686E+00	-.172955E-03		

NUMBER OF ITERATIONS 3

TIME = .200000E+02 DYNAMIC INCREMENT = 779

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.364767E+05
2	.815392E+01	-.496287E+02	-.645991E-05	.135772E+01	-.544505E-01	-.176576E-04		

NUMBER OF ITERATIONS 3

L O A D C A S E P A R A M E T E R S

SUBANALYSIS TYPE = MODE

S O L U T I O N O P T I O N S U M M A R Y

ANALYSIS TYPE = MODE
SOLUTION FORM = MNR

MODIFIED NEWTON-RAPHSON SOLUTION PARAMETERS

STEP SIZE CONTROL NO.	=	2
ITERATION LIMIT	=	20
NO. OF CONV. TRIALS	=	3
MNR UPDATE INTERVAL	=	205
NUMERICAL DAMPING	=	0.
RESIDUAL ERROR TOLERANCE	=	.10000E-02
DEFLECT. ERROR TOLERANCE	=	.10000E-02
1-D SEARCH FACTOR	=	0.
EXTRAPOLATION PARAMETER	=	.50000E+00

MODE 1

CIRC. FREQ. RAD/SEC	NAT. FREQ. CYC/SEC	PERIOD SEC
.47756E+00	.76007E-01	.13157E+02

MODE SHAPE

X	Y	Z
0.	0.	0.
.17571E-01	.28864E-02	0.

MODE 2

CIRC. FREQ. RAD/SEC	NAT. FREQ. CYC/SEC	PERIOD SEC
.47756E+00	.76007E-01	.13157E+02

MODE SHAPE

X	Y	Z
0.	0.	0.
.48560E-09	-.29556E-06	.17806E-01

MODE 3

CIRC. FREQ. RAD/SEC	NAT. FREQ. CYC/SEC	PERIOD SEC
.10246E+01	.16307E+00	.61322E+01

MODE SHAPE

X	Y	Z
0.	0.	0.
-.28864E-02	.17571E-01	.29952E-06

MODE 4

CIRC. FREQ. RAD/SEC	NAT. FREQ. CYC/SEC	PERIOD SEC
.48686E+05	.77486E+04	.12906E-03

MODE SHAPE

X	Y	Z
.27035E+00	0.	0.
0.	0.	0.

MODE 5

CIRC. FREQ. RAD/SEC	NAT. FREQ. CYC/SEC	PERIOD SEC
.48686E+05	.77486E+04	.12906E-03

MODE SHAPE

X	Y	Z
0.	.27035E+00	0.
0.	0.	0.

MODE 6

CIRC. FREQ. RAD/SEC	NAT. FREQ. CYC/SEC	PERIOD SEC
.48686E+05	.77486E+04	.12906E-03

MODE SHAPE

X	Y	Z
0.	0.	.27035E+00
0.	0.	0.

N E W P R O B L E M D A T A

NUMBER OF NODES	= 2		
NUMBER OF ELEMENTS	= 1	NBASE =	143
GRAVITY DIRECTION	= -2		
DYNAMIC OPTION FLAG	= 1		
INPUT ECHO FLAG	= 1		
DRAG MODEL OVERRIDE	= 0		
SHIP LOAD FILE FLAG	= 0		

GRAVITATIONAL ACCELERATION = .321700E+02

FLUID MEDIA DEFINITIONS

	INTERFACE DEPTH	KINEMATIC VISCOSITY	SPECIFIC WEIGHT
1	.25000E+03	.17700E-04	.64000E+02

NODE DATA

NODE	CODE		X	Y		Z	CONSTRAINTS		
1	0	0.		0.	0.		1	1	1
2	0	0.		-.50000E+02	0.		0	0	0

ELEMENT INPUT DATA

EL	N1	N2	N3	MAT	KOMP	FLAG	TENSION	LENGTH	MEDIUM
1	1	2	0	1	0	0	.34600E+05	0.	1

BODY LOCATION DATA

BEGIN	END	INCR	BODY NO.	LIMIT SET
2	2	1	1	0

BODY DATA TABLE

BODY NO.	DRAG FN.NO.	BUOYANCY	DIAMETER	LENGTH	ADDED MASS COEF	WIND DRAG COEF	SUR COF DRAG	MOM OF INERTIA	MED
1	0	-.34000E+05	.10000E+02	0.	.10000E+01	0.	0.	0.	1

CABLE MATERIAL PROPERTY DATA

PROPERTY SET NO. = 1
DRAG COEF. NO. = 0
DIAMETER = .250000E+00
WEIGHT PER UNIT LENGTH = .137000E+02
ADDED MASS COEFFICIENT = .100000E+01
REFERENCE MEDIUM CODE = 1
ULTIMATE TENSION = 0.
MASS PER UNIT LENGTH = .523519E+00

NO. OF POINTS ON TENSION/STRAIN CURVE = 0

EXPONENT FORM COEFFICIENTS .360000E+05 .100000E+01

MATERIAL DAMPING PARAMETERS(CA1,EA1) .100000E+04 0.

FLOW FIELD DATA SETS

SET	CODE	PARAMETERS				
1	1	.840000E+01	0.	0.	0.	0.
		0.	0.	0.	0.	0.

TIME FUNCTION DEFINITIONS

FN. NUMBER	CODE	PARAMETERS				
1	-1	.10000E+01	0.	0.	0.	0.
		0.	0.	0.	0.	0.
		0.	0.	0.	0.	0.
		0.	0.	0.	0.	0.

NODE POINT DATA SUMMARY

NODE NO.	INITIAL COORDINATES X	Y	Z	FIXITY CODES X	Y	Z	LIMIT SET	BODY NO.	A	GRAVITY LOADS Y	Z	VIRTUAL MASSES X	Y	Z
1	0.	0.	0.	1	1	1	0	0	0.	-.2004E+03	0.	.9084E+01	.9084E+01	.9084E+01
2	0.	-.5000E+02	0.	0	0	0	0	1	0.	-.3420E+05	0.	.3149E+04	.3149E+04	.3149E+04

ELEMENT SUMMARY DATA

ELT NO.	CONNECTION DATA N1	N2	N3	MAT NO.	COMP CODE	MED. CODE	INITIAL TENSION	UNSTRETCHED LENGTH	INITIAL LENGTH	RESIDUAL MASS
1	1	2		1	0	1	.346000E+05	.292496E+02	.500000E+02	.142827E+01

ADDITIONAL ELEMENT DATA

ELEMENT		SLOPES		TRANSIT TIME(APPROX)
1	0.	-.10000E+01	0.	.11154E+00

HALF-BANDWIDTH = 6

L O A D C A S E P A R A M E T E R S

SUBANALYSIS TYPE = DEAD

SOLUTION DATA RESET VRR
OUTPUT DATA SELECTIONS
STEP NUMBER INTERVAL = 500
PARAMETER INTERVAL = 0.
DEBUG OUTPUT FLAG = 0

S O L U T I O N O P T I O N S U M M A R Y

ANALYSIS TYPE = DEAD
SOLUTION FORM = VRR

NO. OF STATIC STEPS	=	1
OUTPUT INTERVAL	=	500
DEBUG PRINT CODE	=	0
RESTART FILE FLAG	=	0
UPDATE OPTION	=	1
START UP OPTION	=	0
NO. OF POINT LOADS	=	0
FLOW FIELD NUMBER	=	0

VISCOUS RELAXATION SOLUTION PARAMETERS

INTEGRATION PARAMETER	=	.10000E+01
INITIAL STEP SIZE	=	.10000E+01
INITIAL DAMPING	=	.10000E-02
ITERATION LIMIT	=	200

DEAD LOAD INCREMENT = 0 LOAD FACTOR 0.

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.346000E+05
2	0.	-.500000E+02	0.	0.	0.	0.		

DEAD LOAD INCREMENT = 14 LOAD FACTOR .100000E+01

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.342004E+05
2	0.	-.498097E+02	0.	0.	0.	0.		

L O A D C A S E P A R A M E T E R S

SUBANALYSIS TYPE = LIVE

SOLUTION DATA RESET MAR
STATIC STEP DATA
NUMBER OF STEPS = 5
START UP OPTION = 5
HEADING INCREMENT = 0.
TOTAL HEADING CHANGE = 0.
POINT LOADS DATA

LOAD SET	LOAD COMPONENTS			BEGIN	END	INC
1	-.80000E+04	0.	0.	2	2	1

LOAD SET VARIATION CODES
SET 1 = 1
SET 2 = 0
SET 3 = 0
GRAVITY = 0
CURRENT FIELD DATA
FLOW FIELD NUMBER = 1
FLOW FIELD MULTIPLIER = .10000E+01
FLOW VARIATION CODE = 0
OUTPUT DATA SELECTIONS
STEP NUMBER INTERVAL = 500
PARAMETER INTERVAL = 0.
DEBUG OUTPUT FLAG = 0

S O L U T I O N O P T I O N S U M M A R Y

ANALYSIS TYPE = LIVE
SOLUTION FORM = MNR

NO. OF STATIC STEPS	=	5
OUTPUT INTERVAL	=	500
DEBUG PRINT CODE	=	0
RESTART FILE FLAG	=	0
UPDATE OPTION	=	1
START UP OPTION	=	5
NO. OF POINT LOADS	=	1
FLOW FIELD NUMBER	=	1

MODIFIED NEWTON-RAPHSON SOLUTION PARAMETERS

STEP SIZE CONTROL NO.	=	2
ITERATION LIMIT	=	200
NO. OF CONV. TRIALS	=	3
MNR UPDATE INTERVAL	=	205
NUMERICAL DAMPING	=	0.
RESIDUAL ERROR TOLERANCE	=	.10000E-02
DEFLECT. ERROR TOLERANCE	=	.10000E-02
1-D SEARCH FACTOR	=	0.
EXTRAPOLATION PARAMETER	=	.50000E+00

STEADY STATE INCREMENT = 0 LOAD FACTOR 0.

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3420041+05
2	0.	-.4980477E+02	0.	0.	0.	0.		

NUMBER OF ITERATIONS 0

STEP 5 CONVERGED IN 2 ITERATIONS. NEW STEP SIZE = .18182E+00

STEP 8 CONVERGED IN 2 ITERATIONS. NEW STEP SIZE = .40000E+00

STEADY STATE INCREMENT = 9 LOAD FACTOR .10000E+01

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3497372+05
2	-.1034886+02	-.4909856+02	0.	0.	0.	0.		

NUMBER OF ITERATIONS 3

L O A D C A S E P A R A M E T E R S

```
SUBANALYSIS TYPE = DYN

CURRENT FIELD DATA
     FLOW FIELD NUMBER =     1
     FLOW FIELD MULTIPLIER =      .10000E+01
     FLOW VARIATION CODE =     0
TIME STEP DATA
     INITIAL TIME STEP =      .50000E-02
     MAXIMUM TIME      =      .20000E+02
     BEGINNING TIME    =     0.
     UPDATE TIME       =      .50000E-02
     ALPHA,BETA,GAMMA  =     0.              .83333E-01      .50000E+00
POINT LOADS DATA
     LOAD SET          LOAD COMPONENTS                    BEGIN  END  INC
        1     -.80000E+04     0.              .20000E+01      2    2    1
LOAD SET VARIATION CODES
     SET   1 =     1
     SET   2 =     0
     SET   3 =     0
     GRAVITY =     0
OUTPUT DATA SELECTIONS
     STEP NUMBER INTERVAL =   200
     PARAMETER   INTERVAL =     0.
     DEBUG OUTPUT FLAG =     0
```

S O L U T I O N O P T I O N S U M M A R Y

ANALYSIS TYPE = DYN
SOLUTION FORM = DIR

DYN. INIT. COND. CODE = 0
OUTPUT INTERVAL = 200
DEBUG PRINT CODE = 0
RESTART FILE FLAG = 0
UPDATE OPTION = 1
START UP OPTION = 0
NO. OF POINT LOADS = 1
FLOW FIELD NUMBER = 1

DIRECT ITERATION METHOD DYNAMIC PARAMETERS
DEFLECT. ERROR TOLERANCE = .10000E-02

ELEMENT	EA	UNIT MASS	LENGTH	TIME STEP
1	.360000E+05	.265544E+00	.501773E+02	.960816E-01

TIME STEP DATA
INITIAL TIME STEP = .50000E-02
MAXIMUM TIME = .20000E+02
BEGINNING TIME = 0.
UPDATE TIME = .50000E-02
ALPHA,BETA,GAMMA = 0. .83333E-01 .50000E+00

OUTPUT TIME INTERVAL = .100000E+01

TIME = 0. DYNAMIC INCREMENT = 0

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.349737E+05
2	-.103488E+02	-.490985E+02	0.	0.	0.	0.		

NUMBER OF ITERATIONS 0

TIME = .10000E+01 DYNAMIC INCREMENT = 200

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.346187E+05
2	-.950889E+01	-.491039E+02	.965166E-04	.246052E+01	-.239777E-01	-.137494E-04		

NUMBER OF ITERATIONS 3

TIME = .20000E+01 DYNAMIC INCREMENT = 400

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.337778E+05
2	-.642450E+01	-.491963E+02	.169707E-03	.438647E+01	-.184145E+00	-.455396E-04		

NUMBER OF ITERATIONS 3

STEP 548 CONVERGED IN 2 ITERATIONS. NEW DT AND DTU = .10000E-01 .10000E-01

TIME = .30000E+01 DYNAMIC INCREMENT = 574

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.336135E+05
2	-.186317E+01	-.495000E+02	.205359E-03	.537776E+01	-.415684E+00	-.875214E-04		

NUMBER OF ITERATIONS 3

TIME = .40000E+01 DYNAMIC INCREMENT = 674

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.347548E+05
2	.315902E+01	-.499611E+02	.197030E-03	.529651E+01	-.448499E+00	-.132060E-03		

NUMBER OF ITERATIONS 3

STEP 700 CONVERGED IN 2 ITERATIONS. NEW DT AND DTU = .20000E-01 .20000E-01

TIME = .50000E+01 DYNAMIC INCREMENT = 737

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3636601E+05
2	.7563146E+01	-.5025555E+02	.1465446E-03	.4160836E+01	-.7224466E-01	-.1701086E-03		

NUMBER OF ITERATIONS 3

TIME = .60000E+01 DYNAMIC INCREMENT = 787

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3690021E+05
2	.1040222E+02	-.5001286E+02	.6509836E-04	.2235646E+01	.5652136E+00	-.1924056E-03		

NUMBER OF ITERATIONS 3

STEP 803 CONVERGED IN 2 ITERATIONS. NEW DT AND DTU = .40000E-01 .40000E-01

TIME = .70000E+01 DYNAMIC INCREMENT = 820

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3549906E+05
2	.1111266E+02	-.4920146E+02	-.2798916E-04	-.1646666E-01	.9696636E+00	-.1931006E-03		

NUMBER OF ITERATIONS 3

TIME = .80000E+01 DYNAMIC INCREMENT = 845

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3299556E+05
2	.9664106E+01	-.4829216E+02	-.1122706E-03	-.1977116E+01	.7257176E+00	-.1746446E-03		

NUMBER OF ITERATIONS 3

TIME = .90000E+01 DYNAMIC INCREMENT = 870

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3128816E+05
2	.6568937E+01	-.4795506E+02	-.1705506E-03	-.3228786E+01	-.1218406E+00	-.1423376E-03		

NUMBER OF ITERATIONS 3

TIME = .10000E+02 DYNAMIC INCREMENT = 895

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3179995E+05
2	.2676695E+01	-.4856295E+02	-.1926779E-03	-.3648830E+01	-.1049776E+01	-.1034768E-03		

NUMBER OF ITERATIONS 3

TIME = .11000E+02 DYNAMIC INCREMENT = 920

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3437995E+05
2	-.1241595E+01	-.4985586E+02	-.1753436E-03	-.3246666E+01	-.1394488E+01	-.6457056E-04		

NUMBER OF ITERATIONS 3

TIME = .12000E+02 DYNAMIC INCREMENT = 945

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3725995E+05
2	-.4379186E+01	-.5104466E+02	-.1220076E-03	-.2111036E+01	-.8394416E+00	-.3290406E-04		

NUMBER OF ITERATIONS 3

TIME = .13000E+02 DYNAMIC INCREMENT = 970

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3822695E+05
2	-.6107366E+01	-.5133666E+02	-.4386576E-04	-.4843976E+00	.2954946E+00	-.1616486E-04		

NUMBER OF ITERATIONS 3

TIME = .14000E+02 DYNAMIC INCREMENT = 995

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3844125E+05
2	-.6130106E+01	-.5051906E+02	.4154556E-04	.1224776E+01	.1242086E+01	-.1855786E-04		

NUMBER OF ITERATIONS 3

TIME = .15000E+02 DYNAMIC INCREMENT = 1020

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.338947E+05
2	-.457305E+01	-.491413E+02	.115498E-03	.263440E+01	.134573E+01	-.382688E-04		

NUMBER OF ITERATIONS 3

TIME = .16000E+02 DYNAMIC INCREMENT = 1045

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.308000E+05
2	-.185613E+01	-.481358E+02	.163399E-03	.349791E+01	.547660E+00	-.693395E-04		

NUMBER OF ITERATIONS 3

TIME = .17000E+02 DYNAMIC INCREMENT = 1070

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.308734E+05
2	.139054E+01	-.481643E+02	.177501E-03	.369196E+01	-.596756E+00	-.104904E-03		

NUMBER OF ITERATIONS 3

TIME = .18000E+02 DYNAMIC INCREMENT = 1095

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.333701E+05
2	.449813E+01	-.491805E+02	.155944E-03	.322286E+01	-.130596E+01	-.139701E-03		

NUMBER OF ITERATIONS 3

TIME = .19000E+02 DYNAMIC INCREMENT = 1120

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.365446E+05
2	.682626E+01	-.504577E+02	.102673E-03	.215445E+01	-.108547E+01	-.167111E-03		

NUMBER OF ITERATIONS 3

TIME = .20000E+02 DYNAMIC INCREMENT = 1145

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3822O5E+05
2	.7849166E+01	-.5109O3E+02	.2878634E-04	.6390326E+00	-.1049904E+00	-.1803O1E-03		

NUMBER OF ITERATIONS 3

TIME = .20000E+02 DYNAMIC INCREMENT = 1146

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3822O5E+05
2	.7849166E+01	-.5109O3E+02	.2878634E-04	.6390326E+00	-.1049904E+00	-.1803O1E-03		

NUMBER OF ITERATIONS 2

N E W P R O B L E M D A T A

NUMBER OF NODES	=	2		
NUMBER OF ELEMENTS	=	1	NBASE =	163
GRAVITY DIRECTION	=	-2		
DYNAMIC OPTION FLAG	=	1		
INPUT ECHO FLAG	=	1		
DRAG MODEL OVERRIDE	=	0		
SHIP LOAD FILE FLAG	=	0		

GRAVITATIONAL ACCELERATION = .321700E+02

FLUID MEDIA DEFINITIONS

	INTERFACE DEPTH	KINEMATIC VISCOSITY	SPECIFIC WEIGHT
1	.25000E+03	.17700E-04	.64000E+02

NODE DATA

NODE	CODE		X	Y		Z	CONSTRAINTS		
1	0	0.		0.	0.		1	1	1
2	0	0.		-.50000E+02	0.		0	0	0

ELEMENT INPUT DATA

EL	N1	N2	N3	MAT	KOMP	FLAG	TENSION	LENGTH	MEDIUM
1	1	2	0	1	0	0	.346000E+05	0.	1

BODY LOCATION DATA

BEGIN	END	INCR	BODY NO.	LIMIT SET
2	2	1	1	0

BODY DATA TABLE

BODY NO.	DRAG FN.NO.	BUOYANCY	DIAMETER	LENGTH	ADDED MASS COEF	WIND DRAG COEF	SUR CUR DRAG	MOM OF INERTIA	MED
1	0	-.340000E+05	.100000E+02	0.	.200000E+01	0.	0.	0.	1

CABLE MATERIAL PROPERTY DATA

PROPERTY SET NO. = 1
DRAG COEF. NO. = 0
DIAMETER = .250000E+00
WEIGHT PER UNIT LENGTH = .137000E+02
ADDED MASS COEFFICIENT = .100000E+01
REFERENCE MEDIUM CODE = 1
ULTIMATE TENSION = 0.
MASS PER UNIT LENGTH = .523519E+00

NO. OF POINTS ON TENSION/STRAIN CURVE = 2

I	TENSION	STRAIN	EA
1	.360000E+05	.150000E+00	.240000E+06
2	.450000E+05	.240000E+00	.100000E+06

FLOW FIELD DATA SETS

SET	CODE	PARAMETERS				
1	1	.840000E+01	0.	0.	0.	0.
		0.	0.	0.	0.	0.

TIME FUNCTION DEFINITIONS

FN. NUMBER	CODE	PARAMETERS				
1	-1	.100000E+01	0.	0.	0.	0.
		0.	0.	0.	0.	0.
		0.	0.	0.	0.	0.
		0.	0.	0.	0.	0.

NODE POINT DATA SUMMARY

NODE NO.	INITIAL COORDINATES X	Y	Z	FIXITY CODES X	Y	Z	LIMIT SET	BODY NO.	GRAVITY LOADS X	Y	Z	VIRTUAL MASSES X	Y	Z
1	0.	0.	0.	1	1	1	0	0	0.	-.3017E+03	0.	.1360E+02	.1360E+02	.1360E+02
2	0.	-.5000E+02	0.	0	0	0	0	1	0.	-.3430E+05	0.	.4196E+04	.4196E+04	.4196E+04

ELEMENT SUMMARY DATA

ELT NO.	CONNECTION N1	N2	DATA N3	MAT NO.	COMP CODE	RED. CODE	INITIAL TENSION	UNSTRETCHED LENGTH	INITIAL LENGTH	RESIDUAL MASS
1	1	2		1	0	1	.34600E+05	.44051E+02	.50000E+02	.21509E+01

ADDITIONAL ELEMENT DATA

ELEMENT		SLOPES		TRANSIT TIME(APPROX)
1	0.	-.10000E+01	0.	.65060E-01

HALF-BANDWIDTH = 6

L O A D C A S E P A R A M E T E R S

SUBANALYSIS TYPE = DEAD

SOLUTION DATA RESET VAR
OUTPUT DATA SELECTIONS
STEP NUMBER INTERVAL = 500
PARAMETER INTERVAL = 0.
DEBUG OUTPUT FLAG = 0

S O L U T I O N O P T I O N S U M M A R Y

ANALYSIS TYPE = DEAD
SOLUTION FORM = VRR

NO. OF STATIC STEPS	=	1
OUTPUT INTERVAL	=	500
DEBUG PRINT CODE	=	0
RESTART FILE FLAG	=	0
UPDATE OPTION	=	1
START UP OPTION	=	0
NO. OF POINT LOADS	=	0
FLUID FIELD NUMBER	=	0

VISCOUS RELAXATION SOLUTION PARAMETERS

INTEGRATION PARAMETER	=	.10000E+01
INITIAL STEP SIZE	=	.10000E+01
INITIAL DAMPING	=	.10000E-02
ITERATION LIMIT	=	200

DEAD LOAD INCREMENT = 0 LOAD FACTOR 0.

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.346000E+03
2	0.	-.500000E+02	0.	0.	0.	0.		

SLOW CONVERGENCE ON STEP 4
LAST FOUR VELOCITY NORMS .203619E+01 .160132E+01 .469673E+00 .136027E-01
LAST RESIDUAL NORMS .596342E+04 .158761E+04 .932798E+02

NEW STEP SIZE = .20000E+01

DEAD LOAD INCREMENT = 9 LOAD FACTOR .10000E+01

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.345017E+03
2	0.	-.499517E+02	0.	0.	0.	0.		

L O A D C A S E P A R A M E T E R S

```
SUBANALYSES TYPE = LIVE


SOLUTION DATA RESET      ANN
STATIC STEP DATA
     NUMBER OF STEPS =     5
     START UP OPTION =     5
     HEADING INCREMENT     =     0.
     TOTAL HEADING CHANGE =     0.
POINT LOADS DATA
     LOAD SET          LOAD COMPONENTS                    BEGIN  END  INC
        1     -.80000E+04     0.              0.             2    2    1
LOAD SET VARIATION CODES
     SET   1 =     1
     SET   2 =     0
     SET   3 =     0
     GRAVITY =     0
CURRENT FIELD DATA
     FLOW FIELD NUMBER =     1
     FLOW FIELD MULTIPLIER =      .10000E+01
     FLOW  VARIATION  CODE =     0
OUTPUT DATA SELECTIONS
     STEP NUMBER INTERVAL =  500
     PARAMETER   INTERVAL =     0.
     DEBUG  OUTPUT   FLAG =     0
```

S O L U T I O N O P T I O N S U M M A R Y

ANALYSIS TYPE = LIVE
SOLUTION FORM = MNR

NO. OF STATIC STEPS	=	5
OUTPUT INTERVAL	=	500
DEBUG PRINT CODE	=	0
RESTART FILE FLAG	=	0
UPDATE OPTION	=	1
START UP OPTION	=	5
NO. OF POINT LOADS	=	1
FLOW FIELD NUMBER	=	1

MODIFIED NEWTON-RAPHSON SOLUTION PARAMETERS

STEP SIZE CONTROL NO.	=	2
ITERATION LIMIT	=	200
NO. OF CONV. TRIALS	=	3
MNR UPDATE INTERVAL	=	205
NUMERICAL DAMPING	=	0.
RESIDUAL ERROR TOLERANCE	=	.10000E-02
DEFLECT. ERROR TOLERANCE	=	.10000E-02
L-U SEARCH FACTOR	=	0.
EXTRAPOLATION PARAMETER	=	.50000E+00

STEADY STATE INCREMENT = 0 LOAD FACTOR 0.

NODE	X	Y	Z	VX	VY	VZ
1	0.	0.	0.	0.	0.	0.
2	0.	-.499517E+02	0.	0.	0.	0.

ELT	TENSION
1	.343017E+05

NUMBER OF ITERATIONS 0

STEADY STATE INCREMENT = 9 LOAD FACTOR .10000E+01

NODE	X	Y	Z	VX	VY	VZ
1	0.	0.	0.	0.	0.	0.
2	-.102474E+02	-.490075E+02	0.	0.	0.	0.

ELT	TENSION
1	.350806E+05

NUMBER OF ITERATIONS 3

L O A D C A S E P A R A M E T E R S

SUBANALYSIS TYPE = DYN

CURRENT FIELD DATA
FLOW FIELD NUMBER = 1
FLOW FIELD MULTIPLIER = .10000E+01
FLOW VARIATION CODE = 0
TIME STEP DATA
INITIAL TIME STEP = .50000E-02
MAXIMUM TIME = .20000E+02
BEGINNING TIME = 0.
UPDATE TIME = .50000E-02
ALPHA,BETA,GAMMA = 0. .83333E-01 .50000E+00
POINT LOADS DATA

LOAD SET	LOAD COMPONENTS			BEGIN	END	INC
1	-.80000E+04	0.	.20000E+01	2	2	1

LOAD SET VARIATION CODES
SET 1 = 1
SET 2 = 0
SET 3 = 0
GRAVITY = 0
OUTPUT DATA SELECTIONS
STEP NUMBER INTERVAL = 200
PARAMETER INTERVAL = 0.
DEBUG OUTPUT FLAG = 0

S O L U T I O N O P T I O N S U M M A R Y

ANALYSIS TYPE = DYN
SOLUTION FORM = DIR

DYN. INIT. COND. CODE	0
OUTPUT INTERVAL	200
DEBUG PRINT CODE	0
RESTART FILE FLAG	0
UPDATE OPTION	1
START UP OPTION	0
NO. OF POINT LOADS	1
FLOW FIELD NUMBER	1

DIRECT ITERATION METHOD DYNAMIC PARAMETERS
DEFLECT. ERROR TOLERANCE = .10000E-02

ELEMENT	EA	UNIT MASS	LENGTH	TIME STEP
1	.240000E+06	.456755E+00	.500777E+02	.638806E-01

TIME STEP DATA

INITIAL TIME STEP	.50000E-02		
MAXIMUM TIME	.20000E+02		
BEGINNING TIME	0.		
UPDATE TIME	.50000E-02		
ALPHA,BETA,GAMMA	0.	.83333E-01	.50000E+00

OUTPUT TIME INTERVAL = .100000E+01

TIME = 0. DYNAMIC INCREMENT = 0

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSIÓN
1	0.	0.	0.	0.	0.	0.	1	.350606E+05
2	-.102974E+02	-.490075E+02	0.	0.	0.	0.		

NUMBER OF ITERATIONS 0

STEP 150 CONVERGED IN 2 ITERATIONS. NEW DT AND DTU = .10000E-01 .10000E-01

TIME = .10000E+01 DYNAMIC INCREMENT = 175

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.343509E+05
2	-.966512E+01	-.490159E+02	.732896E-04	.185550E+01	-.403270E-01	-.775343E-05		

NUMBER OF ITERATIONS 3

TIME = .20000E+01 DYNAMIC INCREMENT = 275

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.329290E+05
2	-.730681E+01	-.491893E+02	.133252E-03	.338656E+01	-.348087E+00	-.260436E-04		

NUMBER OF ITERATIONS 3

STEP 350 CONVERGED IN 2 ITERATIONS. NEW DT AND DTU = .20000E-01 .20000E-01

TIME = .30100E+01 DYNAMIC INCREMENT = 383

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.338032E+05
2	-.364399E+01	-.497377E+02	.170731E-03	.436823E+01	-.688342E+00	-.513444E-04		

NUMBER OF ITERATIONS 3

STEP 400 CONVERGED IN 2 ITERATIONS. NEW DT AND DTU = .40000E-01 .40000E-01

TIME = .39900E+01 DYNAMIC INCREMENT = 406

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.363696E+05
2	.547228E+00	-.503655E+02	.182118E-03	.469045E+01	-.479684E+00	-.806473E-04		

NUMBER OF ITERATIONS 3

TIME = .49900E+01 DYNAMIC INCREMENT = 531

NODE	X	Y	Z	VX	VY	VZ
1	0.	0.	0.	0.	0.	0.
2	.479603E+01	-.505513E+02	.161864E-03	.428918E+01	.143844E+00	-.110598E-03

ELT	TENSION
1	.374376E+03

NUMBER OF ITERATIONS 3

TIME = .59900E+01 DYNAMIC INCREMENT = 456

NODE	X	Y	Z	VX	VY	VZ
1	0.	0.	0.	0.	0.	0.
2	.829543E+01	-.500545E+02	.114351E-03	.321914E+01	.830693E+00	-.134231E-03

ELT	TENSION
1	.373302E+03

NUMBER OF ITERATIONS 3

TIME = .69900E+01 DYNAMIC INCREMENT = 481

NODE	X	Y	Z	VX	VY	VZ
1	0.	0.	0.	0.	0.	0.
2	.104872E+02	-.489880E+02	.484297E-04	.172873E+01	.121479E+01	-.146793E-03

ELT	TENSION
1	.352066E+03

NUMBER OF ITERATIONS 3

TIME = .79900E+01 DYNAMIC INCREMENT = 506

NODE	X	Y	Z	VX	VY	VZ
1	0.	0.	0.	0.	0.	0.
2	.111387E+02	-.479835E+02	-.236877E-04	.202374E+00	.574055E+00	-.146932E-03

ELT	TENSION
1	.300543E+03

NUMBER OF ITERATIONS 3

TIME = .89900E+01 DYNAMIC INCREMENT = 531

NODE	X	Y	Z	VX	VY	VZ
1	0.	0.	0.	0.	0.	0.
2	.103618E+02	-.480778E+02	-.908381E-04	-.111719E+01	-.782002E+00	-.136776E-03

ELT	TENSION
1	.295812E+03

NUMBER OF ITERATIONS 3

TIME = .99900E+01 DYNAMIC INCREMENT = 556

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3460066+05
2	.8351686+01	-.4931086+02	-.1431716-03	-.2269476+01	-.1470316+01	-.1172126-03		

NUMBER OF ITERATIONS 3

TIME = .10990E+02 DYNAMIC INCREMENT = 561

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3766986+05
2	.5318306+01	-.5058816+02	-.1709366-03	-.3106866+01	-.9708786+00	-.9872896-04		

NUMBER OF ITERATIONS 3

TIME = .11990E+02 DYNAMIC INCREMENT = 606

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3839706+05
2	.1732176+01	-.5111426+02	-.1685386-03	-.3351846+01	-.5005496-01	-.9500626-04		

NUMBER OF ITERATIONS 3

TIME = .12990E+02 DYNAMIC INCREMENT = 631

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3732986+05
2	-.1777596+01	-.5070566+02	-.1369566-03	-.2961856+01	.8197296+00	-.8137166-04		

NUMBER OF ITERATIONS 3

TIME = .13990E+02 DYNAMIC INCREMENT = 656

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3369566+05
2	-.4626436+01	-.4963846+02	-.8296116-04	-.2065776+01	.1170456+01	-.1383746-04		

NUMBER OF ITERATIONS 3

TIME = .15990E+02 DYNAMIC INCREMENT = 681

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.2971[illegible]
2	-.6441251E+01	-.4877999E+02	-.1723578E-04	-.9394982E+00	.3660153E+00	-.7798600E-05		

NUMBER OF ITERATIONS 3

TIME = .15990E+02 DYNAMIC INCREMENT = 706

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.8139358E+05
2	-.7082466E+01	-.4896926E+02	.4940418E-04	.2770998E+00	-.6918938E+00	-.1177846E-04		

NUMBER OF ITERATIONS 3

TIME = .16990E+02 DYNAMIC INCREMENT = 731

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3611691E+05
2	-.6470188E+01	-.4985227E+02	.1071188E-03	.1562108E+01	-.8744508E+00	-.2585168E-04		

NUMBER OF ITERATIONS 3

STEP 738 CONVERGED IN 2 ITERATIONS. NEW DT AND DTU = .80000E-01 .80000E-01

TIME = .17990E+02 DYNAMIC INCREMENT = 747

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3721251E+05
2	-.4605564E+01	-.5048256+02	.1459956-03	.2707666+01	-.3351826+00	-.4772806-04		

NUMBER OF ITERATIONS 3

TIME = .19030E+02 DYNAMIC INCREMENT = 760

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3678986E+05
2	-.1665466E+01	-.5049757E+02	.1561586E-03	.3418196E+01	.3327836E+00	-.7484667E-04		

NUMBER OF ITERATIONS 3

TIME = .19990E+02 DYNAMIC INCREMENT = 772

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3940261+03
2	.1426681+01	-.4999477E+02	.1453911E-03	.3553531E+01	.6792461+00	-.1009031E-03		

NUMBER OF ITERATIONS 3

TIME = .20000E+02 DYNAMIC INCREMENT = 773

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3936701+03
2	.1462211E+01	-.4999409E+02	.1443791E-03	.3552711E+01	.6793481+00	-.1012701E-03		

NUMBER OF ITERATIONS 3

L O A D C A S E P A R A M E T E R S

SUBANALYSIS TYPE = MODE

N E W P R O B L E M D A T A

NUMBER OF NODES	=	2		
NUMBER OF ELEMENTS	=	1	NBASE =	163
GRAVITY DIRECTION	=	-2		
DYNAMIC OPTION FLAG	=	1		
INPUT ECHO FLAG	=	1		
DRAG MODEL OVERRIDE	=	0		
SHIP LOAD FILE FLAG	=	0		

GRAVITATIONAL ACCELERATION = .321700E+02

FLUID MEDIA DEFINITIONS

	INTERFACE DEPTH	KINEMATIC VISCOSITY	SPECIFIC WEIGHT
1	.25000E+03	.16800E-03	.76500E-01

NODE DATA

NODE	CODE		X	Y	Z	CONSTRAINTS		
1	0	0.		0.	0.	1	1	1
2	0	0.		-.500000E+02	0.	0	0	0

ELEMENT INPUT DATA

EL	N1	N2	N3	MAT	KOMP	FLAG	TENSION	LENGTH	MEDIUM
1	1	2	0	1	0	0	.346000E+05	0.	1

BODY LOCATION DATA

BEGIN	END	INCR	BODY NO.	LIMIT SET
2	2	1	1	0

BODY DATA TABLE

BODY NO.	DRAG FN.NO.	BUOYANCY	DIAMETER	LENGTH	ADDED MASS COEF	WIND DRAG COEF	SUR CUR DRAG	MOM OF INERTIA	MED
1	0	-.340000E+05	.100000E+02	0.	.100000E+01	0.	0.	0.	1

CABLE MATERIAL PROPERTY DATA

PROPERTY SET NO. = 1
DRAG COEF. NO. = 0
DIAMETER = .250000E+00
WEIGHT PER UNIT LENGTH = .137000E+02
ADDED MASS COEFFICIENT = .100000E+01
REFERENCE MEDIUM CODE = 1
ULTIMATE TENSION = 0.
MASS PER UNIT LENGTH = .425979E+00

NO. OF POINTS ON TENSION/STRAIN CURVE = 2

I	TENSION	STRAIN	EA
1	.360000E+05	.150000E+00	.240000E+06
2	.450000E+05	.240000E+00	.100000E+06

FLOW FIELD DATA SETS

SET	CODE	PARAMETERS				
1	1	.840000E+01	0.	0.	0.	0.
		0.	0.	0.	0.	0.

TIME FUNCTION DEFINITIONS

FN. NUMBER	CODE	PARAMETERS				
1	-1	.100000E+01	0.	0.	0.	0.
		0.	0.	0.	0.	0.
		0.	0.	0.	0.	0.
		0.	0.	0.	0.	0.

NODE POINT DATA SUMMARY

NODE NO.	INITIAL COORDINATES X	Y	Z	FIXITY CODES X	Y	Z	LIMIT SET	BODY NO.	GRAVITY LOADS X	Y	Z	VIRTUAL MASSES X	Y	Z
1	0.	0.	0.	1	1	1	0	0	0.	-.3817E+03	0.	.9385E+01	.9385E+01	.9385E+01
2	0.	-.5000E+02	0.	0	0	0	0	1	0.	-.3430E+05	0.	.1069E+04	.1069E+04	.1069E+04

ELEMENT SUMMARY DATA

ELT NO.	CONNECTION N1	N2	N3	DATA MAT NO.	COMP CODE	MLG. CODE	INITIAL TENSION	UNSTRETCHED LENGTH	INITIAL LENGTH	RESIDUAL MASS
1	1	2		1	0	1	.34600E+05	.44051E+02	.50000E+02	.25710E-07

ADDITIONAL ELEMENT DATA

ELEMENT		SLOPES		TRANSIT TIME(APPROX)
1	0.	-.10000E+01	0.	.58687E-01

HALF-BANDWIDTH = 6

L O A D C A S E P A R A M E T E R S

SUBANALYSIS TYPE = DEAD

SOLUTION DATA RESET VNR
OUTPUT DATA SELECTIONS
STEP NUMBER INTERVAL = 500
PARAMETER INTERVAL = 0.
DEBUG OUTPUT FLAG = 0

S O L U T I O N O P T I O N S U M M A R Y

ANALYSIS TYPE = DEAD
SOLUTION FORM = VRR

NO. OF STATIC STEPS	=	1
OUTPUT INTERVAL	=	500
DEBUG PRINT CODE	=	0
RESTART FILE FLAG	=	0
UPDATE OPTION	=	1
START UP OPTION	=	0
NO. OF POINT LOADS	=	0
FLOW FIELD NUMBER	=	0

VISCOUS RELAXATION SOLUTION PARAMETERS

INTEGRATION PARAMETER	=	.10000E+01
INITIAL STEP SIZE	=	.10000E+01
INITIAL DAMPING	=	.10000E-02
ITERATION LIMIT	=	200

DEAD LOAD INCREMENT = 0 LOAD FACTOR 0.

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.356000E+05
2	0.	-.500000E+02	0.	0.	0.	0.		

SLOW CONVERGENCE ON STEP 4
LAST FOUR VELOCITY NORMS .203619E+01 .160132E+01 .469673E+00 .136027E-01
LAST RESIDUAL NORMS .596342E+04 .158761E+04 .932798E+02

NEW STEP SIZE = .20000E+01

DEAD LOAD INCREMENT = 9 LOAD FACTOR .10000E+01

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.349017E+05
2	0.	-.499517E+02	0.	0.	0.	0.		

L O A D C A S E P A R A M E T E R S

SUBANALYSIS TYPE = LIVE

SOLUTION DATA RESET MNR
STATIC STEP DATA
NUMBER OF STEPS = 5
START UP OPTION = 5
HEADING INCREMENT = 0.
TOTAL HEADING CHANGE = 0.
POINT LOADS DATA

LOAD SET	LOAD COMPONENTS		BEGIN	END	INC
1	-.80000E+04	0. 0.	2	2	1

LOAD SET VARIATION CODES
SET 1 = 1
SET 2 = 0
SET 3 = 0
GRAVITY = 0
CURRENT FIELD DATA
FLOW FIELD NUMBER = 1
FLOW FIELD MULTIPLIER = .10000E+01
FLOW VARIATION CODE = 0
OUTPUT DATA SELECTIONS
STEP NUMBER INTERVAL = 500
PARAMETER INTERVAL = 0.
DEBUG OUTPUT FLAG = 0

S O L U T I O N O P T I O N S U M M A R Y

ANALYSIS TYPE = LIVE
SOLUTION FORM = MNR

NO. OF STATIC STEPS	=	5
OUTPUT INTERVAL	=	500
DEBUG PRINT CODE	=	0
RESTART FILE FLAG	=	0
UPDATE OPTION	=	1
START UP OPTION	=	5
NO. OF POINT LOADS	=	1
FLOW FIELD NUMBER	=	1

MODIFIED NEWTON-RAPHSON SOLUTION PARAMETERS

STEP SIZE CONTROL NO.	=	2
ITERATION LIMIT	=	200
NO. OF CONV. TRIALS	=	3
MNR UPDATE INTERVAL	=	205
NUMERICAL DAMPING	=	0.
RESIDUAL ERROR TOLERANCE	=	.10000E-02
DEFLECT. ERROR TOLERANCE	=	.10000E-02
1-D SEARCH FACTOR	=	0.
EXTRAPOLATION PARAMETER	=	.50000E+00

STEADY STATE INCREMENT = 0 LOAD FACTOR 0.

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.343017E+05
2	0.	-.499517E+02	0.	0.	0.	0.		

NUMBER OF ITERATIONS 0

STEADY STATE INCREMENT = 9 LOAD FACTOR .10000E+01

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.352252E+05
2	-.113766E+02	-.487922E+02	0.	0.	0.	0.		

NUMBER OF ITERATIONS 3

L O A D C A S E P A R A M E T E R S

SUBANALYSIS TYPE = DYN

CURRENT FIELD DATA
FLOW FIELD NUMBER = 1
FLOW FIELD MULTIPLIER = .10000E+01
FLOW VARIATION CODE = 0
TIME STEP DATA
INITIAL TIME STEP = .50000E-02
MAXIMUM TIME = .20000E+02
BEGINNING TIME = 0.
UPDATE TIME = .50000E-02
ALPHA,BETA,GAMMA = 0. .83333E-01 .50000E+00
POINT LOADS DATA

LOAD SET	LOAD COMPONENTS		BEGIN	END	INC
1	-.80000E+04	0. .20000E+01	2	2	1

LOAD SET VARIATION CODES
SET 1 = 1
SET 2 = 0
SET 3 = 0
GRAVITY = 0
OUTPUT DATA SELECTIONS
STEP NUMBER INTERVAL = 200
PARAMETER INTERVAL = 0.
DEBUG OUTPUT FLAG = 0

S O L U T I O N O P T I O N S U M M A R Y

ANALYSIS TYPE = DYN
SOLUTION FORM = DIR

DYN. INIT. COND. CODE = 0
OUTPUT INTERVAL = 200
DEBUG PRINT CODE = 0
RESTART FILE FLAG = 0
UPDATE OPTION = 1
START UP OPTION = 0
NO. OF POINT LOADS = 1
FLOW FIELD NUMBER = 1

DIRECT ITERATION METHOD DYNAMIC PARAMETERS
DEFLECT. ERROR TOLERANCE = .10000E-02

ELEMENT	EA	UNIT MASS	LENGTH	TIME STEP
1	.240000E+06	.371460E+00	.501010E+02	.576197E-01

TIME STEP DATA
INITIAL TIME STEP = .50000E-02
MAXIMUM TIME = .20000E+02
BEGINNING TIME = 0.
UPDATE TIME = .50000E-02
ALPHA,BETA,GAMMA = 0. .83333E-01 .50000E+00

OUTPUT TIME INTERVAL = .100000E+01

TIME = 0. DYNAMIC INCREMENT = 0

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.152252E+03
2	-.113766E+02	-.487922E+02	0.	0.	0.	0.		

NUMBER OF ITERATIONS 0

TIME = .100000E+01 DYNAMIC INCREMENT = 200

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.329388E+03
2	-.896184E+01	-.489165E+02	.271178E-03	.694648E+01	-.522735E+00	-.917274E-04		

NUMBER OF ITERATIONS 3

TIME = .200000E+01 DYNAMIC INCREMENT = 400

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.360873E+03
2	-.117361E+01	-.502459E+02	.380930E-03	.102711E+02	-.147736E+01	-.309332E-03		

NUMBER OF ITERATIONS 3

TIME = .300000E+01 DYNAMIC INCREMENT = 600

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.379851E+03
2	.725853E+01	-.504678E+02	.252215E-03	.802720E+01	.128189E+01	-.540817E-03		

NUMBER OF ITERATIONS 3

TIME = .400000E+01 DYNAMIC INCREMENT = 800

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.312146E+03
2	.109923E+02	-.482123E+02	-.410587E-04	.161918E+01	.210229E+01	-.617170E-01		

NUMBER OF ITERATIONS 3

TIME = .50000E+01 DYNAMIC INCREMENT = 1000

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.5E93E7E+05
2	.8452775E+01	-.4884121E+02	-.3172491E-03	-.4039991E+01	-.3280461E+01	-.5126977E-03		

NUMBER OF ITERATIONS 3

TIME = .60000E+01 DYNAMIC INCREMENT = 1200

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3948821+05
2	.1127710E+01	-.5159436E+02	-.4043121E-03	-.7436991E+01	-.9836211E+00	-.2514371E-03		

NUMBER OF ITERATIONS 3

TIME = .70000E+01 DYNAMIC INCREMENT = 1400

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.1705771E+05
2	-.6909761E+01	-.5015921E+02	-.2220341E-03	-.5269121E+01	.3312861E+01	-.1400661E-04		

NUMBER OF ITERATIONS 3

TIME = .80000E+01 DYNAMIC INCREMENT = 1600

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.2723091E+05
2	-.1072551E+02	-.4760041E+02	.1053611E-03	.1512941E+00	.9076531E-01	.2917841E-04		

NUMBER OF ITERATIONS 3

TIME = .90000E+01 DYNAMIC INCREMENT = 1800

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3725601E+05
2	-.8771961E+01	-.4999401E+02	.3752701E-03	.6320911E+01	-.2772201E+01	-.1302601E-03		

NUMBER OF ITERATIONS 3

TIME = .10000E+02 DYNAMIC INCREMENT = 2000

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3613[illegible]E+05
2	-.134920E+01	-.510498E+02	.404747E-03	.100912E+02	.805667E+00	-.421558E-03		

NUMBER OF ITERATIONS 3

TIME = .11000E+02 DYNAMIC INCREMENT = 2200

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3207[illegible]E+05
2	.700789E+01	-.490922E+02	.168964E-03	.816843E+01	.205919E+01	-.624698E-03		

NUMBER OF ITERATIONS 3

TIME = .12000E+02 DYNAMIC INCREMENT = 2400

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3396[illegible]E+05
2	.113126E+02	-.485974E+02	-.170167E-03	.237152E+01	-.873930E+00	-.623634E-03		

NUMBER OF ITERATIONS 3

TIME = .13000E+02 DYNAMIC INCREMENT = 2600

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3526[illegible]E+05
2	.880524E+01	-.493281E+02	-.403087E-03	-.470686E+01	-.400214E+00	-.421533E-03		

NUMBER OF ITERATIONS 3

TIME = .14000E+02 DYNAMIC INCREMENT = 2800

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3421[illegible]E+05
2	.820420E+00	-.499310E+02	-.387258E-03	-.795419E+01	-.966902E+00	-.195802E-03		

NUMBER OF ITERATIONS 3

TIME = .150000E+02 DYNAMIC INCREMENT = 3000

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3756406+05
2	-.760172E+01	-.502162E+02	-.134297E-03	-.548606E+01	.828000E+00	.272966E-05		

NUMBER OF ITERATIONS 3

TIME = .160000E+02 DYNAMIC INCREMENT = 3200

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3267296+05
2	-.111123E+02	-.484289E+02	.205188E-03	.118612E+01	.205431E+01	.600214E-05		

NUMBER OF ITERATIONS 3

TIME = .170000E+02 DYNAMIC INCREMENT = 3400

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3105786+05
2	-.812056E+01	-.487521E+02	.429984E-03	.688298E+01	-.286307E+01	-.181336E-03		

NUMBER OF ITERATIONS 3

TIME = .180000E+02 DYNAMIC INCREMENT = 3600

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3929406+05
2	-.568645E+00	-.514668E+02	.405749E-03	.989615E+01	-.122277E+01	-.479260E-03		

NUMBER OF ITERATIONS 3

TIME = .190000E+02 DYNAMIC INCREMENT = 3800

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.3756266+05
2	.730796E+01	-.502979E+02	.113154E-03	.735578E+01	.321867E+01	-.676440E-03		

NUMBER OF ITERATIONS 3

TIME = .20000E+02 DYNAMIC INCREMENT = 4000

NODE	X	Y	Z	Vx	VY	VZ
1	0.	0.	0.	0.	0.	0.
2	.106529E+02	-.475101E+02	-.258019E-03	.176516E+01	.240406E+00	-.636066E-03

ELT	TENSION
1	.266015E+05

NUMBER OF ITERATIONS 3

TIME = .20000E+02 DYNAMIC INCREMENT = 4001

NODE	X	Y	Z	Vx	VY	VZ
1	0.	0.	0.	0.	0.	0.
2	.106529E+02	-.475101E+02	-.258019E-03	.176516E+01	.240406E+00	-.636066E-03

ELT	TENSION
1	.266015E+05

NUMBER OF ITERATIONS 3

N E W P R O B L E M D A T A

NUMBER OF NODES	=	7		
NUMBER OF ELEMENTS	=	6	NPHASE =	648
GRAVITY DIRECTION	=	-2		
DYNAMIC OPTION FLAG	=	1		
INPUT ECHO FLAG	=	1		
DRAG MODEL OVERRIDE	=	0		
SHIP LOAD FILE FLAG	=	0		

GRAVITATIONAL ACCELERATION = .321700E+02

FLUID MEDIA DEFINITIONS

	INTERFACE DEPTH	KINEMATIC VISCOSITY	SPECIFIC WEIGHT
1		.17700E-04	.64000E+02
	.12000E+04		
2		.16800E-03	.76500E-01
	.20000E+04		

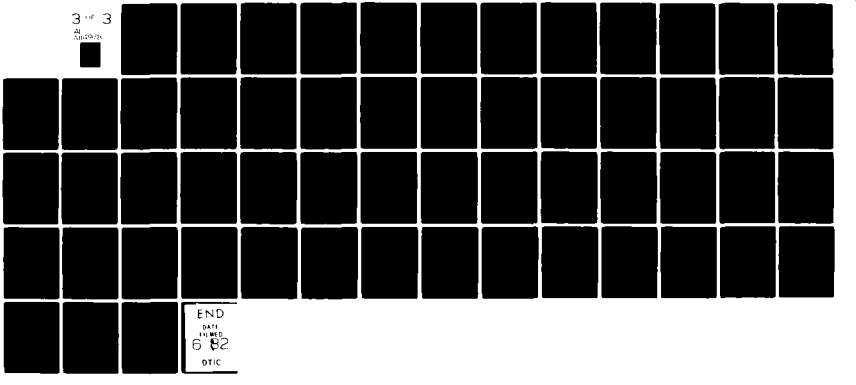
BODY LOCATION DATA

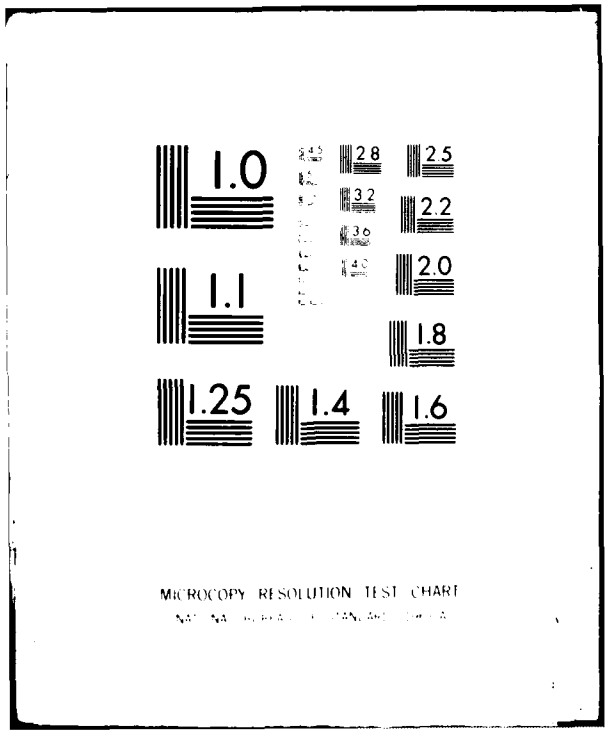
BEGIN	END	INCR	BODY NO.	LIMIT SET
2	5	1	1	1

BODY DATA TABLE

BODY NO.	DRAG FN.NO.	BUOYANCY	DIAMETER	LENGTH	ADDED MASS COEF	WIND DRAG COEF	SUR COR DRAG	MOM OF INERTIA	MED
1	0	-.10000E+03	.40000E+01	0.	.10000E+01	0.	0.	0.	1

AD-A114 978 WESTERN INSTRUMENTS CORP OXNARD CA F/G 13/13
TEST CASES FOR SEADYN VERIFICATION.(U)
APR 82 P E NORDSTROM, H OTTSEN N68305-80-C-0004
UNCLASSIFIED NCEL-CR-82.014 NL




1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
MICROCOPY RESOLUTION TEST CHART

ELEMENT INPUT DATA

EL	N1	N2	N3	MAT	KOMP	FLAG	TENSION	LENGTH	MEDIUM
1	1	2	0	1	0	-1	0.	0.	1
2	2	3	0	1	0	-1	0.	0.	1
3	3	4	0	2	0	-1	0.	0.	1
4	4	5	0	1	0	-1	0.	0.	1
6	6	7	0	1	0	-1	0.	0.	1

NODE LIMIT SET DATA

SET NO.	VERTICAL COORD	TOLERANCE	RELEASE FACTOR	FIXITY CODE
1	0.	.10000E+01	.10010E+01	1

CABLE MATERIAL PROPERTY DATA

PROPERTY SET NO. = 1
DRAG COEF. NO. = 0
DIAMETER = .250000E+00
WEIGHT PER UNIT LENGTH = .137000E+02
ADDED MASS COEFFICIENT = .100000E+01
REFERENCE MEDIUM CODE = 1
ULTIMATE TENSION = 0.
MASS PER UNIT LENGTH = .523519E+00

NO. OF POINTS ON TENSION/STRAIN CURVE = 0

EXPONENT FORM COEFFICIENTS .50000E+07 .10000E+01

PROPERTY SET NO. = 2
DRAG COEF. NO. = 0
DIAMETER = .250000E+00
WEIGHT PER UNIT LENGTH = .137000E+02
ADDED MASS COEFFICIENT = .100000E+01
REFERENCE MEDIUM CODE = 1
ULTIMATE TENSION = 0.
MASS PER UNIT LENGTH = .523519E+00

NO. OF POINTS ON TENSION/STRAIN CURVE = 3

I	TENSION	STRAIN	EA
1	.140000E+05	.140000E-02	.100000E+08
2	.160000E+05	.300000E-02	.125000E+07
3	0.	0.	.533333E+07

MATERIAL DAMPING PARAMETERS(CA1,EA1) .100000E+02 0.

NODE DATA

NODE	CODE	X	Y	Z	CONSTRAINTS		
1	0	0.	0.	0.	1	1	1
5	0	-.14000E+04	.12000E+04	0.	2	2	1
6	0	-.14000E+04	.12000E+04	0.	2	2	1
7	0	-.14000E+04	.12000E+04	0.	1	1	1

SEADYN-- FREE FORMAT TEST CASE - CABLE LAYING

GENERATION OF LINES OF NODES

NUMBER	BEGIN NODE	END NODE	DIFFERENCE	B.C.	FIRST NODE	CODE		
3	1	5	1	0	2	1	.13700E+02	.98000E+04

C.,XSPAN,YSPAN	.71533E+03	.14000E+04	.12000E+04

THE FOLLOWING ELEMENTS HAVE ZERO LENGTH.
AN ERROR MAY BE INDICATED IF THESE ARE NOT FOR PAYOUT.
5
6

NODE POINT DATA SUMMARY

NODE NO.	INITIAL COORDINATES X	Y	Z	FIXITY CODES X	Y	Z	LIMIT SET	BODY NO.	X	GRAVITY LOADS Y	Z	VIRTUAL MASSES X	Y	Z
1	0.	0.	0.	1	1	1	0	0	0.	-.3404E+04	0.	.1544E+03	.1544E+03	.1544E+03
2	-.4943E+03	.5093E+02	0.	0	0	0	1	1	0.	-.6904E+04	0.	.4449E+03	.4449E+03	.4449E+03
3	-.8981E+03	.3396E+03	0.	0	0	0	1	1	0.	-.6922E+04	0.	.4457E+03	.4457E+03	.4457E+03
4	-.1186E+04	.7475E+03	0.	0	0	0	1	1	0.	-.6949E+04	0.	.4470E+03	.4470E+03	.4470E+03
5	-.1400E+04	.1200E+04	0.	2	2	1	1	1	0.	-.3527E+04	0.	.2918E+03	.2918E+03	.2918E+03
6	-.1400E+04	.1200E+04	0.	2	2	1	0	0	0.	0.	0.	0.	0.	0.
7	-.1400E+04	.1200E+04	0.	1	1	1	0	0	0.	0.	0.	0.	0.	0.

ELEMENT SUMMARY DATA

ELT NO.	CONNECTION DATA N1	N2	N3	MAT NO.	COMP CODE	MED. CODE	INITIAL TENSION	UNSTRETCHED LENGTH	INITIAL LENGTH	RESIDUAL MASS
1	1	2		1	0	1	0.	.49696E+03	.49696E+03	.24266E+02
2	2	3		1	0	1	0.	.49630E+03	.49630E+03	.24233E+02
3	3	4		2	0	1	0.	.49955E+03	.49955E+03	.24392E+02
4	4	5		1	0	1	0.	.50034E+03	.50034E+03	.24431E+02
5	5	6		1	0	1	0.	0.	0.	0.
6	6	7		1	0	1	0.	0.	0.	0.

ADDITIONAL ELEMENT DATA

ELEMENT	SLOPES			TRANSIT TIME(APPROX)
1	-.99474E+00	.10247E+00	0.	.16081E+00
2	-.81343E+00	.58167E+00	0.	.16059E+00
3	-.57719E+00	.81661E+00	0.	.11430E+00
4	-.42693E+00	.90429E+00	0.	.16190E+00
5	.10000E+01	0.	0.	0.
6	.10000E+01	0.	0.	0.

HALF-BANDWIDTH = 6

L O A D C A S E P A R A M E T E R S

SUBANALYSIS TYPE = DEAD

OUTPUT DATA SELECTIONS
STEP NUMBER INTERVAL = 10
PARAMETER INTERVAL = 0.
DEBUG OUTPUT FLAG = 0
SOLUTION DATA RESET YES

S O L U T I O N O P T I O N S U M M A R Y

ANALYSIS TYPE = DEAD
SOLUTION FORM = VKH

NO. OF STATIC STEPS	=	1
OUTPUT INTERVAL	=	10
DEBUG PRINT CODE	=	0
RESTART FILE FLAG	=	0
UPDATE OPTION	=	1
START UP OPTION	=	0
NO. OF POINT LOADS	=	0
FLOW FIELD NUMBER	=	0

VISCOUS RELAXATION SOLUTION PARAMETERS

INTEGRATION PARAMETER	=	.10000E+01
INITIAL STEP SIZE	=	.10000E+01
INITIAL DAMPING	=	.10000E+00
ITERATION LIMIT	=	200

DEAD LOAD INCREMENT = 0 LOAD FACTOR 0.

NODE	X	Y	Z	VX	VY	VZ
1	0.	0.	0.	0.	0.	0.
2	-.494347E+03	.509251E+02	0.	0.	0.	0.
3	-.898050E+03	.334606E+03	0.	0.	0.	0.
4	-.118639E+04	.747545E+03	0.	0.	0.	0.
5	-.140000E+04	.120000E+04	0.	0.	0.	0.
6	-.140000E+04	.120000E+04	0.	0.	0.	0.
7	-.140000E+04	.120000E+04	0.	0.	0.	0.

ELT	TENSION
1	0.
2	0.
3	0.
4	0.
5	0.
6	0.

SLOW CONVERGENCE ON STEP 5
LAST FOUR VELOCITY NORMS .456538E+00 .535436E+00 .183949E+00 .153284E+00
LAST RESIDUAL NORMS .774062E+03 .101738E+04 .548424E+02
NEW DAMPING .60000E-01 .16667E+01
NEW DAMPING .48000E-04 .80000E+01

DEAD LOAD INCREMENT = 34 LOAD FACTOR .10000E+01

NODE	X	Y	Z	VX	VY	VZ
1	0.	0.	0.	0.	0.	0.
2	-.496505E+03	.384011E+02	0.	-.151030E-05	-.209164E-04	0.
3	-.894943E+03	.336440E+03	0.	.221471E-04	.106100E-04	0.
4	-.118348E+04	.746284E+03	0.	.219936E-04	.104991E-04	0.
5	-.140000E+04	.120000E+04	0.	0.	0.	0.
6	-.140000E+04	.120000E+04	0.	0.	0.	0.
7	-.140000E+04	.120000E+04	0.	0.	0.	0.

ELT	TENSION
1	.103240E+05
2	.128551E+05
3	.178817E+05
4	.239012E+05
5	0.
6	0.

L O A D C A S E P A R A M E T E R S

SUBANALYSIS TYPE = DYN

SOLUTION DATA RESET DIM
NODE COMPONENT MOVEMENT DATA

NODE	TYPE	VARY CODE	AMPLITUDE	TYPE	VARY CODE	AMPLITUDE	TYPE	VARY CODE	AMPLITUDE
5	2	0	-.20000E+01	2	0	0.	2	0	0.
6	2	0	-.20000E+01	2	0	0.	2	0	0.
7	2	0	-.20000E+01	2	0	0.	2	0	0.

PAYOUT/REEL-IN DATA

NODE	ELT	RATE	MITOSIS LENGTH	GROW NO.	SHRINK NO.	ELT. INCR.	TIME FN. NO.
5	4	.20000E+01	.60000E+02	2	0	1	0

TIME STEP DATA
INITIAL TIME STEP = .10000E+00
MAXIMUM TIME = .40000E+02
BEGINNING TIME = 0.
UPDATE TIME = .10000E+00
ALPHA,BETA,GAMMA = 0. .83333E-01 .50000E+00
OUTPUT DATA SELECTIONS
STEP NUMBER INTERVAL = 10
PARAMETER INTERVAL = .10000E+01
DEBUG OUTPUT FLAG = 0

S O L U T I O N O P T I O N S U M M A R Y

ANALYSIS TYPE = DYN
SOLUTION FORM = DIM

DYN. INIT. COND. CODE	0
OUTPUT INTERVAL	10
DEBUG PRINT CODE	0
RESTART FILE FLAG	0
UPDATE OPTION	1
START UP OPTION	0
NO. OF POINT LOADS	0
FLOW FIELD NUMBER	0
NUMBER OF PAYOUT ENDS	1
NUMBER OF MOVED NODES	3

DIRECT ITERATION METHOD DYNAMIC PARAMETERS
DEFLECT. ERROR TOLERANCE = .10000E-02

ELEMENT	EA	UNIT MASS	LENGTH	TIME STEP
1	.500000E+07	.522440E+00	.497988E+03	.159190E+00
2	.500000E+07	.522176E+00	.497574E+03	.158978E+00
3	.533333E+07	.521769E+00	.501225E+03	.154938E+00
4	.500000E+07	.521028E+00	.502731E+03	.160272E+00

TIME STEP DATA
INITIAL TIME STEP = .10000E+00
MAXIMUM TIME = .40000E+02
BEGINNING TIME = 0.
UPDATE TIME = .10000E+00
ALPHA,BETA,GAMMA = 0. .83333E-01 .50000E+00

OUTPUT TIME INTERVAL = .100000E+01

TIME = 0. DYNAMIC INCREMENT = 0

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.103246E+05
2	-.496505E+03	.384011E+02	0.	0.	0.	0.	2	.128551E+05
3	-.894943E+03	.336440E+03	0.	0.	0.	0.	3	.178417E+05
4	-.118348E+04	.746284E+03	0.	0.	0.	0.	4	.239012E+05
5	-.140000E+04	.120000E+04	0.	0.	0.	0.	5	0.
6	-.140000E+04	.120000E+04	0.	0.	0.	0.	6	0.
7	-.140000E+04	.120000E+04	0.	0.	0.	0.		

NUMBER OF ITERATIONS 0

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.500345E+03	.502731E+03

TIME = .10000E+01 DYNAMIC INCREMENT = 10

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.734534E+05
2	-.496236E+03	.380405E+02	0.	.359003E+00	-.126651E+01	0.	2	.107760E+05
3	-.894666E+03	.335746E+03	0.	.211242E+00	-.144194E+01	0.	3	.153262E+05
4	-.118323E+04	.745270E+03	0.	-.110102E+00	-.114320E+01	0.	4	.222276E+05
5	-.140190E+04	.120000E+04	0.	-.113326E+01	-.180243E+01	0.	5	0.
6	-.140190E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.140190E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.502345E+03	.504573E+03

TIME = .20000E+01 DYNAMIC INCREMENT = 20

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.102339E+05
2	-.496666E+03	.361366E+02	0.	-.135584E+00	-.208316E+01	0.	2	.120296E+05
3	-.894973E+03	.334214E+03	0.	-.944597E-01	-.209373E+01	0.	3	.165115E+05
4	-.118355E+04	.743878E+03	0.	-.592191E+00	-.140746E+01	0.	4	.220139E+05
5	-.140390E+04	.120000E+04	0.	-.113000E+01	-.180086E+01	0.	5	0.
6	-.140390E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.140390E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.504345E+03	.506561E+03

TIME = .30000E+01 DYNAMIC INCREMENT = 30

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.9845251E+04
2	-.496758E+03	.342883E+02	0.	-.162405E+00	-.165213E+01	0.	2	.1801631E+05
3	-.895135E+03	.332436E+03	0.	-.639653E+00	-.996664E+00	0.	3	.1843331E+05
4	-.118393E+04	.742161E+03	0.	-.482597E+00	-.128809E+01	0.	4	.2438780E+05
5	-.140590E+04	.120000E+04	0.	-.112750E+01	-.179965E+01	0.	5	0.
6	-.140590E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.140590E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.506345E+03	.508809E+03

TIME = .40000E+01 DYNAMIC INCREMENT = 40

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.9947611E+04
2	-.496798E+03	.332625E+02	0.	.243664E+00	-.640979E+00	0.	2	.1779351E+05
3	-.895273E+03	.331275E+03	0.	.320453E+00	-.144208E+01	0.	3	.1803947E+05
4	-.118434E+04	.740766E+03	0.	-.432898E+00	-.140193E+01	0.	4	.2381360E+05
5	-.140790E+04	.120000E+04	0.	-.112459E+01	-.179824E+01	0.	5	0.
6	-.140790E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.140790E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.508345E+03	.510760E+03

TIME = .50000E+01 DYNAMIC INCREMENT = 50

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.1015651E+05
2	-.496913E+03	.324625E+02	0.	-.101418E+00	-.977757E+00	0.	2	.1756221E+05
3	-.895468E+03	.330276E+03	0.	-.404433E+00	-.932186E+00	0.	3	.1773401E+05
4	-.118485E+04	.739449E+03	0.	-.458223E+00	-.164268E+01	0.	4	.2320811E+05
5	-.140990E+04	.120000E+04	0.	-.112193E+01	-.179694E+01	0.	5	0.
6	-.140990E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.140990E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.510345E+03	.512595E+03

TIME = .60000E+01 DYNAMIC INCREMENT = 60

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.8858[illegible]E+05
2	-.496855E+03	.313387E+02	0.	-.569794E+00	-.118340E+01	0.	2	.1221731E+05
3	-.895605E+03	.328855E+03	0.	-.220825E+00	-.145214E+01	0.	3	.1722961E+05
4	-.118541E+04	.737728E+03	0.	-.700958E+00	-.154348E+01	0.	4	.2176000E+05
5	-.141190E+04	.120000E+04	0.	-.112005E+01	-.179602E+01	0.	5	0.
6	-.141190E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.141190E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.512345E+03	.514774E+03

TIME = .70000E+01 DYNAMIC INCREMENT = 70

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.1034[illegible]E+06
2	-.497077E+03	.301343E+02	0.	.119249E+00	-.102644E+01	0.	2	.1219[illegible]E+05
3	-.895939E+03	.327496E+03	0.	-.173640E+00	-.142155E+01	0.	3	.1768721E+05
4	-.118612E+04	.736157E+03	0.	-.426151E+00	-.209079E+01	0.	4	.2346650E+05
5	-.141390E+04	.120000E+04	0.	-.111842E+01	-.179522E+01	0.	5	0.
6	-.141390E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.141390E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.514345E+03	.516753E+03

TIME = .80000E+01 DYNAMIC INCREMENT = 80

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.1054[illegible]E+05
2	-.497157E+03	.291288E+02	0.	-.429864E+00	-.844794E+00	0.	2	.1268[illegible]E+05
3	-.896265E+03	.326241E+03	0.	-.330496E+00	-.120523E+01	0.	3	.1819[illegible]E+05
4	-.118678E+04	.734560E+03	0.	-.774150E+00	-.138689E+01	0.	4	.2359[illegible]E+05
5	-.141590E+04	.120000E+04	0.	-.111670E+01	-.179438E+01	0.	5	0.
6	-.141590E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.141590E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.516345E+03	.518776E+03

TIME = .90000E+01 DYNAMIC INCREMENT = 90

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.954718E+04
2	-.497110E+03	.283042E+02	0.	.650069E-01	-.943765E+00	0.	2	.113607E+05
3	-.896462E+03	.324868E+03	0.	-.409598E+00	-.122708E+01	0.	3	.175593E+05
4	-.118747E+04	.732924E+03	0.	-.678440E+00	-.167069E+01	0.	4	.219627E+05
5	-.141790E+04	.120000E+04	0.	-.111514E+01	-.179360E+01	0.	5	0.
6	-.141790E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.141790E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.518345E+03	.520823E+03

TIME = .10000E+02 DYNAMIC INCREMENT = 100

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.101271E+05
2	-.497237E+03	.273318E+02	0.	.182975E+00	-.935134E+00	0.	2	.126188E+05
3	-.896935E+03	.323639E+03	0.	-.199947E+00	-.157573E+01	0.	3	.169233E+05
4	-.118825E+04	.731363E+03	0.	-.814756E+00	-.161622E+01	0.	4	.213241E+05
5	-.141990E+04	.120000E+04	0.	-.111374E+01	-.179291E+01	0.	5	0.
6	-.141990E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.141990E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.520345E+03	.522767E+03

TIME = .11000E+02 DYNAMIC INCREMENT = 110

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.101252E+05
2	-.497269E+03	.263771E+02	0.	-.836282E-01	-.107783E+01	0.	2	.119573E+05
3	-.897252E+03	.322189E+03	0.	-.628046E+00	-.117394E+01	0.	3	.177691E+05
4	-.118903E+04	.729723E+03	0.	-.915135E+00	-.136221E+01	0.	4	.233284E+05
5	-.142190E+04	.120000E+04	0.	-.111249E+01	-.179230E+01	0.	5	0.
6	-.142190E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.142190E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.522345E+03	.524776E+03

TIME = .12000E+02 DYNAMIC INCREMENT = 120

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.925162E+04
2	-.497229E+03	.254785E+02	0.	.227032E+00	-.880450E+00	0.	2	.127236E+05
3	-.897642E+03	.320836E+03	0.	-.291832E+00	-.146916E+01	0.	3	.171448E+05
4	-.118978E+04	.728034E+03	0.	-.813330E+00	-.160953E+01	0.	4	.238577E+05
5	-.142390E+04	.120000E+04	0.	-.111125E+01	-.179166E+01	0.	5	0.
6	-.142390E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.142390E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.524345E+03	.526841E+03

TIME = .13000E+02 DYNAMIC INCREMENT = 130

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.103143E+05
2	-.497378E+03	.246165E+02	0.	.417415E-01	-.839381E+00	0.	2	.124035E+05
3	-.898083E+03	.319525E+03	0.	-.378572E+00	-.138882E+01	0.	3	.176081E+05
4	-.119063E+04	.726508E+03	0.	-.836522E+00	-.160376E+01	0.	4	.226231E+05
5	-.142590E+04	.120000E+04	0.	-.111005E+01	-.179109E+01	0.	5	0.
6	-.142590E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.142590E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.526345E+03	.528721E+03

TIME = .14000E+02 DYNAMIC INCREMENT = 140

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.925950E+04
2	-.497115E+03	.237675E+02	0.	-.216730E+00	-.913187E+00	0.	2	.127986E+05
3	-.898468E+03	.316131E+03	0.	-.582485E+00	-.121400E+01	0.	3	.171650E+05
4	-.119140E+04	.724767E+03	0.	-.825139E+00	-.160566E+01	0.	4	.235741E+05
5	-.142790E+04	.120000E+04	0.	-.110893E+01	-.179053E+01	0.	5	0.
6	-.142790E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.142790E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.528345E+03	.530830E+03

TIME = .15000E+02 DYNAMIC INCREMENT = 150

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.[illegible]
2	-.497407E+03	.229222E+02	0.	-.382165E-01	-.737732E+00	0.	2	.[illegible]
3	-.898880E+03	.316735E+03	0.	-.205594E+00	-.156830E+01	0.	3	.[illegible]
4	-.119224E+04	.723135E+03	0.	-.738502E+00	-.184408E+01	0.	4	.[illegible]
5	-.142990E+04	.120000E+04	0.	-.110789E+01	-.179001E+01	0.	5	0.
6	-.142990E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.142990E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.530345E+03	.532806E+03

TIME = .16000E+02 DYNAMIC INCREMENT = 160

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.[illegible]
2	-.497489E+03	.220587E+02	0.	-.202790E+00	-.818590E+00	0.	2	.[illegible]
3	-.899374E+03	.315422E+03	0.	-.566689E+00	-.120598E+01	0.	3	.[illegible]
4	-.119306E+04	.721478E+03	0.	-.741839E+00	-.179334E+01	0.	4	.[illegible]
5	-.143190E+04	.120000E+04	0.	-.110684E+01	-.178949E+01	0.	5	0.
6	-.143190E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.143190E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.532345E+03	.534815E+03

TIME = .17000E+02 DYNAMIC INCREMENT = 170

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.[illegible]
2	-.499476E+03	.212782E+02	0.	-.291363E+00	-.751545E+00	0.	2	.[illegible]
3	-.899724E+03	.313973E+03	0.	-.358775E+00	-.143385E+01	0.	3	.[illegible]
4	-.119388E+04	.719761E+03	0.	-.845721E+00	-.164086E+01	0.	4	.[illegible]
5	-.143390E+04	.120000E+04	0.	-.110586E+01	-.178900E+01	0.	5	0.
6	-.143390E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.143390E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.534345E+03	.536881E+03

TIME = .18000E+02 DYNAMIC INCREMENT = 180

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.102725E+05
2	-.497563E+03	.204482E+02	0.	.148379E+00	-.797341E+00	0.	2	.124357E+05
3	-.900229E+03	.312658E+03	0.	-.444077E+00	-.136270E+01	0.	3	.166421E+05
4	-.119473E+04	.718118E+03	0.	-.712166E+00	-.191961E+01	0.	4	.235865E+05
5	-.143590E+04	.120000E+04	0.	-.110489E+01	-.178851E+01	0.	5	0.
6	-.143590E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.143590E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.536345E+03	.538864E+03

TIME = .19000E+02 DYNAMIC INCREMENT = 190

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.103618E+05
2	-.497602E+03	.196366E+02	0.	-.234061E+00	-.810290E+00	0.	2	.126057E+05
3	-.900661E+03	.311262E+03	0.	-.442643E+00	-.140672E+01	0.	3	.171099E+05
4	-.119558E+04	.716450E+03	0.	-.984473E+00	-.143614E+01	0.	4	.235022E+05
5	-.143790E+04	.120000E+04	0.	-.110394E+01	-.178805E+01	0.	5	0.
6	-.143790E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.143790E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.538345E+03	.540870E+03

TIME = .20000E+02 DYNAMIC INCREMENT = 200

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.978106E+04
2	-.497577E+03	.188459E+02	0.	.225037E+00	-.875065E+00	0.	2	.128132E+05
3	-.901079E+03	.309853E+03	0.	-.544307E+00	-.130490E+01	0.	3	.171779E+05
4	-.119642E+04	.714742E+03	0.	-.818523E+00	-.173028E+01	0.	4	.238508E+05
5	-.143990E+04	.120000E+04	0.	-.110306E+01	-.176760E+01	0.	5	0.
6	-.143990E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.143990E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.540345E+03	.542916E+03

TIME = .21000E+02 DYNAMIC INCREMENT = 210

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.1027966E+05
2	-.497659E+03	.180302E+02	0.	.647658E-01	-.766480E+00	0.	2	.1298478E+05
3	-.901585E+03	.308526E+03	0.	-.307079E+00	-.154634E+01	0.	3	.1706966E+05
4	-.119730E+04	.713127E+03	0.	-.974493E+00	-.151115E+01	0.	4	.2325141E+05
5	-.144190E+04	.120000E+04	0.	-.110217E+01	-.178715E+01	0.	5	0.
6	-.144190E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.144190E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.542345E+03	.544861E+03

TIME = .22000E+02 DYNAMIC INCREMENT = 220

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.9831559E+04
2	-.497640E+03	.172528E+02	0.	.568798E-01	-.908191E+00	0.	2	.1223008E+05
3	-.901995E+03	.307106E+03	0.	-.671790E+00	-.119217E+01	0.	3	.1749977E+05
4	-.119816E+04	.711433E+03	0.	-.903236E+00	-.157385E+01	0.	4	.2342627E+05
5	-.144390E+04	.120000E+04	0.	-.110130E+01	-.178671E+01	0.	5	0.
6	-.144390E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.144390E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.544345E+03	.546889E+03

TIME = .23000E+02 DYNAMIC INCREMENT = 230

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.9629121E+04
2	-.497646E+03	.164654E+02	0.	.690623E-01	-.734930E+00	0.	2	.1202808E+05
3	-.902463E+03	.305742E+03	0.	-.278550E+00	-.155702E+01	0.	3	.1722418E+05
4	-.119902E+04	.709749E+03	0.	-.904305E+00	-.163873E+01	0.	4	.2349294E+05
5	-.144590E+04	.120000E+04	0.	-.110045E+01	-.178628E+01	0.	5	0.
6	-.144590E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.144590E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.546345E+03	.548906E+03

TIME = .24000E+02 DYNAMIC INCREMENT = 240

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.101961E+05
2	-.497727E+03	.156792E+02	0.	-.114209E-01	-.805614E+00	0.	2	.124065E+05
3	-.902931E+03	.304375E+03	0.	-.555542E+00	-.127044E+01	0.	3	.176222E+05
4	-.119990E+04	.708120E+03	0.	-.837737E+00	-.171399E+01	0.	4	.229975E+05
5	-.144790E+04	.120000E+04	0.	-.109961E+01	-.178586E+01	0.	5	0.
6	-.144790E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.144790E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.548345E+03	.550861E+03

TIME = .25000E+02 DYNAMIC INCREMENT = 250

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.952699E+04
2	-.497685E+03	.149166E+02	0.	-.388068E+00	-.744183E+00	0.	2	.126366E+05
3	-.903364E+03	.302984E+03	0.	-.432965E+00	-.138160E+01	0.	3	.171352E+05
4	-.120074E+04	.706378E+03	0.	-.868221E+00	-.166169E+01	0.	4	.230531E+05
5	-.144990E+04	.120000E+04	0.	-.109877E+01	-.178544E+01	0.	5	0.
6	-.144990E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.144990E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.550345E+03	.552942E+03

TIME = .26000E+02 DYNAMIC INCREMENT = 260

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.101613E+05
2	-.497770E+03	.141541E+02	0.	-.188038E-01	-.703510E+00	0.	2	.121405E+05
3	-.903820E+03	.301612E+03	0.	-.384599E+00	-.140817E+01	0.	3	.175745E+05
4	-.120162E+04	.704738E+03	0.	-.762547E+00	-.186723E+01	0.	4	.232488E+05
5	-.145190E+04	.120000E+04	0.	-.109795E+01	-.178502E+01	0.	5	0.
6	-.145190E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.145190E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.552345E+03	.554907E+03

TIME = .27000E+02 DYNAMIC INCREMENT = 270

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.100794E+05
2	-.497745E+03	.133604E+02	0.	-.222010E+00	-.746672E+00	0.	2	.126294E+05
3	-.904300E+03	.300265E+03	0.	-.516334E+00	-.129261E+01	0.	3	.166303E+05
4	-.120247E+04	.703033E+03	0.	-.839775E+00	-.170640E+01	0.	4	.235531E+05
5	-.145390E+04	.120000E+04	0.	-.109712E+01	-.178460E+01	0.	5	0.
6	-.145390E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.145390E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.554345E+03	.556949E+03

TIME = .28000E+02 DYNAMIC INCREMENT = 280

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.100567E+05
2	-.497801E+03	.126463E+02	0.	-.992934E-01	-.713905E+00	0.	2	.119139E+05
3	-.904700E+03	.298845E+03	0.	-.389834E+00	-.141575E+01	0.	3	.174244E+05
4	-.120334E+04	.701338E+03	0.	-.826116E+00	-.174778E+01	0.	4	.236827E+05
5	-.145590E+04	.120000E+04	0.	-.109633E+01	-.178420E+01	0.	5	0.
6	-.145590E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.145590E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.556345E+03	.558974E+03

TIME = .29000E+02 DYNAMIC INCREMENT = 290

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.100361E+05
2	-.497850E+03	.118702E+02	0.	.343985E-01	-.746054E+00	0.	2	.124856E+05
3	-.905211E+03	.297529E+03	0.	-.472876E+00	-.134199E+01	0.	3	.167174E+05
4	-.120427E+04	.699673E+03	0.	-.813475E+00	-.177511E+01	0.	4	.235865E+05
5	-.145790E+04	.120000E+04	0.	-.109551E+01	-.178379E+01	0.	5	0.
6	-.145790E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.145790E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.558345E+03	.560970E+03

TIME = .300000E+02 DYNAMIC INCREMENT = 300

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.102967E+05
2	-.497856E+03	.111339E+02	0.	-.125589E+00	-.759963E+00	0.	2	.119275E+05
3	-.905620E+03	.296120E+03	0.	-.447298E+00	-.138896E+01	0.	3	.172503E+05
4	-.120507E+04	.697986E+03	0.	-.947643E+00	-.153504E+01	0.	4	.230647E+05
5	-.145990E+04	.120000E+04	0.	-.109473E+01	-.178339E+01	0.	5	0.
6	-.145990E+04	.120000E+04	0.	-.200000E+01	0.	0.	6	0.
7	-.145990E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 2

PAYOUT STATUS END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	5	4	.200000E+01	.560345E+03	.562988E+03

NEW PAYOUT/REEL-IN DATA FOR END 1

NODE = 6
ELT. = 5
STEP 301 TIME .301000E+02

TIME = .310000E+02 DYNAMIC INCREMENT = 310

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.101677E+05
2	-.497864E+03	.103824E+02	0.	.212232E+00	-.781706E+00	0.	2	.121574E+05
3	-.906080E+03	.294761E+03	0.	-.446549E+00	-.139160E+01	0.	3	.170545E+05
4	-.120583E+04	.696381E+03	0.	-.767063E+00	-.143158E+01	0.	4	.227832E+05
5	-.143490E+04	.114394E+04	0.	-.196817E+01	-.432826E+01	0.	5	.356171E+05
6	-.146190E+04	.120000E+04	0.	-.113220E+01	-.180192E+01	0.	6	0.
7	-.146190E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 5

PAYOUT STATUS END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	6	5	.200000E+01	.618000E+02	.622264E+02

TIME = .32000E+02 DYNAMIC INCREMENT = 320

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.1041726+05
2	-.497904E+03	.962602E+01	0.	.301593E-01	-.754032E+00	0.	2	.1238266+05
3	-.906551E+03	.293424E+03	0.	-.425436E+00	-.138903E+01	0.	3	.1722206+05
4	-.120656E+04	.694874E+03	0.	-.956170E+00	-.116790E+01	0.	4	.2271536+05
5	-.143744E+04	.114154E+04	0.	-.120951E+01	-.419600E+01	0.	5	.2873836+05
6	-.146390E+04	.120000E+04	0.	-.117522E+01	-.182201E+01	0.	6	0.
7	-.146390E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 5

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	6	5	.200000E+01	.638000E+02	.641657E+02

TIME = .33000E+02 DYNAMIC INCREMENT = 330

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.9833E.6E+05
2	-.497859E+03	.893591E+01	0.	.146274E+00	-.765169E+00	0.	2	.1234436+05
3	-.906457E+03	.292076E+03	0.	-.514937E+00	-.126504E+01	0.	3	.1721436+05
4	-.120731E+04	.693266E+03	0.	-.919958E+00	-.138268E+01	0.	4	.2410706+05
5	-.143917E+04	.113958E+04	0.	-.581126E+00	-.352457E+01	0.	5	.2007706+05
6	-.146590E+04	.120000E+04	0.	-.119091E+01	-.182904E+01	0.	6	0.
7	-.146590E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 5

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	6	5	.200000E+01	.658000E+02	.660637E+02

TIME = .34000E+02 DYNAMIC INCREMENT = 340

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.9865926+05
2	-.497885E+03	.820889E+01	0.	.782672E-01	-.728714E+00	0.	2	.1259086+05
3	-.907411E+03	.290763E+03	0.	-.317241E+00	-.147429E+01	0.	3	.1701246+05
4	-.120814E+04	.691646E+03	0.	-.887340E+00	-.161146E+01	0.	4	.2459176+05
5	-.144032E+04	.113785E+04	0.	-.946789E+00	-.185[illegible]2E+01	0.	5	.1406206+05
6	-.146790E+04	.120000E+04	0.	-.118865E+01	-.182813E+01	0.	6	0.
7	-.146790E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 5

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	6	5	.200000E+01	.678000E+02	.679904E+02

TIME = .350000E+02 DYNAMIC INCREMENT = 350

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.997160E+04
2	-.497899E+03	.741995E+01	0.	-.603345E-01	-.847345E+00	0.	2	.124856E+05
3	-.907831E+03	.289377E+03	0.	-.548765E+00	-.125958E+01	0.	3	.173148E+05
4	-.120899E+04	.689974E+03	0.	-.735690E+00	-.185524E+01	0.	4	.234852E+05
5	-.144125E+04	.113601E+04	0.	-.176049E+01	-.953948E-01	0.	5	.219440E+05
6	-.146990E+04	.120000E+04	0.	-.118273E+01	-.182540E+01	0.	6	0.
7	-.146990E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 5

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	6	5	.200000E+01	.698000E+02	.701057E+02

TIME = .360000E+02 DYNAMIC INCREMENT = 360

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.984905E+04
2	-.497896E+03	.663150E+01	0.	-.105850E+00	-.720063E+00	0.	2	.125107E+05
3	-.908238E+03	.287995E+03	0.	-.336007E+00	-.140724E+01	0.	3	.174738E+05
4	-.120982E+04	.688292E+03	0.	-.749960E+00	-.179750E+01	0.	4	.235754E+05
5	-.144222E+04	.113404E+04	0.	-.147905E+01	-.101912E+01	0.	5	.366147E+05
6	-.147190E+04	.120000E+04	0.	-.117935E+01	-.182388E+01	0.	6	0.
7	-.147190E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 5

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	6	5	.200000E+01	.718000E+02	.723239E+02

TIME = .370000E+02 DYNAMIC INCREMENT = 370

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.103517E+05
2	-.497955E+03	.588374E+01	0.	-.743051E-01	-.684836E+00	0.	2	.125547E+05
3	-.908670E+03	.286675E+03	0.	-.405278E+00	-.130766E+01	0.	3	.175708E+05
4	-.121065E+04	.686661E+03	0.	-.827308E+00	-.161048E+01	0.	4	.237551E+05
5	-.144341E+04	.113231E+04	0.	-.419115E+00	-.348194E+01	0.	5	.278962E+05
6	-.147390E+04	.120000E+04	0.	-.117868E+01	-.182358E+01	0.	6	0.
7	-.147390E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 5

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	6	5	.200000E+01	.738000E+02	.742370E+02

TIME = .38000E+02 DYNAMIC INCREMENT = 380

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.1010931E+05
2	-.4979402E+03	.5172266E+01	0.	-.1965816E+00	-.6778655E+00	0.	2	.1234684E+05
3	-.9090777E+03	.2853493E+03	0.	-.4225197E+00	-.1314091E+01	0.	3	.1673471E+05
4	-.1211446E+04	.6849648E+03	0.	-.7981132E+00	-.1677911E+01	0.	4	.2483778E+05
5	-.1444688E+04	.1130655E+04	0.	-.1237192E+01	-.1715618E+01	0.	5	.1634218E+05
6	-.1475902E+04	.1200000E+04	0.	-.1179002E+01	-.1823722E+01	0.	6	0.
7	-.1475902E+04	.1200000E+04	0.	-.2000000E+01	0.	0.		

NUMBER OF ITERATIONS 5

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	6	5	.2000000E+01	.7580000E+02	.7605646E+02

TIME = .39000E+02 DYNAMIC INCREMENT = 390

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.1031691E+05
2	-.4979678E+03	.4443331E+01	0.	.2257346E-02	-.7180178E+00	0.	2	.1198478E+05
3	-.9094878E+03	.2839888E+03	0.	-.4029655E+00	-.1351125E+01	0.	3	.1726622E+05
4	-.1212288E+04	.6833418E+03	0.	-.6848588E+00	-.1911996E+01	0.	4	.2207768E+05
5	-.1445758E+04	.1128608E+04	0.	-.1740648E+01	-.5897618E+00	0.	5	.3274138E+05
6	-.1477908E+04	.1200000E+04	0.	-.1178848E+01	-.1823658E+01	0.	6	0.
7	-.1477908E+04	.1200000E+04	0.	-.2000000E+01	0.	0.		

NUMBER OF ITERATIONS 5

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	6	5	.2000000E+01	.7780000E+02	.7830788E+02

TIME = .40000E+02 DYNAMIC INCREMENT = 400

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.1045346E+05
2	-.4979867E+03	.3685746E+01	0.	-.3627076E-01	-.7443946E+00	0.	2	.1234988E+05
3	-.9099366E+03	.2826622E+03	0.	-.4167311E+00	-.1360238E+01	0.	3	.1681758E+05
4	-.1213116E+04	.6816776E+03	0.	-.9510776E+00	-.1438466E+01	0.	4	.2297488E+05
5	-.1446938E+04	.1126856E+04	0.	-.1408121E+01	-.3388116E+01	0.	5	.2760208E+05
6	-.1479908E+04	.1200000E+04	0.	-.1178208E+01	-.1823366E+01	0.	6	0.
7	-.1479908E+04	.1200000E+04	0.	-.2000000E+01	0.	0.		

NUMBER OF ITERATIONS 5

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	6	5	.2000000E+01	.7980000E+02	.8023938E+02

TIME = .40000E+02 DYNAMIC INCREMENT = 401

NODE	X	Y	Z	VX	VY	VZ
1	0.	0.	0.	0.	0.	0.
2	-.497987E+03	.368574E+01	0.	-.362707E-01	-.744394E+00	0.
3	-.909936E+03	.282662E+03	0.	-.416731E+00	-.136023E+01	0.
4	-.121311E+04	.681679E+03	0.	-.951077E+00	-.143846E+01	0.
5	-.144693E+04	.112685E+04	0.	-.408121E+00	-.338311E+01	0.
6	-.147990E+04	.120000E+04	0.	-.117820E+01	-.182336E+01	0.
7	-.147990E+04	.120000E+04	0.	-.200000E+01	0.	0.

ELT	TENSION
1	.104534E+05
2	.123486E+05
3	.168175E+05
4	.229743E+05
5	.276020E+05
6	0.

NUMBER OF ITERATIONS 2

PAYOUT STATUS

END	NODE	ELT.	VELOCITY	UNSTR. LEN.	CURRENT LEN.
1	6	5	.200000E+01	.798000E+02	.802393E+02

L O A D C A S E P A R A M E T E R S

SUBANALYSIS TYPE = DYN

FREED NODE COMPONENTS
11 12
NODE COMPONENT MOVEMENT DATA
NODE TYPE VARY CODE AMPLITUDE TYPE VARY CODE AMPLITUDE TYPE VARY CODE AMPLITUDE
1 2 0 -.20000E+01 2 0 0. 2 0 0.
TIME STEP DATA
INITIAL TIME STEP = .10000E+00
MAXIMUM TIME = .50000E+02
BEGINNING TIME = .40000E+02
UPDATE TIME = .10000E+00
ALPHA,BETA,GAMMA = 0. .83333E-01 .50000E+00
OUTPUT DATA SELECTIONS
STEP NUMBER INTERVAL = 10
PARAMETER INTERVAL = .10000E+01
DEBUG OUTPUT FLAG = 0

S O L U T I O N O P T I O N S U M M A R Y

ANALYSIS TYPE = DYN
SOLUTION FORM = DIM

DYN. INIT. COND. CODE = 0
OUTPUT INTERVAL = 10
DEBUG PRINT CODE = 0
RESTART FILE FLAG = 0
UPDATE OPTION = 1
START UP OPTION = 0
NO. OF POINT LOADS = 0
FLOW FIELD NUMBER = 0
NUMBER OF MOVED NODES = 1

DIRECT ITERATION METHOD DYNAMIC PARAMETERS
DEFLECT. ERROR TOLERANCE = .10000E-02

NODE COMPONENT FIXITIES ALTERED

ELEMENT	EA	UNIT MASS	LENGTH	TIME STEP
1	.500000E+07	.522426E+00	.498001E+03	.159190E+00
2	.500000E+07	.522229E+00	.497524E+03	.158978E+00
3	.533333E+07	.521873E+00	.501126E+03	.154938E+00
4	.500000E+07	.521124E+00	.502840E+03	.160337E+00
5	.500000E+07	.520644E+00	.802393E+02	.255617E-01

TIME STEP DATA
INITIAL TIME STEP = .10000E+00
MAXIMUM TIME = .50000E+02
BEGINNING TIME = .40000E+02
UPDATE TIME = .10000E+00
ALPHA,BETA,GAMMA = 0. .83333E-01 .50000E+00

OUTPUT TIME INTERVAL = .100000E+01

TIME = .40000E+02 DYNAMIC INCREMENT = 401

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	0.	0.	0.	0.	0.	1	.1045361E+05
2	-.497987E+03	.368574E+01	0.	-.362707E-01	-.744394E+00	0.	2	.1234866E+05
3	-.909936E+03	.282662E+03	0.	-.416731E+00	-.136023E+01	0.	3	.1681758E+05
4	-.121311E+04	.681679E+03	0.	-.951077E+00	-.143846E+01	0.	4	.2237488E+05
5	-.144693E+04	.112685E+04	0.	-.108121E+00	-.338311E+01	0.	5	.2760201E+05
6	-.147990E+04	.120000E+04	0.	-.117820E+01	-.182336E+01	0.	6	0.
7	-.147990E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 0

TIME = .41000E+02 DYNAMIC INCREMENT = 411

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	-.769958E+01	-.483410E+01	0.	-.776118E+01	-.647888E+01	0.	1	0.
2	-.502945E+03	.221909E+01	0.	-.979894E+01	-.232224E+01	0.	2	.2557665E+05
3	-.912954E+03	.283200E+03	0.	-.565977E+01	.170894E+01	0.	3	.6162321E+04
4	-.121486E+04	.681593E+03	0.	-.352953E+01	.210268E+01	0.	4	.1897795E+05
5	-.144837E+04	.112647E+04	0.	-.209740E+01	.174988E+01	0.	5	.1275671E+05
6	-.147990E+04	.120000E+04	0.	0.	0.	0.	6	0.
7	-.148130E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 5

STEP 420 CONVERGED IN 2 ITERATIONS. NEW DT AND DTU = .11315E+00 .11315E+00

TIME = .42013E+02 DYNAMIC INCREMENT = 421

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	-.161646E+02	-.113602E+02	0.	-.968225E+01	-.697014E+01	0.	1	0.
2	-.512312E+03	.826606E+00	0.	-.674209E+01	0.	0.	2	0.
3	-.918043E+03	.282005E+03	0.	-.323251E+01	-.433084E+01	0.	3	.7628716E+04
4	-.121863E+04	.681491E+03	0.	-.320327E+01	-.274101E+01	0.	4	.2935491E+04
5	-.145023E+04	.112557E+04	0.	-.202749E+01	-.237476E+01	0.	5	.2064731E+05
6	-.147990E+04	.120000E+04	0.	0.	0.	0.	6	0.
7	-.148393E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 5

TIME = .430321E+02 DYNAMIC INCREMENT = 430

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	-.245260E+02	-.178386E+02	0.	-.691152E+01	-.635714E+01	0.	1	0.
2	-.518155E+03	.828606E+00	0.	-.492842E+01	0.	0.	2	0.
3	-.922181E+03	.278679E+03	0.	-.554189E+01	-.174922E+01	0.	3	.425115E+04
4	-.122159E+04	.678832E+03	0.	-.472895E+01	.973469E+00	0.	4	.173257E+05
5	-.145229E+04	.112499E+04	0.	-.499957E+00	-.123466E+01	0.	5	.318001E+04
6	-.147990E+04	.120000E+04	0.	0.	0.	0.	6	0.
7	-.148596E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 5

TIME = .440508E+02 DYNAMIC INCREMENT = 439

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	-.304580E+02	-.243233E+02	0.	-.480162E+01	-.638191E+01	0.	1	0.
2	-.522604E+03	.828606E+00	0.	-.389379E+01	0.	0.	2	0.
3	-.927819E+03	.276728E+03	0.	-.417886E+01	-.341639E+01	0.	3	.153260E+05
4	-.122563E+04	.677905E+03	0.	-.235830E+01	-.415737E+01	0.	4	.772359E+04
5	-.145334E+04	.112452E+04	0.	-.224072E+01	.102828E+01	0.	5	.134927E+05
6	-.147990E+04	.120000E+04	0.	0.	0.	0.	6	0.
7	-.148800E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 5

TIME = .449559E+02 DYNAMIC INCREMENT = 447

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	-.340333E+02	-.301205E+02	0.	-.310758E+01	-.643177E+01	0.	1	0.
2	-.525839E+03	.828606E+00	0.	-.329017E+01	0.	0.	2	0.
3	-.931430E+03	.273602E+03	0.	-.507803E+01	-.222267E+01	0.	3	.796376E+04
4	-.122843E+04	.675775E+03	0.	-.432080E+01	.321114E+00	0.	4	.160560E+05
5	-.145422E+04	.112430E+04	0.	.496459E+00	-.899016E+00	0.	5	.879126E+04
6	-.147990E+04	.120000E+04	0.	0.	0.	0.	6	0.
7	-.148981E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 5

TIME = .45973E+02 DYNAMIC INCREMENT = 456

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	-.362710E+02	-.367161E+02	0.	-.116450E+01	-.653017E+01	0.	1	0.
2	-.528930E+03	.828606E+00	0.	-.280740E+01	0.	0.	2	0.
3	-.937004E+03	.271635E+03	0.	-.401387E+01	-.368747E+01	0.	3	0.
4	-.123219E+04	.674616E+03	0.	-.293912E+01	-.306072E+01	0.	4	.879939E+04
5	-.145399E+04	.112434E+04	0.	-.102416E+01	.109137E+01	0.	5	.108456E+05
6	-.147990E+04	.120000E+04	0.	0.	0.	0.	6	0.
7	-.149185E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 5

TIME = .46992E+02 DYNAMIC INCREMENT = 465

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	-.363629E+02	-.434398E+02	0.	-.127925E+00	-.658791E+01	0.	1	.269194E+04
2	-.531594E+03	.828606E+00	0.	-.208982E+01	0.	0.	2	0.
3	-.941199E+03	.268263E+03	0.	-.591497E+01	-.116838E+01	0.	3	.822708E+04
4	-.123539E+04	.672512E+03	0.	-.321307E+01	-.118748E+01	0.	4	.109103E+05
5	-.145394E+04	.112404E+04	0.	.714923E+00	-.356580E+00	0.	5	.300131E+05
6	-.147990E+04	.120000E+04	0.	0.	0.	0.	6	0.
7	-.149388E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 5

TIME = .48010E+02 DYNAMIC INCREMENT = 474

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	-.397621E+02	-.498429E+02	0.	-.248458E+01	-.636415E+01	0.	1	0.
2	-.532189E+03	.828606E+00	0.	-.404182E+00	0.	0.	2	0.
3	-.946518E+03	.265990E+03	0.	-.379008E+01	-.387658E+01	0.	3	.539514E+04
4	-.123901E+04	.671291E+03	0.	-.337328E+01	-.199112E+01	0.	4	.106471E+05
5	-.145383E+04	.112457E+04	0.	.201296E+00	-.162264E+01	0.	5	.234639E+05
6	-.147990E+04	.120000E+04	0.	0.	0.	0.	6	0.
7	-.149592E+04	.120000E+04	0.	-.200000E+01	0.	0.		

NUMBER OF ITERATIONS 4

TIME = .49029E+02 DYNAMIC INCREMENT = 483

NODE	X	Y	Z	VX	VY	VZ
1	-.406332E+02	-.564725E+02	0.	.420704E+00	-.667044E+01	0.
2	-.532596E+03	.828606E+00	0.	-.394559E+00	0.	0.
3	-.951082E+03	.263046E+03	0.	-.538886E+01	-.192503E+01	0.
4	-.124210E+04	.669305E+03	0.	-.361072E+01	-.527367E+00	0.
5	-.145415E+04	.112424E+04	0.	-.104799E+01	.239328E+01	0.
6	-.147990E+04	.120000E+04	0.	0.	0.	0.
7	-.149796E+04	.120000E+04	0.	-.200000E+01	0.	0.

ELT	TENSION
1	0.
2	0.
3	.373351E+04
4	.136045E+05
5	.136943E+05
6	0.

NUMBER OF ITERATIONS 5

TIME = .50000E+02 DYNAMIC INCREMENT = 492

NODE	X	Y	Z	VX	VY	VZ
1	-.397004E+02	-.630371E+02	0.	-.257662E+01	-.627809E+01	0.
2	-.532798E+03	.828606E+00	0.	.687575E+00	0.	0.
3	-.956067E+03	.260808E+03	0.	-.379341E+01	-.344700E+01	0.
4	-.124552E+04	.668283E+03	0.	-.287066E+01	-.246166E+01	0.
5	-.145459E+04	.112403E+04	0.	-.313565E-02	-.293537E+01	0.
6	-.147990E+04	.120000E+04	0.	0.	0.	0.
7	-.149990E+04	.120000E+04	0.	-.200000E+01	0.	0.

ELT	TENSION
1	.255167E+04
2	.439344E+04
3	.531490E+04
4	.867025E+04
5	.174060E+05
6	0.

NUMBER OF ITERATIONS 3

N E W P R O B L E M D A T A

NUMBER OF NODES	=	4		
NUMBER OF ELEMENTS	=	1	NBASE =	357
GRAVITY DIRECTION	=	-2		
DYNAMIC OPTION FLAG	=	1		
INPUT ECHO FLAG	=	1		
DRAG MODEL OVERRIDE	=	0		
SHIP LOAD FILE FLAG	=	0		

GRAVITATIONAL ACCELERATION = .321700E+02

FLUID MEDIA DEFINITIONS

	INTERFACE DEPTH	KINEMATIC VISCOSITY	SPECIFIC WEIGHT
1	0.	.17700E-04	.64000E+02

NODE DATA

NODE	CODE	X	Y	Z	CONSTRAINTS		
1	0	0.	-.100000E+03	0.	1	1	1
4	0	-.150000E+03	0.	0.	1	1	1

GENERATION OF LINES OF NODES

NUMBER	BEGIN NODE	END NODE	DIFFERENCE	B.C.	FIRST NODE	CODE	A	B
2	1	4	1	0	2	1	.20000E+01	.50000E+02

L,XSPAN,YSPAN .20000E+02 .15000E+03 .10000E+03

ELEMENT INPUT DATA

EL	N1	N2	N3	MAT	KOMP	FLAG	TENSION	LENGTH	MEDIUM
1	1	2	0	1	0	-1	0.	0.	1
3	3	4	0	1	0	-1	0.	0.	1

ELEMENT PRE-TENSION DATA

BEGIN	END	INCR	CODE	TENSION
1	3	1	E	0.

CABLE MATERIAL PROPERTY DATA

PROPERTY SET NO. = 1
DRAG COEF. NO. = 0
DIAMETER = .250000E+00
WEIGHT PER UNIT LENGTH = .200L00E+01
ADDED MASS COEFFICIENT = .100000E+01
REFERENCE MEDIUM CODE = 1
ULTIMATE TENSION = 0.
MASS PER UNIT LENGTH = .159826E+00

NO. OF POINTS ON TENSION/STRAIN CURVE = 0

EXPONENT FORM COEFFICIENTS .100001E+07 .100001E+01

LIMIT LOCATION DATA

BEGIN	END	INCR	LIMIT SET
1	1	1	1

NODE LIMIT SET DATA

SET NO.	VERTICAL COORD	TOLERANCE	RELEASE FACTOR	FIXITY CODE
1	-.12000E+03	.20000E+01	.10010E+01	1

TIRE FUNCTION DEFINITIONS

FN. NUMBER	CODE	PARAMETERS				
1	-1	.60000E+01	0.	0.	0.	0.
		0.	0.	0.	0.	0.
		0.	0.	0.	0.	0.
		0.	0.	0.	0.	0.

NODE POINT DATA SUMMARY

NODE NO.	INITIAL COORDINATES X	Y	Z	FIXITY CODES X	Y	Z	LIMIT SET	BODY NO.	GRAVITY LOADS X	Y	Z	VIRTUAL MASSES X	Y	Z
1	0.	-.1000E+03	0.	1	1	1	1	0	0.	-.1000E+03	0.	.1293E+02	.1293E+02	.1293E+02
2	-.1000E+03	-.1000E+03	0.	0	991	0	1	0	0.	-.1562E+03	0.	.2016E+02	.2016E+02	.2016E+02
3	-.1165E+03	-.5755E+02	0.	0	0	0	1	0	0.	-.1148E+03	0.	.1479E+02	.1479E+02	.1479E+02
4	-.1500E+03	0.	0.	1	1	1	0	0	0.	-.5909E+02	0.	.7608E+01	.7608E+01	.7608E+01

ELEMENT SUMMARY DATA

ELT NO.	CONNECTION DATA N1	N2	N3	MAT NO.	COMP CODE	MFD. CODE	INITIAL TENSION	UNSTRETCHED LENGTH	INITIAL LENGTH	RESIDUAL MASS
1	1	2		1	0	1	.40000E+02	.10044E+03	.10044E+03	.49042E+01
2	2	3		1	0	1	.61743E+02	.55722E+02	.55726E+02	.27208E+01
3	3	4		1	0	1	.17569E+03	.59092E+02	.57102E+02	.28053E+01

ADDITIONAL ELEMENT DATA

ELEMENT	SLOPES			TRANSIT TIME(APPROX)
1	-.10000E+01	0.	0.	.40153E-01
2	-.64785E+00	.76177E+00	0.	.22277E-01
3	-.22767E+00	.97374E+00	0.	.23624E-01

HALF-BANDWIDTH = 6

C L A S S C A S E P A R A M E T E R S

SUBANALYSIS TYPE = DEAD

SOLUTION DATA RESET VRR
OUTPUT DATA SELECTIONS
STEP NUMBER INTERVAL = 10
PARAMETER INTERVAL = 0.
DEBUG OUTPUT FLAG = 0

S O L U T I O N O P T I O N S U M M A R Y

ANALYSIS TYPE = DEAD
SOLUTION FORM = VRR

NO. OF STATIC STEPS	=	1
OUTPUT INTERVAL	=	10
DEBUG PRINT CODE	=	0
RESTART FILE FLAG	=	0
UPDATE OPTION	=	1
START UP OPTION	=	0
NO. OF POINT LOADS	=	0
FLOW FIELD NUMBER	=	0

VISCOUS RELAXATION SOLUTION PARAMETERS

INTEGRATION PARAMETER	=	.10000E+01
INITIAL STEP SIZE	=	.10000E+01
INITIAL DAMPING	=	.10000E-02
ITERATION LIMIT	=	200

DEAD LOAD INCREMENT = 0 LOAD FACTOR 0.

NODE	X	Y	Z	VX	VY	VZ
1	0.	-.1000000E+03	0.	0.	0.	0.
2	-.1004426E+03	-.1000000E+03	0.	0.	0.	0.
3	-.1365451E+03	-.5755000E+02	0.	0.	0.	0.
4	-.1500000E+03	0.	0.	0.	0.	0.

ELE	TENSION
1	.5000001E+02
2	.6177677E+02
3	.1756911E+03

DEAD LOAD INCREMENT = 9 LOAD FACTOR .1000000E+01

NODE	X	Y	Z	VX	VY	VZ
1	0.	-.1000000E+03	0.	0.	0.	0.
2	-.1004426E+03	-.1000000E+03	0.	0.	0.	0.
3	-.1365426E+03	-.5754887E+02	0.	0.	0.	0.
4	-.1500000E+03	0.	0.	0.	0.	0.

ELE	TENSION
1	.3703456E+02
2	.5718681E+02
3	.1626371E+03

L O A D C A S E P A R A M E T E R S

SUBANALYSIS TYPE = DYN

SOLUTION DATA RESET DEF
TIME STEP DATA
INITIAL TIME STEP = .10000E-01
MAXIMUM TIME = .80000E+01
BEGINNING TIME = 0.
UPDATE TIME = .10000E-01
ALPHA,BETA,GAMMA = 0. .83333E-01 .50000E+00
FREED NODE COMPONENTS
41
NODE COMPONENT MOVEMENT DATA

NODE	TYPE	VARY CODE	AMPLITUDE	TYPE	VARY CODE	AMPLITUDE	TYPE	VARY CODE	AMPLITUDE
4	0	0	0.	1	1	.60000E+01	0	0	0.

OUTPUT DATA SELECTIONS
STEP NUMBER INTERVAL = 50
PARAMETER INTERVAL = 0.
DEBUG OUTPUT FLAG = 0

S O L U T I O N O P T I O N S U M M A R Y

ANALYSIS TYPE = DYN
SOLUTION FORM = DIR

DYN. INIT. COND. CODE	=	0
OUTPUT INTERVAL	=	50
DEBUG PRINT CODE	=	0
RESTART FILE FLAG	=	0
UPDATE OPTION	=	1
START UP OPTION	=	0
NO. OF POINT LOADS	=	0
FLOW FIELD NUMBER	=	0
NUMBER OF MOVED NODES	=	1

DIRECT ITERATION METHOD DYNAMIC PARAMETERS
DEFLECT. ERROR TOLERANCE = .10000E-03

NODE COMPONENT FIXITIES ALTERED

ELEMENT	EA	UNIT MASS	LENGTH	TIME STEP
1	.100000E+07	.159820E+00	.100442E+03	.397498E-01
2	.100000E+07	.159817E+00	.557254E+02	.220528E-01
3	.100000E+07	.159800E+00	.591014E+02	.233864E-01

TIME STEP DATA

INITIAL TIME STEP	=	.10000E-01		
MAXIMUM TIME	=	.80000E+01		
BEGINNING TIME	=	0.		
UPDATE TIME	=	.10000E-01		
ALPHA,BETA,GAMMA	=	0.	.83333E-01	.50000E+00

OUTPUT TIME INTERVAL = .500000E+00

TIME = 0. DYNAMIC INCREMENT = 0

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	-.100000E+03	0.	0.	0.	0.	1	.370346E+02
2	-.100442E+03	-.100000E+03	0.	0.	0.	0.	2	.571031E+02
3	-.136542E+03	-.575487E+02	0.	0.	0.	0.	3	.162637E+03
4	-.150000E+03	0.	0.	0.	0.	0.		

NUMBER OF ITERATIONS 0

TIME = .500000E+00 DYNAMIC INCREMENT = 50

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	-.100000E+03	0.	0.	0.	0.	1	.497727E+02
2	-.100415E+03	-.976250E+02	0.	.129886E+00	.313071E+01	0.	2	.416642E+02
3	-.135474E+03	-.543114E+02	0.	.212813E+01	.232393E+01	0.	3	.537034E+03
4	-.150000E+03	.100000E+01	0.	0.	.545775E+01	0.		

NUMBER OF ITERATIONS 6

TIME = .100000E+01 DYNAMIC INCREMENT = 100

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	-.100000E+03	0.	0.	0.	0.	1	0.
2	-.100333E+03	-.957684E+02	0.	-.138445E+00	.254898E+01	0.	2	.854970E+03
3	-.134756E+03	-.518899E+02	0.	.791738E+00	.416346E+01	0.	3	0.
4	-.150000E+03	.519615E+01	0.	0.	.317003E+01	0.		

NUMBER OF ITERATIONS 5

TIME = .150000E+01 DYNAMIC INCREMENT = 150

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	-.100000E+03	0.	0.	0.	0.	1	0.
2	-.100235E+03	-.950552E+02	0.	.791236E+00	-.336146E+00	0.	2	.167431E+03
3	-.134239E+03	-.508996E+02	0.	.718122E+00	.624974E+00	0.	3	0.
4	-.150000E+03	.600000E+01	0.	0.	.328982E-01	0.		

NUMBER OF ITERATIONS 6

TIME = .20000E+01 DYNAMIC INCREMENT = 200

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	-.100000E+03	0.	0.	0.	0.	1	0.
2	-.100040E+03	-.959016E+02	0.	.461948E+00	-.254744E+01	0.	2	0.
3	-.133706E+03	-.515770E+02	0.	.674355E+00	-.225961E+01	0.	3	0.
4	-.150000E+03	.519615E+01	0.	0.	-.311304E+01	0.		

NUMBER OF ITERATIONS 2

TIME = .25000E+01 DYNAMIC INCREMENT = 250

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	-.100000E+03	0.	0.	0.	0.	1	0.
2	-.996825E+02	-.972452E+02	0.	.928132E+00	-.304366E+01	0.	2	0.
3	-.133127E+03	-.535820E+02	0.	.132575E+01	-.503622E+01	0.	3	0.
4	-.150000E+03	.300000E+01	0.	0.	-.542485E+01	0.		

NUMBER OF ITERATIONS 2

TIME = .30000E+01 DYNAMIC INCREMENT = 300

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	-.100000E+03	0.	0.	0.	0.	1	0.
2	-.991492E+02	-.987825E+02	0.	.117447E+01	-.308886E+01	0.	2	0.
3	-.132342E+03	-.564029E+02	0.	.147181E+01	-.526374E+01	0.	3	.177664E+03
4	-.150000E+03	-.278454E-06	0.	0.	-.628307E+01	0.		

NUMBER OF ITERATIONS 3

TIME = .35000E+01 DYNAMIC INCREMENT = 350

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	-.100000E+03	0.	0.	0.	0.	1	0.
2	-.985319E+02	-.100327E+03	0.	.127564E+01	-.308762E+01	0.	2	0.
3	-.131571E+03	-.591339E+02	0.	.129707E+01	-.493126E+01	0.	3	0.
4	-.150000E+03	-.300000E+01	0.	0.	-.545775E+01	0.		

NUMBER OF ITERATIONS 2

TIME = .600000E+01 DYNAMIC INCREMENT = 600

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	-.100000E+03	0.	0.	0.	0.	1	0.
2	-.978690E+02	-.101869E+03	0.	.128356E+01	-.307677E+01	0.	2	0.
3	-.131139E+03	-.611394E+02	0.	.201451E+00	-.287345E+01	0.	3	0.
4	-.150000E+03	-.519615E+01	0.	0.	-.317003E+01	0.		

NUMBER OF ITERATIONS 2

TIME = .650000E+01 DYNAMIC INCREMENT = 650

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	-.100000E+03	0.	0.	0.	0.	1	0.
2	-.977258E+02	-.103404E+03	0.	.122903E+01	-.306300E+01	0.	2	0.
3	-.131361E+03	-.620794E+02	0.	-.104524E+01	-.783281E+00	0.	3	.694559E+02
4	-.150000E+03	-.600000E+01	0.	0.	-.328979E-01	0.		

NUMBER OF ITERATIONS 4

TIME = .700000E+01 DYNAMIC INCREMENT = 500

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	-.100000E+03	0.	0.	0.	0.	1	0.
2	-.976794E+02	-.104820E+03	0.	-.292860E+01	.453947E+00	0.	2	.733958E+03
3	-.132187E+03	-.617280E+02	0.	.126055E+00	.134113E+01	0.	3	.305151E+04
4	-.150000E+03	-.519615E+01	0.	0.	.311304E+01	0.		

NUMBER OF ITERATIONS 6

TIME = .750000E+01 DYNAMIC INCREMENT = 550

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	-.100000E+03	0.	0.	0.	0.	1	0.
2	-.974573E+02	-.104026E+03	0.	-.360514E+01	-.110015E+00	0.	2	0.
3	-.132681E+03	-.594472E+02	0.	-.174675E+01	.466417E+01	0.	3	.174960E+04
4	-.150000E+03	-.300000E+01	0.	0.	.542485E+01	0.		

NUMBER OF ITERATIONS 3

TIME = .60000E+01 DYNAMIC INCREMENT = 600

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	-.100000E+03	0.	0.	0.	0.	1	.[illegible]
2	-.100501E+03	-.101873E+03	0.	.239071E+01	.717852E+01	0.	2	0.
3	-.132580E+03	-.563369E+02	0.	-.340061E+00	.772570E+01	0.	3	0.
4	-.150000E+03	.556897E-06	0.	0.	.628307E+01	0.		

NUMBER OF ITERATIONS 3

TIME = .65000E+01 DYNAMIC INCREMENT = 650

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	-.100000E+03	0.	0.	0.	0.	1	.[illegible]
2	-.100547E+03	-.991993E+02	0.	-.737083E+00	.613455E+01	0.	2	.[illegible]
3	-.132301E+03	-.533915E+02	0.	.198496E+01	.505773E+01	0.	3	.[illegible]
4	-.150000E+03	.400000E+01	0.	0.	.545775E+01	0.		

NUMBER OF ITERATIONS 5

TIME = .70000E+01 DYNAMIC INCREMENT = 700

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	-.100000E+03	0.	0.	0.	0.	1	.[illegible]
2	-.100408E+03	-.970732E+02	0.	.118432E+01	.301210E+01	0.	2	.[illegible]
3	-.131872E+03	-.510296E+02	0.	.989399E+00	.276404E+01	0.	3	0.
4	-.150000E+03	.519615E+01	0.	0.	.317003E+01	0.		

NUMBER OF ITERATIONS 4

TIME = .75000E+01 DYNAMIC INCREMENT = 750

NODE	X	Y	Z	VX	VY	VZ	ELT	TENSION
1	0.	-.100000E+03	0.	0.	0.	0.	1	0.
2	-.100324E+03	-.962287E+02	0.	-.236528E+00	.360501E+00	0.	2	.[illegible]
3	-.131539E+03	-.500690E+02	0.	.932302E+00	-.270260E+00	0.	3	0.
4	-.150000E+03	.600000E+01	0.	0.	.328977E-01	0.		

NUMBER OF ITERATIONS 6

TIME = .360000E+01 DYNAMIC INCREMENT = 600

NODE	X	Y	Z	VX	VY	VZ	EET	TENSION
1	0.	-.1000000E+03	0.	0.	0.	0.	1	0.
2	-.1003201E+03	-.9649451E+02	0.	.2857331E+00	-.2613601E+01	0.	2	0.
3	-.1111941E+03	-.5079677E+02	0.	.9376491E+00	-.3642071E+01	0.	3	0.
4	-.1500301E+03	.5196151E+01	0.	0.	-.3113051E+01	0.		

NUMBER OF ITERATIONS 2

TIME = .800000E+01 DYNAMIC INCREMENT = 801

NODE	X	Y	Z	VX	VY	VZ	EET	TENSION
1	0.	-.1000000E+03	0.	0.	0.	0.	1	0.
2	-.1003201E+03	-.9649451E+02	0.	.2857331E+00	-.2613601E+01	0.	2	0.
3	-.1111941E+03	-.5079677E+02	0.	.9376491E+00	-.3642091E+01	0.	3	0.
4	-.1500001E+03	.5196151E+01	0.	0.	-.3134851E+01	0.		

NUMBER OF ITERATIONS 2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