SLSF LOOP HANDLING SYSTEM

Volume II
Cradle Analysis for Normal
and Accidental Loading

by

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and R. A. Malek**MASTER**

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ABSTRACT

SLSF loop handling system was analyzed for deadweight and postulated dynamic loading conditions, identified in Chapters II and III in Volume I of this report, using a linear elastic static equivalent method of stress analysis. Stress analysis of the loop handling machine is presented in Volume I of this report. Chapter VII in Volume I of this report is a contribution by EG & G Co., who performed the work under ANL supervision. Stress analysis of SLSF-LHS cradle structure is performed in Volume II and Volume III of this report; Volume II consists of computer modeling of LHM-Cradle-transporter system and Volume III consists of stress computations of Cradle and critical attachments per AISC Code guidelines. HFEF is credited with in-depth review of initial phase of work in Volume III of this report. A summary of results with conclusions and recommendations is presented in Chapter XV in volume III of this report. Volume IV of this report contains some relevant backup appendices for the report.

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IX Transport Cradle System Structural Model

IX.1 General Model Description

The SLSF loop handling system (shown on the Frontispiece) consists of a Loop Handling Machine (LHM) resting in saddles on a Cradle that is pivotally attached to a road vehicle, or Trailer, that transports the system from place to place. For each of the three elements, the model consists of an assemblage of rectangular three-dimensional beam elements; the MRI/STARDYNE (version 3, Feb0178 level) finite element program was used in making the analysis.

The pivotal connection between the cradle and the trailer is provided by two trunnions attached to the trailer and carrying the cradle between them on circular pins. Rotation of the cradle is controlled by two hydraulic cylinders fastened between the trailer and the cradle. As shown on the Frontispiece the cradle-LHM must be in a vertical position when the LHM is being removed from the cradle. At the lower end of the cradle, a bearing and guide arrangement is provided to prevent racking and binding of the cradle while being rotated.

The transporter trailer is a heavy duty over-the-road trailer used to transport the cradle/LHM assembly. Wide-flange and channel shaped beams were used in the trailer's construction. The trailer is supported on its rear tires and the front truck/jeep dolly tires during travel. In the parked position, the trailer is supported on its rear tires and the front power landing legs.

IX.1.1 Global Axes:

The global axes for the structure are as follows:

X1 = Parallel to the longitudinal centerline of the trailer.

The X1-X3 plane contains the LHM centerline.

X2 = Coincident with the center line of trunion pin.

X3 = Perpendicular to the X1-X2 plane at the centerline of trunion.

IX.1.2 Material Properties:

Load Cases 1-10

Transporter Trailer: $E = 29000000.0$ psi

$\nu = 0.3$

Cradle Assembly with LHM: $E = 28000000.0$ psi

$\nu = 0.3$

One Material Used : $E = 29000000.0$ psi

$\nu = 0.3$

Density = 0.28356 lb/in³

Load Cases 11-16

Material 1; Steel: Transporter Trailer and Cradle Assembly with LHM

$E = 29000000.0$ psi, $\nu = 0.3$,

Density = 0.28356 lb/in³

Material 2; LHM cask: Density 1

$E = 29000000.0$ psi, $\nu = 0.3$,

Density = 2.057 lb/in³

Material 3; LHM cask: Density 2

$E = 29000000.0$ psi, $\nu = 0.3$,

Density = 1.99 lb/in³

Material 4; LHM cask: Density 3

$E = 29000000.0$ psi, $\nu = 0.3$,

Density = 4.17 lb/in³

Material 5; Tension Only/Compression Only Members

$E = 29000000.0$ psi, $\nu = 0.3$, Density = 0.0

IX.2 Cradle Description Figure IX.2-1

The cradle is an assemblage of rectangular-shaped sections that support and elevate the loop handling machine (LHM). The cradle is connected to the transporter trailer at the trunnions, elevating cylinders, horizontal binding guide and the cradle pedestal support.

The at-rest position of the cradle is 10° inclined to the X1 axis (the X1 axis is parallel to the plane of the trailer floor system). During the use of the cradle-LHM assembly, the cradle is elevated to a vertical position, 90° to the X1 axis and then back to the 10° inclination. At a 46.5° inclination to the X1 axis, the elevating cylinders are vertical.

The component members of the cradle are discussed separately in more detail. The section property calculations and summaries for all the members used are located in Appendix C (included in Volume IV of this report).

IX.2.1 Crossbeam Number 1; Figure IX.2.1-1

Crossbeam number one is the first cross supporting member on the cradle. The centerline of the beam is located 233.0 inches from the centerline of the trunnion. The member is composed of a main rectangular section built up from plates, a semi-circular saddle to support the LHM cask and a "T-bar in slot" mechanism to prevent lift-off of the cask from the saddle.

The main rectangular portion was modeled by beam elements. At the point where the cross section of the beam changes, and where it connects to the longitudinal beam, the respective neutral axes are not aligned. An infinitely rigid beam is used to connect the misaligned neutral axes and, thus, model the beam section transition and end connection.

The cask rests upon a saddle mechanism that transmits load by bearing only to the crossbeam. The surface of the saddle is frictionless so that no tangential force may be developed. To model this connection, an axial compression-only member with an axial area equal to the bearing surface area is used to connect the LHM with the crossbeam.

To prevent the cask from separating from the saddle during the elevating of the cradle, a tension-only mechanism was provided. A "T" shaped bar was attached to the crossbeam and a "C" shaped slot was attached to the cask. The clearance of the bar in the slot is such that it can

Figure IV.2-1. Cradle Assembly with LHM

● ▲ NODES HAVE SAME COORDINATES
 5 & 6 ARE COMPRESSION ONLY MEMBERS
 549 IS A TENSION ONLY MEMBER

Figure 2.2-1. Crossbeam No. 1

transmit tension only. This connection is modeled by a tension-only member with an area equal to the cross section of the "T" bar connecting the LHM's centerline with the crossbeams.

The exact calculation and summation of the section properties of the members used in this beam are located in Appendix C (included in Volume IV of this report).

IX.2.2 Crossbeam Number 2; Figure IX.2.2-1 and IX.2.2-2

Crossbeam number two is located 183.0 inches from the centerline of the trunnion. The crossbeam consists of a rectangular cross section composed of plates, a semicircular saddle to support the cask, a hold-down strap to prevent lift-off of the case, (see original) and two supporting pedestals that rest upon the transporter trailer during travel.

The crossbeam itself is modeled as beam elements. The section is constant for its length; however, the neutral axis of the crossbeam and the longitudinal beams are not coincident at the member's connection. An infinitely rigid beam is used to model this neutral axis offset and connects the two neutral axes together.

The cask rests upon a saddle mechanism that transmits load by bearing only to the crossbeam. The surface of the saddle is frictionless so that no tangential force may be developed. To model this connection, an axial compression-only member with an axial area equal to the bearing surface area is used to connect the LHM with the crossbeam.

A strap which passes over the cask and attaches to the crossbeam on both sides of the cask is used to prevent lift-off of the cask during elevation. A tension-only member with cross sectional area equal to the area of the strap connects the LHM centerline and the centerline of the crossbeam. The straps pass over and are tangent to the cask and parallel to one another at the centerline of the LHM. At this point they are also perpendicular to the centerline of the crossbeam. To keep the members normal to the crossbeam without using additional nodes and members, the strap's end was offset from the centerline of LHM node. (This is a program technique which is the same as using a rigid beam, passing through the centerline of LHM, parallel to the crossbeams and connecting the strap ends to the LHM).

In the travel case when a transverse (X2) inertia is applied, it is necessary to convert one of the tension straps to a compression-only member as shown in Figure IX.2.2-2. The configuration of members in Figure IX.2-3

- ▲ NODES HAVE SAME COORDINATES ✱ MEMBER'S END IS OFFSET FROM NODE
- 22 & □ 23 ARE TENSION ONLY MEMBERS □ 24 IS A COMPRESSION ONLY MEMBER

Figure IX2.2-1 Crossbeam No. 2, Load Cases 1-9 and 11-16

● ▲ NODES HAVE SAME COORDINATES
 * MEMBER'S END IS OFFSET FROM NODE
 [22] & [23] ARE TENSION ONLY MEMBERS
 [24] IS A COMPRESSION ONLY MEMBER

Figure IX.2.2-2. Crossbeam No. 2, Load Case 10

with beams 22, 23 and 24 being axial-only members does not provide a path for a X2 force at the LHM centerline (node 111) to reach the crossbeam. By converting beam 23 to a compression-only member with an area equal to a portion of the bearing surface of the saddle, a model of the bearing action of the LHM on the saddle as it attempts to roll over the saddle is developed. In this way an X2 force can be transmitted to the crossbeam in the appropriate manner.

In all the travel cases, the cradle rests upon the trailer. There are no positive connections such as bolts or welds between the cradle and trailer at this location, therefore a bearing-only point is assumed. This support pedestal is modeled as a compression-only member connection below the longitudinal beam at crossbeam number two. A similar pedestal is attached at the corresponding location on the trailer.

The actual section property calculations and summaries are contained in Appendix C (included in Volume IV of this report).

IX.2.3 Crossbeam Number 3; Figure IX.2.3-1 and 2.3-2

Crossbeam number three is located 134.0 inches from the centerline of the trunnion. The crossbeam consists of a rectangular cross section composed of plates and a semi-circular saddle to support the cask.

The crossbeam itself is modeled as beam elements that are constant in section properties for the length of the crossbeam. The neutral axes of the crossbeam and the longitudinal beam-cylinder attachment are not coincident however. Rigid members were used to connect the offset axes at the member intersections.

The cask rests upon a saddle mechanism which transmits load by bearing-only to the crossbeam. The surface of the saddle is frictionless so that no tangential force may be developed.. There is no hold-down mechanism at this crossbeam. To model this bearing connection, three compression-only members are used.

For the vertical load cases 1 through 6 inclusive and 11 through 16 inclusive, only beam 43, which is normal to the crossbeam, is participating, see Figure IX.2.3-1. Beams 41, 42, 550 and 551 are non-participating members. By making beam 43 an axial compression-only member with a cross sectional area equal to a central sector of the bearing area of the saddle, the bearing only connection is modeled. This also allows one to transmit the LHM cask weight directly to the crossbeam, causing crossbeam bending,

43 IS A COMPRESSION ONLY MEMBER

●▲ NODES HAVE THE SAME COORDINATES

41 **42** **550** and **551** ARE NONPARTICIPATING MEMBERS

Figure IX.2.3-1. Crossbeam No. 3, Load Cases 1-6 and 11-16

41 42 43 550 and 551 ARE COMPRESSION ONLY MEMBERS

●▲ NODES HAVE THE SAME COORDINATES

Figure IX.2.3-2. Crossbeam No. 3, Load Case 7-10

rather than directly into the longitudinal beams-cylinder attachment arrangement.

For the travel cases 7 through 10 inclusive one attempts to model the participation of the side sector bearing areas of the saddle in the event the cask attempts to roll over the saddle. Beams 41, 42, 550 and 551, see Figure IX.2.3-2, are thus, added as axial compression-only members with axial areas equal to the side sector bearing area of the saddle.

Thus, by appropriately choosing the compression-only members to connect the LHM's and crossbeam's centerlines, the saddle bearing surface is modeled.

The actual section property calculations and summaries are contained in Appendix C (included in Volume IV of this report).1.

IX.2.4 Counterweight, Figure IX.2.4-1

The counterweight is located 131.4 inches from the centerline of the trunnion and is used to keep the LHM vertical when lifted and moved by crane.

Two rectangular cross section beams, one on either side of the cask, model the attachment of the counterweight beams to the cask. These beams are parallel to the global X2 axis.

The counterweight beams connect to the attachment beams and are perpendicular to both the attachment beam and the centerline of the LHM cask. The counterweight beams are also rectangular, built up from a channel and a plate. The counterweights are attached at the very ends (nodes 134 and 135) of these beams.

The actual section property calculations and summaries are located in Appendix C (included in Volume IV of this report).

IX.2.5 Crossbeam Number 4; Figures IX.2.5-1 and 2.5-2

Crossbeam number four is located 45.25 inches from the centerline of the trunnion. The crossbeam consists of a rectangular cross section composed of plates, a semi-circular saddle to support the cask, and a hold-down strap to prevent lift-off of the cask.

The crossbeam itself is constant in cross section between the two longitudinal beams and is modeled as beam elements. The neutral axis of the crossbeam and the longitudinal beams are not coincident; therefore rigid beams are used to connect the respective neutral axes.

The cask is supported by a saddle mechanism which transmits load by bearing-only to the crossbeam. The surface of the saddle is frictionless so that tangential force may be developed. To model this connection, an axial

Figure IX.2.4-1. Counterweight

● ▲ NODES HAVE SAME COORDINATES
 66 & 67 ARE TENSION ONLY MEMBERS
 68 IS A COMPRESSION ONLY MEMBER

Figure IX.2.5-1. Crossbeam No. 4, Load Case 1-9 and 11-16

Figure IX.2.5-2. Crossbeam No. 4, Load Case 10

Figure IX.2.6-1. Crossbeam No. 5

Figure IX.2.7-1. Base Plate

area equal to the bearing surface area is used to connect the LHM with the crossbeam.

A strap which passes over the cask and attaches to the crossbeam on both sides of the cask is used to prevent lift-off of the cask during elevation. A tension-only member with cross sectional area equal to the area of the strap connects the LHM centerline and the crossbeam's. The straps pass over the cask and are tangent to the cask and parallel to one another at the centerline of the LHM. At this point they are also perpendicular to the centerline of the crossbeam. To keep the members normal to the crossbeam without using additional nodes and members, the strap's end was offset from the centerline of LHM node, as in crossbeam number 2.

In the travel case when a tranverse (X2) inertia is applied, it is necessary to convert one of the tension straps to a compression-only member as shown in Figure IX.2.5-2. The configuration of members in Figure IX.2.5-1 with beams 66, 67 and 68 being axial-only members, does not provide a path for a X2 force at the LHM centerline (node 147) to reach the crossbeam. By converting beam 67 to a compression-only member with an area equal to a portion of the bearing surface of the saddle, a model of the bearing action of the LHM on the saddle as it attempts to roll over the saddle is developed. In this way an X2 force can be transmitted to the crossbeam in the appropriate manner.

The actual section property calculations and summaries are contained in Appendix C (included in Volume IV of this report).

IX.2.6 Crossbeam Number 5; Figure IX.2.6-1

Crossbeam number five is located directly below the trunnion pin connection. The crossbeam consists of rectangular sections built up from plates and is modeled by beam elements. There is a point of section transition which results in non-alignment of neutral axes. The connection of the crossbeam with the longitudinal beams also results in a lack of neutral axis coincidence. As before, rigid beams were used to connect the offset neutral axis in all cases.

The actual section property calculations and summaries are contained in Appendix C (included in Volume IV of this report).

XI.2.7 Cradle Pivot Support, Base Plate; Figure IX.2.7-1 and 2.7-2

The cradle pivot support is located 72.14 inches behind (-X1 direction) the trunnion centerline. This beam arrangement models the connection of the

cradle longitudinal beams to the base plate which in turn is positively connected to the LHM cask (by slots and bolts).

Beams 100 and 101 model the base plate. Their neutral axes are offset from the neutral axes of the longitudinal beams. Consequently, rigid beams are used to connect the respective neutral axes.

The LHM is rigidly connected to the base plate at node 178.

The actual section property calculations and summaries are located in Appendix C (included in Volume IV of this report).

IX.2.8 Longitudinal Beams; Figure IX.2-1

The longitudinal beams are the primary load carrying beams of the cradle and are located on the right and left side of the LHM centerline. The longitudinal beams extend approximately the full length of the LHM cask, from cross-beam number one to the base plate. The longitudinal beams are connected to the trunnion pins by means of the cradle pivot support beams at crossbeam number five.

The longitudinal beam is rectangular in shape, built up from plates, and is modeled by beam elements. The neutral axes of the beam elements are co-linear until the cradle pivot support area when a neutral axis shift occurs. As in the previous cases, rigid beams are used to connect the appropriate neutral axes.

In the cradle pivot support area at crossbeam number five, the longitudinal beams are connected to the trunnion pin. A tapered section rises above the longitudinal beam to accept the trunnion pin. The arrangement has been approximately modeled using a rectangular beam section of constant cross section and a rigid beam.

The actual section property calculations and summaries are located in Appendix C (included in Volume IV of this report).

IX.2.9 Trunnion Pin

The trunnion pins connect the cradle to the right and left trunnions. They are circular solid sections set in bearings in the trunnion. The member cannot transmit torsion, therefore the torsion end reaction was released. All other member end reactions were maintained.

The actual section property calculations and summaries are located in Appendix C (included in Volume IV of this report).

Figure IX.2.7-2. Cradle Pivot Support

Figure IX.2.10-1. Centerline of LHM, Side View

IX.2.10 LHM Cask; Figure IX.2.10-1

The LHM cask consists of an inner and outer steel shell sandwiching a uranium shield between them. The LHM with its component weight is the main load-applying member in the structure. The cask rests on saddles at the crossbeams and is attached to the base plate. The cask is continuous for its entire length, but has been broken at specific nodes into several members to facilitate applying concentrated loads in the global direction.

The actual section property calculations and summaries are located in Appendix C (included in Volume IV of this report).

IX.3 CRADLE-TRAILER CONNECTION

IX.3.1 Cylinder Attachment: Right and Left Side; Figures IX.3.1-1 and 3.1-2

The cylinder attachments are located behind (in a -X1 direction) crossbeam number three and serve to attach the elevating cylinder to the cradle.

The attachment beam is rectangular in cross section, built-up from plates. It is connected to crossbeam number three and the longitudinal beams; however, the respective neutral axes are not aligned. Rigid beams are used to connect these misaligned neutral axes as before.

The elevating cylinders may also be considered as part of the cylinder attachment. The elevating cylinders connect the cylinder attachment, and, thus, the cradle with the trailer. The cylinders are double acting hydraulic mechanisms which serve to raise and lower the cradle assembly. Since they are double acting, i.e. hydraulic pressure is applied to lower the cradle rather than bleeding the present pressure, the member can withstand both tension and compression.

The neutral axis of the cylinder is not aligned with the neutral axes of the trailer or cradle attachment. Consequently, rigid beams were used to connect the respective neutral axes. Member 47 connects node 137 of the cylinder with node 139 of the cradle. Member 46 connects node 136 of the cylinder to node 138 of the cradle.

The actual connecting mechanism of the cylinder to the attachments is by means of a pin which allows rotation about a local axis(x3) parallel to the global X2 axis. To accommodate this, local member end releases were included. Specifically, the local axis X3 moments were released at both ends along with the corresponding X2 shears (no intermediate loads were

Figure IX.3.1-1. Cylinder Attachment, Right Hand Side

Figure IX.3.1-2. Cylinder Attachment, Left Hand Side

applied to the member). All remaining member end resultants were included in the analysis.

The actual section property calculations and summaries are located in Appendix C (included in Volume IV of this report).

IX.3.2 Horizontal Bearing Guide; Figure IX.2-1 and IX.3.2-1 through IX.3.2-3

The horizontal bearing guides are located 52.528 inches behind (-X1 direction) the centerline of the trunnion and are connected to the bottom of the longitudinal beams. The guides are connected to a matching guide on the trailer. Their purpose is to provide a horizontal connection between the cradle and the trailer to prevent racking and binding of the cradle during elevation and travel.

The bearing guides are modeled as axial-only members which remain parallel to the X2 axis in all cradle positions. The following member end reactions were released to obtain an axial-only members start and end moments; start and end shears; and torsion.

As the cradle is elevated to its various positions, the bearing guide location changes with respect to the trailer. Thus, the bearing guide member (finite element connectivity) changes between load cases. Figures IX.3.2-1, 3.2-2, and 3.2-3 demonstrate the guide location for the various inclinations. Figure IX.3.2-1 corresponds to load cases 1, 2, 11, 12, 7, 8, 9 and 10. Figures IX.3.2-2 corresponds to load cases 3, 4, 13 and 14 and Figures IX.3.2-3 to load cases 5, 6, 15 and 16. In all cases a member offset technique was used to keep the member parallel to the X2 axis.

The actual section property calculations and summaries are located in Appendix C (included in Volume IV of this report).

IX.3.3 Right and Left Trunnion; Figures IX.3.3-1 and IX.3.3-2

The right and left trunnions are located on either side of the LHM cask. They support the trunnion pins and are connected to the top flange of the trailer beams.

The trunnions are assemblages of rectangular sections and plates that have been modeled exclusively with beam elements. At locations where the member neutral axes do not meet, a rigid beam is used to connect the respective axes together.

The following nodes connect to the trailer: right hand trunnion-nodes 253, 255, 257, 259, 261, 263, 265; left hand trunnion-nodes 254, 256, 258, 260, 262, 264, 266.

Figure IX.3.2-1.

Horizontal Bearing Guide,
Connectivity at 10° Inclination

Figure IX.3.2-3. Horizontal Bearing Guide, Connectivity at 46.5° Inclination

Figure IX.3.2-3. Horizontal Bearing Guide, Connectivity at 90° Inclination

Figure IX.3.3-1. Left Hand Trunnion

The trunnion pin is seated in a circular ring bearing which is attached to the trunnion at two horizontal beams, 106, 112, 126, and 107, 113, 123, 127. The action of the trunnion pin is, therefore, to transfer its load by bearing to the horizontal beams of the trunnion. Because of the relatively small distance between the trunnion pin and the horizontal beams, and the substantially greater stiffness of a bearing situation versus a bending or axial load case, the arrangement was treated essentially as an offset situation. Consequently, rigid beams were used to connect the trunnion pin to the adjacent horizontal beams.

To provide stability for the trunnions in the X2 direction, two inclined brace members were provided for each (beams 135, 145, 141 and 147 for the right trunnion and 134, 144, 140 and 146 for the left). The braces were modeled as beam elements. The neutral axis of the braces do not match those of the appropriate beams on the trunnion or trailer. Beam offsets were used to connect the braces to the trunnions while rigid beams were used to connect the braces to the trailer. For the right hand side, beam 495 connects node 207 of the brace with node 343 of the trailer and beam 496 connects node 215 to 351. For the left hand side, beam 497 connects node 208 of the brace with node 344 of the trailer and beam 498 connects node 216 and 352.

The braces are connected to the trunnion and the trailer by means of pins. This allows rotation of the brace member ends about a local axis (x3) parallel to the global X1 axis. To accomplish this, the start and end moments about the local x3 axis were released for each brace.

The actual section property calculations and summaries are located in Appendix C (included in Volume IV of this report).

IX.4 TRANSPORTER TRAILER

IX.4.1 General Description; Figures IX.4.1-1 through IX.4.1-20

The transporter trailer is used to transport the cradle assembly with the loop handling machine. The transporter trailer is very similar to any flatbed tractor-trailer rig operating on the open highway.

The trailer is made up of common wide-flange and channel sections to form a rectangular floor system. The main carrying beams are W24x100 and S18x54.7. The right and left trunnions with braces are mounted on the

trailer floor system, as are the hydraulic elevating cylinders. There is a large opening in the center of the trailer so that, during elevation, the base plate assembly can swing down and through.

The trailer is supported on tires and hydraulically operated legs in the parked position, and on tires and a truck cab/jeep dolly in the travel position. The legs and tires will be discussed separately. All members of the trailer are assumed rigidly connected to one another.

At the rear truck tires there is also an air suspension system. Under static loading conditions, the air can be exhausted from the suspension system allowing the rear frame to lower on to the axles. For the load cases considered in this analysis, the suspension system will be considered as being non-participating.

In forming the floor system, it is common that the various beam neutral axes are not coincident. In these cases, beam offsets and rigid beams are used to connect the neutral axes.

In the area of the centerline of the trunnion there are rails on the inside of the trailer beams to accept the cradle horizontal bearing guide. The bearing guide is used to prevent binding and racking of the cradle during inclination. As the cradle is raised, the guides come in contact with various nodes on the trailer. See the discussion under the cradle section and Figures IX.3.2-1, IX.3.2-2 and IX.3.2-3.

The actual section property calculations and summaries are located in Appendix C (included in Volume IV of this report).

IX.4.2 Trailer Cradle Pedestal Support; Figures IX.4.2-1 and IX.4.2-2

During the travel loading cases (7, 8, 9 and 10) the cradle, at crossbeam number 2, rests on the trailer. Figures IX.4.2-1 and IX.4.2-2 demonstrate the beam arrangements required at the trailer's front to accommodate these support pedestals. Since the cradle merely bears on the trailer and is not positively attached to it, the pedestals were made compression-only members. See the discussion under cradle crossbeam number 2 for more details.

IX.4.3 Trailer Legs; Figure IX.4.1-1 (mentioned in IX.4.1)

The trailer legs are cylindrical in shape and hydraulically operated. They are positioned in a three sided fashion around the centerline of the trunnion and LHM, see Figure IX.4.1-1.

Figure IX.4.4-6 Isometric View of Supports

Figure IX.41-2 JC Nodes Location

Figure IX.4.1-4 Plan View of Trailer (Part B)

Figure IX.4.1-6. Plan View of Trailer (Part D)

MATCH LINE PART A

Figure IX.4.1-7. Section B-B of Part A

Figure IX.4.1-8. Section B-B of Part B

Figure IX.4.1-9. Section B-B of Part C

Figure IX.4.1-10. Section C-C of Part A

Figure IX.4.1-11. Section C-C of Part B

Figure IX.4.1-12. Section C-C of Part C

Figure IX.4.1-13. Trailer Sections

Figure IX.4.1-14. Trailer Sections

Figure IX.4.1-15. Trailer Sections

Figure IX.4.1-16. Section K-K

TRANSPORTER TRAILER **SECTION LL** **SECTION MM** **SECTION NN**

- = NODE NO.
- * INDICATES MEMBER'S
= END IS OFFSET
FROM NODE
- = NODE NO.
- = BEAM NO.
- △ = SECTION NO.

Figure IX.4.1-17. Trailer Sections

Figure IX.4.1-18. Elevation of Front End of Trailer

LEFT HAND TRUNNION
CONNECTION ENLARGEMENT

REMAINING BEAMS TYPE **△ 50**
 BEAMS=186,188,190,192,194,196=SECTION TYPE **△ 32**
 RIGID
 BEAMS=198,200,202,204,206,208,210=SECTION TYPE **△ 3**

Figure IX.1.1-19, Left Hand Trunnion

RIGHT HAND TRUNNION
CONNECTION ENLARGEMENT

Figure IX.4.1-20 Right Hand Trunnion

Figure IX.4.2-1. Cradle Pedestal Support Beams;
Connectivity on Trailer

Figure IX.4.2-2. Elevation of Cradle Pedestal Support on Trailer

The centerline of the legs are offset from the neutral axes of the trailer beams, and rigid beams are used to connect the misaligned axes.

Since the legs are hydraulically operated, the axial area of the leg corresponds to the leg's central hydraulic oil line. With due regard for the compressibility of oil, the axial area of the legs were computed. The detailed calculations of this effective area, along with the other section property calculations and summaries, are located in Appendix C (included in Volume IV of this report).

In the travel loading case, (7, 8, 9 and 10) the trailer legs are raised, and thus, become non-participating members.

Since the legs rest upon the ground in the parked position, vertical (X3) motion of the bottom of the legs is restrained. Section IV.6 summarizes these and the other boundary conditions.

Under load, the bottom of the front legs tend to displace toward the front of the trailer (+X1 direction). In the parked position, steps have been taken to inhibit this motion. Wooden blocks and other pieces of lumber are placed against the front legs. This shoring resists the X1 displacement and a corresponding rotation about the X2 axis. To model this, ground to node springs are inserted to resist X1 displacement and X2 rotation at the tops of the trailer legs (nodes 413, 414, 417, and 418). An arbitrary spring constant of 9,000,000 lb/in was chosen for both the translational and rotational spring. Section IX.6 summarizes these boundary conditions.

The shoring is not a permanent fixture of the trailer. Therefore, load cases with and without shoring had to be investigated. Load Cases 1 through 6 inclusive had the shoring, and thus, no springs at the front trailer legs. Load Cases 11 through 16 inclusive had the shoring, and thus, ground to node springs at the front trailer legs.

IX.4.3.1 Member Releases: Right and Left Hand Side of Trailer.

(a) Trailer Support Legs

To orient the local member axes JC = 0 was used. The Sturdyne Program Computes JC as follows.

$$X1_{JC} = (X1_{JB} + X1_{JA})/2.$$

$$X2_{JC} = (X2_{JB} + X2_{JA})/2.0 + 5.0$$

$$X3_{JC} = (X3_{JB} + X3_{JA})/2.0$$

For the right and left hand legs this has the following meaning.

Fig. IX.4.3.1-1 Coordinate System for Trailer Legs

$$X1_{JC} = X1_{JB} = X1_{JA}$$

$$X2_{JC} = X2_{JB} + 5.0 = S3_{JB} + 5.0$$

$$X3_{JC} = (X3_{JB} + X3_{JA})/2.0$$

The "JB" Nodes are supported at ground level. We desire only an axial reaction at the nodes; therefore, the global X3 direction will be restrained at these nodes.

Member (Beam)	JA	JB
306	329	331
330	363	365
341	330	332
363	364	366
388	385	387
389	386	388
403	399	401
404	400	402

Global X3 direction restrained

at Node JA the M_{X3} moment is released

$$\therefore MA3 = 0.0$$

While the other moments and shears are maintained.

PIN CODE = [000100]

Trailer Support Legs: Front of Trailer

Member (Beam)	JA	JB
421	413	415
422	417	419
423	418	420
424	414	416

At The nodes JB: 415, 419, 420, 416 the global X3 direction will be restrained to provide an axial reaction while the remaining degrees of freedom are unrestrained.

At The nodes JA: 413, 417, 418, 414; the moment in the X2 direction is released. Thus MA2 = 0 and the PIN CODE = [001000].

(b) Support Restraints @ Trailer Legs

Fig. IX.4.3.1-2. Trailer Leg Boundary Conditions

Restraint Code

100000

Nodes 332, 331, 366, 365, 388, 387, 402, 401, 415, 416, 419, 420.

(c) Bulk Modulus for Trailer Legs

Let B = Bulk Modulus

Let Ref.1 = Element of Physics, 4th ed; Shortley & Williams

Ref.2 = Physics, Part I and II, Halliday & Resnicic

Fig. IX.4.3.1-3. Trailer and Legs with Assumed Springs for Tires.

From Ref. 1 p.232

$$B = -V \frac{dP}{dV} \quad \text{of } -V \frac{\Delta P}{\Delta V} \quad (\text{Force/Length}^2)$$

Fig. IX.4.3.1-4. Trailer Leg Model for Bulk Modulus Calculation

let $K_e = \frac{F}{\Delta h}$ = effective spring constant

$$B = \frac{-hA (FA)}{\Delta h A} = hA \left(\frac{F}{\Delta h} \right)$$

$$\frac{-B}{hA} = K_e = \frac{F}{\Delta h}$$

Estimate: h = height of column of oil = height from center line of main trailer beam to ground $h = 36"$

A = cross sectional area of column estimate 3/4" diameter tube

$$A = \left(\frac{.75}{2} \right)^2 \pi = 0.4418 \text{ in}^2$$

From standard handbook for mechanical engineers 7th ed by Baumeister & Marks

p 3 - 52 Table 3

$$B = 2.25 \times 10^5 \text{ psi}$$

p 6 - 9

$$B = 55 \times 10^6 \text{ to } 80 \times 10^6 \text{ ATM @ } 70^\circ\text{F} \\ = 3.7 \times 10^6 \text{ to } 5.4 \times 10^6 \text{ psi}$$

Conservatively use $B = 2.25 \times 10^5 \text{ psi}$

$$K_e = \frac{2.25 \times 10^5}{(36)(.4418)} = 14146.67 \text{ lb/in.}$$

Use $K_e = 15000.0 \text{ lb/in.}$

Since the axial stiffness of a beam is determined by AE/l an effective area is as follows.

$$A = \frac{Kex}{E} = \frac{15000 (36)}{29000000.0} = 0.1862 \text{ in}^2$$

$$A = 0.1862 \text{ in}^2$$

IX.4.3.2 Effective Spring Constant for Air Suspension System

Neway AR-1818-US-TCA 5" Travel air suspension

Estimate of dimensions

ESTIMATE OF DIMENSIONS

Fig. IX.4.3.2.1. Neoprene Nylon Container for Trailer Air Suspension System. As in the case of the trailer legs, the bulk modulus of air will be used to determine the effective spring constant.

$$K_e = \frac{f}{\Delta h} = \frac{-B}{hA}$$

for air $B = \gamma P$

where P = pressure

$$\gamma = \frac{C_p}{C_v}$$

Where C_p = heat capacity per kilomole at constant pressure.

C_v = heat capacity per kilomole at constant volume.

Since air is mostly O_2 & N_2 it is essentially a diatomic gas. Thus $C_v = 5/2R$ & $C_p = 7/2R$

where $R = 1.987 \text{ kcal/kmole} \cdot \text{K}$

$$\gamma = \frac{7/2}{5/2} = 1.4$$

Thus $B = 1.4P$

Estimate pressure in spring @ 400 psi

$$B = 1.4 (300) = 420 \text{ psi}$$

$$Z = 4^2 \pi = 50.26 \text{ in}^2$$

$$h = 10"$$

$$K_e = \frac{420}{10 (50.26)} = 0.84 \text{ lbs/in}$$

Neglect effect of air spring in static analysis.

IX.4.4 Truck Tires; Figures IX.4.4-1

In the parked position, the trailer is supported in the rear by truck tires. In the travel position, both the front and rear are supported on truck tires. Appendix D (included in Volume IV of this report) contains the development equations and empirical data which will be used for the spring constants at the tires. The rear tires are 12 x 24-20 ply tires on 8.5 x 24 rims. The front tire set includes the 12 x 24 plus several 10 x 20-12 ply tires on 7.5 x 20 rims. All tires are assumed to be inflated to 90 pounds per square inch pressure.

From Appendix D (included in Volume IV of this report) the following values for the spring constants are obtained:

For one truck tire 12 x 24

$$p_0 = 90 \text{ psi}; w = 12.0 \text{ inches}; d = 48.0 \text{ inches}; h = 12.0 \text{ inches}$$

$$k_x = 9600 \text{ lbs/in (empirical approximation based on automobile tire information, see Appendix D included in Volume IV of this report)}$$

$$k_y = 1950 \text{ lbs/in (empirically determined from graph Figures 7 and 8, Appendix D)}$$

check by Equ. 5, Appendix E

$$k_y = \frac{S}{\delta_s} = \sqrt{2} p_0 w \sqrt{d/h} \quad n = 0.75$$

$$= \sqrt{2} (90) (0.75) (12) (48/12)^{1/2}$$

$$k_y = 2291.0 \text{ lbs/in - checks}$$

$$k_z = 5360 \text{ lbs/in (empirically determined from graph Figure 4, Appendix E) check by Equ. 1, Appendix D}$$

$$k_z = \pi p_0 \sqrt{dw}$$

$$= \pi (90) \sqrt{(48)(12)}$$

$$k_z = 6785.8 \text{ lbs/in - checks}$$

$$\theta_z = 123768.0 \text{ ln-in/rad}$$

Equ. 7 Appendix D

$$\phi_z = 0.3365 \text{ Pd } \sqrt{w/h}$$

$$\theta_z = 0.3375(7640)(48) \sqrt{12/12}$$

here P = maximum tire load = 7640 lbs

$$\text{and } 0.3375 = \frac{\sqrt{2}}{\eta \pi} \text{ with } \eta = 0.75$$

θ_x and θ_y : There is no information on these rotational springs in the literature for the static case. If one assumes that the trailer wheels are blocked to the brakes set, θ_y = fixed. For θ_x , however, there is not a rational value to choose. Therefore, θ_x is assumed to be fixed.

For one jeep dolly tire 10 x 20

$$p_0 = 90 \text{ psi; } w = 10.0 \text{ inches; } d = 40.0 \text{ inches; } h = 10.0 \text{ inches}$$

$$k_x = 9600 \text{ lb/in} \quad \text{Assume the same as 12 x 24 tire since no additional information is available.}$$

$$\begin{aligned} k_y &= \sqrt{2} p_0 \eta w \sqrt{d/h} \\ &= \sqrt{2} (90) (0.75) (10) (\sqrt{40/10}) \\ &= 1908.9 \text{ lb/in} \quad \text{use 1800 lb/in} \\ &\quad \text{(in line with the empirical equation ratio of the 12 x 24} \\ &\quad \text{tire calculation)} \end{aligned}$$

$$\begin{aligned} k_z &= \pi p_0 \sqrt{dw} \\ &= \pi(90) \sqrt{(40)(10)} \\ &= 5654.9 \text{ lb/in use 5000 lb/in} \end{aligned}$$

$$\begin{aligned} \theta_z &= 0.3375 P d \sqrt{w/h} \\ &= 0.3375 (7640) (40) \sqrt{10/10} \\ &= 103140.0 \text{ lb-in/rad} \end{aligned}$$

$$\theta_y = \theta_x = \text{fixed as in the 12 x 24 tire.}$$

At each rear tire support location there are two tires. At the jeep dolly there are 8-10 x 20 and 8-12 x 24 tires. The springs are connected in a parallel arrangement therefore the quantities at each location are additive.

Rear tire support -2 tires

$$k_x = 2(9600) = 19200 \text{ lb/in}$$

$$k_y = 2(1950) = 3900 \text{ lb/in}$$

$$k_z = 2(5360) = 10720 \text{ lb/in}$$

$$\theta_z = 2(123768.0) = 247536 \text{ lb-in/rad}$$

$$\theta_x = \theta_y = \text{FIXED}$$

Front jeep cab location

$$k_x = 16(9600) = 153600 \text{ lb/in}$$

$$k_y = 8(1800 + 1950) = 30000 \text{ lb/in}$$

$$k_z = 8(5000 + 5360) = 82880 \text{ lb/in}$$

$$\theta_z = 8(103140 + 123768) = 1815264 \text{ lb-in/rad}$$

$$\theta_x = \theta_y = \text{FIXED}$$

SUPPORT RESTRAINT AT TRUCK TIRES

Figure IX.4.4-1. Support Restraint at Truck Tires

Table IX.4.4-1 Summary at Tire Spring Constants

	12 x 24	10 x 20
k_x	9600	9600 lb/in
k_y	1950	1800 lb/in
k_z	5360	5000 lb/in
θ_z	123768	103140 lb-in/rad
θ_x	FIXED	FIXED
θ_y	FIXED	FIXED

IX.5 GEOMETRY

IX.5.1 Cradle Local Input Nodal Coordinates

Table IX.5.1-1 is a list of the input nodal coordinates for the cradle and LHM. The input coordinate system is parallel to the global coordinate system, has its origin at the global origin and causes the cradle to be, initially, at 0° inclination to the trailer. The finite element program used has the ability to define individual input coordinate systems as desired. By orienting this cradle, this coordinate system at 10°, 46.5° and 90° to the global axes, the cradle coordinate systems at inclinations of 10°, 46.5° and 90° are obtained easily from this one Table.

IX.5.2 Transporter Trailer Global Nodal Coordinates

Table IX.5.2-1 is a list of the global nodal coordinates for the transporter trailer. An input nodal coordinate system was used for the trailer as in the cradle. The origin of this individual system is -321 inch in the X1 direction, +72.0 inch in the X2 direction and -54.0 inch in the X3 direction. This individual system is parallel to the global system.

The individual system was chosen solely to use some prior work, and serves no other useful purpose. Consequently, it was decided to tabulate the global coordinates since they will be more useful.

IX.5.3 Load Case Geometry Changes

Load Case Number 1 is the base case from which all other cases are created. Table IX.5.3-1 (a), (b) and (c) is a summary of the geometry changes made to Load Case 1 to obtain the Load Cases 3, 5, 7, 8 and 9. Table IX 5.3-2 is a summary of the geometry changes required to obtain the failure counterpart (accidental cylinder failure) of Load Cases 1, 3, and 5. These are Load Cases 2, 4 and 6. Load Case 10 is obtained from the geometry file of Load Cases 7, 8 and 9 (see Table IX.5.3-3).

Load Cases 11 through 16 are counterparts to Load Cases 1 through 6. In these cases, ground to node springs are added to the top node of the front trailer legs to model the wood shoring used to inhibit +X1 displacement of the legs. Case 11 is the counterpart to Case 1, Case 12 to Case 2, etc.

Tables IX.5.3-4 (a), (b), (c), IX.5.3-5 and IX.5.3-6 are the changes to the working file. Unfortunately, the identifiers are not consecutive. If an exact duplicate of Load Case 1 (the reference case) was created, new, consecutive identifiers would be attached. Tables IX.5.3-4 (a), (b), (c);

IX.5.3-5 and IX.5.3-6 are recapitulations of Tables IX.5.3-1 (a), (b), (c); IX.5.3-2 and IX.5.3-3 with the new consecutive numbering incorporated.

Should one wish to use a zero density approach, rather than subtracting nodal weights to account for the fictitious weights of the tension-only/compression-only members and the LHM cask members, another set of identifiers would be created. Tables IX.5.3-7 (a), (b), (c); IX.5.3-8 and IX.5.3-9 reflect the new identifier numbering in the zero density situation.

The following is an index of the commands used in the Table:

*IDENT xxx	= A line identifier attached to each change in a particular load case.
D xxxx.n	= Delete the line(s) identified by this character string. Any line following this command will be inserted behind this location until the next command prefixed by an asterisk () is reached.
I xxxx.n	= After the line identified by this character string, insert all lines following this command until an asterisk () prefixed command is reached.
NEWSYS	= A STARDYNE command used to establish a new individual input coordinate system. This allows the cradle to be inclined, with respect to the global coordinate axes, as desired.
ASYSG	= A STARDYNE command used to establish an individual coordinate system for a particular node. This allows one to orient the global degrees of freedom at a node. It is used in the influence load cases to orient the axes tangent and normal to the tension-only/compression-only members.
RESTG	= A STARDYNE command establishing a restraint table. Restrained degrees of freedom at particular nodes are established in this Table.
Nodal Coordinates	= In the fixed format scheme NODE, X1, X2, X3

Member Connectivity = In the fixed format scheme

MEMBER START NODE END NODE

...Axis Orientation NODE mat'l Type

...Beam Property Type

(Comments) = Informal comments to explain changes

IX.5.4 Model Geometry Verification by Computer Plots

The geometrical configuration of the structural model was verified by using the plotting capabilities of the finite element program. Figures IX.5.4-1 through - 45 inclusive represent the geometry check.

For the beams in which offsets were used rather than rigid beams to account for misalignment of neutral axes, one must resort to additional checking. The plotting program does not recognize the offset information and uses only the nodal coordinate and beam (finite element connectivity) table. For example at crossbeam number 2, the tension-only hold-downs, which were connected to the LHM via offsets, plot as inclined members not the vertical members (which they, in fact, are). In those cases, the direction cosines of the members were checked to verify their orientation.

Table IX.5.1-1. Cradle Local Input Nodal Coordinates
(0° Inclination to the Transporter Trailer)

NODE	X	Y	Z	NODE	X	Y	Z
1	233.0	31.5	100.0	31	0.0	0.0	100.0
2	233.0	-31.5	100.0	32	0.0	-31.5	100.0
3	183.0	100.0	-43.0	33	-48.1	0.0	100.0
4	183.0	31.5	100.0	34	-72.14	31.5	100.0
5	183.0	16.84	100.0	35	-72.14	0.0	100.0
6	183.0	-16.84	100.0	36	-72.14	-31.5	100.0
7	183.0	-31.5	100.0	37	-6.33	40.88	100.0
8	183.0	-100.0	-43.0	38	-6.33	-40.88	100.0
9	131.4	37.75	100.0	84	271.6	0.0	-5.0
10	131.4	0.0	100.0	85	264.3	0.0	-5.0
11	131.4	-37.75	100.0	86	243.3	0.0	-5.0
12	134.0	21.5	100.0	87	185.8	0.0	-5.0
13	134.0	31.5	100.0	88	178.6	0.0	-5.0
14	134.0	0.0	100.0	89	167.9	0.0	-5.0
15	134.0	-31.5	100.0	90	160.0	0.0	-5.0
16	134.0	-21.5	100.0	91	119.4	0.0	-5.0
17	83.14	-21.5	100.0	92	101.8	0.0	-5.0
18	83.14	21.5	100.0	93	99.3	0.0	-5.0
19	45.25	31.5	100.0	94	84.5	0.0	-5.0
20	45.25	0.0	100.0	95	80.3	0.0	-5.0
21	45.25	-31.5	100.0	96	67.0	0.0	-5.0
22	70.0	40.88	0.0	97	55.3	0.0	-5.0
23	70.0	-40.88	0.0	98	13.9	0.0	-5.0
24	-70.0	40.88	0.0	99	9.3	0.0	-5.0
25	-70.0	-40.88	0.0	100	-5.0	0.0	-5.0
26	8.0	66.1	100.0	101	276.025	0.0	-5.0
27	8.0	-66.1	100.0	102	233.0	0.0	-5.0
28	-8.0	66.1	100.0	103	233.0	31.5	-27.0
29	-8.0	-66.1	100.0	104	233.0	-31.5	-27.0
30	0.0	31.5	100.0	105	233.0	28.3	-29.0

Table IX.5.1-1. (cont) Cradle Local Input Nodal Coordinates
(0° Inclination to the Transporter Trailer)

NODE	X	Y	Z	NODE	X	Y	Z
106	233.0	-28.3	-29.0	137	93.5	21.5	-50.4
107	233.0	16.1	-29.0	138	110.75	-21.5	-24.0
108	233.0	-16.1	-29.0	139	110.75	21.5	-24.0
109	233.0	10.5	-32.6	140	116.6	-21.5	-24.0
110	233.0	-10.5	-32.6	141	116.6	21.5	-24.0
111	183.0	0.0	-5.0	142	116.6	-21.5	-27.0
112	183.0	-31.5	-27.0	143	116.6	21.5	-27.0
113	183.0	31.5	-27.0	144	116.6	-31.5	-27.0
114	183.0	-31.5	-33.0	145	116.6	31.5	-27.0
115	183.0	31.5	-33.0	146	89.5	0.0	-5.0
116	183.0	-31.5	-43.0	147	45.25	0.0	-5.0
117	183.0	31.5	-43.0	148	45.25	-31.5	-27.0
118	183.0	-28.3	-31.0	149	45.25	31.5	-27.0
119	183.0	28.3	-31.0	150	45.25	-28.0	-27.0
120	183.0	-16.84	-31.0	151	45.25	28.0	-27.0
121	183.0	16.84	-31.0	152	45.25	-28.0	-32.2
122	183.0	0.0	-31.0	153	45.25	28.0	-32.2
123	134.0	0.0	-5.0	154	45.25	0.0	-32.2
124	134.0	31.5	-27.0	155	24.0	31.5	-27.0
125	134.0	-31.5	-27.0	156	24.0	-31.5	-21.5
126	134.0	21.5	-27.0	157	24.0	31.5	-21.5
127	134.0	-21.5	-27.0	158	24.0	-31.5	-27.0
128	134.0	16.3	-29.5	159	32.25	0.0	-5.0
129	134.0	-16.3	-29.5	160	-2.4	-31.5	-9.5
130	134.0	0.0	-29.5	161	-2.4	31.5	-9.5
131	131.4	0.0	-5.0	162	0.0	-31.5	0.0
132	131.4	-37.75	-5.0	163	0.0	31.5	0.0
133	131.4	37.75	-5.0	164	0.0	-31.5	-21.5
134	131.4	-37.75	-56.56	165	0.0	31.5	-21.5
135	131.4	37.75	-56.56	166	0.0	-28.5	-21.5
136	93.5	-21.5	-50.4	167	0.0	28.5	-21.5

Table IX.5.1-1.(cont) Cradle Local Input Nodal Coordinates
(0° Inclination to the Transporter Trailer)

NODE	X	Y	Z	NODE	X	Y	Z
168	0.0	-14.0	-21.5	200	10.68	-40.88	-2.75
169	0.0	14.0	-21.5	201	-14.78	40.88	-9.766
170	0.0	-14.0	-30.0	202	-14.78	-40.88	-9.766
171	0.0	14.0	-30.0	203	-8.0	40.88	-9.766
172	0.0	0.0	-30.0	204	-8.0	-40.88	-9.766
173	-48.1	0.0	-5.0	205	-8.0	57.436	-26.355
174	-38.0	-31.5	-21.5	206	-8.0	-57.436	-26.355
175	-38.0	31.5	-21.5	207	-8.0	66.10	-38.6
176	-38.0	-31.5	-25.0	208	-8.0	-66.10	-38.6
177	-38.0	31.5	-25.0	209	0.0	40.88	-9.766
178	-72.14	0.0	-5.0	210	0.0	-40.88	-9.766
179	-72.14	31.5	-5.0	211	8.0	40.88	-9.766
180	-72.14	-31.5	-5.0	212	8.0	-40.88	-9.766
181	-72.14	31.5	-25.0	213	8.0	57.436	-26.355
182	-72.14	-31.5	-25.0	214	8.0	-57.436	-26.355
183	0.0	40.88	0.0	215	8.0	66.10	-38.6
184	0.0	-40.88	0.0	216	8.0	-66.10	-38.6
185	0.0	40.88	4.71	217	14.78	40.88	-9.766
186	0.0	-40.88	4.71	218	14.78	-40.88	-9.766
187	0.0	40.88	-2.75	219	-23.88	40.88	-25.36
188	0.0	-40.88	-2.75	220	-23.88	-40.88	-25.36
189	-6.33	40.88	4.71	221	-17.33	40.88	-25.36
190	-6.33	-40.88	4.71	222	-17.33	-40.88	-25.36
191	6.33	40.88	4.71	223	-8.67	40.88	-25.36
192	6.33	-40.88	4.71	224	-8.67	-40.88	-25.36
193	-10.68	40.88	-2.75	225	0.0	40.88	-25.36
194	-10.68	-40.88	-2.75	226	0.0	-40.88	-25.36
195	-9.2	0.0	-5.0	227	8.67	40.88	-25.36
196	-53.7	0.0	-5.0	228	8.67	-40.88	-25.36
197	-55.5	0.0	-5.0	229	17.34	40.88	-25.36
198	-66.0	0.0	-5.0	230	17.34	-40.88	-25.36
199	10.68	40.88	-2.75	231	23.88	40.88	-25.36

Table IX.5.1-1.(cont) Cradle Local Input Nodal Coordinates
(0° Inclination to the Transporter Trailer)

NODE	X	Y	Z	NODE	X	Y	Z
232	23.88	-40.88	-25.36	264	17.34	-40.88	-42.0
233	-26.0	40.88	-29.0	265	26.0	40.88	-42.0
234	-26.0	-40.88	-29.0	266	26.0	-40.88	-42.0
235	0.0	40.88	-29.0	479	-52.528	31.5	-25.0
236	0.0	-40.88	-29.0	480	-52.528	-31.5	-25.0
237	26.0	40.88	-29.0	481	-52.528	31.5	-36.781
238	26.0	-40.88	-29.0	482	-52.528	-31.5	-36.781
239	-26.0	40.88	-35.88	485	233.0	16.1	-29.0
240	-26.0	-40.88	-35.88	486	233.0	-16.1	-29.0
241	-17.33	40.88	-35.88	487	233.0	10.5	-29.0
242	-17.33	-40.88	-35.88	488	233.0	-10.5	-29.0
243	-8.67	40.88	-35.88	489	233.0	0.0	-32.6
244	-8.67	-40.88	-35.88	490	233.0	0.0	-32.6
245	0.0	40.88	-35.88	491	183.0	16.84	-31.0
246	0.0	-40.88	-35.88	492	183.0	-16.84	-31.0
247	8.67	40.88	-35.88	493	183.0	0.0	-31.0
248	8.67	-40.88	-35.88	494	134.0	9.647	-19.5
249	17.34	40.88	-35.88	495	134.0	-9.647	-19.5
250	17.34	-40.88	-35.88	496	134.0	9.647	-19.5
251	26.0	40.88	-35.88	497	134.0	-9.647	-19.5
252	26.0	-40.88	-35.88	498	134.0	0.0	-29.5
253	-26.0	40.88	-42.0	499	45.25	0.0	-32.2
254	-26.0	-40.88	-42.0	500	45.25	-18.22	-32.2
255	-17.33	40.88	-42.0	501	45.25	18.22	-32.2
256	-17.33	-40.88	-42.0	502	45.25	-18.22	-32.2
257	-8.67	40.88	-42.0	503	45.25	18.22	-32.2
258	-8.67	-40.88	-42.0	504	183.0	-31.5	-43.0
259	0.0	40.88	-42.0	505	183.0	31.5	-43.0
260	0.0	-40.88	-42.0				
261	8.67	40.88	-42.0				
262	8.67	-40.88	-42.0				
263	17.34	40.88	-42.0				

Table IX.5.2-1. Transporter Trailer Global Nodal Coordinates

NODE	X	Y	Z	NODE	X	Y	Z
267	-321.7	37.875	-47.0	299	-156.0	43.0	-54.0
268	-321.7	-37.875	-47.0	300	-156.0	-43.0	-54.0
269	-305.0	37.875	-47.0	301	-156.0	43.0	-47.0
270	-305.0	-37.875	-47.0	302	-156.0	-43.0	-47.0
271	-294.0	37.875	-47.0	303	-156.0	37.875	-47.0
272	-294.0	-37.875	-47.0	304	-156.0	-37.875	-47.0
273	-282.125	37.875	-47.0	305	-132.5	72.0	-54.0
274	-282.125	-37.875	-47.0	306	-132.5	-72.0	-54.0
275	-271.56	37.875	-47.0	307	-132.5	43.0	-54.0
276	-271.56	-37.875	-47.0	308	-132.5	-43.0	-54.0
277	-267.0	37.875	-47.0	309	-109.0	68.625	-54.0
278	-267.0	-37.875	-47.0	310	-109.0	-68.625	-54.0
279	-252.0	37.875	-47.0	311	-109.0	43.0	-54.0
280	-252.0	-37.875	-47.0	312	-109.0	-43.0	-54.0
281	-240.0	37.875	-47.0	313	-83.75	68.625	-54.0
282	-240.0	-37.875	-47.0	314	-83.75	-68.625	-54.0
283	-229.0	37.875	-47.0	315	-83.75	43.0	-54.0
284	-229.0	-37.875	-47.0	316	-83.75	-43.0	-54.0
285	-217.06	37.875	-47.0	317	-58.5	68.625	-54.0
286	-217.06	-37.875	-47.0	318	-58.5	-68.625	-54.0
287	-213.0	37.875	-47.0	319	-58.5	43.0	-54.0
288	-213.0	-37.875	-47.0	320	-58.5	-43.0	-54.0
289	-199.75	37.875	-47.0	321	-33.25	68.625	-54.0
290	-199.75	-37.875	-47.0	322	-33.25	-68.62	-54.0
291	-186.0	37.875	-47.0	323	-33.25	43.0	-54.0
292	-186.0	-37.875	-47.0	324	-33.25	-43.0	-54.0
293	-173.24	37.875	-47.0	325	-26.0	43.0	-42.0
294	-173.24	-37.875	-47.0	326	-26.0	-43.0	-42.0
295	-163.06	37.875	-47.0	327	-26.0	43.0	-54.0
296	-163.06	-37.875	-47.0	328	-26.0	-43.0	-54.0
297	-156.0	72.0	-47.0	329	-21.0	51.0	-54.0
298	-156.0	-72.0	-47.0	330	-21.0	-51.0	-54.0

Table IX.5.2-1 (cont). Transporter Trailer Global Nodal Coordinates

NODE	X	Y	Z	NODE	X	Y	Z
331	-21.0	51.0	-90.0	364	21.0	-51.0	-54.0
332	-21.0	-51.0	-90.0	365	21.0	51.0	-90.0
333	-21.0	43.0	-54.0	366	21.0	-51.0	-90.0
334	-21.0	-43.0	-54.0	367	21.0	43.0	-54.0
335	-17.333	43.0	-42.0	368	21.0	-43.0	-54.0
336	-17.333	-43.0	-42.0	369	26.0	43.0	-42.0
337	-17.333	43.0	-54.0	370	26.0	-43.0	-42.0
338	-17.333	-43.0	-54.0	371	26.0	43.0	-54.0
339	-8.667	43.0	-42.0	372	26.0	-43.0	-54.0
340	-8.667	-43.0	-42.0	373	36.0	68.625	-54.0
341	-8.667	43.0	-54.0	374	36.0	-68.62	-54.0
342	-8.667	-43.0	-54.0	375	36.0	43.0	-54.0
343	-8.0	68.625	-54.0	376	36.0	-43.0	-54.0
344	-8.0	-68.62	-54.0	377	47.0	43.0	-54.0
345	-8.0	43.0	-54.0	378	47.0	-43.0	-54.0
346	-8.0	-43.0	-54.0	379	71.0	68.625	-54.0
347	0.0	43.0	-42.0	380	71.0	-68.62	-54.0
348	0.0	-43.0	-42.0	381	71.0	43.0	-54.0
349	0.0	43.0	-54.0	382	71.0	-43.0	-54.0
350	0.0	-43.0	-54.0	383	71.0	21.5	-54.0
351	8.0	68.625	-54.0	384	71.0	-21.5	-54.0
352	8.0	-68.62	-54.0	385	84.0	51.0	-54.0
353	8.0	43.0	-54.0	386	84.0	-51.0	-54.0
354	8.0	-43.0	-54.0	387	84.0	51.0	-90.0
355	8.667	43.0	-42.0	388	84.0	-51.0	-90.0
356	8.667	-43.0	-42.0	389	84.0	43.0	-54.0
357	8.667	43.0	-54.0	390	84.0	-43.0	-54.0
358	8.667	-43.0	-54.0	391	93.5	43.0	-54.0
359	17.333	43.0	-42.0	392	93.5	-43.0	-54.0
360	17.333	-43.0	-42.0	393	93.5	21.5	-54.0
361	17.333	43.0	-54.0	394	93.5	-21.5	-54.0
362	17.333	-43.0	-54.0	395	116.0	43.0	-54.0
363	21.0	51.0	-54.0	396	116.0	-43.0	-54.0

Table IX.5.2-1 (cont). Transporter Trailer Global Nodal Coordinates

NODE	X	Y	Z	NODE	X	Y	Z
331	-21.0	51.0	-90.0	364	21.0	-51.0	-54.0
332	-21.0	-51.0	-90.0	365	21.0	51.0	-90.0
333	-21.0	43.0	-54.0	366	21.0	-51.0	-90.0
334	-21.0	-43.0	-54.0	367	21.0	43.0	-54.0
335	-17.333	43.0	-42.0	368	21.0	-43.0	-54.0
336	-17.333	-43.0	-42.0	369	26.0	43.0	-42.0
337	-17.333	43.0	-54.0	370	26.0	-43.0	-42.0
338	-17.333	-43.0	-54.0	371	26.0	43.0	-54.0
339	-8.667	43.0	-42.0	372	26.0	-43.0	-54.0
340	-8.667	-43.0	-42.0	373	36.0	68.625	-54.0
341	-8.667	43.0	-54.0	374	36.0	-68.62	-54.0
342	-8.667	-43.0	-54.0	375	36.0	43.0	-54.0
343	-8.0	68.625	-54.0	376	36.0	-43.0	-54.0
344	-8.0	-68.62	-54.0	377	47.0	43.0	-54.0
345	-8.0	43.0	-54.0	378	47.0	-43.0	-54.0
346	-8.0	-43.0	-54.0	379	71.0	68.625	-54.0
347	0.0	43.0	-42.0	380	71.0	-68.62	-54.0
348	0.0	-43.0	-42.0	381	71.0	43.0	-54.0
349	0.0	43.0	-54.0	382	71.0	-43.0	-54.0
350	0.0	-43.0	-54.0	383	71.0	21.5	-54.0
351	8.0	68.625	-54.0	384	71.0	-21.5	-54.0
352	8.0	-68.62	-54.0	385	84.0	51.0	-54.0
353	8.0	43.0	-54.0	386	84.0	-51.0	-54.0
354	8.0	-43.0	-54.0	387	84.0	51.0	-90.0
355	8.667	43.0	-42.0	388	84.0	-51.0	-90.0
356	8.667	-43.0	-42.0	389	84.0	43.0	-54.0
357	8.667	43.0	-54.0	390	84.0	-43.0	-54.0
358	8.667	-43.0	-54.0	391	93.5	43.0	-54.0
359	17.333	43.0	-42.0	392	93.5	-43.0	-54.0
360	17.333	-43.0	-42.0	393	93.5	21.5	-54.0
361	17.333	43.0	-54.0	394	93.5	-21.5	-54.0
362	17.333	-43.0	-54.0	395	116.0	43.0	-54.0
363	21.0	51.0	-54.0	396	116.0	-43.0	-54.0

Table IX.5.2-1 (cont). Transporter Trailer Global Nodal Coordinates

NODE	X	Y	Z	NODE	X	Y	Z
397	116.0	21.5	-54.0	429	235.526	43.0	-7.831
398	116.0	-21.5	-54.0	430	235.526	-43.0	-7.831
399	132.0	51.0	-54.0	431	235.526	18.0	-7.831
400	132.0	-51.0	-54.0	432	235.526	-18.0	-7.831
401	132.0	51.0	-90.0	433	249.532	43.0	-4.078
402	132.0	-51.0	-90.0	434	249.532	-43.0	-4.078
403	132.0	43.0	-54.0	435	249.532	18.0	-4.078
404	132.0	-43.0	-54.0	436	249.532	-18.0	-4.078
405	155.0	43.0	-54.0	437	263.538	43.0	-0.325
406	155.0	-43.0	-54.0	438	263.538	-43.0	-0.325
407	155.0	27.75	-54.0	439	263.538	18.0	-0.325
408	155.0	-27.75	-54.0	440	263.538	-18.0	-0.325
409	155.0	9.25	-54.0	441	291.55	43.0	7.181
410	155.0	-9.25	-54.0	442	291.55	-43.0	7.181
411	160.625	43.0	-54.0	443	291.55	18.0	7.181
412	160.625	-43.0	-54.0	444	291.55	-18.0	7.181
413	163.0	27.75	-54.0	445	320.5	43.0	14.938
414	163.0	-27.75	-54.0	446	320.5	-43.0	14.938
415	163.0	27.75	-90.0	447	320.5	18.0	14.938
416	163.0	-27.75	-90.0	448	320.5	-18.0	14.938
417	163.0	9.25	-54.0	449	320.5	7.0	14.938
418	163.0	-9.25	-54.0	450	320.5	-7.0	14.938
419	163.0	9.25	-90.0	451	336.39	43.0	12.659
420	163.0	-9.25	-90.0	452	336.39	-43.0	12.659
421	188.75	43.0	-20.375	453	336.39	18.0	12.659
422	188.75	-43.0	-20.375	454	336.39	-18.0	12.659
423	188.75	18.0	-20.375	455	336.39	7.0	12.659
424	188.75	-18.0	-20.375	456	336.39	-7.0	12.659
425	206.915	43.0	-15.498	457	320.5	0.0	14.938
426	206.915	-43.0	-15.498	458	336.39	0.0	12.659
427	206.915	18.0	-15.498	459	354.0	7.0	10.132
428	206.915	-18.0	-15.498	460	354.0	-7.0	10.132

Table IX.5.2-1 (cont). Transporter Trailer Global Nodal Coordinates

NODE	X	Y	Z	NODE	X	Y	Z
461	365.375	43.0	8.5	470	-305.0	-37.875	-44.0
462	365.375	-43.0	8.5	471	-252.0	37.875	-44.0
463	365.375	18.0	8.5	472	-252.0	-37.875	-44.0
464	365.375	-18.0	8.5	473	-199.75	37.875	-44.0
465	365.375	7.0	8.5	474	-199.75	-37.875	-44.0
466	365.375	-7.0	8.5	475	-132.5	43.0	-43.0
467	354.0	0.0	10.132	476	-132.5	-43.0	-43.0
468	365.375	0.0	8.5	477	188.75	31.5	-20.375
469	-305.0	37.875	-44.0	478	188.75	-31.5	-20.375

Table IX.5.3-1(a). Load Case Geometry Changes to Existing
Working File, Load Case 1 is Base

Load Case Number 3

*IDENT LC3
(change title)

*D FEB1.1
Transporter Trailer and Cradle Assembly with LHM; Case 3
(change 5 NEWSYS cards to incline cradle at 46.5°)

*D LHMCDL.6
NEWSYS 0.0 0.0 0.0 300.0 0.0 316.134 0.0 100.0 0.0

*D LHMCDL.26
NEWSYS 0.0 0.0 0.0 300.0 0.0 316.134 0.0 100.0 0.0

*D FEB1.3
NEWSYS 0.0 0.0 0.0 300.0 0.0 316.134 0.0 100.0 0.0

*D FEB1.5
NEWSYS 0.0 0.0 0.0 300.0 0.0 316.134 0.0 100.0 0.0

*D LHMCDL.85
NEWSYS 0.0 0.0 0.0 300.0 0.0 316.134 0.0 100.0 0.0
(remove nodes 483 and 484 used in the 10° horizontal bearing guide
connectivity)

*D FEB13A.5, 6
(remove the 10° connectivity at the trailer for the horizontal bearing
guide - 292, 293, 540, 541, 542 and 543 - and reconnect trailer members)

*D FEB13A.13,18
292 319 323 54 1 50
293 320 324 55 1 50
(establish new horizontal bearing guide connectivity for 46.5°
inclination)

*I LHMCDL.995
540 341 481 9999 1 79 011111 90
541 342 482 9999 1 79 011111 90
(establish new beam offset for horizontal bearing guide)

*D FEB13A.21
79 -0.811 0.0 -9.421 0.0 0.0 0.0

Table IX.5.3-1(b). Load Case Geometry Changes to Existing Working File, Load Case 1 is Base

Load Case Number 5

*IDENT LC5
(change title)

*D FEB1.1
Transporter Trailer and Cradle Assembly with LHM; Case 5
(change 5 NEWSYS cards to incline cradle at 90°)

*D LHMCDL.6
NEWSYS 0.0 0.0 0.0 0.0 0.0 300.0 0.0 100.0 0.0

*D LHMCDL.26
NEWSYS 0.0 0.0 0.0 0.0 0.0 300.0 0.0 100.0 0.0

*D FEB1.3
NEWSYS 0.0 0.0 0.0 0.0 0.0 300.0 0.0 100.0 0.0

*D FEB1.5
NEWSYS 0.0 0.0 0.0 0.0 0.0 300.0 0.0 100.0 0.0

*D LHMCDL.85
NEWSYS 0.0 0.0 0.0 0.0 0.0 300.0 0.0 100.0 0.0
(remove nodes 483 and 484 used in the 10° horizontal bearing guide connectivity)

*D FEB13A.5,6
(remove the 10° connectivity at the trailer for the horizontal bearing guide - 292, 293, 540, 541, 542 and 543 - and reconnect trailer members)

*D FEB13A.13,18
292 319 323 64 1 50
293 320 324 55 1 50
(establish new horizontal bearing guide connectivity for 90° inclination)

*I LHMCDL.995
540 375 481 9999 1 79 011111 90
541 376 482 9999 1 79 011111 90
(establish new beam offset for horizontal bearing guide)

*D FEB13A.21
79 0.781 0.0 1.472 0.0 0.0 0.0

Table IX.5.3-1(c). Load Case Geometry Changes to Existing Working File, Load Case 1 is Base

Load Case Number 7, 8 and 9

*IDENT LC789

(change title)

*D FEB1.1

Transporter Trailer and Cradle Assembly with LHM; Travel Cases 7, 8 and 9
(insert new nodes required for BOP points for cradle support pedestal,
same coordinates as 116 and 117)

*I LHMC DL.63

504 183.0 -31.5 -43.0

505 183.0 31.5 -43.0

(insert new nodes required to locate pedestal support on trailer -
trailer input coordinate system)

*I LHMC DL.471

477 509.75 -40.5 33.625

478 509.75 -103.5 33.625

(establish new individual coordinate system required for the degrees of
freedom at the cradle pedestal support BOP points)

*D FEB28.31

ASYSG 1 147 101 133 489 493 1 498 505 1 116 117 1

(remove the trailer leg support - trailer legs are not active - add new
RESTG heading card)

*D FEB1.34,46

RESTG 271 000110

(add restraints consistent with tire restraints at front truck/jeep
dolley, i.e. at node 467)

*I FEB1.51

467 000110

(new connectivity at trailer for cradle pedestal support)

*D LHMC DL.911

426 421 477 70 1 54

*D.LHMC DL.915

430 478 422 70 1 54

*I LHMC DL.995

532 477 423 70 1 54

533 424 478 70 1 54

534 477 505 3 1 8

535 478 504 8 1 8

(insert the spring constants which model the truck/jeep dolley)

*I KASE1C.24

467 1 153600.0 30000.0 82880.0

467 6 1815264.0 0.0 0.0

(Make additions to the nodal weight table in the amount of the Loop
Handling Machine component weights. This will simplify the applied
load Table for the load cases.)

Table IX.5.3-1(c) (cont). Load Case Geometry Changes to Existing
Working File, Load Case 1 is Base

*I MAR2.15

84	709.0	709.0	709.0
85	994.0	994.0	994.0
86	790.0	790.0	790.0
87	3355.0	3355.0	3355.0
89	160.0	160.0	160.0
90	234.0	234.0	234.0
91	2438.0	2438.0	2438.0
92	1251.0	1251.0	1251.0
93	5224.0	5224.0	5224.0
94	454.0	454.0	454.0
95	1640.0	1640.0	1640.0
96	305.0	305.0	305.0
97	100.0	100.0	100.0
98	3322.0	3322.0	3322.0
99	439.0	439.0	439.0
100	6710.0	6710.0	6710.0
101	854.0	854.0	854.0
111	100.0	100.0	100.0
134	3160.0	3160.0	3160.0
135	3160.0	3160.0	3160.0
196	430.0	430.0	430.0
197	3075.0	3075.0	3075.0
198	3560.0	3560.0	3560.0
271	410.0	410.0	410.0
272	410.0	410.0	410.0
281	410.0	410.0	410.0
282	410.0	410.0	410.0
291	410.0	410.0	410.0
292	410.0	410.0	410.0

Table IX.5.3-2. Geometry Changes to Existing Working File;
Failure Loading

Load Case Number 2
(work on Load Case Number 1)

*IDENT LC2
(change title)

*D FEB1.1
Transporter Trailer and Cradle Assembly with LHM; Case 2
(delete member 47 to simulate an elevating cylinder failure)

*D DEC28.36

Load Case Number 4
(work on Load Case Number 3)

*IDENT LC4
(change title)

*D LC3.1
Transporter Trailer and Cradle Assembly with LHM; Case 4
(delete member 47 to simulate an elevating cylinder failure)

*D DEC28.36

Load Case Number 6
(work on Load Case Number 5)

*IDENT LC6
(change title)

*D LC5.1
Transporter Trailer and Cradle Assembly with LHM; Case 6
(delete member 47 to simulate an elevating cylinder failure)

*D DEC 28.36

Table IX.5.3-3. Geometry Changes to Existing Working File;
Load Cases 7, 8, 9 are Reference Cases

Load Case Number 10
(work on Load Case 7, 8 and 9)

*IDENT TRANS
(change title)

*D TRVL.1
Transporter Trailer and Cradle Assembly with LHM; Travel Case 10
(Establish new individual coordinate system required for the degrees
of freedom at BOP points 120, 492, 500 and 502. Involves correcting
and deleting case 789 Systems.)

*D FEB28.30

ASYSG	1	147	101	133	121	122	1	130		154			
ASYSG	1	147	101	133	489	491	1	493		498	499	1	
ASYSG	1	147	101	133	501			503	505	1	116	117	1

*D TRVL.6

*I FEB28.35

ASYSG	6	120	111	7	120	492
ASYSG	7	500	147	21	500	502

(make corrections to nodal weight table to account for fictitious
weights in table at compression only points)

*I TRVL.36

111	-475.7	-475.7	-475.7
147	-594.2	-594.2	-594.2
492	-475.7	-475.7	-475.7
502	-594.2	-594.2	-594.2

(change the BPROP_i card to make areas for sections 9 and 20 equivalent
to saddle bearing areas)

*D FEB28.65

9	108.3
---	-------

*D GEB28.66

20	128.3
----	-------

(remove member end offsets, BPROP₄, for sections 9 and 20; this
inclines these members to the crossbeam; they no longer are tension
holdowns)

*D FEB28.70,71

Table IX.5.3-4(a). Consecutive Numbering Applied to
Table IX.5.3-1(a)

Load Case Number 3

*IDENT LC3
(change title)

*D LOADCASE1.2
Transporter Trailer and Cradle Assembly with LHM; Case 3
(change 5 NEWSYS cards to incline cradle at 46.5°)

*D LOADCASE1.5
NEWSYS 0.0 0.0 0.0 300.0 0.0 315.134 0.0 100.0 0.0

*D LOADCASE1.25
NEWSYS 0.0 0.0 0.0 300.0 0.0 315.134 0.0 100.0 0.0

*D LOADCASE1.38
NEWSYS 0.0 0.0 0.0 300.0 0.0 315.134 0.0 100.0 0.0

*D LOADCASE1.49
NEWSYS 0.0 0.0 0.0 300.0 0.0 315.134 0.0 100.0 0.0

*D LOADCASE1.109
NEWSYS 0.0 0.0 0.0 300.0 0.0 315.134 0.0 100.0 0.0
(remove nodes 483 and 484 used in the 10° horizontal bearing guide
connectivity)

*D LOADCASE1.515,516
(remove the 10° connectivity at the trailer for the horizontal bearing
guide - 292, 293, 540, 541, 542 and 543 - and reconnect trailer
members)

*D LOADCASE1.929,934
292 319 323 64 1 50
293 320 324 55 1 50
(establish new horizontal bearing guide connectivity for 46.5°
inclination)

*I LOADCASE1.1150
540 341 481 9999 1 79 011111 90
541 342 482 9999 1 79 011111 90
(establish new beam offset for horizontal bearing guide)

*D LOADCASE1.1317
79 -0.811 0.0 -9.421 0.0 0.0 0.0

Table IX.5.3-4(b). Consecutive Numbering Applied to
Table IX.5.3-1(b)

Load Case Number 5

*IDENT LC5
(change title)

*D LOADCASE1.2
Transporter Trailer and Cradle Assembly with LHM; Case 5
(change 5 NEWSYS cards to incline cradle at 90°)

*D LOADCASE1.5
NEWSYS 0.0 0.0 0.0 0.0 0.0 300.0 0.0 100.0 0.0

*D LOADCASE1.25
NEWSYS 0.0 0.0 0.0 0.0 0.0 300.0 0.0 100.0 0.0

*D LOADCASE1.38
NEWSYS 0.0 0.0 0.0 0.0 0.0 300.0 0.0 100.0 0.0

*D LOADCASE1.49
NEWSYS 0.0 0.0 0.0 0.0 0.0 300.0 0.0 100.0 0.0

*D LOADCASE1.109
NEWSYS 0.0 0.0 0.0 0.0 0.0 300.0 0.0 100.0 0.0
(remove nodes 483 and 484 used in the 10° horizontal bearing guide
connectivity)

*D LOADCASE1.515,516
(remove the 10° connectivity at the trailer for the horizontal bearing
guide - 292, 293, 540, 541, 542 and 543 - and reconnect trailer
members)

*D LOADCASE1.929,934
292 319 323 64 1 50
293 320 324 55 1 50
(establish new horizontal bearing guide connectivity for 90°
inclination)

*I LOADCASE1.1150
540 375 481 9999 1 79 011111 90
541 376 482 9999 1 79 011111 90
(establish new beam offset for horizontal bearing guide)

*D LOADCASE1.1317
79 0.781 0.0 1.472 0.0 0.0 0.0

Table IX.5.3-4(c). Consecutive Numbering Applied to Table IX.5.3-1(c)

Load Case Numbers 7, 8 and 9

*IDENT LC789
(change title)

*D LOADCASE1.2
Transporter Trailer and Cradle Assembly with LHM; Travel Cases 7, 8 and 9 (insert new nodes required for BOP point for cradle support pedestal, same coordinates as 116 and 117)

*I LOADCASE1.87
504 183.0 -31.5 -43.0
505 183.0 31.5 -43.0
(insert new nodes required to locate pedestal support on trailer - trailer input coordinate system)

*I LOADCASE1.514
477 509.75 -40.5 33.625
478 509.75 -103.5 33.625
(establish new individual coordinate system required for the degrees of freedom at the cradle pedestal support BOP points)

*D LOADCASE1.519
ASYSG 1 147 101 133 489 493 1 498 505 1 116 117 1
(remove the trailer leg support - trailer legs are not active - add new RESTG heading card)

*D LOADCASE1.525,537
RESTG 271 000110
(add restraints consistent with tire restraints at front truck/jeep dolly, i.e. at node 467)

*D LOADCASE1.542
467 000110
(new connectivity at trailer for cradle pedestal support)

*D LOADCASE1.1066
426 421 477 70 1 54

*D LOADCASE1.1070
430 478 422 70 1 54

*I LOADCASE1.1150
532 477 423 70 1 54
533 424 478 70 1 54
534 477 505 3 1 8
535 478 504 8 1 8

(insert the spring constants which model the truck/jeep dolly)

*I LOADCASE1.1332
467 1 153600.0 30000.0 82880.0
467 6 1815264.0 0.0 0.0

(Make additions to the nodal weight table in the amount of the Loop Handling Machine component weights. This will simplify the applied load Table for the load cases.)

Table IX.5.3-4(c) (cont). Consecutive Numbering Applied to
Table IX.5.3-1(c)

*I LOADCASE1.609

84	709.0	709.0	709.0
85	994.0	994.0	994.0
86	790.0	790.0	790.0
87	3355.0	3355.0	3355.0
89	160.0	160.0	160.0
90	234.0	234.0	234.0
91	2438.0	2438.0	2438.0
92	1251.0	1251.0	1251.0
93	5224.0	5224.0	5224.0
94	454.0	454.0	454.0
95	1640.0	1640.0	1640.0
96	305.0	305.0	305.0
97	100.0	100.0	100.0
98	3322.0	3322.0	3322.0
99	439.0	439.0	439.0
100	6710.0	6710.0	6710.0
101	854.0	854.0	854.0
111	100.0	100.0	100.0
134	3160.0	3160.0	3160.0
135	3160.0	3160.0	3160.0
196	430.0	430.0	430.0
197	3075.0	3075.0	3075.0
198	3560.0	3560.0	3560.0
271	410.0	410.0	410.0
272	410.0	410.0	410.0
281	410.0	410.0	410.0
282	410.0	410.0	410.0
291	410.0	410.0	410.0
292	410.0	410.0	410.0

Table 5.3-5. Consecutive Numbering Applied to Table IX.5.3-2.

Load Case Number 2
(work on Load Case Number 1)

*IDENT LC2
(change title)

*D LOADCASE1.2
Transporter Trailer and Cradle Assembly with LHM; Case 2
(delete member 47 to simulate an elevating cylinder failure)

*D LOADCASE1.663

Load Case Number 4
(work on Load Case Number 3)

*IDENT LC4
(change title)

*D LC3.1
Transporter Trailer and Cradle Assembly with LHM; Case 4
(delete member 47 to simulate an elevating cylinder failure)

*D LOADCASE1.663

Load Case Number 6
(work on Load Case Number 5)

*IDENT LC6
(change title)

*D LC5.1
Transporter Trailer and Cradle Assembly with LHM; Case 6
(delete member 47 to simulate an elevating cylinder failure)

*D LOADCASE1.663

Table 5.3-6. Consecutive Numbering Applied to Table IX.5.3-3.

Load Case Number 10
(work on Load Case 7, 8 and 9)

*IDENT TRANS
(change title)

*D TRVL.1
Transporter Trailer and Cradle Assembly with LHM; Travel Case 10
(establish new individual coordinate system required for the degrees
of freedom at BOP points 120, 492, 500 and 502. Involves correcting
and deleting case 789 Systems)

*D LOADCASE1.518

ASYSG	1	147	101	133	121	122	1	130		154			
ASYSG	1	147	101	133	489	491	1	493		498	499	1	
ASYSG	1	147	101	133	501			503	505	1	116	117	1

*D TRVL.6

*I LOADCASE1.523

ASYSG	6	120	111	7	120		492
ASYSG	7	500	147	21	500		502

(make corrections to nodal weight table to account for fictitious
weights in table at compression-only points)

*I TRVL.37

111	-475.7	-475.7	-475.7
147	-594.2	-594.2	-594.2
492	-475.7	-475.7	-475.7
502	-594.2	-594.2	-594.2

(change the BPROP1 card to make areas for sections 9 and 20 equivalent
to saddle bearing areas)

*D LOADCASE1.1159

9	108.3
---	-------

*D LOADCASE1.1170

20	128.3
----	-------

(remove member end offsets, BPROP4, for sections 9 and 20; this
inclines these members to the crossbeam; they no longer are tension
hold downs)

*D LOADCASE1.1286,1287

Table IX.5.3-7(a). Zero Density Rather than Weight Subtraction;
Table IX.5.3-1(a) Consecutive Numbering

Load Case Number 3

*IDENT LC3
(change title)

*D LOADCASE1.2
Transporter Trailer and Cradle Assembly with LHM; Case 3
(change 5 NEWSYS cards to incline cradle at 46.5°)

*D LOADCASE1.9
NEWSYS 0.0 0.0 0.0 300.0 0.0 315.134 0.0 100.0 0.0

*D LOADCASE1.29
NEWSYS 0.0 0.0 0.0 300.0 0.0 315.134 0.0 100.0 0.0

*D LOADCASE1.42
NEWSYS 0.0 0.0 0.0 300.0 0.0 315.134 0.0 100.0 0.0

*D LOADCASE1.53
NEWSYS 0.0 0.0 0.0 300.0 0.0 315.134 0.0 100.0 0.0

*D LOADCASE1.113
NEWSYS 0.0 0.0 0.0 300.0 0.0 315.134 0.0 100.0 0.0
(remove nodes 483 and 484 used in the 10° horizontal bearing guide
connectivity)

*D LOADCASE1.519,520
(remove the 10° connectivity at the trailer for the horizontal bearing
guide - 292, 293, 540, 541, 542 and 543 - and reconnect trailer
members)

*D LOADCASE1.891,896
292 319 323 64 1 50
293 320 324 55 1 50
(establish new horizontal bearing guide connectivity for 46.5°
inclination)

*I LOADCASE1.1112
540 341 481 9999 1 79 011111 90
541 342 482 9999 1 79 011111 90
(establish new beam offset for horizontal bearing guide)

*D LOADCASE1.1279
79 -0.811 0.0 -9.421 0.0 0.0 0.0

Table IX.5.3-7(b). Zero Density Rather Than Weight Subtraction;
Table IX.5.3-1(b) Consecutive Numbering

Load Case Number 5

*IDENT LC5
(change title)

*D LOADCASE1.2
Transporter Trailer and Cradle Assembly with LHM; Case 5
(change 5 NEWSYS cards to incline cradle at 90°)

*D LOADCASE1.9
NEWSYS 0.0 0.0 0.0 0.0 0.0 300.0 0.0 100.0 0.0

*D LOADCASE1.29
NEWSYS 0.0 0.0 0.0 0.0 0.0 300.0 0.0 100.0 0.0

*D LOADCASE1.42
NEWSYS 0.0 0.0 0.0 0.0 0.0 300.0 0.0 100.0 0.0

*D LOADCASE1.53
NEWSYS 0.0 0.0 0.0 0.0 0.0 300.0 0.0 100.0 0.0

*D LOADCASE1.113
NEWSYS 0.0 0.0 0.0 0.0 0.0 300.0 0.0 100.0 0.0
(remove nodes 483 and 484 used in the 10° horizontal bearing guide
connectivity)

*D LOADCASE1.519,520
(remove the 10° connectivity at the trailer for the horizontal bearing
guide - 292, 293, 540, 541, 542 and 543 - and reconnect trailer
members)

*D LOADCASE1.891,896
292 319 323 64 1 50
293 320 324 55 1 50
(establish new horizontal bearing guide connectivity for 90°
inclination)

*I LOADCASE1.1112
540 375 481 9999 1 79 011111 90
541 376 482 9999 1 79 011111 90
(establish new beam offset for horizontal bearing guide)

*D LOADCASE1.1279
79 0.781 0.0 1.472 0.0 0.0 0.0

Table IX.5.3-7(c). Zero Density Rather Than Weight Subtraction;
Table IX.5.3-1(c) Consecutive Numbering

Load Case Numbers 7, 8 and 9

*IDENT LC789

(change title)

*D LOADCASE1.2

Transporter Trailer and Cradle Assembly with LHM; Travel Cases 7, 8 and 9 (insert new nodes required for BOP point for cradle support pedestal, same coordinates as 116 and 117)

*I LOADCASE1.91

504 183.0 -31.5 -43.0

505 183.0 31.5 -43.0

(insert new nodes required to locate pedestal support on trailer - trailer input coordinate system)

*I LOADCASE1.518

477 509.75 -40.5 33.625

478 509.75 -103.5 33.625

(establish new individual coordinate system required for the degrees of freedom at the cradle pedestal support BOP points)

*D LOADCASE1.523

1 147 101 133 489 493 1 498 505 1 116 117 1
(remove the trailer leg support - trailer legs are not active - add new RESTG heading card)

*D LOADCASE1.529,541

RESTG 271 000110

(add restraints consistent with tire restraints at front truck/jeep dolly, i.e. at node 467)

*D LOADCASE1.546

467 000110

(new connectivity at trailer for cradle pedestal support)

*D LOADCASE1.1028

426 421 477 70 1 54

*D LOADCASE1.1032

430 478 422 70 1 54

*I LOADCASE1.1112

532 477 423 70 1 54

533 424 478 70 1 54

534 477 505 3 1 8

535 478 504 8 1 8

(insert the spring constants which model the truck/jeep dolly)

*I LOADCASE1.1294

467 1 153600.0 30000.0 82880.0

467 6 1815264.0 0.0 0.0

(Make additions to the nodal weight table in the amount of the Loop Handling Machine component weights. This will simplify the applied load Table for the load cases.)

Table IX.5.3-7(c) (cont). Zero Density Rather Than Weight
Subtraction; Table IX.5.3-1(c)
Consecutive Numbering

*1 LOADCASE1.571

84	709.0	709.0	709.0
85	994.0	994.0	994.0
86	790.0	790.0	790.0
87	3355.0	3355.0	3355.0
89	160.0	160.0	160.0
90	234.0	234.0	234.0
91	2438.0	2438.0	2438.0
92	1251.0	1251.0	1251.0
93	5224.0	5224.0	5224.0
94	454.0	454.0	454.0
95	1640.0	1640.0	1640.0
96	305.0	305.0	305.0
97	100.0	100.0	100.0
98	3322.0	3322.0	3322.0
99	439.0	439.0	439.0
100	6710.0	6710.0	6710.0
101	854.0	854.0	854.0
111	100.0	100.0	100.0
134	3160.0	3160.0	3160.0
135	3160.0	3160.0	3160.0
196	430.0	430.0	430.0
197	3075.0	3075.0	3075.0
198	3560.0	3560.0	3560.0
271	410.0	410.0	410.0
272	410.0	410.0	410.0
281	410.0	410.0	410.0
282	410.0	410.0	410.0
291	410.0	410.0	410.0
292	410.0	410.0	410.0

Table IX.5.3-8. Zero Density Rather Than Weight Subtraction;
Table IX.5.3-2 Consecutive Numbering

Load Case Number 2
(work on Load Case Number 1)

*IDENT LC2
(change title)

*D LOADCASE1.2
Transporter Trailer and Cradle Assembly with LHM; Case 2
(delete member 47 to simulate an elevating cylinder failure)

*D LOADCASE1.625

Load Case Number 4
(work on Load Case Number 3)

*IDENT LC4
(change title)

*D LC3.1
Transporter Trailer and Cradle Assembly with LHM; Case 4
(delete member 47 to simulate an elevating cylinder failure)

*D LOADCASE1.625

Load Case Number 6
(work on Load Case Number 5)

*IDENT LC6
(change title)

*D LC5.1
Transporter Trailer and Cradle Assembly with LHM; Case 6
(delete member 47 to simulate an elevating cylinder failure)

*D LOADCASE1.625

Table IX.5.3-9. Zero Density Rather Than Weight Subtraction;
Table IX.5.3-3 Consecutive Numbering

Load Case Number 10

(work on Load Case 7, 8 and 9)

*IDENT TRANS

(change title)

*D TRVL.1

Transporter Trailer and Cradle Assembly with LHM; Travel Case 10
(establish new individual coordinate system required for the degrees
of freedom at BOP points 120, 492, 500 and 502. Involves correcting
and deleting case 789 Systems)

*D LOADCASE1.522

ASYSG	1	147	101	133	121	122	1	130		154		
ASYSG	1	147	101	133	489	491	1	493		498	499	1
ASYSG	1	147	101	133	501			503	505	1	116	117 1

*D TRVL.6

*I LOADCASE1.527

ASYSG	6	120	111	7	120	492
ASYSG	7	500	147	21	500	502

(change the BPROP1 card to make areas for sections 9 and 20 equivalent
to saddle bearing areas)

*D LOADCASE1.1121

9 108.3

*D LOADCASE1.1132

20 128.3

(remove member end offsets, BPROP4, for sections 9 and 20; this
inclines these members to the crossbeam; they no longer are tension
hold downs)

*D LOADCASE1.1248,1249

Figure 1A.5.4-1 Cradle Assembly
with LHM

Figure IX.5.4-2 Crossbeam No. 1

Figure IX.5.4-3. Crossbeam No. 2

Figure IX.5.4- 4 Cassin's beam No. 3

Figure IX.5.4-5. Counterweight

Figure IX.5.4-6. Crossbeam No. 4

Figure IX.5.4-7. Crossbeam No. 5

Figure IX.5.4-8. Right Longitudinal Beam
10° Inclination

Figure IX.5.4-9. Left Longitudinal Beam
10° Inclination

Figure IX.5.4-10. Right Hand Trunnion

Figure IX.5.4-11. Left Hand Trunnion

Figure IX.5.4-12. LHM Transporter Trailer
Plan View

Figure IX.5.4-13. LHM Transporter Trailer
Side Elevation

Figure IX.5.4-14. Cross Section E-E

Figure IX.5.4-15. Cross Section F-F

Figure IX.5.4-16. Cross Section K-K

Figure IX.5.4-17. Cross Section L-L

Figure IX.5.4-18. Isometric View of Part A

Figure IX.5.4-19. Isometric View of Part B

Figure IX.5.4-20. Isometric View of Part C

Figure IX.5.4-21. Isometric
View of Part D

Figure IX.5.4-22. Elevation View of
10° Case

Figure IX.5.4-23, Elevation View of
10° Case with Nodes

Figure IX.5.4-24. Elevation View of
46.5° Case

Figure IX.5.4-25. Elevation View of
46.5° Case with Nodes

Figure IX.5.4-26. Elevation View of 90°
Case

Figure IX.5.4-27. Elevation View of
90° Case with Nodes

Figure IX 5.4-28. Elevation of View of
10° Travel Case

Figure IX.5.4-29. Elevation of View
10° Travel Case with Nodes

Figure IX.5.4-30. Isometric View of
LHS Load Case 1

Figure IX.5.4-31. Isometric View of
LHS Load Case 1 with Nodes

Figure IX.5.4-32. Isometric View of
LHC Load Case 2

ISOMETRIC VIEW OF LOAD CASE 2

Figure IX.5.4-33. Isometric view of
LHS Load Case 2 with Nodes

Figure IX.5.4-34. Isometric View of
LHS Load Case 3

Figure IX.5.4-35. Isometric View of Load
LHS Load Case 3 with Nodes

ISOMETRIC VIEW OF LOAD CASE 4

Figure IX.5.4-36. Isometric View of
LHS Load Case 4

Figure IX.5.4-37. Isometric View of
LHS Load Case 4 with Nodes

Figure IX.5.4- 38. Isometric View of
LHS Load Case 5

Figure IX.5.4-39. Isometric View of
LHS Load Case 5 with Nodes

Figure IX.5.4-40. Isometric View of
LHS Load Case 6

Figure 1X.5.4-41. Isometric View of
LHS Load Case 6 with Nodes

Figure IX.5.4-42. Isometric View of
LHS Load Cases 7, 8 and 9

ISOMETRIC VIEW OF LOAD CASE 7, 8, 9

Figure IX.5.4-43. Isometric View of LHS Load Cases 7, 8 and 9 with Nodes

Figure IX.5.4-44. Isometric View of
LHS Load Case 10

Figure IX.5.4-45. Isometric View of
LHS Load Case 10 with Nodes

IX.6 BOUNDARY CONDITIONS

Tables IX.6-1, IX.6-2 and IX.6-3 summarize the overall boundary conditions used for the structure in the various load cases (also see Figure IX.4.1-1).

The trailer legs were restrained against vertical translation (X3) in load cases 1-6. In Load Cases 11-16, the legs were restrained against vertical translation (X3); longitudinal translation (S1) and transverse rotation (about the X2 axis) was inhibited by using ground to node springs. The remaining degrees of freedom at the legs were permitted to occur. Section IX.4.3 gives a more detailed discussion of the trailer legs.

The tires were modeled as node-to-ground translational and rotational springs. The above mentioned tables give a summary of the spring values, while Section IX.4.4 and Appendix E (included in Volume IV of this report) contain a more detailed discussion of how the appropriate values were obtained.

Table IX.6-1. Load Cases 1, 2, 3, 4, 5 and 6 Boundary Conditions and Spring Constants

Node	Translation (lb/in)			Rotation (lb-in/rad)			COMMENT
	X1	X2	X3	X1	X2	X3	
271	19200	3900	10720	FIXED	FIXED	247536	TIRE
272	19200	3900	10720	FIXED	FIXED	247536	
281	19200	3900	10720	FIXED	FIXED	247536	
282	19200	3900	10720	FIXED	FIXED	247536	
291	19200	3900	10720	FIXED	FIXED	247536	
292	19200	3900	10720	FIXED	FIXED	247536	TIRE
331	FREE	FREE	FIXED	FREE	FREE	FREE	LEG
332			FIXED				
365			FIXED				
366			FIXED				
387			FIXED				
388			FIXED				
401			FIXED				
402			FIXED				
415			FIXED				
416			FIXED				
419			FIXED				
420	FREE	FREE	FIXED	FREE	FREE	FREE	LEG

Table IX.6-2. Load Cases 7, 8, 9, and 10 Boundary Conditions and Spring Constants

Node	Translation (lb/in)			Rotation (lb-in/rad)			COMMENT
	X1	X2	X3	X1	X2	X3	
271	19200	3900	10720	FIXED	FIXED	247536	TIRE
272	19200	3900	10720			247536	
281	19200	3900	10720			247536	
282	19200	3900	10720			247536	
291	19200	3900	10720			247536	
292	19200	3900	10720	FIXED	FIXED	247536	TIRE
467	153600	30000	82880	FIXED	FIXED	1815264	Truck-Dolley

Table IX.6-3. Load Cases 11 through 16 Inclusive Boundary Conditions and Spring Constants

Node	Translation (lb/in)			Rotation (lb-in/rad)			COMMENT
	X1	X2	X3	X1	X2	X3	
271	19200	3900	10720	FIXED	FIXED	247536	TIRE
272	19200	3900	10720	FIXED	FIXED	247536	
281	19200	3900	10720	FIXED	FIXED	247536	
282	19200	3900	10720	FIXED	FIXED	247536	
291	19200	3900	10720	FIXED	FIXED	247536	
292	19200	3900	10720	FIXED	FIXED	247536	TIRE
331	FREE	FREE	FIXED	FREE	FREE	FREE	LEG
332			FIXED				
365			FIXED				
366			FIXED				
387			FIXED				
388			FIXED				
401			FIXED				
402	FREE		FIXED		FREE		
413	9000000		FIXED		9000000		
414	9000000		FIXED		9000000		
415	FREE		FIXED		FREE		
416	FREE		FIXED		FREE		
417	9000000		FIXED		9000000		
418	9000000		FIXED		9000000		
419	FREE		FIXED		FREE		
420	FREE	FREE	FIXED	FREE	FREE	FREE	LEG

IX.7 STRUCTURE LOAD CASES

The cradle assembly with Loop Handling Machine (LHM) on the transporter trailer was subjected to gravity or 1g inertia loadings in the global directions. The various structure load cases arise from the inclination of the cradle to the trailer when the gravity load is applied and the applicable boundary conditions when the travel conditions are considered. The details of each load case are described in this section.

The method of analysis for each Load Case was as follows. In Step 1 a released structure was analyzed and influence coefficients for the compression-only/tension-only points were determined (see Appendix F included in Volume IV of this report for more details). Next the forces necessary to restore compatibility to the structure consistent with the capabilities of the released points (tension-only members are subjected to tension while compression-only members are subjected to compression) are determined. The second and final step consists of adding these restoring forces to the actual loads on the released structure to obtain the final displacements, member end reactions and member stresses.

IX.7.1 Description of Load Cases

Load Case 1; Figure IX.7.1-1

This load case consists of the LHM with cradle assembly mounted on the transporter trailer. The cradle is attached to the trailer at two elevating cylinders, two trunnions and two horizontal bearing guides. The axis of the cradle is inclined 10° to the trailer floor. The trailer is supported on the rear truck tires and the trailer legs. The applied load is in the global X3 direction and is due to the component dead loads.

Load Case 2; Figure IX.7.1-2

This load case is the failure counterpart to Load Case 1. Here one of the elevating cylinders is removed to simulate its failure.

Load Case 3; Figure IX.7.1-3

This load case consists of the LHM with cradle assembly mounted on the transporter trailer. The cradle is attached to the trailer at two elevating cylinders, two trunnions and two horizontal bearing guides. The axis of the cradle is inclined 46.5° to the trailer floor. The trailer is supported on the rear truck tires and the trailer legs. The applied load is in the global X3 direction and is due to the component dead loads.

Load Case 4; Figure IX.7.1-4

This load case is the failure counterpart to Load Case 3. Here one of the elevating cylinders is removed to simulate its failure.

Load Case 5; Figure IX.7.1-5

This load case consists of the LHM with cradle assembly mounted on the transporter trailer. The cradle is attached to the trailer at two elevating cylinders, two trunnions and two horizontal bearing guides. The axis of the cradle is inclined 90° to the trailer floor. The trailer is supported on the rear truck tires and the trailer legs. The applied load is in the global X3 direction and is due to the component dead load.

Load Case 6; Figure IX.7.1-6

This load case is the failure counterpart to Load Case 5. Here one of the elevating cylinders is removed to simulate its failure.

Load Case 7; Figure IX.7.1-7

This load case consists of the LHM with cradle assembly mounted on the transporter trailer to simulate a travel condition. The cradle is attached to the trailer at two elevating cylinders, two trunnions, two horizontal bearing guides, and two cradle pedestal supports. The axis of the cradle is inclined 10° to the trailer floor. The trailer is supported on the rear truck tires and the front truck cab/jeep dolly tires. The applied load is in the global X3 direction (+lg) and is due to the component dead loads.

Load Case 8 and 9; Figure IX.7.1-8

These load cases are counterparts of Load Case 7. The geometry and connectivity is the same as in Load Case 7. Here X1 inertias (lg loading) are considered. Load Case 8 is due to a +lg inertia applied to the component weights in the X1 direction giving -X1 forces. Load Case 9 is due to a -lg inertia applied to the component weights, yielding forces in the -X1 direction.

Load Case 10; Figure IX.7.1-9

This load case is a counterpart to Load Cases 7, 8 and 9. The geometry and connectivity is the same as in the referenced load cases except at crossbeams 2 and 4 of the cradle. The required alterations to these crossbeams are presented in the discussion of the cradle model. Here a +X2 inertia is applied to the component weight yielding forces in the -X2 direction.

LOAD CASESCASE NO. 1

PARKED POSITION ; 10° ELEVATION ; BOTH ELEVATING CYLINDERS OPERATIONAL ; VERTICAL LOAD.

Figure IX.7.1-1 LHS Load Case 1

CASE NO. 2

PARKED POSITION ; 10° ELEVATION ; ONE ELEVATING ; CYLINDER OPERATIONAL ; VERTICAL LOAD.

Figure IX.7.1-2 LHS Load Case 2

CASE NO. 3

PARKED POSITION ; 45.5° ELEVATION ; BOTH ELEVATING CYLINDER OPERATIONAL ; VERTICAL LOAD.

Figure IX.7.1-3 LHS Load Case 3

LOAD CASESCASE NO. 4

PARKED POSITION ; 46.5° ELEVATION ; ONE ELEVATING CYLINDER OPERATIONAL ; VERTICAL LOAD.

Figure IX.7.1-4 LHS Load Case 4

CASE NO. 5

PARKED POSITION ; 90° ELEVATION ; BOTH ELEVATING CYLINDERS OPERATIONAL ; VERTICAL LOAD.

Figure IX.7.1-5 LHS Load Case 5

LOAD CASESCASE NO. 6

PARKED POSITION ; 90° ELEVATION ; ONE ELEVATING CYLINDER OPERATIONAL ; VERTICAL LOAD.

IX.7.1-6 LHS Load Case 6

CASE NO. 7

TRAVEL POSITION ; 10° ELEVATION ; BOTH ELEVATING CYLINDERS OPERATIONAL ; CRADLE TRAVEL SUPPORT OPERATIONAL ; VERTICAL LOAD.

IX.7.1-7 LHS Load Case 7

CASE NO. 8 AND 9

TRAVEL POSITION ; 10° ELEVATION ; BOTH ELEVATING CYLINDERS
OPERATIONAL ; CRADLE TRAVEL SUPPORT OPERATIONAL ;
LONGITUDINAL INERTIA.

IX.7.1-8 LHS Load Cases 8 and 9

LOAD CASESCASE NO. 10

TRAVEL POSITION ; 10° ELEVATION ; BOTH ELEVATING CYLINDERS
OPERATIONAL ; CRADLE TRAVEL SUPPORT OPERATIONAL ;
TRANSVERSE INERTIA

IX.7.1-9 LHS Load Case 10

Load Case 11

This load case takes the geometry and loading of Load Case 1 and adds the spring restraint at the top of the front trailer leg.

Load Case 12

This load case takes the geometry and loading of Load Case 2 and adds the spring restraint at the top of the front trailer legs.

Load Case 13

This load case takes the geometry and loading of Load Case 3 and adds the spring restraint at the top of the front trailer legs.

Load Case 14

This load case takes the geometry and loading of Load Case 4 and adds the spring restraint at the top of the front trailer legs.

Load Case 15

This load case takes the geometry and loading of Load Case 5 and adds the spring restraint at the top of the front trailer legs.

Load Case 16

This load case takes the geometry and loading of Load Case 6 and adds the spring restraint at the top of the front trailer legs.

IX.7.2 Applied Uniform Loads

The applied uniform loads used in this structural system are due to the density of the LHM cask. The values used were obtained from Chapter II, Figure II.2-1 and Table II.2-1. The appropriate calculations follow:

MAINBODY - LOWER HALF; SHIELD, LOWER SECTION

Uranium	216.9 lb/in
Outside Shell	13.8 lb/in
Inside Shell	2.4 lb/in
	<u>233.1 lb/in</u>

Uniform load of 233.1 lb/in from node 159 to 173 on the LHM centerline. This includes the following members: 525, 526, 527, 528 and 92.

MAINBODY - LOWER HALF; SHIELD, UPPER SECTION

Uranium	122.6 lb/in
Outside Shell	13.8 lb/in
Inside Shell	2.4 lb/in
	<u>138.8 lb/in</u>

Uniform load of 138.8 lb/in from node 95 to 159 on the LHM centerline. This includes the following members: 522, 523, 524 and 77.

MAINBODY - UPPER HALF

Uranium	122.6 lb/in
Outside Shell	18.5 lb/in
Inside Shell	<u>2.4 lb/in</u>
	143.5 lb/in

Uniform load of 143.5 lb/in from node 84 to 95 on the LHM centerline. This includes the following members: 13, 29, 36, 60, 61 and 511 through 521 inclusive.

IX.7.3 Concentrated Nodal Loads

To facilitate orienting the loads in the global coordinate system, all the loop component weights were applied as concentrated nodal loads. For those loads whose center of gravity is offset from the centerline of LHM, the weight has been transferred to the LHM centerline as a concentrated load plus a statically equivalent moment. The following calculations describe the weight, assign a node and calculate an equivalent force system if the weight is offset from the LHM centerline.

These calculations are for the 10° inclined position of the cradle. In the 46.5° and 90° inclined position only the calculations for an equivalent force and moment system will be presented.

The values and location of each weight used were obtained from Chapter II, Figure II.2-1 and Table II.2-1.

In the travel load cases, X1, X2, and X3 acceleration inertias are applied to the nodal weight to generate a static force system in the X1, X2 and X3 directions respectively. As was noted previously, several of the LHM component weights are offset from the LHM centerline. An equivalent force system at the nodes is used to account for this offset. The location and values of the weights were obtained from Chapter II, Figure II.2-1 and Table II.2-1. The calculations for the equivalent force systems only, are now presented.

IX.7.4 Applied Load Summaries (see Table IX.7.4-1 thru 7.4-8)

The following tables summarize the applied loads (uniform, concentrated and inertia) used for each of the structure load cases.

IX.7.5 Structure Dead Load (see Table IX.7.5-1)

The dead load of the structural members are accounted for in the following manner. The weight of each structural member was calculated by the finite element program as length x area x density. The member weight is then lumped at the member's end. The resulting nodal weights are then subjected to an inertia loading of 1g acceleration in the X3 direction to yield the structure dead load.

In some instances the member cross sectional areas was fictitious, (saddle bearing area members) and in other instances the actual member uniform loads (LHM uniform loads) were used. Since the 1g load is applied to all nodal weights, it is necessary to make adjustments to the nodal weight table to subtract out the unwanted weights. Table IX.7.5-1 contain the adjustments to the nodal weight table for Load Cases 1-10.

For Load Cases 11-16, use was made of zero density for the tension-only/compression-only members. Consequently, it is not necessary to subtract out nodal weights. The positive values of Table IX.7.5-1 only are applicable to Load Cases 11-16.

IX.7.6 Influence Coefficient Load Cases (BOP Load Cases) (see Table IX.7.6-1 to 7.6-3)

In the procedure for solving the tension-only/compression-only member situations, it is necessary to develop influence coefficients for the tension/compression-only points. The following table is a tabulation of the load cases used to obtain the required flexibility coefficients.

Table IX.7.4-1. Load Cases 1, 2, 11 and 12, 10° Inclination

<u>Concentrated Load Table</u>					
NODE	FZ(lb)	MX1(lb/in)	MX2(lb/in)	Global Member Uniform Load	
84	-709.0				
85	-994.0				
86	-790.0				
87	-3355.0				
89	-160.0			MEMBER	WZ(lb/in)
90	-234.0		-763.91	525 to 528	-233.1
91	-2438.0			92	-233.1
92	-1251.0			522 to 524	-138.8
93	-5224.0			77	-138.8
94	-454.0			511 to 521	-143.5
95	-1640.0			13	-143.5
96	-305.0			29	-143.5
97	-100.0			36	-143.5
98	-3322.0		-2906.85	60 & 61	-143.5
99	-439.0				
100	-6710.0		-47772.3		
101	-854.0				
111	-100.0				
134	-3160.0	30178.0		STRUCTURE DEAD LOAD	
135	-3160.0	-30178.0		+ 1g X3 inertia to all nodal	
196	-430.0			weights (-X3 Forces)	
197	-3075.0				
198	-3560.0		-7109.3		
271	-410.0				
272	-410.0				
281	-410.0				
282	-410.0				
291	-410.0				
292	-410.0				

Table IX.7.4-2. Load Cases 3, 4, 13 and 14, 46.5° Inclination

<u>Concentrated Load Table</u>					
NODE	FZ(lb)	MX1	MX 2		
84	-709.0				
85	-994.0				
86	-790.0			<u>Global Member Uniform Load</u>	
87	-3355.0			MEMBER	WZ(lb/in)
89	-160.0				
90	-234.0		-3191.07	525 to 528	-233.1
91	-2438.0			92	-233.1
92	-1251.0			522 to 524	-138.8
93	-5224.0			77	-138.8
94	-454.0			511 to 521	-143.5
95	-1640.0			13	-143.5
96	-305.0			29	-143.5
97	-100.0			36	-143.5
98	-3322.0		-12142.8	60 & 61	-143.5
99	-439.0				
100	-6710.0		-199557.7		
101	-854.0				
111	-100.0			STRUCTURE DEAD LOAD	
134	-3160.0	30178.0			
135	-3160.0	-30178.0		+ 1g X3 inertia to all nodal	
196	-430.0			weights (-X3 Forces)	
197	-3075.0				
198	-3560.0		-29696.8		
271	-410.0				
272	-410.0				
281	-410.0				
282	-410.0				
291	-410.0				
292	-410.0				

Table IX.7.4-1. Load Cases 5, 6, 15 and 16, 90° Inclination

<u>Concentrated Load Table</u>					
NODE	FZ(lb)	MX1	MX2	<u>Global Member Uniform Load</u>	
84	-709.0				
85	-994.0				
86	-790.0				
87	-3355.0			MEMBER	WZ(lb/in)
89	-160.0				
90	-234.0		-4399.2	525 to 528	-233.1
91	-2438.0			92	-233.1
92	-1251.0			522 to 524	-138.8
93	-5224.0			77	-138.8
94	-454.0			511 to 521	-143.5
95	-1640.0			13	-143.5
96	-305.0			29	-143.5
97	-100.0			36	-143.5
98	-3322.0		-16740.0	60 & 61	-143.5
99	-439.0				
100	-6710.0		-275110.0		
101	-854.0				
111	-100.0				
134	-3160.0	30178.0			
135	-3160.0	-30178.0			
196	-430.0				
197	-3075.0				
198	-3560.0		-40940.0		
271	-410.0				
272	-410.0				
281	-410.0				
282	-410.0				
291	-410.0				
292	-410.0				

Table IX.7.4-4. Load Case 7, 8, 9 and 10 Concentrated Loads*

NODE	CASE 7 FZ	CASE 8 FX	CASE 9 FX	CASE 10 FY
84	-709.0	-709.0	709.0	-709.0
85	-994.0	-994.0	994.0	-994.0
86	-790.0	-790.0	790.0	-790.0
87	-3355.0	-3355.0	3355.0	-3355.0
89	-160.0	-160.0	160.0	-160.0
90	-234.0	-234.0	234.0	-234.0
91	-2438.0	-2438.0	2438.0	-2438.0
92	-1251.0	-1251.0	1251.0	-1251.0
93	-5224.0	-5224.0	5224.0	-5224.0
94	-454.0	-454.0	454.0	-454.0
95	-1640.0	-1640.0	1640.0	-1640.0
96	-305.0	-305.0	305.0	-305.0
97	-100.0	-100.0	100.0	-100.0
98	-3322.0	-3322.0	3322.0	-3322.0
99	-439.0	-439.0	439.0	-439.0
100	-6710.0	-6710.0	6710.0	-6710.0
101	-854.0	-854.0	854.0	-854.0
111	-100.0	-100.0	100.0	-100.0
134	-3160.0	-3160.0	3160.0	-3160.0
135	-3160.0	-3160.0	3160.0	-3160.0
196	-430.0	-430.0	430.0	-430.0
197	-3075.0	-3075.0	3075.0	-3075.0
198	-3560.0	-3560.0	3060.0	-3060.0
271	-410.0	-410.0	410.0	-410.0
272	-410.0	-410.0	410.0	-410.0
281	-410.0	-410.0	410.0	-410.0
282	-410.0	-410.0	410.0	-410.0
291	-410.0	-410.0	410.0	-410.0
292	-410.0	-410.0	410.0	-410.0

*NOTE: These loads will be entered as nodal weights to ease load input. When the lg inertia is applied in the various directions the weights will then be active.

Table IX.7.4-5. Load Case 7

CONCENTRATED MOMENT DUE TO EQUIVALENT FORCES

NODE	MX1	MX2	MX3
90	0.0	-763.91	
98	0.0	-2906.9	
100	0.0	-47772.4	
134	30178.0	0.0	
135	-30178.0	0.0	
198	0.0	-7109.2	

GLOBAL MEMBER UNIFORM LOAD

MEMBER	WZ(lb/in)
525 to 528	-233.1
92	-233.1
522 to 524	-138.8
77	-138.8
511 to 521	-143.5
13	-143.5
29	-143.5
36	-143.5
60 & 61	-143.5

1g acceleration in the +X3 direction yielding concentrated forces in the -X3 direction (see preceding table).

Table IX.7.4-6. Load Case 8

CONCENTRATED MOMENT DUE TO EQUIVALENT FORCES

NODE	MX1	MX2	MX3
90		-4332.37	0.0
98		-16485.7	0.0
100		-270930.5	0.0
134		0.0	-30178.0
135		0.0	30178.0
198		-40318.0	

GLOBAL MEMBER UNIFORM LOAD

MEMBER	WZ(lb/in)
525 to 528	-233.1
92	-233.1
522 to 524	-138.8
77	-138.8
511 to 521	-143.5
13	-143.5
29	-143.5
36	-143.5
60 & 61	-143.5

1g acceleration in the +X1 direction yielding concentrated forces in the -X1 direction (see preceding table).

Table IX.7.4-7. Load Case 9

CONCENTRATED MOMENT DUE TO EQUIVALENT FORCES

NODE	MX1	MX2	MX3
90		4332.37	0.0
98		16485.7	0.0
100		270930.5	0.0
134		0.0	30178.0
135		0.0	-30178.0
198		40318.0	

GLOBAL MEMBER UNIFORM LOAD

MEMBER	WX(lb/in)
525 to 528	233.1
92	233.1
522 to 524	138.8
77	138.8
511 to 521	143.5
13	143.5
29	143.5
36	143.5
60 & 61	143.5

1g acceleration in the +X1 direction yielding concentrated forces in the -X1 direction (see preceding table).

Table IX.7.4-8. Load Case 10

CONCENTRATED MOMENT DUE TO EQUIVALENT FORCES

NODE	MX1	MX2	MX3
90	4332.37		763.91
98	16485.7		2906.9
100	270930.5		47772.4
134	0.0		0.0
135	0.0		0.0
198	40318.0		7109.2

GLOBAL MEMBER UNIFORM LOAD

MEMBER	WY (lb/in)
525 to 528	-233.1
92	-233.1
522 to 524	-138.8
77	-138.8
511 to 521	-143.5
13	-143.5
29	-143.5
36	-143.5
60 & 61	-143.5

1g acceleration in the +X2 direction yielding concentrated forces in the -X2 direction (see preceding table).

Table IX.7.5-1. Alterations to Nodal Weight Table

NODE	WEIGHT	NODE	WEIGHT
84	-112.98	363	35.0
85	-279.86	364	35.0
86	-312.5	365	35.0
87	-494.46	366	35.0
88	-149.33	385	35.0
89	-183.94	386	35.0
90	-335.24	387	35.0
91	-292.72	388	35.0
92	-198.77	399	35.0
93	-121.64	400	35.0
94	-90.98	401	35.0
95	-173.06	402	35.0
96	-247.23	403	35.0
97	-215.09	414	35.0
98	-284.62	415	35.0
99	-110.05	416	35.0
100	-72.84	417	35.0
101	-43.76	418	35.0
102	-1756.6	419	35.0
111	-551.15	420	35.0
123	-1172.81	485	-594.0
128	-78.3	486	-594.0
129	-78.3	487	-479.95
131	-144.36	494	-113.5
146	-146.35	495	-113.5
147	-1475.1	496	-78.3
159	-113.24	497	-78.3
173	-307.95	498	-663.0
195	-341.2	499	-1127.5
329	35.0	111	-475.7*
330	35.0	147	-594.2*
331	35.0	492	-475.7*
332	35.0	502	-594.2*

*Load Case 10 - additional weights to be removed

Table IX.7.6-1. Load Cases 1 Through 6 Inclusive

BOP LOAD CASE NO.	NODES	FX '	FZ '
1	485	1.0	0.0
	107	-1.0	0.0
2	486	1.0	0.0
	108	-1.0	0.0
3	490	0.0	-1.0
	489	0.0	1.0
4	492	0.0	-1.0
	120	0.0	1.0
5	491	0.0	-1.0
	121	0.0	1.0
6	493	0.0	1.0
	122	0.0	-1.0
7	498	0.0	1.0
	130	0.0	-1.0
8	502	0.0	-1.0
	500	0.0	1.0
9	503	0.0	-1.0
	501	0.0	1.0
10	499	0.0	1.0
	154	0.0	-1.0

Table IX.7.6-2. Load Cases 7, 8 and 9

BOP LOAD CASE NO.	NODES	FX'	FZ'
1	485	1.0	0.0
	107	-1.0	0.0
2	486	1.0	0.0
	108	-1.0	0.0
3	490	0.0	-1.0
	489	0.0	1.0
4	492	0.0	-1.0
	120	0.0	1.0
5	491	0.0	-1.0
	121	0.0	1.0
6	493	0.0	1.0
	122	0.0	-1.0
7	498	0.0	1.0
	130	0.0	-1.0
8	502	0.0	-1.0
	500	0.0	1.0
9	503	0.0	-1.0
	501	0.0	1.0
10	499	0.0	1.0
	154	0.0	-1.0
11	494	1.0	0.0
	496	-1.0	0.0
12	495	1.0	0.0
	497	-1.0	0.0
13	117	0.0	1.0
	505	0.0	-1.0
14	116	0.0	1.0
	504	0.0	-1.0

Table IX.7.6-2. Load Case 10

BOP LOAD CASE NO.	NODES	FX'	FZ'
1	485	1.0	0.0
	107	-1.0	0.0
2	486	1.0	0.0
	108	-1.0	0.0
3	490	0.0	-1.0
	489	0.0	1.0
4	492	0.0	-1.0
	120	0.0	1.0
5	491	.0	-1.0
	121	0.0	1.0
6	493	0.0	1.0
	122	0.0	-1.0
7	498	0.0	1.0
	130	0.0	-1.0
8	502	0.0	-1.0
	500	0.0	1.0
9	503	0.0	-1.0
	501	0.0	1.0
10	499	0.0	1.0
	154	0.0	-1.0
11	494	1.0	0.0
	496	-1.0	0.0
12	495	1.0	0.0
	497	-1.0	0.0
13	117	0.0	1.0
	505	0.0	-1.0
14	116	0.0	1.0
	504	0.0	-1.0

IX.8 Results

IX.8.1 Deflected Shape Plots

Deflected shape plots for SLSF Handling System are given on Figs. IX.8.1-1 to IX.8.1-132.

IX.8.2 Loads on Cradle Beams

These are given in Tables IX.8.2-1 to IX.8.2-21.

IX.8.3 Loads on Trunnion Beams

These are given in Tables IX.8.3-1 to IX.8.3-36.

DEFORMED ELEVATION VIEW OF CASE 1

Figure IX.8.1-1. Deformed Elevation View
of LHS Load Case 1

DEFORMED ISOMETRIC VIEW OF LHM CASE 1

Figure IX.8.1.2. Deformed Isometric View
of LHS Load Case 1

Figure IX.8.1-3. Cross Beam No. 1
- LHS Load Case 1

Figure IX.8.1-4. Cross Beam No.2
- LHS Load Case 1

Table IX.8.1-5. Cross Beam No. 3
- LHS Load Case 1

IX.8.1-6 Counterweight - LHS Load Case 1

Figure IX.8.1-7. Cross Beam No. 4
- LHS Load Case 1

Figure IX.8.1-8. Cross Beam No. 5
- LHS Load Case 1

LOAD CASE 1 PART A

IX.8.1-9 LHS Load Case 1 Part A

LOAD CASE 1 PART B

IX.8.1-10 LHS Load Case 1 Part B

IX.8.1-11 LHS Load Case 1 Part C

LOAD CASE 1 PART C

LOAD CASE 1 PART D

IX.8.1-12 LHS Load Case 1 Part D

DEFORMED ELEVATION VIEW OF CASE 2

Figure IX.8.1-13. Deformed Elevation View
of LHS Load Case 2

Figure IX.9.1-14. Deformed Isometric View
of LHS Load Case 2

CROSS BEAM NO. 1 LOAD CASE 2

Figure IX.8.1-15. Cross Beam No. 1
- LHS Load Case 2

Figure IX.8.1-16. Cross Beam No. 2
- LHS Load Case 2

Figure IX.8.1-17. Cross Beam No. 3
- LHS Load Case 2

IX.8.1-18 Counterweight - LHS Load Case 2

Figure IX.8.1-19. Cross Beam No. 4
- LHS Load Case 2

Figure IX.8.1-20. Cross Beam No. 5
- LHS Load Case 2

LOAD CASE 2 PART A

IX.8.1-21 LHS Load Case 2 Part A

LOAD CASE 2 PART B

IX.8.1-22 LHS Load Case 2 Part B

LOAD CASE 2 PART C

IX.8.1-23 LHS Load Case 2 Part C

LOAD CASE 2 PART D

IX.8.1-24 LHS Load Case 2 Part D

Figure IX.8.1-25. Deformed Elevation View
of LHS Load Case 3

DEFORMED ISOMETRIC VIEW OF LHM CASE 3

Figure IX.8.1-26. Deformed Isometric View
of LHS Load Case 3

Figure IX.8.1-27. Cross Beam No. 1
- LHS Load Case 3

Figure IX.8.1-28. Cross Beam No. 2
- LHS Load Case 3

Figure IX.8.1-29. Cross Beam No. 3
- LHS Load Case 3

IX.8.1-30 Counterweight - LHS Load Case 3

Figure IX.8.1-31. Cross Beam No. 4
Load Case 3

Figure IX.8.1-32. Cross Beam No. 5
- LHS Load Case 3

LOAD CASE 3 PART A

IX.8.1-33 LHS Load Case 3 Part A

LOAD CASE 3 PART B

IX.8.1-34 LHS Load Case 3 Part B

IX.8.1-35 LHS Load Case 3 Part C

LOAD CASE 3 PART D

IX.8.1-36 LHS Load Case 3 Part D

DEFORMED ELEVATION VIEW OF CASE 4

Figure IX.8.1-37. Deformed Elevation View
of LHS Load Case 4

DEFORMED ISOMETRIC VIEW OF LHM CASE 4

IX.8.1-38 Deformed Isometric View of
LHS Load Case 4

Figure IX.8.1-39. Cross Beam No. 1
- LHS Load Case 4

Figure IX.8.1-40. Cross Beam No. 2
- LHS Load Case 4

Figure IX.8.1-41. Cross Beam No. 3
- LHS Load Case 4

IX.8.1-42 Counterweight - LHS Load Case 4

CROSS BEAM NO.4 LOAD CASE 4

Figure IX.8.1-43. Cross Beam No. 4
- LHS Load Case 4

Figure IX.8.1-44. Cross Beam No. 5
- LHS Load Case 4

LOAD CASE 4 PART A

IX.8.1-45 LHS Load Case 4 Part A

LOAD CASE 4 PART B

IX.8.1-46 LHS Load Case 4 Part B

LOAD CASE 4 PART C

IX.8.1-47 LHS Load Case 4 Part C

LOAD CASE 4 PART D

IX.8.1-48 LHS Load Case 4 Part D

DEFORMED ELEVATION VIEW OF CASE 5

Figure IX.8.1-49. Deformed Elevation View
of LHS Load Case 5

DEFORMED ISOMETRIC VIEW OF LHM CASE 5

IX.8.1-50 Deformed Isometric View of
LHS Load Case 5

CROSS BEAM NO. 1 LOAD CASE 5

IX.8.1-51 Cross Beam Number 1 - LHS
Load Case 5

CROSS BEAM NO.2 LOAD CASE 5

IX.8.1-52 Cross Beam Number 2 - LHS
Load Case 5

IX.8.1-53 Cross Beam Number 3 - LHS
Load Case 5

IX.8.1-54 Counterweight - LHS Load Case 5

CROSS BEAM NO.4 LOAD CASE 5

IX.8.1-55 Cross Beam Number 4 - LHS
Load Case 5

IX.8.1-56 Cross Beam Number 5 - LHS
Load Case 5

LOAD CASE 5 PART A

IX.8.1-57 LHS Load Case 5 Part A

LOAD CASE 5 PART B

IX.8.1-58 LHS Load Case 5 Part B

IX.8.1-59 LHS Load Case 5 Part C

LOAD CASE 5 PART D

IX.8.1-60 LHS Load Case 5 Part D

Figure IX.8.1-61. Deformed Elevation View
of LHS Load Case 6

DEFORMED ISOMETRIC VIEW OF LHM CASE 6

Figure IX.8.1-62. Deformed Isometric View
of LHM Load Case 6

Figure IX.8.1-63. Cross Beam No. 1
- LHS Load Case 6

Figure IX.8.1-64. Cross Beam No. 2
- LHS Load Case 6

CROSS BEAM NO. 3 LOAD CASE 6

Figure IX.8.1-65. Cross Beam No. 3
- LHS Load Case 6

IX.8.1-66 Counterweight - LHS Load Case 6

Figure IX.8.1-87.6 Cross Beam No. 4

Figure IX.8.1-68. Cross Beam No. 5
- LHS Load Case 6

LOAD CASE 6 PART A

IX.8.1-69 LHS Load Case 6 Part A

LOAD CASE 6 PART B

IX.8.1-70 LHS Load Case 6 Part B

LOAD CASE 6 PART D

IX.8.1-72 LHS Load Case 6 Part D

Figure IX.8.1-73. Deformed Elevation View
of LHS Case 7

DEFORMED ELEVATION VIEW OF CASE 7

Figure IX.8.1-74. Deformed Isometric View
of LHS Case 7

Figure IX.8.1-75 Cross Beam No. 1
- LHS load Case 7

CROSS BEAM NO. 2 LOAD CASE 7

IX.8.1-76 Cross Beam Number 2 - LHS
Load Case 7

Figure IX.8.1-77. Cross Beam No. 3
- LHS Load Case 7

IX.8.1- /8 Counterweight - LHS Load Case 7

Figure IX.8.1-79. Cross Beam No. 4
- LHS Load Case 7

Figure IX.8.1-80. Cross Beam No. 5
- LHS Load Case 7

LOAD CASE 7 PART A

IX.8.1-81 LHS Load Case 7 Part A

IX.8.1-82 LHS Load Case 7 Part B

LOAD CASE 7 PART C

IX.8.1-83 LHS Load Case 7 Part C

LOAD CASE 7 PART D

IX.8.1-84 LHS Load Case 7 Part D

DEFORMED ELEVATION VIEW OF CASE 8

Figure IX.8.1-85. Deformed Elevation View
of LHS Load Case 8

Figure IX.8.1-86. Deformed Isometric View
of LHS Load Case 8

Figure IX.8.1-87. Cross Beam No. 1
- LHS Load Case 8

Figure IX.8.1-88. Cross Beam No. 2
- LHS Load Case 8

Figure IX.8.1-89. Cross Beam No. 3
- LHS Load Case 8

IX.P.1-90 Counterweight - LHS Load Case 8

Figure IX.8.1-91. Cross Beam No. 4
- LHS Load Case 8

Figure IX.8.1-92. Cross Beam No. 5
- LHS Load Case 8

LOAD CASE 8 PART A

IX.8.1-93 LHS Load Case 8 Part A

LOAD CASE 8 PART B

IX.8.1-94 LHS Load Case 8 Part B

IX.8.1-95 LHS Load Case 8 Part C

IX.8.1-9& LHS Load Case 8 Part D

DEFORMED ELEVATION VIEW OF CASE 9

Figure IX.8.1-97. Deformed Elevation View
of LSC Load Case 9

DEFORMED ISOMETRIC VIEW OF LHM CASE 9

Figure IX.8.1-98. Deformed Isometric View
of LHS Load Case 9

Figure IX.8.1-99. Cross Beam No. 1
- LHS Load Case 9

Figure IX.8.1-100. Cross Beam No. 2
- LHS Load Case 9

Figure IX.8.1-101. Cross Beam No. 3
- LHS Load Case 9

COUNTERWEIGHT LOAD CASE 9

IX.8.1-102 Counterweight - LHS Load Case 9

CROSS BEAM NO. 4 LOAD CASE 9

Figure IX.8.1-103. Cross Beam No. 4
- LHS Load Case 9

Figure IX.8.1-104. Cross Beam No. 5
- LHS Load Case 9

LOAD CASE 9 PART A

IX.8.1-105 LHS Load Case 9 Part A

LOAD CASE 9 PART B

IX.8.1-106 LHS Load Case 9 Part B

IX.8.1-107 LHS Load Case 9 Part C

LOAD CASE 9 PART D

IX.8.1-108 LHS Load Case 9 Part D

DEFORMED ELEVATION VIEW OF CASE 10

Figure IX.8.1-109. Deformed Elevation View
of LHS Load Case 10

Figure IX.8.1-110. Deformed Isometric View
of LHS Load Case 10

CROSS BEAM NO. 1 LOAD CASE 10

Figure IX.8.1-111. Cross Beam No. 1
- LHS Load Case 10

CROSS BEAM NO. 2 LOAD CASE 10

Figure IX.8.1-112. Cross Beam No. 2
- LHS Load Case 10

Figure IX.8.1-113. Cross Beam No. 3
- LHS Load Case 10

COUNTERWEIGHT LOAD CASE 10

IX.8.1-114 Counterweight - LHS Load Case 10

CROSS BEAM NO. 4 LOAD CASE 10

Figure IX.8.1-115. Cross Beam No. 4
- LHS Load Case 10

Figure IX.8.1-116. Cross Beam No. 5
- LHS Load Case 10

LOAD CASE 10 PART A

IX.8.1-117 LHS Load Case 10 Part A

LOAD CASE 10 PART B

IX.8.1-118 LHS Load Case 10 Part B

IX.8.1-119 LHS Load Case 10 Part C

LOAD CASE 10 PART D

IX.8.1-120 LHS Load Case 10 Part D

DEFORMED ELEVATION VIEW OF CASE 11

Figure IX.8.1-121. Deformed Elevation View
of LHS Load Case 11

IX.8.1-122 LHS Load Case 11 Part C

DEFORMED ELEVATION VIEW OF CASE 12

Figure IX.8.1-123. Deformed Elevation View
of LHS Load Case 12

IX.8.1-124 LHS Load Case 12 Part C

DEFORMED ELEVATION VIEW OF CASE 13

Figure IX.8.1-125. Deformed Elevation View
of LHS Load Case 13

IX.8.1-126 LHS Load Case 13 Part C

DEFORMED ELEVATION VIEW OF CASE 14

Figure IX.8.1-127. Deformed Elevation View
of LHS Load Case 14

IX.8.1-128 LHS Load Case 14 Part C

DEFORMED ELEVATION VIEW OF CASE 15

Figure IX.8.1-129. Deformed Elevation View
of LHS Load Case 15

LOAD CASE 15 PART C

IX.8.1-130 LHS Load Case 15 Part C

DEFORMED ELEVATION VIEW OF CASE 18

Figure IX.8.1-131. Deformed Elevation View
of LHS Load Case 16

IX.8.1-132 LHS Load Case 16 Part C

TABLE IX.8.2-1. Loads on Cradle Beams 3 & 4 (See FIG. IX.2.1-1)

MEMBER	FROM	TO	REACTION	NORMAL LOADING									ACCIDENTAL LOADING					
				CASE 1	CASE 3	CASE 5	CASE 7	CASE 8	CASE 9	CASE 11	CASE 13	CASE 15	CASE 17	CASE 19	CASE 16			
105	Axial R1			5.109E 01	6.715E 01	4.349E 01	-3.184E 02	-2.303E 02	-5.326E 02	2.298E 02	-2.226E 01	-4.116E 01	5.086E 01	6.700E 01	3.175E 01	-3.181E 02	-2.300E 02	-3.599E 00
	Shear R2			-2.947E 02	-1.973E 02	-6.790E 01	9.008E 02	6.194E 02	5.476E 01	5.492E 03	7.715E 02	3.307E 03	-2.917E 02	-1.959E 02	-1.693E 01	9.023E 02	6.195E 02	3.982E 01
	Shear R3			-1.448E 01	-6.049E 01	-8.339E 01	1.432E 02	2.252E 02	-3.872E 01	-1.448E 01	-8.212E 01	8.212E 01	-1.448E 01	-6.049E 01	-8.339E 01	1.429E 02	2.247E 01	-5.603E 01
	Tor. M1			2.026E 01	8.456E 01	1.116E 02	3.199E 04	2.345E 04	3.445E 04	2.032E 01	1.148E 02	-1.148E 02	2.026E 01	8.456E 01	1.169E 02	3.194E 04	2.341E 04	1.986E 03
	Bend. M2			6.071E 02	6.953E 02	4.544E 02	-9.320E 03	-7.278E 03	-8.066E 02	5.146E 03	-5.966E 02	-3.471E 02	6.074E 02	6.949E 02	3.408E 02	-9.310E 03	-7.217E 03	4.047E 02
107	Axial R1			-5.109E 01	-6.715E 01	-4.349E 01	3.184E 02	2.303E 02	5.326E 02	-2.298E 02	2.226E 01	4.116E 01	-5.086E 01	-6.700E 01	-3.175E 01	3.181E 02	2.300E 02	-3.599E 00
	Shear R2			2.947E 02	1.973E 02	6.790E 01	-9.008E 02	-6.194E 02	-5.476E 01	-5.492E 03	-7.715E 02	-3.307E 03	2.917E 02	1.959E 02	1.693E 01	-9.023E 02	-6.195E 02	-3.982E 01
	Shear R3			1.448E 01	6.049E 01	8.339E 01	-3.432E 02	-2.252E 02	3.872E 01	1.448E 01	8.212E 01	-8.212E 01	1.448E 01	6.049E 01	8.339E 01	-3.429E 02	-2.247E 02	5.603E 01
	Tor. M1			-2.026E 01	-8.456E 01	-1.116E 02	-3.199E 04	-2.345E 04	-3.445E 04	-2.032E 01	-1.148E 02	1.148E 02	-2.026E 01	-8.456E 01	-1.166E 02	-3.194E 04	-2.341E 04	-1.986E 03
	Bend. M2			-6.071E 02	-6.953E 02	-4.544E 02	9.320E 03	7.278E 03	8.066E 02	-5.146E 03	5.966E 02	3.471E 02	-6.074E 02	-6.949E 02	-3.408E 02	9.310E 03	7.217E 03	-4.047E 02
109	Axial R1			5.109E 01	6.715E 01	4.349E 01	4.392E 02	3.001E 02	8.880E 01	2.798E 02	-2.226E 01	-4.116E 01	5.086E 01	6.700E 01	3.175E 01	-4.388E 02	3.795E 02	6.237E 01
	Shear R2			-2.947E 02	-1.973E 02	-6.790E 01	8.335E 01	4.926E 01	1.309E 01	-5.492E 03	-7.716E 02	-3.307E 03	2.917E 02	1.959E 02	1.693E 01	8.012E 01	4.833E 01	4.674E 00
	Shear R3			1.448E 01	6.049E 01	8.339E 01	3.722E 02	1.367E 02	1.241E 02	1.448E 01	8.212E 01	-8.212E 01	1.448E 01	6.049E 01	8.339E 01	3.718E 02	3.457E 02	1.107E 03
	Tor. M1			-2.026E 01	-8.456E 01	-1.166E 02	3.195E 04	2.338E 04	3.212E 03	-2.016E 01	-1.148E 02	1.148E 02	-2.026E 01	-8.456E 01	-1.166E 02	3.190E 04	2.324E 04	1.753E 03
	Bend. M2			-6.071E 02	-6.953E 02	-4.544E 02	-9.320E 03	-7.278E 03	-8.066E 02	5.146E 03	-5.966E 02	-3.471E 02	6.074E 02	6.949E 02	3.408E 02	-9.310E 03	-7.217E 03	4.047E 02
110	Axial R1			-5.109E 01	-6.715E 01	-4.349E 01	-4.392E 02	-3.001E 02	-8.880E 01	-2.798E 02	2.226E 01	4.116E 01	-5.086E 01	-6.700E 01	-3.175E 01	4.388E 02	-3.795E 02	-6.237E 01
	Shear R2			2.947E 02	1.973E 02	6.790E 01	-8.335E 01	-4.926E 01	-1.309E 01	5.492E 03	7.716E 02	3.307E 03	-2.917E 02	-1.959E 02	-1.693E 01	-8.012E 01	-4.833E 01	-4.674E 00
	Shear R3			-1.448E 01	-6.049E 01	-8.339E 01	-3.722E 02	-1.367E 02	-1.241E 02	-1.448E 01	-8.212E 01	8.212E 01	-1.448E 01	-6.049E 01	-8.339E 01	-3.718E 02	-3.457E 02	-1.107E 03
	Tor. M1			2.026E 01	8.456E 01	1.166E 02	-3.195E 04	-2.338E 04	-3.212E 03	2.016E 01	1.148E 02	-1.148E 02	2.026E 01	8.456E 01	1.166E 02	-3.190E 04	-2.324E 04	-1.753E 03
	Bend. M2			6.071E 02	6.953E 02	4.544E 02	9.320E 03	7.278E 03	8.066E 02	-5.146E 03	5.966E 02	3.471E 02	-6.074E 02	-6.949E 02	-3.408E 02	9.310E 03	7.217E 03	-4.047E 02

Case 1 - Cradle, 10 Normal
Case 2 - Cradle, 10 Single Cylinder
Case 3 - Cradle, 46 S Normal
Case 4 - Cradle, 46 S Single
Case 5 - Cradle Vertical, Normal
Case 6 - Cradle Vertical, Single

TABLE IX.8.2-2. Loads on Cradle Beams 11 & 12 (See FIG. IX.2-1)

MEMBER	FROM	TO	DIRECTION	NORMAL LOADING				ACCIDENTAL LOADING				TRAVEL LOADING				ACCIDENTAL TRAVEL			
				CASE 1	CASE 3	CASE 5	CASE 7	CASE 4	CASE 6	CASE 2	CASE 8	CASE 9	CASE 1	CASE 3	CASE 5	CASE 7	CASE 4	CASE 6	CASE 2
112	axial	41		3.787E-01	1.582E-02	2.181E-02	1.956E-02	4.438E-02	2.679E-02	1.797E-01	2.148E-02	-2.149E-02	1.582E-01	2.181E-02	1.956E-02	4.438E-02	2.679E-02	1.797E-01	2.148E-02
	shear	42		-1.621E-02	1.046E-02	-6.790E-01	4.908E-01	4.438E-01	1.399E-01	8.851E-01	2.402E-01	3.325E-01	1.591E-02	1.046E-01	-1.621E-01	5.251E-01	4.438E-01	4.676E-00	4.676E-00
	shear	43		-5.109E-01	-6.715E-01	4.449E-01	-4.382E-02	1.956E-02	-8.890E-01	2.149E-02	2.226E-01	4.116E-01	5.086E-01	-6.715E-01	1.175E-01	-4.388E-02	-3.794E-01	6.237E-01	6.237E-01
	top	30		-6.116E-02	-2.664E-02	-1.912E-02	2.519E-04	1.907E-04	2.724E-03	1.513E-04	2.765E-03	1.165E-03	-5.496E-02	-2.664E-02	1.912E-02	2.519E-04	-1.803E-04	1.608E-03	1.608E-03
	bend	32		1.386E-03	2.407E-03	1.368E-03	9.827E-03	9.848E-03	6.292E-03	6.860E-02	-1.164E-03	1.878E-03	1.462E-03	2.407E-03	9.848E-03	4.613E-03	8.876E-03	1.539E-03	1.539E-03
	bend	33		-9.046E-03	-4.905E-03	-3.050E-03	-2.873E-04	-2.039E-04	4.557E-04	2.813E-05	1.774E-04	1.659E-05	-2.896E-03	-4.905E-03	-3.107E-02	-2.852E-04	-2.029E-04	1.712E-03	1.712E-03
111	axial	40		-3.787E-01	-1.582E-02	2.181E-02	1.956E-02	4.438E-02	2.679E-02	1.797E-01	2.148E-02	-2.149E-02	-1.582E-01	-2.181E-02	-1.956E-02	-4.438E-02	-2.679E-02	-1.797E-01	-2.148E-02
	shear	42		1.621E-02	1.046E-02	6.790E-01	4.908E-01	4.438E-01	1.399E-01	8.851E-01	2.402E-01	3.325E-01	1.591E-02	1.046E-01	1.621E-01	-5.251E-01	-4.438E-01	4.676E-00	4.676E-00
	shear	43		5.109E-01	6.715E-01	4.449E-01	-4.382E-02	1.956E-02	-8.890E-01	2.149E-02	2.226E-01	4.116E-01	5.086E-01	6.715E-01	1.175E-01	4.388E-02	3.794E-01	6.237E-01	6.237E-01
	top	30		6.116E-02	2.664E-02	1.912E-02	2.519E-04	1.907E-04	2.724E-03	1.513E-04	2.765E-03	1.165E-03	5.496E-02	2.664E-02	1.912E-02	2.519E-04	1.803E-04	1.608E-03	1.608E-03
	bend	32		6.682E-02	9.508E-02	6.064E-02	1.213E-04	1.911E-04	2.137E-03	5.297E-03	-2.510E-02	6.936E-02	6.636E-02	9.508E-02	6.908E-02	1.232E-04	1.009E-04	1.574E-03	1.574E-03
	bend	33		-5.842E-03	-2.441E-02	-3.165E-02	1.120E-04	2.253E-04	-2.833E-03	5.801E-03	1.115E-02	3.114E-02	-5.842E-03	-2.441E-02	-3.165E-02	1.115E-04	2.253E-04	1.476E-03	1.476E-03
113	axial	41		3.787E-01	1.582E-02	2.181E-02	1.956E-02	4.438E-02	2.679E-02	1.797E-01	2.148E-02	-2.149E-02	1.582E-01	2.181E-02	1.956E-02	4.438E-02	2.679E-02	1.797E-01	2.148E-02
	shear	42		-1.621E-02	1.046E-02	-6.790E-01	4.908E-01	4.438E-01	1.399E-01	8.851E-01	2.402E-01	3.325E-01	1.591E-02	1.046E-01	1.693E-01	-5.251E-01	-4.438E-01	4.676E-00	4.676E-00
	shear	43		-5.109E-01	-6.715E-01	4.449E-01	-4.382E-02	1.956E-02	-8.890E-01	2.149E-02	2.226E-01	4.116E-01	5.086E-01	-6.715E-01	1.175E-01	-4.388E-02	-3.794E-01	6.237E-01	6.237E-01
	top	30		-6.116E-02	-2.664E-02	-1.912E-02	2.519E-04	1.907E-04	2.724E-03	1.513E-04	2.765E-03	1.165E-03	-5.496E-02	-2.664E-02	1.912E-02	2.519E-04	-1.803E-04	1.608E-03	1.608E-03
	bend	32		-1.386E-03	-2.407E-03	1.368E-03	9.827E-03	9.848E-03	6.292E-03	6.860E-02	-1.164E-03	1.878E-03	1.462E-03	-2.407E-03	9.848E-03	4.613E-03	8.876E-03	1.539E-03	1.539E-03
	bend	33		9.046E-03	4.905E-03	3.050E-03	8.230E-04	5.945E-04	-4.033E-04	-2.813E-05	-1.774E-04	-1.659E-05	2.896E-03	4.905E-03	3.107E-02	8.301E-04	5.861E-04	4.142E-03	4.142E-03
114	axial	40		-3.787E-01	-1.582E-02	2.181E-02	1.956E-02	4.438E-02	2.679E-02	1.797E-01	2.148E-02	-2.149E-02	-1.582E-01	-2.181E-02	-1.956E-02	-4.438E-02	-2.679E-02	-1.797E-01	-2.148E-02
	shear	42		1.621E-02	1.046E-02	6.790E-01	4.908E-01	4.438E-01	1.399E-01	8.851E-01	2.402E-01	3.325E-01	1.591E-02	1.046E-01	1.693E-01	-5.251E-01	-4.438E-01	4.676E-00	4.676E-00
	shear	43		5.109E-01	-6.715E-01	4.449E-01	-4.382E-02	1.956E-02	-8.890E-01	2.149E-02	2.226E-01	4.116E-01	5.086E-01	-6.715E-01	1.175E-01	1.181E-02	2.308E-02	3.599E-00	3.599E-00
	top	30		-6.116E-02	-2.664E-02	-1.912E-02	2.519E-04	1.907E-04	2.724E-03	1.513E-04	2.765E-03	1.165E-03	-5.496E-02	-2.664E-02	1.912E-02	2.519E-04	1.803E-04	1.608E-03	1.608E-03
	bend	32		-6.682E-02	-9.508E-02	-6.064E-02	1.213E-04	1.911E-04	2.137E-03	5.297E-03	-2.510E-02	6.937E-02	1.879E-03	-9.508E-02	-6.919E-02	1.039E-04	7.974E-03	1.443E-02	1.443E-02
	bend	33		-5.842E-03	-2.441E-02	-3.165E-02	-1.111E-04	-2.044E-04	-5.976E-03	-5.951E-03	1.114E-02	3.116E-02	2.896E-03	-2.441E-02	-3.165E-02	-1.127E-04	-2.299E-04	2.151E-03	2.151E-03

TABLE IX.8.2-3. Loads on Cradle Beams 25 & 26 (See FIG. IX.2.2-2)

NUMBER	FROM	TO	SITUATION	NORMAL LOADING				ACCIDENTAL LOADING				TRAVEL LOADING				APPROXIMATE SPACING			
				CASE 1	CASE 3	CASE 5	CASE 7	CASE 1	CASE 3	CASE 5	CASE 7	CASE 1	CASE 3	CASE 5	CASE 7	1	2	3	4
119	119	119	Normal	9.516E-02	-9.566E-02	-1.062E-01	9.471E-01	1.000E-01	1.001E-02	1.076E-02	1.097E-01	4.132E-02	8.505E-02	8.600E-02	1.000E-02	1.000E-02	8.660E-02	-1.062E-01	1.065E-02
			Dead	1.449E-01	-1.062E-01	7.517E-01	1.045E-04	2.100E-01	6.472E-01	1.001E-01	1.001E-01	1.761E-01	1.454E-01	1.000E-01	1.000E-01	1.000E-01	1.044E-01	-7.171E-01	-2.025E-02
			Dead	-1.075E-01	-7.834E-01	-1.000E-02	6.693E-02	4.907E-01	7.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	4.700E-02	-1.000E-01
			Live	5.375E-02	1.562E-02	1.519E-01	1.400E-01	7.571E-04	1.000E-04	1.000E-01	1.000E-01	6.405E-02	5.713E-02	1.000E-01	1.000E-01	1.000E-01	1.000E-01	7.557E-04	5.904E-01
			Dead	6.369E-01	-8.060E-01	3.007E-01	2.411E-04	2.077E-04	6.001E-01	1.117E-01	1.767E-01	4.362E-01	5.165E-01	6.001E-01	1.000E-01	1.000E-01	2.410E-04	-2.393E-04	1.100E-01
120	120	120	Normal	8.604E-01	-4.761E-01	1.047E-01	8.449E-04	2.435E-04	5.172E-01	5.116E-01	1.001E-01	1.001E-01	8.675E-01	4.290E-01	4.71E-02	1.000E-01	2.619E-04	1.100E-01	1.100E-01
			Dead	8.516E-02	9.856E-02	8.967E-02	8.672E-02	1.000E-01	1.001E-01	1.000E-01	1.000E-01	4.132E-02	8.505E-02	8.600E-02	1.000E-02	1.000E-02	1.062E-01	1.065E-02	
			Dead	1.449E-01	1.000E-01	7.517E-01	1.045E-04	2.100E-01	6.472E-01	1.001E-01	1.001E-01	1.761E-01	1.454E-01	1.000E-01	1.000E-01	1.000E-01	1.044E-01	7.171E-01	2.025E-02
			Dead	1.075E-01	7.834E-01	1.000E-02	6.693E-02	4.907E-01	7.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	4.700E-02	-1.000E-01
			Live	-5.375E-02	-1.562E-02	-1.519E-01	1.040E-01	7.571E-04	1.000E-04	1.000E-01	1.000E-01	6.405E-02	5.713E-02	1.000E-01	1.000E-01	1.000E-01	1.000E-01	7.557E-04	5.904E-01
121	121	121	Normal	6.583E-01	8.964E-01	4.544E-01	1.700E-04	1.046E-04	5.000E-01	2.000E-01	1.000E-01	5.000E-01	5.000E-01	5.000E-01	5.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01
			Dead	7.960E-01	7.272E-01	1.000E-02	-1.541E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01
122	122	122	Normal	-8.516E-02	-9.856E-02	1.000E-01	8.672E-02	1.000E-01	1.001E-01	1.000E-01	1.000E-01	4.132E-02	8.505E-02	8.600E-02	1.000E-02	1.000E-02	1.062E-01	1.065E-02	
			Dead	1.449E-01	1.000E-01	7.517E-01	1.045E-04	2.100E-01	6.472E-01	1.001E-01	1.001E-01	1.761E-01	1.454E-01	1.000E-01	1.000E-01	1.000E-01	1.044E-01	7.171E-01	2.025E-02
			Dead	1.075E-01	7.834E-01	1.000E-02	6.693E-02	4.907E-01	7.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	4.700E-02	-1.000E-01
			Live	-5.375E-02	-1.562E-02	-1.519E-01	1.040E-01	7.571E-04	1.000E-04	1.000E-01	1.000E-01	6.405E-02	5.713E-02	1.000E-01	1.000E-01	1.000E-01	1.000E-01	7.557E-04	5.904E-01
123	123	123	Normal	6.583E-01	8.964E-01	4.544E-01	1.700E-04	1.046E-04	5.000E-01	2.000E-01	1.000E-01	5.000E-01	5.000E-01	5.000E-01	5.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01
			Dead	7.960E-01	7.272E-01	1.000E-02	-1.541E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01
124	124	124	Normal	8.516E-02	9.856E-02	1.000E-01	8.672E-02	1.000E-01	1.001E-01	1.000E-01	1.000E-01	4.132E-02	8.505E-02	8.600E-02	1.000E-02	1.000E-02	1.062E-01	1.065E-02	
			Dead	1.449E-01	1.000E-01	7.517E-01	1.045E-04	2.100E-01	6.472E-01	1.001E-01	1.001E-01	1.761E-01	1.454E-01	1.000E-01	1.000E-01	1.000E-01	1.044E-01	7.171E-01	2.025E-02
			Dead	1.075E-01	7.834E-01	1.000E-02	6.693E-02	4.907E-01	7.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	4.700E-02	-1.000E-01
			Live	-5.375E-02	-1.562E-02	-1.519E-01	1.040E-01	7.571E-04	1.000E-04	1.000E-01	1.000E-01	6.405E-02	5.713E-02	1.000E-01	1.000E-01	1.000E-01	1.000E-01	7.557E-04	5.904E-01
125	125	125	Normal	6.583E-01	8.964E-01	4.544E-01	1.700E-04	1.046E-04	5.000E-01	2.000E-01	1.000E-01	5.000E-01	5.000E-01	5.000E-01	5.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01
			Dead	7.960E-01	7.272E-01	1.000E-02	-1.541E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01
126	126	126	Normal	8.516E-02	9.856E-02	1.000E-01	8.672E-02	1.000E-01	1.001E-01	1.000E-01	1.000E-01	4.132E-02	8.505E-02	8.600E-02	1.000E-02	1.000E-02	1.062E-01	1.065E-02	
			Dead	1.449E-01	1.000E-01	7.517E-01	1.045E-04	2.100E-01	6.472E-01	1.001E-01	1.001E-01	1.761E-01	1.454E-01	1.000E-01	1.000E-01	1.000E-01	1.044E-01	7.171E-01	2.025E-02
			Dead	1.075E-01	7.834E-01	1.000E-02	6.693E-02	4.907E-01	7.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	4.700E-02	-1.000E-01
			Live	-5.375E-02	-1.562E-02	-1.519E-01	1.040E-01	7.571E-04	1.000E-04	1.000E-01	1.000E-01	6.405E-02	5.713E-02	1.000E-01	1.000E-01	1.000E-01	1.000E-01	7.557E-04	5.904E-01
127	127	127	Normal	6.583E-01	8.964E-01	4.544E-01	1.700E-04	1.046E-04	5.000E-01	2.000E-01	1.000E-01	5.000E-01	5.000E-01	5.000E-01	5.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01
			Dead	7.960E-01	7.272E-01	1.000E-02	-1.541E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01
			Dead	1.075E-01	7.834E-01	1.000E-02	6.693E-02	4.907E-01	7.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	1.000E-01	4.700E-02	-1.000E-01
			Live	-5.375E-02	-1.562E-02	-1.519E-01	1.040E-01	7.571E-04	1.000E-04	1.000E-01	1.000E-01	6.405E-02	5.713E-02	1.000E-01	1.000E-01	1.000E-01	1.000E-01	7.557E-04	5.904E-01
			Dead	6.369E-01	-8.060E-01	3.007E-01	2.411E-04	2.077E-04	6.001E-01	1.117E-01	1.767E-01	4.362E-01	5.165E-01	6.001E-01	1.000E-01	1.000E-01	2.410E-04	-2.393E-04	1.100E-01

TABLE IX.8.2-5. Loads on Cradle Beams 34 & 35 (See FIG. IX.2-1)

[illegible]

TABLE IX.8.2-6. Loads of Cradle Beams 44 & 45 (See FIG. IX.2.3-1)

 

Case 1 - Cradle, 40 Normal
Case 2 - Cradle, 11 Single
Case 3 - Cradle, 40 Normal
Case 4 - Cradle, 40 Normal
Case 5 - Cradle, 40 Normal
Case 6 - Cradle, 40 Normal

TABLE IX.8.2-9. Loads on Cradle Beams 56 & 57 (See FIGS. IX.3.1-1 & IX.3.1-2)

Beam No.	Location	Normal Loading			Accidental Loading			Travel Loading			Other Loading			Accidental Loading		
		Case 1			Case 2			Case 3			Case 4			Case 5		
		Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7	Case 8	Case 9	Case 10	Case 11	Case 12	Case 13	Case 14	Case 15
56	Top	9.949E-01	-1.047E-04	-1.351E-03	-1.715E-04	1.677E-04	5.558E-05	6.991E-03	1.677E-03	1.944E-03	6.941E-03	1.481E-03	6.952E-03	1.713E-04	-1.823E-04	1.852E-03
	Bottom	6.609E-03	4.400E-03	1.404E-02	2.979E-03	5.479E-03	1.144E-03	1.054E-03	8.722E-03	6.694E-02	6.694E-03	4.144E-03	6.694E-03	2.694E-03	5.115E-03	-4.547E-03
	Left	2.925E-02	3.695E-02	2.012E-02	2.641E-02	2.777E-02	1.999E-02	1.475E-02	1.144E-03	1.766E-02	2.572E-02	3.694E-02	1.075E-02	1.014E-02	2.767E-02	9.692E-03
	Right	1.130E-04	2.310E-04	6.011E-03	8.699E-03	6.919E-03	1.766E-04	1.766E-04	1.400E-03	1.766E-03	1.110E-04	1.375E-03	1.176E-03	1.490E-04	6.697E-04	5.661E-03
	Front	1.676E-04	-1.796E-04	-6.946E-03	1.672E-04	3.419E-04	1.140E-04	6.945E-03	1.140E-03	6.759E-03	1.675E-04	1.766E-03	1.440E-03	1.440E-03	-1.419E-04	-6.946E-03
	Rear	1.145E-02	2.759E-04	8.964E-03	1.464E-03	1.151E-03	1.151E-04	1.170E-03	1.141E-03	-1.069E-03	1.145E-02	1.170E-03	1.075E-03	2.694E-03	1.145E-04	6.154E-03
57	Top	9.949E-01	1.647E-04	1.351E-03	1.715E-04	1.677E-04	5.558E-05	6.991E-03	1.677E-03	1.944E-03	6.941E-03	1.481E-03	6.952E-03	1.713E-04	1.823E-04	2.851E-03
	Bottom	6.609E-03	4.400E-03	1.404E-02	2.979E-03	5.479E-03	1.144E-03	1.054E-03	8.722E-03	6.694E-02	6.694E-03	4.144E-03	6.694E-03	2.694E-03	5.115E-03	4.547E-03
	Left	2.925E-02	3.695E-02	2.012E-02	2.641E-02	2.777E-02	1.999E-02	1.475E-02	1.144E-03	1.766E-02	2.572E-02	3.694E-02	1.075E-02	1.014E-02	2.767E-02	9.692E-03
	Right	1.130E-04	2.310E-04	6.011E-03	8.699E-03	6.919E-03	1.766E-04	1.766E-04	1.400E-03	1.766E-03	1.110E-04	1.375E-03	1.176E-03	1.490E-04	6.697E-04	5.661E-03
	Front	1.117E-04	1.151E-04	3.496E-03	2.719E-04	2.117E-04	9.545E-03	6.517E-03	2.117E-03	1.711E-03	1.116E-04	1.151E-04	1.147E-03	1.711E-04	2.932E-04	4.146E-03
	Rear	4.596E-02	-1.023E-03	-6.292E-03	6.733E-04	5.804E-04	1.350E-04	9.489E-04	1.101E-04	9.759E-04	4.146E-04	1.146E-03	1.440E-03	1.711E-04	1.693E-04	-1.015E-03
58	Top	9.949E-01	-1.047E-04	-1.351E-03	-1.715E-04	1.677E-04	5.558E-05	6.991E-03	1.677E-03	1.944E-03	6.941E-03	1.481E-03	6.952E-03	1.713E-04	-1.823E-04	1.852E-03
	Bottom	6.609E-03	4.400E-03	1.404E-02	2.979E-03	5.479E-03	1.144E-03	1.054E-03	8.722E-03	6.694E-02	6.694E-03	4.144E-03	6.694E-03	2.694E-03	5.115E-03	-4.547E-03
	Left	2.925E-02	3.695E-02	2.012E-02	2.641E-02	2.777E-02	1.999E-02	1.475E-02	1.144E-03	1.766E-02	2.572E-02	3.694E-02	1.075E-02	1.014E-02	2.767E-02	9.692E-03
	Right	1.130E-04	2.310E-04	6.011E-03	8.699E-03	6.919E-03	1.766E-04	1.766E-04	1.400E-03	1.766E-03	1.110E-04	1.375E-03	1.176E-03	1.490E-04	6.697E-04	5.661E-03
	Front	1.117E-04	1.151E-04	3.496E-03	2.719E-04	2.117E-04	9.545E-03	6.517E-03	2.117E-03	1.711E-03	1.116E-04	1.151E-04	1.147E-03	1.711E-04	2.932E-04	4.146E-03
	Rear	4.596E-02	-1.023E-03	-6.292E-03	6.733E-04	5.804E-04	1.350E-04	9.489E-04	1.101E-04	9.759E-04	4.146E-04	1.146E-03	1.440E-03	1.711E-04	1.693E-04	-1.015E-03
59	Top	9.949E-01	-1.047E-04	-1.351E-03	-1.715E-04	1.677E-04	5.558E-05	6.991E-03	1.677E-03	1.944E-03	6.941E-03	1.481E-03	6.952E-03	1.713E-04	-1.823E-04	1.852E-03
	Bottom	6.609E-03	4.400E-03	1.404E-02	2.979E-03	5.479E-03	1.144E-03	1.054E-03	8.722E-03	6.694E-02	6.694E-03	4.144E-03	6.694E-03	2.694E-03	5.115E-03	-4.547E-03
	Left	2.925E-02	3.695E-02	2.012E-02	2.641E-02	2.777E-02	1.999E-02	1.475E-02	1.144E-03	1.766E-02	2.572E-02	3.694E-02	1.075E-02	1.014E-02	2.767E-02	9.692E-03
	Right	1.130E-04	2.310E-04	6.011E-03	8.699E-03	6.919E-03	1.766E-04	1.766E-04	1.400E-03	1.766E-03	1.110E-04	1.375E-03	1.176E-03	1.490E-04	6.697E-04	5.661E-03
	Front	1.117E-04	1.151E-04	3.496E-03	2.719E-04	2.117E-04	9.545E-03	6.517E-03	2.117E-03	1.711E-03	1.116E-04	1.151E-04	1.147E-03	1.711E-04	2.932E-04	4.146E-03
	Rear	4.596E-02	-1.023E-03	-6.292E-03	6.733E-04	5.804E-04	1.350E-04	9.489E-04	1.101E-04	9.759E-04	4.146E-04	1.146E-03	1.440E-03	1.711E-04	1.693E-04	-1.015E-03
60	Top	9.949E-01	1.647E-04	1.351E-03	1.715E-04	1.677E-04	5.558E-05	6.991E-03	1.677E-03	1.944E-03	6.941E-03	1.481E-03	6.952E-03	1.713E-04	1.823E-04	2.851E-03
	Bottom	6.609E-03	4.400E-03	1.404E-02	2.979E-03	5.479E-03	1.144E-03	1.054E-03	8.722E-03	6.694E-02	6.694E-03	4.144E-03	6.694E-03	2.694E-03	5.115E-03	4.547E-03
	Left	2.925E-02	3.695E-02	2.012E-02	2.641E-02	2.777E-02	1.999E-02	1.475E-02	1.144E-03	1.766E-02	2.572E-02	3.694E-02	1.075E-02	1.014E-02	2.767E-02	9.692E-03
	Right	1.130E-04	2.310E-04	6.011E-03	8.699E-03	6.919E-03	1.766E-04	1.766E-04	1.400E-03	1.766E-03	1.110E-04	1.375E-03	1.176E-03	1.490E-04	6.697E-04	5.661E-03
	Front	1.117E-04	1.151E-04	3.496E-03	2.719E-04	2.117E-04	9.545E-03	6.517E-03	2.117E-03	1.711E-03	1.116E-04	1.151E-04	1.147E-03	1.711E-04	2.932E-04	4.146E-03
	Rear	4.596E-02	-1.023E-03	-6.292E-03	6.733E-04	5.804E-04	1.350E-04	9.489E-04	1.101E-04	9.759E-04	4.146E-04	1.146E-03	1.440E-03	1.711E-04	1.693E-04	-1.015E-03

Case 1 - Cradle, 10 Normal
Case 2 - Cradle, 10 Single
Case 3 - Cradle, 40 S Normal
Case 4 - Cradle, 40 S Single
Case 5 - Cradle Vertical, Normal
Case 6 - Cradle Vertical, Single

TABLE IX.8.2-10. Loads on Cradle Beams 58 & 59 (See FIG. IX.2-1)

MEMBER FROM TO	TO SECTION	NORMAL LOADING					ACCIDENTAL LOADING					TRAVEL LOADING					ACCIDENTAL LOADING				
		Case 1	Case 3	Case 5	Case 7	Case 9	Case 1	Case 3	Case 5	Case 7	Case 9	Case 1	Case 3	Case 5	Case 7	Case 9	Case 1	Case 3	Case 5	Case 7	Case 9
110	Avail R1	2.231E-04	2.427E-04	-8.865E-05	3.621E-04	4.438E-04	1.399E-04	0.000E+00	1.491E-04	0.000E+00	0.000E+00	2.420E-04	2.420E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	Avail S2	-8.795E-03	-6.429E-03	-2.061E-03	2.100E-03	1.557E-03	-0.000E+00	-0.000E+00	1.057E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	Shear R3	9.113E-02	1.188E-01	6.552E-02	4.066E-02	6.642E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	Shear S3	-2.248E-04	1.659E-04	2.017E-03	4.953E-04	1.048E-04	-0.000E+00	-0.000E+00	-0.000E+00	-0.000E+00	-0.000E+00	1.648E-04	1.648E-04	0.000E+00	0.000E+00	0.000E+00	1.648E-04	1.648E-04	0.000E+00	0.000E+00	0.000E+00
	End R2	1.527E-04	2.454E-04	1.867E-04	1.534E-04	1.000E-04	1.000E-04	1.000E-04	1.000E-04	1.000E-04	1.000E-04	1.000E-04	1.000E-04	1.000E-04	1.000E-04	1.000E-04	1.000E-04	1.000E-04	1.000E-04	1.000E-04	1.000E-04
	End S3	1.047E-04	-8.462E-05	-5.009E-04	2.007E-04	1.503E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
111	Avail R1	2.231E-04	2.427E-04	-8.865E-05	3.621E-04	4.438E-04	1.399E-04	0.000E+00	1.491E-04	0.000E+00	0.000E+00	2.420E-04	2.420E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	Avail S2	-8.795E-03	-6.429E-03	-2.061E-03	2.100E-03	1.557E-03	-0.000E+00	-0.000E+00	1.057E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	Shear R3	9.113E-02	1.188E-01	6.552E-02	4.066E-02	6.642E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	Shear S3	-2.248E-04	1.659E-04	2.017E-03	4.953E-04	1.048E-04	-0.000E+00	-0.000E+00	-0.000E+00	-0.000E+00	-0.000E+00	1.648E-04	1.648E-04	0.000E+00	0.000E+00	0.000E+00	1.648E-04	1.648E-04	0.000E+00	0.000E+00	0.000E+00
	End R2	5.142E-04	6.022E-04	2.747E-04	4.111E-04	6.079E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.439E-04	2.439E-04	0.000E+00	0.000E+00	0.000E+00	2.439E-04	2.439E-04	0.000E+00	0.000E+00	0.000E+00
	End S3	6.172E-05	-4.671E-05	-9.690E-04	1.141E-04	9.274E-05	1.637E-04	1.637E-04	1.637E-04	1.637E-04	1.637E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
112	Avail R1	2.231E-04	2.427E-04	-8.865E-05	3.621E-04	4.438E-04	1.399E-04	0.000E+00	1.491E-04	0.000E+00	0.000E+00	2.420E-04	2.420E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	Avail S2	-8.795E-03	-6.429E-03	-2.061E-03	2.100E-03	1.557E-03	-0.000E+00	-0.000E+00	1.057E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	Shear R3	9.113E-02	1.188E-01	6.552E-02	4.066E-02	6.642E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	Shear S3	-2.248E-04	1.659E-04	2.017E-03	4.953E-04	1.048E-04	-0.000E+00	-0.000E+00	-0.000E+00	-0.000E+00	-0.000E+00	1.648E-04	1.648E-04	0.000E+00	0.000E+00	0.000E+00	1.648E-04	1.648E-04	0.000E+00	0.000E+00	0.000E+00
	End R2	1.527E-04	2.454E-04	1.867E-04	1.534E-04	1.000E-04	1.000E-04	1.000E-04	1.000E-04	1.000E-04	1.000E-04	1.000E-04	1.000E-04	1.000E-04	1.000E-04	1.000E-04	1.000E-04	1.000E-04	1.000E-04	1.000E-04	1.000E-04
	End S3	1.047E-04	-8.462E-05	-5.009E-04	2.007E-04	1.503E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
113	Avail R1	2.231E-04	2.427E-04	-8.865E-05	3.621E-04	4.438E-04	1.399E-04	0.000E+00	1.491E-04	0.000E+00	0.000E+00	2.420E-04	2.420E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	Avail S2	-8.795E-03	-6.429E-03	-2.061E-03	2.100E-03	1.557E-03	-0.000E+00	-0.000E+00	1.057E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	Shear R3	9.113E-02	1.188E-01	6.552E-02	4.066E-02	6.642E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	Shear S3	-2.248E-04	1.659E-04	2.017E-03	4.953E-04	1.048E-04	-0.000E+00	-0.000E+00	-0.000E+00	-0.000E+00	-0.000E+00	1.648E-04	1.648E-04	0.000E+00	0.000E+00	0.000E+00	1.648E-04	1.648E-04	0.000E+00	0.000E+00	0.000E+00
	End R2	5.142E-04	6.022E-04	2.747E-04	4.111E-04	6.079E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.439E-04	2.439E-04	0.000E+00	0.000E+00	0.000E+00	2.439E-04	2.439E-04	0.000E+00	0.000E+00	0.000E+00
	End S3	6.172E-05	-4.671E-05	-9.690E-04	1.141E-04	9.274E-05	1.637E-04	1.637E-04	1.637E-04	1.637E-04	1.637E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

TABLE IX.8.2-12. Loads on Cradle Beams 75 & 76 (See FIG. IX.2-1)

Crate	Load Case	NORMAL LOADING						TRAVEL LOADING						ACCIDENTAL LOADING					
		CASE 1		CASE 2		CASE 3		CASE 4		CASE 5		CASE 6		CASE 7		CASE 8		CASE 9	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
75	Dead wt.	2.22E+04	2.89E+04	8.29E+03	1.00E+04	1.00E+04	1.19E+04	1.35E+04	4.35E+03	2.95E+03	2.22E+04	2.19E+04	2.76E+04	1.36E+04	1.43E+04	1.36E+04	1.43E+04	1.36E+04	1.43E+04
	Dead wt.	1.17E+04	8.54E+03	8.60E+03	2.16E+03	1.14E+03	1.10E+03	1.46E+03	4.16E+03	8.52E+03	1.06E+04	8.50E+03	5.43E+03	2.15E+03	1.43E+03	1.43E+03	1.43E+03	1.43E+03	1.43E+03
	Dead wt.	1.25E+03	4.17E+02	2.22E+03	2.25E+02	2.17E+02	2.44E+03	1.13E+03	2.97E+03	1.96E+03	1.26E+03	4.06E+03	2.76E+03	2.63E+02	2.07E+02	2.76E+02	2.76E+02	2.76E+02	2.76E+02
	Dead wt.	1.29E+04	2.15E+04	1.43E+04	1.54E+05	1.12E+05	2.17E+05	1.62E+04	2.99E+03	1.40E+04	1.15E+04	2.15E+04	1.99E+04	1.54E+05	1.12E+05	1.12E+05	1.12E+05	1.12E+05	1.12E+05
	Dead wt.	1.70E+04	1.65E+04	6.67E+04	1.11E+04	4.67E+03	2.06E+04	4.57E+03	1.14E+05	6.94E+04	5.72E+04	1.63E+04	6.13E+04	6.12E+04	4.90E+03	2.82E+03	2.82E+03	2.82E+03	2.82E+03
	Dead wt.	5.05E+05	2.61E+05	4.96E+05	1.21E+05	1.63E+05	4.96E+05	6.12E+05	4.17E+05	5.16E+05	5.03E+05	2.66E+05	1.99E+05	1.22E+05	1.54E+05	1.54E+05	1.54E+05	1.54E+05	1.54E+05
76	Dead wt.	2.22E+04	2.89E+04	8.29E+03	1.00E+04	1.00E+04	1.19E+04	1.35E+04	4.35E+03	2.95E+03	2.22E+04	2.19E+04	2.76E+04	1.36E+04	1.43E+04	1.36E+04	1.43E+04	1.36E+04	1.43E+04
	Dead wt.	1.17E+04	8.54E+03	8.60E+03	2.16E+03	1.14E+03	1.10E+03	1.46E+03	4.16E+03	8.52E+03	1.06E+04	8.50E+03	5.43E+03	2.15E+03	1.43E+03	1.43E+03	1.43E+03	1.43E+03	1.43E+03
	Dead wt.	1.25E+03	4.17E+02	2.22E+03	2.25E+02	2.17E+02	2.44E+03	1.13E+03	2.97E+03	1.96E+03	1.26E+03	4.06E+03	2.76E+03	2.63E+02	2.07E+02	2.76E+02	2.76E+02	2.76E+02	2.76E+02
	Dead wt.	1.29E+04	2.15E+04	1.43E+04	1.54E+05	1.12E+05	2.17E+05	1.62E+04	2.99E+03	1.40E+04	1.15E+04	2.15E+04	1.99E+04	1.54E+05	1.12E+05	1.12E+05	1.12E+05	1.12E+05	1.12E+05
	Dead wt.	1.70E+04	1.65E+04	6.67E+04	1.11E+04	4.67E+03	2.06E+04	4.57E+03	1.14E+05	6.94E+04	5.72E+04	1.63E+04	6.13E+04	6.12E+04	4.90E+03	2.82E+03	2.82E+03	2.82E+03	2.82E+03
	Dead wt.	1.76E+05	5.04E+04	2.29E+05	1.76E+05	1.94E+05	2.99E+05	2.87E+05	1.90E+05	1.12E+05	1.75E+05	5.64E+04	1.69E+05	1.69E+05	1.73E+05	1.89E+05	1.92E+05	1.92E+05	1.92E+05
77	Dead wt.	2.22E+04	2.89E+04	8.29E+03	1.00E+04	1.00E+04	1.19E+04	1.35E+04	4.35E+03	2.95E+03	2.22E+04	2.19E+04	2.76E+04	1.36E+04	1.43E+04	1.36E+04	1.43E+04	1.36E+04	1.43E+04
	Dead wt.	1.17E+04	8.54E+03	8.60E+03	2.16E+03	1.14E+03	1.10E+03	1.46E+03	4.16E+03	8.52E+03	1.06E+04	8.50E+03	5.43E+03	2.15E+03	1.43E+03	1.43E+03	1.43E+03	1.43E+03	1.43E+03
	Dead wt.	1.25E+03	4.17E+02	2.22E+03	2.25E+02	2.17E+02	2.44E+03	1.13E+03	2.97E+03	1.96E+03	1.26E+03	4.06E+03	2.76E+03	2.63E+02	2.07E+02	2.76E+02	2.76E+02	2.76E+02	2.76E+02
	Dead wt.	1.29E+04	2.15E+04	1.43E+04	1.54E+05	1.12E+05	2.17E+05	1.62E+04	2.99E+03	1.40E+04	1.15E+04	2.15E+04	1.99E+04	1.54E+05	1.12E+05	1.12E+05	1.12E+05	1.12E+05	1.12E+05
	Dead wt.	1.70E+04	1.65E+04	6.67E+04	1.11E+04	4.67E+03	2.06E+04	4.57E+03	1.14E+05	6.94E+04	5.72E+04	1.63E+04	6.13E+04	6.12E+04	4.90E+03	2.82E+03	2.82E+03	2.82E+03	2.82E+03
	Dead wt.	5.05E+05	2.61E+05	4.96E+05	1.21E+05	1.63E+05	4.96E+05	6.12E+05	4.17E+05	5.16E+05	5.03E+05	2.66E+05	1.99E+05	1.22E+05	1.54E+05	1.54E+05	1.54E+05	1.54E+05	1.54E+05
78	Dead wt.	2.22E+04	2.89E+04	8.29E+03	1.00E+04	1.00E+04	1.19E+04	1.35E+04	4.35E+03	2.95E+03	2.22E+04	2.19E+04	2.76E+04	1.36E+04	1.43E+04	1.36E+04	1.43E+04	1.36E+04	1.43E+04
	Dead wt.	1.17E+04	8.54E+03	8.60E+03	2.16E+03	1.14E+03	1.10E+03	1.46E+03	4.16E+03	8.52E+03	1.06E+04	8.50E+03	5.43E+03	2.15E+03	1.43E+03	1.43E+03	1.43E+03	1.43E+03	1.43E+03
	Dead wt.	1.25E+03	4.17E+02	2.22E+03	2.25E+02	2.17E+02	2.44E+03	1.13E+03	2.97E+03	1.96E+03	1.26E+03	4.06E+03	2.76E+03	2.63E+02	2.07E+02	2.76E+02	2.76E+02	2.76E+02	2.76E+02
	Dead wt.	1.29E+04	2.15E+04	1.43E+04	1.54E+05	1.12E+05	2.17E+05	1.62E+04	2.99E+03	1.40E+04	1.15E+04	2.15E+04	1.99E+04	1.54E+05	1.12E+05	1.12E+05	1.12E+05	1.12E+05	1.12E+05
	Dead wt.	1.70E+04	1.65E+04	6.67E+04	1.11E+04	4.67E+03	2.06E+04	4.57E+03	1.14E+05	6.94E+04	5.72E+04	1.63E+04	6.13E+04	6.12E+04	4.90E+03	2.82E+03	2.82E+03	2.82E+03	2.82E+03
	Dead wt.	5.05E+05	2.61E+05	4.96E+05	1.21E+05	1.63E+05	4.96E+05	6.12E+05	4.17E+05	5.16E+05	5.03E+05	2.66E+05	1.99E+05	1.22E+05	1.54E+05	1.54E+05	1.54E+05	1.54E+05	1.54E+05

TABLE IX.8.2-15. Loads on Cradle Beams 90 & 91 (See FIG. IX.2-1)

MEMBER FROM TO	FUNCTION	NORMAL LOADING						ACCIDENTAL LOADING						IMPACT LOADING						SEISMIC LOADING						ACCIDENTAL LOADING					
		CASE 1	CASE 3	CASE 5	CASE 7	CASE 4	CASE 6	CASE 7	CASE 8	CASE 9	CASE 10	CASE 11	CASE 12	CASE 13	CASE 14	CASE 15	CASE 16	CASE 17	CASE 18	CASE 19	CASE 20	CASE 21	CASE 22	CASE 23	CASE 24	CASE 25	CASE 26	CASE 27	CASE 28	CASE 29	CASE 30
101	Actual R1	9.919E-03	3.725E-04	5.116E-04	9.149E-03	3.672E-04	5.144E-04	9.991E-03	3.647E-04	5.082E-04	9.899E-03	9.125E-04	3.111E-04	1.216E-03	3.645E-04	5.119E-04															
	Seismic R2	4.269E-03	4.234E-03	3.439E-03	3.177E-03	3.674E-03	2.896E-03	3.177E-03	3.669E-03	3.019E-03	4.224E-03	4.269E-03	3.669E-03	3.177E-03	2.896E-03	3.177E-03															
	Seismic R3	9.374E-02	6.239E-02	2.872E-02	2.758E-02	3.046E-02	2.877E-02	3.046E-02	3.046E-02	3.564E-02	9.173E-02	9.273E-02	8.165E-02	2.776E-02	2.092E-02	3.164E-02															
	Surf R1	2.546E-04	2.457E-03	5.573E-04	5.573E-04	3.455E-04	4.473E-04	1.172E-04	3.668E-04	9.962E-03	2.519E-04	8.127E-03	1.658E-04	5.546E-04	2.514E-04	1.862E-04															
	Wind R2	4.193E-03	3.676E-04	2.599E-04	1.713E-04	9.549E-05	2.632E-04	384E-05	1.407E-04	2.730E-04	2.730E-04	4.963E-03	3.669E-04	1.674E-04	3.235E-04	1.012E-04	4.456E-05														
	Wind R3	5.922E-04	1.954E-05	5.292E-05	2.186E-05	1.645E-05	5.441E-05	9.449E-05	6.476E-05	5.268E-05	5.268E-05	9.910E-05	6.117E-05	1.167E-05	1.624E-05	5.473E-05															
102	Actual R1	9.919E-03	3.725E-04	5.116E-04	9.149E-03	3.672E-04	5.144E-04	9.991E-03	3.647E-04	5.082E-04	9.899E-03	9.125E-04	3.111E-04	1.216E-03	3.645E-04	5.119E-04															
	Seismic R2	4.269E-03	4.234E-03	3.439E-03	3.177E-03	3.674E-03	2.896E-03	3.177E-03	3.669E-03	3.019E-03	4.224E-03	4.269E-03	3.669E-03	3.177E-03	2.896E-03	3.177E-03															
	Seismic R3	9.374E-02	6.239E-02	2.872E-02	2.758E-02	3.046E-02	2.877E-02	3.046E-02	3.046E-02	3.564E-02	9.173E-02	9.273E-02	8.165E-02	2.776E-02	2.092E-02	3.164E-02															
	Surf R1	2.546E-04	2.457E-03	5.573E-04	5.573E-04	3.455E-04	4.473E-04	1.172E-04	3.668E-04	9.962E-03	2.519E-04	8.127E-03	1.658E-04	5.546E-04	2.514E-04	1.862E-04															
	Wind R2	4.193E-04	6.979E-03	9.111E-04	7.114E-04	9.913E-04	9.913E-04	1.407E-04	1.407E-04	4.716E-04	3.694E-04	9.241E-04	4.144E-04	7.340E-04	6.927E-04	5.113E-04															
	Wind R3	2.235E-05	5.567E-05	4.487E-05	1.191E-05	9.411E-05	4.473E-05	1.191E-05	7.795E-05	4.911E-05	2.141E-05	9.549E-05	7.564E-05	1.410E-05	9.733E-05	6.466E-05															
103	Actual R1	9.919E-03	3.725E-04	5.116E-04	9.149E-03	3.672E-04	5.144E-04	9.991E-03	3.647E-04	5.082E-04	9.899E-03	9.125E-04	3.111E-04	1.216E-03	3.645E-04	5.119E-04															
	Seismic R2	4.269E-03	4.234E-03	3.439E-03	3.177E-03	3.674E-03	2.896E-03	3.177E-03	3.669E-03	3.019E-03	4.224E-03	4.269E-03	3.669E-03	3.177E-03	2.896E-03	3.177E-03															
	Seismic R3	9.374E-02	6.239E-02	2.872E-02	2.758E-02	3.046E-02	2.877E-02	3.046E-02	3.046E-02	3.564E-02	9.173E-02	9.273E-02	8.165E-02	2.776E-02	2.092E-02	3.164E-02															
	Surf R1	2.546E-04	2.457E-03	5.573E-04	5.573E-04	3.455E-04	4.473E-04	1.172E-04	3.668E-04	9.962E-03	2.519E-04	8.127E-03	1.658E-04	5.546E-04	2.514E-04	1.862E-04															
	Wind R2	4.193E-03	3.676E-04	2.599E-04	1.713E-04	9.549E-05	2.632E-04	384E-05	1.407E-04	2.730E-04	2.730E-04	4.963E-03	3.669E-04	1.674E-04	3.235E-04	1.012E-04	4.456E-05														
	Wind R3	5.922E-04	1.954E-05	5.292E-05	2.186E-05	1.645E-05	5.441E-05	9.449E-05	6.476E-05	5.268E-05	5.268E-05	9.910E-05	6.117E-05	1.167E-05	1.624E-05	5.473E-05															
104	Actual R1	9.919E-03	3.725E-04	5.116E-04	9.149E-03	3.672E-04	5.144E-04	9.991E-03	3.647E-04	5.082E-04	9.899E-03	9.125E-04	3.111E-04	1.216E-03	3.645E-04	5.119E-04															
	Seismic R2	4.269E-03	4.234E-03	3.439E-03	3.177E-03	3.674E-03	2.896E-03	3.177E-03	3.669E-03	3.019E-03	4.224E-03	4.269E-03	3.669E-03	3.177E-03	2.896E-03	3.177E-03															
	Seismic R3	9.374E-02	6.239E-02	2.872E-02	2.758E-02	3.046E-02	2.877E-02	3.046E-02	3.046E-02	3.564E-02	9.173E-02	9.273E-02	8.165E-02	2.776E-02	2.092E-02	3.164E-02															
	Surf R1	2.546E-04	2.457E-03	5.573E-04	5.573E-04	3.455E-04	4.473E-04	1.172E-04	3.668E-04	9.962E-03	2.519E-04	8.127E-03	1.658E-04	5.546E-04	2.514E-04	1.862E-04															
	Wind R2	4.193E-03	3.676E-04	2.599E-04	1.713E-04	9.549E-05	2.632E-04	384E-05	1.407E-04	2.730E-04	2.730E-04	4.963E-03	3.669E-04	1.674E-04	3.235E-04	1.012E-04	4.456E-05														
	Wind R3	5.922E-04	1.954E-05	5.292E-05	2.186E-05	1.645E-05	5.441E-05	9.449E-05	6.476E-05	5.268E-05	5.268E-05	9.910E-05	6.117E-05	1.167E-05	1.624E-05	5.473E-05															

Case 1 - Cradle, 1x Normal
Case 2 - Cradle, 1x Simple Cylinder
Case 3 - Cradle, 4x 5 Normal
Case 4 - Cradle, 4x 5 Simple
Case 5 - Cradle Vertical, Normal
Case 6 - Cradle Vertical, Simple

TABLE IX.8.2-16. Loads on Cradle Beams 95 & 96 (See FIG. IX.2-1)

Case	Type	Size	Normal Loading			Asymmetric Loading			Thermal Loading			Combined Loading			Total Stress (MPa)		
			Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7	Case 8	Case 9	Case 10	Case 11	Case 12	Case 13	Case 14	Case 15
1	Cylindrical	400	Normal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Thermal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Combined	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Stress	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Strain	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Displacement	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Temperature	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Factor of Safety	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Volume	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Mass	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	Conical	400	Normal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Thermal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Combined	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Stress	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Strain	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Displacement	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Temperature	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Factor of Safety	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Volume	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Mass	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	Cylindrical	400	Normal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Thermal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Combined	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Stress	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Strain	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Displacement	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Temperature	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Factor of Safety	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Volume	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Mass	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	Conical	400	Normal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Thermal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Combined	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Stress	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Strain	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Displacement	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Temperature	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Factor of Safety	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Volume	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Mass	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

FIG. IX.8.2-17. Loads on Trailer Beams 408 & 409 (See FIG. IX.4.1-5)

 
	W4	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	W5	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	W6	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	W7	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	W8	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	W9	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	W10	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Case 1 - Grade, 1 - Single

Case 2 - Grade, 1 - Single

Case 3 - Grade, 1 - Single

Case 4 - Grade, 1 - Single

Case 5 - Grade, 1 - Single

Case 6 - Grade, 1 - Single

Case 7 - Grade, 1 - Single

Case 8 - Grade, 1 - Single

 

FIG. IX.8.2-18. Loads on Trailer Beams 410 & 411 (See FIG. IX.4.1-5)

[illegible]

FIG. IX.8.2-19. Loads on Trailer Beam 412 (See FIG. IX.4.1-5)

 
19.0	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
20.0	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Case 1 - stable, 10 Normal
Case 2 - stable, 10 Single
Case 3 - stable, 10 Normal
Case 4 - stable, 10 Normal
Case 5 - stable vertical, Normal
Case 6 - stable vertical, Single

FIG. IX.8.2-20. Loads on Cradle Beams 536 & 537 (See FIG. IX.2-1)

[illegible]

TABLE IX.8.3-1. Loads on Trunnion Beams 102 & 103 (See FIG. IX.2-1)

Category	Case	Normal Loading				Accidental Loading				Normal Loading				Accidental Loading				Remarks
		Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7	Case 8	Case 9	Case 10	Case 11	Case 12	Case 13	Case 14	Case 15		
I	1	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		
	2	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		
	3	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		
	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		
II	1	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		
	2	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		
	3	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		
	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		
III	1	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		
	2	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		
	3	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		
	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		

TABLE IX.8.3-2. Loads on Trunnion Beams 104 & 105 (See FIGS. IX.3.3-1 & IX.3.3-2)

[illegible]

TABLE IX.8.3-4. Loads on Trunnion Beams 112 & 113 (See FIGS. IX.3.3-1 & IX.3.3-2)

MEMBER	FROM	TO	NORMAL LOADING						ACCIDENTAL LOADING					
			BEAM 112 (kips)						BEAM 113 (kips)					
			1	2	3	4	5	6	1	2	3	4	5	6
112	Beam 112	Beam 111	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03
		Beam 113	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03
		Beam 114	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03
		Beam 115	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03
		Beam 116	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03
	Beam 113	Beam 111	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03
		Beam 113	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03
		Beam 114	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03
		Beam 115	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03
		Beam 116	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03
113	Beam 112	Beam 111	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03
		Beam 113	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03
		Beam 114	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03
		Beam 115	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03
		Beam 116	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03
	Beam 113	Beam 111	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03
		Beam 113	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03
		Beam 114	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03
		Beam 115	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03
		Beam 116	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03

TABLE IX.8.3-6. Loads on Trunnion Beams 120 & 115 (See FIGS. IX.3.3-1 & IX.3.3-2)

[illegible]

TABLE IX.8.3-7. Loads on Trunnion Beams 122 & 127 (See FIGS. IX 3.3-1 & IX.3.3-2)

TRUNNION BEAM	Direction	Normal Loading				Accidental Loading				Emergency Loading				Normal Loading				Accidental Loading			
		Case 1	Case 3	Case 5	Case 2	Case 4	Case 6	Case 7	Case 8	Case 9	Case 12	Case 11	Case 13	Case 15	Case 12	Case 14	Case 16	Case 15	Case 12	Case 14	Case 16
122	Vertical	1.760E+03	2.750E+02	1.637E+03	4.400E+02	2.430E+03	0	1.760E+03	1.760E+03	1.760E+03	2.750E+02	1.760E+03	1.760E+03	1.760E+03	1.760E+03	2.750E+02	1.637E+03	4.400E+02	2.430E+03	1.760E+03	1.760E+03
	Horizontal	5.631E+02	7.430E+02	2.636E+03	1.760E+03	1.760E+03	0	5.631E+02	5.631E+02	5.631E+02	7.430E+02	5.631E+02	5.631E+02	5.631E+02	5.631E+02	7.430E+02	2.636E+03	1.760E+03	1.760E+03	5.631E+02	5.631E+02
	Shear	6.745E+02	0.000E+00	2.636E+03	2.636E+03	2.636E+03	0	6.745E+02	6.745E+02	6.745E+02	0.000E+00	6.745E+02	6.745E+02	6.745E+02	6.745E+02	0.000E+00	2.636E+03	2.636E+03	2.636E+03	6.745E+02	6.745E+02
	Torsion	0.000E+00	0.000E+00	2.636E+03	0.000E+00	0.000E+00	0	0.000E+00	0.000E+00	0.000E+00	2.636E+03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.636E+03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	Wind	1.760E+03	0.000E+00	2.636E+03	1.760E+03	1.760E+03	0	1.760E+03	1.760E+03	1.760E+03	0.000E+00	1.760E+03	1.760E+03	1.760E+03	1.760E+03	0.000E+00	2.636E+03	1.760E+03	1.760E+03	1.760E+03	1.760E+03
127	Vertical	1.760E+03	2.750E+02	1.637E+03	4.400E+02	2.430E+03	0	1.760E+03	1.760E+03	1.760E+03	2.750E+02	1.760E+03	1.760E+03	1.760E+03	1.760E+03	2.750E+02	1.637E+03	4.400E+02	2.430E+03	1.760E+03	1.760E+03
	Horizontal	5.631E+02	7.430E+02	2.636E+03	1.760E+03	1.760E+03	0	5.631E+02	5.631E+02	5.631E+02	7.430E+02	5.631E+02	5.631E+02	5.631E+02	5.631E+02	7.430E+02	2.636E+03	1.760E+03	1.760E+03	5.631E+02	5.631E+02
	Shear	6.745E+02	0.000E+00	2.636E+03	2.636E+03	2.636E+03	0	6.745E+02	6.745E+02	6.745E+02	0.000E+00	6.745E+02	6.745E+02	6.745E+02	6.745E+02	0.000E+00	2.636E+03	2.636E+03	2.636E+03	6.745E+02	6.745E+02
	Torsion	0.000E+00	0.000E+00	2.636E+03	0.000E+00	0.000E+00	0	0.000E+00	0.000E+00	0.000E+00	2.636E+03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.636E+03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	Wind	1.760E+03	0.000E+00	2.636E+03	1.760E+03	1.760E+03	0	1.760E+03	1.760E+03	1.760E+03	0.000E+00	1.760E+03	1.760E+03	1.760E+03	1.760E+03	0.000E+00	2.636E+03	1.760E+03	1.760E+03	1.760E+03	1.760E+03
128	Vertical	1.760E+03	2.750E+02	1.637E+03	4.400E+02	2.430E+03	0	1.760E+03	1.760E+03	1.760E+03	2.750E+02	1.760E+03	1.760E+03	1.760E+03	1.760E+03	2.750E+02	1.637E+03	4.400E+02	2.430E+03	1.760E+03	1.760E+03
	Horizontal	5.631E+02	7.430E+02	2.636E+03	1.760E+03	1.760E+03	0	5.631E+02	5.631E+02	5.631E+02	7.430E+02	5.631E+02	5.631E+02	5.631E+02	5.631E+02	7.430E+02	2.636E+03	1.760E+03	1.760E+03	5.631E+02	5.631E+02
	Shear	6.745E+02	0.000E+00	2.636E+03	2.636E+03	2.636E+03	0	6.745E+02	6.745E+02	6.745E+02	0.000E+00	6.745E+02	6.745E+02	6.745E+02	6.745E+02	0.000E+00	2.636E+03	2.636E+03	2.636E+03	6.745E+02	6.745E+02
	Torsion	0.000E+00	0.000E+00	2.636E+03	0.000E+00	0.000E+00	0	0.000E+00	0.000E+00	0.000E+00	2.636E+03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.636E+03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	Wind	1.760E+03	0.000E+00	2.636E+03	1.760E+03	1.760E+03	0	1.760E+03	1.760E+03	1.760E+03	0.000E+00	1.760E+03	1.760E+03	1.760E+03	1.760E+03	0.000E+00	2.636E+03	1.760E+03	1.760E+03	1.760E+03	1.760E+03

TABLE IX.8.3-8. Loads on Trunnion Beams 126 & 123 (See FIGS. IX.3.3-1 & IX.3.3-2)

[illegible]

TABLE IX.8.3-10. Loads on Trunnion Beams 130 & 129 (See FIGS. IX.3.3-1 & IX.3.3-2)

Beam	Type	Loc.	Normal Loading										Accidental Loading				Case	16
			Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7	Case 8	Case 9	Case 10	Case 11	Case 12	Case 13	Case 14	Case 15	Case 16
130	130	130	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04
			1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04
			1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04
			1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04
			1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04
129	129	129	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04
			1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04
			1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04
			1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04
			1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04
129	129	129	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04
			1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04
			1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04
			1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04
			1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04	1.000 04

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TABLE IX.8.3-11. Loads on Trunnion Seams 132 & 143 (See FIGS. IX.3.3-1 & IX.3.3-2)

		NORMAL LOADING				EXCESSIVE LOADING				SHOCK LOADING				NORMAL LOADING				ACCIDENTAL LOADING				
SEAM	TRUNNION	CASE 1	CASE 2	CASE 3	CASE 4	CASE 5	CASE 6	CASE 7	CASE 8	CASE 9	CASE 10	CASE 11	CASE 12	CASE 13	CASE 14	CASE 15	CASE 16					
Case 1	Normal	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	Case 1			
	Vertical	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	Case 2			
	Horizontal	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	Case 3			
	Diagonal	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	Case 4			
	Random	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	Case 5			
Case 2	Normal	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	Case 6			
	Vertical	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	Case 7			
	Horizontal	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	Case 8			
	Diagonal	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	Case 9			
	Random	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	Case 10			
Case 3	Normal	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	Case 11			
	Vertical	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	Case 12			
	Horizontal	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	Case 13			
	Diagonal	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	Case 14			
	Random	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	Case 15			
Case 4	Normal	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	Case 16			
	Vertical	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	Case 17			
	Horizontal	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	Case 18			
	Diagonal	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	Case 19			
	Random	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	Case 20			
Case 5	Normal	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	Case 21			
	Vertical	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	Case 22			
	Horizontal	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	Case 23			
	Diagonal	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	Case 24			
	Random	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	1.56E+02	Case 25			

TABLE IX.8.3-13. Loads on Trunnion Beams 142 & 133 (See FIGS. IX.3.3-1 & IX.3.3-2)

Beam	Reaction	Normal Loading							Accidental Loading						
		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5	CASE 6	CASE 7	CASE 8	CASE 9	CASE 10	CASE 11	CASE 12	CASE 13	CASE 14
142	Rear RL	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	Rear RR	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	Front RL	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	Front RR	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	Left RL	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	Left RR	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	Right RL	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	Right RR	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	Left RL	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	Left RR	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
133	Rear RL	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	Rear RR	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	Front RL	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	Front RR	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	Left RL	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	Left RR	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	Right RL	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	Right RR	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	Left RL	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	Left RR	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

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TABLE IX.8.3-16. Loads on Trunnion Beams 140 & 135 (See FIGS. IX.3.3-1 & IX.3.3-2)

[illegible]

TABLE IX.8.3-17. Loads on Trunnion Beams 146 & 145 (See FIGS. IX.3.3-1 & IX.3.3-2)

[illegible]

TABLE IX.8.3-18. Loads on Trunnion Beams 144 & 147 (See Figs. IX.3.3-1 & IX.3.3-2)

[illegible]

TABLE IX.8.3-19. Loads on Trunnion Beams 148 & 155 (See FIGS. IX.3.3-1 & IX.3.3-2)

Case	AGENCY LOADING			ACCIDENTAL LOADING			TRAVEL LOADING			NONMTR LOADING					ACCIDENTAL LOADING			
	Case 1	Case 3	Case 5	Case 2	Case 4	Case 6	Case 8	Case 9	Case 10	Case 11	Case 13	Case 15	Case 12	Case 14	Case 16			
5-2-1-1	1.964E-01	2.600E-01	2.200E-01	-1.311E-01	2.034E-01	2.563E-01	3.150E-01	-2.267E-01	7.311E-01	1.606E-01	1.627E-01	-1.281E-01	1.664E-01	1.664E-01	1.797E-01			
5-2-2-1	1.715E-01	1.494E-01	1.793E-01	2.076E-01	1.655E-01	-2.763E-01	6.164E-01	5.300E-01	-1.219E-01	1.669E-01	-1.914E-02	2.031E-02	-1.670E-02	-0.033E-02	1.797E-01			
5-2-3-1	1.414E-01	1.014E-01	1.301E-01	8.555E-01	1.209E-01	1.590E-01	3.139E-01	4.519E-01	-6.442E-01	-7.441E-01	9.561E-02	-1.719E-02	-1.591E-02	-1.031E-02	1.797E-01			
5-2-4-1	1.156E-01	1.274E-01	1.430E-02	9.495E-01	1.160E-02	1.925E-01	-0.094E-01	1.000E-01	3.922E-01	2.942E-01	6.470E-02	1.194E-01	-1.591E-01	2.001E-01	1.797E-01			
5-2-5-1	1.910E-01	9.550E-01	-1.534E-01	6.146E-01	-1.315E-01	1.530E-01	2.305E-01	2.501E-01	4.653E-01	2.064E-01	8.461E-01	4.716E-01	1.263E-01	8.474E-01	1.797E-01			
5-2-6-1	1.523E-01	-1.039E-01	1.531E-01	1.067E-01	-2.379E-01	1.800E-01	5.140E-01	4.147E-01	-1.067E-01	1.471E-01	-1.460E-01	1.822E-01	-2.748E-01	-6.716E-01	1.797E-01			
5-2-7-1	1.964E-01	6.600E-01	-2.200E-01	1.311E-01	2.034E-01	2.563E-01	3.150E-01	2.267E-01	7.311E-01	1.606E-01	-6.445E-01	-1.627E-01	-1.664E-01	-1.797E-01	1.797E-01			
5-2-8-1	1.715E-01	1.494E-01	-1.793E-01	-2.076E-01	-1.655E-01	2.763E-01	6.164E-01	-5.300E-01	-1.219E-01	-1.669E-01	1.914E-02	-2.031E-02	1.670E-02	0.033E-02	1.797E-01			
5-2-9-1	1.414E-01	1.014E-01	-1.301E-01	-8.555E-01	1.209E-01	1.590E-01	3.139E-01	-2.519E-01	6.442E-01	7.441E-01	9.561E-02	-1.719E-02	-1.591E-02	-1.031E-02	1.797E-01			
5-3-1-1	-2.156E-01	-1.274E-01	-1.430E-02	-9.495E-01	-1.160E-02	-1.925E-01	0.094E-01	1.000E-01	-3.922E-01	-2.942E-01	-6.470E-02	-1.194E-01	1.591E-01	-2.001E-01	1.797E-01			
5-3-2-1	8.250E-02	8.751E-01	-2.620E-01	-2.639E-01	5.605E-01	-2.601E-01	2.669E-01	-2.000E-01	1.648E-01	-7.501E-02	8.774E-01	2.349E-01	-5.949E-01	2.051E-01	1.797E-01			
5-3-3-1	1.543E-01	-1.659E-01	1.707E-01	1.881E-01	-3.527E-01	1.500E-01	-5.786E-01	4.695E-01	-1.131E-01	1.517E-01	-1.174E-01	-6.815E-01	1.846E-01	-2.716E-01	1.797E-01			
5-3-4-1	3.704E-01	6.600E-01	2.200E-01	1.311E-01	2.034E-01	2.563E-01	3.150E-01	2.267E-01	-7.311E-01	-1.606E-01	6.445E-01	1.627E-01	1.664E-01	1.797E-01	1.797E-01			
5-3-5-1	1.715E-01	1.494E-01	-1.793E-01	-2.076E-01	-1.655E-01	2.763E-01	6.164E-01	-5.300E-01	-1.219E-01	-1.669E-01	1.914E-02	-2.031E-02	1.670E-02	0.033E-02	1.797E-01			
5-3-6-1	1.414E-01	1.014E-01	-1.301E-01	-8.555E-01	1.209E-01	1.590E-01	3.139E-01	-2.519E-01	6.442E-01	7.441E-01	9.561E-02	-1.719E-02	-1.591E-02	-1.031E-02	1.797E-01			
5-3-7-1	-2.156E-01	-1.274E-01	-1.430E-02	-9.495E-01	-1.160E-02	-1.925E-01	0.094E-01	1.000E-01	-3.922E-01	-2.942E-01	-6.470E-02	-1.194E-01	1.591E-01	-2.001E-01	1.797E-01			
5-3-8-1	8.250E-02	8.751E-01	-2.620E-01	-2.639E-01	5.605E-01	-2.601E-01	2.669E-01	-2.000E-01	1.648E-01	-7.501E-02	8.774E-01	2.349E-01	-5.949E-01	2.051E-01	1.797E-01			
5-3-9-1	1.543E-01	-1.659E-01	1.707E-01	1.881E-01	-3.527E-01	1.500E-01	-5.786E-01	4.695E-01	-1.131E-01	1.517E-01	-1.174E-01	-6.815E-01	1.846E-01	-2.716E-01	1.797E-01			
5-4-1-1	3.704E-01	6.600E-01	2.200E-01	1.311E-01	2.034E-01	2.563E-01	3.150E-01	2.267E-01	-7.311E-01	-1.606E-01	6.445E-01	1.627E-01	1.664E-01	1.797E-01	1.797E-01			
5-4-2-1	1.715E-01	1.494E-01	-1.793E-01	-2.076E-01	-1.655E-01	2.763E-01	6.164E-01	-5.300E-01	-1.219E-01	-1.669E-01	1.914E-02	-2.031E-02	1.670E-02	0.033E-02	1.797E-01			
5-4-3-1	1.414E-01	1.014E-01	-1.301E-01	-8.555E-01	1.209E-01	1.590E-01	3.139E-01	-2.519E-01	6.442E-01	7.441E-01	9.561E-02	-1.719E-02	-1.591E-02	-1.031E-02	1.797E-01			
5-4-4-1	-2.156E-01	-1.274E-01	-1.430E-02	-9.495E-01	-1.160E-02	-1.925E-01	0.094E-01	1.000E-01	-3.922E-01	-2.942E-01	-6.470E-02	-1.194E-01	1.591E-01	-2.001E-01	1.797E-01			
5-4-5-1	8.250E-02	8.751E-01	-2.620E-01	-2.639E-01	5.605E-01	-2.601E-01	2.669E-01	-2.000E-01	1.648E-01	-7.501E-02	8.774E-01	2.349E-01	-5.949E-01	2.051E-01	1.797E-01			
5-4-6-1	1.543E-01	-1.659E-01	1.707E-01	1.881E-01	-3.527E-01	1.500E-01	-5.786E-01	4.695E-01	-1.131E-01	1.517E-01	-1.174E-01	-6.815E-01	1.846E-01	-2.716E-01	1.797E-01			
5-4-7-1	3.704E-01	6.600E-01	2.200E-01	1.311E-01	2.034E-01	2.563E-01	3.150E-01	2.267E-01	-7.311E-01	-1.606E-01	6.445E-01	1.627E-01	1.664E-01	1.797E-01	1.797E-01			
5-4-8-1	1.715E-01	1.494E-01	-1.793E-01	-2.076E-01	-1.655E-01	2.763E-01	6.164E-01	-5.300E-01	-1.219E-01	-1.669E-01	1.914E-02	-2.031E-02	1.670E-02	0.033E-02	1.797E-01			
5-4-9-1	1.414E-01	1.014E-01	-1.301E-01	-8.555E-01	1.209E-01	1.590E-01	3.139E-01	-2.519E-01	6.442E-01	7.441E-01	9.561E-02	-1.719E-02	-1.591E-02	-1.031E-02	1.797E-01			
5-5-1-1	1.964E-01	2.600E-01	2.200E-01	-1.311E-01	2.034E-01	2.563E-01	3.150E-01	-2.267E-01	7.311E-01	1.606E-01	1.627E-01	-1.281E-01	1.664E-01	1.664E-01	1.797E-01			
5-5-2-1	1.715E-01	1.494E-01	1.793E-01	2.076E-01	1.655E-01	-2.763E-01	6.164E-01	5.300E-01	-1.219E-01	1.669E-01	-1.914E-02	2.031E-02	-1.670E-02	-0.033E-02	1.797E-01			
5-5-3-1	1.414E-01	1.014E-01	1.301E-01	8.555E-01	1.209E-01	1.590E-01	3.139E-01	4.519E-01	-6.442E-01	-7.441E-01	9.561E-02	-1.719E-02	-1.591E-02	-1.031E-02	1.797E-01			
5-5-4-1	1.156E-01	1.274E-01	1.430E-02	9.495E-01	1.160E-02	1.925E-01	-0.094E-01	1.000E-01	3.922E-01	2.942E-01	6.470E-02	1.194E-01	-1.591E-01	2.001E-01	1.797E-01			
5-5-5-1	1.910E-01	9.550E-01	-1.534E-01	6.146E-01	-1.315E-01	1.530E-01	2.305E-01	2.501E-01	4.653E-01	2.064E-01	8.461E-01	4.716E-01	1.263E-01	8.474E-01	1.797E-01			
5-5-6-1	1.523E-01	-1.039E-01	1.531E-01	1.067E-01	-2.379E-01	1.800E-01	5.140E-01	4.147E-01	-1.067E-01	1.471E-01	-1.460E-01	1.822E-01	-2.748E-01	-6.716E-01	1.797E-01			
5-5-7-1	1.964E-01	6.600E-01	-2.200E-01	1.311E-01	2.034E-01	2.563E-01	3.150E-01	2.267E-01	7.311E-01	1.606E-01	-6.445E-01	-1.627E-01	-1.664E-01	-1.797E-01	1.797E-01			
5-5-8-1	1.715E-01	1.494E-01	-1.793E-01	-2.076E-01	-1.655E-01	2.763E-01	6.164E-01	-5.300E-01	-1.219E-01	-1.669E-01	1.914E-02	-2.031E-02	1.670E-02	0.033E-02	1.797E-01			
5-5-9-1	1.414E-01	1.014E-01	-1.301E-01	-8.555E-01	1.209E-01	1.590E-01	3.139E-01	-2.519E-01	6.442E-01	7.441E-01	9.561E-02	-1.719E-02	-1.591E-02	-1.031E-02	1.797E-01			
5-6-1-1	1.964E-01	2.600E-01	2.200E-01	-1.311E-01	2.034E-01	2.563E-01	3.150E-01	-2.267E-01	7.311E-01	1.606E-01	1.627E-01	-1.281E-01	1.664E-01	1.664E-01	1.797E-01			
5-6-2-1	1.715E-01	1.494E-01	1.793E-01	2.076E-01	1.655E-01	-2.763E-01	6.164E-01	5.300E-01	-1.219E-01	1.669E-01	-1.914E-02	2.031E-02	-1.670E-02	-0.033E-02	1.797E-01			
5-6-3-1	1.414E-01	1.014E-01	1.301E-01	8.555E-01	1.209E-01	1.590E-01	3.139E-01	4.519E-01	-6.442E-01	-7.441E-01	9.561E-02	-1.719E-02	-1.591E-02	-1.031E-02	1.797E-01			
5-6-4-1	1.156E-01	1.274E-01	1.430E-02	9.495E-01	1.160E-02	1.925E-01	-0.094E-01	1.000E-01	3.922E-01	2.942E-01	6.470E-02	1.194E-01	-1.591E-01	2.001E-01	1.797E-01			
5-6-5-1	1.910E-01	9.550E-01	-1.534E-01	6.146E-01	-1.315E-01	1.530E-01	2.305E-01	2.501E-01	4.653E-01	2.064E-01	8.461E-01	4.716E-01	1.263E-01	8.474E-01	1.797E-01			
5-6-6-1	1.523E-01	-1.039E-01	1.531E-01	1.067E-01	-2.379E-01	1.800E-01	5.140E-01	4.147E-01	-1.067E-01	1.471E-01	-1.460E-01	1.822E-01	-2.748E-01	-6.716E-01	1.797E-01			
5-6-7-1	1.964E-01	6.600E-01	-2.200E-01	1.311E-01	2.034E-01	2.563E-01	3.150E-01	2.267E-01	7.311E-01	1.606E-01	-6.445E-01	-1.627E-01	-1.664E-01	-1.797E-01	1.797E-01			
5-6-8-1	1.715E-01	1.494E-01	-1.793E-01	-2.076E-01	-1.655E-01	2.763E-01	6.164E-01	-5.300E-01	-1.219E-01	-1.669E-01	1.914E-02	-2.031E-02	1.670E-02	0.033E-02	1.797E-01			
5-6-9-1	1.414E-01	1.014E-01	-1.301E-01	-8.555E-01	1.209E-01	1.590E-01	3.139E-01	-2.519E-01	6.442E-01	7.441E-01	9.561E-02	-1.719E-02	-1.591E-02	-1.031E-02	1.797E-01			
5-7-1-1	1.964E-01	2.600E-01	2.200E-01	-1.311E-01	2.034E-01	2.563E-01	3.150E-01	-2.267E-01	7.311E-01	1.606E-01	1.627E-01	-1.281E-01	1.664E-01	1.664E-01	1.797E-01			
5-7-2-1	1.715E-01	1.494E-01	1.793E-01	2.076E-01	1.655E-01	-2.763E-01	6.164E-01	5.300E-01	-1.219E-01	1.669E-01	-1.914E-02	2.031E-02	-1.670E-02	-0.033E-02	1.797E-01			
5-7-3-1	1.414E-01	1.014E-01	1.301E-01	8.555E-01	1.209E-01	1.590E-01	3.139E-01	4.519E-01	-6.442E-01	-7.441E-01	9.561E-02	-1.719E-02	-1.591E-02	-1.031E-02	1.797E-01			
5-7-4-1	1.156E-01	1.274E-01	1.430E-02	9.495E-01	1.160E-02	1.925E-01	-0.094E-01	1.000E-01	3.922E-01	2.942E-01	6.470E-02	1.194E-01	-1.591E-01	2.001E-01	1.797E-01			
5-7-5-1	1.910E-01	9.550E-01	-1.534E-01	6.146E-01	-1.315E-01	1.530E-01	2.305E-01	2.501E-01	4.653E-01	2.064E-01	8.461E-01	4.716E-01	1.263E-01	8.474E-01	1.797E-01			
5-7-6-1	1.523E-01	-1.039E-01	1.531E-01	1.067E-01	-2.379E-01	1.800E-01	5.140E-01	4.147E-01	-1.067E-01	1.471E-01	-1.460E-01	1.822E-01	-2.748E-01	-6.716E-01	1.797E-01			
5-7-7-1	1.964E-01	6.600E-01	-2.200E-01	1.311E-01	2.034E-01	2.563E-01	3.150E-01	2.267E-01	7.311E-01	1.606E-01	-6.445E-01	-1.627E-01	-1.664E-01	-1.797E-01	1.797E-01			
5-7-8-1	1.715E-01	1.494E-01	-1.793E-01	-2.076E-01	-1.655E-01	2.763E-01	6.164E-01	-5.300E-01	-1.219E-01	-1.669E-01	1.914E-02	-2.031E-02	1.670E-02	0.033E-02	1.797E-01			
5-7-9-1	1.414E-01	1.014E-01	-1.301E-01	-8.555E-01	1.209E-01	1.590E-01	3.139E-01	-2.519E-01	6.442E-01	7.441E-01	9.561E-02	-1.719E-02	-1.591E-02					

TABLE IX.8.3-20. Loads on Trunnion Beams 152 & 149 (See FIGS. IX.3.3-1 & IX.3.3-2)

Member	Span	Type	Normal Loading					Accidental Loading					Severe Loading					Normal Loading					Accidental Loading				
			Case 1	Case 3	Case 5	Case 7	Case 9	Case 11	Case 13	Case 15	Case 17	Case 19	Case 21	Case 23	Case 25	Case 27	Case 29	Case 31	Case 33	Case 35	Case 37	Case 39	Case 41	Case 43	Case 45	Case 47	Case 49
152	152	152-1	1.4751	6.4521	6.4521	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751
		152-2	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001
		152-3	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751
		152-4	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001
		152-5	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751
149	149	149-1	1.4751	6.4521	6.4521	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751
		149-2	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001
		149-3	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751
		149-4	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001	2.1001
		149-5	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751	1.4751

TABLE IX.8.3-22. Loads on Trunnion Beams 154 & 155 (See FIGS. IX.3.3-1 & IX.3.3-2)

MEMBER FROM TO	NORMAL LOADING					ACCIDENTAL LOADING					EARTH LOADING					NORMAL LOADING					ACCIDENTAL LOADING				
	CASE 1	CASE 3	CASE 5	CASE 7	CASE 9	CASE 11	CASE 13	CASE 15	CASE 17	CASE 19	CASE 21	CASE 23	CASE 25	CASE 27	CASE 29	CASE 31	CASE 33	CASE 35	CASE 37	CASE 39	CASE 41	CASE 43	CASE 45	CASE 47	CASE 49
154	Vertical R1	1.897E-03	1.460E-03	1.898E-03	2.363E-03	5.248E-02	1.777E-03	1.150E-03	1.167E-03	5.761E-03	1.691E-03	4.417E-03	1.423E-03	4.367E-03	1.423E-03	4.417E-03	1.423E-03	4.367E-03	1.423E-03	4.367E-03	1.423E-03	4.367E-03	1.423E-03	4.367E-03	1.423E-03
	Vertical R2	-2.542E-03	-6.613E-02	-2.401E-02	-2.545E-03	1.439E-02	2.400E-02	7.725E-03	9.463E-03	6.713E-03	1.465E-04	2.477E-03	-1.771E-03	1.771E-03	1.771E-03	2.477E-03	-1.771E-03	1.771E-03	1.771E-03	2.477E-03	-1.771E-03	1.771E-03	1.771E-03	2.477E-03	-1.771E-03
	Shear R3	-4.737E-02	2.152E-02	1.775E-02	-1.865E-02	9.317E-03	1.999E-02	1.199E-02	5.143E-03	1.273E-03	1.193E-03	-5.437E-03	1.574E-02	1.252E-02	-2.602E-02	8.449E-02	-2.315E-02	8.449E-02	-2.315E-02	8.449E-02	-2.315E-02	8.449E-02	-2.315E-02	8.449E-02	-2.315E-02
	Top R3	4.377E-01	1.460E-02	5.017E-02	6.309E-01	5.446E-02	6.309E-01	1.210E-01	6.309E-02	-2.257E-02	-2.274E-01	1.509E-01	1.254E-02	1.462E-02	5.807E-01	1.266E-02	1.657E-02	1.266E-02	1.657E-02	1.266E-02	1.657E-02	1.266E-02	1.657E-02	1.266E-02	1.657E-02
	Bottom R3	-3.478E-04	-2.127E-03	1.745E-03	-3.568E-04	-1.062E-03	1.777E-04	-2.203E-04	1.137E-05	-5.543E-04	2.042E-05	-1.280E-04	4.129E-05	-1.466E-03	-3.794E-04	-1.107E-03	1.313E-02	-1.280E-04	4.129E-05	-1.466E-03	-3.794E-04	-1.107E-03	1.313E-02	-1.280E-04	4.129E-05
155	Vertical R1	-1.887E-03	-1.423E-03	-1.890E-03	-2.363E-03	-2.246E-02	1.777E-03	1.150E-03	1.167E-03	5.762E-03	1.691E-03	4.417E-03	-1.423E-03	-4.367E-03	-1.423E-03	-4.417E-03	-1.423E-03	-4.367E-03	-1.423E-03	-4.367E-03	-1.423E-03	-4.367E-03	-1.423E-03	-4.367E-03	-1.423E-03
	Vertical R2	2.542E-03	6.613E-02	2.401E-02	2.545E-03	1.439E-02	2.400E-02	7.725E-03	9.463E-03	6.713E-03	1.465E-04	2.477E-03	-1.771E-03	1.771E-03	1.771E-03	2.477E-03	-1.771E-03	1.771E-03	1.771E-03	2.477E-03	-1.771E-03	1.771E-03	1.771E-03	2.477E-03	-1.771E-03
	Shear R3	4.737E-02	-2.152E-02	-1.775E-02	1.865E-02	9.317E-03	-1.999E-02	-1.199E-02	-5.143E-03	-1.273E-03	-1.193E-03	5.437E-03	-1.574E-02	-1.252E-02	2.602E-02	-8.449E-02	-2.315E-02	-8.449E-02	-2.315E-02	-8.449E-02	-2.315E-02	-8.449E-02	-2.315E-02	-8.449E-02	-2.315E-02
	Top R3	4.377E-01	-1.460E-02	-5.017E-02	-6.309E-01	5.446E-02	6.309E-01	1.210E-01	6.309E-02	2.257E-02	2.274E-01	-1.509E-01	-1.254E-02	-1.462E-02	-5.807E-01	-1.266E-02	-1.657E-02	-1.266E-02	-1.657E-02	-1.266E-02	-1.657E-02	-1.266E-02	-1.657E-02	-1.266E-02	-1.657E-02
	Bottom R3	1.473E-03	-2.576E-03	-5.289E-03	-2.936E-03	3.292E-03	-1.100E-03	-5.500E-02	1.377E-02	1.395E-02	-2.411E-03	-1.111E-03	-2.186E-03	-5.289E-03	-2.566E-03	-1.046E-03	-5.289E-03	-2.566E-03	-1.046E-03	-5.289E-03	-2.566E-03	-1.046E-03	-5.289E-03	-2.566E-03	-1.046E-03
156	Vertical R1	1.897E-03	1.460E-03	1.898E-03	2.363E-03	5.248E-02	1.777E-03	1.150E-03	1.167E-03	5.761E-03	1.691E-03	4.417E-03	1.423E-03	4.367E-03	1.423E-03	4.417E-03	1.423E-03	4.367E-03	1.423E-03	4.367E-03	1.423E-03	4.367E-03	1.423E-03	4.367E-03	1.423E-03
	Vertical R2	-2.542E-03	-6.613E-02	-2.401E-02	-2.545E-03	1.439E-02	2.400E-02	7.725E-03	9.463E-03	6.713E-03	1.465E-04	2.477E-03	-1.771E-03	1.771E-03	1.771E-03	2.477E-03	-1.771E-03	1.771E-03	1.771E-03	2.477E-03	-1.771E-03	1.771E-03	1.771E-03	2.477E-03	-1.771E-03
	Shear R3	-4.737E-02	2.152E-02	1.775E-02	-1.865E-02	9.317E-03	1.999E-02	1.199E-02	5.143E-03	1.273E-03	1.193E-03	-5.437E-03	1.574E-02	1.252E-02	-2.602E-02	8.449E-02	-2.315E-02	8.449E-02	-2.315E-02	8.449E-02	-2.315E-02	8.449E-02	-2.315E-02	8.449E-02	-2.315E-02
	Top R3	4.377E-01	-1.460E-02	-5.017E-02	-6.309E-01	5.446E-02	6.309E-01	1.210E-01	6.309E-02	2.257E-02	2.274E-01	-1.509E-01	-1.254E-02	-1.462E-02	-5.807E-01	-1.266E-02	-1.657E-02	-1.266E-02	-1.657E-02	-1.266E-02	-1.657E-02	-1.266E-02	-1.657E-02	-1.266E-02	-1.657E-02
	Bottom R3	1.473E-03	-2.576E-03	-5.289E-03	-2.936E-03	3.292E-03	-1.100E-03	-5.500E-02	1.377E-02	1.395E-02	-2.411E-03	-1.111E-03	-2.186E-03	-5.289E-03	-2.566E-03	-1.046E-03	-5.289E-03	-2.566E-03	-1.046E-03	-5.289E-03	-2.566E-03	-1.046E-03	-5.289E-03	-2.566E-03	-1.046E-03

Case 1 - Seismic, 1st Floor
Case 2 - Seismic, 2nd Floor
Case 3 - Seismic, 3rd Floor
Case 4 - Seismic, 4th Floor
Case 5 - Seismic, 5th Floor
Case 6 - Seismic, 6th Floor
Case 7 - Seismic, 7th Floor
Case 8 - Seismic, 8th Floor
Case 9 - Seismic, 9th Floor
Case 10 - Seismic, 10th Floor
Case 11 - Seismic, 11th Floor
Case 12 - Seismic, 12th Floor
Case 13 - Seismic, 13th Floor
Case 14 - Seismic, 14th Floor
Case 15 - Seismic, 15th Floor
Case 16 - Seismic, 16th Floor
Case 17 - Seismic, 17th Floor
Case 18 - Seismic, 18th Floor
Case 19 - Seismic, 19th Floor
Case 20 - Seismic, 20th Floor
Case 21 - Seismic, 21st Floor
Case 22 - Seismic, 22nd Floor
Case 23 - Seismic, 23rd Floor
Case 24 - Seismic, 24th Floor
Case 25 - Seismic, 25th Floor
Case 26 - Seismic, 26th Floor
Case 27 - Seismic, 27th Floor
Case 28 - Seismic, 28th Floor
Case 29 - Seismic, 29th Floor
Case 30 - Seismic, 30th Floor
Case 31 - Seismic, 31st Floor
Case 32 - Seismic, 32nd Floor
Case 33 - Seismic, 33rd Floor
Case 34 - Seismic, 34th Floor
Case 35 - Seismic, 35th Floor
Case 36 - Seismic, 36th Floor
Case 37 - Seismic, 37th Floor
Case 38 - Seismic, 38th Floor
Case 39 - Seismic, 39th Floor
Case 40 - Seismic, 40th Floor
Case 41 - Seismic, 41st Floor
Case 42 - Seismic, 42nd Floor
Case 43 - Seismic, 43rd Floor
Case 44 - Seismic, 44th Floor
Case 45 - Seismic, 45th Floor
Case 46 - Seismic, 46th Floor
Case 47 - Seismic, 47th Floor
Case 48 - Seismic, 48th Floor
Case 49 - Seismic, 49th Floor
Case 50 - Seismic, 50th Floor

TABLE IX.8.3-23. Loads on Trunnion Beams 156 & 163 (See FIGS. IX.3.3-1 & IX.3.3-2)

[illegible]

TABLE IX.8.3-25. Loads on Trunnion Beams 160 & 159 (See FIGS. IX.3.3-1 & IX.3.3-2)

			NORMAL LOADING				ACCIDENTAL LOADING				TRAVEL LOADING				NORMAL LOADING				ACCIDENTAL LOADING			
SECTOR	FROM	TO	CASE 1	CASE 2	CASE 3	CASE 4	CASE 5	CASE 6	CASE 7	CASE 8	CASE 9	CASE 10	CASE 11	CASE 12	CASE 13	CASE 14	CASE 15	CASE 16				
160	228	Vertical	1	1.161E 04	1.110E 04	2.434E 04	2.470E 02	6.507E 02	2.270E 04	6.511E 04	1.402E 04	1.251E 04	5.972E 03	1.160E 04	1.125E 04	3.007E 04	2.054E 03	2.780E 03	2.643E 04	Case 1 - Cradle, 45° Normal		
		Shear	2	3.050E 02	1.094E 03	5.514E 03	1.301E 03	-1.200E 03	5.134E 03	1.544E 03	2.753E 03	1.404E 03	1.024E 04	-5.860E 02	8.494E 02	5.544E 03	-1.576E 03	-1.447E 03	5.267E 03			
		Shear	3	5.619E 02	1.237E 03	1.601E 03	4.670E 02	1.130E 03	1.570E 03	1.540E 03	1.450E 03	1.434E 03	2.217E 03	4.534E 02	1.120E 03	1.214E 03	3.571E 02	1.010E 03	1.343E 03			
		Tor	4	1.624E 02	1.560E 02	1.755E 02	1.550E 02	1.137E 02	1.100E 02	1.644E 02	2.742E 02	1.031E 03	6.935E 02	1.444E 02	1.412E 02	1.644E 02	1.370E 02	1.664E 02	1.501E 02			
		Dist	5	2.264E 03	4.827E 03	1.601E 03	1.917E 03	-1.067E 02	1.770E 03	-1.510E 04	1.134E 04	1.251E 04	1.164E 05	6.607E 03	-4.717E 03	4.300E 03	1.295E 03	-7.509E 02	4.104E 03			
	229	Vertical	1	2.601E 04	1.416E 04	1.141E 03	1.174E 04	1.131E 04	1.010E 03	1.045E 05	1.127E 05	-1.111E 04	1.419E 05	-1.429E 04	-1.871E 04	1.155E 04	-1.301E 04	-1.649E 04	-1.046E 04	Case 2 - Cradle, 45° Normal		
		Shear	2	1.161E 04	1.110E 04	2.434E 04	2.470E 02	6.507E 02	2.270E 04	6.511E 04	1.402E 04	1.251E 04	5.972E 03	-1.160E 04	-1.125E 04	3.007E 04	2.054E 03	2.780E 03	2.643E 04			
		Shear	3	3.750E 02	1.094E 03	5.514E 03	1.301E 03	1.200E 03	5.134E 03	1.544E 03	2.753E 03	1.404E 03	1.024E 04	5.860E 02	8.494E 02	5.544E 03	3.576E 03	1.447E 03	5.267E 03			
		Tor	4	5.619E 02	1.237E 03	1.601E 03	4.670E 02	1.130E 03	1.570E 03	1.540E 03	1.450E 03	1.434E 03	2.217E 03	4.534E 02	1.120E 03	1.214E 03	3.571E 02	1.010E 03	1.343E 03			
		Dist	5	1.624E 02	1.560E 02	1.755E 02	1.550E 02	1.137E 02	1.100E 02	1.644E 02	2.742E 02	1.031E 03	6.935E 02	-1.444E 02	-1.412E 02	1.644E 02	1.370E 02	1.664E 02	1.501E 02			
159	228	Vertical	1	-1.216E 04	-5.921E 03	-1.550E 04	-5.972E 03	-8.912E 03	1.507E 04	2.647E 03	-2.640E 03	-3.397E 02	-1.357E 05	-1.054E 04	-5.000E 03	-1.575E 04	-4.391E 03	-7.997E 03	-1.575E 04	Case 3 - Cradle, 45° Normal		
		Shear	2	2.637E 04	2.365E 04	4.649E 04	5.119E 03	1.410E 03	1.170E 04	1.142E 04	4.505E 04	3.693E 04	5.735E 04	2.920E 04	2.600E 04	5.462E 04	8.027E 03	3.944E 03	5.615E 04			
		Shear	3	1.161E 04	1.110E 04	2.434E 04	2.470E 02	6.507E 02	2.270E 04	6.511E 04	1.402E 04	1.251E 04	5.972E 03	1.160E 04	1.125E 04	3.007E 04	2.054E 03	2.780E 03	2.643E 04			
		Shear	4	3.750E 02	1.094E 03	5.514E 03	1.301E 03	1.200E 03	5.134E 03	1.544E 03	2.753E 03	1.404E 03	1.024E 04	5.860E 02	8.494E 02	5.544E 03	3.576E 03	1.447E 03	5.267E 03			
		Tor	5	5.619E 02	1.237E 03	1.601E 03	4.670E 02	1.130E 03	1.570E 03	1.540E 03	1.450E 03	1.434E 03	2.217E 03	4.534E 02	1.120E 03	1.214E 03	3.571E 02	1.010E 03	1.343E 03			
	229	Vertical	1	1.624E 02	1.560E 02	1.755E 02	1.550E 02	1.137E 02	1.100E 02	1.644E 02	2.742E 02	1.031E 03	6.935E 02	-1.444E 02	-1.412E 02	1.644E 02	1.370E 02	1.664E 02	1.501E 02	Case 4 - Cradle, 45° Normal		
		Shear	2	-1.216E 04	-5.921E 03	-1.550E 04	-5.972E 03	-8.912E 03	1.507E 04	2.647E 03	-2.640E 03	-3.397E 02	-1.357E 05	-1.054E 04	-5.000E 03	-1.575E 04	-4.391E 03	-7.997E 03	-1.575E 04			
		Shear	3	2.637E 04	2.365E 04	4.649E 04	5.119E 03	1.410E 03	1.170E 04	1.142E 04	4.505E 04	3.693E 04	5.735E 04	2.920E 04	2.600E 04	5.462E 04	8.027E 03	3.944E 03	5.615E 04			
		Shear	4	1.161E 04	1.110E 04	2.434E 04	2.470E 02	6.507E 02	2.270E 04	6.511E 04	1.402E 04	1.251E 04	5.972E 03	1.160E 04	1.125E 04	3.007E 04	2.054E 03	2.780E 03	2.643E 04			
		Tor	5	3.750E 02	1.094E 03	5.514E 03	1.301E 03	1.200E 03	5.134E 03	1.544E 03	2.753E 03	1.404E 03	1.024E 04	5.860E 02	8.494E 02	5.544E 03	3.576E 03	1.447E 03	5.267E 03			
158	228	Vertical	1	1.624E 02	1.560E 02	1.755E 02	1.550E 02	1.137E 02	1.100E 02	1.644E 02	2.742E 02	1.031E 03	6.935E 02	-1.444E 02	-1.412E 02	1.644E 02	1.370E 02	1.664E 02	1.501E 02	Case 5 - Cradle, 45° Normal		
		Shear	2	2.264E 03	4.827E 03	1.601E 03	1.917E 03	-1.067E 02	1.770E 03	-1.510E 04	1.134E 04	1.251E 04	1.164E 05	6.607E 03	-4.717E 03	4.300E 03	1.295E 03	-1.191E 04	8.600E 03		-4.661E 03	
		Shear	3	1.601E 04	1.416E 04	1.141E 03	1.174E 04	1.131E 04	1.010E 03	1.045E 05	1.127E 05	-1.111E 04	1.419E 05	-1.429E 04	-1.871E 04	1.155E 04	-1.301E 04	-1.649E 04	-1.046E 04			
		Shear	4	1.161E 04	1.110E 04	2.434E 04	2.470E 02	6.507E 02	2.270E 04	6.511E 04	1.402E 04	1.251E 04	5.972E 03	1.160E 04	1.125E 04	3.007E 04	2.054E 03	2.780E 03	2.643E 04			
		Tor	5	3.750E 02	1.094E 03	5.514E 03	1.301E 03	1.200E 03	5.134E 03	1.544E 03	2.753E 03	1.404E 03	1.024E 04	5.860E 02	8.494E 02	5.544E 03	3.576E 03	1.447E 03	5.267E 03			
	229	Vertical	1	1.624E 02	1.560E 02	1.755E 02	1.550E 02	1.137E 02	1.100E 02	1.644E 02	2.742E 02	1.031E 03	6.935E 02	-1.444E 02	-1.412E 02	1.644E 02	1.370E 02	1.664E 02	1.501E 02	Case 6 - Cradle, 45° Normal		
		Shear	2	-1.216E 04	-5.921E 03	-1.550E 04	-5.972E 03	-8.912E 03	1.507E 04	2.647E 03	-2.640E 03	-3.397E 02	-1.357E 05	-1.054E 04	-5.000E 03	-1.575E 04	-4.391E 03	-7.997E 03	-1.575E 04			
		Shear	3	2.637E 04	2.365E 04	4.649E 04	5.119E 03	1.410E 03	1.170E 04	1.142E 04	4.505E 04	3.693E 04	5.735E 04	2.920E 04	2.600E 04	5.462E 04	8.027E 03	3.944E 03	5.615E 04			
		Shear	4	1.161E 04	1.110E 04	2.434E 04	2.470E 02	6.507E 02	2.270E 04	6.511E 04	1.402E 04	1.251E 04	5.972E 03	1.160E 04	1.125E 04	3.007E 04	2.054E 03	2.780E 03	2.643E 04			
		Tor	5	3.750E 02	1.094E 03	5.514E 03	1.301E 03	1.200E 03	5.134E 03	1.544E 03	2.753E 03	1.404E 03	1.024E 04	5.860E 02	8.494E 02	5.544E 03	3.576E 03	1.447E 03	5.267E 03			

TABLE IX.8.3-26. Loads on Trunnion Beams 162 & 157 (See FIGS. IX.3.3-1 & IX.3.3-2)

NUMBER	FROM	TO	NORMAL LOADING			ACCIDENTAL LOADING			TRAFFIC LOADING			NORMAL LOADING			ACCIDENTAL LOADING					
			CASE 1	CASE 3	CASE 5	CASE 2	CASE 4	CASE 6	CASE 7	CASE 8	CASE 9	CASE 10	CASE 11	CASE 13	CASE 15	CASE 12	CASE 14		CASE 16	
243	Vertical	162	1.244E 04	1.112E 04	2.195E 04	2.187E 03	1.604E 03	1.550E 04	4.477E 04	2.437E 04	1.557E 04	1.114E 04	1.454E 04	1.123E 04	2.773E 04	4.467E 03	1.431E 04	2.627E 04	2.527E 04	Case 1 - Loading, 1 - Normal
	Shear	162	1.369E 03	1.497E 02	4.416E 03	1.741E 03	1.164E 03	4.176E 03	2.167E 03	4.271E 03	5.414E 03	9.892E 03	1.629E 03	1.604E 02	4.409E 03	-1.996E 03	-1.347E 03	1.433E 03	Case 2 - Loading, 1 - Normal	
	Shear	157	1.580E 02	1.162E 03	1.147E 03	5.254E 02	1.264E 03	1.493E 03	1.166E 02	2.462E 03	-1.166E 03	-2.424E 02	2.166E 02	1.445E 03	-1.75E 04	1.457E 02	1.204E 03	4.775E 02	Case 3 - Loading, 46.5 - Normal	
	Torsion	162	-2.455E 01	1.566E 01	7.895E 01	1.155E 01	1.594E 01	1.159E 01	7.641E 01	3.696E 01	1.144E 01	-6.464E 01	2.172E 00	1.154E 01	1.267E 00	-6.420E 00	1.325E 01	2.733E 00	Case 4 - Loading, 46.5 - Normal	
	Torsion	157	1.455E 03	1.791E 03	9.792E 02	-2.616E 03	2.671E 03	4.164E 03	-1.443E 04	5.409E 03	6.191E 03	1.149E 05	2.629E 03	-4.100E 03	5.444E 02	-3.340E 03	-2.924E 03	5.598E 02	Case 5 - Loading, Vertical, Normal	
162	Vertical	157	1.883E 04	-1.350E 04	1.255E 04	1.565E 04	7.174E 03	-1.276E 04	-1.675E 04	7.145E 04	-4.427E 04	5.527E 04	-2.171E 04	1.724E 04	4.467E 04	-2.060E 04	-1.175E 04	-1.942E 04	Case 6 - Loading, Vertical, Normal	
	Shear	157	1.244E 04	1.112E 04	-2.195E 04	2.187E 03	1.604E 03	1.550E 04	4.477E 04	2.437E 04	1.557E 04	1.114E 04	-1.454E 04	-1.123E 04	-2.774E 04	-4.467E 03	-1.431E 04	-2.627E 04	Case 7 - Loading, 46.5 - Normal	
	Shear	162	1.369E 03	1.497E 02	4.416E 03	1.741E 03	1.164E 03	4.176E 03	2.167E 03	4.271E 03	5.414E 03	9.892E 03	1.629E 03	1.604E 02	4.409E 03	1.996E 03	1.347E 03	1.433E 03	Case 8 - Loading, 46.5 - Normal	
	Torsion	157	1.580E 02	1.162E 03	1.147E 03	5.254E 02	1.264E 03	1.493E 03	1.166E 02	2.462E 03	-1.166E 03	-2.424E 02	2.166E 02	1.445E 03	-1.75E 04	1.457E 02	-1.204E 03	-4.775E 02	Case 9 - Loading, 46.5 - Normal	
	Torsion	162	2.455E 01	1.566E 01	7.895E 01	1.155E 01	1.594E 01	1.159E 01	7.641E 01	3.696E 01	1.144E 01	-6.464E 01	2.172E 00	1.154E 01	1.267E 00	-6.420E 00	1.325E 01	2.733E 00	Case 10 - Loading, Vertical, Normal	
249	Vertical	162	1.244E 04	1.112E 04	2.195E 04	2.187E 03	1.604E 03	1.550E 04	4.477E 04	2.437E 04	1.557E 04	1.114E 04	1.454E 04	1.123E 04	2.773E 04	4.467E 03	1.431E 04	2.627E 04	2.527E 04	Case 11 - Loading, 1 - Normal
	Shear	162	1.369E 03	1.497E 02	4.416E 03	1.741E 03	1.164E 03	4.176E 03	2.167E 03	4.271E 03	5.414E 03	9.892E 03	1.629E 03	1.604E 02	4.409E 03	-1.996E 03	-1.347E 03	1.433E 03	Case 12 - Loading, 1 - Normal	
	Shear	157	1.580E 02	1.162E 03	1.147E 03	5.254E 02	1.264E 03	1.493E 03	1.166E 02	2.462E 03	-1.166E 03	-2.424E 02	2.166E 02	1.445E 03	-1.75E 04	1.457E 02	1.204E 03	4.775E 02	Case 13 - Loading, 46.5 - Normal	
	Torsion	162	-2.455E 01	1.566E 01	7.895E 01	1.155E 01	1.594E 01	1.159E 01	7.641E 01	3.696E 01	1.144E 01	-6.464E 01	2.172E 00	1.154E 01	1.267E 00	-6.420E 00	1.325E 01	2.733E 00	Case 14 - Loading, 46.5 - Normal	
	Torsion	157	1.455E 03	1.791E 03	9.792E 02	-2.616E 03	2.671E 03	4.164E 03	-1.443E 04	5.409E 03	6.191E 03	1.149E 05	2.629E 03	-4.100E 03	5.444E 02	-3.340E 03	-2.924E 03	5.598E 02	Case 15 - Loading, Vertical, Normal	
157	Vertical	162	1.883E 04	-1.350E 04	1.255E 04	1.565E 04	7.174E 03	-1.276E 04	-1.675E 04	7.145E 04	-4.427E 04	5.527E 04	-2.171E 04	1.724E 04	4.467E 04	-2.060E 04	-1.175E 04	-1.942E 04	Case 16 - Loading, Vertical, Normal	
	Shear	162	1.244E 04	1.112E 04	-2.195E 04	2.187E 03	1.604E 03	1.550E 04	4.477E 04	2.437E 04	1.557E 04	1.114E 04	-1.454E 04	-1.123E 04	-2.774E 04	-4.467E 03	-1.431E 04	-2.627E 04	Case 17 - Loading, 46.5 - Normal	
	Shear	157	1.369E 03	1.497E 02	4.416E 03	1.741E 03	1.164E 03	4.176E 03	2.167E 03	4.271E 03	5.414E 03	9.892E 03	1.629E 03	1.604E 02	4.409E 03	1.996E 03	1.347E 03	1.433E 03	Case 18 - Loading, 46.5 - Normal	
	Torsion	162	2.455E 01	1.566E 01	7.895E 01	1.155E 01	1.594E 01	1.159E 01	7.641E 01	3.696E 01	1.144E 01	-6.464E 01	2.172E 00	1.154E 01	1.267E 00	-6.420E 00	1.325E 01	2.733E 00	Case 19 - Loading, 46.5 - Normal	
	Torsion	157	1.455E 03	1.791E 03	9.792E 02	-2.616E 03	2.671E 03	4.164E 03	-1.443E 04	5.409E 03	6.191E 03	1.149E 05	2.629E 03	-4.100E 03	5.444E 02	-3.340E 03	-2.924E 03	5.598E 02	Case 20 - Loading, Vertical, Normal	

Case 1 - Loading, 1 - Normal
Case 2 - Loading, 2 - Single
Case 3 - Loading, 3 - Single
Case 4 - Loading, 4 - Single
Case 5 - Loading, 5 - Single
Case 6 - Loading, 6 - Single

TABLE IX.8.3-27. Loads on Trunnion Beams 164 & 155 (See FIGS. IX.3.3-1 & IX.3.3-2)

[illegible]

TABLE IX.8.3-28. Loads on Trunnion Beams 166 & 171 (See FIGS. IX.3.3-1 & IX.3.3-2)

				NORMAL LOADING						ACCIDENTAL LOADING						TRAVEL LOADING						NORMAL LOADING						ACCIDENTAL LOADING						
MEMBER	PART	TYPE	SECTION	CASE 1	CASE 3	CASE 5	CASE 2	CASE 4	CASE 6	CASE 7	CASE 8	CASE 9	CASE 10	CASE 11	CASE 13	CASE 15	CASE 12	CASE 14	CASE 16			CASE 11	CASE 13	CASE 15	CASE 12	CASE 14	CASE 16							
166	Beam #1			2.413E 02	7.913E 03	2.319E 04	9.699E 03	1.147E 03	1.160E 03	5.800E 04	1.271E 04	1.165E 04	5.134E 04	1.129E 04	75.0E 03	2.292E 04	-4.742E 03	2.016E 03	2.134E 04			1.129E 04	75.0E 03	2.292E 04	-4.742E 03	2.016E 03	2.134E 04							
	Beam #2			-5.147E 02	-1.042E 03	1.332E 03	1.134E 03	2.179E 04	1.761E 03	1.00E 03	7.179E 03	1.131E 03	-5.018E 03	-6.165E 02	-1.00E 03	1.589E 03	1.048E 03	2.551E 03	3.423E 03			-6.165E 02	-1.00E 03	1.589E 03	1.048E 03	2.551E 03	3.423E 03							
	Beam #3			-6.174E 02	7.992E 02	1.523E 03	-1.052E 02	-4.139E 04	1.874E 03	1.40E 03	1.00E 02	1.100E 03	5.203E 03	6.161E 02	2.40E 03	-1.611E 03	-1.005E 02	-4.103E 02	-1.581E 03			6.161E 02	2.40E 03	-1.611E 03	-1.005E 02	-4.103E 02	-1.581E 03							
	Beam #4			-6.273E 02	-1.417E 03	-4.261E 03	1.493E 03	-4.710E 03	1.173E 03	1.00E 03	1.00E 03	6.664E 03	6.664E 03	1.791E 04	1.165E 02	1.119E 03	-2.162E 03	-1.005E 02	-4.174E 03	-2.473E 03			1.165E 02	1.119E 03	-2.162E 03	-1.005E 02	-4.174E 03	-2.473E 03						
	Beam #5			-4.131E 03	1.150E 04	1.883E 04	5.064E 03	1.903E 04	1.104E 04	7.410E 03	1.290E 04	2.36E 04	1.073E 04	1.079E 03	1.058E 04	1.167E 04	3.793E 03	1.701E 04	1.253E 04			1.079E 03	1.058E 04	1.167E 04	3.793E 03	1.701E 04	1.253E 04							
167	Beam #1			-2.035E 02	3.237E 03	1.059E 04	5.969E 03	6.859E 03	1.759E 03	1.10E 02	-4.734E 03	4.34E 03	-1.005E 04	-2.016E 03	-1.273E 03							-2.016E 03	-1.273E 03											
	Beam #2			-1.143E 02	-7.913E 03	-2.319E 04	9.699E 03	1.147E 03	1.160E 03	5.800E 04	1.271E 04	1.165E 04	5.134E 04	1.129E 04	75.0E 03	-2.292E 04	4.742E 03	-2.016E 03	-2.134E 04			-2.292E 04	4.742E 03	-2.016E 03	-2.134E 04									
	Beam #3			1.511E 02	1.042E 03	-1.332E 03	-1.134E 03	-2.179E 04	-1.761E 03	-1.00E 03	-7.179E 03	-1.131E 03	5.018E 03	6.165E 02	1.00E 03	-1.589E 03	-1.048E 03	-2.551E 03	-3.423E 03			6.165E 02	1.00E 03	-1.589E 03	-1.048E 03	-2.551E 03	-3.423E 03							
	Beam #4			6.174E 02	7.992E 02	1.523E 03	1.052E 02	4.139E 04	1.874E 03	1.40E 03	1.00E 02	1.100E 03	5.203E 03	6.161E 02	2.40E 03	1.611E 03	1.005E 02	4.103E 02	1.581E 03			6.161E 02	2.40E 03	1.611E 03	1.005E 02	4.103E 02	1.581E 03							
	Beam #5			6.273E 02	1.417E 03	4.261E 03	1.493E 03	4.710E 03	1.173E 03	1.00E 03	1.00E 03	6.664E 03	6.664E 03	1.791E 04	1.165E 02	1.119E 03	2.162E 03	1.005E 02	4.174E 03	2.473E 03			1.165E 02	1.119E 03	2.162E 03	1.005E 02	4.174E 03	2.473E 03						
171	Beam #1			-1.610E 03	-6.138E 03	1.242E 04	-4.534E 03	1.629E 04	1.223E 04	2.410E 03	-2.294E 04	4.444E 04	6.119E 04	4.838E 02	7.133E 03	-5.168E 03	-3.374E 03	-5.869E 04				4.838E 02	7.133E 03	-5.168E 03	-3.374E 03	-5.869E 04								
	Beam #2			-1.294E 03	-1.184E 03	1.457E 03	5.392E 02	1.100E 04	1.054E 03	-1.005E 03	1.609E 03	-1.694E 02	1.473E 03	-1.643E 03	-1.524E 03	-4.273E 03	1.829E 02	3.447E 03	4.029E 03			-1.643E 03	-1.524E 03	-4.273E 03	1.829E 02	3.447E 03	4.029E 03							
	Beam #3			2.034E 02	7.913E 03	2.319E 04	1.099E 04	1.467E 03	1.161E 04	1.90E 04	1.704E 04	1.165E 04	2.163E 04	1.129E 04	75.0E 03	2.292E 04	-4.742E 03	-2.016E 03	-2.261E 04			1.129E 04	75.0E 03	2.292E 04	-4.742E 03	-2.016E 03	-2.261E 04							
	Beam #4			5.147E 02	1.042E 03	1.332E 03	2.040E 03	1.174E 03	1.00E 03	7.179E 03	1.131E 03	-5.018E 03	-6.165E 02	-1.00E 03	1.589E 03	1.048E 03	2.551E 03	3.423E 03	3.741E 03			-6.165E 02	-1.00E 03	1.589E 03	1.048E 03	2.551E 03	3.741E 03							
	Beam #5			6.174E 02	7.992E 02	1.523E 03	1.134E 03	1.170E 03	1.100E 03	1.40E 03	1.100E 03	5.203E 03	6.161E 02	2.40E 03	1.611E 03	1.005E 02	4.103E 02	1.581E 03	1.636E 03			6.161E 02	2.40E 03	1.611E 03	1.005E 02	4.103E 02	1.636E 03							
172	Beam #1			-6.138E 03	1.417E 03	4.261E 03	1.493E 03	4.710E 03	1.173E 03	1.00E 03	1.00E 03	6.664E 03	6.664E 03	1.791E 04	1.165E 02	1.119E 03	2.162E 03	1.005E 02	4.174E 03	2.473E 03			1.165E 02	1.119E 03	2.162E 03	1.005E 02	4.174E 03	2.473E 03						
	Beam #2			-4.131E 03	1.150E 04	1.883E 04	5.064E 03	1.903E 04	1.104E 04	7.410E 03	1.290E 04	2.36E 04	1.073E 04	1.079E 03	1.058E 04	1.167E 04	3.793E 03	1.701E 04	1.253E 04			-1.079E 03	-1.058E 04	-1.167E 04	3.793E 03	1.701E 04	1.253E 04							
	Beam #3			-2.035E 02	3.237E 03	1.059E 04	5.969E 03	6.859E 03	1.759E 03	1.10E 02	-4.734E 03	4.34E 03	-1.005E 04	-2.016E 03	-1.273E 03							-2.016E 03	-1.273E 03											
	Beam #4			-1.143E 02	-7.913E 03	-2.319E 04	9.699E 03	1.147E 03	1.160E 03	5.800E 04	1.271E 04	1.165E 04	5.134E 04	1.129E 04	75.0E 03	-2.292E 04	4.742E 03	-2.016E 03	-2.261E 04			-2.292E 04	4.742E 03	-2.016E 03	-2.261E 04									
	Beam #5			1.511E 02	1.042E 03	-1.332E 03	-1.134E 03	-2.179E 04	-1.761E 03	-1.00E 03	-7.179E 03	-1.131E 03	5.018E 03	6.165E 02	1.00E 03	-1.589E 03	-1.048E 03	-2.551E 03	-3.741E 03			6.165E 02	1.00E 03	-1.589E 03	-1.048E 03	-2.551E 03	-3.741E 03							

Case 1 - Positive, Normal
Case 2 - Negative, Longitudinal
Case 3 - Positive, 30° Normal
Case 4 - Positive, 30° Longitudinal
Case 5 - Positive, Vertical Normal
Case 6 - Positive, Vertical Longitudinal

TABLE IX.8.3-29. Loads on Trunnion Beams 168 & 169 (See FIGS. IX.3.3-1 & IX.3.3-2)

HOBBS	F	T	T2	NORMAL LOADING				ACCIDENTAL LOADING				TRAVEL LOADING				NORMAL LOADING				ACCIDENTAL LOADING								
				CASE 1	CASE 3	CASE 5	CASE 7	CASE 9	CASE 6	CASE 7	CASE 8	CASE 9	CASE 10	CASE 11	CASE 13	CASE 15	CASE 12	CASE 14	CASE 16									
168	168-01	168-01	168-01	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03									
	168-02	168-02	168-02	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03									
	168-03	168-03	168-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03									
	168-04	168-04	168-04	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03									
	168-05	168-05	168-05	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03									
169	169-01	169-01	169-01	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	Case 1 - Cradle, 40.5° Normal	Case 2 - Cradle, 40.5° Single	Case 3 - Cradle, 40.5° Normal	Case 4 - Cradle, 40.5° Single	Case 5 - Cradle vertical, Normal				
	169-02	169-02	169-02	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03									
	169-03	169-03	169-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03									
	169-04	169-04	169-04	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03									
	169-05	169-05	169-05	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03									
170	170-01	170-01	170-01	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	Case 6 - Cradle vertical, Single								
	170-02	170-02	170-02	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03									
	170-03	170-03	170-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03									
	170-04	170-04	170-04	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03									
	170-05	170-05	170-05	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03									

TABLE IX.8.3-30. Loads on Trunnion Beams 170 & 167 (See FIGS. IX.3.3-1 & IX.3.3-2)

HULL	FROM	TO	NORMAL LOADING			ACCIDENTAL LOADING			TRAVEL LOADING			NORMAL LOADING			ACCIDENTAL LOADING				
			CASE 1	CASE 3	CASE 5	CASE 2	CASE 4	CASE 6	CASE 7	CASE 8	CASE 9	CASE 10	CASE 11	CASE 13	CASE 15	CASE 12	CASE 14		CASE 16
170	170	Beam 1	1.195E 04	6.627E 03	1.177E 04	1.431E 03	1.072E 03	1.119E 03	1.108E 03	1.401E 04	1.164E 04	5.176E 04	1.290E 04	7.415E 03	2.112E 04	6.281E 03	2.759E 02	1.964E 04	Case 1 - Cradle, 10' Normal
		Beam 2	2.147E 03	1.503E 03	2.134E 03	1.143E 03	5.791E 02	2.059E 03	8.154E 03	1.162E 03	9.211E 03	1.124E 03	2.493E 03	1.109E 03	3.011E 03	1.513E 03	8.369E 02	2.836E 03	
		Beam 3	5.176E 02	6.144E 02	9.274E 02	1.404E 03	1.191E 02	1.116E 02	6.195E 02	4.151E 03	2.134E 02	1.292E 03	4.066E 02	5.274E 02	1.170E 03	3.918E 01	9.727E 01	1.137E 03	
		Loc. 11	4.576E 03	2.063E 03	6.968E 02	2.500E 03	1.458E 03	7.900E 02	6.956E 03	5.740E 03	4.434E 03	1.164E 03	4.061E 03	1.601E 03	1.890E 03	2.324E 03	1.232E 03	1.693E 03	
		Loc. 12	2.350E 04	1.344E 04	1.968E 04	2.160E 04	1.144E 04	1.196E 04	6.716E 03	1.499E 04	2.374E 04	6.257E 04	2.457E 04	1.273E 04	1.641E 04	2.003E 04	1.026E 04	1.515E 04	
		Loc. 13	2.094E 03	4.819E 03	6.157E 03	4.494E 03	1.511E 03	1.276E 03	1.012E 04	1.165E 04	1.150E 04	6.555E 02	2.441E 03	1.252E 03	3.556E 03	9.527E 02	1.044E 03	3.179E 03	
170	170	Beam 1	1.195E 04	6.627E 03	1.177E 04	1.431E 03	1.072E 03	1.119E 03	1.108E 03	1.401E 04	1.164E 04	5.176E 04	1.290E 04	7.415E 03	2.112E 04	6.281E 03	2.759E 02	1.964E 04	Case 2 - Cradle, 4' Single Collision
		Beam 2	2.147E 03	1.503E 03	2.134E 03	1.143E 03	5.791E 02	2.059E 03	8.154E 03	1.162E 03	9.211E 03	1.124E 03	2.493E 03	1.109E 03	3.011E 03	1.513E 03	8.369E 02	2.836E 03	
		Beam 3	5.176E 02	6.144E 02	9.274E 02	1.404E 03	1.191E 02	1.116E 02	6.195E 02	4.151E 03	2.134E 02	1.292E 03	4.066E 02	5.274E 02	1.170E 03	3.918E 01	9.727E 01	1.137E 03	
		Loc. 11	4.576E 03	2.063E 03	6.968E 02	2.500E 03	1.458E 03	7.900E 02	6.956E 03	5.740E 03	4.434E 03	1.164E 03	4.061E 03	1.601E 03	1.890E 03	2.324E 03	1.232E 03	1.693E 03	
		Loc. 12	2.141E 04	1.127E 04	6.647E 03	2.160E 04	1.144E 04	1.196E 04	6.716E 03	1.499E 04	2.374E 04	6.257E 04	2.457E 04	1.273E 04	1.641E 04	2.003E 04	1.026E 04	1.515E 04	
		Loc. 13	2.094E 03	1.847E 03	2.810E 03	5.440E 03	6.162E 03	2.855E 03	1.100E 04	4.217E 03	2.009E 03	6.555E 02	2.441E 03	1.252E 03	3.556E 03	9.527E 02	1.044E 03	3.179E 03	
170	170	Beam 1	1.195E 04	6.627E 03	1.177E 04	1.431E 03	1.072E 03	1.119E 03	1.108E 03	1.401E 04	1.164E 04	5.176E 04	1.290E 04	7.415E 03	2.112E 04	6.281E 03	2.759E 02	1.964E 04	Case 3 - Cradle, 40' Normal
		Beam 2	2.147E 03	1.503E 03	2.134E 03	1.143E 03	5.791E 02	2.059E 03	8.154E 03	1.162E 03	9.211E 03	1.124E 03	2.493E 03	1.109E 03	3.011E 03	1.513E 03	8.369E 02	2.836E 03	
		Beam 3	5.176E 02	6.144E 02	9.274E 02	1.404E 03	1.191E 02	1.116E 02	6.195E 02	4.151E 03	2.134E 02	1.292E 03	4.066E 02	5.274E 02	1.170E 03	3.918E 01	9.727E 01	1.137E 03	
		Loc. 11	4.576E 03	2.063E 03	6.968E 02	2.500E 03	1.458E 03	7.900E 02	6.956E 03	5.740E 03	4.434E 03	1.164E 03	4.061E 03	1.601E 03	1.890E 03	2.324E 03	1.232E 03	1.693E 03	
		Loc. 12	2.350E 04	1.344E 04	1.968E 04	2.160E 04	1.144E 04	1.196E 04	6.716E 03	1.499E 04	2.374E 04	6.257E 04	2.457E 04	1.273E 04	1.641E 04	2.003E 04	1.026E 04	1.515E 04	
		Loc. 13	2.094E 03	4.819E 03	6.157E 03	4.494E 03	1.511E 03	1.276E 03	1.012E 04	1.165E 04	1.150E 04	6.555E 02	2.441E 03	1.252E 03	3.556E 03	9.527E 02	1.044E 03	3.179E 03	
170	170	Beam 1	1.195E 04	6.627E 03	1.177E 04	1.431E 03	1.072E 03	1.119E 03	1.108E 03	1.401E 04	1.164E 04	5.176E 04	1.290E 04	7.415E 03	2.112E 04	6.281E 03	2.759E 02	1.964E 04	Case 4 - Cradle, 40' Single
		Beam 2	2.147E 03	1.503E 03	2.134E 03	1.143E 03	5.791E 02	2.059E 03	8.154E 03	1.162E 03	9.211E 03	1.124E 03	2.493E 03	1.109E 03	3.011E 03	1.513E 03	8.369E 02	2.836E 03	
		Beam 3	5.176E 02	6.144E 02	9.274E 02	1.404E 03	1.191E 02	1.116E 02	6.195E 02	4.151E 03	2.134E 02	1.292E 03	4.066E 02	5.274E 02	1.170E 03	3.918E 01	9.727E 01	1.137E 03	
		Loc. 11	4.576E 03	2.063E 03	6.968E 02	2.500E 03	1.458E 03	7.900E 02	6.956E 03	5.740E 03	4.434E 03	1.164E 03	4.061E 03	1.601E 03	1.890E 03	2.324E 03	1.232E 03	1.693E 03	
		Loc. 12	2.350E 04	1.344E 04	1.968E 04	2.160E 04	1.144E 04	1.196E 04	6.716E 03	1.499E 04	2.374E 04	6.257E 04	2.457E 04	1.273E 04	1.641E 04	2.003E 04	1.026E 04	1.515E 04	
		Loc. 13	2.094E 03	4.819E 03	6.157E 03	4.494E 03	1.511E 03	1.276E 03	1.012E 04	1.165E 04	1.150E 04	6.555E 02	2.441E 03	1.252E 03	3.556E 03	9.527E 02	1.044E 03	3.179E 03	
170	170	Beam 1	1.195E 04	6.627E 03	1.177E 04	1.431E 03	1.072E 03	1.119E 03	1.108E 03	1.401E 04	1.164E 04	5.176E 04	1.290E 04	7.415E 03	2.112E 04	6.281E 03	2.759E 02	1.964E 04	Case 5 - Cradle vertical, Normal
		Beam 2	2.147E 03	1.503E 03	2.134E 03	1.143E 03	5.791E 02	2.059E 03	8.154E 03	1.162E 03	9.211E 03	1.124E 03	2.493E 03	1.109E 03	3.011E 03	1.513E 03	8.369E 02	2.836E 03	
		Beam 3	5.176E 02	6.144E 02	9.274E 02	1.404E 03	1.191E 02	1.116E 02	6.195E 02	4.151E 03	2.134E 02	1.292E 03	4.066E 02	5.274E 02	1.170E 03	3.918E 01	9.727E 01	1.137E 03	
		Loc. 11	4.576E 03	2.063E 03	6.968E 02	2.500E 03	1.458E 03	7.900E 02	6.956E 03	5.740E 03	4.434E 03	1.164E 03	4.061E 03	1.601E 03	1.890E 03	2.324E 03	1.232E 03	1.693E 03	
		Loc. 12	2.350E 04	1.344E 04	1.968E 04	2.160E 04	1.144E 04	1.196E 04	6.716E 03	1.499E 04	2.374E 04	6.257E 04	2.457E 04	1.273E 04	1.641E 04	2.003E 04	1.026E 04	1.515E 04	
		Loc. 13	2.094E 03	4.819E 03	6.157E 03	4.494E 03	1.511E 03	1.276E 03	1.012E 04	1.165E 04	1.150E 04	6.555E 02	2.441E 03	1.252E 03	3.556E 03	9.527E 02	1.044E 03	3.179E 03	
170	170	Beam 1	1.195E 04	6.627E 03	1.177E 04	1.431E 03	1.072E 03	1.119E 03	1.108E 03	1.401E 04	1.164E 04	5.176E 04	1.290E 04	7.415E 03	2.112E 04	6.281E 03	2.759E 02	1.964E 04	Case 6 - Cradle vertical, Single
		Beam 2	2.147E 03	1.503E 03	2.134E 03	1.143E 03	5.791E 02	2.059E 03	8.154E 03	1.162E 03	9.211E 03	1.124E 03	2.493E 03	1.109E 03	3.011E 03	1.513E 03	8.369E 02	2.836E 03	
		Beam 3	5.176E 02	6.144E 02	9.274E 02	1.404E 03	1.191E 02	1.116E 02	6.195E 02	4.151E 03	2.134E 02	1.292E 03	4.066E 02	5.274E 02	1.170E 03	3.918E 01	9.727E 01	1.137E 03	
		Loc. 11	4.576E 03	2.063E 03	6.968E 02	2.500E 03	1.458E 03	7.900E 02	6.956E 03	5.740E 03	4.434E 03	1.164E 03	4.061E 03	1.601E 03	1.890E 03	2.324E 03	1.232E 03	1.693E 03	
		Loc. 12	2.141E 04	1.127E 04	6.647E 03	2.160E 04	1.144E 04	1.196E 04	6.716E 03	1.499E 04	2.374E 04	6.257E 04	2.457E 04	1.273E 04	1.641E 04	2.003E 04	1.026E 04	1.515E 04	
		Loc. 13	2.094E 03	1.847E 03	2.810E 03	5.440E 03	6.162E 03	2.855E 03	1.100E 04	4.217E 03	2.009E 03	6.555E 02	2.441E 03	1.252E 03	3.556E 03	9.527E 02	1.044E 03	3.179E 03	

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[illegible]

TABLE IX.8.3-33. Loads on Trunnion Beams 190 & 193 (See FIGS. IX.3.3-1 & IX.3.3-2)

[illegible]

TABLE IX.8.3-34. Loads on Trunnion Beams 192 & 191 (See FIGS. IX.3.3-1 & IX.3.3-2)

MEMBER FROM	TO	NORMAL LOADING				ACCIDENTAL LOADING				TABLE IX.8.3-34				NORMAL LOADING				ACCIDENTAL LOADING			
		CASE 1	CASE 3	CASE 5	CASE 2	CASE 4	CASE 6	CASE 7	CASE 8	CASE 9	CASE 10	CASE 11	CASE 13	CASE 15	CASE 12	CASE 14	CASE 16				
192	Support 1	5.430E-03	1.971E-03	7.911E-03	1.412E-03	7.347E-03	7.440E-03	1.1E-04	8.349E-03	1.551E-03	1.561E-03	6.011E-03	4.560E-03	1.521E-03	1.975E-03	1.692E-03	6.687E-03				
	Support 2	6.430E-02	1.797E-03	1.722E-03	1.691E-03	1.964E-02	1.540E-03	1.40E-04	4.217E-03	1.755E-03	6.390E-03	-9.115E-03	1.144E-03	1.444E-03	2.095E-03	-8.666E-03	1.419E-03				
	Support 3	3.594E-02	2.431E-02	1.890E-03	1.699E-03	1.971E-02	4.11E-03	1.63E-03	1.754E-03	1.190E-03	1.090E-03	-1.762E-02	2.14E-03	8.524E-03	-2.333E-03	2.621E-03	1.453E-02				
	Support 4	6.965E-03	6.965E-03	3.015E-03	1.675E-03	6.411E-03	1.14E-03	1.47E-03	1.147E-03	1.150E-03	1.294E-03	-4.356E-03	5.166E-03	1.535E-03	-2.530E-03	-1.139E-03	-1.299E-03				
	Support 5	3.494E-03	1.162E-02	6.737E-02	2.233E-03	1.111E-03	1.16E-03	5.6E-03	1.443E-03	5.430E-03	1.742E-03	1.233E-03	1.147E-03	1.147E-03	4.784E-02	-1.292E-02	1.671E-03				
191	Support 1	1.457E-04	-1.511E-04	-2.595E-04	5.401E-03	4.075E-03	1.6E-04	1.6E-04	4.154E-04	1.1E-04	2.764E-04	-1.451E-04	1.151E-04	1.151E-04	4.053E-03	-6.455E-03	-1.48E-04				
	Support 2	5.430E-03	1.971E-03	7.911E-03	1.412E-03	7.347E-03	7.440E-03	1.1E-04	8.349E-03	1.551E-03	1.561E-03	6.011E-03	4.560E-03	1.521E-03	1.975E-03	1.692E-03	6.687E-03				
	Support 3	6.430E-02	1.797E-03	1.722E-03	1.691E-03	1.964E-02	1.540E-03	1.40E-04	4.217E-03	1.755E-03	6.390E-03	-9.115E-03	1.144E-03	1.444E-03	2.095E-03	-8.666E-03	1.419E-03				
	Support 4	3.594E-02	2.431E-02	1.890E-03	1.699E-03	1.971E-02	4.11E-03	1.63E-03	1.754E-03	1.190E-03	1.090E-03	-1.762E-02	2.14E-03	8.524E-03	-2.333E-03	2.621E-03	1.453E-02				
	Support 5	6.965E-03	6.965E-03	3.015E-03	1.675E-03	6.411E-03	1.14E-03	1.47E-03	1.147E-03	1.150E-03	1.294E-03	-4.356E-03	5.166E-03	1.535E-03	-2.530E-03	-1.139E-03	-1.299E-03				
190	Support 1	4.568E-02	-1.720E-03	4.052E-03	1.104E-03	2.169E-03	4.274E-03	1.640E-03	1.472E-03	1.530E-03	5.351E-03	6.561E-03	1.167E-03	-2.556E-03	1.544E-03	-1.244E-03	-2.423E-03				
	Support 2	7.338E-03	1.497E-04	4.090E-04	1.222E-04	1.961E-03	1.890E-04	1.72E-03	4.273E-03	4.443E-03	2.465E-04	1.045E-04	1.771E-04	4.547E-04	-9.421E-03	9.417E-03	4.323E-04				
	Support 3	5.430E-03	1.971E-03	7.911E-03	1.412E-03	7.347E-03	7.440E-03	1.1E-04	8.349E-03	1.551E-03	1.561E-03	6.011E-03	4.560E-03	1.521E-03	1.975E-03	1.692E-03	6.687E-03				
	Support 4	6.430E-02	1.797E-03	1.722E-03	1.691E-03	1.964E-02	1.540E-03	1.40E-04	4.217E-03	1.755E-03	6.390E-03	-9.115E-03	1.144E-03	1.444E-03	2.095E-03	-8.666E-03	1.419E-03				
	Support 5	3.594E-02	2.431E-02	1.890E-03	1.699E-03	1.971E-02	4.11E-03	1.63E-03	1.754E-03	1.190E-03	1.090E-03	-1.762E-02	2.14E-03	8.524E-03	-2.333E-03	2.621E-03	1.453E-02				
189	Support 1	3.816E-03	6.969E-03	5.011E-03	2.625E-03	9.411E-03	1.14E-03	1.47E-03	1.147E-03	1.150E-03	1.294E-03	-4.356E-03	5.166E-03	1.535E-03	-2.530E-03	-1.139E-03	-1.299E-03				
	Support 2	4.568E-02	-1.720E-03	4.052E-03	1.104E-03	2.169E-03	4.274E-03	1.640E-03	1.472E-03	1.530E-03	5.351E-03	6.561E-03	1.167E-03	-2.556E-03	1.544E-03	-1.244E-03	-2.423E-03				
	Support 3	7.338E-03	1.497E-04	4.090E-04	1.222E-04	1.961E-03	1.890E-04	1.72E-03	4.273E-03	4.443E-03	2.465E-04	1.045E-04	1.771E-04	4.547E-04	-9.421E-03	9.417E-03	4.323E-04				
	Support 4	5.430E-03	1.971E-03	7.911E-03	1.412E-03	7.347E-03	7.440E-03	1.1E-04	8.349E-03	1.551E-03	1.561E-03	6.011E-03	4.560E-03	1.521E-03	1.975E-03	1.692E-03	6.687E-03				
	Support 5	6.430E-02	1.797E-03	1.722E-03	1.691E-03	1.964E-02	1.540E-03	1.40E-04	4.217E-03	1.755E-03	6.390E-03	-9.115E-03	1.144E-03	1.444E-03	2.095E-03	-8.666E-03	1.419E-03				
188	Support 1	3.594E-02	2.431E-02	1.890E-03	1.699E-03	1.971E-02	4.11E-03	1.63E-03	1.754E-03	1.190E-03	1.090E-03	-1.762E-02	2.14E-03	8.524E-03	-2.333E-03	2.621E-03	1.453E-02				
	Support 2	6.965E-03	6.965E-03	3.015E-03	1.675E-03	6.411E-03	1.14E-03	1.47E-03	1.147E-03	1.150E-03	1.294E-03	-4.356E-03	5.166E-03	1.535E-03	-2.530E-03	-1.139E-03	-1.299E-03				
	Support 3	4.568E-02	-1.720E-03	4.052E-03	1.104E-03	2.169E-03	4.274E-03	1.640E-03	1.472E-03	1.530E-03	5.351E-03	6.561E-03	1.167E-03	-2.556E-03	1.544E-03	-1.244E-03	-2.423E-03				
	Support 4	7.338E-03	1.497E-04	4.090E-04	1.222E-04	1.961E-03	1.890E-04	1.72E-03	4.273E-03	4.443E-03	2.465E-04	1.045E-04	1.771E-04	4.547E-04	-9.421E-03	9.417E-03	4.323E-04				
	Support 5	5.430E-03	1.971E-03	7.911E-03	1.412E-03	7.347E-03	7.440E-03	1.1E-04	8.349E-03	1.551E-03	1.561E-03	6.011E-03	4.560E-03	1.521E-03	1.975E-03	1.692E-03	6.687E-03				
187	Support 1	6.430E-02	1.797E-03	1.722E-03	1.691E-03	1.964E-02	1.540E-03	1.40E-04	4.217E-03	1.755E-03	6.390E-03	-9.115E-03	1.144E-03	1.444E-03	2.095E-03	-8.666E-03	1.419E-03				
	Support 2	3.594E-02	2.431E-02	1.890E-03	1.699E-03	1.971E-02	4.11E-03	1.63E-03	1.754E-03	1.190E-03	1.090E-03	-1.762E-02	2.14E-03	8.524E-03	-2.333E-03	2.621E-03	1.453E-02				
	Support 3	6.965E-03	6.965E-03	3.015E-03	1.675E-03	6.411E-03	1.14E-03	1.47E-03	1.147E-03	1.150E-03	1.294E-03	-4.356E-03	5.166E-03	1.535E-03	-2.530E-03	-1.139E-03	-1.299E-03				
	Support 4	4.568E-02	-1.720E-03	4.052E-03	1.104E-03	2.169E-03	4.274E-03	1.640E-03	1.472E-03	1.530E-03	5.351E-03	6.561E-03	1.167E-03	-2.556E-03	1.544E-03	-1.244E-03	-2.423E-03				
	Support 5	7.338E-03	1.497E-04	4.090E-04	1.222E-04	1.961E-03	1.890E-04	1.72E-03	4.273E-03	4.443E-03	2.465E-04	1.045E-04	1.771E-04	4.547E-04	-9.421E-03	9.417E-03	4.323E-04				

TABLE IX.8.3-35. Loads on Trunion Beams 194 & 189 (See FIGS. IX.3.3-1 & IX.3.3-2)

[illegible]

TABLE IX.8.3-36. Loads on Trunnion Beams 196 & 187 (See FIGS. IX.3.3-1 & IX.3.3-2)

			NORMAL LOADING				ACCIDENTAL LOADING				TRAFFIC LOADING				NORMAL LOADING				ACCIDENTAL LOADING			
SECTION	FROM	TO	CASE 1	CASE 2	CASE 3	CASE 4	CASE 5	CASE 6	CASE 7	CASE 8	CASE 9	CASE 10	CASE 11	CASE 12	CASE 13	CASE 14	CASE 15	CASE 16	CASE 17	CASE 18		
196	197	198	1.992E+03	1.238E+04	1.245E+04	9.530E+03	2.730E+03	1.636E+04	4.433E+04	2.941E+04	1.759E+04	4.133E+04	2.97E+04	1.354E+04	2.633E+04	1.190E+04	4.441E+04	2.462E+04	4.441E+04	2.462E+04	4.441E+04	
		199	1.760E+03	9.781E+02	9.781E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	
		200	9.493E+02	2.580E+03	1.173E+03	9.781E+02	6.773E+02	9.781E+02	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	
		201	1.181E+04	5.165E+03	1.181E+04	1.181E+04	5.165E+03	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03
		202	2.759E+03	5.553E+03	6.763E+03	1.734E+04	5.553E+03	5.553E+03	2.759E+03	2.759E+03	5.553E+03	5.553E+03	2.759E+03	2.759E+03	5.553E+03	5.553E+03	2.759E+03	2.759E+03	5.553E+03	5.553E+03	2.759E+03	2.759E+03
196	197	203	4.182E+04	3.182E+04	4.440E+04	1.673E+04	7.443E+04	1.183E+04	4.779E+04	4.779E+04	1.183E+04	1.183E+04	4.779E+04	4.779E+04	1.183E+04	1.183E+04	4.779E+04	4.779E+04	1.183E+04	1.183E+04	4.779E+04	
		204	1.182E+04	9.182E+03	1.734E+04	5.553E+03	2.759E+03	1.636E+04	4.433E+04	2.941E+04	1.759E+04	4.133E+04	2.97E+04	1.354E+04	2.633E+04	1.190E+04	4.441E+04	2.462E+04	4.441E+04	2.462E+04	4.441E+04	
		205	1.760E+03	9.781E+02	9.781E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	
		206	9.493E+02	2.580E+03	1.173E+03	9.781E+02	6.773E+02	9.781E+02	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	
		207	1.181E+04	5.165E+03	1.181E+04	1.181E+04	5.165E+03	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03
196	197	208	1.992E+03	1.238E+04	1.245E+04	9.530E+03	2.730E+03	1.636E+04	4.433E+04	2.941E+04	1.759E+04	4.133E+04	2.97E+04	1.354E+04	2.633E+04	1.190E+04	4.441E+04	2.462E+04	4.441E+04	2.462E+04	4.441E+04	
		209	1.760E+03	9.781E+02	9.781E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	
		210	9.493E+02	2.580E+03	1.173E+03	9.781E+02	6.773E+02	9.781E+02	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	
		211	1.181E+04	5.165E+03	1.181E+04	1.181E+04	5.165E+03	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03
		212	2.759E+03	5.553E+03	6.763E+03	1.734E+04	5.553E+03	5.553E+03	2.759E+03	2.759E+03	5.553E+03	5.553E+03	2.759E+03	2.759E+03	5.553E+03	5.553E+03	2.759E+03	2.759E+03	5.553E+03	5.553E+03	2.759E+03	2.759E+03
196	197	213	4.182E+04	3.182E+04	4.440E+04	1.673E+04	7.443E+04	1.183E+04	4.779E+04	4.779E+04	1.183E+04	1.183E+04	4.779E+04	4.779E+04	1.183E+04	1.183E+04	4.779E+04	4.779E+04	1.183E+04	1.183E+04	4.779E+04	
		214	1.182E+04	9.182E+03	1.734E+04	5.553E+03	2.759E+03	1.636E+04	4.433E+04	2.941E+04	1.759E+04	4.133E+04	2.97E+04	1.354E+04	2.633E+04	1.190E+04	4.441E+04	2.462E+04	4.441E+04	2.462E+04	4.441E+04	
		215	1.760E+03	9.781E+02	9.781E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	
		216	9.493E+02	2.580E+03	1.173E+03	9.781E+02	6.773E+02	9.781E+02	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	
		217	1.181E+04	5.165E+03	1.181E+04	1.181E+04	5.165E+03	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03
196	197	218	1.992E+03	1.238E+04	1.245E+04	9.530E+03	2.730E+03	1.636E+04	4.433E+04	2.941E+04	1.759E+04	4.133E+04	2.97E+04	1.354E+04	2.633E+04	1.190E+04	4.441E+04	2.462E+04	4.441E+04	2.462E+04	4.441E+04	
		219	1.760E+03	9.781E+02	9.781E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	
		220	9.493E+02	2.580E+03	1.173E+03	9.781E+02	6.773E+02	9.781E+02	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	
		221	1.181E+04	5.165E+03	1.181E+04	1.181E+04	5.165E+03	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03
		222	2.759E+03	5.553E+03	6.763E+03	1.734E+04	5.553E+03	5.553E+03	2.759E+03	2.759E+03	5.553E+03	5.553E+03	2.759E+03	2.759E+03	5.553E+03	5.553E+03	2.759E+03	2.759E+03	5.553E+03	5.553E+03	2.759E+03	2.759E+03
196	197	223	4.182E+04	3.182E+04	4.440E+04	1.673E+04	7.443E+04	1.183E+04	4.779E+04	4.779E+04	1.183E+04	1.183E+04	4.779E+04	4.779E+04	1.183E+04	1.183E+04	4.779E+04	4.779E+04	1.183E+04	1.183E+04	4.779E+04	
		224	1.182E+04	9.182E+03	1.734E+04	5.553E+03	2.759E+03	1.636E+04	4.433E+04	2.941E+04	1.759E+04	4.133E+04	2.97E+04	1.354E+04	2.633E+04	1.190E+04	4.441E+04	2.462E+04	4.441E+04	2.462E+04	4.441E+04	
		225	1.760E+03	9.781E+02	9.781E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	
		226	9.493E+02	2.580E+03	1.173E+03	9.781E+02	6.773E+02	9.781E+02	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	
		227	1.181E+04	5.165E+03	1.181E+04	1.181E+04	5.165E+03	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03
196	197	228	1.992E+03	1.238E+04	1.245E+04	9.530E+03	2.730E+03	1.636E+04	4.433E+04	2.941E+04	1.759E+04	4.133E+04	2.97E+04	1.354E+04	2.633E+04	1.190E+04	4.441E+04	2.462E+04	4.441E+04	2.462E+04	4.441E+04	
		229	1.760E+03	9.781E+02	9.781E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	
		230	9.493E+02	2.580E+03	1.173E+03	9.781E+02	6.773E+02	9.781E+02	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	
		231	1.181E+04	5.165E+03	1.181E+04	1.181E+04	5.165E+03	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03
		232	2.759E+03	5.553E+03	6.763E+03	1.734E+04	5.553E+03	5.553E+03	2.759E+03	2.759E+03	5.553E+03	5.553E+03	2.759E+03	2.759E+03	5.553E+03	5.553E+03	2.759E+03	2.759E+03	5.553E+03	5.553E+03	2.759E+03	2.759E+03
196	197	233	4.182E+04	3.182E+04	4.440E+04	1.673E+04	7.443E+04	1.183E+04	4.779E+04	4.779E+04	1.183E+04	1.183E+04	4.779E+04	4.779E+04	1.183E+04	1.183E+04	4.779E+04	4.779E+04	1.183E+04	1.183E+04	4.779E+04	
		234	1.182E+04	9.182E+03	1.734E+04	5.553E+03	2.759E+03	1.636E+04	4.433E+04	2.941E+04	1.759E+04	4.133E+04	2.97E+04	1.354E+04	2.633E+04	1.190E+04	4.441E+04	2.462E+04	4.441E+04	2.462E+04	4.441E+04	
		235	1.760E+03	9.781E+02	9.781E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	
		236	9.493E+02	2.580E+03	1.173E+03	9.781E+02	6.773E+02	9.781E+02	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	4.779E+02	1.147E+03	1.147E+03	4.779E+02	
		237	1.181E+04	5.165E+03	1.181E+04	1.181E+04	5.165E+03	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03	1.181E+04	5.165E+03

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