

2.6.11 Structural Evaluation Results Summary and Minimum Margins of Safety under Normal Conditions of Transport

In this subsection, the resulting stresses from analyses for Normal conditions of transport are combined, following Reference [2.4] guidelines.

Table 2-36 and Table 2-37 identify the particular table in which the resulting stresses are reported for each AOS Transport Packaging System model, for all Normal conditions of transport Load Cases and Load Combinations, respectively. The referenced tables for each model are located in Appendix 2.12.2, "Structural Evaluation Results – Models AOS-025, AOS-050, and AOS-100," within their respective paragraphs.

Paragraph 2.6.11.1 provides the Minimum Margin of Safety (MS) obtained for each Load Combination and System model, under Normal conditions of transport.

This data shows that the AOS Transport Packaging System has the capacity to endure all Normal conditions of transport, without affecting its ability to contain and shield the radioactive material payload from undue risk to the public.

**Table 2-36. Load Cases under Normal Conditions of Transport
Structural Evaluation Results – All Models**

Load Case	Description	Data, by Model			
		AOS-025A	AOS-050A	AOS-100A AOS-100A-S	AOS-100B
101	100°F Ambient, Maximum Decay Heat	Table 2-66	Table 2-135	Table 2-204	Table 2-272
102	100°F Ambient, Maximum Decay Heat, Maximum Insolation	Table 2-67	Table 2-136	Table 2-205	Table 2-273
103	-20°F Ambient, Zero Decay Heat, Zero Insolation	Table 2-68	Table 2-137	Table 2-206	Table 2-274
104	-40°F Ambient, Zero Decay Heat, Zero Insolation	Table 2-69	Table 2-138	Table 2-207	Table 2-275
105	-40°F Ambient, Maximum Decay Heat	Table 2-70	Table 2-139	Table 2-208	Table 2-276
106	-20°F Ambient, Maximum Decay Heat	Table 2-71	Table 2-140	Table 2-209	Table 2-277
201	Internal Design Pressure	Table 2-72	Table 2-141	Table 2-210	Table 2-278
202	Minimum External Pressure, 24 kPa (3.5 psia)	Table 2-73	Table 2-142	Table 2-211	Table 2-279
203	Maximum Increased External Pressure, 140 kPa (20 psia)	Table 2-74	Table 2-143	Table 2-212	Table 2-280
204	Additional Increased External Pressure, 2 MPa (290 psia)	Table 2-75	Table 2-144	Table 2-213	Table 2-281
211	Fabrication Stress	Table 2-76	Table 2-145	Table 2-214	Table 2-282
215	Compression Load (5x weight)	Table 2-77	Table 2-146	Table 2-215	Table 2-283
216	Rod Drop onto Cask	Table 2-78	Table 2-147	Table 2-216	Table 2-284
221	Forward 10g Vibration Inertia Load	Table 2-79	Table 2-148	Table 2-217	Table 2-285
222	Lateral 5g Vibration Inertia Load	Table 2-80	Table 2-149	Table 2-218	Table 2-286
223	Vertical 2g Vibration Inertia Load	Table 2-81	Table 2-150	Table 2-219	Table 2-287
231	3- or 4-ft. Head-On Drop	Table 2-82	Table 2-151	Table 2-220	Table 2-288
232	30-ft. Head-On Drop Impact Test, Normal Conditions	Table 2-83	Table 2-152	Table 2-221	Table 2-289

**Table 2-37. Load Combinations under Normal Conditions of Transport
Structural Evaluation Results – All Models**

Load Combination	Load Cases	Description	Data, by Model			
			AOS-025A	AOS-050A	AOS-100A AOS-100A-S	AOS-100B
101	102, 201, 211	Hot Environment	Table 2-84	Table 2-153	Table 2-222	Table 2-290
102	104, 201, 211	Cold Environment	Table 2-85	Table 2-154	Table 2-223	Table 2-291
103	103, 202, 211	Increased External Pressure	Table 2-86	Table 2-155	Table 2-224	Table 2-292
104	101, 201, 202, 211	Minimum External Pressure	Table 2-87	Table 2-156	Table 2-225	Table 2-293
105	105, 201, 202, 211	Cold Environment with Maximum Decay Heat	Table 2-88	Table 2-157	Table 2-226	Table 2-294
106	101, 201, 203, 211	Maximum Pressure, Hot Environment	Table 2-89	Table 2-158	Table 2-227	Table 2-295
107	105, 201, 203, 211	Maximum Pressure, Cold Environment	Table 2-90	Table 2-159	Table 2-228	Table 2-296
215	215, 101, 201, 211	Compression Load	Table 2-91	Table 2-160	Table 2-229	Table 2-297
216	216, 101, 201, 211	Rod Drop	Table 2-92	Table 2-161	Table 2-230	Table 2-298
217	216, 104, 201, 211	Rod Drop, Cold Environment	Table 2-93	Table 2-162	Table 2-231	Table 2-299
221	221, 101, 201, 211	Forward Vibration	Table 2-94	Table 2-163	Table 2-232	Table 2-300
222	222, 101, 201, 211	Lateral Vibration	Table 2-95	Table 2-164	Table 2-233	Table 2-301
223	223, 101, 201, 211	Vertical Vibration	Table 2-96	Table 2-165	Table 2-234	Table 2-302
224	221, 103, 201, 211	Forward Vibration at Cold Temperature	Table 2-97	Table 2-166	Table 2-235	Table 2-303
225	222, 103, 201, 211	Lateral Vibration at Cold Temperature	Table 2-98	Table 2-167	Table 2-236	Table 2-304
226	223, 103, 201, 211	Vertical Vibration at Cold Temperature	Table 2-99	Table 2-168	Table 2-237	Table 2-305

Table 2-37. Load Combinations under Normal Conditions of Transport Structural Evaluation Results – All Models (Continued)

Load Combination	Load Cases	Description	Data, by Model			
			AOS-025A	AOS-050A	AOS-100A AOS-100A-S	AOS-100B
231	231, 102, 201, 211	3- or 4-ft. Head-On Drop, Normal Conditions	Table 2-100	Table 2-169	Table 2-238	Table 2-306
232 ^a	232, 102, 201, 211	30-ft. Head-On Drop, Normal Conditions (Impact Test)	Table 2-101	Table 2-170	–	–
233	231, 103, 211	3- or 4-ft. Drop at Cold Temperature	Table 2-102	Table 2-171	Table 2-239	Table 2-307

a. Load Combination 232 is documented only for the Model AOS-025A and AOS-050A transport packages, and demonstrates compliance with the requirements of IAEA TS-R-1, Paragraph 737 (Reference [2.2]).

2.6.11.1 Minimum Margins of Safety

Table 2-38 through Table 2-41 provide the Minimum Margin of Safety (MS) obtained for each Load Combination and Transport Packaging System model, under Normal conditions of transport.

Table 2-38. Min MS for Normal Conditions of Transport – Model AOS-025A

Ld_Cmb	Load_Cases						Min_MS	Loc	Str_Cmb
-----	-----						-----	---	-----
101	102	201	211	0	0	5.630E+00	20	Pm+Pb	
102	104	201	211	0	0	2.146E+00	5	Pm+Pb+Q	
103	103	202	211	0	0	2.841E+00	5	Pm+Pb+Q	
104	101	201	202	211	0	2.943E+00	20	Pm+Pb	
105	105	201	202	211	0	2.943E+00	20	Pm+Pb	
106	101	201	203	211	0	2.889E+00	20	Pm+Pb	
107	105	201	203	211	0	2.889E+00	20	Pm+Pb	
215	215	101	201	211	0	5.457E+00	20	Pm+Pb	
216	216	101	201	211	0	3.306E-01	15	Pm	
217	216	104	201	211	0	3.306E-01	15	Pm	
221	221	101	201	211	0	5.612E+00	20	Pm+Pb	
222	222	101	201	211	0	5.567E+00	20	Pm+Pb	
223	223	101	201	211	0	5.505E+00	20	Pm+Pb	
224	221	103	201	211	0	2.717E+00	5	Pm+Pb+Q	
225	222	103	201	211	0	2.704E+00	5	Pm+Pb+Q	
226	223	103	201	211	0	2.686E+00	5	Pm+Pb+Q	
231	231	102	201	211	0	2.821E+00	4	Pm+Pb	
232	232	102	201	211	0	2.354E+00	4	Pm+Pb	
233	231	103	211	0	0	2.678E+00	5	Pm+Pb+Q	

Table 2-39. Min MS for Normal Conditions of Transport – Model AOS-050A

Ld_Cmb	Load_Cases						Min_MS	Loc	Str_Cmb
-----	-----						-----	---	-----
101	102	201	211	0	0	5.819E+00	4	Pm+Pb	
102	104	201	211	0	0	2.164E+00	5	Pm+Pb+Q	
103	103	202	211	0	0	2.771E+00	5	Pm+Pb+Q	
104	101	201	202	211	0	5.535E+00	4	Pm+Pb	
105	105	201	202	211	0	5.535E+00	4	Pm+Pb	
106	101	201	203	211	0	4.918E+00	4	Pm+Pb	
107	105	201	203	211	0	4.918E+00	4	Pm+Pb	
215	215	101	201	211	0	4.990E+00	4	Pm+Pb	
216	216	101	201	211	0	1.285E+00	15	Pm	
217	216	104	201	211	0	1.285E+00	15	Pm	
221	221	101	201	211	0	5.732E+00	4	Pm+Pb	
222	222	101	201	211	0	5.775E+00	4	Pm+Pb	
223	223	101	201	211	0	5.816E+00	4	Pm+Pb	
224	221	103	201	211	0	2.681E+00	5	Pm+Pb+Q	
225	222	103	201	211	0	2.684E+00	5	Pm+Pb+Q	
226	223	103	201	211	0	2.686E+00	5	Pm+Pb+Q	
231	231	102	201	211	0	3.266E+00	4	Pm+Pb	
232	232	102	201	211	0	1.032E+00	4	Pm+Pb	
233	231	103	211	0	0	2.454E+00	5	Pm+Pb+Q	

Table 2-40. Min MS for Normal Conditions of Transport – Model AOS-100A and AOS-100A-S

Ld_Cmb	Load_Cases					Min_MS	Loc	Str_Cmb
-----	-----					-----	---	-----
101	102	201	211	0	0	1.196E+00	4	Pm+Pb
102	104	201	211	0	0	1.196E+00	4	Pm+Pb
103	103	202	211	0	0	5.387E+00	5	Pm+Pb+Q
104	101	201	202	211	0	1.146E+00	4	Pm+Pb
105	105	201	202	211	0	1.146E+00	4	Pm+Pb
106	101	201	203	211	0	1.087E+00	4	Pm+Pb
107	105	201	203	211	0	1.087E+00	4	Pm+Pb
215	215	101	201	211	0	9.375E-01	4	Pm+Pb
216	216	101	201	211	0	1.128E+00	15	Pm+Pb
217	216	104	201	211	0	1.128E+00	15	Pm+Pb
221	221	101	201	211	0	1.068E+00	4	Pm+Pb
222	222	101	201	211	0	1.176E+00	4	Pm+Pb
223	223	101	201	211	0	1.191E+00	4	Pm+Pb
224	221	103	201	211	0	1.068E+00	4	Pm+Pb
225	222	103	201	211	0	1.176E+00	4	Pm+Pb
226	223	103	201	211	0	1.191E+00	4	Pm+Pb
231	231	102	201	211	0	1.127E+00	4	Pm+Pb
233	231	103	211	0	0	5.347E+00	5	Pm+Pb+Q

Table 2-41. Min MS for Normal Conditions of Transport – Model AOS-100B

Ld_Cmb	Load_Cases					Min_MS	Loc	Str_Cmb
-----	-----					-----	---	-----
101	102	201	211	0	0	1.196E+00	4	Pm+Pb
102	104	201	211	0	0	1.196E+00	4	Pm+Pb
103	103	202	211	0	0	1.101E+01	4	Pm+Pb
104	101	201	202	211	0	1.146E+00	4	Pm+Pb
105	105	201	202	211	0	1.146E+00	4	Pm+Pb
106	101	201	203	211	0	1.087E+00	4	Pm+Pb
107	105	201	203	211	0	1.087E+00	4	Pm+Pb
215	215	101	201	211	0	9.375E-01	4	Pm+Pb
216	216	101	201	211	0	1.128E+00	15	Pm+Pb
217	216	104	201	211	0	1.128E+00	15	Pm+Pb
221	221	101	201	211	0	1.068E+00	4	Pm+Pb
222	222	101	201	211	0	1.176E+00	4	Pm+Pb
223	223	101	201	211	0	1.191E+00	4	Pm+Pb
224	221	103	201	211	0	1.068E+00	4	Pm+Pb
225	222	103	201	211	0	1.176E+00	4	Pm+Pb
226	223	103	201	211	0	1.191E+00	4	Pm+Pb
231	231	102	201	211	0	1.127E+00	4	Pm+Pb
233	231	103	211	0	0	1.043E+01	4	Pm+Pb

2.7 HYPOTHETICAL ACCIDENT CONDITIONS

The AOS Transport Packaging System, when subjected to the Hypothetical Accident conditions of transport specified in *10 CFR 71.73*, meets the performance requirements specified in *10 CFR 71 [2.1]*, Subpart E. This is demonstrated within this section where the Hypothetical Accident conditions of transport are addressed and shown to meet the applicable design criteria provided in Subsection 2.1.2, "Design Criteria."

The engineering evaluation for these regulatory conditions was conducted by using the LIBRA Finite Element program. The analytical model used was verified by a Free-Drop test of a 165% scaled-up version of the Model AOS-100A, referred to as "AOS-165A" and/or "prototype" in the discussions. The testing conducted and results are also briefly discussed within this section; however, the complete test report is included in [Appendix 2.12.6](#).

The scaled-up Free-Drop test was conducted at General Electric ("GE Hitachi Nuclear Energy" at the time of this publication), Vallecitos Nuclear Center, Sunol, California, for Alpha-Omega Services, Inc., of Bellflower, California. In addition, Alpha-Omega Services contracted CSA Engineering, Inc., of Mountain View, California, to instrument and record the test results, and RANOR, Inc., of Westminister, Massachusetts, to fabricate the prototype packaging. GE Hitachi Nuclear Energy contracted RANOR, Inc. to perform pre- and post-dimensional inspections. A copy of the Dimensional Inspection report is included in [Appendix 2.12.7](#).

For Free Drop evaluation, three orientations were analyzed:

- Head-On Drop
- Side Drop, including Slap-Down
- Cg/Corner Drop

The first two drop orientations were correlated to the Free-Drop test data, for validation of the analytical model and procedure used. The correlation work is also included in this section.

2.7.1 Free Drop

The AOS Transport Packaging System is described in [Subsection 2.1.1, "Discussion."](#) As discussed in that subsection, the cask component is covered at both ends by the impact limiter. The impact limiter is designed to absorb the energy developed during the drop, mitigating the drop's effect on the cask. The analysis presented in this subsection consists of two (2) parts:

- To identify the load onto the cask, by conducting a pseudo-static collapse analysis of the impact limiter, and
- To impose this resulting load onto the cask in the stress analysis

Hypothetical Accident conditions of transport are provided in [Appendix 2.12.2](#).

The AOS Transport Packaging System has an axisymmetric geometry. The Head-On Drop is oriented with the cask lid facing down, to produce the maximum damage on the cask lid seal joint. For the Side Drop, the cask is oriented to produce maximum side loading. The Slap-Down Drop is oriented to produce the maximum slap-down loading. The Cg/Corner Drop is oriented such that impact occurs on a line through the cask center of gravity.

Notes: *The Cg/Corner Drop loading condition was not one of the orientations tested. This condition does not produce as critical a load as the Slap-Down loading. Additionally, the design has a recessed cask lid, which protects the cask lid seal and cask lid attachment bolts.*

The foam properties used in the free drop analysis are those presented in Appendix 2.12.5 [2.19] for the foam density values of 20, 10, and 12 pcf. for the Model AOS-025, AOS-050, and AOS-100, respectively.

The Impact (Free-Drop) test is conducted to obtain data to demonstrate the adequacy of analytical methods used for qualifying the transport packages, both at the size tested and scaled-down versions. The AOS-165A was selected for this test because it is the largest package, in terms of size and weight. These analytical methods are used to show that the impact limiters are capable of limiting impact loads on the payload to an acceptable level.

Appendix 2.12.6 presents the Free-Drop Test report, which includes a detailed description of the test procedure. Appendix 2.12.7 presents the Dimensional Inspection report of the impact limiter and cask components, taken throughout the Free-Drop test. Appendix 2.12.13 presents the Certificate of Conformance for the General Plastics LAST-A-FOAM FR-3720 foam used in the AOS-165A prototype.

A 9-m (30-ft.) Drop test is conducted on a 165% scaled-up version of the Model AOS-100A, the AOS-165A prototype. The test article weighs approximately 18,144 kg (40,000 lbs.). Three (3) free drops, each with the package at a different orientation, are conducted as part of the test:

- **End (Head-On orientation)** – Package axis is vertically oriented
- **Side (Side orientation)** – Package axis is horizontally oriented
- **Slap-Down** – Package axis is oriented at a pre-determined angle with the impact plane to cause maximum slap-down load

Figure 2-30 illustrates the three (3) free drop orientations and test setup. The test sequence listed above can be changed during the tests. High-speed cameras from two (2) orthogonal directions were used to document the orientation prior to each drop. (Refer to Figure 2-31 for camera positioning.)

Acceleration time history data is recorded during the test, using accelerometers located inside the cask and on the impact limiter. A total of 10 sensors are used. One triaxial accelerometer is mounted on the impact limiter, at a location determined by CSA Engineering, Inc. (the company contracted to conduct the test). Two (2) triaxial accelerometers are mounted inside the payload cavity, one on each end of the dummy mass. Each triaxial accelerometer senses in the radial, tangential, and axial directions. The tenth sensor is a uniaxial accelerometer sensing in the vertical direction for the drop.

The impact force distribution on the cask surface is estimated using a pressure-sensing film applied prior to each drop and removed immediately afterward. The film is used on the top and curved surfaces of the cask, enclosed by the impact limiters.

In addition, a series of dimensional inspections of the cask and impact limiter are conducted before and after each drop, to establish the drop's resulting deformation pattern.

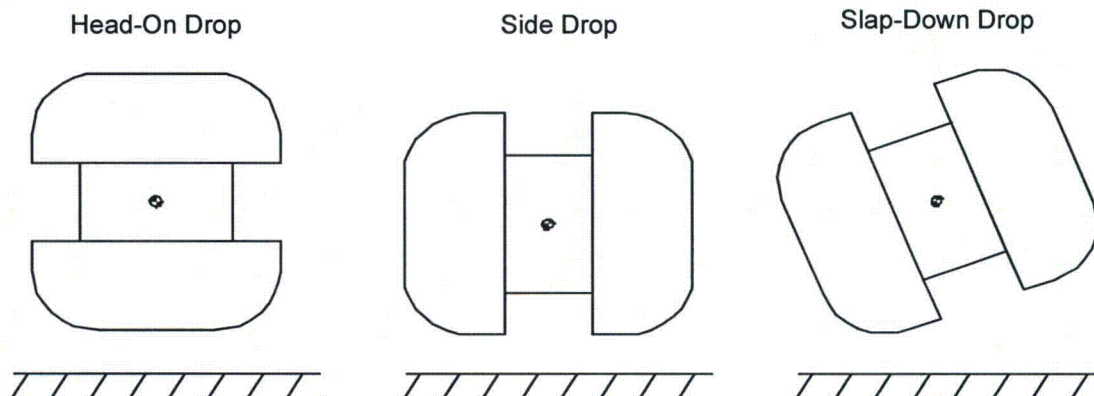


Figure 2-30. Head-On, Side, and Slap-Down Free-Drop Orientations

A portable 90-ton hydraulic crane is used to position the package at the proper height of 9m (30 ft.) or greater, above the impact surface. To prevent crane boom backlash after the load is released, the crane hook must be connected to two (2) dead weights by wire rope slings. This maintains the load on the crane after the package is released. (Refer to Figure 2-31.)

A quick-release (air-actuated, pneumatic) mechanism is used to release the package and allow it to fall freely. The mechanism is attached to the crane hook and package holding gear [3.7-m (12-ft.) wire rope sling]. The only connections to the package during the drop are the light instrumentation cables. The cables are arranged so that they do not interfere with the free-fall path of the package. Attached to the slings is a 3-gallon air accumulator tank and fast-acting, electrically triggered diaphragm valve mounted close to the quick-release mechanism.

Drop height is determined by means of a light, graduated chain or measuring tape, hanging from the lowest point of the package to the ground. After the drop height is verified, the graduated chain or measuring tape is removed prior to the drop.

The primary pass-fail criterion for the test is based upon a Leak Rate test, conducted upon the transport package's cask component before and after the Drop tests. Subsection 8.1.4, "Leakage Tests," details the Leak test methodology. An acceptable leak rate is less than 2.96×10^{-7} cm³/sec (helium), at a differential pressure of 1 atmosphere.

Note: For the transport package to be judged acceptable, the measured leak rate must be less than this amount, both before and after the Drop tests.

The secondary criterion relates to external transport package dimensions. These must not have changed by any amount that would prevent or endanger the transport package's performance of its primary functions – containment and shielding.

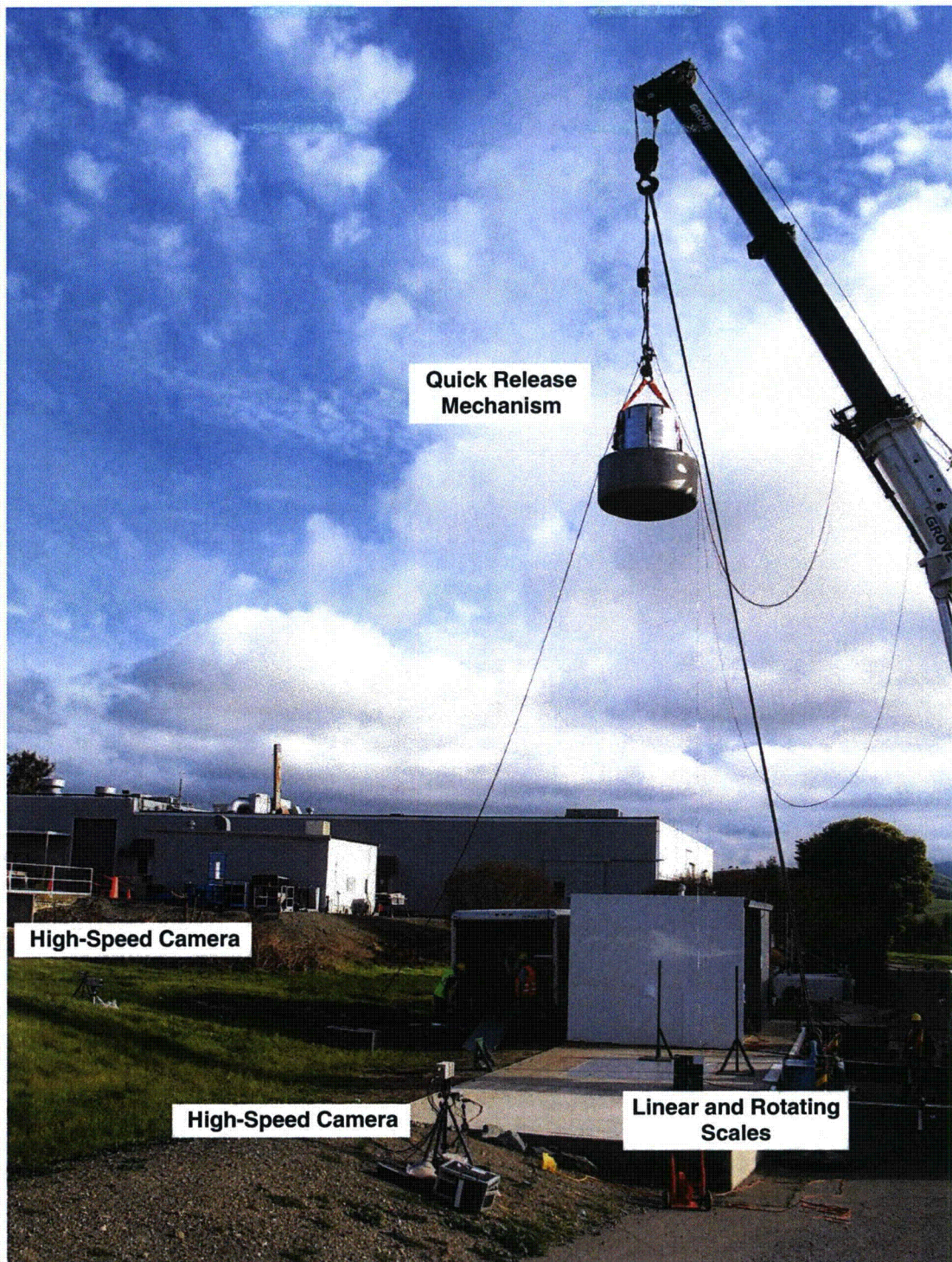


Figure 2-31. Test Setup (Head-On Orientation Shown) – AOS-165A Prototype

2.7.1.1 End Drop

2.7.1.1.1 Head-On Free-Drop Impact Limiter Analysis – Model AOS-100

The Model AOS-100 transport package's impact limiter structure is composed of General Plastics LAST-A-FOAM FR-3712 foam and 12-gauge (2.7 mm / 0.105 in.) stainless steel cladding. The entire assembly consists of two (2) impact limiters connected by eight (8) turnbuckles. Each impact limiter is approximately 116 cm (45.65 in.) in diameter by 62.5 cm (24.6 in.) in height. There is an uncovered cask length of approximately 56 cm (22 in.) between the impact limiters. The impact limiter end is a spherical, dish shell. In addition, the ends contain a recessed, cylindrical section of approximately 41 cm (16.2 in.) in diameter by 12.4 cm (5.0 in.) in depth.

The foam material accounts for most of the impact limiter's energy absorbing capability. The energy absorbed by the cladding is small and not included in this analysis. Also, not included in the analytical models are the eight (8) structural ribs that are part of the impact limiter structure because they have little effect on the behavior of the impact limiter due to the free drop load. The omission of the ribs are justified by the analysis presented in [Appendix 2.12.10](#). The impact limiter foam is analyzed by static, 3D, large displacement, finite element analyses. The foam is modeled by solid elements with Piola-Kirchhoff stress tensors, and FR-3712 foam constitutive behavior. Strain energy developed in the foam is determined for a sequence of applied displacement fields corresponding to the impact of the cask on a rigid plane. Displacements are applied in 0.25 mm (0.01 in.) increments for both head-on and side drop configurations, until the strain energy developed in the foam equals the potential energy of a 9-m (30-ft.) drop. The configuration corresponding to the maximum slap-down impact is determined from a series of dynamic analyses with different cask impact orientations and side-drop impact properties. The orientation producing maximum impact force is selected as the slap-down configuration.

Figure 2-32 shows the FEA model used in the drop analyses. The model represents a 180° section of the impact limiter and contains 2,835 nodes, 2,220 elements, and 8,496 degrees of freedom. A small, artificial hole is modeled at the axis of rotation of the impact limiter, to restrict the model to 8-node solid elements. Radial degrees of freedom are fixed at the hole. Foam element constitutive properties are taken from [Table 2-14](#) and [Table 2-15](#).

The interaction between the content and cask lid due to the free drop load is provided in [Appendix 2.12.8](#).

In the impact analysis, a series of displacement fields simulating the head-on impact of the impact limiter onto a rigid surface was applied. The displacement steps correspond to 0.25 mm (0.01 in.) displacements of the rigid surface. The geometric and constitutive element properties were updated after each displacement step. [Figure 2-33](#) illustrates the strain energy developed in the foam, and total force at the rigid surface, as a function of surface displacement. For a 180° model, and 9,510-lb. weight (Model AOS-100 is used for reference), the maximum displacement corresponds to the strain energy.

$$U = 9,510 * 360 = 3.42 \times 10^6 \text{ in.-lb.}$$

From [Figure 2-33](#), the corresponding displacement is 15.5 cm (6.1 in.), the total force is 1.42×10^6 lbs., and the maximum acceleration is:

$$a = 1.42 \times 10^6 / 9,510 = 149.3g$$

[Figure 2-34](#) shows longitudinal foam displacements, where the displacement contours are plotted on the deformed geometry. The equivalent stress at maximum displacement is plotted in [Figure 2-35](#).

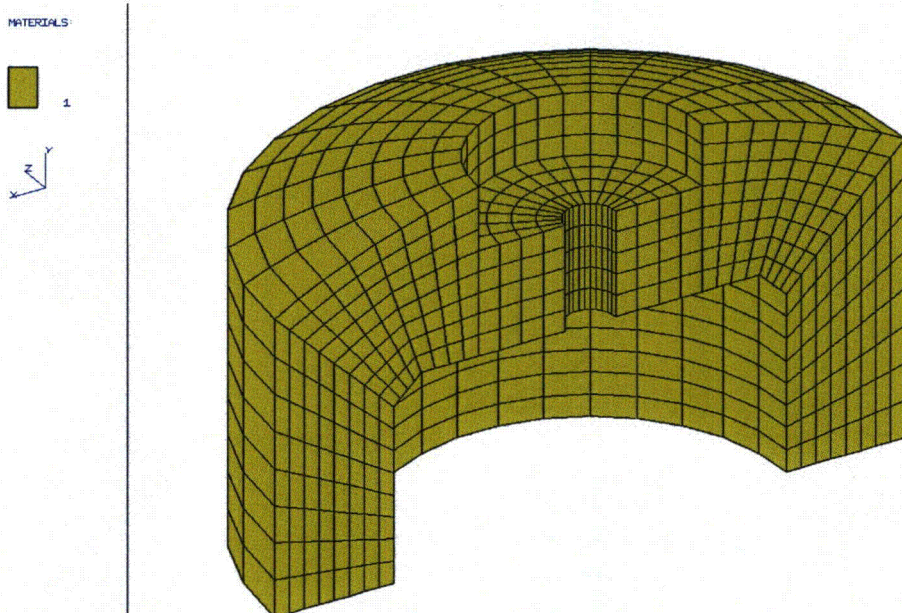


Figure 2-32. Finite Element Model of Impact Limiter – Model AOS-100

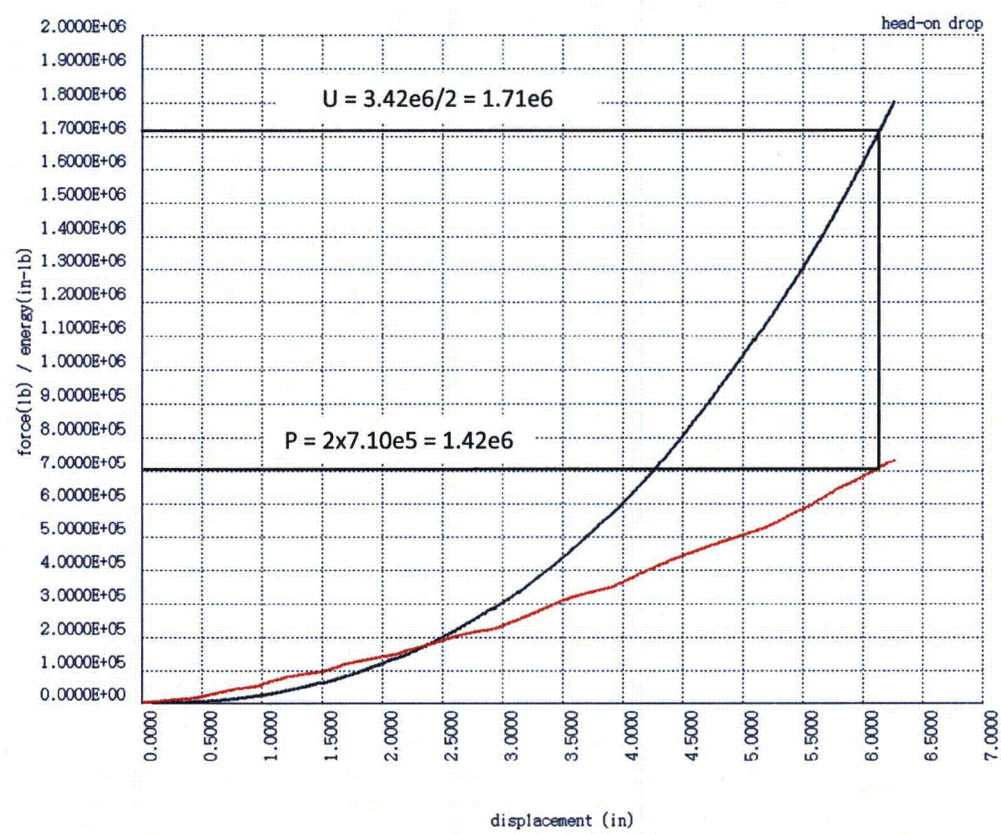


Figure 2-33. Head-On Drop Force and Energy – Model AOS-100

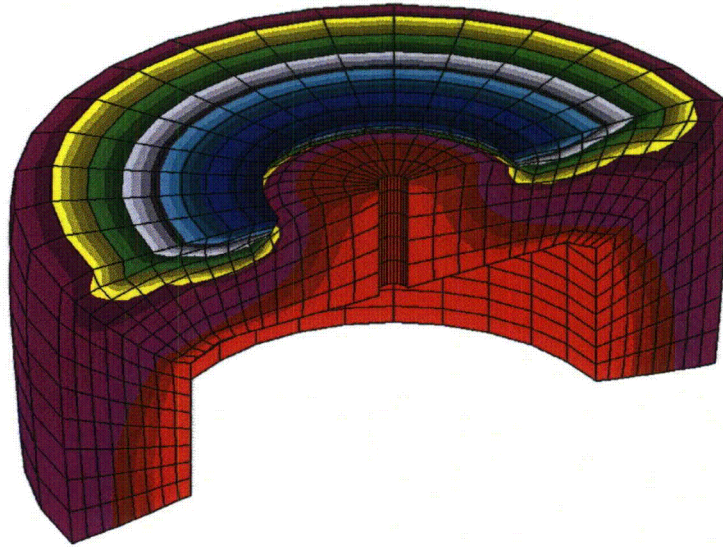
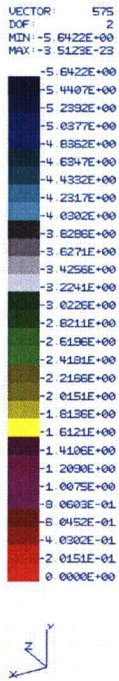


Figure 2-34. Head-On Drop, Maximum Foam Displacement (Deformed Model) – Model AOS-100

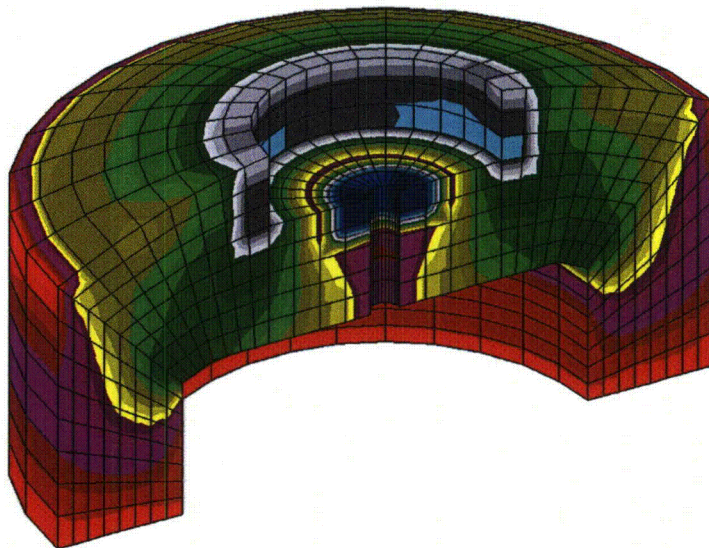
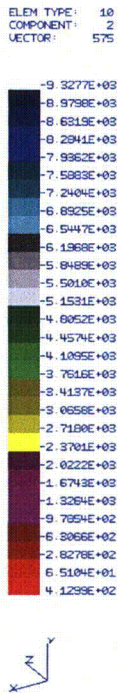


Figure 2-35. Head-On Drop, Maximum Equivalent Stress in Foam – Model AOS-100

2.7.1.1.2 Head-On Free-Drop Cask Analysis

A net force due to a 30-ft. head-on drop, Load Case 301, is determined from the impact limiter analysis presented in Paragraph 2.7.1.1.1. Stress due to head-on drop loads was analyzed by the 2D cask model. Figure 2-36 shows the assumed impact load distribution. With reference to Figure 2-36, for a total impact force P , the load intensity is given by:

$$q = P / \pi (R_1^2 - R_2^2)$$

Over section L , the load intensity in the x and y directions is:

$$q_x = q_y = q * \sin(45^\circ)$$

The LIBRA LE -4^a loading function is used to apply pressure load q . In addition to the impact load, an opposing inertia body force is applied to the cask. Displacements are fixed along the cask base to account for the small non-equilibrium of pressure and inertia forces.

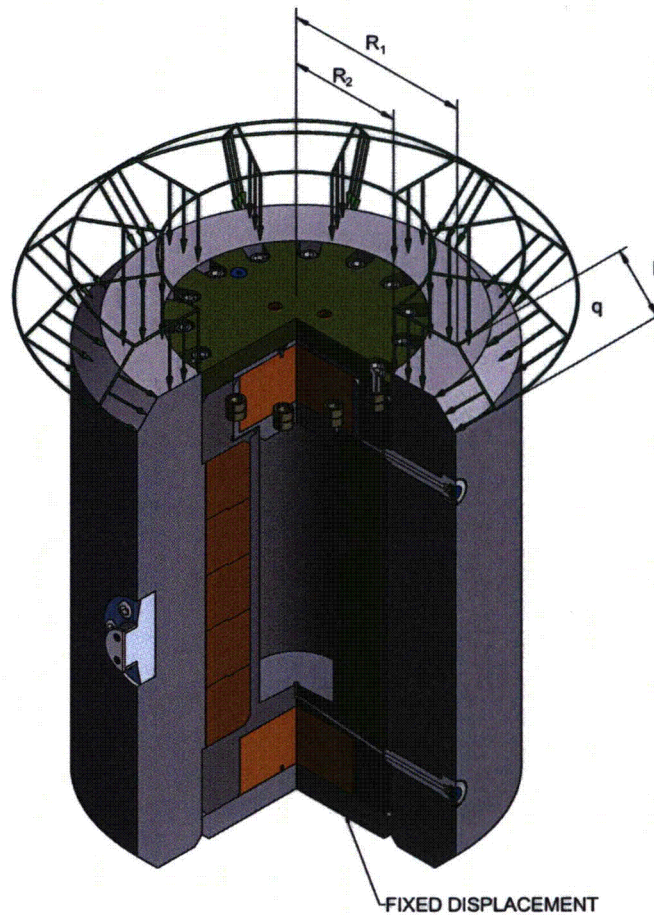


Figure 2-36. Head-On Drop Analysis Load Distribution – All Models

a. *Ibid* (refer to previous LIBRA LE -4 footnote a).

2.7.1.1.3 Correlation of Head-On Drop Analysis and Test

In the Drop test, a 165% scaled-up version of the Model AOS-100A (referred to as "AOS-165A" and/or "prototype" in the discussions) was used. A single cask component of the prototype with multiple impact limiters was subjected to three (3), 9.14-m (30-ft.) Drop tests:

- Head-On Drop
- Side Drop
- Slap-Down Drop

In the Slap-Down Drop test, the cask was oriented with one end offset 25.4 cm (10 in.) above the other. Following all three (3) tests, the cask showed no measurable deformation, and passed all Leak tests. The only notable structural problem encountered in the Drop tests was the failure of a turnbuckle pin in the Side Drop test. A larger-diameter pin was successfully used in the subsequent Slap-Down Drop test.

Four (4) types of data were gathered before, during, and after each drop test:

- Acceleration data from three (3) accelerometers
- Laser dimensional readings
- High-speed photographs at 1-ms intervals during impact
- Photographs of the sectioned, deformed impact limiters

The Dimensional Inspection report, presented in [Appendix 2.12.7](#), for the Head-On Drop test, does not provide a direct correlation with the LIBRA analysis, because the laser readings are of the cladding, and the cladding at the center of the impact limiter significantly separated from the foam. A correlation of analysis and test displacement results is obtained from the photo of the sectioned impact limiter, shown in [Figure 2-37](#). This photo provides a measurement of the compressed impact limiter height that can be directly compared to analysis. In [Figure 2-37](#), Dimension A is used to scale the photo measures to design dimensions, and Dimension B is the overall height.

Design Dimensions	A = 46.6 in.
	B = 39.0 in.
Photo Dimensions	a = 4.85 in.
	b = 3.60 in.
Scale Factor	X = A / a = 46.6 in. / 4.85 in. = 9.61 in.
Compressed Height from Photo	B' = X * b = 9.61 in. * 3.60 in. = 34.6 in.
Deflection, δ	B - B' = 39.0 in. - 34.6 in. = 4.4 in.

The deflection, δ , corresponds to a displacement of 5.5 in. for a cask weight of 37,500 lbs., in [Figure 2-44](#). The analysis and measured values differ by 25%.

In addition to correlating maximum displacements, a qualitative comparison of overall displacements is provided by Figure 2-38 and Figure 2-39. Figure 2-38 is a photo of the deformed impact limiter. Figure 2-39 is a LIBRA-rendered plot of the deformed model. A comparison of these figures shows that the LIBRA deformed model qualitatively compares well with the deformed structure.

The test accelerometer data is dominated by ringing due to vibration of tungsten alloy cylinders, rendering it unsuitable for correlation with the analytical results. A comparison of analytical and test results for head-on, rigid body cask deceleration is obtained using the time to achieve maximum displacement shown on the high-speed photographs, some of which are shown in Figure 2-40. In the Drop Test report, presented in Appendix 2.12.6, the time to achieve maximum displacement is given as 0.021 sec. This time can be calculated by considering the cask and impact limiter to be a single degree of freedom spring-mass system, where the spring is approximated from Figure 2-33, and the mass is the total cask plus impact limiter mass. The period for cask impact limiter, undamped spring-mass system is:

$$\begin{aligned}k &= 5.6 \times 10^6 / 6.2 = 0.90 \times 10^6 \text{ lb/in} \\m &= 37,500 / 386.4 = 96.3 \text{ lb-sec/in}^2 \\f &= (k / m)^{0.5} = 96.7 \text{ rad/sec} = 15.4 \text{ Hz} \\T &= 1 / f = 0.065 \text{ sec}\end{aligned}$$

Due to the foam, the cask experienced high damping during impact. The amount of damping is given by the height of the cask rebound. From the Drop Test report (Appendix 2.12.6), the rebound height was approximately 0.9m (3 ft.), 10% of the drop height, indicating that 90% of the kinetic energy was damped. A series of LIBRA-AGS analyses were conducted, to determine the critical damping coefficient corresponding to a 90% energy loss. As illustrated in Figure 2-42, a critical damping coefficient of $\xi = 0.60$ corresponds approximately to a 90% energy loss. The damped period is then:

$$T' = T / (1 - \xi^2)^{0.5} = 0.065 / 0.80 = 0.0813 \text{ sec}$$

The impact duration is half the period, $T'/2 = 0.041 \text{ sec}$, and corresponds to the time at which the cask separates from the ground. From Figure 2-40, separation time is seen to be approximately 0.042 sec, which corresponds well to $T'/2$. In addition, the maximum displacement occurs at $T'/4$ (0.023 sec.), which correlates well with the time observed in the test, 0.021 sec.

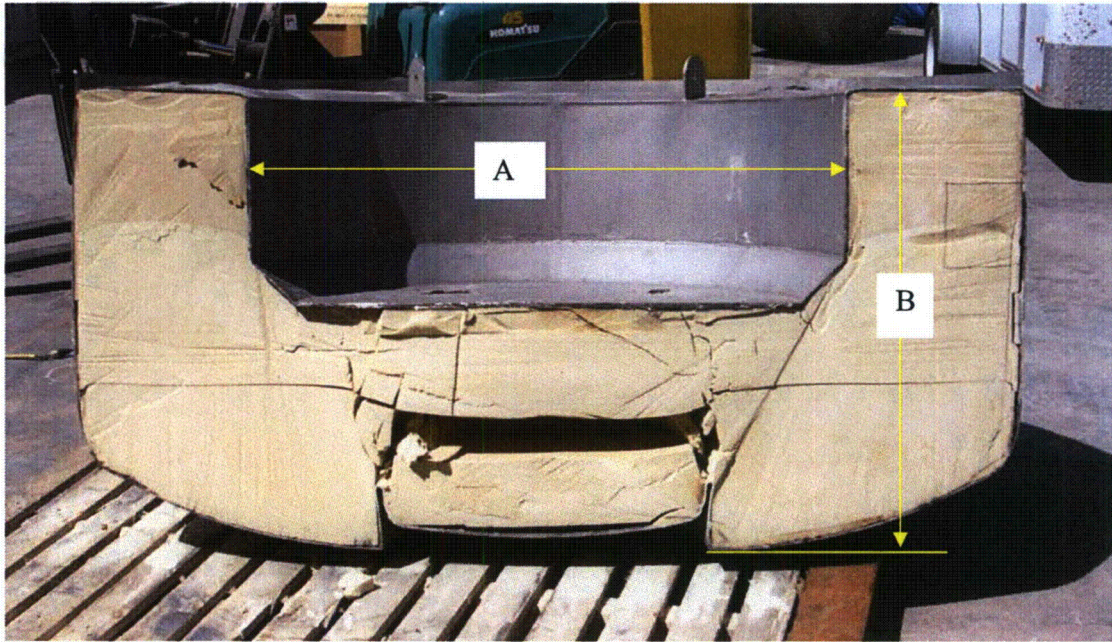


Figure 2-37. Sectioned Impact Limiter Used in Head-On Drop – AOS-165A Prototype



Figure 2-38. Impact Limiter after Head-On Drop – AOS-165A Prototype

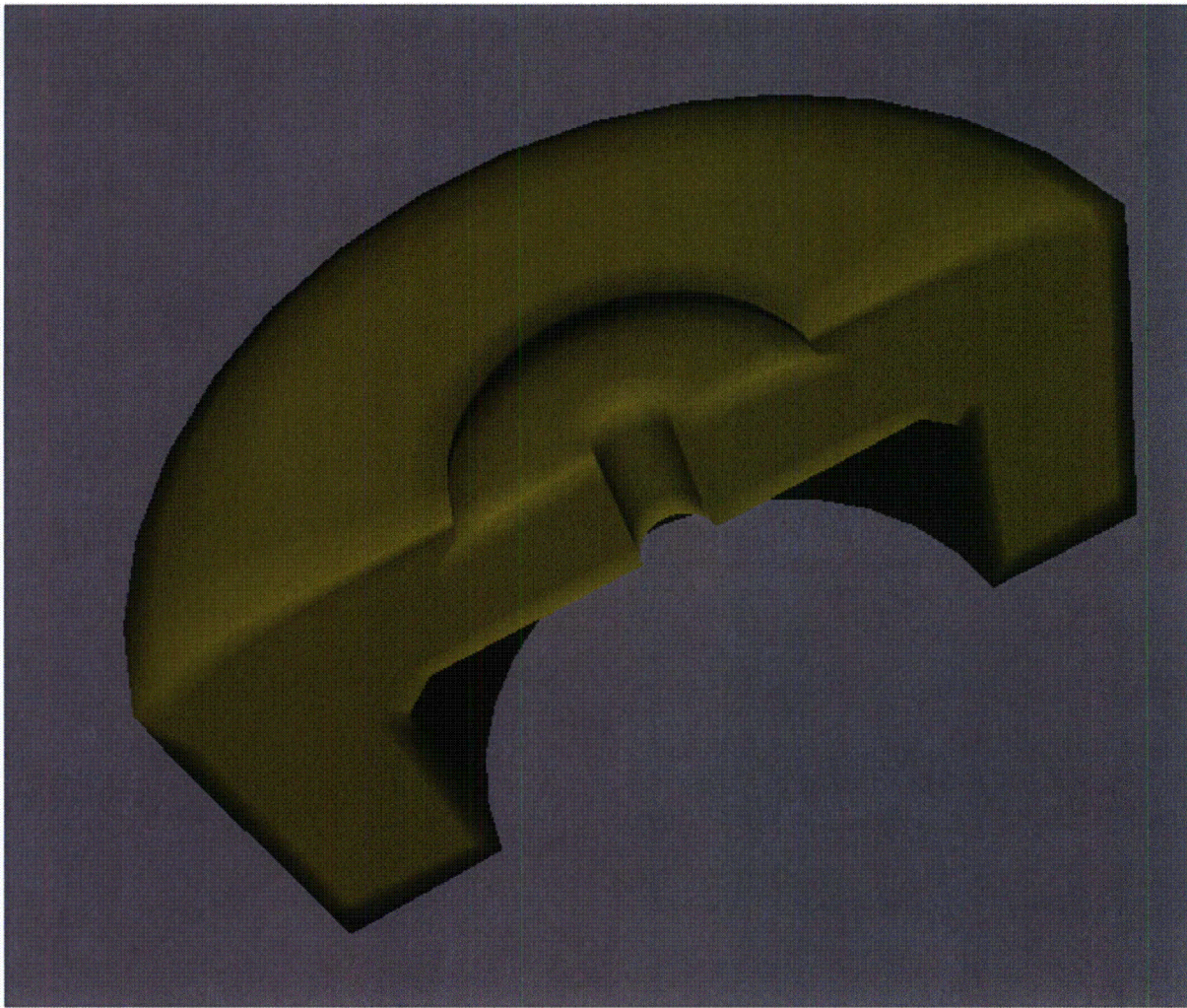


Figure 2-39. Rendered LIBRA Deformed Head-On Drop – AOS-165A Prototype

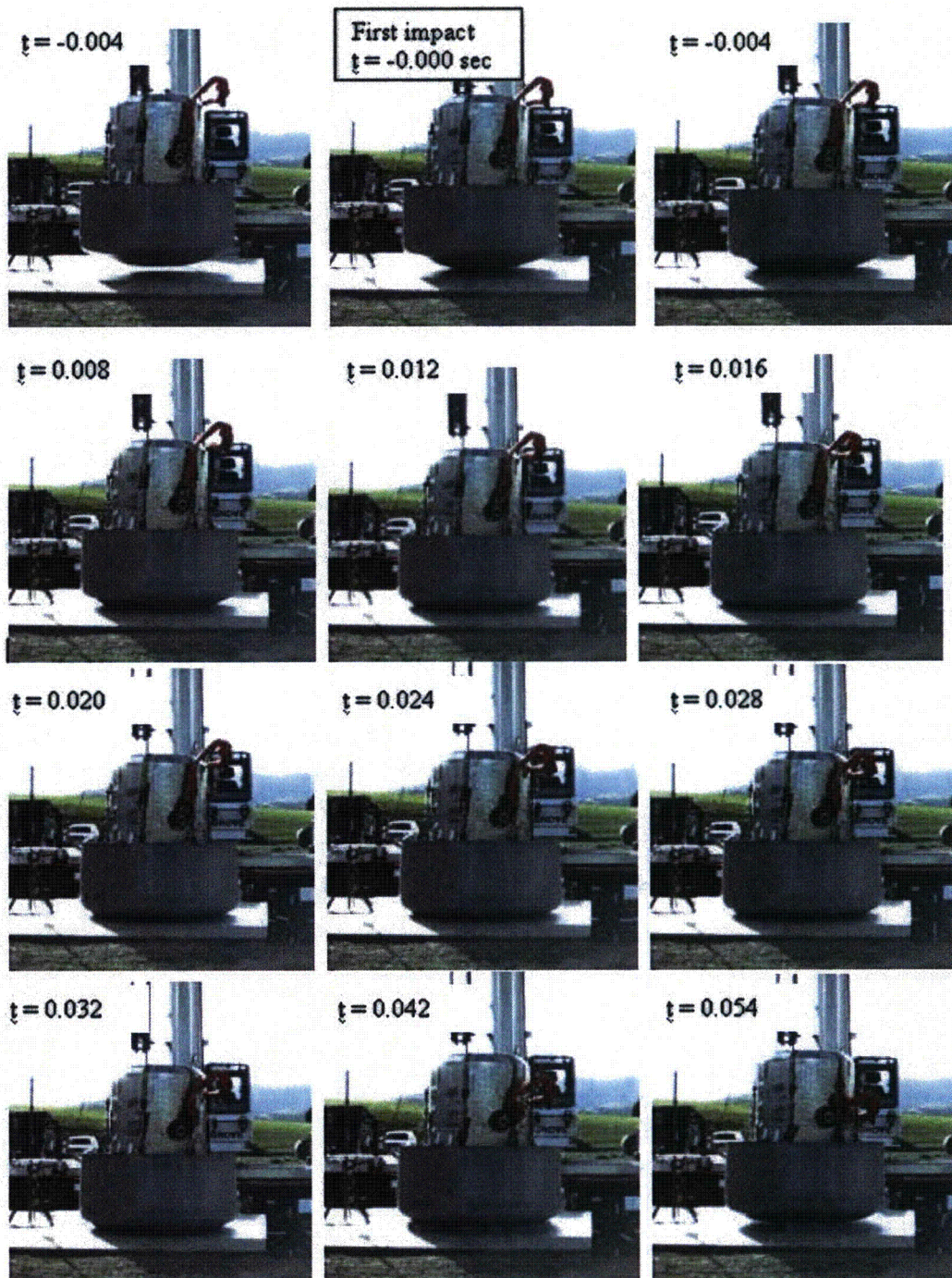


Figure 2-40. Photograph Frames from High-Speed Video of Head-On Drop – AOS-165A Prototype

```

ti  damping analysis
sc  300000,1.0E-6,  0,0.0114,  0,0,0
nd  1,90.0
,   2,1
el  1,1,1,2
pr  1,1.0E6
bc  2
iv  1,527
mo  1,1
end

```

$$\omega = \sqrt{k/m} = 105.4$$

$$\xi = 0.06$$

$$\beta = 2 * \xi / \omega = 0.0114$$

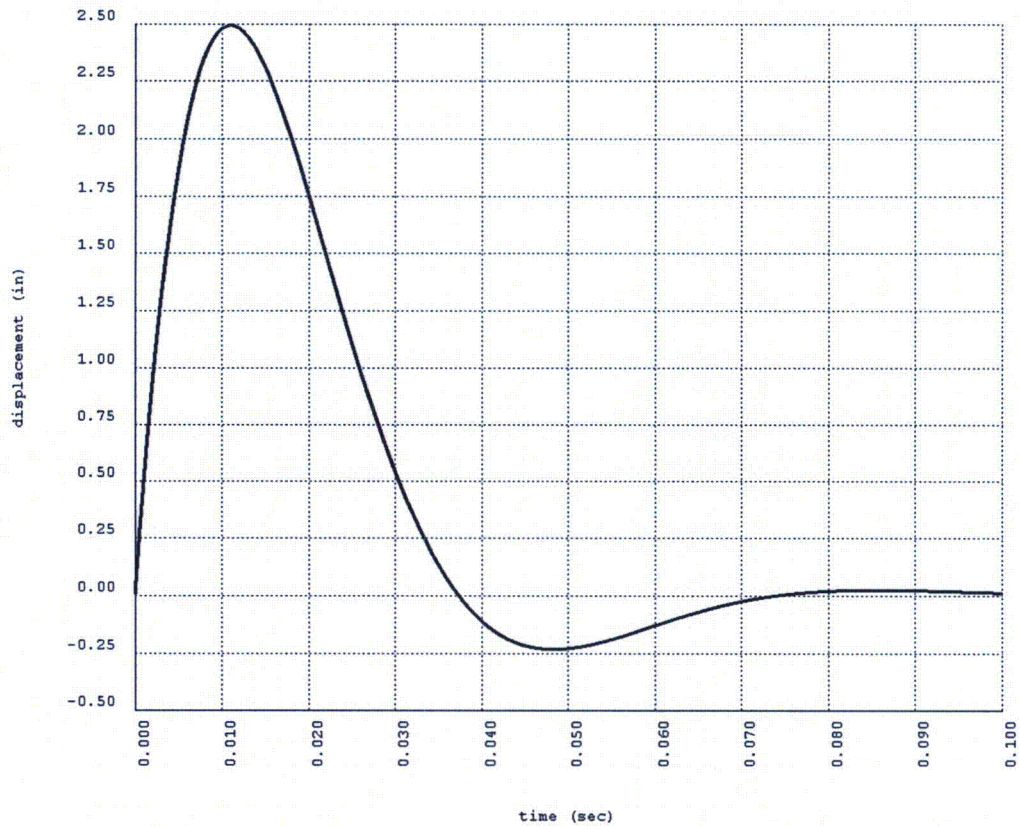
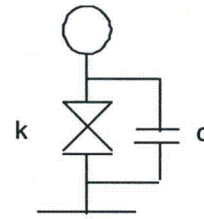


Figure 2-41. Impact Response for Damping, $\xi = 0.06$ – AOS-165A Prototype

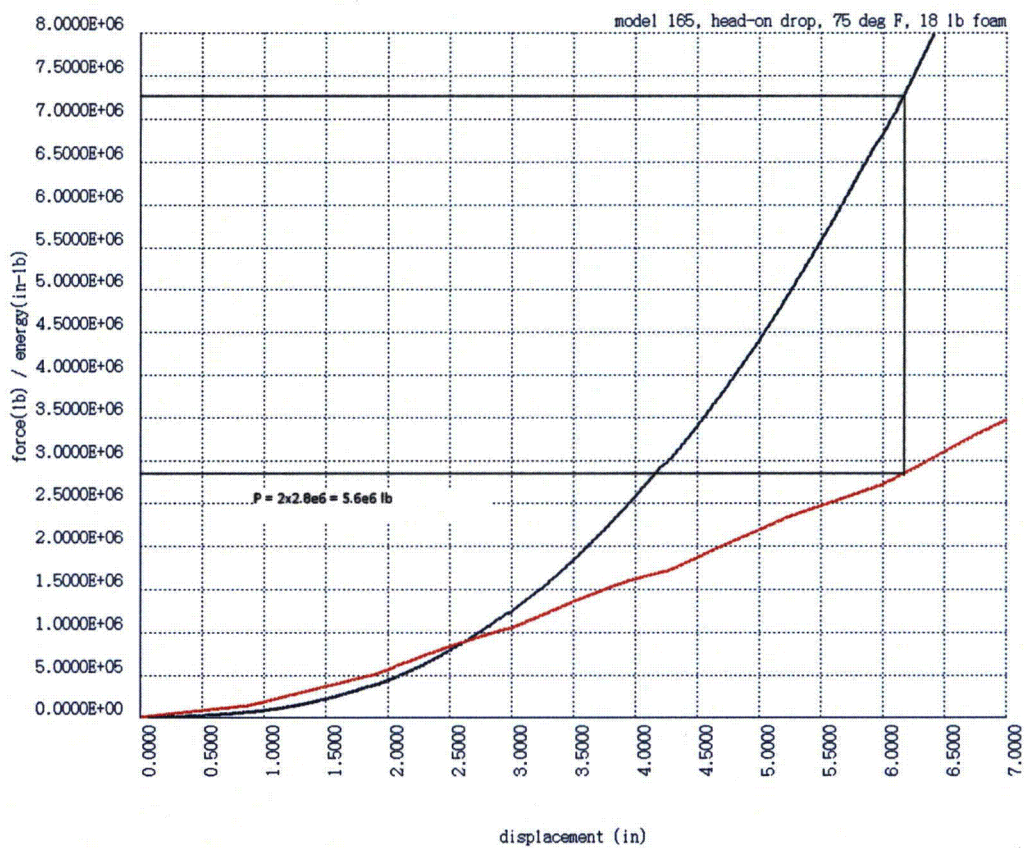


Figure 2-42. Head-On Drop Force and Energy – AOS-165A Prototype

2.7.1.2 Side Drop

2.7.1.2.1 Side Drop Impact Limiter Analysis

The FEA model shown in Figure 2-32 is also used for the Side Drop configuration. As in the head-on drop analysis, a series of displacement fields, simulating the side impact of the impact limiter onto a rigid surface, is applied, with displacement steps corresponding to 0.25 mm (0.01 in.) displacements of the rigid surface, and geometric and constitutive element properties updated after each displacement step. Figure 2-43 illustrates the strain energy and total force developed in the foam due to the rigid surface displacements. For the 180° section of one impact limiter and an 9,510-lb. cask weight, the maximum displacement corresponds to the strain energy:

$$U = 9,510 * 360 = 3.42 \times 10^6 \text{ in.-lb.}$$

From Figure 2-43, the corresponding displacement is 14.5 cm (5.7 in.), the total force is 1.36×10^6 lbs., and the maximum acceleration is:

$$a = 1.36 \times 10^6 / 9,510 = 143.0g$$

Figure 2-44 illustrates the lateral foam displacements, where the displacement contours are plotted on the deformed geometry. The equivalent stress and strain at maximum displacement are plotted in Figure 2-45 and Figure 2-46, respectively.

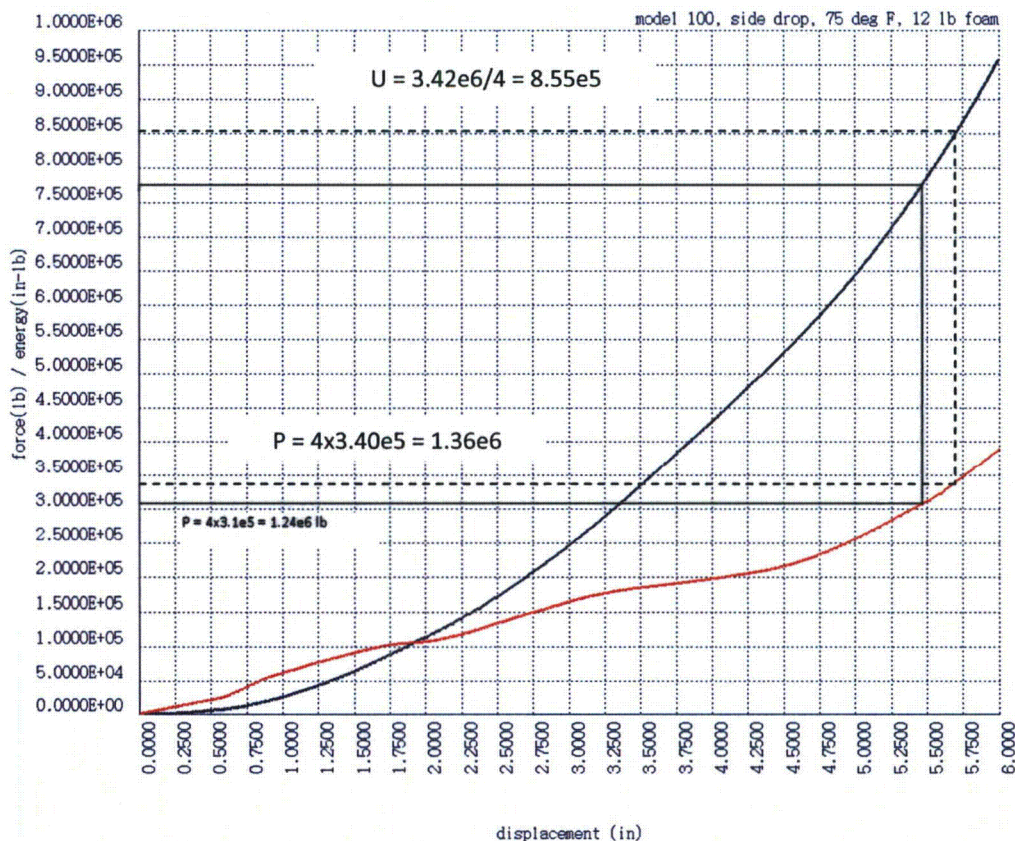


Figure 2-43. Side Drop Force and Energy – Model AOS-100

VECTOR: 450
 DOF: 1
 MIN: -4.4672E+00
 MAX: 4.7134E-02

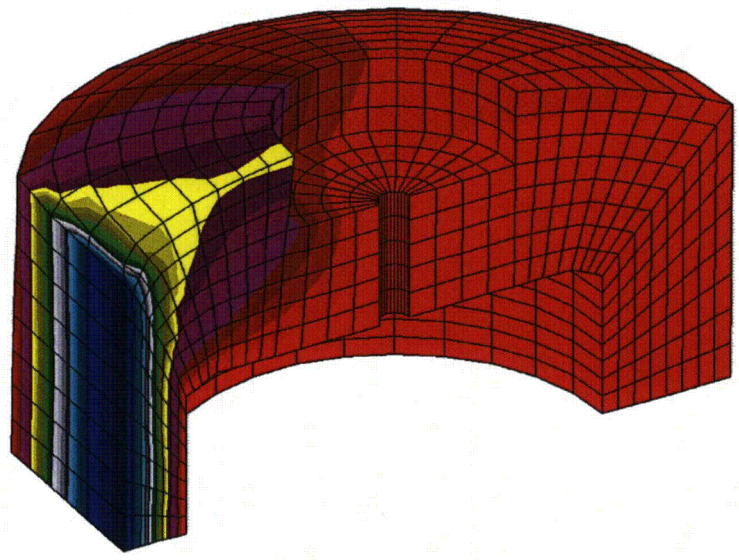
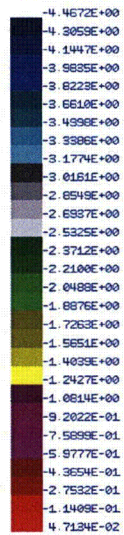


Figure 2-44. Side Drop, Maximum Foam Displacement (Deformed Model) – Model AOS-100

ELEM TYPE: 10
 COMPONENT: 1
 VECTOR: 450

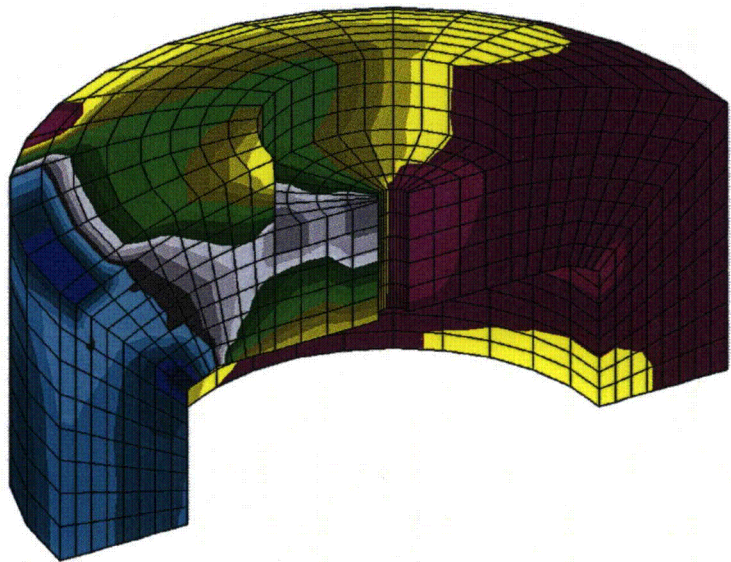


Figure 2-45. Side Drop, Maximum Equivalent Stress in Foam – Model AOS-100

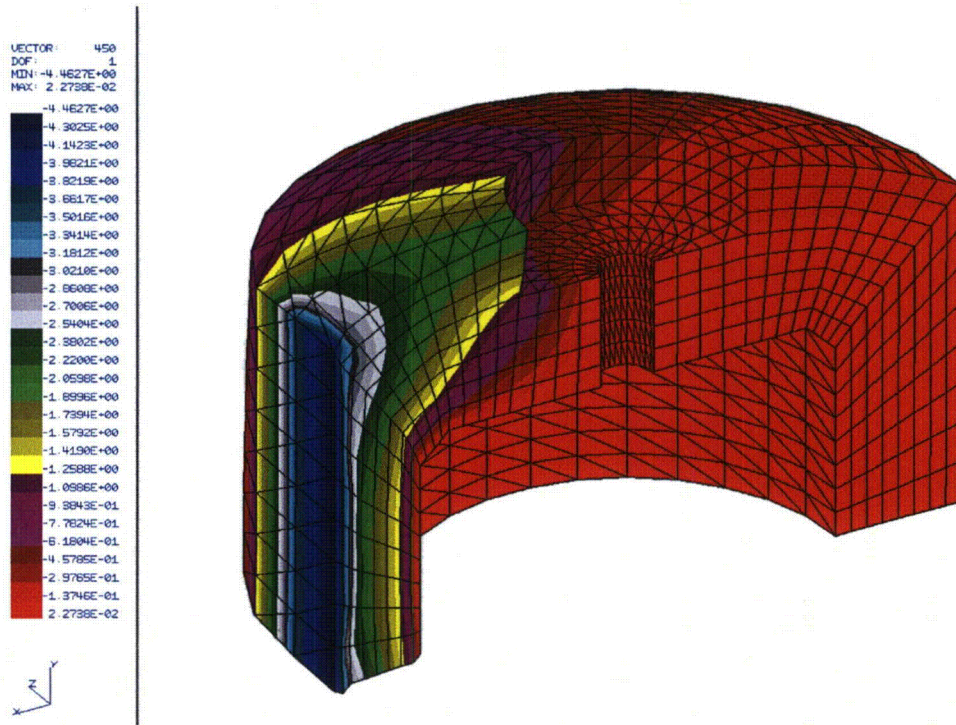


Figure 2-46. Side Drop, Maximum Principal Strain in Foam – Model AOS-100

2.7.1.2.2 Side Drop Cask Analysis

Net force due to a 30-ft. side drop plus slap-down, Load Case 302, is determined from the impact limiter analysis presented in Paragraph 2.7.1.2.1. Figure 2-47 illustrates the assumed impact load distribution. For impact force P, the load intensity distribution, as a function of the circumferential angle, is assumed to be:

$$\begin{aligned}q_x &= -q * \cos^2 \theta \\q_z &= q * \sin \theta * \cos \theta \\P &= 2L \int_{-\pi/2}^{\pi/2} -q * \cos^2 \theta * r * d\theta \\P &= \pi * R * L * q \\q &= P / (\pi * R * L)\end{aligned}$$

The LIBRA loading function, LE -5^a, applies impact traction q. This function applies surface tractions in 3D models generated from 2D models. Traction is applied along nodal lines of the 2D model. The tractions can vary linearly along the 2D nodal lines, and as a sine or cosine harmonic in the circumferential direction. The above tractions, q_x and q_z, are applied with LE -5, using the trigonometric identities:

$$\begin{aligned}q_x * \cos^2 \theta &= 1/2 * q_x * (1 + \cos 2\theta) \\q_z * \sin \theta * \cos \theta &= 1/2 * q_z * \sin 2\theta\end{aligned}$$

In addition to the impact load, an opposing inertia body force is applied to the cask. Radial displacements are fixed along the cask meridian 180° from center of loading, to account for non-equilibrium of pressure and inertia forces.

a. *Ibid* (refer to previous LIBRA LE -5 footnote a).

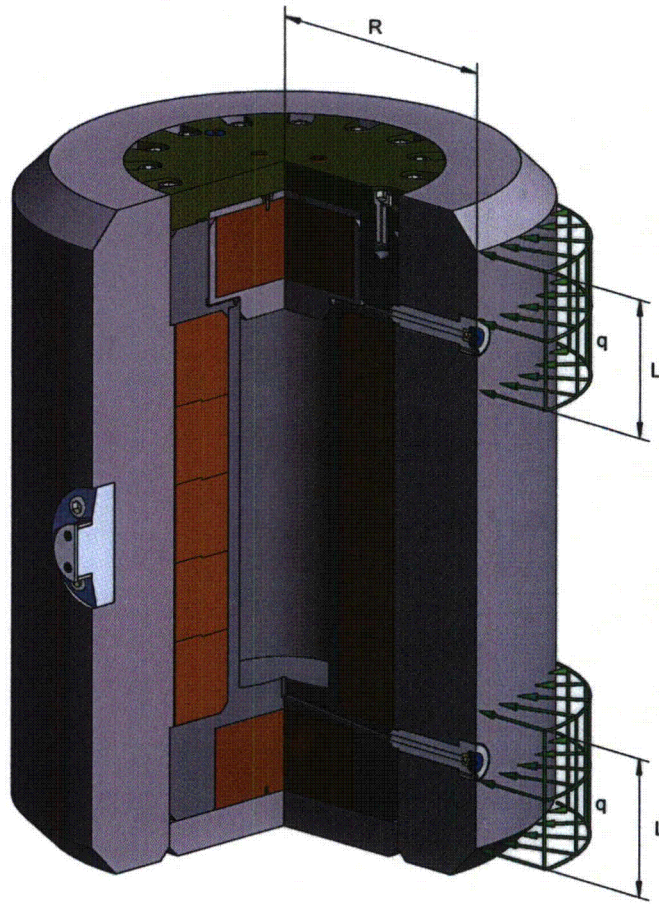


Figure 2-47. Side Drop Analysis Load Distribution – All Models

2.7.1.2.3 Correlation of Side-Drop Analysis and Test

In the side drop, there is not a significant separation of foam and cladding. (Refer to Figure 2-44.) As a result, the dimensional inspection results are used to correlate test and analysis results. In the analysis, a uniform radial displacement is applied along the impact limiter structure. In the side-drop test, the impact limiter experienced small rotation, producing differences in radial displacement along the impact limiter. Consequently, the net average test radial displacement in each impact limiter is compared to the uniform analysis displacement. For the AOS-165A prototype, the net average test radial displacements at the two (2) impact limiters are provided in Table 2-42 from the Dimensional Inspection report, presented in Appendix 2.12.7.

The average of displacements is determined at three (3) locations along the impact limiter:

- **Point 1** – At the impact limiter base
- **Point 2** – Approximately halfway between the impact limiter base and crown
- **Point 3** – At the impact limiter crown

The net displacement – the sum of all displacements, at the inside and outside of the impact limiter – is used at each point.

The average radial displacement at Impact Limiter 1 is 8.91794 cm (3.511 in.). The average radial displacement at Impact Limiter 2 is 7.56666 cm (2.979 in.). From Figure 2-43, the average analytical radial displacement is 10.5156 cm (4.14 in.). This analytical value includes a 1.15 slap-down factor.

Table 2-42. Side-Drop Analysis and Test, Radial Displacement at Impact Limiters 1 and 2 – AOS-165A Prototype

Impact Limiter 1 (in.)				Impact Limiter 2 (in.)			
Area	Base	Mid	Crown	Area	Base	Mid	Crown
Outside	3.969	2.239	2.080	Outside	4.027	2.057	1.892
Inside	0.547	1.247	0.451	Inside	0.000	0.650	0.311
Total	4.516	3.486	2.531	Total	4.027	2.707	2.203

2.7.1.2.4 Side Drop Slap-Down Analysis

The Slap-Down drop analysis is used to determine the cask orientation that produces maximum side impact. The impact force is determined by a series of direct integration, dynamic analyses involving different offset values, and the FEA model used for these analyses is shown in Figure 2-48. This model consists of a uniform block, and two (2) linear springs connected to the block by gap elements. Block geometry, total mass, and moment of inertia approximate the cask values. The spring stiffness values approximate stiffness of the impact limiter when subjected to a side drop. In each analysis, a null gap is modeled at one spring, and a gap equal to the offset is modeled at the other spring. The approximate, linear stiffness used for the impact limiter is 0.85×10^6 .

Figure 2-49 and Figure 2-50 graphically present the direct integration, dynamic analyses results for the AOS-165A prototype:

- Figure 2-49 presents the spring displacement, plotted as a function of support offset.
- Figure 2-50 presents the displacements at both springs, plotted as functions of time for an offset of approximately 25.4 cm (10 in.), the offset used in the drop test.

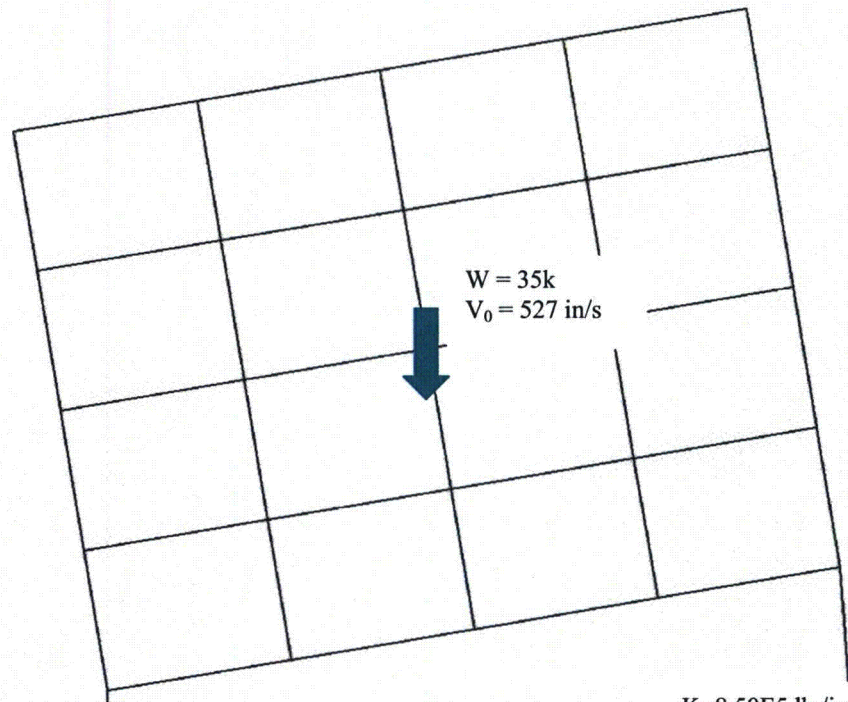
Maximum values from Figure 2-50 are presented in Table 2-43.

Table 2-43. Support Displacements – AOS-165A Prototype

Support	Maximum Displacement	
	cm	in.
1	8.89	3.500
2	10.82	4.260

VECTOR: 0
AMPL: 0.000E+00
SQUARE: OFF
SCALE: 0.55

BOUNDARIES:
X: -7.552
60.000
Y: -1.000
55.238
Z: 0.000
0.000



K=8.50E5 lb./in.
Zero Gap

K=8.50E5 lb./in.
Offset Gap

Figure 2-48. Slap Finite Element Model – AOS-165A Prototype

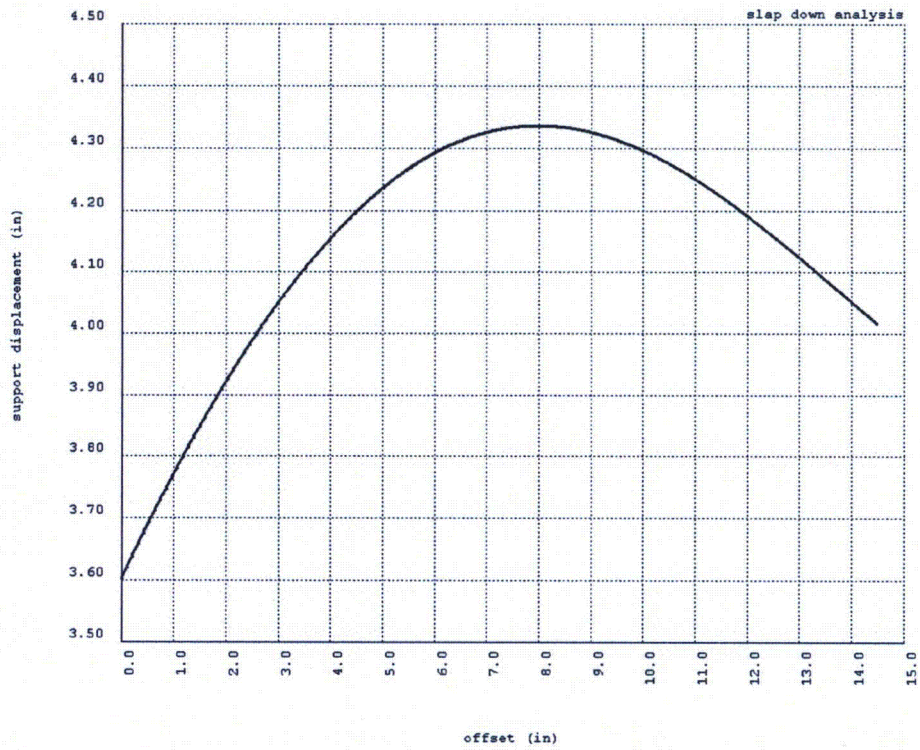


Figure 2-49. Maximum Support Displacement versus Offset – AOS-165A Prototype

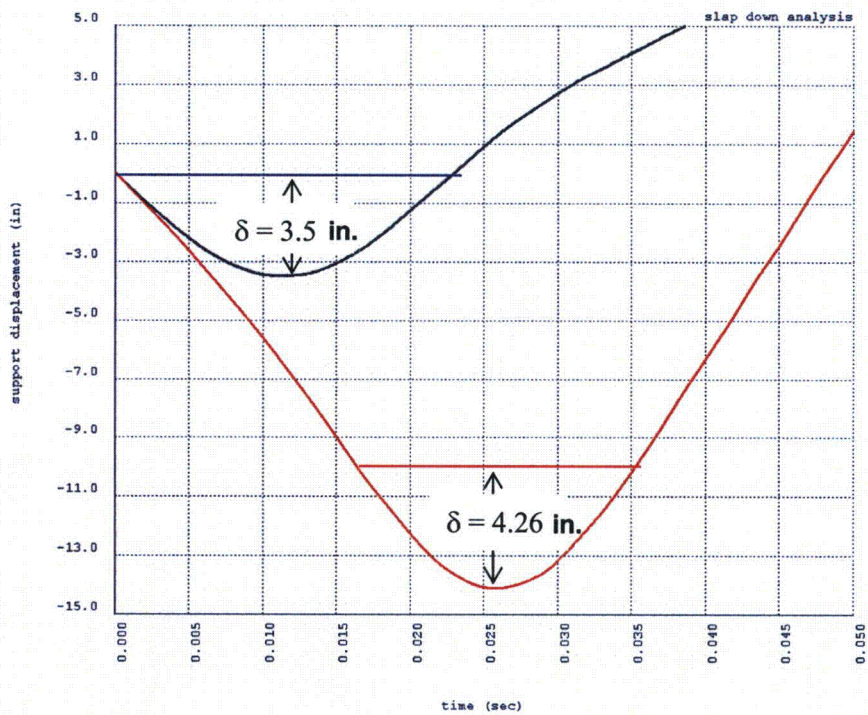


Figure 2-50. Slap-Down Analysis Support Displacements versus Time – AOS-165A Prototype

2.7.1.2.5 Correlation of Slap-Down Drop Analysis and Test

The dimensional analysis results are used to correlate Slap-Down test and analysis results. In the analysis, a single radial displacement is assumed for each impact limiter structure. In the Side-Drop test, the impact limiter experienced small rotation, producing differences in radial displacement along the impact limiter. Consequently, the net average test radial displacement in each impact limiter is compared to the single analysis displacement. For the AOS-165A prototype, the net average test radial displacements at the two (2) impact limiters are provided in Table 2-44, from the Dimensional Inspection report, presented in Appendix 2.12.7.

The average of displacements is determined at three (3) locations along the impact limiter:

- **Point 1** – At the impact limiter base
- **Point 2** – Approximately halfway between the impact limiter base and crown
- **Point 3** – At the impact limiter crown

The net displacement – the sum of all displacements, at the inside and outside of the impact limiter – is used at each point.

The average radial displacement at Impact Limiter 1 is 7.14756 cm (2.814 in.). The average radial displacement at Impact Limiter 2 is 9.53516 cm (3.754 in.). From Figure 2-50, the corresponding analytical radial displacements are 8.89 cm (3.50 in.) and 10.8204 cm (4.26 in.). The analysis and test results differ by a maximum of 19.6%. The test and analysis ratio of displacements at the impact limiters are 3.302 cm (1.30 in.) for the test and 3.0734 cm (1.21 in.) for the analysis.

Table 2-44. Slap-Down Drop Analysis and Test, Radial Displacement at Impact Limiters 1 and 2 – AOS-165A Prototype

Impact Limiter 1 (in.)				Impact Limiter 2 (in.)			
Area	Base	Mid	Crown	Area	Base	Mid	Crown
Outside	3.093	2.090	2.494	Outside	4.080	2.406	2.494
Inside	0.490	0.490	0.274	Inside	0.000	1.581	0.702
Total	3.583	2.580	2.768	Total	4.080	3.987	3.196

2.7.1.2.6 Slap-Down Drop Cask Analysis

Figure 2-51 illustrates this force distributed over the entire cask surface. For impact forces P_x and P_y , the load intensity distribution, as a function of the circumferential angle θ , is assumed to be:

$$q_y = 2/\pi * P_y / (R_2^2 - R_3^2)$$

$$q_x = -q * \cos^2\theta$$

$$q_z = q * \sin\theta * \cos\theta$$

$$P_x = 2L \int_{-\pi/2}^{\pi/2} -q * \cos^2\theta * r * d\theta$$

$$q_x = 2 * P / (\pi * R_1 * L)$$

In addition to the impact load, an opposing inertia body force is applied to the cask. Radial displacements are fixed along the cask meridian 180° from center of loading, to account for non-equilibrium of impact and inertia forces.

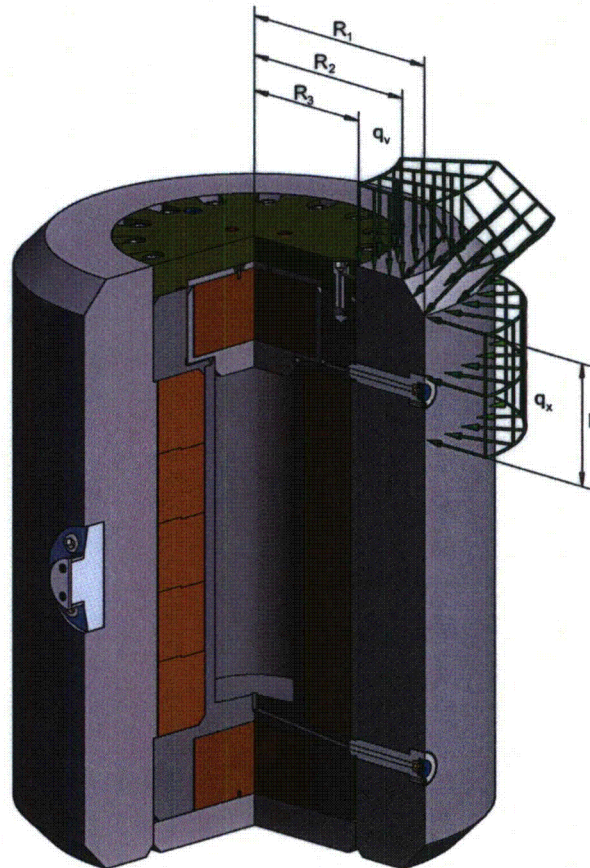


Figure 2-51. Cg/Corner Drop Analysis Load Distribution – All Models

2.7.1.3 Corner Drop

As with Head-On and Side Drops, evaluation of the Corner orientation (Cg/Corner) 30-Ft. Drop involves two separate analyses – a foam analysis to determine maximum impact force, and a cask analysis to evaluate cask stress due to impact loading. The impact limiter FEA model illustrated in Figure 2-32 is used to determine the maximum impact loading for a Cg/Corner Drop configuration. As in both the Head-On and Side Drop analyses, a series of 0.25-mm (0.01-in.) displacements of a rigid plane simulating foam impact onto a rigid surface is applied to the model in Figure 2-32. The model geometry and element constitutive properties are updated after each displacement step. The impact force and strain energy developed in the foam are determined in the analysis, and are plotted as functions of the rigid plane displacement. The maximum impact force is determined from the plots, and corresponds to the strain energy equal to the drop potential energy of 9,510 lbs * 30 ft., or 3.42×10^6 in-lb. This maximum force is then applied to the FEA model illustrated in Figure 2-7, with the load distribution illustrated in Figure 2-51.

2.7.1.4 Oblique Drops

The preceding analytical evaluations, together with the results of the full-scale Drop test presented in Appendix 2.12.6 and Appendix 2.12.7, demonstrate that the AOS Transport Packaging System models can survive the effects of the 9-m (30-ft.) free drop, without breaching containment nor suffering significant deformation on their cask components. In the Free-Drop test (Appendix 2.12.6), the prototype cask was dropped three (3) times, in different orientations, without any significant deformation nor failure of the containment system.

2.7.1.5 Summary of Results

All analyses associated with the 9-m (30-ft.) cask drops conducted for Models AOS-025, AOS-050, and AOS-100 are summarized within this paragraph.

2.7.1.5.1 9-m (30-ft.) Drop Analyses

Table 2-45 lists the six (6) analyses conducted on each of the three (3) cask models, for a total of 18 drop analyses.

Each drop analysis involves two (2) separate analyses. In the first analysis, the impact limiter is analyzed to determine impact loading upon the cask structure. The force-displacement curves generated in the impact limiter drop analyses are presented in Figure 2-54 through Figure 2-63. In the second analysis, the impact loading is applied in a cask stress analysis. Two (2) model types are used in cask stress analyses. Head-On drops are assumed to be axisymmetric, and the 2D cask model illustrated in Figure 2-52 is used. The 3D cask model illustrated in Figure 2-53 is used for Side and Cg/Corner Drop cask stress analyses.

Table 2-45. 9-m (30-ft.) Drop Analyses Conducted upon Each Cask Model

Load Case	Description
301	30-ft. Head-On Drop at 75°F
302	30-ft. Side Drop + Slap-Down at 75°F
303	30-ft. Cg/Corner Drop at 75°F
304	30-ft. Head-On Drop at -40°F, Low Temperature
305	30-ft. Side Drop + Slap-Down at -40°F, Low Temperature
306	30-ft. Cg/Corner Drop at -40°F, Low Temperature

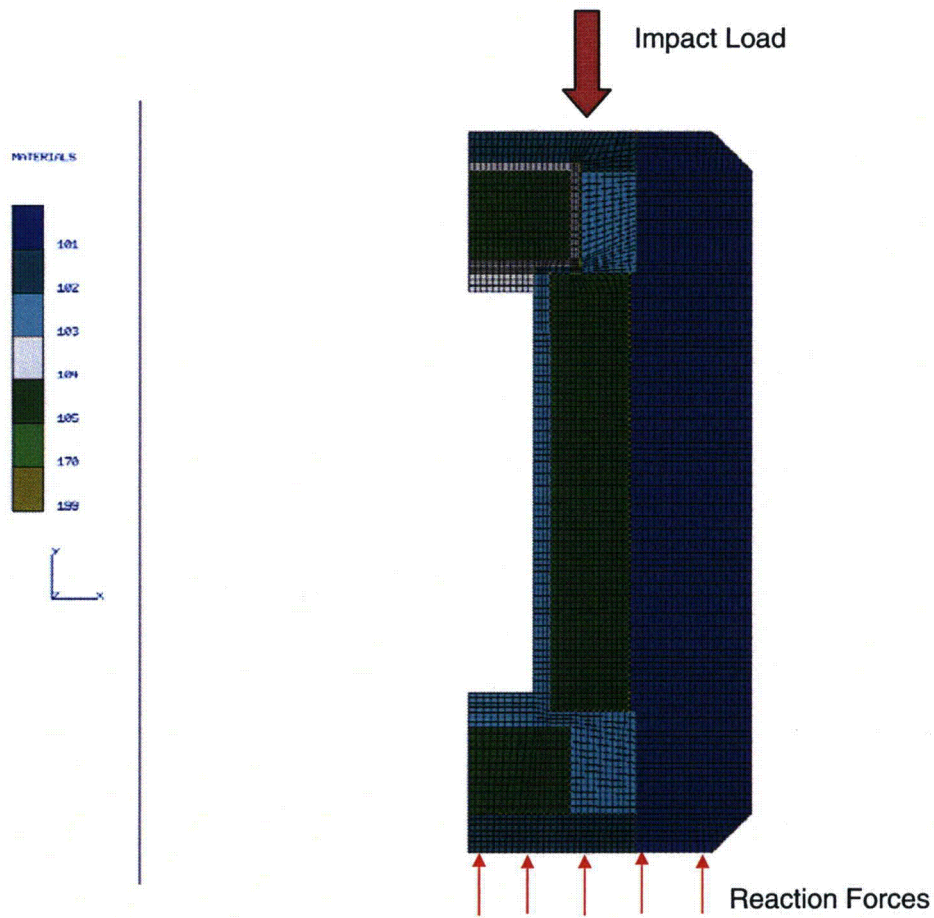


Figure 2-52. Head-On Drop Cask Model

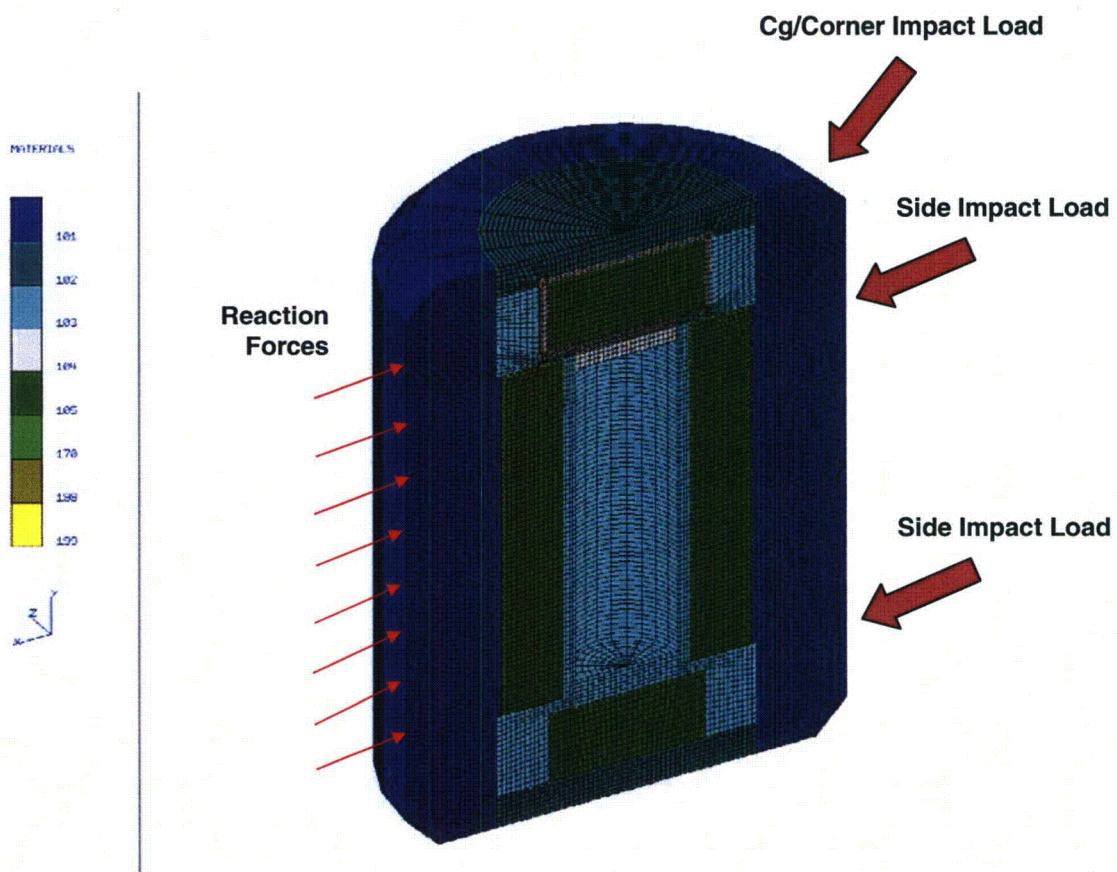


Figure 2-53. Side+Slap-Down and Cg/Corner Drop Cask Model

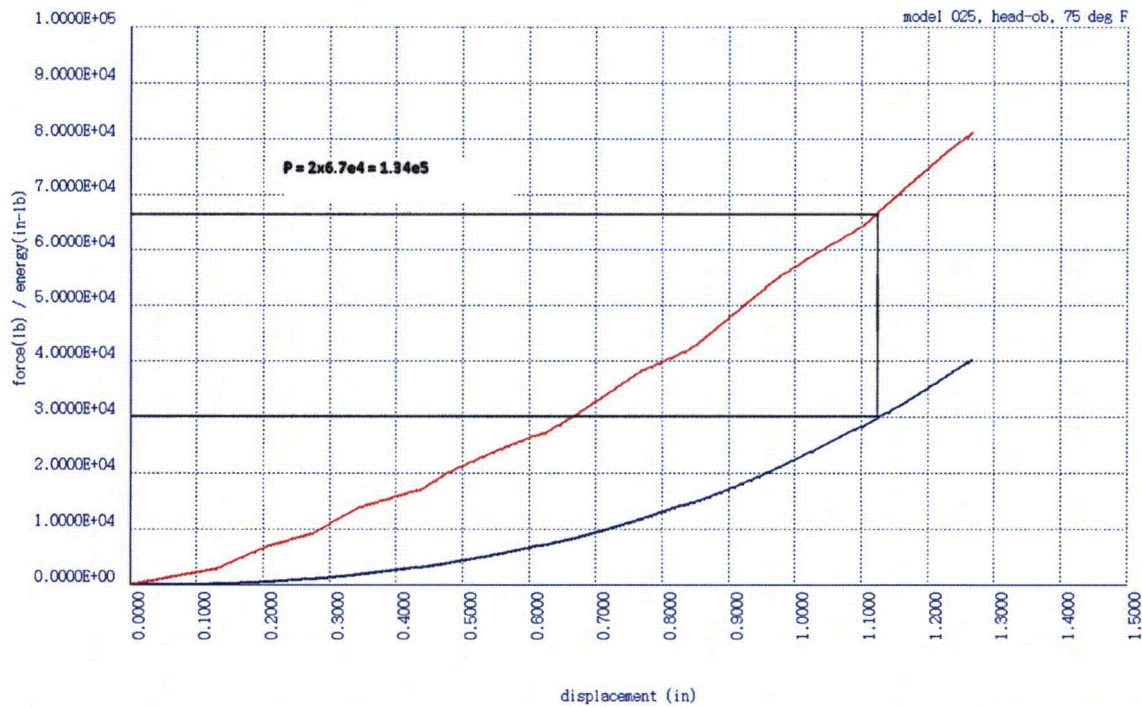
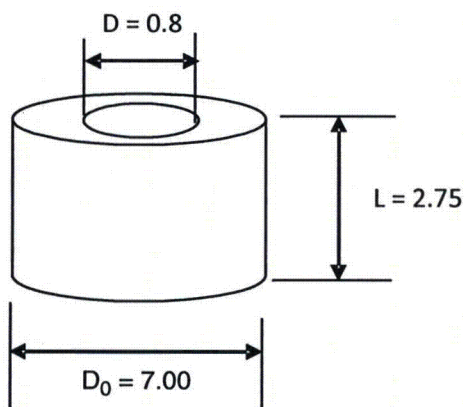


Figure 2-54. Force-Displacement for Head-On Drop at 75°F – Model AOS-025

Note: The foam manufacturer, General Plastics, recommends a 50% strain limit to FR-3700 series foam that has 20-pcf density (FR-3720). This limit applies to nominal strain, and not to strain at every point. The recessed region at the top of the impact limiter has high localized strains under a head-on impact. The FEA model used in the drop analyses requires foam data for strains over 50% to accurately model these local regions. Nominal foam strain in the Model AOS-025 cask for a head-on impact is approximately 35%, as shown below. The dimensions provided are in inches.



$$V = 220 * 360 = 7.92 \times 10^4 \text{ in-lb}$$

$$A = \pi (3.50^2 - 0.4^2) = 38.0 \text{ in}^2$$

$$f = 2.168 \text{ ksi (40\% strain)}$$

$$P = A * f = 38.0 * 2.168 = 82.3 \text{ k}$$

$$\delta = V / P = 79.2 \times 10^3 / 82.3 \times 10^3 = 0.96 \text{ in.}$$

$$\epsilon = \delta / L = 0.96 / 2.75 = 0.35 \text{ in/in}$$

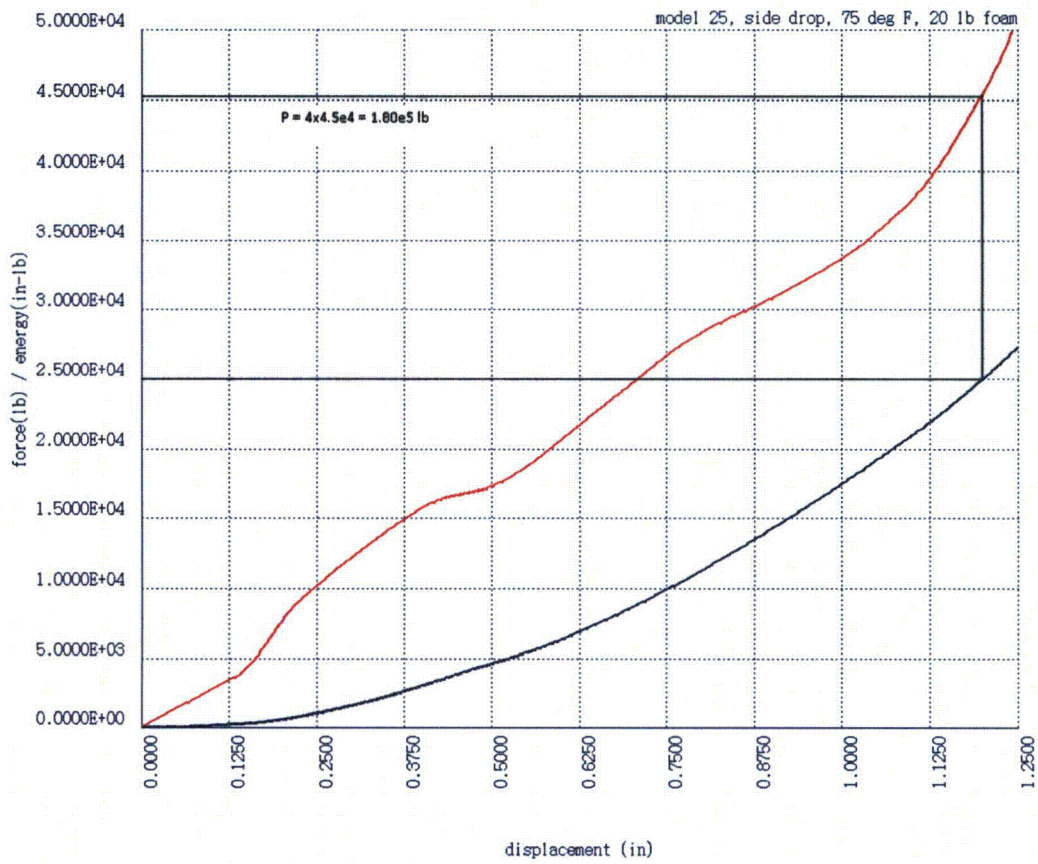


Figure 2-55. Force-Displacement for Side Drop at 75°F – Model AOS-025

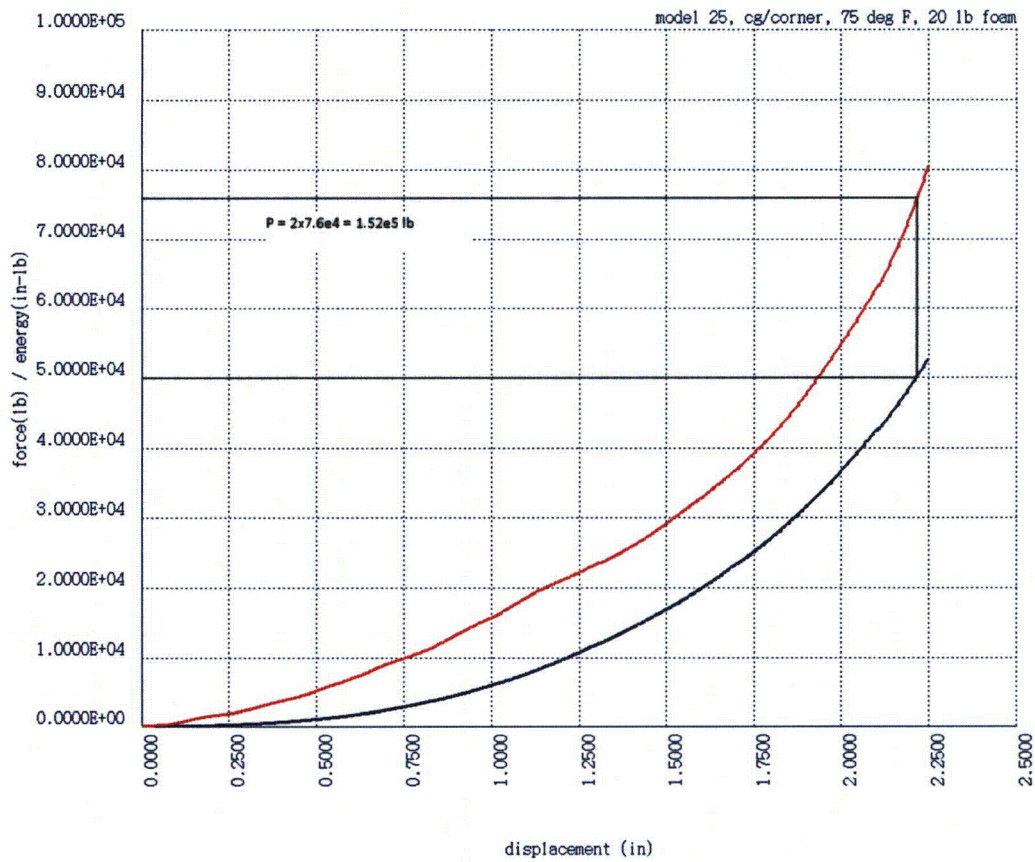


Figure 2-56. Force-Displacement for Cg/Corner Drop at 75°F – Model AOS-025

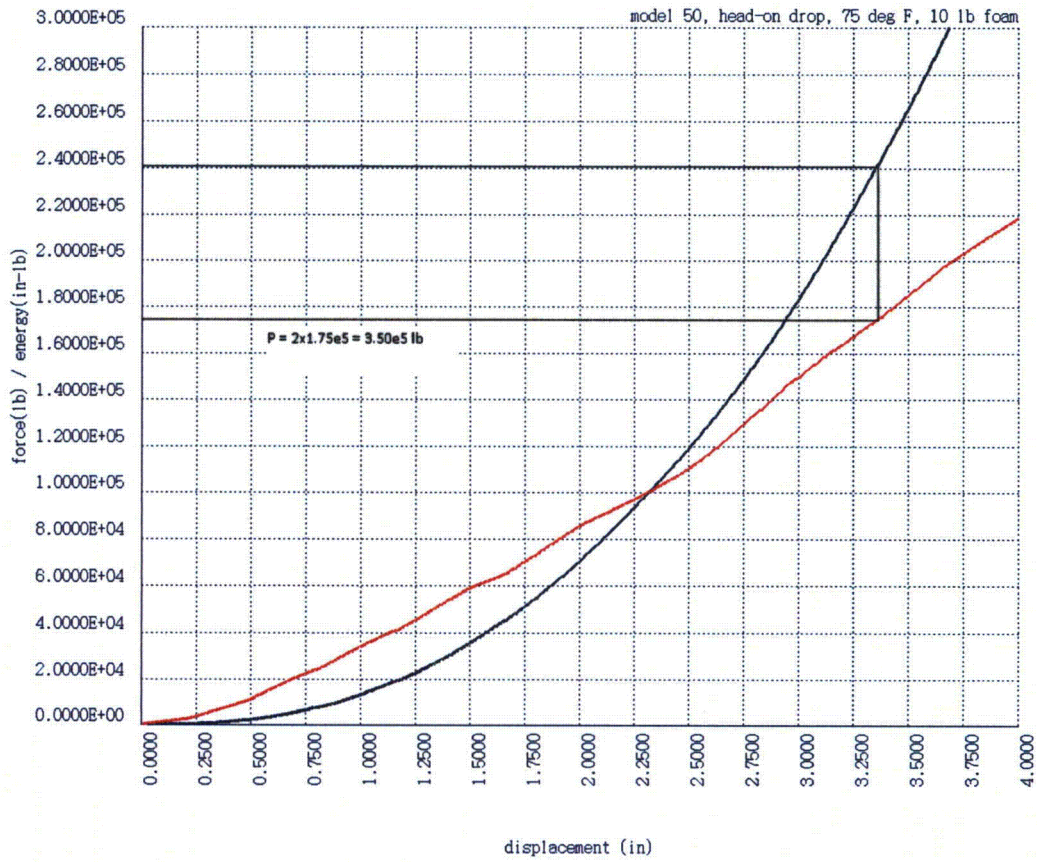


Figure 2-57. Force-Displacement for Head-On Drop at 75°F – Model AOS-050

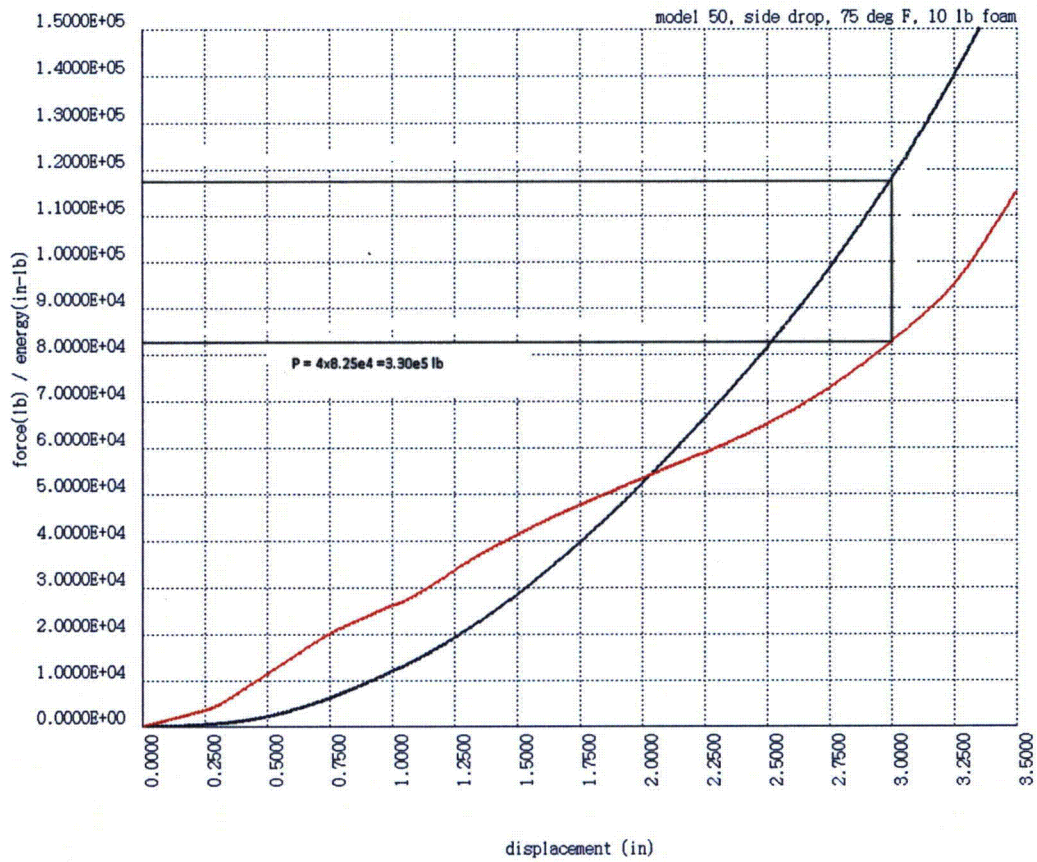


Figure 2-58. Force-Displacement for Side Drop at 75°F – Model AOS-050

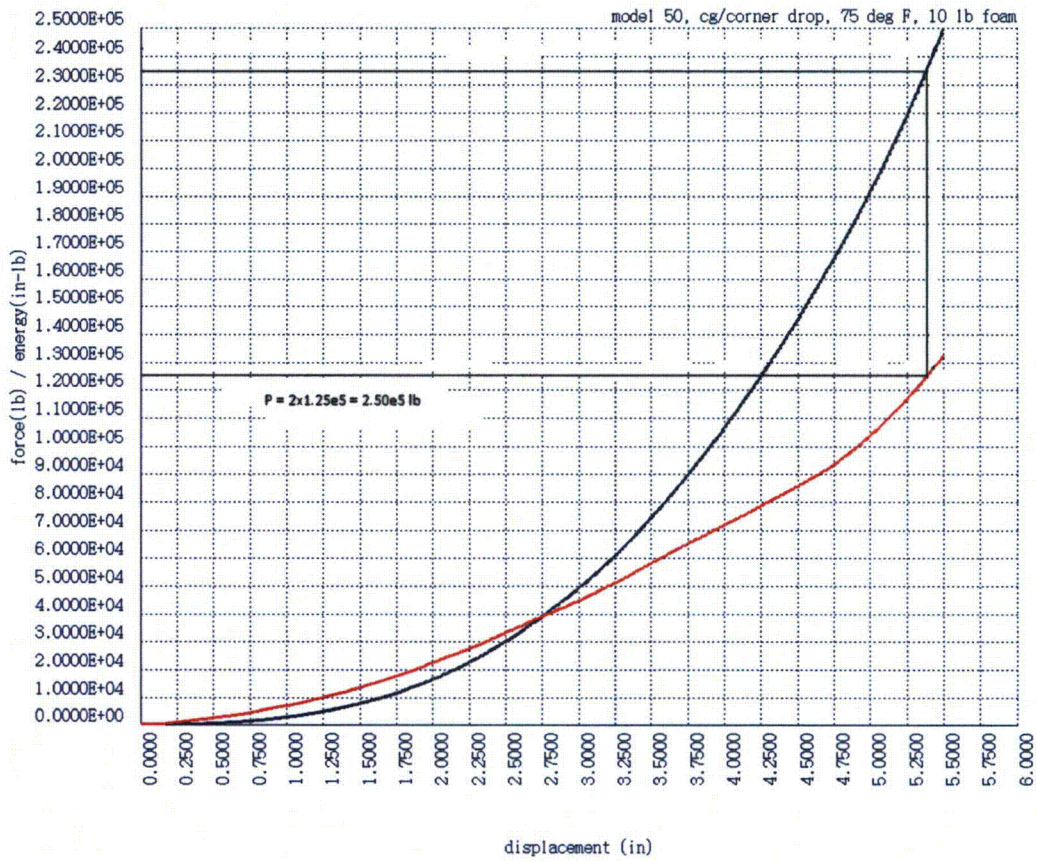


Figure 2-59. Force-Displacement for Cg/Corner Drop at 75°F – Model AOS-050

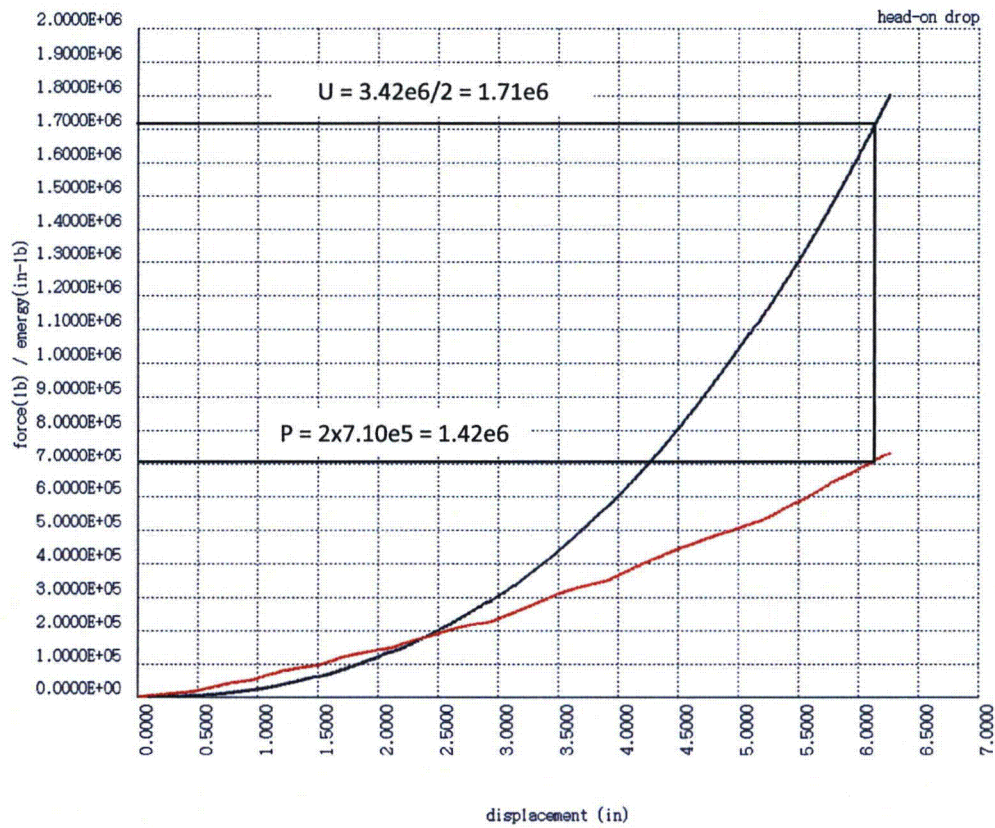


Figure 2-60. Force-Displacement for Head-On Drop at 75°F – Model AOS-100

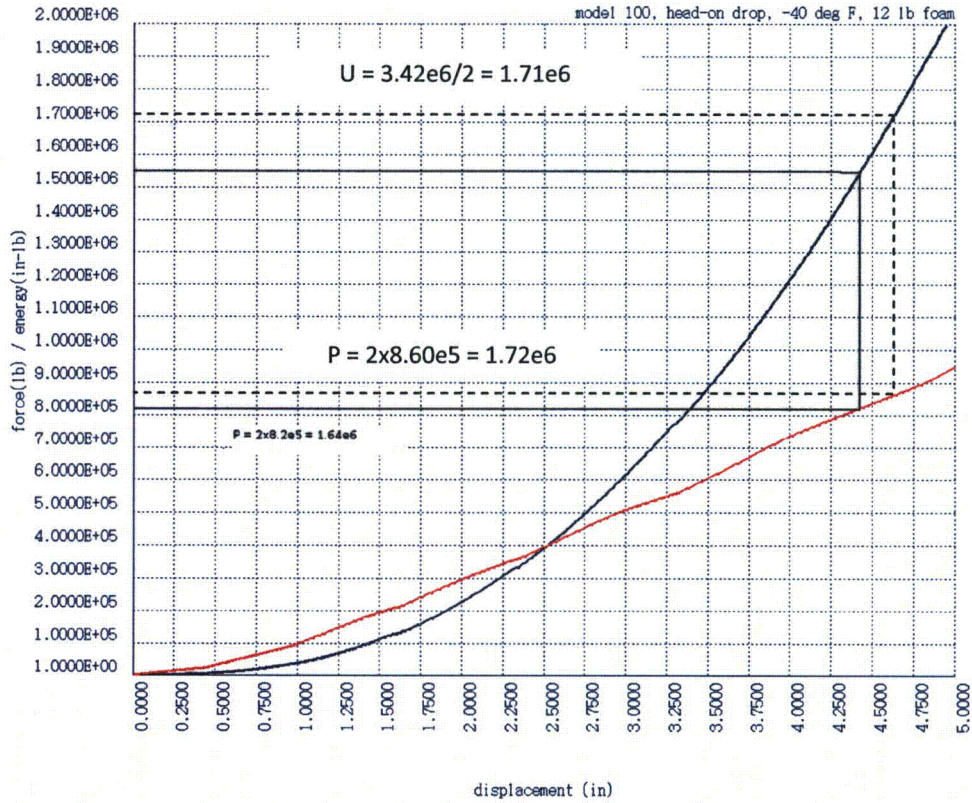


Figure 2-61. Force-Displacement for Head-On Drop at -40°F – Model AOS-100

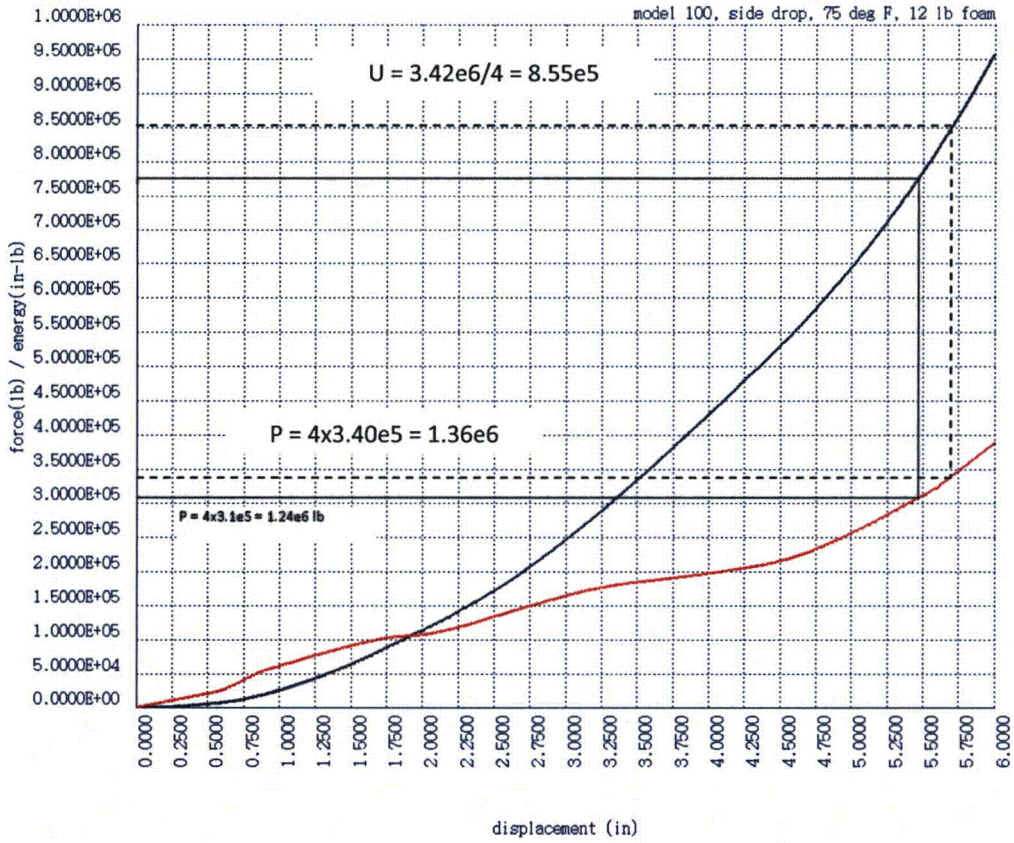


Figure 2-62. Force-Displacement for Side Drop at 75°F – Model AOS-100

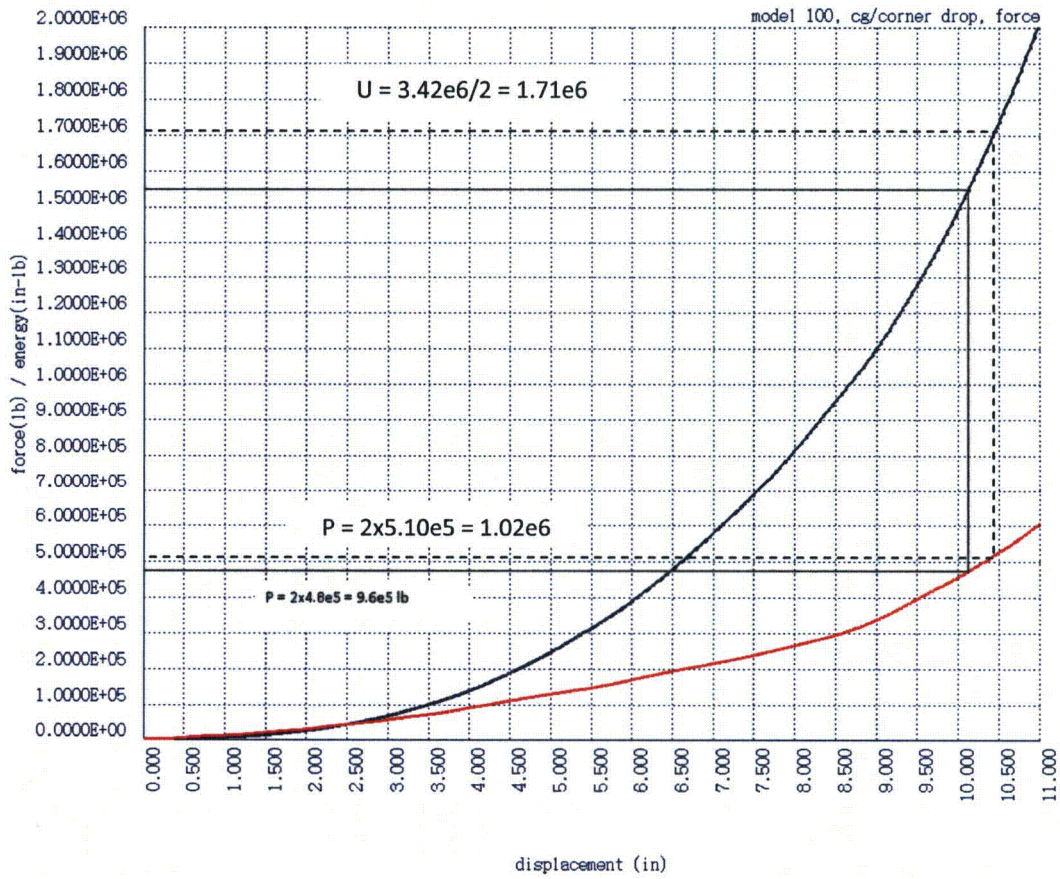


Figure 2-63. Force-Displacement for Cg/Corner Drop at 75°F – Model AOS-100

2.7.1.5.2 Cask Impact Loadings

Figure 2-64 and Figure 2-65 illustrate the impact load distributions applied in the cask stress analyses.

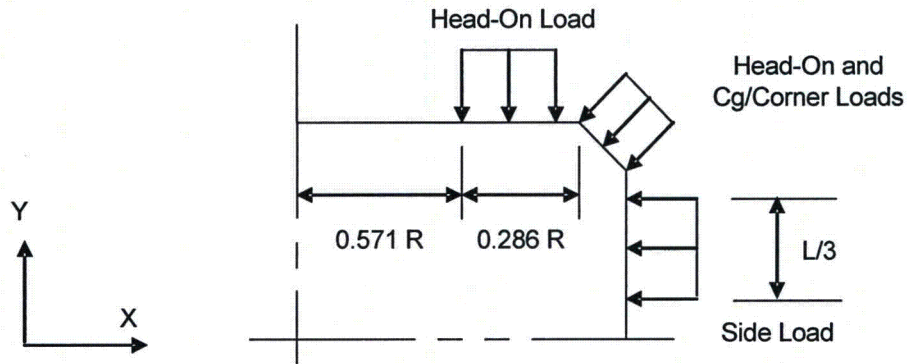


Figure 2-64. Impact Load Distributions

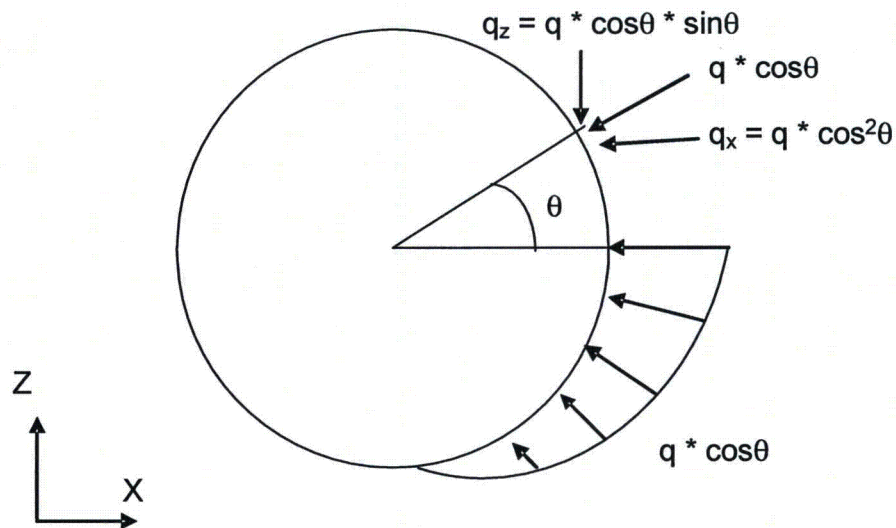


Figure 2-65. Circumferential Impact Load Distribution for Side and Cg/Corner Drops

These distributions are applied over the impact areas observed in the drop tests. The head-on impact load distribution is axisymmetric, and the applied traction, q , is provided by the force, P , divided by the surface area, A :

$$q = P/A$$

In the LIBRA program, q is entered with an LE -4^a command.

The Side and Cg/Corner loadings vary circumferentially, as a cosine function. With reference to Figure 2-64 and Figure 2-65, Side and Cg/Corner surface tractions are provided by the following development:

$$P = 2 \int_0^{\pi/2} q_x * r * d\theta$$

$$q_x = q * \cos^2\theta$$

$$P = 2q \int_0^{\pi/2} \cos^2\theta * r * d\theta = \pi L * r * q / 2$$

$$q = 2P / \pi L * r$$

where:

- P = Impact load
- q = Prescribed surface traction
- r = Cask outside radius
- L = Cask length

a. *Ibid* (refer to previous LIBRA LE -4 footnote a).

The traction, q , is applied by its x and z components:

$$\begin{aligned}q_x &= q * \cos^2\theta \\q_z &= q * \cos\theta * \sin\theta\end{aligned}$$

Impact loading is applied with LIBRA LE -4 and LE -5^a commands. To apply q_x and q_z with LE -5, it is necessary to express $\cos^2\theta$ and $\cos\theta * \sin\theta$ as functions of 2θ . Using the trigonometric identities:

$$\begin{aligned}\cos^2\theta &= (1 + \cos 2\theta) / 2 \\ \cos\theta * \sin\theta &= (\sin 2\theta) / 2\end{aligned}$$

The traction x and Z components become:

$$\begin{aligned}q_x &= q (1 + \cos 2\theta) / 2 \\ q_z &= q (\sin 2\theta) / 2\end{aligned}$$

These surface traction components are entered into LIBRA with LE -4 and LE -5 commands. The constant part of q_x is entered with an LE -4 command, and the parts of q_x and q_z that vary as a function of 2θ are entered with an LE -5 command.

2.7.1.5.2.1 Impact Load Tables

Impact loads applied in cask stress analyses are summarized in two (2) tables for each AOS model. The first table presents impact loads found in the impact limiter drop analyses, and the corresponding loads upon the cask stress models. The second table presents actual loads applied in the cask stress analyses.

In addition to the impact load, P' , an inertial acceleration, A' , is applied in the cask stress analyses. The inertia forces prevent large, pseudo-stress at supports, and have only a marginal effect upon maximum stress values. The accelerations are listed in the second table, and are based upon the actual applied impact load and weight of the stress model. The reaction force found in the stress analysis is:

$$R = P' - (A' * M)$$

This reaction force, R , is listed in the second table. In all cases R/P' is less than 0.01, indicating that the inertia and impact loads differ by less than 1%. Locations of reaction forces are illustrated in Figure 2-52 and Figure 2-53, for head-on and side drops, respectively.

In the first table for each of the three (3) cask models, impact loads determined in impact limiter impact analyses are modified by four (4) factors:

- Temperature load (f_T)
- Slap-down load (f_S)
- Geometric load factor (f_G)
- Shipping cage impact factor (f_P)

a. *Ibid* (refer to previous LIBRA LE -4 and LE -5 footnote a).

Each factor is described in the paragraphs that follow. The impact load applied in the cask analysis is then the product of these four (4) factors and the impact load determined in the impact limiter analysis.

Foam force-displacement properties are approximately 40% higher at -40°F than at 75°F. Results of Head-On Drop analyses for the Model AOS-100 with foam properties at 75°F and -40°F are illustrated in Figure 2-60 and Figure 2-61, respectively. A comparison of these two figures shows that the impact load at -40°F is approximately 28% higher than the load at 75°F. Although this increase in impact force is less than the increase in force-displacement properties, in the -40°F load cases, a foam temperature load factor of 1.4 is applied to the impact loads at 75°F.

Results of a slap-down study conducted for the AOS-165A prototype illustrated in Figure 2-66 shows that the slap-down load factor is approximately 1.2 (3.035/2.544). Because cask geometries are scaled, this factor is applicable to all AOS models. In Side Drops, Load Cases 302 and 305, impact loads are modified by this slap-down load factor.

A geometric load factor is used to account for model geometry. The Head-On drop uses a 2D model that reflects the full cask, whereas Side and Cg/Corner Drops use only a half model. As a result, impact loads for the full cask are reduced by a 0.5 factor in the Side and Cg/Corner Drop analyses.

Shipping cages add to the cask impact forces, for both Head-On and Cg/Corner 30-ft. Drops. Side Drops, however, are not affected by shipping cage impacts, because only barrier wire mesh, not pallets, impact the cask with negligible impact force. Ground impact forces react to both the shipping cage and cask impact forces; however, the shipping cage and ground forces affect opposite impact limiters and are not in phase. In addition, the foam impacted by the shipping cage is less compressed than the foam impacted by the cask, and is thereby softer. The LIBRA-AGS dynamic response analysis program is used to determine the shipping cage impact forces, and the AGS analyses take into account both the force phases and foam stiffness properties. The increases in ground impact forces, due to the shipping cage impacts, are determined as fractions of cask impact forces and applied as force factors, f_p . Table 2-46 lists the shipping cage used in the impact analyses. Analyses results that include the shipping cage in the 30-ft. drops are provided in Appendix 2.12.11.

Table 2-46. Shipping Cage Weights Used in LIBRA-AGS Dynamic Response Analyses

Model	Shipping Cage Weight (lbs.)
AOS-025	55.0
AOS-050	240.0
AOS-100	1,500.0

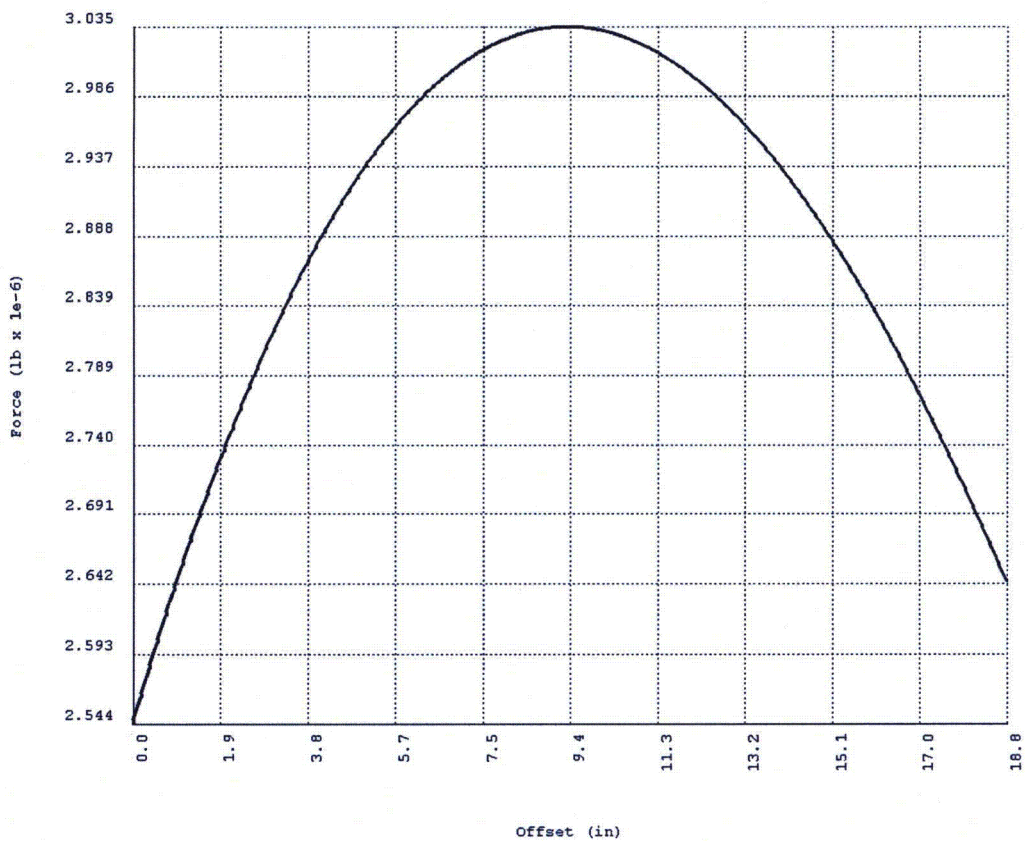


Figure 2-66. Side Impact Slap-Down Analysis

2.7.1.5.2.1.1 Cask Impact Loads – Model AOS-025

Table 2-47 presents the Model AOS-025 impact loads determined in the impact limiter analyses, and the corresponding cask stress analysis loads. The actual loads and accelerations applied in Model AOS-025 cask stress analyses are presented in Table 2-48. Table 2-48 also presents equilibrium checks.

Table 2-47. Loads and Accelerations Determined in Drop Analysis Impact – Model AOS-025

Load Case ^a	f_T	f_S	f_G	f_P	f	I (lbs.)	P (lbs.)
301	1.0	1.0	1.0	1.05	1.05	1.34×10^5	1.40×10^5
302	1.0	1.2	0.5	1.00	0.60	1.80×10^5	1.08×10^5
303 _x	1.0	1.0	0.5	1.11	0.56	9.33×10^4	5.22×10^4
303 _y	1.0	1.0	0.5	1.11	0.56	1.21×10^5	6.78×10^4
304	1.4	1.0	1.0	1.05	1.47	1.34×10^5	1.97×10^5
305	1.4	1.2	0.5	1.00	0.84	1.80×10^5	1.51×10^5
306 _x	1.4	1.0	0.5	1.11	0.78	9.33×10^4	7.28×10^4
306 _y	1.4	1.0	0.5	1.11	0.78	1.21×10^5	9.44×10^4

a. Subscripts x and y designate components of the loading.

where:

- f_T = Temperature load factor
- f_S = Slap-down load factor
- f_G = Geometric load factor
- f_P = Shipping cage load factor
- f = Total load factor, $f = f_T * f_S * f_G * f_P$
- I = Impact force from drop analysis load-displacement curve
- P = Drop analysis impact load, $P = f * I$

Table 2-48. Loads and Accelerations Applied in Cask Stress Analyses – Model AOS-025

Load Case ^a	P' (lbs.)	A' (g)	M (lbs.)	R (lbs.)	R/P'
301	2.08×10^5	1,779.5	117.17	24.2	0.00
302	1.08×10^5	1,865	57.91	20.3	0.00
303 _x	5.36×10^4	925.4	57.91	3.2	0.00
303 _y	6.96×10^4	1,201.4	57.91	2.7	0.00
304	2.90×10^5	2,470.9	117.17	9.2	0.00
305	1.51×10^5	2,611	57.91	28.4	0.00
306 _x	7.50×10^4	1,295.6	57.91	6.8	0.00
306 _y	9.74×10^4	1,682	57.91	6.3	0.00

a. Subscripts x and y designate components of the loading.

where:

- P' = Applied impact force
- A' = Applied body acceleration
- M = FEA cask model weight
- R = Total reaction force from FEM cask analysis, $R = P' - A' * M$

2.7.1.5.2.1.2 Cask Impact Loads – Model AOS-050

Table 2-49 presents the Model AOS-050 impact loads determined in the impact limiter analyses, and the corresponding cask stress analysis loads. The actual loads and accelerations applied in Model AOS-050 cask stress analyses are presented in Table 2-50. Table 2-50 also presents equilibrium checks.

Table 2-49. Loads Determined in Drop Impact Analyses – Model AOS-050

Load Case ^a	f_T	f_S	f_G	f_P	f	I (lbs.)	P (lbs.)
301	1.0	1.0	1.0	1.06	1.06	3.50×10^5	3.71×10^5
302	1.0	1.2	0.5	1.00	0.60	3.30×10^5	1.98×10^5
303 _x	1.0	1.0	0.5	1.06	0.53	1.54×10^5	0.82×10^5
303 _y	1.0	1.0	0.5	1.06	0.53	1.97×10^5	1.04×10^5
304	1.4	1.0	1.0	1.06	1.48	3.50×10^5	5.18×10^5
305	1.4	1.2	0.5	1.00	0.84	3.30×10^5	2.77×10^5
306 _x	1.4	1.0	0.5	1.06	0.74	1.54×10^5	1.14×10^5
306 _y	1.4	1.0	0.5	1.06	0.74	1.97×10^5	1.46×10^5

a. Subscripts x and y designate components of the loading.

where:

- f_T = Temperature load factor
- f_S = Slap-down load factor
- f_G = Geometric load factor
- f_P = Shipping cage load factor
- f = Total load factor, $f = f_T * f_S * f_G * f_P$
- I = Impact force from drop analysis load-displacement curve
- P = Drop analysis impact load, $P = f * I$

Table 2-50. Loads and Accelerations Applied in Cask Stress Analyses – Model AOS-050

Load Case ^a	P' (lbs.)	A' (g)	M (lbs.)	R (lbs.)	R/P'
301	3.85×10^5	410.9	932	109.6	0.00
302	1.98×10^5	427.4	463.3	19.0	0.00
303 _x	0.85×10^5	182.8	463.3	13.6	0.00
303 _y	1.08×10^5	231.2	463.3	286.9	0.00
304	5.31×10^5	566.2	932	60.4	0.00
305	2.77×10^5	598.4	463.3	9.4	0.00
306 _x	1.19×10^5	256.0	463.3	42.9	0.00
306 _y	1.51×10^5	325.8	463.3	412.1	0.00

a. Subscripts x and y designate components of the loading.

where:

- P' = Applied impact force
- A' = Applied body acceleration
- M = FEA cask model weight
- R = Total reaction force from FEM cask analysis, $R = P' - A' * M$

2.7.1.5.2.1.3 Cask Impact Loads – Model AOS-100

Table 2-51 presents the Model AOS-100 impact loads determined in the impact limiter analyses, and the corresponding cask stress analysis loads. The actual loads and accelerations applied in Model AOS-100 cask stress analyses are presented in Table 2-52. Table 2-52 also presents equilibrium checks.

Table 2-51. Loads Determined in Drop Analysis – Model AOS-100

Load Case ^a	f_T	f_S	f_G	f_P	f	I (lbs.)	P (lbs.)
301	1.0	1.0	1.0	1.04	1.040	1.42×10^6	1.48×10^6
302	1.0	1.2	0.5	1.00	0.600	1.36×10^6	8.16×10^5
303 _x	1.0	1.0	0.5	1.05	0.525	6.25×10^5	3.28×10^5
303 _y	1.0	1.0	0.5	1.05	0.525	8.05×10^5	4.23×10^5
304	1.4	1.0	1.0	1.04	1.456	1.42×10^6	2.07×10^6
305	1.4	1.2	0.5	1.00	0.840	1.36×10^6	1.14×10^6
306 _x	1.4	1.0	0.5	1.05	0.735	6.25×10^5	4.59×10^5
306 _y	1.4	1.0	0.5	1.05	0.735	8.05×10^5	5.92×10^5

a. Subscripts x and y designate components of the loading.

where:

- f_T = Temperature load factor
- f_S = Slap-down load factor
- f_G = Geometric load factor
- f_P = Shipping cage load factor
- f = Total load factor, $f = f_T * f_S * f_G * f_P$
- I = Impact force from drop analysis load-displacement curve
- P = Drop analysis impact load, $P = f * I$

Table 2-52. Loads and Accelerations Applied in Cask Stress Analyses – Model AOS-100

Load Case ^a	P' (lbs.)	A' (g)	M (lbs.)	R (lbs.)	R / P'
301	1.48×10^6	197.0	7,498	2.14×10^3	0.00
302	8.16×10^5	220.2	3,706	0.29×10^3	0.00
303 _x	3.54×10^5	95.5	3,706	263.9	0.00
303 _y	4.54×10^5	122.4	3,706	315.9	0.00
304	2.07×10^6	276.1	7,498	863.9	0.00
305	1.14×10^6	307.6	3,706	4.61×10^3	0.00
306 _x	4.96×10^5	117.1	3,706	214.0	0.00
306 _y	6.35×10^5	154.1	3,706	384.8	0.00

a. Subscripts x and y designate components of the loading.

where:

- P' = Applied impact force
- A' = Applied body acceleration
- M = FEA cask model weight
- R = Total reaction force from FEM cask analysis, $R = P' - A' * M$

2.7.2 Crush

The compression load of 5 times (5x) the cask weight, Load Case 215, is analyzed using the 2D model. The compression force is applied to the top of the cask, as a pressure loading using the LE -4^a load function.

2.7.3 Puncture

The cask component of the AOS Transport Packaging System is evaluated for accidental drops in Load Case 311. The Model AOS-025, AOS-050, and AOS-100 transport packages are analyzed for 121.92-cm (4-ft.) drops onto a rod with a 15 cm (6 in.) diameter. The orientation selected for the drop is Head-On, impacting the package concentric with its vertical center line. This orientation is selected because at this point, the impact limiter has the least thickness. Because the cask/cask lid seal joint is recessed into the cask body and also covered by the impact limiter structure, there is no damage resulting from Free drop of Crush events.

Figure 2-67 illustrates the cask FEA model for a puncture drop. The impacted bar is modeled as fixed points, and the cask is given an initial velocity corresponding to the free-drop height. Figure 2-67 also illustrates the stress state at the time of maximum displacement, at the monitored node used for stress evaluation. Maximum cask weights are used in the Puncture analyses.

a. *Ibid* (refer to previous LIBRA LE -4 footnote a).

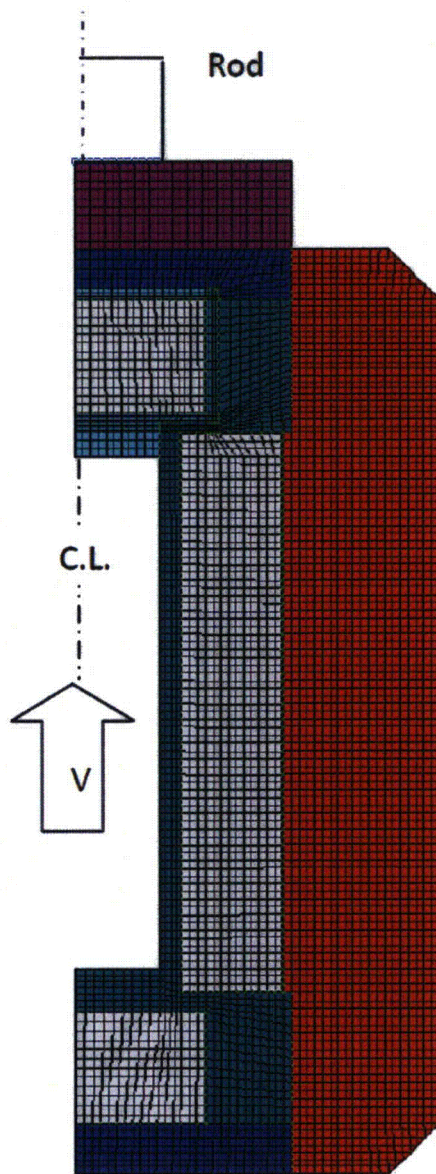


Figure 2-67. FEA Model of Puncture Drop

2.7.4 Thermal

The Fire condition is analyzed in Section 3.4, "Thermal Evaluation under Hypothetical Accident Conditions." In the following paragraphs, maximum values of temperature and pressure are provided for all AOS Transport Packaging System models. In addition, Load Cases representing the Fire condition, at 0.5-hr. intervals throughout the Fire event, are identified. The resulting stresses are provided in Paragraph 2.7.4.4.

2.7.4.1 Summary of Pressures and Temperatures

Table 2-53 presents the maximum temperatures, throughout the transport package, resulting from the Fire condition. The structural analyses are applied the temperature field generated by the thermal analysis, to determine the thermal stresses. Table 2-54 presents the pressure corresponding to the maximum temperature for each transport package model. This pressure value is based upon air at 100% relative humidity occupying the entire cavity volume. These pressures do not exceed the design pressure, which is also listed in Table 2-54. Therefore, the transport package can withstand pressures and temperatures in excess of those encountered in the Fire condition.

Pressure-related Load Cases 201 through 204 are analyzed by the 2D cask model. Design pressure, specific for each transport package model, is applied to the model's inside cask cavity wall or cask outside surface. The LIBRA LE -4^a loading function is used to apply pressure loads. This function generates nodal forces in 2D models due to surface tractions along edge nodal lines. The nodal lines are defined by terminal nodes.

-
- a. *The LIBRA program's LE feature defines several types of edge and surface loadings. The first entry is a negative integer that distinguishes the type of loading. The types of loadings and nodal specifications are listed below, with former record types in parentheses.*

Options Available when Applying the "LE" Command

Type -1 – General loading on nodes specified by numbering sequence.

Type -2 – General loading on arc defined by control points (LE1).

Type -3 – Surface pressure on arc defined by control points (LEP).

Type -4 – Linearly varying pressure on line specified by end nodes.

Type -5 – Linearly varying harmonic pressure on 3D model generated from a 2D model.

Further Details for Types -4 and -5

Type -4 – This command generates nodal loads corresponding to linearly varying surface tractions along a line on a 2D model. The line is specified by the two (2) terminal nodes, and loads are applied to all nodes within a specified distance of the line. The linearly varying pressure is specified by the terminal values.

Type -5 – This command generates nodal loads corresponding to surface tractions over a 3D model generated from an axisymmetric (2D) model. The tractions may vary linearly along a radial line, and circumferentially as a Fourier harmonic. The loaded nodes are identified by specifying the two (2) terminal nodes on the zero meridian. The linearly varying pressure is specified by the corresponding terminal values on the zero meridian.

Table 2-53. Temperature Summary of Fire Condition – All Models

Component	Maximum Temperatures, by Model							
	AOS-025A		AOS-050A		AOS-100A AOS-100A-S		AOS-100B	
	°C	°F	°C	°F	°C	°F	°C	°F
Cask Cavity	136	277	259	499	246	476	241	467
Shielding Material	135	276	262	504	246	475	242	467
Cask Lid Seal Area	134	274	223	434	207	404	204	399
Cask Vent Port	134	274	225	437	208	407	206	403
Cask Drain Port	135	276	227	440	210	410	207	405
Test Port	134	274	223	433	206	402	203	397
Cask Vent Port Pipe Plug	134	274	225	437	209	407	206	402
Cask Drain Port Pipe Plug	135	276	227	441	211	411	208	406
Cask Vent Port Conical Seal	134	274	224	435	207	405	205	400
Cask Drain Port Conical Seal	135	276	224	436	208	407	206	402
Cask Outside Surface	145	294	414	777	463	866	463	866

Table 2-54. Maximum Cask Cavity Pressure Due to Fire Condition – All Models

Model	Temperature ^a		Pressure ^b			Design Pressure ^c	
	°C	°F	kPa	psia		kPa	psia
AOS-025A	136	277	139	20	<	207	30
AOS-050A	259	499	181	26	<	414	60
AOS-100A AOS-100A-S	246	476	177	26	<	1,930	280
AOS-100B	241	467	175	25	<	1,930	280

a. Temperature listed is the maximum value obtained throughout the Fire event.

b. Pressure calculation is based upon the ideal gas law illustrated in Table 4-6, "Maximum Cask Cavity Pressure Due to Normal Conditions of Transport – All Models," footnote a.

c. **Model AOS-100 transport package** – Pressure value is based upon projected operating conditions.

2.7.4.2 Differential Thermal Expansion

Thermal stresses and deformations due to thermal load cases and load combination specified in Reference [2.4] are determined from LIBRA Finite Element analyses, applying the 2D model shown in Figure 2-6. Stresses are calculated, combined and evaluated, as described in Paragraph 2.7.4.3.

2.7.4.3 Stress Calculations

Stress calculations are calculated using the LIBRA Finite Element analysis program. The models used in the finite element stress analyses are shown in Figure 2-6 and Figure 2-7. Membrane and bending stresses are calculated at the 22 model cross-sections shown in Figure 2-9. Stresses are calculated for the individual Hypothetical Accident Load Combinations specified in Reference [2.4]. The Load Cases specified in Reference [2.3], and the corresponding analysis Load Case numbers, are listed in Table 2-4.

Each of the 22 cross-sections at which stresses are evaluated involve a number of elements. The elements comprising the cross-sections are listed in Table 2-4. For each cross-section and Load Case, axial, shear, and bending stress resultants are determined by integrating element stresses over the cross-section. Membrane and bending stresses are then determined from the stress resultants and cross-section area properties.

The individual Load Case stresses at the 22 cross-sections shown are combined, according to the Load Combinations specified in Reference [2.4]. The applicable Load Combinations specified in Reference [2.4] are listed in Table 2-5, along with analysis Load Combination numbers. The membrane and bending stresses combined according to Reference [2.4] are listed in Paragraph 2.7.4.4 for Hypothetical Accident conditions of transport.

The combined membrane and bending stresses are evaluated for Margins of Safety (MS), according to the Design Criteria specified in Reference [2.3]. Paragraph 2.7.8.1 provides the minimum Margin of Safety (MS) obtained for each Load Combination and System model, under Hypothetical Accident conditions of transport.

2.7.4.4 Comparison with Allowable Stresses

Table 2-55 and Table 2-56 identify the particular table in which the resulting stresses are reported for each AOS Transport Packaging System model, for all Hypothetical Accident conditions of transport Load Cases and Load Combinations, respectively. The referenced tables for each model are located in Appendix 2.12.2, "Structural Evaluation Results – Models AOS-025, AOS-050, and AOS-100," within their respective paragraphs.

Table 2-55. Load Cases Associated with Thermal Stresses under Hypothetical Accident Conditions of Transport – All Models

Load Case	Description	Data, by Model			
		AOS-025A	AOS-050A	AOS-100A AOS-100A-S	AOS-100B
111	Fire at 30 Minutes, 1,475°F Ambient, Maximum Decay Heat	Table 2-105	Table 2-174	Table 2-242	Table 2-310
112	Post Fire at 60 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation	Table 2-106	Table 2-175	Table 2-243	Table 2-311
	Post Fire at 90 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation	Table 2-107	Table 2-176	Table 2-244	Table 2-312
	Post Fire at 120 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation	Table 2-108	Table 2-177	Table 2-245	Table 2-313
	Post Fire at 150 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation	Table 2-109	Table 2-178	Table 2-246	Table 2-314
	Post Fire at 180 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation	Table 2-110	Table 2-179	Table 2-247	Table 2-315

Table 2-56. Load Combinations Associated with Thermal Stresses under Hypothetical Accident Conditions of Transport – All Models

Load Combinations	Load Cases	Description	Data, by Model			
			AOS-025A	AOS-050A	AOS-100A AOS-100A-S	AOS-100B
350	111, 201, 211	Fire at 30 Minutes	Table 2-127	Table 2-196	Table 2-264	Table 2-332
351	112, 201, 211	Post Fire at 60 Minutes	Table 2-128	Table 2-197	Table 2-265	Table 2-333
352		Post Fire at 90 Minutes	Table 2-129	Table 2-198	Table 2-266	Table 2-334
353		Post Fire at 120 Minutes	Table 2-130	Table 2-199	Table 2-267	Table 2-335
354		Post Fire at 150 Minutes	Table 2-131	Table 2-200	Table 2-268	Table 2-336
355		Post Fire at 180 Minutes	Table 2-132	Table 2-201	Table 2-269	Table 2-337

2.7.5 Immersion – Fissile Material

Not applicable. Fissile material is not an authorized content for the AOS Transport Packaging System.

2.7.6 Immersion – All Packages

This condition is less demanding to the transport packages than the Deep Water Immersion condition, and is therefore covered by the Deep Water condition. All AOS Transport Packaging System models are analyzed to the Deep Water condition and meet the performance requirements.

2.7.7 Deep Water Immersion Test (for Type B Packages Containing More than $10^5 A_2$)

A pressure load of 2 MPa (290 psia) is applied to the cask component of the AOS Transport Packaging System. This condition, represented by Load Case 204, is analyzed by the use of a 2D cask model. Pressure is applied to the model outside the cask surface. The LIBRA LE -4^a loading function is used to apply pressure loads. This function generates nodal forces in 2D models due to surface tractions along edge nodal lines. Terminal nodes define the nodal lines.

Load Case 204 information is presented in Table 2-57. The referenced tables for each model are located in Appendix 2.12.2, "Structural Evaluation Results – Models AOS-025, AOS-050, and AOS-100," within their respective paragraphs.

Table 2-57. Stresses Resulting from Additional Increased External Pressure under Hypothetical Accident Conditions of Transport – All Models

Load Case	Description	Data, by Model			
		AOS-025A	AOS-050A	AOS-100A AOS-100A-S	AOS-100B
204	Additional Increased External Pressure, 2 MPa (290 psia)	Table 2-75	Table 2-144	Table 2-213	Table 2-281

a. *Ibid* (refer to previous LIBRA LE -4 footnote a).

2.7.8 Summary of Damages

The evaluation presented in this subsection (Section 2.7, "Hypothetical Accident Conditions") demonstrates the ability of the AOS Transport Packaging System to meet the Hypothetical Accident conditions of transport specified in References [2.1] and [2.2]. All damage is confined to the impact limiter component, as designed. The integrity of the containment system is not affected by these events.

The cask drain port, cask vent port, and test port also do not suffer any damage, as a consequence of Hypothetical Accident conditions of transport. These cask component features are well-protected by the impact limiter's inside shell. The results of the Free-Drop test verify that the shell does not suffer damage that could negatively impact these features, protecting them from direct impact. Also, the analytical evaluation shows that these ports are located within areas of low-stress intensity, for all Hypothetical Accident conditions of transport.

Table 2-58 and Table 2-59 identify the particular table in which the resulting stresses are reported for each AOS Transport Packaging System model, for all Hypothetical Accident conditions of transport Load Cases and Load Combinations, respectively. Paragraph 2.7.8.1 provides the minimum Margin of Safety (MS) obtained for each Load Combination and System model, under Hypothetical Accident conditions of transport.

This data shows that the AOS Transport Packaging System has the capacity to endure all Hypothetical Accident conditions of transport without affecting its ability to contain and to shield the radioactive material payload from undue risk to the public.

Table 2-58. Load Cases Associated with Allowable Stresses under Hypothetical Accident Conditions of Transport – All Models

Load Case	Description	Data, by Model			
		AOS-025A	AOS-050A	AOS-100A AOS-100A-S	AOS-100B
111	Fire at 30 Minutes, 1,475°F Ambient, Maximum Decay Heat	Table 2-105	Table 2-174	Table 2-242	Table 2-310
112	Post Fire at 60 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation	Table 2-106	Table 2-175	Table 2-243	Table 2-311
	Post Fire at 90 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation	Table 2-107	Table 2-176	Table 2-244	Table 2-312
	Post Fire at 120 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation	Table 2-108	Table 2-177	Table 2-245	Table 2-313
	Post Fire at 150 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation	Table 2-109	Table 2-178	Table 2-246	Table 2-314
	Post Fire at 180 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation	Table 2-110	Table 2-179	Table 2-247	Table 2-315
301	30-ft. Head-On Drop	Table 2-111	Table 2-180	Table 2-248	Table 2-316
302	30-ft. Side Drop + Slap-Down	Table 2-112	Table 2-181	Table 2-249	Table 2-317
303	30-ft. Cg/Corner Drop	Table 2-113	Table 2-182	Table 2-250	Table 2-318
304	30-ft. Head-On Drop at -40°F, Low Temperature	Table 2-114	Table 2-183	Table 2-251	Table 2-319
305	30-ft. Side Drop + Slap-Down at -40°F, Low Temperature	Table 2-115	Table 2-184	Table 2-252	Table 2-320
306	30-ft. Cg/Corner Drop at -40°F, Low Temperature	Table 2-116	Table 2-185	Table 2-253	Table 2-321
311	4-ft. Drop onto Rod	Table 2-117	Table 2-186	Table 2-254	Table 2-322

Table 2-59. Load Combinations Associated with Allowable Stresses under Hypothetical Accident Conditions of Transport – All Models

Load Combinations	Load Cases	Description	Data, by Model			
			AOS-025A	AOS-050A	AOS-100A AOS-100A-S	AOS-100B
301	301, 102, 201, 211	Head-On Drop Orientation	Table 2-118	Table 2-187	Table 2-255	Table 2-323
302	302, 102, 201, 211	Side Drop Orientation	Table 2-119	Table 2-188	Table 2-256	Table 2-324
303	303, 102, 201, 211	Cg/Corner Drop Orientation	Table 2-120	Table 2-189	Table 2-257	Table 2-325
304	304, 105, 202, 211	Head-On Drop Orientation at -40°F, Cold Environment	Table 2-121	Table 2-190	Table 2-258	Table 2-326
305	305, 105, 202, 211	Side Drop Orientation at -40°F, Cold Environment	Table 2-122	Table 2-191	Table 2-259	Table 2-327
306	306, 105, 202, 211	Cg/Corner Drop Orientation at -40°F, Cold Environment	Table 2-123	Table 2-192	Table 2-260	Table 2-328
310	204, 101, 211	Additional Increased External Pressure (290 psi)	Table 2-124	Table 2-193	Table 2-261	Table 2-329
311	311, 101, 201, 211	4-ft. Drop onto Rod	Table 2-125	Table 2-194	Table 2-262	Table 2-330
312	311, 104, 201, 211	4-ft. Drop onto Rod at -40°F, Cold Environment	Table 2-126	Table 2-195	Table 2-263	Table 2-331
350	111, 201, 211	Fire at 30 Minutes	Table 2-127	Table 2-196	Table 2-264	Table 2-332
351	112, 201, 211	Post Fire at 60 Minutes	Table 2-128	Table 2-197	Table 2-265	Table 2-333
352		Post Fire at 90 Minutes	Table 2-129	Table 2-198	Table 2-266	Table 2-334
353		Post Fire at 120 Minutes	Table 2-130	Table 2-199	Table 2-267	Table 2-335
354		Post Fire at 150 Minutes	Table 2-131	Table 2-200	Table 2-268	Table 2-336
355		Post Fire at 180 Minutes	Table 2-132	Table 2-201	Table 2-269	Table 2-337

2.7.8.1 Minimum Margins of Safety

Table 2-60 through Table 2-63 provide the Minimum Margin of Safety (MS) obtained for each Load Combination and System model, under Hypothetical Accident conditions of transport.

Table 2-60. Min MS for Hypothetical Accident Conditions of Transport – Model AOS-025A

Ld_Cmb	Load_Cases					Min_MS	Loc	Str_Cmb
-----	-----	-----	-----	-----	-----	-----	-----	-----
301	301	102	201	211	0	2.457E+00	4	Pm+Pb
302	302	102	201	211	0	7.184E+00	19	Pm
303	303	102	201	211	0	4.434E+00	4	Pm
304	304	105	202	211	0	1.833E+00	4	Pm+Pb
305	305	105	202	211	0	5.825E+00	19	Pm
306	306	105	202	211	0	3.265E+00	4	Pm
310	204	101	211	0	0	1.138E+00	4	Pm+Pb
311	311	101	201	211	0	2.782E+00	15	Pm
312	311	104	201	211	0	2.782E+00	15	Pm
350	111	201	211	0	0	1.365E+01	20	Pm+Pb
351	112	201	211	0	0	1.365E+01	20	Pm+Pb
352	113	201	211	0	0	1.365E+01	20	Pm+Pb
353	114	201	211	0	0	1.365E+01	20	Pm+Pb
354	115	201	211	0	0	1.365E+01	20	Pm+Pb
355	116	201	211	0	0	1.365E+01	20	Pm+Pb

Table 2-61. Min MS for Hypothetical Accident Conditions of Transport – Model AOS-050A

Ld_Cmb	Load_Cases					Min_MS	Loc	Str_Cmb
-----	-----	-----	-----	-----	-----	-----	-----	-----
301	301	102	201	211	0	3.771E+00	4	Pm+Pb
302	302	102	201	211	0	7.094E+00	1	Pm+Pb
303	303	102	201	211	0	7.457E+00	4	Pm+Pb
304	304	105	202	211	0	3.103E+00	4	Pm+Pb
305	305	105	202	211	0	5.793E+00	1	Pm+Pb
306	306	105	202	211	0	7.087E+00	4	Pm+Pb
310	204	101	211	0	0	2.815E+00	4	Pm+Pb
311	311	101	201	211	0	3.697E-01	15	Pm
312	311	104	201	211	0	4.167E-01	15	Pm
350	111	201	211	0	0	1.407E+01	4	Pm+Pb
351	112	201	211	0	0	1.257E+01	4	Pm+Pb
352	113	201	211	0	0	1.257E+01	4	Pm+Pb
353	114	201	211	0	0	1.257E+01	4	Pm+Pb
354	115	201	211	0	0	1.257E+01	4	Pm+Pb
355	116	201	211	0	0	1.257E+01	4	Pm+Pb

Table 2-62. Min MS for Hypothetical Accident Conditions of Transport – Models AOS-100A and AOS-100A-S

Ld_Cmb	Load_Cases						Min_MS	Loc	Str_Cmb
-----	-----						-----	---	-----
301	301	102	201	211	0	0	1.525E+00	4	Pm+Pb
302	302	102	201	211	0	0	2.843E+00	4	Pm+Pb
303	303	102	201	211	0	0	2.665E+00	4	Pm+Pb
304	304	105	202	211	0	0	2.463E+00	4	Pm+Pb
305	305	105	202	211	0	0	7.547E+00	1	Pm
306	306	105	202	211	0	0	7.608E+00	4	Pm
310	204	101	211	0	0	0	2.724E+00	4	Pm+Pb
311	311	101	201	211	0	0	2.703E-01	15	Pm
312	311	104	201	211	0	0	3.138E-01	15	Pm
350	111	201	211	0	0	0	3.854E+00	4	Pm+Pb
351	112	201	211	0	0	0	3.524E+00	4	Pm+Pb
352	113	201	211	0	0	0	3.524E+00	4	Pm+Pb
353	114	201	211	0	0	0	3.524E+00	4	Pm+Pb
354	115	201	211	0	0	0	3.524E+00	4	Pm+Pb

Table 2-63. Min MS for Hypothetical Accident Conditions of Transport – Model AOS-100B

Ld_Cmb	Load_Cases						Min_MS	Loc	Str_Cmb
-----	-----						-----	---	-----
301	301	102	201	211	0	0	1.525E+00	4	Pm+Pb
302	302	102	201	211	0	0	2.843E+00	4	Pm+Pb
303	303	102	201	211	0	0	2.665E+00	4	Pm+Pb
304	304	105	202	211	0	0	2.463E+00	4	Pm+Pb
305	305	105	202	211	0	0	7.547E+00	1	Pm
306	306	105	202	211	0	0	7.608E+00	4	Pm
310	204	101	211	0	0	0	2.724E+00	4	Pm+Pb
311	311	101	201	211	0	0	2.703E-01	15	Pm
312	311	104	201	211	0	0	3.138E-01	15	Pm
350	111	201	211	0	0	0	3.854E+00	4	Pm+Pb
351	112	201	211	0	0	0	3.524E+00	4	Pm+Pb
352	113	201	211	0	0	0	3.524E+00	4	Pm+Pb
353	114	201	211	0	0	0	3.524E+00	4	Pm+Pb
354	115	201	211	0	0	0	3.524E+00	4	Pm+Pb

2.8 ACCIDENT CONDITIONS FOR AIR TRANSPORT OF PLUTONIUM

Not applicable. Plutonium is not an authorized content for the AOS Transport Packaging System.

2.9 ACCIDENT CONDITIONS FOR FISSILE MATERIAL PACKAGE FOR AIR TRANSPORT

Not applicable. Fissile material is not an authorized content for the AOS Transport Packaging System.

2.10 SPECIAL FORM

The AOS Transport Packaging system is authorized to ship both *Normal* and *Special form* material, as described in Subsection 1.2.2, "Contents."

2.11 FUEL RODS

Not applicable. This section does not apply to the AOS Transport Packaging System.

2.12 APPENDIX

This appendix presents the following information:

- Data CDs
- Structural Evaluation Results – Models AOS-025, AOS-050, and AOS-100
 - Structural Evaluation Results – Model AOS-025A
 - Structural Evaluation Results – Model AOS-050A
 - Structural Evaluation Results – Models AOS-100A and AOS-100A-S
 - Structural Evaluation Results – Model AOS-100B
- LIBRA Finite Element Analysis Program and Verification Problems
- Description of LIBRA Files and Post-Processors: AOS Safety Analysis Report
- Selected Material Properties References
- Impact (Free-Drop) Test Report
 - Test Report: Drop Tests of the Alpha Omega Services Shipping Cask for Radioactive Material
 - Free-Drop Test Activity Record – Pre- and Post-Leak Test
- Dimensional Inspection Report
- Analysis of Content-Cask Lid Impact
- Comparison of Libra Static and Dynamic Impact Analysis
- Effect of Ribs on Stress at Foam-Cask Interface
- Analysis of 30-Ft. Drops with Shipping Cages
- Analysis of Tie-Down Devices
- Certificate of Conformance, General Plastics FR-3700 Series Foam – AOS-165A Prototype

2.12.1 Data CDs

All thermal input/output files, as well as all Autodesk Inventor files, are attached on the Compact Discs (CDs), as listed below:

- **CDs 1, 2, and 3** – All analytical files, including the LIBRA FEA program
- **CD 4** – Autodesk Inventor files

2.12.2 Structural Evaluation Results – Models AOS-025, AOS-050, and AOS-100

This appendix presents Load Case, Load Combination, and Free Drop structural evaluations for each AOS Transport Packaging System model:

- Structural Evaluation Results – Model AOS-025A
- Structural Evaluation Results – Model AOS-050A
- Structural Evaluation Results – Models AOS-100A and AOS-100A-S
- Structural Evaluation Results – Model AOS-100B

2.12.2.1 Structural Evaluation Results – Model AOS-025A

This appendix presents the following information, specific to the Model AOS-025A transport package:

- Normal Conditions of Transport Stress Summary and Comparisons with Allowable – Model AOS-025A
- Hypothetical Accident Conditions of Transport, Summary of Damages (Stresses) – Model AOS-025A

2.12.2.1.1 Normal Conditions of Transport Stress Summary and Comparisons with Allowable – Model AOS-025A

Table 2-64 and Table 2-65 present Model AOS-025A transport package Load Cases and Load Combinations, respectively, under Normal conditions of transport:

- Table 2-66 through Table 2-83 present Load Case output data. Comparisons with allowable stress limits are included for Load Cases 101, 102, 103, 104, 105, and 106.
- Table 2-84 through Table 2-101 present Load Combination output data.

Table 2-64. Load Cases Associated with Allowable Stresses under Normal Conditions of Transport – Model AOS-025A

Load Case	Description	Data
101	100°F Ambient, Maximum Decay Heat	Table 2-66
102	100°F Ambient, Maximum Decay Heat, Maximum Insolation	Table 2-67
103	-20°F Ambient, Zero Decay Heat, Zero Insolation	Table 2-68
104	-40°F Ambient, Zero Decay Heat, Zero Insolation	Table 2-69
105	-40°F Ambient, Maximum Decay Heat	Table 2-70
106	-20°F Ambient, Maximum Decay Heat	Table 2-71
201	Internal Design Pressure, 207 kPa (30 psia)	Table 2-72
202	Minimum External Pressure, 24 kPa (3.5 psia)	Table 2-73
203	Maximum Increased External Pressure, 140 kPa (20 psia)	Table 2-74
204	Additional Increased External Pressure, 2 MPa (290 psia)	Table 2-75
211	Fabrication Stress	Table 2-76
215	Compression Load (5x weight)	Table 2-77
216	Rod Drop onto Cask	Table 2-78
221	Forward 10g Vibration Inertia Load	Table 2-79
222	Lateral 5g Vibration Inertia Load	Table 2-80
223	Vertical 2g Vibration Inertia Load	Table 2-81
231	4-ft. Head-On Drop	Table 2-82
232	30-ft. Head-On Drop Impact Test, Normal Conditions	Table 2-83

Table 2-65. Load Combinations Associated with Allowable Stresses under Normal Conditions of Transport – Model AOS-025A

Load Combination	Load Cases	Description	Data
101	102, 201, 211	Hot Environment	Table 2-84
102	104, 201, 211	Cold Environment	Table 2-85
103	103, 202, 211	Increased External Pressure	Table 2-86
104	101, 201, 202, 211	Minimum External Pressure	Table 2-87
105	105, 201, 202, 211	Cold Environment with Maximum Decay Heat	Table 2-88
106	101, 201, 203, 211	Maximum Pressure, Hot Environment	Table 2-89
107	105, 201, 203, 211	Maximum Pressure, Cold Environment	Table 2-90
215	215, 101, 201, 211	Compression Load	Table 2-91
216	216, 101, 201, 211	Rod Drop	Table 2-92
217	216, 104, 201, 211	Rod Drop, Cold Environment	Table 2-93
221	221, 101, 201, 211	Forward Vibration	Table 2-94
222	222, 101, 201, 211	Lateral Vibration	Table 2-95
223	223, 101, 201, 211	Vertical Vibration	Table 2-96
224	221, 103, 201, 211	Forward Vibration at Cold Temperature	Table 2-97
225	222, 103, 201, 211	Lateral Vibration at Cold Temperature	Table 2-98
226	223, 103, 201, 211	Vertical Vibration at Cold Temperature	Table 2-99
231	231, 102, 201, 211	4-ft. Head-On Drop, Normal Conditions	Table 2-100
232	232, 102, 201, 211	30-ft. Head-On Drop, Normal Conditions (Impact Test)	Table 2-101
233	231, 103, 211	4-ft. Drop at Cold Temperature	Table 2-102

Table 2-66. Load Case 101, 100°F Ambient, Maximum Decay Heat, Normal Conditions of Transport – Model AOS-025A

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	1.3327E+01	-2.7841E+01	-1.6030E+00	4.1168E+01	6.2735E+01	
	9.1885E-02	-1.9196E-01	-1.1052E-02	2.8384E-01	4.3254E-01	
2	1.8481E+01	-3.5348E+01	-7.3136E+00	5.3828E+01	1.1004E+02	
	1.2742E-01	-2.4371E-01	-5.0426E-02	3.7113E-01	7.5872E-01	
3	1.1888E+01	-2.5210E+01	1.0357E+00	3.7098E+01	5.8479E+01	
	8.1963E-02	-1.7382E-01	7.1410E-03	2.5578E-01	4.0320E-01	
4	6.1221E+01	-2.5287E+02	-3.5965E+01	3.1409E+02	6.2290E+02	
	4.2210E-01	-1.7435E+00	-2.4797E-01	2.1656E+00	4.2948E+00	
5	5.9830E+01	-2.8719E+02	-1.3955E+02	3.4702E+02	5.4579E+02	
	4.1251E-01	-1.9801E+00	-9.6219E-01	2.3926E+00	3.7631E+00	
6	4.8628E+00	-1.4243E+02	-1.8031E+02	1.4729E+02	1.7075E+02	
	3.3528E-02	-9.8203E-01	-1.2432E+00	1.0156E+00	1.1773E+00	
7	-1.9338E+00	-5.4225E+01	2.7226E+00	5.2292E+01	4.2532E+01	
	-1.3333E-02	-3.7387E-01	1.8772E-02	3.6054E-01	2.9325E-01	
8	-1.9700E+00	-5.4235E+01	1.0402E-02	5.2265E+01	4.2866E+01	
	-1.3582E-02	-3.7394E-01	7.1718E-05	3.6035E-01	2.9555E-01	
9	-1.9394E+00	-5.4136E+01	-1.0939E+00	5.2196E+01	4.0292E+01	
	-1.3372E-02	-3.7325E-01	-7.5424E-03	3.5988E-01	2.7780E-01	
10	-8.2869E+00	-7.4767E+01	1.7471E+01	6.6481E+01	1.3195E+02	
	-5.7136E-02	-5.1550E-01	1.2046E-01	4.5837E-01	9.0974E-01	
11	-1.8716E+01	-1.1606E+02	-5.8726E+01	9.7343E+01	8.6337E+00	
	-1.2904E-01	-8.0020E-01	-4.0490E-01	6.7116E-01	5.9527E-02	
12	7.7527E+00	-1.3983E+02	-1.3968E+02	1.4759E+02	6.9585E+00	
	5.3453E-02	-9.6412E-01	-9.6303E-01	1.0176E+00	4.7977E-02	
13	-1.3381E+01	-2.0043E+02	-3.3218E+01	1.8705E+02	8.0556E+01	
	-9.2257E-02	-1.3819E+00	-2.2903E-01	1.2897E+00	5.5541E-01	
14	-1.5516E+01	-1.7660E+02	4.3348E+00	1.6109E+02	1.2270E+02	
	-1.0698E-01	-1.2176E+00	2.9888E-02	1.1107E+00	8.4595E-01	
15	5.0409E+02	-4.6082E+02	-3.5506E+01	9.6491E+02	1.6214E+03	
	3.4756E+00	-3.1772E+00	-2.4481E-01	6.6528E+00	1.1179E+01	

16	1.7388E+02	-3.4133E+02	-1.1891E+02	5.1521E+02	8.3771E+02
	1.1989E+00	-2.3534E+00	-8.1985E-01	3.5523E+00	5.7758E+00
17	7.6463E+01	-2.3543E+02	5.1413E+00	3.1189E+02	5.3992E+02
	5.2720E-01	-1.6232E+00	3.5448E-02	2.1504E+00	3.7226E+00
18	1.9931E+01	-1.2565E+02	1.7859E+02	1.4558E+02	2.1678E+02
	1.3742E-01	-8.6631E-01	1.2313E+00	1.0037E+00	1.4946E+00
19	5.4880E+01	-2.1571E+02	1.4014E+02	2.7059E+02	4.5442E+02
	3.7839E-01	-1.4873E+00	9.6623E-01	1.8656E+00	3.1331E+00
20	3.3759E+01	-2.7313E+02	-7.4676E-01	3.0689E+02	5.6868E+02
	2.3276E-01	-1.8831E+00	-5.1487E-03	2.1159E+00	3.9209E+00
21	1.9983E+01	4.0117E+00	1.4122E+01	1.5971E+01	8.0643E+00
	1.3778E-01	2.7660E-02	9.7370E-02	1.1012E-01	5.5601E-02
22	9.2878E+00	-1.6752E+01	5.8919E+00	2.6039E+01	5.3023E+01
	6.4037E-02	-1.1550E-01	4.0623E-02	1.7954E-01	3.6558E-01

Allowable Stress for Load Case 101

LOC	Tmax (deg_F)	Tave (deg_F)	Sm (ksi)	Sy (ksi)	Su (ksi)
1	170.07	169.85	20.00	26.70	70.00
2	170.26	169.95	20.00	26.70	70.00
3	169.94	169.68	20.00	26.70	70.00
4	170.25	170.22	20.00	26.70	70.00
5	170.83	170.73	20.00	26.70	70.00
6	171.04	170.96	20.00	26.70	70.00
7	171.28	171.14	20.00	26.70	70.00
8	171.27	171.13	20.00	26.70	70.00
9	171.23	171.09	20.00	26.70	70.00
10	171.23	171.07	20.00	26.70	70.00
11	171.43	171.19	20.00	26.70	70.00
12	171.98	171.72	20.00	26.70	70.00
13	170.83	170.71	20.00	26.70	70.00
14	170.52	170.44	20.00	26.70	70.00
15	169.83	169.81	20.00	26.70	70.00
16	170.12	170.07	20.00	26.70	70.00
17	170.17	170.13	20.00	26.70	70.00
18	170.42	170.37	20.00	26.70	70.00
19	170.66	170.56	20.00	26.70	70.00
20	171.72	171.58	20.00	26.70	70.00
21	169.25	169.22	20.00	26.70	70.00
22	169.68	169.64	20.00	26.70	70.00

Table 2-67. Load Case 102, 100°F Ambient, Maximum Decay Heat, Maximum Insolation, Normal Conditions of Transport – Model AOS-025A

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	1.2042E+01	-2.6465E+01	-1.2767E+00	3.8507E+01	5.9653E+01	
	8.3029E-02	-1.8247E-01	-8.8028E-03	2.6550E-01	4.1129E-01	
2	1.7922E+01	-3.2577E+01	-7.4355E+00	5.0499E+01	1.0306E+02	
	1.2357E-01	-2.2461E-01	-5.1266E-02	3.4818E-01	7.1056E-01	
3	1.2490E+01	-2.3623E+01	-3.2368E-01	3.6113E+01	5.4421E+01	
	8.6113E-02	-1.6288E-01	-2.2317E-03	2.4899E-01	3.7522E-01	
4	3.4914E+02	-3.2820E+02	-2.1387E+02	6.7734E+02	1.2718E+03	
	2.4072E+00	-2.2629E+00	-1.4745E+00	4.6701E+00	8.7691E+00	
5	3.0330E+02	-1.6590E+02	-4.4195E+02	4.6919E+02	4.7463E+02	
	2.0911E+00	-1.1438E+00	-3.0472E+00	3.2350E+00	3.2724E+00	
6	4.3240E+01	-3.7667E+02	-1.1116E+03	4.1991E+02	6.4881E+02	
	2.9813E-01	-2.5971E+00	-7.6641E+00	2.8952E+00	4.4734E+00	
7	-6.8300E+01	-2.2748E+02	-1.8378E+03	1.5918E+02	5.5931E+01	
	-4.7091E-01	-1.5684E+00	-1.2671E+01	1.0975E+00	3.8563E-01	
8	-7.1007E+01	-2.2385E+02	-1.8387E+03	1.5285E+02	4.0158E+01	
	-4.8958E-01	-1.5434E+00	-1.2677E+01	1.0538E+00	2.7688E-01	
9	-6.8874E+01	-2.2589E+02	-1.8513E+03	1.5702E+02	5.2730E+01	
	-4.7487E-01	-1.5575E+00	-1.2764E+01	1.0826E+00	3.6356E-01	
10	3.7940E+01	-5.7268E+02	-9.7662E+02	6.1062E+02	2.1127E+02	
	2.6159E-01	-3.9485E+00	-6.7336E+00	4.2101E+00	1.4567E+00	
11	-8.7258E+01	-5.3768E+02	-4.8550E+02	4.5042E+02	6.3314E+02	
	-6.0163E-01	-3.7072E+00	-3.3474E+00	3.1055E+00	4.3653E+00	
12	1.8612E+01	-5.4650E+02	-5.3970E+02	5.6511E+02	6.7494E+02	
	1.2832E-01	-3.7680E+00	-3.7211E+00	3.8963E+00	4.6535E+00	
13	7.2537E+01	-2.4837E+02	-6.6039E+01	3.2091E+02	3.2331E+02	
	5.0012E-01	-1.7125E+00	-4.5532E-01	2.2126E+00	2.2291E+00	
14	3.5746E+01	-2.8476E+02	-5.3075E+01	3.2051E+02	5.9180E+02	
	2.4646E-01	-1.9634E+00	-3.6594E-01	2.2098E+00	4.0803E+00	
15	9.2248E+02	-8.6794E+02	-8.8106E+01	1.7904E+03	3.0075E+03	
	6.3602E+00	-5.9842E+00	-6.0747E-01	1.2344E+01	2.0736E+01	

16	3.2164E+02	-6.4191E+02	-1.9740E+02	9.6355E+02	1.5663E+03
	2.2176E+00	-4.4258E+00	-1.3610E+00	6.6434E+00	1.0799E+01
17	1.4077E+02	-4.3793E+02	3.8502E+01	5.7869E+02	9.9987E+02
	9.7056E-01	-3.0194E+00	2.6546E-01	3.9900E+00	6.8939E+00
18	3.9472E+01	-2.2939E+02	1.9121E+02	2.6886E+02	4.3950E+02
	2.7215E-01	-1.5816E+00	1.3183E+00	1.8538E+00	3.0302E+00
19	1.1904E+02	-3.6343E+02	9.9902E+01	4.8247E+02	8.0248E+02
	8.2074E-01	-2.5058E+00	6.8880E-01	3.3265E+00	5.5329E+00
20	1.3236E+02	-4.6148E+02	-9.4106E+00	5.9384E+02	1.1111E+03
	9.1259E-01	-3.1818E+00	-6.4884E-02	4.0944E+00	7.6606E+00
21	2.4825E+01	4.5153E+00	1.5261E+01	2.0310E+01	9.4798E+00
	1.7116E-01	3.1132E-02	1.0522E-01	1.4003E-01	6.5361E-02
22	1.8018E+01	-3.0138E+01	1.3409E+01	4.8156E+01	8.9828E+01
	1.2423E-01	-2.0779E-01	9.2450E-02	3.3203E-01	6.1934E-01

Allowable Stress for Load Case 102

LOC	Tmax (deg_F)	Tave (deg_F)	Sm (ksi)	Sy (ksi)	Su (ksi)
1	255.38	255.18	20.00	23.60	66.30
2	255.49	255.18	20.00	23.60	66.30
3	255.15	254.90	20.00	23.60	66.30
4	255.57	255.55	20.00	23.60	66.30
5	256.10	256.01	20.00	23.60	66.30
6	256.30	256.22	20.00	23.60	66.30
7	256.47	256.34	20.00	23.60	66.30
8	256.45	256.31	20.00	23.60	66.30
9	256.39	256.26	20.00	23.60	66.30
10	256.39	256.23	20.00	23.60	66.30
11	256.57	256.35	20.00	23.60	66.30
12	257.10	256.85	20.00	23.60	66.30
13	256.01	255.89	20.00	23.60	66.30
14	255.71	255.64	20.00	23.60	66.30
15	255.24	255.23	20.00	23.60	66.30
16	255.48	255.43	20.00	23.60	66.30
17	255.52	255.49	20.00	23.60	66.30
18	255.75	255.70	20.00	23.60	66.30
19	255.96	255.87	20.00	23.60	66.30
20	256.94	256.81	20.00	23.60	66.30
21	254.49	254.47	20.00	23.60	66.30
22	255.13	255.10	20.00	23.60	66.30

Table 2-68. Load Case 103, -20°F Ambient, Zero Decay Heat, Zero Insolation, Normal Conditions of Transport – Model AOS-025A

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	3.6224E+01	-1.2400E+02	-2.5915E+01	1.6023E+02	1.5954E+02
	2.4975E-01	-8.5497E-01	-1.7868E-01	1.1047E+00	1.1000E+00
2	1.1401E+02	-1.5187E+00	-3.7180E+01	1.1553E+02	1.4883E+01
	7.8607E-01	-1.0471E-02	-2.5635E-01	7.9655E-01	1.0262E-01
3	1.3158E+02	-1.6611E+01	-1.9397E+01	1.4819E+02	1.6471E+02
	9.0718E-01	-1.1453E-01	-1.3374E-01	1.0217E+00	1.1356E+00
4	5.1382E+03	-3.5508E+03	-1.0594E+03	8.6890E+03	1.7448E+04
	3.5427E+01	-2.4482E+01	-7.3043E+00	5.9909E+01	1.2030E+02
5	9.0634E+03	-4.2021E+03	-1.1953E+03	1.3266E+04	1.5716E+04
	6.2490E+01	-2.8973E+01	-8.2415E+00	9.1463E+01	1.0836E+02
6	6.4410E+03	-2.3908E+02	1.3354E+03	6.6800E+03	1.1948E+04
	4.4409E+01	-1.6484E+00	9.2073E+00	4.6057E+01	8.2375E+01
7	3.5268E+03	5.1759E-01	-8.2167E+01	3.5263E+03	9.9515E+01
	2.4317E+01	3.5686E-03	-5.6652E-01	2.4313E+01	6.8613E-01
8	3.5225E+03	1.8346E-02	3.3241E+00	3.5225E+03	6.0174E-01
	2.4287E+01	1.2649E-04	2.2919E-02	2.4287E+01	4.1488E-03
9	3.5237E+03	-6.4911E-02	-4.7631E+01	3.5237E+03	2.6424E+01
	2.4295E+01	-4.4755E-04	-3.2840E-01	2.4295E+01	1.8219E-01
10	3.5411E+03	-2.7486E+02	1.5542E+03	3.8160E+03	1.8204E+03
	2.4415E+01	-1.8951E+00	1.0716E+01	2.6310E+01	1.2551E+01
11	8.5223E+02	-8.5294E+02	1.8047E+02	1.7052E+03	1.5788E+03
	5.8759E+00	-5.8808E+00	1.2443E+00	1.1757E+01	1.0885E+01
12	5.3403E+02	-3.0975E+02	2.2055E+02	8.4378E+02	1.6088E+03
	3.6820E+00	-2.1356E+00	1.5206E+00	5.8177E+00	1.1092E+01
13	4.3646E+03	-1.8592E+03	2.8716E+02	6.2238E+03	4.0695E+03
	3.0093E+01	-1.2819E+01	1.9799E+00	4.2912E+01	2.8058E+01
14	3.3108E+03	-1.5822E+03	2.5586E+02	4.8929E+03	6.0508E+03
	2.2827E+01	-1.0909E+01	1.7641E+00	3.3735E+01	4.1719E+01
15	4.5537E+02	-3.1770E+02	3.0878E+02	7.7307E+02	1.0795E+03
	3.1396E+00	-2.1905E+00	2.1290E+00	5.3301E+00	7.4431E+00

16	1.2167E+03	-5.0524E+02	4.4815E+02	1.7220E+03	1.9041E+03
	8.3891E+00	-3.4835E+00	3.0899E+00	1.1873E+01	1.3128E+01
17	1.4168E+03	-1.7911E+02	-7.3013E+01	1.5960E+03	2.7927E+03
	9.7688E+00	-1.2349E+00	-5.0341E-01	1.1004E+01	1.9255E+01
18	1.5283E+03	-2.2139E+02	-1.2031E+02	1.7497E+03	3.0619E+03
	1.0537E+01	-1.5264E+00	-8.2952E-01	1.2063E+01	2.1111E+01
19	1.4787E+03	-6.1203E+02	4.3835E+02	2.0908E+03	2.4748E+03
	1.0196E+01	-4.2198E+00	3.0223E+00	1.4415E+01	1.7063E+01
20	1.3331E+03	-6.3594E+02	2.6187E+02	1.9690E+03	3.6560E+03
	9.1914E+00	-4.3847E+00	1.8055E+00	1.3576E+01	2.5207E+01
21	4.5624E+02	-4.8712E+02	-3.3167E+01	9.4337E+02	1.8516E+03
	3.1457E+00	-3.3586E+00	-2.2868E-01	6.5043E+00	1.2766E+01
22	8.5505E+01	-1.2200E+02	8.6425E+01	2.0750E+02	1.2799E+01
	5.8953E-01	-8.4114E-01	5.9588E-01	1.4307E+00	8.8246E-02

Allowable Stress for Load Case 103

LOC	Tmax (deg_F)	Tave (deg_F)	Sm (ksi)	Sy (ksi)	Su (ksi)
1	0.00	-20.00	20.00	30.00	70.00
2	0.00	-20.00	20.00	30.00	70.00
3	0.00	-20.00	20.00	30.00	70.00
4	0.00	-20.00	20.00	30.00	70.00
5	0.00	-20.00	20.00	30.00	70.00
6	0.00	-20.00	20.00	30.00	70.00
7	0.00	-20.00	20.00	30.00	70.00
8	0.00	-20.00	20.00	30.00	70.00
9	0.00	-20.00	20.00	30.00	70.00
10	0.00	-20.00	20.00	30.00	70.00
11	0.00	-20.00	20.00	30.00	70.00
12	0.00	-20.00	20.00	30.00	70.00
13	0.00	-20.00	20.00	30.00	70.00
14	0.00	-20.00	20.00	30.00	70.00
15	0.00	-20.00	20.00	30.00	70.00
16	0.00	-20.00	20.00	30.00	70.00
17	0.00	-20.00	20.00	30.00	70.00
18	0.00	-20.00	20.00	30.00	70.00
19	0.00	-20.00	20.00	30.00	70.00
20	0.00	-20.00	20.00	30.00	70.00
21	0.00	-20.00	20.00	30.00	70.00
22	0.00	-20.00	20.00	30.00	70.00

Table 2-69. Load Case 104, -40°F Ambient, Zero Decay Heat, Zero Insolation, Normal Conditions of Transport – Model AOS-025A

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	4.4273E+01	-1.5156E+02	-3.1674E+01	1.9583E+02	1.9499E+02	
	3.0525E-01	-1.0450E+00	-2.1838E-01	1.3502E+00	1.3444E+00	
2	1.3935E+02	-1.8562E+00	-4.5442E+01	1.4120E+02	1.8190E+01	
	9.6076E-01	-1.2798E-02	-3.1331E-01	9.7356E-01	1.2542E-01	
3	1.6081E+02	-2.0302E+01	-2.3708E+01	1.8112E+02	2.0131E+02	
	1.1088E+00	-1.3998E-01	-1.6346E-01	1.2488E+00	1.3880E+00	
4	6.2800E+03	-4.3399E+03	-1.2948E+03	1.0620E+04	2.1326E+04	
	4.3299E+01	-2.9923E+01	-8.9275E+00	7.3222E+01	1.4704E+02	
5	1.1078E+04	-5.1359E+03	-1.4610E+03	1.6213E+04	1.9209E+04	
	7.6377E+01	-3.5411E+01	-1.0073E+01	1.1179E+02	1.3244E+02	
6	7.8723E+03	-2.9221E+02	1.6322E+03	8.1645E+03	1.4603E+04	
	5.4277E+01	-2.0147E+00	1.1253E+01	5.6292E+01	1.0068E+02	
7	4.3105E+03	6.3261E-01	-1.0043E+02	4.3099E+03	1.2163E+02	
	2.9720E+01	4.3617E-03	-6.9242E-01	2.9716E+01	8.3860E-01	
8	4.3053E+03	2.2422E-02	4.0628E+00	4.3053E+03	7.3546E-01	
	2.9684E+01	1.5460E-04	2.8012E-02	2.9684E+01	5.0708E-03	
9	4.3067E+03	-7.9336E-02	-5.8216E+01	4.3068E+03	3.2296E+01	
	2.9694E+01	-5.4700E-04	-4.0138E-01	2.9694E+01	2.2268E-01	
10	4.3281E+03	-3.3594E+02	1.8996E+03	4.6640E+03	2.2249E+03	
	2.9841E+01	-2.3162E+00	1.3097E+01	3.2157E+01	1.5340E+01	
11	1.0416E+03	-1.0425E+03	2.2057E+02	2.0841E+03	1.9296E+03	
	7.1817E+00	-7.1877E+00	1.5208E+00	1.4369E+01	1.3304E+01	
12	6.5270E+02	-3.7858E+02	2.6956E+02	1.0313E+03	1.9663E+03	
	4.5002E+00	-2.6102E+00	1.8586E+00	7.1105E+00	1.3557E+01	
13	5.3345E+03	-2.2724E+03	3.5097E+02	7.6069E+03	4.9738E+03	
	3.6780E+01	-1.5668E+01	2.4198E+00	5.2447E+01	3.4293E+01	
14	4.0465E+03	-1.9338E+03	3.1272E+02	5.9802E+03	7.3954E+03	
	2.7900E+01	-1.3333E+01	2.1561E+00	4.1232E+01	5.0989E+01	
15	5.5656E+02	-3.8830E+02	3.7740E+02	9.4486E+02	1.3194E+03	
	3.8373E+00	-2.6772E+00	2.6021E+00	6.5146E+00	9.0971E+00	

16	1.4871E+03	-6.1752E+02	5.4774E+02	2.1046E+03	2.3272E+03
	1.0253E+01	-4.2576E+00	3.7765E+00	1.4511E+01	1.6046E+01
17	1.7317E+03	-2.1891E+02	-8.9238E+01	1.9506E+03	3.4133E+03
	1.1940E+01	-1.5093E+00	-6.1527E-01	1.3449E+01	2.3534E+01
18	1.8679E+03	-2.7059E+02	-1.4705E+02	2.1385E+03	3.7423E+03
	1.2879E+01	-1.8656E+00	-1.0139E+00	1.4744E+01	2.5803E+01
19	1.8074E+03	-7.4804E+02	5.3576E+02	2.5554E+03	3.0248E+03
	1.2461E+01	-5.1576E+00	3.6940E+00	1.7619E+01	2.0855E+01
20	1.6293E+03	-7.7726E+02	3.2007E+02	2.4066E+03	4.4684E+03
	1.1234E+01	-5.3591E+00	2.2068E+00	1.6593E+01	3.0809E+01
21	5.5763E+02	-5.9537E+02	-4.0537E+01	1.1530E+03	2.2630E+03
	3.8447E+00	-4.1049E+00	-2.7949E-01	7.9497E+00	1.5603E+01
22	1.0451E+02	-1.4911E+02	1.0563E+02	2.5361E+02	1.5643E+01
	7.2054E-01	-1.0281E+00	7.2830E-01	1.7486E+00	1.0786E-01

Allowable Stress for Load Case 104

LOC	Tmax (deg_F)	Tave (deg_F)	Sm (ksi)	Sy (ksi)	Su (ksi)
1	0.00	-40.00	20.00	30.00	70.00
2	0.00	-40.00	20.00	30.00	70.00
3	0.00	-40.00	20.00	30.00	70.00
4	0.00	-40.00	20.00	30.00	70.00
5	0.00	-40.00	20.00	30.00	70.00
6	0.00	-40.00	20.00	30.00	70.00
7	0.00	-40.00	20.00	30.00	70.00
8	0.00	-40.00	20.00	30.00	70.00
9	0.00	-40.00	20.00	30.00	70.00
10	0.00	-40.00	20.00	30.00	70.00
11	0.00	-40.00	20.00	30.00	70.00
12	0.00	-40.00	20.00	30.00	70.00
13	0.00	-40.00	20.00	30.00	70.00
14	0.00	-40.00	20.00	30.00	70.00
15	0.00	-40.00	20.00	30.00	70.00
16	0.00	-40.00	20.00	30.00	70.00
17	0.00	-40.00	20.00	30.00	70.00
18	0.00	-40.00	20.00	30.00	70.00
19	0.00	-40.00	20.00	30.00	70.00
20	0.00	-40.00	20.00	30.00	70.00
21	0.00	-40.00	20.00	30.00	70.00
22	0.00	-40.00	20.00	30.00	70.00

Table 2-70. Load Case 105, -40°F Ambient, Maximum Decay Heat, Normal Conditions of Transport – Model AOS-025A

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	1.8170E+01	-6.6102E+01	-1.1426E+01	8.4272E+01	1.2660E+02	
	1.2528E-01	-4.5576E-01	-7.8778E-02	5.8103E-01	8.7291E-01	
2	4.4922E+01	-2.2098E+01	-2.1504E+01	6.7020E+01	1.1467E+02	
	3.0973E-01	-1.5236E-01	-1.4826E-01	4.6209E-01	7.9065E-01	
3	5.0256E+01	-2.2140E+01	-6.1228E+00	7.2397E+01	2.0709E+00	
	3.4651E-01	-1.5265E-01	-4.2215E-02	4.9916E-01	1.4279E-02	
4	1.6354E+03	-1.2700E+03	-4.2512E+02	2.9054E+03	5.7564E+03	
	1.1276E+01	-8.7561E+00	-2.9311E+00	2.0032E+01	3.9689E+01	
5	3.0091E+03	-1.4824E+03	-5.8574E+02	4.4915E+03	5.1886E+03	
	2.0747E+01	-1.0221E+01	-4.0385E+00	3.0968E+01	3.5774E+01	
6	2.1899E+03	-8.8527E+01	2.8614E+02	2.2784E+03	4.1394E+03	
	1.5099E+01	-6.1037E-01	1.9729E+00	1.5709E+01	2.8540E+01	
7	1.2166E+03	-1.9106E+00	-2.6714E+01	1.2185E+03	1.0129E+01	
	8.3884E+00	-1.3173E-02	-1.8419E-01	8.4016E+00	6.9837E-02	
8	1.2151E+03	-2.1309E+00	1.1964E+00	1.2172E+03	4.6705E+01	
	8.3776E+00	-1.4692E-02	8.2488E-03	8.3923E+00	3.2202E-01	
9	1.2156E+03	-2.1383E+00	-1.8451E+01	1.2177E+03	3.4090E+01	
	8.3813E+00	-1.4743E-02	-1.2721E-01	8.3960E+00	2.3504E-01	
10	1.2289E+03	-1.3863E+02	5.8233E+02	1.3676E+03	8.0687E+02	
	8.4733E+00	-9.5580E-01	4.0150E+00	9.4291E+00	5.5632E+00	
11	2.3553E+02	-3.8416E+02	5.0007E-01	6.1969E+02	5.8247E+02	
	1.6239E+00	-2.6487E+00	3.4479E-03	4.2726E+00	4.0160E+00	
12	1.1899E+02	-1.9141E+02	-7.3078E+01	3.1040E+02	5.9007E+02	
	8.2040E-01	-1.3197E+00	-5.0385E-01	2.1401E+00	4.0684E+00	
13	1.4125E+03	-7.4122E+02	6.6806E+01	2.1538E+03	1.3789E+03	
	9.7391E+00	-5.1105E+00	4.6061E-01	1.4850E+01	9.5075E+00	
14	1.0377E+03	-6.2489E+02	9.7638E+01	1.6626E+03	2.0637E+03	
	7.1548E+00	-4.3085E+00	6.7319E-01	1.1463E+01	1.4229E+01	
15	1.8246E+02	-1.0634E+02	1.3654E+02	2.8880E+02	3.8433E+02	
	1.2580E+00	-7.3321E-01	9.4144E-01	1.9912E+00	2.6499E+00	

16	4.4891E+02	-1.8048E+02	1.3548E+02	6.2939E+02	7.0517E+02
	3.0951E+00	-1.2444E+00	9.3407E-01	4.3395E+00	4.8620E+00
17	5.1359E+02	-6.3788E+01	-5.9597E+01	5.7738E+02	1.0091E+03
	3.5411E+00	-4.3980E-01	-4.1090E-01	3.9809E+00	6.9576E+00
18	5.4406E+02	-8.9168E+01	1.2934E+02	6.3323E+02	1.1123E+03
	3.7512E+00	-6.1479E-01	8.9178E-01	4.3660E+00	7.6693E+00
19	4.7174E+02	-2.4049E+02	3.4565E+02	7.1222E+02	7.6749E+02
	3.2525E+00	-1.6581E+00	2.3832E+00	4.9106E+00	5.2916E+00
20	4.0006E+02	-3.0315E+02	1.0467E+02	7.0321E+02	1.2703E+03
	2.7583E+00	-2.0902E+00	7.2169E-01	4.8485E+00	8.7587E+00
21	1.7905E+02	-1.7652E+02	1.5125E+00	3.5556E+02	6.9900E+02
	1.2345E+00	-1.2170E+00	1.0428E-02	2.4515E+00	4.8194E+00
22	3.4621E+01	-4.3313E+01	3.5022E+01	7.7934E+01	2.5093E+01
	2.3870E-01	-2.9864E-01	2.4147E-01	5.3734E-01	1.7301E-01

Allowable Stress for Load Case 105

LOC	Tmax (deg_F)	Tave (deg_F)	Sm (ksi)	Sy (ksi)	Su (ksi)
1	36.56	36.32	20.00	30.00	70.00
2	36.80	36.47	20.00	30.00	70.00
3	36.45	36.17	20.00	30.00	70.00
4	36.76	36.73	20.00	30.00	70.00
5	37.41	37.30	20.00	30.00	70.00
6	37.63	37.55	20.00	30.00	70.00
7	37.94	37.78	20.00	30.00	70.00
8	37.94	37.79	20.00	30.00	70.00
9	37.90	37.74	20.00	30.00	70.00
10	37.89	37.71	20.00	30.00	70.00
11	38.10	37.84	20.00	30.00	70.00
12	38.69	38.41	20.00	30.00	70.00
13	37.45	37.30	20.00	30.00	70.00
14	37.09	37.01	20.00	30.00	70.00
15	36.31	36.30	20.00	30.00	70.00
16	36.67	36.60	20.00	30.00	70.00
17	36.72	36.68	20.00	30.00	70.00
18	36.98	36.94	20.00	30.00	70.00
19	37.25	37.14	20.00	30.00	70.00
20	38.45	38.28	20.00	30.00	70.00
21	35.68	35.65	20.00	30.00	70.00
22	36.10	36.05	20.00	30.00	70.00

Table 2-71. Load Case 106, -20°F Ambient, Maximum Decay Heat, Normal Conditions of Transport – Model AOS-025A

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	1.4037E+01	-4.3087E+01	-5.8715E+00	5.7124E+01	9.1799E+01	
	9.6783E-02	-2.9708E-01	-4.0483E-02	3.9386E-01	6.3293E-01	
2	2.9227E+01	-3.0093E+01	-1.3528E+01	5.9320E+01	1.1607E+02	
	2.0151E-01	-2.0748E-01	-9.3270E-02	4.0900E-01	8.0029E-01	
3	2.5654E+01	-2.2139E+01	-1.1922E+00	4.7793E+01	3.6463E+01	
	1.7688E-01	-1.5264E-01	-8.2198E-03	3.2952E-01	2.5141E-01	
4	5.5000E+02	-5.1863E+02	-1.9923E+02	1.0686E+03	2.0568E+03	
	3.7921E+00	-3.5759E+00	-1.3736E+00	7.3680E+00	1.4181E+01	
5	1.0884E+03	-5.9124E+02	-3.2914E+02	1.6797E+03	1.8566E+03	
	7.5045E+00	-4.0765E+00	-2.2693E+00	1.1581E+01	1.2801E+01	
6	8.2419E+02	-3.8602E+01	5.4335E+00	8.6279E+02	1.6032E+03	
	5.6826E+00	-2.6615E-01	3.7463E-02	5.9487E+00	1.1054E+01	
7	4.6803E+02	-1.9955E+00	-9.3068E+00	4.7002E+02	3.0709E+01	
	3.2269E+00	-1.3759E-02	-6.4168E-02	3.2407E+00	2.1173E-01	
8	4.6737E+02	-2.1091E+00	4.9122E-01	4.6948E+02	4.6018E+01	
	3.2224E+00	-1.4542E-02	3.3868E-03	3.2370E+00	3.1728E-01	
9	4.6766E+02	-2.0995E+00	-8.3323E+00	4.6976E+02	3.9133E+01	
	3.2244E+00	-1.4475E-02	-5.7449E-02	3.2389E+00	2.6981E-01	
10	4.7987E+02	-8.2643E+01	2.5197E+02	5.6251E+02	4.1957E+02	
	3.3086E+00	-5.6980E-01	1.7373E+00	3.8784E+00	2.8928E+00	
11	5.8682E+01	-2.0684E+02	-3.8372E+01	2.6553E+02	2.4795E+02	
	4.0460E-01	-1.4261E+00	-2.6456E-01	1.8307E+00	1.7096E+00	
12	1.9396E+01	-1.3892E+02	-1.1941E+02	1.5832E+02	2.4921E+02	
	1.3373E-01	-9.5783E-01	-8.2328E-01	1.0916E+00	1.7182E+00	
13	4.9018E+02	-3.5104E+02	3.7309E+00	8.4121E+02	5.1525E+02	
	3.3797E+00	-2.4203E+00	2.5724E-02	5.8000E+00	3.5525E+00	
14	3.3739E+02	-2.9201E+02	4.0395E+01	6.2940E+02	7.7925E+02	
	2.3262E+00	-2.0133E+00	2.7851E-01	4.3396E+00	5.3727E+00	
15	8.3989E+01	-4.2269E+01	6.9838E+01	1.2626E+02	1.5447E+02	
	5.7908E-01	-2.9143E-01	4.8152E-01	8.7052E-01	1.0651E+00	

16	1.8963E+02	-7.2963E+01	4.0799E+01	2.6260E+02	2.9870E+02
	1.3075E+00	-5.0306E-01	2.8130E-01	1.8105E+00	2.0595E+00
17	2.1188E+02	-2.5652E+01	-4.3233E+01	2.3753E+02	4.1432E+02
	1.4609E+00	-1.7687E-01	-2.9808E-01	1.6377E+00	2.8566E+00
18	2.2267E+02	-4.3980E+01	1.5062E+02	2.6665E+02	4.6743E+02
	1.5353E+00	-3.0323E-01	1.0385E+00	1.8385E+00	3.2228E+00
19	1.6387E+02	-1.1304E+02	2.4910E+02	2.7691E+02	2.5563E+02
	1.1299E+00	-7.7939E-01	1.7175E+00	1.9093E+00	1.7625E+00
20	1.3241E+02	-1.7580E+02	4.8167E+01	3.0821E+02	5.1758E+02
	9.1292E-01	-1.2121E+00	3.3210E-01	2.1250E+00	3.5686E+00
21	8.1670E+01	-7.3076E+01	8.0668E+00	1.5475E+02	3.0451E+02
	5.6310E-01	-5.0384E-01	5.5618E-02	1.0669E+00	2.0995E+00
22	1.7281E+01	-1.8617E+01	1.6618E+01	3.5897E+01	1.9631E+01
	1.1915E-01	-1.2836E-01	1.1458E-01	2.4750E-01	1.3535E-01

Allowable Stress for Load Case 106

LOC	Tmax (deg_F)	Tave (deg_F)	Sm (ksi)	Sy (ksi)	Su (ksi)
1	55.71	55.47	20.00	30.00	70.00
2	55.94	55.61	20.00	30.00	70.00
3	55.60	55.32	20.00	30.00	70.00
4	55.91	55.87	20.00	30.00	70.00
5	56.55	56.44	20.00	30.00	70.00
6	56.77	56.68	20.00	30.00	70.00
7	57.06	56.91	20.00	30.00	70.00
8	57.06	56.91	20.00	30.00	70.00
9	57.02	56.87	20.00	30.00	70.00
10	57.01	56.84	20.00	30.00	70.00
11	57.22	56.96	20.00	30.00	70.00
12	57.81	57.53	20.00	30.00	70.00
13	56.58	56.44	20.00	30.00	70.00
14	56.23	56.15	20.00	30.00	70.00
15	55.46	55.44	20.00	30.00	70.00
16	55.81	55.74	20.00	30.00	70.00
17	55.86	55.82	20.00	30.00	70.00
18	56.12	56.07	20.00	30.00	70.00
19	56.38	56.27	20.00	30.00	70.00
20	57.56	57.40	20.00	30.00	70.00
21	54.84	54.80	20.00	30.00	70.00
22	55.26	55.21	20.00	30.00	70.00

**Table 2-72. Load Case 201, Internal Design Pressure, 207 kPa (30 psia),
Normal Conditions of Transport – Model AOS-025A**

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	3.6585E+01	-5.4281E+01	8.7424E+00	9.0866E+01	1.3580E+02	
	2.5225E-01	-3.7425E-01	6.0277E-02	6.2650E-01	9.3633E-01	
2	9.1587E+01	-9.1726E+01	1.3799E+00	1.8331E+02	1.1633E+02	
	6.3147E-01	-6.3243E-01	9.5139E-03	1.2639E+00	8.0207E-01	
3	5.7976E+01	-7.1305E+01	9.5053E+01	1.2928E+02	8.6501E+01	
	3.9973E-01	-4.9163E-01	6.5537E-01	8.9136E-01	5.9640E-01	
4	3.9674E+02	-4.8939E+02	-1.4103E+02	8.8613E+02	1.7529E+03	
	2.7354E+00	-3.3742E+00	-9.7240E-01	6.1097E+00	1.2086E+01	
5	3.4081E+02	-3.9554E+02	-6.1119E+02	7.3634E+02	8.7549E+02	
	2.3498E+00	-2.7271E+00	-4.2140E+00	5.0769E+00	6.0363E+00	
6	7.2339E+00	-5.6062E+02	-1.4403E+03	5.6785E+02	9.1816E+02	
	4.9876E-02	-3.8653E+00	-9.9304E+00	3.9152E+00	6.3305E+00	
7	-1.4547E+02	-3.1548E+02	-2.2906E+03	1.7000E+02	5.0967E+01	
	-1.0030E+00	-2.1751E+00	-1.5793E+01	1.1721E+00	3.5141E-01	
8	-1.4710E+02	-3.2278E+02	-2.3765E+03	1.7568E+02	4.6280E+01	
	-1.0142E+00	-2.2255E+00	-1.6385E+01	1.2113E+00	3.1909E-01	
9	-1.4339E+02	-3.3248E+02	-2.4380E+03	1.8909E+02	7.0462E+01	
	-9.8866E-01	-2.2924E+00	-1.6810E+01	1.3037E+00	4.8582E-01	
10	-5.2130E+01	-6.6136E+02	-1.4092E+03	6.0923E+02	5.6607E+01	
	-3.5943E-01	-4.5599E+00	-9.7160E+00	4.2005E+00	3.9029E-01	
11	-7.9877E+01	-6.9324E+02	-6.7102E+02	6.1337E+02	7.6777E+02	
	-5.5074E-01	-4.7797E+00	-4.6265E+00	4.2290E+00	5.2936E+00	
12	3.7604E+01	-6.9696E+02	-6.8111E+02	7.3457E+02	9.7641E+02	
	2.5927E-01	-4.8054E+00	-4.6961E+00	5.0647E+00	6.7321E+00	
13	6.7009E+01	-4.8695E+02	-1.3751E+02	5.5396E+02	1.8447E+02	
	4.6201E-01	-3.3574E+00	-9.4813E-01	3.8194E+00	1.2719E+00	
14	6.3614E+01	-5.4823E+02	-7.3920E+01	6.1185E+02	9.8317E+02	
	4.3860E-01	-3.7799E+00	-5.0966E-01	4.2185E+00	6.7787E+00	
15	6.2371E+02	-5.8489E+02	-2.1049E+02	1.2086E+03	1.5777E+03	
	4.3003E+00	-4.0327E+00	-1.4513E+00	8.3330E+00	1.0878E+01	

16	4.3864E+02	-1.0779E+03	-4.1763E+02	1.5165E+03	2.4543E+03
	3.0243E+00	-7.4316E+00	-2.8795E+00	1.0456E+01	1.6922E+01
17	1.7526E+02	-7.9610E+02	-8.8161E+01	9.7137E+02	1.6698E+03
	1.2084E+00	-5.4889E+00	-6.0785E-01	6.6973E+00	1.1513E+01
18	8.5529E+01	-6.3566E+02	1.8824E+02	7.2119E+02	1.1780E+03
	5.8970E-01	-4.3827E+00	1.2979E+00	4.9724E+00	8.1223E+00
19	2.9758E+02	-9.5687E+02	-7.8807E+00	1.2545E+03	2.0663E+03
	2.0518E+00	-6.5974E+00	-5.4336E-02	8.6492E+00	1.4247E+01
20	3.4484E+02	-1.1050E+03	-1.3971E+02	1.4498E+03	2.7037E+03
	2.3776E+00	-7.6187E+00	-9.6327E-01	9.9963E+00	1.8641E+01
21	7.0046E+01	-3.4058E+01	-1.1059E+00	1.0410E+02	2.6339E+02
	4.8295E-01	-2.3482E-01	-7.6250E-03	7.1777E-01	1.8160E+00
22	1.4036E+02	1.1960E+01	4.0982E+01	1.2840E+02	4.1357E+01
	9.6777E-01	8.2464E-02	2.8256E-01	8.8530E-01	2.8515E-01

**Table 2-73. Load Case 202, Minimum External Pressure, 24 kPa (3.5 psia),
Normal Conditions of Transport – Model AOS-025A**

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	4.7455E+01 3.2719E-01	-4.8088E+01 -3.3155E-01	3.5134E+01 2.4224E-01	9.5543E+01 6.5875E-01	1.3398E+02 9.2377E-01	
2	1.0023E+02 6.9106E-01	-8.0039E+01 -5.5185E-01	2.6810E+01 1.8485E-01	1.8027E+02 1.2429E+00	1.1572E+02 7.9786E-01	
3	6.7627E+01 4.6627E-01	-5.9530E+01 -4.1044E-01	1.2089E+02 8.3353E-01	1.2716E+02 8.7671E-01	8.2293E+01 5.6739E-01	
4	3.3559E+02 2.3138E+00	-3.8819E+02 -2.6765E+00	-1.8126E+02 -1.2497E+00	7.2378E+02 4.9903E+00	1.4175E+03 9.7733E+00	
5	2.8471E+02 1.9630E+00	-2.4582E+02 -1.6948E+00	-6.6035E+02 -4.5529E+00	5.3052E+02 3.6578E+00	5.7821E+02 3.9866E+00	
6	1.7823E+01 1.2289E-01	-4.6911E+02 -3.2344E+00	-1.4653E+03 -1.0103E+01	4.8693E+02 3.3573E+00	7.5436E+02 5.2011E+00	
7	-1.0435E+02 -7.1947E-01	-2.9717E+02 -2.0489E+00	-2.3335E+03 -1.6089E+01	1.9282E+02 1.3294E+00	5.0263E+01 3.4655E-01	
8	-1.0583E+02 -7.2965E-01	-3.0468E+02 -2.1007E+00	-2.4186E+03 -1.6676E+01	1.9886E+02 1.3711E+00	4.6250E+01 3.1888E-01	
9	-1.0219E+02 -7.0460E-01	-3.1424E+02 -2.1666E+00	-2.4818E+03 -1.7111E+01	2.1205E+02 1.4620E+00	7.0044E+01 4.8294E-01	
10	1.0417E+01 7.1823E-02	-6.9090E+02 -4.7636E+00	-1.3846E+03 -9.5463E+00	7.0131E+02 4.8354E+00	1.4931E+02 1.0294E+00	
11	-9.4375E+01 -6.5069E-01	-6.9287E+02 -4.7772E+00	-6.7425E+02 -4.6488E+00	5.9850E+02 4.1265E+00	7.5163E+02 5.1823E+00	
12	3.1391E+01 2.1643E-01	-6.8675E+02 -4.7349E+00	-6.7900E+02 -4.6815E+00	7.1814E+02 4.9514E+00	8.8422E+02 6.0965E+00	
13	5.8456E+01 4.0304E-01	-3.8978E+02 -2.6874E+00	-1.2637E+02 -8.7126E-01	4.4823E+02 3.0904E+00	3.0839E+02 2.1263E+00	
14	3.2885E+01 2.2674E-01	-4.3871E+02 -3.0248E+00	-6.0028E+01 -4.1388E-01	4.7160E+02 3.2516E+00	8.1555E+02 5.6230E+00	
15	7.7008E+02 5.3095E+00	-6.7238E+02 -4.6359E+00	-1.4097E+02 -9.7196E-01	1.4425E+03 9.9454E+00	2.2371E+03 1.5424E+01	

16	3.9147E+02	-8.7900E+02	-3.2523E+02	1.2705E+03	2.0613E+03
	2.6991E+00	-6.0605E+00	-2.2424E+00	8.7596E+00	1.4212E+01
17	1.6336E+02	-6.3436E+02	-3.4520E+01	7.9772E+02	1.3778E+03
	1.1264E+00	-4.3737E+00	-2.3801E-01	5.5001E+00	9.4998E+00
18	6.6830E+01	-4.5218E+02	2.2464E+02	5.1901E+02	8.4463E+02
	4.6077E-01	-3.1177E+00	1.5488E+00	3.5785E+00	5.8235E+00
19	2.1863E+02	-6.9687E+02	7.2926E+01	9.1550E+02	1.5151E+03
	1.5074E+00	-4.8047E+00	5.0281E-01	6.3122E+00	1.0446E+01
20	2.4582E+02	-8.2954E+02	-8.8106E+01	1.0754E+03	2.0083E+03
	1.6948E+00	-5.7195E+00	-6.0747E-01	7.4143E+00	1.3847E+01
21	4.1904E+01	-1.0111E+01	-3.0399E+00	5.2014E+01	1.1140E+02
	2.8891E-01	-6.9710E-02	-2.0959E-02	3.5863E-01	7.6804E-01
22	9.4583E+01	-3.2193E+00	2.9242E+01	9.7802E+01	4.1078E+01
	6.5213E-01	-2.2196E-02	2.0162E-01	6.7432E-01	2.8322E-01

Table 2-74. Load Case 203, Maximum Increased External Pressure, 140 kPa (20 psia), Normal Conditions of Transport – Model AOS-025A

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	3.1826E+01	-5.6494E+01	-3.3976E+00	8.8320E+01	1.3867E+02	
	2.1943E-01	-3.8951E-01	-2.3426E-02	6.0894E-01	9.5611E-01	
2	8.7012E+01	-9.8172E+01	-1.0205E+01	1.8518E+02	1.1681E+02	
	5.9993E-01	-6.7687E-01	-7.0359E-02	1.2768E+00	8.0535E-01	
3	5.2774E+01	-7.7655E+01	8.3021E+01	1.3043E+02	9.0403E+01	
	3.6386E-01	-5.3541E-01	5.7241E-01	8.9927E-01	6.2331E-01	
4	5.2492E+02	-7.8082E+02	-2.3387E+02	1.3057E+03	2.5751E+03	
	3.6192E+00	-5.3836E+00	-1.6125E+00	9.0028E+00	1.7755E+01	
5	4.4608E+02	-6.5713E+02	-6.9842E+02	1.1032E+03	1.5392E+03	
	3.0756E+00	-4.5307E+00	-4.8155E+00	7.6064E+00	1.0613E+01	
6	2.5853E+01	-6.8104E+02	-1.5608E+03	7.0689E+02	1.1427E+03	
	1.7825E-01	-4.6956E+00	-1.0762E+01	4.8738E+00	7.8786E+00	
7	-1.6452E+02	-3.1849E+02	-2.3379E+03	1.5397E+02	5.1273E+01	
	-1.1344E+00	-2.1959E+00	-1.6119E+01	1.0616E+00	3.5352E-01	
8	-1.6635E+02	-3.2554E+02	-2.4249E+03	1.5919E+02	4.6294E+01	
	-1.1469E+00	-2.2445E+00	-1.6719E+01	1.0976E+00	3.1919E-01	
9	-1.6263E+02	-3.3522E+02	-2.4873E+03	1.7259E+02	7.0297E+01	
	-1.1213E+00	-2.3113E+00	-1.7150E+01	1.1900E+00	4.8468E-01	
10	-6.4607E+01	-6.8931E+02	-1.4220E+03	6.2470E+02	1.0431E+02	
	-4.4545E-01	-4.7526E+00	-9.8046E+00	4.3072E+00	7.1921E-01	
11	-8.8776E+01	-6.9444E+02	-6.7614E+02	6.0567E+02	7.9433E+02	
	-6.1209E-01	-4.7880E+00	-4.6619E+00	4.1759E+00	5.4767E+00	
12	3.4433E+01	-6.9418E+02	-6.8248E+02	7.2861E+02	9.2658E+02	
	2.3741E-01	-4.7862E+00	-4.7056E+00	5.0236E+00	6.3885E+00	
13	7.0217E+01	-4.7838E+02	-1.3470E+02	5.4859E+02	1.7723E+02	
	4.8413E-01	-3.2983E+00	-9.2874E-01	3.7824E+00	1.2220E+00	
14	6.9538E+01	-5.4324E+02	-6.9880E+01	6.1278E+02	9.8177E+02	
	4.7945E-01	-3.7455E+00	-4.8180E-01	4.2250E+00	6.7691E+00	
15	7.9863E+02	-7.1315E+02	-1.4789E+02	1.5118E+03	2.3518E+03	
	5.5063E+00	-4.9170E+00	-1.0197E+00	1.0423E+01	1.6215E+01	

16	4.0879E+02	-9.1470E+02	-3.3512E+02	1.3235E+03	2.1474E+03
	2.8185E+00	-6.3066E+00	-2.3106E+00	9.1252E+00	1.4806E+01
17	1.7095E+02	-6.5933E+02	-3.0852E+01	8.3028E+02	1.4344E+03
	1.1786E+00	-4.5459E+00	-2.1272E-01	5.7246E+00	9.8899E+00
18	6.9241E+01	-4.6610E+02	2.2760E+02	5.3534E+02	8.7359E+02
	4.7740E-01	-3.2136E+00	1.5692E+00	3.6910E+00	6.0232E+00
19	2.2666E+02	-7.1653E+02	6.9118E+01	9.4319E+02	1.5602E+03
	1.5628E+00	-4.9403E+00	4.7655E-01	6.5031E+00	1.0757E+01
20	2.5792E+02	-8.5409E+02	-8.9637E+01	1.1120E+03	2.0768E+03
	1.7783E+00	-5.8888E+00	-6.1802E-01	7.6670E+00	1.4319E+01
21	7.6980E+01	-5.4733E+01	-2.0676E+00	1.3171E+02	3.2001E+02
	5.3076E-01	-3.7737E-01	-1.4256E-02	9.0813E-01	2.2064E+00
22	7.0147E+01	-1.6346E+01	2.4514E+00	8.6493E+01	1.8044E+02
	4.8364E-01	-1.1270E-01	1.6901E-02	5.9635E-01	1.2441E+00

Table 2-75. Load Case 204, Additional Increased External Pressure, 2 MPa (290 psia), Normal Conditions of Transport – Model AOS-025A

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	-1.2602E+02	-2.9307E+02	-6.3470E+02	1.6704E+02	2.1323E+02	
	-8.6891E-01	-2.0206E+00	-4.3761E+00	1.1517E+00	1.4702E+00	
2	-1.1608E+02	-4.0601E+02	-6.1835E+02	2.8994E+02	1.2790E+02	
	-8.0034E-01	-2.7994E+00	-4.2634E+00	1.9990E+00	8.8185E-01	
3	-1.6522E+02	-3.9783E+02	-5.1550E+02	2.3261E+02	2.0433E+02	
	-1.1392E+00	-2.7429E+00	-3.5543E+00	1.6038E+00	1.4088E+00	
4	3.6672E+03	-7.1088E+03	-1.0331E+03	1.0776E+04	2.0933E+04	
	2.5285E+01	-4.9013E+01	-7.1229E+00	7.4298E+01	1.4433E+02	
5	3.3659E+03	-7.4720E+03	-1.2596E+03	1.0838E+04	1.6757E+04	
	2.3207E+01	-5.1518E+01	-8.6847E+00	7.4725E+01	1.1553E+02	
6	3.4034E+02	-4.2924E+03	-3.0562E+03	4.6327E+03	7.1770E+03	
	2.3465E+00	-2.9595E+01	-2.1072E+01	3.1942E+01	4.9483E+01	
7	-2.9421E+02	-1.5505E+03	-2.4135E+03	1.2563E+03	6.7087E+01	
	-2.0285E+00	-1.0691E+01	-1.6641E+01	8.6621E+00	4.6255E-01	
8	-3.0219E+02	-1.5496E+03	-2.5308E+03	1.2474E+03	4.6994E+01	
	-2.0836E+00	-1.0684E+01	-1.7449E+01	8.6006E+00	3.2401E-01	
9	-3.0766E+02	-1.5507E+03	-2.5811E+03	1.2431E+03	7.4008E+01	
	-2.1212E+00	-1.0692E+01	-1.7796E+01	8.5706E+00	5.1027E-01	
10	-4.5425E+02	-1.5323E+03	-2.0452E+03	1.0780E+03	6.1550E+02	
	-3.1320E+00	-1.0565E+01	-1.4101E+01	7.4328E+00	4.2437E+00	
11	2.1256E+02	-9.5925E+02	-7.3368E+02	1.1718E+03	1.4828E+03	
	1.4655E+00	-6.6138E+00	-5.0586E+00	8.0793E+00	1.0224E+01	
12	1.0685E+02	-8.8184E+02	-7.6682E+02	9.8869E+02	1.5857E+03	
	7.3667E-01	-6.0801E+00	-5.2870E+00	6.8167E+00	1.0933E+01	
13	6.8197E+02	-2.4235E+03	-3.1854E+02	3.1055E+03	2.0182E+03	
	4.7020E+00	-1.6709E+01	-2.1963E+00	2.1411E+01	1.3915E+01	
14	7.7645E+02	-2.4315E+03	-2.7918E+02	3.2079E+03	3.7414E+03	
	5.3534E+00	-1.6764E+01	-1.9249E+00	2.2118E+01	2.5796E+01	
15	4.3119E+02	-1.9220E+03	-3.4476E+02	2.3532E+03	3.5041E+03	
	2.9730E+00	-1.3252E+01	-2.3770E+00	1.6225E+01	2.4160E+01	

16	5.8662E+02	-1.2942E+03	-4.3995E+02	1.8808E+03	3.0487E+03
	4.0446E+00	-8.9234E+00	-3.0333E+00	1.2968E+01	2.1020E+01
17	2.3701E+02	-9.2544E+02	3.1708E+00	1.1625E+03	2.0151E+03
	1.6341E+00	-6.3807E+00	2.1862E-02	8.0148E+00	1.3894E+01
18	1.4002E+02	-7.4683E+02	2.6864E+02	8.8685E+02	1.4885E+03
	9.6542E-01	-5.1492E+00	1.8522E+00	6.1146E+00	1.0263E+01
19	4.0925E+02	-1.1237E+03	-3.0554E+01	1.5330E+03	2.5332E+03
	2.8217E+00	-7.7478E+00	-2.1067E-01	1.0569E+01	1.7466E+01
20	5.2124E+02	-1.3674E+03	-1.6888E+02	1.8886E+03	3.5717E+03
	3.5938E+00	-9.4276E+00	-1.1644E+00	1.3021E+01	2.4626E+01
21	7.5985E+02	-9.7395E+02	-4.8106E+01	1.7338E+03	3.6138E+03
	5.2390E+00	-6.7152E+00	-3.3168E-01	1.1954E+01	2.4916E+01
22	5.2498E+02	-1.3040E+03	-4.2627E+02	1.8290E+03	3.3465E+03
	3.6196E+00	-8.9907E+00	-2.9390E+00	1.2610E+01	2.3073E+01

**Table 2-76. Load Case 211, Fabrication Stress,
Normal Conditions of Transport – Model AOS-025A**

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	5.0993E+02	-1.2900E+02	4.6067E+01	6.3893E+02	8.9316E+02
	3.5159E+00	-8.8942E-01	3.1762E-01	4.4053E+00	6.1581E+00
2	7.0946E+00	-4.4601E+01	3.6652E+01	5.1695E+01	2.5230E+01
	4.8916E-02	-3.0751E-01	2.5270E-01	3.5643E-01	1.7395E-01
3	4.1560E+00	-2.6427E+01	1.1942E+01	3.0582E+01	7.2770E+00
	2.8654E-02	-1.8220E-01	8.2334E-02	2.1086E-01	5.0173E-02
4	3.7259E+02	-9.3381E+01	7.3002E+01	4.6597E+02	5.5832E+02
	2.5689E+00	-6.4384E-01	5.0333E-01	3.2127E+00	3.8495E+00
5	3.7085E+02	-1.2174E+02	4.3727E+01	4.9259E+02	7.5318E+02
	2.5569E+00	-8.3939E-01	3.0149E-01	3.3963E+00	5.1930E+00
6	2.4440E+02	7.7848E+01	1.1226E+02	1.6655E+02	2.4997E+02
	1.6851E+00	5.3674E-01	7.7402E-01	1.1483E+00	1.7235E+00
7	7.4070E+01	2.1570E+00	1.3022E+01	7.1913E+01	3.4813E+00
	5.1069E-01	1.4872E-02	8.9781E-02	4.9582E-01	2.4003E-02
8	5.9997E+01	5.7216E-01	3.9280E+00	5.9425E+01	2.3979E-01
	4.1366E-01	3.9449E-03	2.7083E-02	4.0972E-01	1.6533E-03
9	8.6093E+01	3.0938E-01	1.1872E+00	8.5783E+01	3.9082E+00
	5.9359E-01	2.1331E-03	8.1855E-03	5.9145E-01	2.6946E-02
10	3.4975E+02	-3.7100E+00	1.3939E+02	3.5346E+02	6.3643E+01
	2.4114E+00	-2.5579E-02	9.6107E-01	2.4370E+00	4.3880E-01
11	1.6523E+02	-3.1028E+01	1.0631E+02	1.9625E+02	1.9364E+02
	1.1392E+00	-2.1393E-01	7.3301E-01	1.3531E+00	1.3351E+00
12	2.1035E+02	9.5687E+01	1.2097E+02	1.1466E+02	2.1929E+02
	1.4503E+00	6.5974E-01	8.3406E-01	7.9058E-01	1.5120E+00
13	5.7075E+02	-1.1986E+02	1.6093E+02	6.9061E+02	6.9395E+02
	3.9352E+00	-8.2639E-01	1.1095E+00	4.7616E+00	4.7846E+00
14	5.2477E+02	-1.1222E+02	1.6355E+02	6.3699E+02	5.4979E+02
	3.6181E+00	-7.7376E-01	1.1276E+00	4.3919E+00	3.7906E+00
15	4.8542E+02	1.3703E+02	1.3353E+02	3.4839E+02	1.1757E+02
	3.3469E+00	9.4481E-01	9.2069E-01	2.4021E+00	8.1062E-01

16	5.9771E+01	-2.3684E+01	-1.3505E+00	8.3455E+01	7.7903E+01
	4.1210E-01	-1.6330E-01	-9.3111E-03	5.7540E-01	5.3713E-01
17	9.4243E+01	-5.7775E+00	-3.0181E+01	1.0002E+02	4.3703E+01
	6.4979E-01	-3.9834E-02	-2.0809E-01	6.8962E-01	3.0132E-01
18	1.1129E+02	-1.1573E+01	-4.5575E+01	1.2286E+02	1.8277E+02
	7.6732E-01	-7.9792E-02	-3.1423E-01	8.4712E-01	1.2602E+00
19	9.1189E+01	-7.1082E+01	9.5176E+00	1.6227E+02	3.0830E+01
	6.2873E-01	-4.9009E-01	6.5621E-02	1.1188E+00	2.1257E-01
20	1.2417E+02	-1.8104E+02	2.4480E+01	3.0521E+02	6.5983E+01
	8.5612E-01	-1.2482E+00	1.6878E-01	2.1043E+00	4.5493E-01
21	1.4022E+02	-7.5207E+01	-7.1474E+01	2.1542E+02	2.5432E+02
	9.6677E-01	-5.1853E-01	-4.9280E-01	1.4853E+00	1.7535E+00
22	4.1516E+02	1.5105E+02	3.9048E+02	2.6412E+02	3.2892E+02
	2.8625E+00	1.0414E+00	2.6923E+00	1.8210E+00	2.2678E+00

**Table 2-77. Load Case 215, Compression Load (5x weight),
Normal Conditions of Transport – Model AOS-025A**

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	-4.0707E-01	-4.3966E+01	-4.8806E+00	4.3559E+01	6.7559E+01
	-2.8067E-03	-3.0313E-01	-3.3650E-02	3.0033E-01	4.6580E-01
2	7.0349E-01	-3.2850E+01	3.5885E+00	3.3553E+01	4.0898E-02
	4.8504E-03	-2.2649E-01	2.4742E-02	2.3134E-01	2.8198E-04
3	-1.1958E+00	-3.8627E+01	6.7452E-01	3.7432E+01	1.1886E+01
	-8.2448E-03	-2.6633E-01	4.6507E-03	2.5808E-01	8.1950E-02
4	8.2434E+01	-1.1924E+02	7.3423E+00	2.0167E+02	2.7087E+02
	5.6836E-01	-8.2212E-01	5.0623E-02	1.3905E+00	1.8676E+00
5	5.9502E+01	-9.1875E+01	8.4979E+00	1.5138E+02	2.1438E+02
	4.1025E-01	-6.3346E-01	5.8591E-02	1.0437E+00	1.4781E+00
6	-2.1191E+01	-9.0401E+01	-2.3835E+01	6.9210E+01	3.6208E+01
	-1.4611E-01	-6.2329E-01	-1.6433E-01	4.7718E-01	2.4964E-01
7	-1.0270E-01	-2.4311E+01	6.3946E-01	2.4208E+01	1.7559E+00
	-7.0808E-04	-1.6762E-01	4.4089E-03	1.6691E-01	1.2107E-02
8	1.7799E-01	-1.4624E+01	1.7967E+00	1.4802E+01	1.0504E-01
	1.2272E-03	-1.0083E-01	1.2388E-02	1.0206E-01	7.2420E-04
9	1.4687E-01	-1.5811E+01	1.8683E+00	1.5957E+01	3.7509E-01
	1.0126E-03	-1.0901E-01	1.2881E-02	1.1002E-01	2.5862E-03
10	-1.3586E+00	-6.2312E+01	-1.9160E+01	6.0953E+01	1.5363E+01
	-9.3669E-03	-4.2962E-01	-1.3210E-01	4.2026E-01	1.0592E-01
11	5.9636E+00	-2.6511E+01	-1.1858E+01	3.2474E+01	3.6281E+01
	4.1118E-02	-1.8279E-01	-8.1758E-02	2.2390E-01	2.5015E-01
12	-1.0548E+01	-4.3654E+01	-1.3365E+01	3.3106E+01	5.2704E+01
	-7.2723E-02	-3.0098E-01	-9.2149E-02	2.2826E-01	3.6338E-01
13	2.5479E+01	-8.0420E+01	-1.5349E+01	1.0590E+02	9.8131E+01
	1.7567E-01	-5.5448E-01	-1.0583E-01	7.3015E-01	6.7659E-01
14	2.3610E+01	-7.0825E+01	-1.4323E+01	9.4435E+01	8.0268E+01
	1.6278E-01	-4.8832E-01	-9.8752E-02	6.5111E-01	5.5343E-01
15	-1.3219E+02	-4.2422E+02	-1.2980E+02	2.9203E+02	1.0706E+02
	-9.1141E-01	-2.9249E+00	-8.9493E-01	2.0135E+00	7.3816E-01

16	4.2852E+00	-2.7271E+01	-8.8634E+00	3.1556E+01	2.1175E+01
	2.9545E-02	-1.8802E-01	-6.1111E-02	2.1757E-01	1.4600E-01
17	-5.8523E+00	-3.1062E+01	-6.1143E+00	2.5210E+01	3.2089E+01
	-4.0350E-02	-2.1417E-01	-4.2156E-02	1.7382E-01	2.2124E-01
18	-7.3178E+00	-3.9563E+01	5.6412E-01	3.2245E+01	5.2267E+01
	-5.0455E-02	-2.7278E-01	3.8895E-03	2.2232E-01	3.6037E-01
19	3.2495E+01	-4.3426E+01	3.1003E-01	7.5921E+01	8.7350E+01
	2.2405E-01	-2.9941E-01	2.1376E-03	5.2346E-01	6.0226E-01
20	4.8117E+01	-4.9020E+01	-7.0031E+00	9.7137E+01	1.2922E+02
	3.3175E-01	-3.3798E-01	-4.8284E-02	6.6974E-01	8.9093E-01
21	-2.6747E+00	-6.8144E+01	-3.5011E+00	6.5469E+01	2.9403E+01
	-1.8442E-02	-4.6984E-01	-2.4139E-02	4.5139E-01	2.0273E-01
22	-9.0750E+01	-1.9038E+02	-1.0670E+02	9.9630E+01	7.0107E+01
	-6.2570E-01	-1.3126E+00	-7.3565E-01	6.8692E-01	4.8337E-01

**Table 2-78. Load Case 216, Rod Drop onto Cask,
Normal Conditions of Transport – Model AOS-025A**

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	-1.2222E+01	-1.1342E+02	8.2376E+01	1.0120E+02	3.0094E+01	
	-8.4270E-02	-7.8204E-01	5.6796E-01	6.9777E-01	2.0749E-01	
2	4.2342E+00	-1.7886E+02	2.3240E+01	1.8310E+02	1.8028E+01	
	2.9194E-02	-1.2332E+00	1.6023E-01	1.2624E+00	1.2430E-01	
3	5.0955E+00	-1.9575E+02	1.0264E+01	2.0084E+02	3.0906E+01	
	3.5132E-02	-1.3496E+00	7.0770E-02	1.3848E+00	2.1309E-01	
4	6.0758E+02	-1.4569E+02	4.6165E+02	7.5327E+02	9.1517E+01	
	4.1891E+00	-1.0045E+00	3.1830E+00	5.1936E+00	6.3099E-01	
5	5.0624E+02	-3.6132E+02	3.3898E+02	8.6756E+02	5.2569E+02	
	3.4904E+00	-2.4912E+00	2.3372E+00	5.9816E+00	3.6245E+00	
6	-8.6692E+01	-1.0487E+03	-3.4299E+00	9.6200E+02	4.0857E+02	
	-5.9772E-01	-7.2305E+00	-2.3649E-02	6.6328E+00	2.8170E+00	
7	1.1395E+00	-2.2238E+02	1.6537E+01	2.2351E+02	2.3697E+01	
	7.8562E-03	-1.5332E+00	1.1402E-01	1.5411E+00	1.6338E-01	
8	2.0173E+00	-9.2489E+01	1.9936E+01	9.4506E+01	1.2567E+00	
	1.3909E-02	-6.3769E-01	1.3746E-01	6.5159E-01	8.6646E-03	
9	1.0580E+00	-9.3042E+01	1.2869E+01	9.4100E+01	1.3847E+00	
	7.2947E-03	-6.4150E-01	8.8726E-02	6.4880E-01	9.5474E-03	
10	-6.1571E+00	-3.7134E+02	-1.0758E+02	3.6518E+02	8.6329E+01	
	-4.2452E-02	-2.5603E+00	-7.4172E-01	2.5178E+00	5.9522E-01	
11	4.7129E+01	-1.5111E+02	-5.2200E+01	1.9824E+02	2.3162E+02	
	3.2494E-01	-1.0419E+00	-3.5991E-01	1.3668E+00	1.5970E+00	
12	-4.8566E+01	-2.6552E+02	-6.2850E+01	2.1696E+02	3.1755E+02	
	-3.3485E-01	-1.8307E+00	-4.3334E-01	1.4959E+00	2.1894E+00	
13	1.7672E+02	-4.5921E+02	-5.9307E+01	6.3593E+02	5.5973E+02	
	1.2184E+00	-3.1661E+00	-4.0891E-01	4.3846E+00	3.8592E+00	
14	1.7080E+02	-4.1020E+02	-5.2286E+01	5.8101E+02	5.0329E+02	
	1.1776E+00	-2.8283E+00	-3.6050E-01	4.0059E+00	3.4700E+00	
15	-5.5572E+03	-1.9032E+04	-5.4444E+03	1.3475E+04	4.6668E+03	
	-3.8316E+01	-1.3122E+02	-3.7538E+01	9.2904E+01	3.2177E+01	

16	4.3643E+02	-9.0325E+02	-9.2868E+01	1.3397E+03	1.4628E+03
	3.0091E+00	-6.2277E+00	-6.4030E-01	9.2368E+00	1.0086E+01
17	3.3779E+02	-8.6443E+02	1.7524E+02	1.2022E+03	1.8115E+03
	2.3290E+00	-5.9600E+00	1.2082E+00	8.2890E+00	1.2490E+01
18	1.5393E+02	-6.0276E+02	-6.2840E+01	7.5670E+02	6.6403E+02
	1.0613E+00	-4.1559E+00	-4.3327E-01	5.2173E+00	4.5783E+00
19	4.5080E+02	-2.0457E+02	2.1191E+02	6.5537E+02	2.0244E+02
	3.1081E+00	-1.4105E+00	1.4610E+00	4.5186E+00	1.3958E+00
20	7.7049E+02	-4.5219E+02	2.7273E+01	1.2227E+03	4.3619E+02
	5.3123E+00	-3.1177E+00	1.8804E-01	8.4301E+00	3.0075E+00
21	-2.9643E+01	-4.2108E+02	-3.4839E+01	3.9144E+02	1.7775E+02
	-2.0438E-01	-2.9033E+00	-2.4021E-01	2.6989E+00	1.2255E+00
22	-1.4169E+03	-7.4743E+03	-2.1260E+03	6.0574E+03	1.4578E+03
	-9.7695E+00	-5.1534E+01	-1.4658E+01	4.1764E+01	1.0051E+01

**Table 2-79. Load Case 221, Forward 10g Vibration Inertia Load,
Normal Conditions of Transport – Model AOS-025A**

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	7.9327E+01	1.0282E+01	-6.2189E+00	8.5546E+01	3.3713E+01
	5.4694E-01	7.0895E-02	-4.2878E-02	5.8982E-01	2.3244E-01
2	7.7890E+01	1.4034E+01	-9.0426E+00	8.9834E+01	3.1460E+01
	5.3703E-01	9.6759E-02	-6.2346E-02	6.1939E-01	2.1691E-01
3	7.6520E+01	9.5948E+00	-6.5601E+00	8.3080E+01	3.6251E+01
	5.2759E-01	6.6154E-02	-4.5230E-02	5.7282E-01	2.4994E-01
4	6.2521E+01	1.5869E+00	-6.5300E+00	6.9051E+01	2.0553E+01
	4.3107E-01	1.0941E-02	-4.5023E-02	4.7609E-01	1.4170E-01
5	4.3093E+01	-1.1986E+00	-6.0654E+00	5.7160E+01	5.3932E+00
	2.9712E-01	-8.2642E-03	-4.1819E-02	3.9411E-01	3.7184E-02
6	1.7063E+01	-5.9830E+00	-1.4683E+01	2.6576E+01	2.2684E+00
	1.1764E-01	-4.1251E-02	-1.0124E-01	1.8324E-01	1.5640E-02
7	2.9506E+01	-9.7233E+00	-2.8043E+01	2.6773E+01	2.1988E+00
	2.0344E-01	-6.7040E-02	-1.9335E-01	1.8459E-01	1.5160E-02
8	2.7770E+01	-1.0814E+01	-2.6443E+01	2.5276E+01	2.4255E+00
	1.9147E-01	-7.4563E-02	-1.8232E-01	1.7427E-01	1.6723E-02
9	2.6473E+01	-9.9331E+00	-2.5080E+01	2.4025E+01	2.2924E+00
	1.8252E-01	-6.8486E-02	-1.7292E-01	1.6564E-01	1.5805E-02
10	2.3249E+01	-5.2522E+00	-1.3609E+01	3.6858E+01	7.1230E+00
	1.6029E-01	-3.6213E-02	-9.3833E-02	2.5413E-01	4.9111E-02
11	2.3170E+01	1.2601E+00	-9.7610E+00	3.2931E+01	7.0822E+00
	1.5975E-01	8.6884E-03	-6.7300E-02	2.2705E-01	4.8830E-02
12	1.5520E+01	-8.1130E-01	-9.6212E+00	2.5141E+01	6.0924E+00
	1.0701E-01	-5.5937E-03	-6.6336E-02	1.7334E-01	4.2006E-02
13	3.2162E+01	-3.1985E+00	-7.8412E+00	4.0003E+01	1.0143E+01
	2.2175E-01	-2.2053E-02	-5.4063E-02	2.7581E-01	6.9932E-02
14	3.5766E+01	-7.9320E-01	-8.0624E+00	4.3829E+01	8.8173E+00
	2.4660E-01	-5.4689E-03	-5.5588E-02	3.0219E-01	6.0793E-02
15	1.2632E+01	-4.3733E+00	-6.0133E+00	1.6197E+01	4.7570E+00
	8.7095E-02	-3.0153E-02	-4.1460E-02	1.1167E-01	3.2798E-02

16	3.1463E+01	9.1659E-01	-5.8936E+00	3.7356E+01	4.1548E+00
	2.1693E-01	6.3197E-03	-4.0635E-02	2.5756E-01	2.8647E-02
17	1.2456E+01	-5.7529E+00	-1.0224E+01	2.2680E+01	6.6761E+00
	8.5882E-02	-3.9665E-02	-7.0491E-02	1.5637E-01	4.6030E-02
18	1.1893E+01	-5.8752E+00	-1.0043E+01	2.1936E+01	6.0008E+00
	8.2001E-02	-4.0508E-02	-6.9243E-02	1.5124E-01	4.1374E-02
19	3.7817E+01	-3.0640E-01	-4.2126E+00	4.2030E+01	4.0128E+00
	2.6074E-01	-2.1125E-03	-2.9045E-02	2.8978E-01	2.7667E-02
20	3.2977E+01	-4.8799E-01	-4.7144E+00	3.7691E+01	8.9088E+00
	2.2737E-01	-3.3646E-03	-3.2504E-02	2.5987E-01	6.1424E-02
21	1.7799E+01	-8.4773E-01	-9.0908E+00	2.6889E+01	4.9066E+00
	1.2272E-01	-5.8449E-03	-6.2679E-02	1.8540E-01	3.3830E-02
22	1.6382E+01	-4.9802E-01	-8.4892E+00	2.4871E+01	5.2865E+00
	1.1295E-01	-3.4337E-03	-5.8531E-02	1.7148E-01	3.6449E-02

Table 2-80. Load Case 222, Lateral 5g Vibration Inertia Load, Normal Conditions of Transport – Model AOS-025A

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	3.9664E+01	5.1412E+00	-3.1095E+00	4.2773E+01	1.6856E+01	
	2.7347E-01	3.5448E-02	-2.1439E-02	2.9491E-01	1.1622E-01	
2	3.8945E+01	7.0168E+00	-4.5213E+00	4.4917E+01	1.5730E+01	
	2.6852E-01	4.8379E-02	-3.1173E-02	3.0969E-01	1.0845E-01	
3	3.8260E+01	4.7974E+00	-3.2801E+00	4.1540E+01	1.8125E+01	
	2.6379E-01	3.3077E-02	-2.2615E-02	2.8641E-01	1.2497E-01	
4	3.1260E+01	7.9343E-01	-3.2650E+00	3.4525E+01	1.0276E+01	
	2.1553E-01	5.4705E-03	-2.2511E-02	2.3804E-01	7.0852E-02	
5	2.1546E+01	-5.9931E-01	-3.0327E+00	2.8580E+01	2.6966E+00	
	1.4856E-01	-4.1321E-03	-2.0910E-02	1.9705E-01	1.8592E-02	
6	8.5313E+00	-2.9915E+00	-7.3415E+00	1.3288E+01	1.1342E+00	
	5.8821E-02	-2.0626E-02	-5.0618E-02	9.1618E-02	7.8201E-03	
7	1.4753E+01	-4.8617E+00	-1.4021E+01	1.3387E+01	1.0994E+00	
	1.0172E-01	-3.3520E-02	-9.6674E-02	9.2297E-02	7.5802E-03	
8	1.3885E+01	-5.4072E+00	-1.3222E+01	1.2638E+01	1.2127E+00	
	9.5734E-02	-3.7281E-02	-9.1159E-02	8.7136E-02	8.3615E-03	
9	1.3236E+01	-4.9665E+00	-1.2540E+01	1.2012E+01	1.1462E+00	
	9.1262E-02	-3.4243E-02	-8.6461E-02	8.2822E-02	7.9027E-03	
10	1.1624E+01	-2.6261E+00	-6.8047E+00	1.8429E+01	3.5615E+00	
	8.0147E-02	-1.8106E-02	-4.6917E-02	1.2706E-01	2.4556E-02	
11	1.1585E+01	6.3007E-01	-4.8805E+00	1.6466E+01	3.5411E+00	
	7.9876E-02	4.3442E-03	-3.3650E-02	1.1353E-01	2.4415E-02	
12	7.7600E+00	-4.0565E-01	-4.8106E+00	1.2571E+01	3.0462E+00	
	5.3503E-02	-2.7968E-03	-3.3168E-02	8.6671E-02	2.1003E-02	
13	1.6081E+01	-1.5993E+00	-3.9206E+00	2.0002E+01	5.0714E+00	
	1.1087E-01	-1.1027E-02	-2.7032E-02	1.3791E-01	3.4966E-02	
14	1.7883E+01	-3.9660E-01	-4.0312E+00	2.1914E+01	4.4087E+00	
	1.2330E-01	-2.7345E-03	-2.7794E-02	1.5109E-01	3.0397E-02	
15	6.3161E+00	-2.1866E+00	-3.0067E+00	8.0983E+00	2.3785E+00	
	4.3548E-02	-1.5076E-02	-2.0730E-02	5.5836E-02	1.6399E-02	

16	1.5731E+01	4.5830E-01	-2.9468E+00	1.8678E+01	2.0774E+00
	1.0846E-01	3.1598E-03	-2.0317E-02	1.2878E-01	1.4323E-02
17	6.2280E+00	-2.8764E+00	-5.1119E+00	1.1340E+01	3.3381E+00
	4.2941E-02	-1.9832E-02	-3.5245E-02	7.8186E-02	2.3015E-02
18	5.9466E+00	-2.9376E+00	-5.0214E+00	1.0968E+01	3.0004E+00
	4.1001E-02	-2.0254E-02	-3.4622E-02	7.5622E-02	2.0687E-02
19	1.8909E+01	-1.5320E-01	-2.1063E+00	2.1015E+01	2.0064E+00
	1.3037E-01	-1.0563E-03	-1.4523E-02	1.4489E-01	1.3834E-02
20	1.6488E+01	-2.4400E-01	-2.3572E+00	1.8846E+01	4.4544E+00
	1.1368E-01	-1.6823E-03	-1.6252E-02	1.2994E-01	3.0712E-02
21	8.8993E+00	-4.2386E-01	-4.5454E+00	1.3445E+01	2.4533E+00
	6.1358E-02	-2.9224E-03	-3.1339E-02	9.2698E-02	1.6915E-02
22	8.1908E+00	-2.4901E-01	-4.2446E+00	1.2435E+01	2.6433E+00
	5.6474E-02	-1.7169E-03	-2.9265E-02	8.5739E-02	1.8225E-02

Table 2-81. Load Case 223, Vertical 2g Vibration Inertia Load, Normal Conditions of Transport – Model AOS-025A

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	1.5824E+01	1.3769E+00	-1.1904E+01	2.5272E+01	1.9103E+00
	1.0910E-01	9.4932E-03	-8.2078E-02	1.7424E-01	1.3171E-02
2	3.6583E+02	5.1326E+01	-1.9922E+01	4.7669E+02	8.4751E+01
	2.5223E+00	3.5388E-01	-1.3736E-01	3.2867E+00	5.8434E-01
3	1.6234E+01	1.6494E+00	-1.3138E+01	2.6128E+01	2.7857E+00
	1.1193E-01	1.1373E-02	-9.0583E-02	1.8015E-01	1.9207E-02
4	7.1429E+00	2.8061E+00	-1.1375E+00	8.5932E+00	7.1773E+00
	4.9249E-02	1.9348E-02	-7.8430E-03	5.9248E-02	4.9486E-02
5	1.0441E+01	2.3594E+00	-3.4310E+00	1.3872E+01	4.3760E-01
	7.1991E-02	1.6267E-02	-2.3656E-02	9.5647E-02	3.0172E-03
6	8.3799E+00	2.2804E+00	-4.3855E+00	1.6626E+01	3.7356E+00
	5.7777E-02	1.5723E-02	-3.0237E-02	1.1463E-01	2.5756E-02
7	5.2336E+00	3.7936E-01	-4.2924E+00	9.5036E+00	7.5942E-01
	3.6084E-02	2.6156E-03	-2.9595E-02	6.5525E-02	5.2360E-03
8	4.6921E+00	6.2000E-01	-4.6921E+00	5.6661E+00	1.3693E+00
	3.2351E-02	4.2747E-03	-3.2351E-02	3.9066E-02	9.4412E-03
9	4.6234E+00	2.2395E-01	-4.6234E+00	6.4390E+00	9.9670E-01
	3.1877E-02	1.5441E-03	-3.1877E-02	4.4395E-02	6.8720E-03
10	1.8357E+01	4.7530E+00	1.1155E+00	1.7242E+01	8.1740E-01
	1.2657E-01	3.2771E-02	7.6912E-03	1.1888E-01	5.6358E-03
11	1.1996E+01	1.9106E-01	-1.2269E+00	1.3299E+01	1.1556E+01
	8.2711E-02	1.3173E-03	-8.4593E-03	9.1692E-02	7.9676E-02
12	6.0250E+00	3.4167E-01	-2.1504E+00	8.1755E+00	5.4546E+00
	4.1541E-02	2.3557E-03	-1.4827E-02	5.6368E-02	3.7608E-02
13	7.8809E+00	1.6144E+00	-2.4262E+00	1.0307E+01	7.7148E+00
	5.4337E-02	1.1131E-02	-1.6728E-02	7.1065E-02	5.3192E-02
14	7.0999E+00	1.7850E+00	-2.0296E+00	9.1295E+00	6.1607E+00
	4.8952E-02	1.2307E-02	-1.3994E-02	6.2946E-02	4.2476E-02
15	4.4532E+00	-4.4399E-01	-4.4533E+00	6.5806E+00	2.1336E+00
	3.0704E-02	-3.0612E-03	-3.0704E-02	4.5372E-02	1.4711E-02

16	6.8752E+00	2.1663E-01	-3.1875E+00	1.0063E+01	1.4935E+00
	4.7403E-02	1.4936E-03	-2.1977E-02	6.9380E-02	1.0297E-02
17	4.3508E+00	1.4174E+00	-4.3507E+00	7.3182E+00	2.1243E+00
	2.9997E-02	9.7727E-03	-2.9997E-02	5.0457E-02	1.4647E-02
18	5.0002E+00	9.4257E-01	-1.9295E+00	9.9075E+00	1.0333E+00
	3.4475E-02	6.4988E-03	-1.3304E-02	6.8310E-02	7.1244E-03
19	9.1207E+00	1.0719E+00	-3.1721E-01	9.4379E+00	2.0949E+00
	6.2885E-02	7.3907E-03	-2.1871E-03	6.5072E-02	1.4444E-02
20	8.0415E+00	2.0293E+00	-1.8633E+00	9.9049E+00	4.8090E+00
	5.5444E-02	1.3992E-02	-1.2847E-02	6.8292E-02	3.3157E-02
21	2.4280E+00	-1.4075E-01	-1.3576E+00	3.8128E+00	7.8305E-01
	1.6740E-02	-9.7045E-04	-9.3604E-03	2.6288E-02	5.3989E-03
22	1.7210E+00	-1.7757E-01	-1.0343E+00	2.7554E+00	1.0311E+00
	1.1866E-02	-1.2243E-03	-7.1316E-03	1.8998E-02	7.1094E-03

**Table 2-82. Load Case 231, 4-ft. Head-On Drop,
Normal Conditions of Transport – Model AOS-025A**

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	-1.1781E+01	-1.0985E+03	3.4727E+01	1.0868E+03	3.4599E+02
	-8.1229E-02	-7.5742E+00	2.3944E-01	7.4929E+00	2.3855E+00
2	1.2373E+01	-5.9157E+02	-2.7822E+01	6.0394E+02	5.9061E+01
	8.5309E-02	-4.0787E+00	-1.9182E-01	4.1640E+00	4.0721E-01
3	-6.4569E+00	-2.1843E+02	-5.7753E+00	2.1197E+02	2.3115E+01
	-4.4519E-02	-1.5060E+00	-3.9820E-02	1.4615E+00	1.5937E-01
4	6.1400E+02	-2.0260E+03	-2.0241E+02	2.6400E+03	9.7495E+02
	4.2334E+00	-1.3969E+01	-1.3955E+00	1.8202E+01	6.7221E+00
5	2.8812E+02	-8.2946E+02	1.4579E+01	1.1176E+03	8.6904E+02
	1.9865E+00	-5.7189E+00	1.0052E-01	7.7054E+00	5.9918E+00
6	-8.7409E+01	-1.3628E+03	-2.0239E+02	1.2754E+03	1.5681E+02
	-6.0266E-01	-9.3965E+00	-1.3955E+00	8.7938E+00	1.0812E+00
7	1.7158E+00	-5.2076E+02	3.8986E+01	5.2248E+02	1.1015E+00
	1.1830E-02	-3.5905E+00	2.6880E-01	3.6024E+00	7.5947E-03
8	-8.5238E-01	-4.1060E+02	-9.0671E+00	4.0975E+02	3.5991E+00
	-5.8770E-03	-2.8310E+00	-6.2516E-02	2.8251E+00	2.4815E-02
9	-3.8915E-01	-3.1728E+02	4.7881E-01	3.1689E+02	3.2264E-01
	-2.6831E-03	-2.1876E+00	3.3013E-03	2.1849E+00	2.2245E-03
10	-1.0205E+02	-6.2168E+02	-1.2928E+02	5.1962E+02	2.3706E+02
	-7.0364E-01	-4.2863E+00	-8.9136E-01	3.5827E+00	1.6345E+00
11	6.9184E+01	-3.5568E+02	-5.7937E+01	4.2486E+02	1.7179E+02
	4.7701E-01	-2.4523E+00	-3.9946E-01	2.9293E+00	1.1845E+00
12	7.4453E+01	-3.9743E+01	6.1540E+01	1.1420E+02	2.2882E+02
	5.1334E-01	-2.7402E-01	4.2430E-01	7.8736E-01	1.5776E+00
13	7.4744E+01	-2.6268E+02	-1.0865E+01	3.3742E+02	1.2836E+02
	5.1535E-01	-1.8111E+00	-7.4911E-02	2.3265E+00	8.8502E-01
14	7.0821E+01	-1.8655E+02	1.8622E+01	2.5738E+02	8.8913E+01
	4.8830E-01	-1.2862E+00	1.2840E-01	1.7745E+00	6.1304E-01
15	-8.3277E+02	-2.5292E+03	-8.0025E+02	1.6964E+03	2.7886E+02
	-5.7418E+00	-1.7438E+01	-5.5175E+00	1.1696E+01	1.9227E+00

16	1.5449E+02	-5.5559E+02	5.8282E+01	7.1008E+02	2.4754E+02
	1.0651E+00	-3.8307E+00	4.0184E-01	4.8958E+00	1.7068E+00
17	-3.4180E+01	-1.0291E+03	-1.5267E+02	9.9495E+02	1.1348E+02
	-2.3566E-01	-7.0956E+00	-1.0526E+00	6.8600E+00	7.8241E-01
18	-1.8807E+01	-1.0314E+03	-7.4420E+01	1.0126E+03	3.2987E+02
	-1.2967E-01	-7.1114E+00	-5.1311E-01	6.9818E+00	2.2744E+00
19	4.4039E+02	-7.1985E+02	1.1669E+02	1.1602E+03	4.6439E+02
	3.0364E+00	-4.9632E+00	8.0457E-01	7.9995E+00	3.2018E+00
20	4.1983E+02	-8.8913E+02	-8.9073E+01	1.3090E+03	4.0897E+02
	2.8946E+00	-6.1304E+00	-6.1413E-01	9.0250E+00	2.8197E+00
21	-5.3480E+01	-1.3001E+02	-1.2728E+02	7.6528E+01	3.8034E+01
	-3.6873E-01	-8.9637E-01	-8.7755E-01	5.2764E-01	2.6223E-01
22	-1.7542E+02	-1.5442E+03	-1.6486E+02	1.3688E+03	7.8552E+02
	-1.2095E+00	-1.0647E+01	-1.1367E+00	9.4375E+00	5.4160E+00

Table 2-83. Load Case 232, 30-ft. Head-On Drop Impact Test, Normal Conditions, Normal Conditions of Transport – Model AOS-025A

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	-3.7664E+01 -2.5969E-01	-2.0445E+03 -1.4096E+01	-3.8817E+02 -2.6763E+00	2.0068E+03 1.3836E+01	6.6642E+02 4.5948E+00
2	1.9436E+01 1.3400E-01	-1.0696E+03 -7.3745E+00	-8.0832E+01 -5.5732E-01	1.0890E+03 7.5085E+00	6.3311E+01 4.3651E-01
3	-2.8033E+00 -1.9328E-02	-6.2633E+02 -4.3184E+00	-2.3404E+01 -1.6136E-01	6.2352E+02 4.2990E+00	7.0647E+01 4.8710E-01
4	3.3546E+02 2.3129E+00	-3.2914E+03 -2.2694E+01	-1.0560E+03 -7.2808E+00	3.6269E+03 2.5007E+01	1.6542E+03 1.1406E+01
5	-4.2679E+01 -2.9426E-01	-1.0426E+03 -7.1884E+00	-4.4607E+02 -3.0755E+00	9.9991E+02 6.8942E+00	1.1870E+03 8.1838E+00
6	-1.8983E+02 -1.3088E+00	-9.2086E+02 -6.3491E+00	-3.9715E+02 -2.7383E+00	7.3103E+02 5.0403E+00	1.9662E+02 1.3556E+00
7	-1.0040E+01 -6.9221E-02	-7.1815E+02 -4.9515E+00	-9.7489E+01 -6.7216E-01	7.0811E+02 4.8822E+00	5.3947E+00 3.7195E-02
8	-7.1885E+00 -4.9563E-02	-7.0102E+02 -4.8334E+00	-6.8586E+01 -4.7288E-01	6.9384E+02 4.7838E+00	9.4709E-01 6.5299E-03
9	-2.3051E+00 -1.5893E-02	-5.7443E+02 -3.9605E+00	-1.2598E+01 -8.6858E-02	5.7212E+02 3.9447E+00	9.4499E-01 6.5155E-03
10	-1.5349E+02 -1.0583E+00	-1.1298E+03 -7.7898E+00	-2.1535E+02 -1.4848E+00	9.7632E+02 6.7315E+00	4.4125E+02 3.0423E+00
11	1.0340E+02 7.1291E-01	-6.1346E+02 -4.2297E+00	-1.1244E+02 -7.7521E-01	7.1686E+02 4.9426E+00	2.7277E+02 1.8807E+00
12	1.1401E+02 7.8609E-01	-7.3421E+01 -5.0622E-01	8.3205E+01 5.7368E-01	1.8743E+02 1.2923E+00	3.9316E+02 2.7108E+00
13	1.3008E+02 8.9686E-01	-5.7284E+02 -3.9496E+00	-5.9139E+01 -4.0775E-01	7.0292E+02 4.8465E+00	4.0703E+02 2.8064E+00
14	1.3462E+02 9.2815E-01	-4.7673E+02 -3.2869E+00	-1.7402E+01 -1.1998E-01	6.1135E+02 4.2151E+00	2.1895E+02 1.5096E+00
15	2.2390E+02 1.5437E+00	1.5565E+02 1.0731E+00	2.1375E+02 1.4737E+00	6.8253E+01 4.7059E-01	3.8141E+01 2.6297E-01

16	5.1030E+01	-5.1030E+02	-1.9782E+02	5.6133E+02	2.3536E+01
	3.5184E-01	-3.5184E+00	-1.3639E+00	3.8702E+00	1.6228E-01
17	1.5478E+02	-5.9532E+02	-3.0416E+02	7.5010E+02	5.8342E+02
	1.0672E+00	-4.1046E+00	-2.0971E+00	5.1717E+00	4.0225E+00
18	1.6269E+02	-1.0551E+03	-3.1323E+02	1.2178E+03	1.0726E+03
	1.1217E+00	-7.2746E+00	-2.1596E+00	8.3963E+00	7.3952E+00
19	2.0525E+02	-9.7621E+02	-3.6657E+02	1.1815E+03	5.9874E+02
	1.4151E+00	-6.7307E+00	-2.5274E+00	8.1459E+00	4.1282E+00
20	-1.7716E+02	-6.4447E+02	-4.3104E+02	4.6731E+02	5.5081E+02
	-1.2215E+00	-4.4435E+00	-2.9719E+00	3.2220E+00	3.7977E+00
21	-1.6729E+00	-9.8990E+00	-3.8560E+00	8.2261E+00	1.8589E+01
	-1.1534E-02	-6.8251E-02	-2.6586E-02	5.6717E-02	1.2817E-01
22	3.3026E+02	8.8571E+01	3.2863E+02	2.4169E+02	1.3664E+02
	2.2771E+00	6.1067E-01	2.2658E+00	1.6664E+00	9.4208E-01

**Table 2-84. Load Combination 101, Hot Environment,
Normal Conditions of Transport – Model AOS-025A**

Load Cases: 102, 201, 211
 100°F Ambient, Maximum Decay Heat, Maximum Insolation
 Internal Design Pressure, 207 kPa (30 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	0.73 5.03	1.03 7.09	0.04 0.27	1.76 12.13	1.80 12.39	20.00 137.90	66.30 457.12	>10
2	0.24 1.62	0.14 0.98	0.05 0.35	0.38 2.60	0.43 2.94	20.00 137.90	66.30 457.12	>10
3	0.16 1.10	0.09 0.65	0.04 0.25	0.25 1.75	0.29 2.00	20.00 137.90	66.30 457.12	>10
4	1.35 9.32	2.31 15.94	0.68 4.67	3.66 25.26	4.34 29.93	20.00 137.90	66.30 457.12	7.19
5	1.23 8.47	1.63 11.23	0.47 3.23	2.86 19.70	3.33 22.94	20.00 137.90	66.30 457.12	9.50
6	0.73 5.06	1.17 8.05	0.42 2.90	1.90 13.12	2.32 16.01	20.00 137.90	66.30 457.12	>10
7	0.24 1.67	0.05 0.38	0.16 1.10	0.30 2.04	0.46 3.14	20.00 137.90	66.30 457.12	>10
8	0.24 1.62	0.05 0.32	0.15 1.05	0.28 1.94	0.43 3.00	20.00 137.90	66.30 457.12	>10
9	0.27 1.90	0.07 0.51	0.16 1.08	0.35 2.41	0.51 3.49	20.00 137.90	66.30 457.12	>10
10	0.96 6.64	0.12 0.83	0.61 4.21	1.08 7.47	1.69 11.68	20.00 137.90	66.30 457.12	>10
11	0.81 5.58	0.96 6.63	0.45 3.11	1.77 12.21	2.22 15.32	20.00 137.90	66.30 457.12	>10
12	0.85 5.86	1.20 8.24	0.57 3.90	2.04 14.10	2.61 18.00	20.00 137.90	66.30 457.12	>10
13	1.24 8.58	0.88 6.06	0.32 2.21	2.12 14.64	2.44 16.85	20.00 137.90	66.30 457.12	>10

14	1.25	1.53	0.32	2.78	3.10	20.00	66.30	9.78
	8.61	10.57	2.21	19.18	21.39	137.90	457.12	
15	1.56	1.70	1.79	3.25	5.04	20.00	66.30	8.22
	10.74	11.69	12.34	22.42	34.77	137.90	457.12	
16	1.60	2.53	0.96	4.13	5.10	20.00	66.30	6.26
	11.03	17.46	6.64	28.49	35.13	137.90	457.12	
17	1.07	1.71	0.58	2.78	3.36	20.00	66.30	9.77
	7.39	11.81	3.99	19.20	23.19	137.90	457.12	
18	0.84	1.36	0.27	2.20	2.47	20.00	66.30	>10
	5.82	9.38	1.85	15.20	17.06	137.90	457.12	
19	1.42	2.10	0.48	3.51	4.00	20.00	66.30	7.54
	9.77	14.46	3.33	24.23	27.55	137.90	457.12	
20	1.76	2.77	0.59	4.52	5.12	20.00	66.30	5.63
	12.10	19.10	4.09	31.20	35.29	137.90	457.12	
21	0.32	0.52	0.02	0.84	0.86	20.00	66.30	>10
	2.20	3.57	0.14	5.77	5.91	137.90	457.12	
22	0.39	0.37	0.05	0.76	0.81	20.00	66.30	>10
	2.71	2.55	0.33	5.26	5.59	137.90	457.12	

Min MS: 5.630, Location: 20, Combination: Pm+Pb

**Table 2-85. Load Combination 102, Cold Environment,
Normal Conditions of Transport – Model AOS-025A**

Load Cases: 104, 201, 211
 -40°F Ambient, Zero Decay Heat, Zero Insolation
 Internal Design Pressure, 207 kPa (30 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	0.73 5.03	1.03 7.09	0.20 1.35	1.76 12.13	1.95 13.48	20.00 137.90	70.00 482.63	>10
2	0.24 1.62	0.14 0.98	0.14 0.97	0.38 2.60	0.52 3.57	20.00 137.90	70.00 482.63	>10
3	0.16 1.10	0.09 0.65	0.18 1.25	0.25 1.75	0.43 3.00	20.00 137.90	70.00 482.63	>10
4	1.35 9.32	2.31 15.94	10.62 73.22	3.66 25.26	14.28 98.48	20.00 137.90	70.00 482.63	3.20
5	1.23 8.47	1.63 11.23	16.21 111.78	2.86 19.70	19.07 131.49	20.00 137.90	70.00 482.63	2.15
6	0.73 5.06	1.17 8.05	8.16 56.29	1.90 13.12	10.07 69.41	20.00 137.90	70.00 482.63	4.96
7	0.24 1.67	0.05 0.38	4.31 29.72	0.30 2.04	4.61 31.76	20.00 137.90	70.00 482.63	>10
8	0.24 1.62	0.05 0.32	4.31 29.68	0.28 1.94	4.59 31.63	20.00 137.90	70.00 482.63	>10
9	0.27 1.90	0.07 0.51	4.31 29.69	0.35 2.41	4.66 32.10	20.00 137.90	70.00 482.63	>10
10	0.96 6.64	0.12 0.83	4.66 32.16	1.08 7.47	5.75 39.62	20.00 137.90	70.00 482.63	9.44
11	0.81 5.58	0.96 6.63	2.08 14.37	1.77 12.21	3.86 26.58	20.00 137.90	70.00 482.63	>10
12	0.85 5.86	1.20 8.24	1.03 7.11	2.04 14.10	3.08 21.21	20.00 137.90	70.00 482.63	>10
13	1.24 8.58	0.88 6.06	7.61 52.45	2.12 14.64	9.73 67.09	20.00 137.90	70.00 482.63	5.17

14	1.25 8.61	1.53 10.57	5.98 41.23	2.78 19.18	8.76 60.41	20.00 137.90	70.00 482.63	5.85
15	1.56 10.74	1.70 11.69	0.94 6.51	3.25 22.42	4.20 28.94	20.00 137.90	70.00 482.63	8.22
16	1.60 11.03	2.53 17.46	2.10 14.51	4.13 28.49	6.24 43.00	20.00 137.90	70.00 482.63	6.26
17	1.07 7.39	1.71 11.81	1.95 13.45	2.78 19.20	4.74 32.65	20.00 137.90	70.00 482.63	9.77
18	0.84 5.82	1.36 9.38	2.14 14.74	2.20 15.20	4.34 29.95	20.00 137.90	70.00 482.63	>10
19	1.42 9.77	2.10 14.46	2.56 17.62	3.51 24.23	6.07 41.85	20.00 137.90	70.00 482.63	7.54
20	1.76 12.10	2.77 19.10	2.41 16.59	4.52 31.20	6.93 47.79	20.00 137.90	70.00 482.63	5.63
21	0.32 2.20	0.52 3.57	1.15 7.95	0.84 5.77	1.99 13.72	20.00 137.90	70.00 482.63	>10
22	0.39 2.71	0.37 2.55	0.25 1.75	0.76 5.26	1.02 7.01	20.00 137.90	70.00 482.63	>10

Min MS: 2.146, Location: 5, Combination: Pm+Pb+Q

Table 2-86. Load Combination 103, Increased External Pressure, Normal Conditions of Transport – Model AOS-025A

Load Cases: 103, 202, 211
 -20°F Ambient, Zero Decay Heat, Zero Insolation
 Minimum External Pressure, 24 kPa (3.5 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	0.73	1.03	0.16	1.76	1.92	20.00	70.00	>10
	5.06	7.08	1.10	12.15	13.25	137.90	482.63	
2	0.23	0.14	0.12	0.37	0.49	20.00	70.00	>10
	1.60	0.97	0.80	2.57	3.37	137.90	482.63	
3	0.16	0.09	0.15	0.25	0.40	20.00	70.00	>10
	1.09	0.62	1.02	1.71	2.73	137.90	482.63	
4	1.19	1.98	8.69	3.17	11.85	20.00	70.00	4.06
	8.20	13.62	59.91	21.83	81.73	137.90	482.63	
5	1.02	1.33	13.27	2.35	15.62	20.00	70.00	2.84
	7.05	9.18	91.47	16.23	107.70	137.90	482.63	
6	0.65	1.00	6.68	1.66	8.34	20.00	70.00	6.20
	4.51	6.92	46.06	11.43	57.49	137.90	482.63	
7	0.26	0.05	3.53	0.32	3.84	20.00	70.00	>10
	1.83	0.37	24.31	2.20	26.51	137.90	482.63	
8	0.26	0.05	3.52	0.30	3.83	20.00	70.00	>10
	1.78	0.32	24.29	2.10	26.39	137.90	482.63	
9	0.30	0.07	3.52	0.37	3.90	20.00	70.00	>10
	2.05	0.51	24.30	2.56	26.86	137.90	482.63	
10	1.05	0.21	3.82	1.27	5.08	20.00	70.00	>10
	7.27	1.47	26.31	8.74	35.05	137.90	482.63	
11	0.79	0.95	1.71	1.74	3.45	20.00	70.00	>10
	5.48	6.52	11.76	12.00	23.75	137.90	482.63	
12	0.83	1.10	0.84	1.94	2.78	20.00	70.00	>10
	5.74	7.61	5.82	13.35	19.17	137.90	482.63	
13	1.14	1.00	6.22	2.14	8.36	20.00	70.00	6.17
	7.85	6.91	42.91	14.76	57.67	137.90	482.63	

14	1.11	1.37	4.89	2.47	7.37	20.00	70.00	7.14
	7.64	9.41	33.74	17.06	50.79	137.90	482.63	
15	1.79	2.35	0.77	4.15	4.92	20.00	70.00	6.24
	12.35	16.23	5.33	28.58	33.91	137.90	482.63	
16	1.35	2.14	1.72	3.49	5.22	20.00	70.00	7.59
	9.34	14.75	11.87	24.08	35.96	137.90	482.63	
17	0.90	1.42	1.60	2.32	3.92	20.00	70.00	>10
	6.19	9.80	11.00	15.99	26.99	137.90	482.63	
18	0.64	1.03	1.75	1.67	3.42	20.00	70.00	>10
	4.43	7.08	12.06	11.51	23.57	137.90	482.63	
19	1.08	1.55	2.09	2.62	4.71	20.00	70.00	>10
	7.43	10.66	14.42	18.09	32.51	137.90	482.63	
20	1.38	2.07	1.97	3.45	5.42	20.00	70.00	7.68
	9.52	14.30	13.58	23.82	37.40	137.90	482.63	
21	0.27	0.37	0.94	0.63	1.58	20.00	70.00	>10
	1.84	2.52	6.50	4.37	10.87	137.90	482.63	
22	0.36	0.37	0.21	0.73	0.94	20.00	70.00	>10
	2.50	2.55	1.43	5.05	6.48	137.90	482.63	

Min MS: 2.841, Location: 5, Combination: Pm+Pb+Q

Table 2-87. Load Combination 104, Minimum External Pressure, Normal Conditions of Transport – Model AOS-025A

Load Cases: 101, 201, 202, 211
 100°F Ambient, Maximum Decay Heat
 Internal Design Pressure, 207 kPa (30 psia)
 Minimum External Pressure, 24 kPa (3.5 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	0.83 5.69	1.16 8.02	0.04 0.28	1.99 13.71	2.03 13.99	20.00 137.90	70.00 482.63	>10
2	0.42 2.86	0.26 1.77	0.05 0.37	0.67 4.64	0.73 5.01	20.00 137.90	70.00 482.63	>10
3	0.29 1.98	0.18 1.21	0.04 0.26	0.46 3.19	0.50 3.45	20.00 137.90	70.00 482.63	>10
4	2.08 14.31	3.73 25.71	0.31 2.17	5.80 40.02	6.12 42.19	20.00 137.90	70.00 482.63	4.17
5	1.76 12.13	2.21 15.22	0.35 2.39	3.97 27.35	4.31 29.74	20.00 137.90	70.00 482.63	6.56
6	1.22 8.42	1.92 13.26	0.15 1.02	3.14 21.68	3.29 22.69	20.00 137.90	70.00 482.63	8.54
7	0.43 3.00	0.10 0.72	0.05 0.36	0.54 3.72	0.59 4.08	20.00 137.90	70.00 482.63	>10
8	0.43 2.99	0.09 0.64	0.05 0.36	0.53 3.63	0.58 3.99	20.00 137.90	70.00 482.63	>10
9	0.49 3.36	0.14 1.00	0.05 0.36	0.63 4.35	0.68 4.71	20.00 137.90	70.00 482.63	>10
10	1.66 11.47	0.27 1.86	0.07 0.46	1.93 13.33	2.00 13.79	20.00 137.90	70.00 482.63	>10
11	1.41 9.71	1.71 11.81	0.10 0.67	3.12 21.52	3.22 22.19	20.00 137.90	70.00 482.63	8.61
12	1.57 10.81	2.08 14.34	0.15 1.02	3.65 25.15	3.79 26.16	20.00 137.90	70.00 482.63	7.23

13	1.69	1.19	0.19	2.88	3.07	20.00	70.00	9.42
	11.67	8.18	1.29	19.85	21.14	137.90	482.63	
14	1.72	2.35	0.16	4.07	4.23	20.00	70.00	6.37
	11.86	16.19	1.11	28.05	29.17	137.90	482.63	
15	3.00	3.93	0.96	6.93	7.90	20.00	70.00	3.33
	20.68	27.11	6.65	47.79	54.45	137.90	482.63	
16	2.87	4.59	0.52	7.46	7.98	20.00	70.00	3.02
	19.79	31.67	3.55	51.46	55.01	137.90	482.63	
17	1.87	3.09	0.31	4.96	5.27	20.00	70.00	5.05
	12.89	21.31	2.15	34.20	36.35	137.90	482.63	
18	1.36	2.21	0.15	3.57	3.71	20.00	70.00	7.41
	9.40	15.21	1.00	24.60	25.61	137.90	482.63	
19	2.33	3.61	0.27	5.94	6.22	20.00	70.00	4.05
	16.08	24.91	1.87	40.99	42.85	137.90	482.63	
20	2.83	4.78	0.31	7.61	7.92	20.00	70.00	2.94
	19.51	32.94	2.12	52.46	54.57	137.90	482.63	
21	0.37	0.63	0.02	1.00	1.02	20.00	70.00	>10
	2.56	4.34	0.11	6.90	7.01	137.90	482.63	
22	0.49	0.41	0.03	0.90	0.93	20.00	70.00	>10
	3.38	2.84	0.18	6.22	6.40	137.90	482.63	

Min MS: 2.943, Location: 20, Combination: Pm+Pb

Table 2-88. Load Combination 105, Cold Environment with Maximum Decay Heat, Normal Conditions of Transport – Model AOS-025A

Load Cases: 105, 201, 202, 211
 -40°F Ambient, Maximum Decay Heat
 Internal Design Pressure, 207 kPa (30 psia)
 Minimum External Pressure, 24 kPa (3.5 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)						Sm	Su	MS
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q				
1	0.83 5.69	1.16 8.02	0.08 0.58	1.99 13.71	2.07 14.29	20.00 137.90	70.00 482.63	>10	
2	0.42 2.86	0.26 1.77	0.07 0.46	0.67 4.64	0.74 5.10	20.00 137.90	70.00 482.63	>10	
3	0.29 1.98	0.18 1.21	0.07 0.50	0.46 3.19	0.54 3.69	20.00 137.90	70.00 482.63	>10	
4	2.08 14.31	3.73 25.71	2.91 20.03	5.80 40.02	8.71 60.05	20.00 137.90	70.00 482.63	4.17	
5	1.76 12.13	2.21 15.22	4.49 30.97	3.97 27.35	8.46 58.31	20.00 137.90	70.00 482.63	6.09	
6	1.22 8.42	1.92 13.26	2.28 15.71	3.14 21.68	5.42 37.38	20.00 137.90	70.00 482.63	8.54	
7	0.43 3.00	0.10 0.72	1.22 8.40	0.54 3.72	1.76 12.12	20.00 137.90	70.00 482.63	>10	
8	0.43 2.99	0.09 0.64	1.22 8.39	0.53 3.63	1.74 12.02	20.00 137.90	70.00 482.63	>10	
9	0.49 3.36	0.14 1.00	1.22 8.40	0.63 4.35	1.85 12.75	20.00 137.90	70.00 482.63	>10	
10	1.66 11.47	0.27 1.86	1.37 9.43	1.93 13.33	3.30 22.76	20.00 137.90	70.00 482.63	>10	
11	1.41 9.71	1.71 11.81	0.62 4.27	3.12 21.52	3.74 25.79	20.00 137.90	70.00 482.63	8.61	
12	1.57 10.81	2.08 14.34	0.31 2.14	3.65 25.15	3.96 27.29	20.00 137.90	70.00 482.63	7.23	

13	1.69 11.67	1.19 8.18	2.15 14.85	2.88 19.85	5.03 34.70	20.00 137.90	70.00 482.63	9.42
14	1.72 11.86	2.35 16.19	1.66 11.46	4.07 28.05	5.73 39.52	20.00 137.90	70.00 482.63	6.37
15	3.00 20.68	3.93 27.11	0.29 1.99	6.93 47.79	7.22 49.78	20.00 137.90	70.00 482.63	3.33
16	2.87 19.79	4.59 31.67	0.63 4.34	7.46 51.46	8.09 55.80	20.00 137.90	70.00 482.63	3.02
17	1.87 12.89	3.09 21.31	0.58 3.98	4.96 34.20	5.54 38.18	20.00 137.90	70.00 482.63	5.05
18	1.36 9.40	2.21 15.21	0.63 4.37	3.57 24.60	4.20 28.97	20.00 137.90	70.00 482.63	7.41
19	2.33 16.08	3.61 24.91	0.71 4.91	5.94 40.99	6.66 45.90	20.00 137.90	70.00 482.63	4.05
20	2.83 19.51	4.78 32.94	0.70 4.85	7.61 52.46	8.31 57.31	20.00 137.90	70.00 482.63	2.94
21	0.37 2.56	0.63 4.34	0.36 2.45	1.00 6.90	1.36 9.35	20.00 137.90	70.00 482.63	>10
22	0.49 3.38	0.41 2.84	0.08 0.54	0.90 6.22	0.98 6.75	20.00 137.90	70.00 482.63	>10

Min MS: 2.943, Location: 20, Combination: Pm+Pb

Table 2-89. Load Combination 106, Maximum Pressure, Hot Environment, Normal Conditions of Transport – Model AOS-025A

Load Cases: 101, 201, 203, 211
 100°F Ambient, Maximum Decay Heat
 Internal Design Pressure, 207 kPa (30 psia)
 Maximum Increased External Pressure, 140 kPa (20 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	0.82 5.64	1.17 8.05	0.04 0.28	1.99 13.69	2.03 13.98	20.00 137.90	70.00 482.63	>10
2	0.42 2.90	0.26 1.78	0.05 0.37	0.68 4.68	0.73 5.05	20.00 137.90	70.00 482.63	>10
3	0.29 2.00	0.18 1.27	0.04 0.26	0.47 3.27	0.51 3.53	20.00 137.90	70.00 482.63	>10
4	2.66 18.32	4.89 33.69	0.31 2.17	7.54 52.01	7.86 54.18	20.00 137.90	70.00 482.63	2.98
5	2.33 16.08	3.17 21.84	0.35 2.39	5.50 37.92	5.85 40.31	20.00 137.90	70.00 482.63	4.45
6	1.44 9.94	2.31 15.93	0.15 1.02	3.75 25.87	3.90 26.89	20.00 137.90	70.00 482.63	7.00
7	0.40 2.73	0.11 0.73	0.05 0.36	0.50 3.46	0.55 3.82	20.00 137.90	70.00 482.63	>10
8	0.39 2.72	0.09 0.64	0.05 0.36	0.49 3.36	0.54 3.72	20.00 137.90	70.00 482.63	>10
9	0.45 3.09	0.14 1.00	0.05 0.36	0.59 4.08	0.64 4.44	20.00 137.90	70.00 482.63	>10
10	1.59 10.94	0.22 1.55	0.07 0.46	1.81 12.49	1.88 12.95	20.00 137.90	70.00 482.63	>10
11	1.42 9.76	1.76 12.11	0.10 0.67	3.17 21.86	3.27 22.53	20.00 137.90	70.00 482.63	8.46
12	1.58 10.88	2.12 14.63	0.15 1.02	3.70 25.51	3.85 26.53	20.00 137.90	70.00 482.63	7.11

13	1.79	1.06	0.19	2.85	3.04	20.00	70.00	9.53
	12.36	7.28	1.29	19.64	20.93	137.90	482.63	
14	1.86	2.51	0.16	4.38	4.54	20.00	70.00	5.86
	12.84	17.34	1.11	30.17	31.28	137.90	482.63	
15	3.07	4.05	0.96	7.12	8.08	20.00	70.00	3.22
	21.16	27.90	6.65	49.06	55.71	137.90	482.63	
16	2.92	4.68	0.52	7.60	8.12	20.00	70.00	2.95
	20.16	32.26	3.55	52.42	55.97	137.90	482.63	
17	1.90	3.15	0.31	5.05	5.36	20.00	70.00	4.94
	13.11	21.70	2.15	34.82	36.97	137.90	482.63	
18	1.38	2.23	0.15	3.61	3.76	20.00	70.00	7.30
	9.51	15.41	1.00	24.92	25.92	137.90	482.63	
19	2.36	3.66	0.27	6.02	6.29	20.00	70.00	3.99
	16.27	25.22	1.87	41.49	43.35	137.90	482.63	
20	2.87	4.85	0.31	7.71	8.02	20.00	70.00	2.89
	19.77	33.42	2.12	53.18	55.30	137.90	482.63	
21	0.45	0.84	0.02	1.29	1.30	20.00	70.00	>10
	3.11	5.78	0.11	8.89	9.00	137.90	482.63	
22	0.48	0.55	0.03	1.03	1.06	20.00	70.00	>10
	3.30	3.80	0.18	7.10	7.28	137.90	482.63	

Min MS: 2.889, Location: 20, Combination: Pm+Pb

Table 2-90. Load Combination 107, Maximum Pressure, Cold Environment, Normal Conditions of Transport – Model AOS-025A

Load Cases: 105, 201, 203, 211
 -40°F Ambient, Maximum Decay Heat
 Internal Design Pressure, 207 kPa (30 psia)
 Maximum Increased External Pressure, 140 kPa (20 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	0.82 5.64	1.17 8.05	0.08 0.58	1.99 13.69	2.07 14.27	20.00 137.90	70.00 482.63	>10
2	0.42 2.90	0.26 1.78	0.07 0.46	0.68 4.68	0.75 5.14	20.00 137.90	70.00 482.63	>10
3	0.29 2.00	0.18 1.27	0.07 0.50	0.47 3.27	0.55 3.77	20.00 137.90	70.00 482.63	>10
4	2.66 18.32	4.89 33.69	2.91 20.03	7.54 52.01	10.45 72.05	20.00 137.90	70.00 482.63	2.98
5	2.33 16.08	3.17 21.84	4.49 30.97	5.50 37.92	9.99 68.89	20.00 137.90	70.00 482.63	4.45
6	1.44 9.94	2.31 15.93	2.28 15.71	3.75 25.87	6.03 41.58	20.00 137.90	70.00 482.63	7.00
7	0.40 2.73	0.11 0.73	1.22 8.40	0.50 3.46	1.72 11.86	20.00 137.90	70.00 482.63	>10
8	0.39 2.72	0.09 0.64	1.22 8.39	0.49 3.36	1.70 11.75	20.00 137.90	70.00 482.63	>10
9	0.45 3.09	0.14 1.00	1.22 8.40	0.59 4.08	1.81 12.48	20.00 137.90	70.00 482.63	>10
10	1.59 10.94	0.22 1.55	1.37 9.43	1.81 12.49	3.18 21.92	20.00 137.90	70.00 482.63	>10
11	1.42 9.76	1.76 12.11	0.62 4.27	3.17 21.86	3.79 26.14	20.00 137.90	70.00 482.63	8.46
12	1.58 10.88	2.12 14.63	0.31 2.14	3.70 25.51	4.01 27.65	20.00 137.90	70.00 482.63	7.11

13	1.79	1.06	2.15	2.85	5.00	20.00	70.00	9.53
	12.36	7.28	14.85	19.64	34.49	137.90	482.63	
14	1.86	2.51	1.66	4.38	6.04	20.00	70.00	5.86
	12.84	17.34	11.46	30.17	41.64	137.90	482.63	
15	3.07	4.05	0.29	7.12	7.40	20.00	70.00	3.22
	21.16	27.90	1.99	49.06	51.05	137.90	482.63	
16	2.92	4.68	0.63	7.60	8.23	20.00	70.00	2.95
	20.16	32.26	4.34	52.42	56.76	137.90	482.63	
17	1.90	3.15	0.58	5.05	5.63	20.00	70.00	4.94
	13.11	21.70	3.98	34.82	38.80	137.90	482.63	
18	1.38	2.23	0.63	3.61	4.25	20.00	70.00	7.30
	9.51	15.41	4.37	24.92	29.28	137.90	482.63	
19	2.36	3.66	0.71	6.02	6.73	20.00	70.00	3.99
	16.27	25.22	4.91	41.49	46.40	137.90	482.63	
20	2.87	4.85	0.70	7.71	8.42	20.00	70.00	2.89
	19.77	33.42	4.85	53.18	58.03	137.90	482.63	
21	0.45	0.84	0.36	1.29	1.64	20.00	70.00	>10
	3.11	5.78	2.45	8.89	11.34	137.90	482.63	
22	0.48	0.55	0.08	1.03	1.11	20.00	70.00	>10
	3.30	3.80	0.54	7.10	7.64	137.90	482.63	

Min MS: 2.889, Location: 20, Combination: Pm+Pb

Table 2-91. Load Combination 215, Compression Load, Normal Conditions of Transport – Model AOS-025A

Load Cases: 215, 101, 201, 211
 Compression Load (5x weight)
 100°F Ambient, Maximum Decay Heat
 Internal Design Pressure, 207 kPa (30 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)						Sm	Su	MS
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q				
1	0.75	1.07	0.04	1.82	1.86	20.00	70.00	>10	
	5.19	7.34	0.28	12.54	12.82	137.90	482.63		
2	0.25	0.14	0.05	0.39	0.45	20.00	70.00	>10	
	1.74	0.98	0.37	2.72	3.09	137.90	482.63		
3	0.18	0.10	0.04	0.28	0.32	20.00	70.00	>10	
	1.24	0.69	0.26	1.93	2.19	137.90	482.63		
4	1.46	2.46	0.31	3.92	4.23	20.00	70.00	6.66	
	10.07	16.93	2.17	27.00	29.17	137.90	482.63		
5	1.31	1.74	0.35	3.05	3.40	20.00	70.00	8.83	
	9.03	12.02	2.39	21.05	23.44	137.90	482.63		
6	0.77	1.19	0.15	1.96	2.11	20.00	70.00	>10	
	5.32	8.19	1.02	13.51	14.52	137.90	482.63		
7	0.25	0.06	0.05	0.31	0.36	20.00	70.00	>10	
	1.76	0.38	0.36	2.14	2.50	137.90	482.63		
8	0.24	0.05	0.05	0.29	0.34	20.00	70.00	>10	
	1.68	0.32	0.36	2.00	2.36	137.90	482.63		
9	0.28	0.07	0.05	0.36	0.41	20.00	70.00	>10	
	1.95	0.51	0.36	2.47	2.83	137.90	482.63		
10	1.00	0.13	0.07	1.12	1.19	20.00	70.00	>10	
	6.86	0.89	0.46	7.75	8.21	137.90	482.63		
11	0.83	0.98	0.10	1.81	1.91	20.00	70.00	>10	
	5.70	6.76	0.67	12.46	13.14	137.90	482.63		
12	0.87	1.22	0.15	2.09	2.24	20.00	70.00	>10	
	5.98	8.44	1.02	14.42	15.43	137.90	482.63		

13	1.30 8.97	0.93 6.42	0.19 1.29	2.23 15.39	2.42 16.68	20.00 137.90	70.00 482.63	>10
14	1.30 8.96	1.58 10.87	0.16 1.11	2.88 19.82	3.04 20.93	20.00 137.90	70.00 482.63	9.43
15	1.71 11.81	1.75 12.08	0.96 6.65	3.47 23.90	4.43 30.55	20.00 137.90	70.00 482.63	7.66
16	1.62 11.15	2.54 17.54	0.52 3.55	4.16 28.68	4.68 32.24	20.00 137.90	70.00 482.63	6.21
17	1.08 7.48	1.73 11.93	0.31 2.15	2.82 19.41	3.13 21.56	20.00 137.90	70.00 482.63	9.66
18	0.86 5.94	1.39 9.57	0.15 1.00	2.25 15.51	2.40 16.52	20.00 137.90	70.00 482.63	>10
19	1.46 10.05	2.14 14.78	0.27 1.87	3.60 24.83	3.87 26.70	20.00 137.90	70.00 482.63	7.33
20	1.81 12.46	2.84 19.57	0.31 2.12	4.65 32.03	4.95 34.15	20.00 137.90	70.00 482.63	5.46
21	0.35 2.44	0.53 3.68	0.02 0.11	0.89 6.12	0.90 6.23	20.00 137.90	70.00 482.63	>10
22	0.45 3.07	0.41 2.81	0.03 0.18	0.85 5.89	0.88 6.06	20.00 137.90	70.00 482.63	>10

Min MS: 5.457, Location: 20, Combination: Pm+Pb

**Table 2-92. Load Combination 216, Rod Drop,
Normal Conditions of Transport – Model AOS-025A**

Load Cases: 216, 101, 201, 211
 Rod Drop onto Cask
 100°F Ambient, Maximum Decay Heat
 Internal Design Pressure, 207 kPa (30 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	0.83 5.73	1.06 7.30	0.04 0.28	1.89 13.03	1.93 13.31	20.00 137.90	70.00 482.63	>10
2	0.42 2.88	0.16 1.10	0.05 0.37	0.58 3.98	0.63 4.35	20.00 137.90	70.00 482.63	>10
3	0.36 2.49	0.12 0.86	0.04 0.26	0.49 3.35	0.52 3.60	20.00 137.90	70.00 482.63	>10
4	2.11 14.51	2.40 16.57	0.31 2.17	4.51 31.08	4.82 33.25	20.00 137.90	70.00 482.63	5.65
5	2.10 14.45	2.15 14.85	0.35 2.39	4.25 29.31	4.60 31.70	20.00 137.90	70.00 482.63	6.06
6	1.70 11.69	1.58 10.87	0.15 1.02	3.27 22.56	3.42 23.58	20.00 137.90	70.00 482.63	8.17
7	0.47 3.21	0.08 0.54	0.05 0.36	0.54 3.75	0.60 4.11	20.00 137.90	70.00 482.63	>10
8	0.33 2.27	0.05 0.33	0.05 0.36	0.38 2.60	0.43 2.96	20.00 137.90	70.00 482.63	>10
9	0.37 2.54	0.08 0.52	0.05 0.36	0.44 3.07	0.50 3.43	20.00 137.90	70.00 482.63	≥10
10	1.33 9.15	0.21 1.42	0.07 0.46	1.53 10.58	1.60 11.04	20.00 137.90	70.00 482.63	>10
11	1.01 6.95	1.19 8.22	0.10 0.67	2.20 15.17	2.30 15.84	20.00 137.90	70.00 482.63	>10
12	1.07 7.35	1.51 10.43	0.15 1.02	2.58 17.78	2.73 18.80	20.00 137.90	70.00 482.63	>10

13	1.88	1.44	0.19	3.32	3.50	20.00	70.00	8.04
	12.96	9.91	1.29	22.87	24.16	137.90	482.63	
14	1.83	2.04	0.16	3.87	4.03	20.00	70.00	6.76
	12.61	14.04	1.11	26.65	27.76	137.90	482.63	
15	15.03	6.36	0.96	21.39	22.36	20.00	70.00	0.33
	103.64	43.86	6.65	147.50	154.15	137.90	482.63	
16	2.94	3.99	0.52	6.93	7.45	20.00	70.00	3.33
	20.27	27.54	3.55	47.81	51.36	137.90	482.63	
17	2.27	3.52	0.31	5.80	6.11	20.00	70.00	4.17
	15.67	24.30	2.15	39.97	42.12	137.90	482.63	
18	1.60	2.02	0.15	3.62	3.77	20.00	70.00	7.28
	11.03	13.96	1.00	24.99	26.00	137.90	482.63	
19	2.07	2.30	0.27	4.37	4.64	20.00	70.00	5.86
	14.29	15.85	1.87	30.14	32.01	137.90	482.63	
20	2.98	3.21	0.31	6.18	6.49	20.00	70.00	3.85
	20.53	22.10	2.12	42.63	44.75	137.90	482.63	
21	0.71	0.70	0.02	1.41	1.42	20.00	70.00	>10
	4.90	4.79	0.11	9.69	9.80	137.90	482.63	
22	6.45	1.83	0.03	8.28	8.30	20.00	70.00	2.10
	44.47	12.61	0.18	57.08	57.26	137.90	482.63	

Min MS: 0.331, Location: 15, Combination: Pm

**Table 2-93. Load Combination 217, Rod Drop, Cold Environment,
Normal Conditions of Transport – Model AOS-025A**

Load Cases: 216, 104, 201, 211
 Rod Drop onto Cask
 -40°F Ambient, Zero Decay Heat, Zero Insolation
 Internal Design Pressure, 207 kPa (30 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	0.83 5.73	1.06 7.30	0.20 1.35	1.89 13.03	2.09 14.38	20.00 137.90	70.00 482.63	>10
2	0.42 2.88	0.16 1.10	0.14 0.97	0.58 3.98	0.72 4.96	20.00 137.90	70.00 482.63	>10
3	0.36 2.49	0.12 0.86	0.18 1.25	0.49 3.35	0.67 4.59	20.00 137.90	70.00 482.63	>10
4	2.11 14.51	2.40 16.57	10.62 73.22	4.51 31.08	15.13 104.30	20.00 137.90	70.00 482.63	2.97
5	2.10 14.45	2.15 14.85	16.21 111.78	4.25 29.31	20.46 141.09	20.00 137.90	70.00 482.63	1.93
6	1.70 11.69	1.58 10.87	8.16 56.29	3.27 22.56	11.44 78.86	20.00 137.90	70.00 482.63	4.25
7	0.47 3.21	0.08 0.54	4.31 29.72	0.54 3.75	4.85 33.46	20.00 137.90	70.00 482.63	>10
8	0.33 2.27	0.05 0.33	4.31 29.68	0.38 2.60	4.68 32.29	20.00 137.90	70.00 482.63	>10
9	0.37 2.54	0.08 0.52	4.31 29.69	0.44 3.07	4.75 32.76	20.00 137.90	70.00 482.63	>10
10	1.33 9.15	0.21 1.42	4.66 32.16	1.53 10.58	6.20 42.73	20.00 137.90	70.00 482.63	8.68
11	1.01 6.95	1.19 8.22	2.08 14.37	2.20 15.17	4.28 29.54	20.00 137.90	70.00 482.63	>10
12	1.07 7.35	1.51 10.43	1.03 7.11	2.58 17.78	3.61 24.89	20.00 137.90	70.00 482.63	>10

13	1.88	1.44	7.61	3.32	10.92	20.00	70.00	4.49
	12.96	9.91	52.45	22.87	75.32	137.90	482.63	
14	1.83	2.04	5.98	3.87	9.85	20.00	70.00	5.09
	12.61	14.04	41.23	26.65	67.88	137.90	482.63	
15	15.03	6.36	0.94	21.39	22.34	20.00	70.00	0.33
	103.64	43.86	6.51	147.50	154.01	137.90	482.63	
16	2.94	3.99	2.10	6.93	9.04	20.00	70.00	3.33
	20.27	27.54	14.51	47.81	62.32	137.90	482.63	
17	2.27	3.52	1.95	5.80	7.75	20.00	70.00	4.17
	15.67	24.30	13.45	39.97	53.42	137.90	482.63	
18	1.60	2.02	2.14	3.62	5.76	20.00	70.00	7.28
	11.03	13.96	14.74	24.99	39.74	137.90	482.63	
19	2.07	2.30	2.56	4.37	6.93	20.00	70.00	5.86
	14.29	15.85	17.62	30.14	47.76	137.90	482.63	
20	2.98	3.21	2.41	6.18	8.59	20.00	70.00	3.85
	20.53	22.10	16.59	42.63	59.22	137.90	482.63	
21	0.71	0.70	1.15	1.41	2.56	20.00	70.00	>10
	4.90	4.79	7.95	9.69	17.64	137.90	482.63	
22	6.45	1.83	0.25	8.28	8.53	20.00	70.00	2.10
	44.47	12.61	1.75	57.08	58.82	137.90	482.63	

Min MS: 0.331, Location: 15, Combination: Pm

**Table 2-94. Load Combination 221, Forward Vibration,
Normal Conditions of Transport – Model AOS-025A**

Load Cases: 221, 101, 201, 211
 Forward 10g Vibration Inertia Load
 100°F Ambient, Maximum Decay Heat
 Internal Design Pressure, 207 kPa (30 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	0.75 5.14	1.03 7.11	0.04 0.28	1.78 12.26	1.82 12.54	20.00 137.90	70.00 482.63	>10
2	0.38 2.60	0.20 1.35	0.05 0.37	0.57 3.95	0.63 4.32	20.00 137.90	70.00 482.63	>10
3	0.18 1.23	0.10 0.68	0.04 0.26	0.28 1.91	0.31 2.16	20.00 137.90	70.00 482.63	>10
4	1.36 9.40	2.32 15.98	0.31 2.17	3.68 25.38	4.00 27.55	20.00 137.90	70.00 482.63	7.15
5	1.24 8.55	1.63 11.27	0.35 2.39	2.87 19.82	3.22 22.21	20.00 137.90	70.00 482.63	9.44
6	0.74 5.12	1.17 8.08	0.15 1.02	1.91 13.20	2.06 14.22	20.00 137.90	70.00 482.63	>10
7	0.25 1.71	0.05 0.38	0.05 0.36	0.30 2.09	0.36 2.45	20.00 137.90	70.00 482.63	>10
8	0.24 1.63	0.05 0.32	0.05 0.36	0.28 1.95	0.34 2.31	20.00 137.90	70.00 482.63	>10
9	0.28 1.93	0.07 0.52	0.05 0.36	0.35 2.45	0.41 2.81	20.00 137.90	70.00 482.63	>10
10	0.98 6.74	0.12 0.85	0.07 0.46	1.10 7.58	1.17 8.04	20.00 137.90	70.00 482.63	>10
11	0.82 5.66	0.97 6.68	0.10 0.67	1.79 12.33	1.89 13.01	20.00 137.90	70.00 482.63	>10

12	0.86	1.20	0.15	2.06	2.20	20.00	70.00	>10
	5.91	8.27	1.02	14.18	15.20	137.90	482.63	
13	1.25	0.89	0.19	2.14	2.33	20.00	70.00	>10
	8.64	6.12	1.29	14.76	16.05	137.90	482.63	
14	1.26	1.54	0.16	2.79	2.95	20.00	70.00	9.74
	8.67	10.59	1.11	19.26	20.37	137.90	482.63	
15	1.56	1.70	0.96	3.26	4.22	20.00	70.00	8.21
	10.77	11.69	6.65	22.46	29.11	137.90	482.63	
16	1.61	2.54	0.52	4.14	4.66	20.00	70.00	6.24
	11.09	17.48	3.55	28.57	32.13	137.90	482.63	
17	1.08	1.72	0.31	2.80	3.11	20.00	70.00	9.72
	7.44	11.86	2.15	19.30	21.45	137.90	482.63	
18	0.85	1.37	0.15	2.22	2.36	20.00	70.00	>10
	5.86	9.42	1.00	15.28	16.28	137.90	482.63	
19	1.42	2.10	0.27	3.52	3.79	20.00	70.00	7.52
	9.82	14.47	1.87	24.29	26.16	137.90	482.63	
20	1.76	2.77	0.31	4.54	4.84	20.00	70.00	5.61
	12.17	19.11	2.12	31.28	33.40	137.90	482.63	
21	0.33	0.52	0.02	0.85	0.87	20.00	70.00	>10
	2.28	3.60	0.11	5.89	6.00	137.90	482.63	
22	0.40	0.37	0.03	0.78	0.80	20.00	70.00	>10
	2.77	2.58	0.18	5.36	5.54	137.90	482.63	

Min MS: 5.612, Location: 20, Combination: Pm+Pb

**Table 2-95. Load Combination 222, Lateral Vibration,
Normal Conditions of Transport – Model AOS-025A**

Load Cases: 222, 101, 201, 211
 Lateral 5g Vibration Inertia Load
 100°F Ambient, Maximum Decay Heat
 Internal Design Pressure, 207 kPa (30 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	0.75 5.15	1.03 7.12	0.04 0.28	1.78 12.27	1.82 12.56	20.00 137.90	70.00 482.63	>10
2	0.58 4.00	0.18 1.24	0.05 0.37	0.76 5.24	0.81 5.61	20.00 137.90	70.00 482.63	>10
3	0.17 1.17	0.10 0.68	0.04 0.26	0.27 1.85	0.30 2.10	20.00 137.90	70.00 482.63	>10
4	1.40 9.64	2.35 16.22	0.31 2.17	3.75 25.86	4.06 28.03	20.00 137.90	70.00 482.63	7.00
5	1.27 8.77	1.66 11.46	0.35 2.39	2.93 20.23	3.28 22.62	20.00 137.90	70.00 482.63	9.22
6	0.78 5.39	1.18 8.15	0.15 1.02	1.96 13.54	2.11 14.56	20.00 137.90	70.00 482.63	>10
7	0.25 1.69	0.05 0.38	0.05 0.36	0.30 2.07	0.35 2.43	20.00 137.90	70.00 482.63	>10
8	0.24 1.68	0.05 0.32	0.05 0.36	0.29 2.00	0.34 2.36	20.00 137.90	70.00 482.63	>10
9	0.28 1.96	0.07 0.51	0.05 0.36	0.36 2.47	0.41 2.83	20.00 137.90	70.00 482.63	>10
10	1.02 7.06	0.14 0.97	0.07 0.46	1.17 8.03	1.23 8.49	20.00 137.90	70.00 482.63	>10
11	0.85 5.85	1.01 6.96	0.10 0.67	1.86 12.81	1.95 13.48	20.00 137.90	70.00 482.63	>10
12	0.87 6.02	1.21 8.31	0.15 1.02	2.08 14.33	2.23 15.35	20.00 137.90	70.00 482.63	>10

13	1.28	0.88	0.19	2.17	2.35	20.00	70.00	>10
	8.84	6.10	1.29	14.94	16.23	137.90	482.63	
14	1.28	1.55	0.16	2.82	2.98	20.00	70.00	9.63
	8.80	10.66	1.11	19.47	20.58	137.90	482.63	
15	1.58	1.70	0.96	3.28	4.24	20.00	70.00	8.15
	10.86	11.73	6.65	22.60	29.25	137.90	482.63	
16	1.62	2.56	0.52	4.18	4.69	20.00	70.00	6.18
	11.17	17.63	3.55	28.80	32.35	137.90	482.63	
17	1.09	1.73	0.31	2.81	3.12	20.00	70.00	9.67
	7.49	11.90	2.15	19.39	21.54	137.90	482.63	
18	0.85	1.36	0.15	2.21	2.36	20.00	70.00	>10
	5.88	9.39	1.00	15.27	16.27	137.90	482.63	
19	1.44	2.12	0.27	3.57	3.84	20.00	70.00	7.41
	9.94	14.65	1.87	24.59	26.45	137.90	482.63	
20	1.78	2.79	0.31	4.57	4.88	20.00	70.00	5.57
	12.25	19.24	2.12	31.50	33.61	137.90	482.63	
21	0.33	0.52	0.02	0.85	0.86	20.00	70.00	>10
	2.26	3.58	0.11	5.84	5.95	137.90	482.63	
22	0.41	0.37	0.03	0.78	0.80	20.00	70.00	>10
	2.79	2.57	0.18	5.36	5.54	137.90	482.63	

Min MS: 5.567, Location: 20, Combination: Pm+Pb

**Table 2-96. Load Combination 223, Vertical Vibration,
Normal Conditions of Transport – Model AOS-025A**

Load Cases: 223, 101, 201, 211
 Vertical 2g Vibration Inertia Load
 100°F Ambient, Maximum Decay Heat
 Internal Design Pressure, 207 kPa (30 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	0.76	1.04	0.04	1.80	1.84	20.00	70.00	>10
	5.27	7.15	0.28	12.42	12.70	137.90	482.63	
2	0.92	0.22	0.05	1.14	1.20	20.00	70.00	>10
	6.37	1.51	0.37	7.88	8.25	137.90	482.63	
3	0.18	0.10	0.04	0.28	0.32	20.00	70.00	>10
	1.24	0.70	0.26	1.94	2.20	137.90	482.63	
4	1.45	2.39	0.31	3.84	4.15	20.00	70.00	6.82
	9.97	16.50	2.17	26.46	28.63	137.90	482.63	
5	1.32	1.70	0.35	3.01	3.36	20.00	70.00	8.96
	9.07	11.69	2.39	20.76	23.15	137.90	482.63	
6	0.83	1.20	0.15	2.03	2.17	20.00	70.00	>10
	5.72	8.25	1.02	13.97	14.99	137.90	482.63	
7	0.25	0.06	0.05	0.30	0.36	20.00	70.00	>10
	1.72	0.38	0.36	2.10	2.46	137.90	482.63	
8	0.25	0.05	0.05	0.30	0.35	20.00	70.00	>10
	1.74	0.33	0.36	2.07	2.43	137.90	482.63	
9	0.29	0.07	0.05	0.37	0.42	20.00	70.00	>10
	2.02	0.51	0.36	2.53	2.89	137.90	482.63	
10	1.08	0.16	0.07	1.25	1.31	20.00	70.00	>10
	7.48	1.12	0.46	8.60	9.06	137.90	482.63	
11	0.89	1.06	0.10	1.94	2.04	20.00	70.00	>10
	6.11	7.29	0.67	13.40	14.07	137.90	482.63	

12	0.90 6.18	1.22 8.38	0.15 1.02	2.11 14.56	2.26 15.58	20.00 137.90	70.00 482.63	>10
13	1.32 9.11	0.89 6.14	0.19 1.29	2.21 15.24	2.40 16.53	20.00 137.90	70.00 482.63	>10
14	1.30 9.00	1.56 10.76	0.16 1.11	2.86 19.75	3.03 20.86	20.00 137.90	70.00 482.63	9.47
15	1.59 10.99	1.71 11.78	0.96 6.65	3.30 22.77	4.27 29.43	20.00 137.90	70.00 482.63	8.08
16	1.64 11.31	2.58 17.80	0.52 3.55	4.22 29.11	4.74 32.67	20.00 137.90	70.00 482.63	6.10
17	1.10 7.60	1.74 11.99	0.31 2.15	2.84 19.59	3.15 21.74	20.00 137.90	70.00 482.63	9.56
18	0.86 5.94	1.36 9.40	0.15 1.00	2.22 15.34	2.37 16.34	20.00 137.90	70.00 482.63	>10
19	1.47 10.11	2.15 14.84	0.27 1.87	3.62 24.95	3.89 26.82	20.00 137.90	70.00 482.63	7.29
20	1.80 12.41	2.81 19.39	0.31 2.12	4.61 31.80	4.92 33.92	20.00 137.90	70.00 482.63	5.50
21	0.34 2.32	0.52 3.59	0.02 0.11	0.86 5.91	0.87 6.02	20.00 137.90	70.00 482.63	>10
22	0.42 2.88	0.37 2.58	0.03 0.18	0.79 5.46	0.82 5.64	20.00 137.90	70.00 482.63	>10

Min MS: 5.505, Location: 20, Combination: Pm+Pb

Table 2-97. Load Combination 224, Forward Vibration at Cold Temperature, Normal Conditions of Transport – Model AOS-025A

Load Cases: 221, 103, 201, 211
 Forward 10g Vibration Inertia Load
 -20°F Ambient, Zero Decay Heat, Zero Insolation
 Internal Design Pressure, 207 kPa (30 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	0.75 5.14	1.03 7.11	0.16 1.10	1.78 12.26	1.94 13.36	20.00 137.90	70.00 482.63	>10
2	0.38 2.60	0.20 1.35	0.12 0.80	0.57 3.95	0.69 4.74	20.00 137.90	70.00 482.63	>10
3	0.18 1.23	0.10 0.68	0.15 1.02	0.28 1.91	0.42 2.93	20.00 137.90	70.00 482.63	>10
4	1.36 9.40	2.32 15.98	8.69 59.91	3.68 25.38	12.37 85.29	20.00 137.90	70.00 482.63	3.85
5	1.24 8.55	1.63 11.27	13.27 91.47	2.87 19.82	16.14 111.29	20.00 137.90	70.00 482.63	2.72
6	0.74 5.12	1.17 8.08	6.68 46.06	1.91 13.20	8.59 59.26	20.00 137.90	70.00 482.63	5.98
7	0.25 1.71	0.05 0.38	3.53 24.31	0.30 2.09	3.83 26.41	20.00 137.90	70.00 482.63	>10
8	0.24 1.63	0.05 0.32	3.52 24.29	0.28 1.95	3.81 26.24	20.00 137.90	70.00 482.63	>10
9	0.28 1.93	0.07 0.52	3.52 24.30	0.35 2.45	3.88 26.74	20.00 137.90	70.00 482.63	>10
10	0.98 6.74	0.12 0.85	3.82 26.31	1.10 7.58	4.92 33.89	20.00 137.90	70.00 482.63	>10
11	0.82 5.66	0.97 6.68	1.71 11.76	1.79 12.33	3.49 24.09	20.00 137.90	70.00 482.63	>10
12	0.86 5.91	1.20 8.27	0.84 5.82	2.06 14.18	2.90 20.00	20.00 137.90	70.00 482.63	>10

13	1.25	0.89	6.22	2.14	8.36	20.00	70.00	6.17
	8.64	6.12	42.91	14.76	57.67	137.90	482.63	
14	1.26	1.54	4.89	2.79	7.69	20.00	70.00	6.81
	8.67	10.59	33.74	19.26	53.00	137.90	482.63	
15	1.56	1.70	0.77	3.26	4.03	20.00	70.00	8.21
	10.77	11.69	5.33	22.46	27.79	137.90	482.63	
16	1.61	2.54	1.72	4.14	5.87	20.00	70.00	6.24
	11.09	17.48	11.87	28.57	40.45	137.90	482.63	
17	1.08	1.72	1.60	2.80	4.40	20.00	70.00	9.72
	7.44	11.86	11.00	19.30	30.30	137.90	482.63	
18	0.85	1.37	1.75	2.22	3.97	20.00	70.00	>10
	5.86	9.42	12.06	15.28	27.34	137.90	482.63	
19	1.42	2.10	2.09	3.52	5.61	20.00	70.00	7.52
	9.82	14.47	14.42	24.29	38.71	137.90	482.63	
20	1.76	2.77	1.97	4.54	6.51	20.00	70.00	5.61
	12.17	19.11	13.58	31.28	44.86	137.90	482.63	
21	0.33	0.52	0.94	0.85	1.80	20.00	70.00	>10
	2.28	3.60	6.50	5.89	12.39	137.90	482.63	
22	0.40	0.37	0.21	0.78	0.98	20.00	70.00	>10
	2.77	2.58	1.43	5.36	6.79	137.90	482.63	

Min MS: 2.717, Location: 5, Combination: Pm+Pb+Q

Table 2-98. Load Combination 225, Lateral Vibration at Cold Temperature, Normal Conditions of Transport – Model AOS-025A

Load Cases: 222, 103, 201, 211
 Lateral 5g Vibration Inertia Load
 -20°F Ambient, Zero Decay Heat, Zero Insolation
 Internal Design Pressure, 207 kPa (30 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	0.75 5.15	1.03 7.12	0.16 1.10	1.78 12.27	1.94 13.38	20.00 137.90	70.00 482.63	>10
2	0.58 4.00	0.18 1.24	0.12 0.80	0.76 5.24	0.88 6.04	20.00 137.90	70.00 482.63	>10
3	0.17 1.17	0.10 0.68	0.15 1.02	0.27 1.85	0.42 2.87	20.00 137.90	70.00 482.63	>10
4	1.40 9.64	2.35 16.22	8.69 59.91	3.75 25.86	12.44 85.77	20.00 137.90	70.00 482.63	3.82
5	1.27 8.77	1.66 11.46	13.27 91.47	2.93 20.23	16.20 111.70	20.00 137.90	70.00 482.63	2.70
6	0.78 5.39	1.18 8.15	6.68 46.06	1.96 13.54	8.64 59.60	20.00 137.90	70.00 482.63	5.94
7	0.25 1.69	0.05 0.38	3.53 24.31	0.30 2.07	3.83 26.39	20.00 137.90	70.00 482.63	>10
8	0.24 1.68	0.05 0.32	3.52 24.29	0.29 2.00	3.81 26.29	20.00 137.90	70.00 482.63	>10
9	0.28 1.96	0.07 0.51	3.52 24.30	0.36 2.47	3.88 26.77	20.00 137.90	70.00 482.63	>10
10	1.02 7.06	0.14 0.97	3.82 26.31	1.17 8.03	4.98 34.34	20.00 137.90	70.00 482.63	>10
11	0.85 5.85	1.01 6.96	1.71 11.76	1.86 12.81	3.56 24.56	20.00 137.90	70.00 482.63	>10
12	0.87 6.02	1.21 8.31	0.84 5.82	2.08 14.33	2.92 20.15	20.00 137.90	70.00 482.63	>10

13	1.28	0.88	6.22	2.17	8.39	20.00	70.00	6.15
	8.84	6.10	42.91	14.94	57.85	137.90	482.63	
14	1.28	1.55	4.89	2.82	7.72	20.00	70.00	6.78
	8.80	10.66	33.74	19.47	53.20	137.90	482.63	
15	1.58	1.70	0.77	3.28	4.05	20.00	70.00	8.15
	10.86	11.73	5.33	22.60	27.93	137.90	482.63	
16	1.62	2.56	1.72	4.18	5.90	20.00	70.00	6.18
	11.17	17.63	11.87	28.80	40.67	137.90	482.63	
17	1.09	1.73	1.60	2.81	4.41	20.00	70.00	9.67
	7.49	11.90	11.00	19.39	30.40	137.90	482.63	
18	0.85	1.36	1.75	2.21	3.96	20.00	70.00	>10
	5.88	9.39	12.06	15.27	27.33	137.90	482.63	
19	1.44	2.12	2.09	3.57	5.66	20.00	70.00	7.41
	9.94	14.65	14.42	24.59	39.00	137.90	482.63	
20	1.78	2.79	1.97	4.57	6.54	20.00	70.00	5.57
	12.25	19.24	13.58	31.50	45.07	137.90	482.63	
21	0.33	0.52	0.94	0.85	1.79	20.00	70.00	>10
	2.26	3.58	6.50	5.84	12.34	137.90	482.63	
22	0.41	0.37	0.21	0.78	0.99	20.00	70.00	>10
	2.79	2.57	1.43	5.36	6.79	137.90	482.63	

Min MS: 2.704, Location: 5, Combination: Pm+Pb+Q

Table 2-99. Load Combination 226, Vertical Vibration at Cold Temperature, Normal Conditions of Transport – Model AOS-025A

Load Cases: 223, 103, 201, 211
 Vertical 2g Vibration Inertia Load
 -20°F Ambient, Zero Decay Heat, Zero Insolation
 Internal Design Pressure, 207 kPa (30 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	0.76 5.27	1.04 7.15	0.16 1.10	1.80 12.42	1.96 13.52	20.00 137.90	70.00 482.63	>10
2	0.92 6.37	0.22 1.51	0.12 0.80	1.14 7.88	1.26 8.68	20.00 137.90	70.00 482.63	>10
3	0.18 1.24	0.10 0.70	0.15 1.02	0.28 1.94	0.43 2.97	20.00 137.90	70.00 482.63	>10
4	1.45 9.97	2.39 16.50	8.69 59.91	3.84 26.46	12.53 86.37	20.00 137.90	70.00 482.63	3.79
5	1.32 9.07	1.70 11.69	13.27 91.47	3.01 20.76	16.28 112.23	20.00 137.90	70.00 482.63	2.69
6	0.83 5.72	1.20 8.25	6.68 46.06	2.03 13.97	8.71 60.03	20.00 137.90	70.00 482.63	5.89
7	0.25 1.72	0.06 0.38	3.53 24.31	0.30 2.10	3.83 26.42	20.00 137.90	70.00 482.63	>10
8	0.25 1.74	0.05 0.33	3.52 24.29	0.30 2.07	3.82 26.35	20.00 137.90	70.00 482.63	>10
9	0.29 2.02	0.07 0.51	3.52 24.30	0.37 2.53	3.89 26.83	20.00 137.90	70.00 482.63	>10
10	1.08 7.48	0.16 1.12	3.82 26.31	1.25 8.60	5.06 34.91	20.00 137.90	70.00 482.63	>10
11	0.89 6.11	1.06 7.29	1.71 11.76	1.94 13.40	3.65 25.16	20.00 137.90	70.00 482.63	>10
12	0.90 6.18	1.22 8.38	0.84 5.82	2.11 14.56	2.96 20.38	20.00 137.90	70.00 482.63	>10

13	1.32	0.89	6.22	2.21	8.43	20.00	70.00	6.11
	9.11	6.14	42.91	15.24	58.16	137.90	482.63	
14	1.30	1.56	4.89	2.86	7.76	20.00	70.00	6.73
	9.00	10.76	33.74	19.75	53.49	137.90	482.63	
15	1.59	1.71	0.77	3.30	4.08	20.00	70.00	8.08
	10.99	11.78	5.33	22.77	28.10	137.90	482.63	
16	1.64	2.58	1.72	4.22	5.94	20.00	70.00	6.10
	11.31	17.80	11.87	29.11	40.99	137.90	482.63	
17	1.10	1.74	1.60	2.84	4.44	20.00	70.00	9.56
	7.60	11.99	11.00	19.59	30.59	137.90	482.63	
18	0.86	1.36	1.75	2.22	3.97	20.00	70.00	>10
	5.94	9.40	12.06	15.34	27.40	137.90	482.63	
19	1.47	2.15	2.09	3.62	5.71	20.00	70.00	7.29
	10.11	14.84	14.42	24.95	39.37	137.90	482.63	
20	1.80	2.81	1.97	4.61	6.58	20.00	70.00	5.50
	12.41	19.39	13.58	31.80	45.38	137.90	482.63	
21	0.34	0.52	0.94	0.86	1.80	20.00	70.00	>10
	2.32	3.59	6.50	5.91	12.41	137.90	482.63	
22	0.42	0.37	0.21	0.79	1.00	20.00	70.00	>10
	2.88	2.58	1.43	5.46	6.89	137.90	482.63	

Min MS: 2.686, Location: 5, Combination: Pm+Pb+Q

Table 2-100. Load Combination 231, 4-ft. Head-On Drop, Normal Conditions, Normal Conditions of Transport – Model AOS-025A

Load Cases: 231, 102, 201, 211
 4-ft. Head-On Drop
 100°F Ambient, Maximum Decay Heat, Maximum Insolation
 Internal Design Pressure, 207 kPa (30 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	2.33 16.05	1.54 10.65	0.04 0.27	3.87 26.70	3.91 26.96	20.00 137.90	66.30 457.12	6.75
2	1.34 9.22	0.21 1.48	0.05 0.35	1.55 10.70	1.60 11.05	20.00 137.90	66.30 457.12	>10
3	1.14 7.87	0.30 2.06	0.04 0.25	1.44 9.93	1.48 10.18	20.00 137.90	66.30 457.12	>10
4	4.23 29.13	3.63 25.00	0.68 4.67	7.85 54.13	8.53 58.80	20.00 137.90	66.30 457.12	2.82
5	2.07 14.24	2.59 17.89	0.47 3.23	4.66 32.13	5.13 35.36	20.00 137.90	66.30 457.12	5.44
6	1.46 10.07	1.27 8.74	0.42 2.90	2.73 18.81	3.15 21.70	20.00 137.90	66.30 457.12	10.00
7	0.93 6.40	0.06 0.40	0.16 1.10	0.99 6.79	1.14 7.89	20.00 137.90	66.30 457.12	>10
8	0.96 6.64	0.05 0.34	0.15 1.05	1.01 6.98	1.16 8.03	20.00 137.90	66.30 457.12	>10
9	0.98 6.73	0.07 0.51	0.16 1.08	1.05 7.24	1.21 8.32	20.00 137.90	66.30 457.12	>10
10	2.55 17.60	0.84 5.78	0.61 4.21	3.39 23.39	4.00 27.60	20.00 137.90	66.30 457.12	6.83
11	1.95 13.43	1.38 9.54	0.45 3.11	3.33 22.97	3.78 26.07	20.00 137.90	66.30 457.12	8.01
12	1.17 8.08	1.86 12.81	0.57 3.90	3.03 20.89	3.60 24.79	20.00 137.90	66.30 457.12	8.90

13	2.50	1.68	0.32	4.18	4.50	20.00	66.30	6.17
	17.25	11.59	2.21	28.84	31.05	137.90	457.12	
14	2.43	1.94	0.32	4.36	4.68	20.00	66.30	5.87
	16.74	13.35	2.21	30.09	32.30	137.90	457.12	
15	1.59	1.72	1.79	3.31	5.10	20.00	66.30	8.07
	10.97	11.83	12.34	22.80	35.14	137.90	457.12	
16	1.97	2.54	0.96	4.51	5.47	20.00	66.30	5.65
	13.58	17.51	6.64	31.09	37.73	137.90	457.12	
17	1.55	2.09	0.58	3.64	4.22	20.00	66.30	7.24
	10.71	14.39	3.99	25.10	29.09	137.90	457.12	
18	1.73	2.13	0.27	3.86	4.13	20.00	66.30	6.77
	11.91	14.70	1.85	26.61	28.46	137.90	457.12	
19	2.34	2.59	0.48	4.93	5.41	20.00	66.30	5.09
	16.14	17.83	3.33	33.97	37.29	137.90	457.12	
20	2.26	3.22	0.59	5.48	6.07	20.00	66.30	4.48
	15.56	22.20	4.09	37.76	41.86	137.90	457.12	
21	1.08	0.84	0.02	1.92	1.94	20.00	66.30	>10
	7.45	5.77	0.14	13.22	13.36	137.90	457.12	
22	0.52	0.46	0.05	0.98	1.03	20.00	66.30	>10
	3.60	3.16	0.33	6.76	7.09	137.90	457.12	

Min MS: 2.821, Location: 4, Combination: Pm+Pb

Table 2-101. Load Combination 232, 30-ft. Head-On Drop, Normal Conditions (Impact Test), Normal Conditions of Transport – Model AOS-025A

Load Cases: 232, 102, 201, 211
 30-ft. Head-On Drop Impact Test, Normal Conditions
 100°F Ambient, Maximum Decay Heat, Maximum Insolation
 Internal Design Pressure, 207 kPa (30 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	2.74 18.87	1.70 11.69	0.04 0.27	4.43 30.56	4.47 30.82	20.00 137.90	66.30 457.12	5.77
2	1.32 9.13	0.20 1.41	0.05 0.35	1.53 10.54	1.58 10.89	20.00 137.90	66.30 457.12	>10
3	0.78 5.40	0.16 1.13	0.04 0.25	0.95 6.53	0.98 6.78	20.00 137.90	66.30 457.12	>10
4	4.98 34.33	3.97 27.34	0.68 4.67	8.94 61.67	9.62 66.34	20.00 137.90	66.30 457.12	2.35
5	2.23 15.37	2.82 19.41	0.47 3.23	5.04 34.78	5.51 38.02	20.00 137.90	66.30 457.12	4.95
6	1.47 10.10	1.36 9.41	0.42 2.90	2.83 19.51	3.25 22.41	20.00 137.90	66.30 457.12	9.60
7	0.95 6.55	0.06 0.41	0.16 1.10	1.01 6.96	1.17 8.06	20.00 137.90	66.30 457.12	>10
8	0.93 6.40	0.05 0.33	0.15 1.05	0.98 6.73	1.13 7.79	20.00 137.90	66.30 457.12	>10
9	0.85 5.84	0.08 0.52	0.16 1.08	0.92 6.36	1.08 7.44	20.00 137.90	66.30 457.12	>10
10	1.94 13.37	0.56 3.87	0.61 4.21	2.50 17.24	3.11 21.45	20.00 137.90	66.30 457.12	9.31
11	1.53 10.52	1.23 8.51	0.45 3.11	2.76 19.03	3.21 22.14	20.00 137.90	66.30 457.12	9.87
12	1.04 7.15	1.59 10.95	0.57 3.90	2.63 18.10	3.19 22.00	20.00 137.90	66.30 457.12	>10

13	1.95	1.29	0.32	3.23	3.55	20.00	66.30	8.28
	13.43	8.86	2.21	22.29	24.50	137.90	457.12	
14	1.86	1.75	0.32	3.61	3.93	20.00	66.30	7.31
	12.83	12.08	2.21	24.90	27.11	137.90	457.12	
15	1.63	1.73	1.79	3.36	5.15	20.00	66.30	7.93
	11.21	11.95	12.34	23.16	35.50	137.90	457.12	
16	2.16	2.56	0.96	4.72	5.68	20.00	66.30	5.36
	14.90	17.62	6.64	32.52	39.17	137.90	457.12	
17	1.82	2.30	0.58	4.12	4.70	20.00	66.30	6.28
	12.56	15.84	3.99	28.40	32.39	137.90	457.12	
18	2.06	2.43	0.27	4.50	4.76	20.00	66.30	5.67
	14.22	16.78	1.85	30.99	32.85	137.90	457.12	
19	2.60	2.70	0.48	5.29	5.78	20.00	66.30	4.67
	17.91	18.59	3.33	36.50	39.83	137.90	457.12	
20	2.22	3.32	0.59	5.54	6.14	20.00	66.30	4.41
	15.32	22.89	4.09	38.22	42.31	137.90	457.12	
21	0.33	0.54	0.02	0.86	0.88	20.00	66.30	>10
	2.26	3.70	0.14	5.96	6.10	137.90	457.12	
22	0.63	0.51	0.05	1.14	1.19	20.00	66.30	>10
	4.37	3.50	0.33	7.87	8.20	137.90	457.12	

Min MS: 2.354, Location: 4, Combination: Pm+Pb

Table 2-102. Load Combination 233, 4-ft. Drop at Cold Temperature, Normal Conditions of Transport – Model AOS-025A

Load Cases: 231, 103, 211
 4-ft. Head-On Drop
 -20°F Ambient, Zero Decay Heat, Zero Insolation
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	2.24 15.42	1.41 9.71	0.16 1.10	3.65 25.14	3.81 26.24	20.00 137.90	70.00 482.63	7.23
2	1.15 7.95	0.10 0.68	0.12 0.80	1.25 8.63	1.37 9.43	20.00 137.90	70.00 482.63	>10
3	1.01 6.98	0.21 1.47	0.15 1.02	1.22 8.45	1.37 9.47	20.00 137.90	70.00 482.63	>10
4	3.34 23.02	1.87 12.91	8.69 59.91	5.21 35.94	13.90 95.85	20.00 137.90	70.00 482.63	3.32
5	1.33 9.16	1.72 11.85	13.27 91.47	3.05 21.01	16.31 112.48	20.00 137.90	70.00 482.63	2.68
6	0.89 6.15	0.35 2.41	6.68 46.06	1.24 8.56	7.92 54.62	20.00 137.90	70.00 482.63	6.57
7	0.76 5.23	0.01 0.05	3.53 24.31	0.76 5.27	4.29 29.58	20.00 137.90	70.00 482.63	>10
8	0.79 5.43	0.00 0.02	3.52 24.29	0.79 5.45	4.31 29.73	20.00 137.90	70.00 482.63	>10
9	0.79 5.42	0.00 0.03	3.52 24.30	0.79 5.45	4.31 29.75	20.00 137.90	70.00 482.63	>10
10	1.94 13.40	0.78 5.39	3.82 26.31	2.73 18.79	6.54 45.10	20.00 137.90	70.00 482.63	8.17
11	1.33 9.20	0.62 4.25	1.71 11.76	1.95 13.44	3.66 25.20	20.00 137.90	70.00 482.63	>10
12	0.44 3.02	0.88 6.08	0.84 5.82	1.32 9.10	2.16 14.91	20.00 137.90	70.00 482.63	>10
13	1.95 13.43	1.50 10.31	6.22 42.91	3.44 23.75	9.67 66.66	20.00 137.90	70.00 482.63	5.21

14	1.82	0.95	4.89	2.77	7.66	20.00	70.00	6.83
	12.52	6.57	33.74	19.09	52.83	137.90	482.63	
15	0.38	0.14	0.77	0.52	1.29	20.00	70.00	>10
	2.64	0.95	5.33	3.59	8.92	137.90	482.63	
16	0.45	0.09	1.72	0.54	2.26	20.00	70.00	>10
	3.12	0.59	11.87	3.71	15.58	137.90	482.63	
17	0.58	0.42	1.60	1.00	2.59	20.00	70.00	>10
	4.01	2.87	11.00	6.88	17.89	137.90	482.63	
18	1.01	0.95	1.75	1.96	3.71	20.00	70.00	>10
	6.93	6.58	12.06	13.51	25.58	137.90	482.63	
19	1.09	0.52	2.09	1.61	3.70	20.00	70.00	>10
	7.49	3.58	14.42	11.07	25.49	137.90	482.63	
20	0.81	0.52	1.97	1.32	3.29	20.00	70.00	>10
	5.57	3.56	13.58	9.13	22.70	137.90	482.63	
21	0.98	0.57	0.94	1.55	2.49	20.00	70.00	>10
	6.73	3.95	6.50	10.68	17.19	137.90	482.63	
22	0.39	0.42	0.21	0.81	1.02	20.00	70.00	>10
	2.71	2.88	1.43	5.59	7.02	137.90	482.63	

Min MS: 2.678, Location: 5, Combination: Pm+Pb+Q

2.12.2.1.2 Hypothetical Accident Conditions of Transport, Summary of Damages (Stresses) – Model AOS-025A

Table 2-103 and Table 2-104 present Model AOS-025A transport package Load Cases and Load Combinations, respectively, under Hypothetical Accident conditions of transport:

- Table 2-105 through Table 2-117 present Model AOS-025A transport package output data, for the Load Cases listed in Table 2-103. Comparisons with allowable stress limits are included for Load Cases 111 and 112.
- Table 2-118 through Table 2-132 present Model AOS-025A transport package output data, for the Load Combinations listed in Table 2-103.

Table 2-103. Load Cases Associated with Allowable Stresses under Hypothetical Accident Conditions of Transport – Model AOS-025A

Load Case	Description	Data
111	Fire at 30 Minutes, 1,475°F Ambient, Maximum Decay Heat	Table 2-105
112	Post Fire at 60 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation	Table 2-106
	Post Fire at 90 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation	Table 2-107
	Post Fire at 120 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation	Table 2-108
	Post Fire at 150 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation	Table 2-109
	Post Fire at 180 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation	Table 2-110
301	30-ft. Head-On Drop	Table 2-111
302	30-ft. Side Drop + Slap-Down	Table 2-112
303	30-ft. Cg/Corner Drop	Table 2-113
304	30-ft. Head-On Drop at -40°F, Low Temperature	Table 2-114
305	30-ft. Side Drop + Slap-Down at -40°F, Low Temperature	Table 2-115
306	30-ft. Cg/Corner Drop at -40°F, Low Temperature	Table 2-116
311	4-ft. Drop onto Rod	Table 2-117

Table 2-104. Load Combinations Associated with Allowable Stresses under Hypothetical Accident Conditions of Transport – Model AOS-025A

Load Combination	Load Cases ^a	Description	Data
301	301, 102, 201, 211	Head-On Drop Orientation	Table 2-118
302	302, 102, 201, 211	Side Drop Orientation	Table 2-119
303	303, 102, 201, 211	Cg/Corner Drop Orientation	Table 2-120
304	304, 105, 202, 21	Head-On Drop Orientation at -40°F, Cold Environment	Table 2-121
305	305, 105, 202, 211	Side Drop Orientation at -40°F, Cold Environment	Table 2-122
306	306, 105, 202, 211	Cg/Corner Drop Orientation at -40°F, Cold Environment	Table 2-123
310	204, 101, 211	Additional Increased External Pressure (290 psi)	Table 2-124
311	311, 101, 201, 211	4-ft. Drop onto Rod	Table 2-125
312	311, 104, 201, 211	4-ft. Drop onto Rod at -40°F, Cold Environment	Table 2-126
350	111, 201, 211	Fire at 30 Minutes	Table 2-127
351	112, 201, 211	Post Fire at 60 Minutes	Table 2-128
352		Post Fire at 90 Minutes	Table 2-129
353		Post Fire at 120 Minutes	Table 2-130
354		Post Fire at 150 Minutes	Table 2-131
355		Post Fire at 180 Minutes	Table 2-132

a. Some Normal conditions of transport Load Cases are included in Hypothetical Accident conditions of transport Load Combinations, to meet regulatory requirements.

Table 2-105. Load Case 111, Fire at 30 Minutes, 1,475°F Ambient, Maximum Decay Heat, Hypothetical Accident Conditions of Transport – Model AOS-025A

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	5.9151E+01	-5.3232E+01	1.3313E+01	1.1238E+02	1.5376E+02	
	4.0783E-01	-3.6702E-01	9.1791E-02	7.7485E-01	1.0602E+00	
2	1.0643E+02	-5.5001E+01	1.2785E+02	1.6143E+02	6.9698E+01	
	7.3381E-01	-3.7922E-01	8.8146E-01	1.1130E+00	4.8055E-01	
3	6.2110E+01	-2.6745E+01	1.9476E+02	8.8855E+01	7.7603E+01	
	4.2823E-01	-1.8440E-01	1.3428E+00	6.1264E-01	5.3505E-01	
4	4.3362E+02	-5.5844E+02	-3.8678E+02	9.9206E+02	1.9172E+03	
	2.9897E+00	-3.8503E+00	-2.6668E+00	6.8400E+00	1.3219E+01	
5	3.8148E+02	-3.7522E+02	-6.8435E+02	7.5670E+02	1.0010E+03	
	2.6302E+00	-2.5870E+00	-4.7184E+00	5.2173E+00	6.9018E+00	
6	4.0684E+01	-5.3326E+02	-1.4645E+03	5.7395E+02	9.0795E+02	
	2.8051E-01	-3.6767E+00	-1.0097E+01	3.9572E+00	6.2601E+00	
7	-9.7383E+01	-3.1357E+02	-2.4083E+03	2.1619E+02	1.1302E+02	
	-6.7143E-01	-2.1620E+00	-1.6605E+01	1.4906E+00	7.7921E-01	
8	-9.9918E+01	-3.1977E+02	-2.4959E+03	2.1986E+02	1.0276E+02	
	-6.8891E-01	-2.2048E+00	-1.7208E+01	1.5159E+00	7.0848E-01	
9	-9.5765E+01	-3.2978E+02	-2.5572E+03	2.3401E+02	1.2969E+02	
	-6.6028E-01	-2.2737E+00	-1.7631E+01	1.6135E+00	8.9416E-01	
10	1.2245E+01	-7.1869E+02	-1.4017E+03	7.3093E+02	2.2478E+02	
	8.4428E-02	-4.9552E+00	-9.6641E+00	5.0396E+00	1.5498E+00	
11	-8.2223E+01	-6.3254E+02	-6.1550E+02	5.5032E+02	8.8898E+02	
	-5.6691E-01	-4.3612E+00	-4.2437E+00	3.7943E+00	6.1293E+00	
12	4.9503E+01	-6.1932E+02	-5.8968E+02	6.6882E+02	9.5462E+02	
	3.4131E-01	-4.2701E+00	-4.0657E+00	4.6114E+00	6.5819E+00	
13	8.9949E+01	-2.4788E+02	-8.5093E+01	3.3783E+02	2.4896E+02	
	6.2018E-01	-1.7091E+00	-5.8670E-01	2.3292E+00	1.7165E+00	
14	8.0233E+01	-3.2160E+02	-8.3643E+01	4.0183E+02	6.8238E+02	
	5.5318E-01	-2.2173E+00	-5.7670E-01	2.7705E+00	4.7048E+00	
15	9.4434E+02	-8.9523E+02	-1.2427E+02	1.8396E+03	3.0698E+03	
	6.5110E+00	-6.1724E+00	-8.5678E-01	1.2683E+01	2.1165E+01	

16	3.3951E+02	-6.9570E+02	-1.8148E+02	1.0352E+03	1.6900E+03
	2.3408E+00	-4.7967E+00	-1.2512E+00	7.1375E+00	1.1652E+01
17	1.4898E+02	-4.7259E+02	6.9752E+01	6.2157E+02	1.0754E+03
	1.0272E+00	-3.2584E+00	4.8092E-01	4.2856E+00	7.4146E+00
18	4.4400E+01	-2.4591E+02	1.3609E+02	2.9031E+02	4.8639E+02
	3.0613E-01	-1.6955E+00	9.3831E-01	2.0016E+00	3.3535E+00
19	1.3831E+02	-3.7598E+02	1.2475E+01	5.1428E+02	8.3821E+02
	9.5360E-01	-2.5923E+00	8.6011E-02	3.5459E+00	5.7793E+00
20	2.0049E+02	-5.0043E+02	-2.9970E+01	7.0092E+02	1.3136E+03
	1.3823E+00	-3.4504E+00	-2.0663E-01	4.8327E+00	9.0567E+00
21	1.8646E+01	-4.1953E+01	-4.0036E+01	6.0598E+01	6.4045E+01
	1.2856E-01	-2.8925E-01	-2.7604E-01	4.1781E-01	4.4158E-01
22	4.6123E+00	-4.1220E+01	-2.0625E+01	4.5833E+01	1.0609E+02
	3.1801E-02	-2.8420E-01	-1.4221E-01	3.1601E-01	7.3148E-01

Allowable Stress for Load Case 111

LOC	Tmax (deg_F)	Tave (deg_F)	Sm (ksi)	Sy (ksi)	Su (ksi)
---	-----	-----	-----	-----	-----
1	254.94	254.69	20.00	23.60	66.30
2	255.08	254.68	20.00	23.60	66.30
3	254.67	254.31	20.00	23.60	66.30
4	255.26	255.23	20.00	23.60	66.30
5	255.67	255.58	20.00	23.60	66.30
6	256.08	255.90	20.00	23.60	66.30
7	257.07	256.75	20.00	23.60	66.30
8	257.05	256.72	20.00	23.60	66.30
9	256.97	256.64	20.00	23.60	66.30
10	256.45	256.10	20.00	23.60	66.30
11	256.50	255.87	20.00	23.60	66.30
12	257.17	256.36	20.00	23.60	66.30
13	255.37	255.21	20.00	23.60	66.30
14	255.12	255.04	20.00	23.60	66.30
15	255.03	254.92	20.00	23.60	66.30
16	254.90	254.85	20.00	23.60	66.30
17	254.95	254.89	20.00	23.60	66.30
18	255.22	255.19	20.00	23.60	66.30
19	255.31	255.27	20.00	23.60	66.30
20	255.97	255.79	20.00	23.60	66.30
21	254.52	254.20	20.00	23.60	66.30
22	254.77	254.65	20.00	23.60	66.30

Table 2-106. Load Case 112, Post Fire at 60 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation, Hypothetical Accident Conditions of Transport – Model AOS-025A

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	1.3943E+01	-3.0431E+01	1.6392E+00	4.4374E+01	6.1122E+01
	9.6135E-02	-2.0981E-01	1.1302E-02	3.0595E-01	4.2142E-01
2	1.6628E+01	-2.6938E+01	-1.3796E+01	4.3566E+01	7.1288E+01
	1.1465E-01	-1.8573E-01	-9.5122E-02	3.0038E-01	4.9151E-01
3	9.3689E+00	-5.0466E+00	1.8256E+01	1.4415E+01	2.2622E+01
	6.4596E-02	-3.4795E-02	1.2587E-01	9.9391E-02	1.5597E-01
4	4.4069E+02	-3.6547E+02	-2.5565E+02	8.0616E+02	1.4932E+03
	3.0384E+00	-2.5198E+00	-1.7626E+00	5.5583E+00	1.0295E+01
5	4.0664E+02	-1.6404E+02	-6.0379E+02	5.7068E+02	4.5801E+02
	2.8037E+00	-1.1310E+00	-4.1630E+00	3.9347E+00	3.1578E+00
6	6.5258E+01	-4.7711E+02	-1.5139E+03	5.4237E+02	8.1254E+02
	4.4993E-01	-3.2896E+00	-1.0438E+01	3.7395E+00	5.6023E+00
7	-8.0879E+01	-3.0737E+02	-2.5665E+03	2.2649E+02	6.0090E+01
	-5.5764E-01	-2.1193E+00	-1.7696E+01	1.5616E+00	4.1431E-01
8	-8.4611E+01	-3.0428E+02	-2.5840E+03	2.1967E+02	3.9199E+01
	-5.8337E-01	-2.0979E+00	-1.7816E+01	1.5146E+00	2.7026E-01
9	-8.1452E+01	-3.0926E+02	-2.6190E+03	2.2781E+02	5.8675E+01
	-5.6159E-01	-2.1323E+00	-1.8058E+01	1.5707E+00	4.0455E-01
10	7.0839E+01	-7.9974E+02	-1.3864E+03	8.7058E+02	2.2569E+02
	4.8842E-01	-5.5140E+00	-9.5589E+00	6.0024E+00	1.5561E+00
11	-9.7611E+01	-7.0238E+02	-6.3264E+02	6.0477E+02	9.7648E+02
	-6.7301E-01	-4.8427E+00	-4.3619E+00	4.1697E+00	6.7326E+00
12	4.4142E+01	-7.1010E+02	-6.7833E+02	7.5424E+02	1.0324E+03
	3.0435E-01	-4.8960E+00	-4.6769E+00	5.2003E+00	7.1180E+00
13	1.6690E+02	-2.3658E+02	-5.7161E+01	4.0348E+02	5.1233E+02
	1.1507E+00	-1.6312E+00	-3.9411E-01	2.7819E+00	3.5324E+00
14	1.1456E+02	-3.1120E+02	-9.9917E+01	4.2576E+02	7.9285E+02
	7.8989E-01	-2.1456E+00	-6.8890E-01	2.9355E+00	5.4665E+00
15	1.0131E+03	-9.4631E+02	-8.9292E+01	1.9594E+03	3.2916E+03
	6.9848E+00	-6.5246E+00	-6.1565E-01	1.3509E+01	2.2695E+01

16	3.5309E+02	-7.0175E+02	-2.2426E+02	1.0548E+03	1.7142E+03
	2.4344E+00	-4.8384E+00	-1.5462E+00	7.2728E+00	1.1819E+01
17	1.5453E+02	-4.7982E+02	3.4095E+01	6.3436E+02	1.0959E+03
	1.0655E+00	-3.3083E+00	2.3508E-01	4.3737E+00	7.5557E+00
18	4.2638E+01	-2.5221E+02	2.3599E+02	2.9485E+02	4.7392E+02
	2.9398E-01	-1.7390E+00	1.6271E+00	2.0329E+00	3.2676E+00
19	1.2757E+02	-4.0644E+02	1.3858E+02	5.3402E+02	8.8967E+02
	8.7957E-01	-2.8023E+00	9.5545E-01	3.6819E+00	6.1341E+00
20	1.3177E+02	-5.1216E+02	-2.1697E+01	6.4393E+02	1.2061E+03
	9.0855E-01	-3.5312E+00	-1.4960E-01	4.4398E+00	8.3160E+00
21	1.3371E+01	-8.5806E+01	-8.5802E+01	9.9177E+01	3.0133E+01
	9.2187E-02	-5.9161E-01	-5.9159E-01	6.8380E-01	2.0776E-01
22	4.6085E+01	-2.7761E+01	4.5958E+01	7.3847E+01	5.0029E+01
	3.1775E-01	-1.9141E-01	3.1687E-01	5.0915E-01	3.4494E-01

Allowable Stress for Load Case 112 (Post Fire at 60 Minutes)

LOC	Tmax (deg_F)	Tave (deg_F)	Sm (ksi)	Sy (ksi)	Su (ksi)
1	272.45	272.11	20.00	23.60	66.30
2	273.64	273.33	20.00	23.60	66.30
3	274.61	274.55	20.00	23.60	66.30
4	272.15	272.10	20.00	23.60	66.30
5	273.06	272.89	20.00	23.60	66.30
6	273.33	273.24	20.00	23.60	66.30
7	274.22	274.08	20.00	23.60	66.30
8	274.58	274.43	20.00	23.60	66.30
9	274.90	274.76	20.00	23.60	66.30
10	275.60	275.33	20.00	23.60	66.30
11	275.89	275.72	20.00	23.60	66.30
12	276.48	276.24	20.00	23.60	66.30
13	275.60	275.59	20.00	23.60	66.30
14	275.59	275.59	20.00	23.60	66.30
15	270.99	270.97	20.00	23.60	66.30
16	271.35	271.29	20.00	23.60	66.30
17	271.39	271.36	20.00	23.60	66.30
18	271.73	271.68	20.00	23.60	66.30
19	272.02	271.91	20.00	23.60	66.30
20	273.35	273.16	20.00	23.60	66.30
21	277.94	277.73	20.00	23.60	66.30
22	270.88	270.86	20.00	23.60	66.30

Table 2-107. Load Case 112, Post Fire at 90 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation, Hypothetical Accident Conditions of Transport – Model AOS-025A

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	1.2198E+01	-2.7116E+01	-2.3369E-01	3.9314E+01	5.9159E+01
	8.4102E-02	-1.8696E-01	-1.6113E-03	2.7106E-01	4.0789E-01
2	1.6890E+01	-2.9454E+01	-1.1593E+01	4.6344E+01	9.0990E+01
	1.1645E-01	-2.0308E-01	-7.9928E-02	3.1953E-01	6.2735E-01
3	7.7301E+00	-1.3987E+01	6.2882E+00	2.1717E+01	2.7365E+01
	5.3297E-02	-9.6434E-02	4.3356E-02	1.4973E-01	1.8867E-01
4	4.7105E+02	-3.7259E+02	-2.8236E+02	8.4364E+02	1.5516E+03
	3.2478E+00	-2.5689E+00	-1.9468E+00	5.8167E+00	1.0698E+01
5	4.4243E+02	-1.6646E+02	-5.8252E+02	6.0890E+02	4.6484E+02
	3.0505E+00	-1.1477E+00	-4.0163E+00	4.1982E+00	3.2050E+00
6	7.3487E+01	-4.9179E+02	-1.5134E+03	5.6527E+02	8.4899E+02
	5.0668E-01	-3.3908E+00	-1.0434E+01	3.8974E+00	5.8536E+00
7	-8.2883E+01	-3.1146E+02	-2.5960E+03	2.2858E+02	6.1708E+01
	-5.7146E-01	-2.1475E+00	-1.7899E+01	1.5760E+00	4.2546E-01
8	-8.6761E+01	-3.0681E+02	-2.6015E+03	2.2005E+02	3.9334E+01
	-5.9820E-01	-2.1154E+00	-1.7937E+01	1.5172E+00	2.7120E-01
9	-8.3640E+01	-3.1044E+02	-2.6247E+03	2.2680E+02	5.8013E+01
	-5.7668E-01	-2.1404E+00	-1.8097E+01	1.5638E+00	3.9999E-01
10	6.7941E+01	-7.9554E+02	-1.3894E+03	8.6348E+02	2.3917E+02
	4.6844E-01	-5.4851E+00	-9.5799E+00	5.9535E+00	1.6490E+00
11	-1.0733E+02	-7.1296E+02	-6.5239E+02	6.0563E+02	9.3260E+02
	-7.4002E-01	-4.9157E+00	-4.4981E+00	4.1757E+00	6.4301E+00
12	3.5338E+01	-7.2035E+02	-6.9753E+02	7.5569E+02	9.8598E+02
	2.4365E-01	-4.9666E+00	-4.8093E+00	5.2103E+00	6.7981E+00
13	1.4662E+02	-2.7085E+02	-7.1948E+01	4.1747E+02	5.0655E+02
	1.0109E+00	-1.8674E+00	-4.9606E-01	2.8784E+00	3.4926E+00
14	9.0882E+01	-3.3493E+02	-8.8638E+01	4.2581E+02	7.9819E+02
	6.2661E-01	-2.3093E+00	-6.1114E-01	2.9359E+00	5.5033E+00
15	1.0168E+03	-9.5738E+02	-9.7935E+01	1.9742E+03	3.3158E+03
	7.0105E+00	-6.6009E+00	-6.7524E-01	1.3611E+01	2.2862E+01

16	3.5539E+02	-7.0980E+02	-2.1768E+02	1.0652E+03	1.7314E+03
	2.4504E+00	-4.8939E+00	-1.5009E+00	7.3443E+00	1.1938E+01
17	1.5546E+02	-4.8407E+02	4.3547E+01	6.3954E+02	1.1048E+03
	1.0719E+00	-3.3376E+00	3.0024E-01	4.4095E+00	7.6171E+00
18	4.3914E+01	-2.5385E+02	2.0498E+02	2.9776E+02	4.8800E+02
	3.0278E-01	-1.7502E+00	1.4133E+00	2.0530E+00	3.3647E+00
19	1.3271E+02	-4.0084E+02	1.0272E+02	5.3355E+02	8.8687E+02
	9.1500E-01	-2.7637E+00	7.0826E-01	3.6787E+00	6.1148E+00
20	1.5015E+02	-5.0844E+02	-1.4117E+01	6.5859E+02	1.2321E+03
	1.0352E+00	-3.5056E+00	-9.7333E-02	4.5408E+00	8.4949E+00
21	1.4182E+01	-1.5368E+01	-1.5540E+01	2.9550E+01	4.4945E+00
	9.7782E-02	-1.0596E-01	-1.0715E-01	2.0374E-01	3.0988E-02
22	2.6332E+01	-3.0226E+01	2.3925E+01	5.6557E+01	8.2641E+01
	1.8155E-01	-2.0840E-01	1.6495E-01	3.8995E-01	5.6979E-01

Allowable Stress for Load Case 112 (Post Fire at 90 Minutes)

LOC	Tmax (deg_F)	Tave (deg_F)	Sm (ksi)	Sy (ksi)	Su (ksi)
1	273.67	273.44	20.00	23.60	66.30
2	274.04	273.74	20.00	23.60	66.30
3	274.06	273.89	20.00	23.60	66.30
4	273.73	273.70	20.00	23.60	66.30
5	274.35	274.24	20.00	23.60	66.30
6	274.56	274.48	20.00	23.60	66.30
7	274.92	274.78	20.00	23.60	66.30
8	274.99	274.85	20.00	23.60	66.30
9	275.04	274.90	20.00	23.60	66.30
10	275.32	275.11	20.00	23.60	66.30
11	275.55	275.35	20.00	23.60	66.30
12	276.10	275.86	20.00	23.60	66.30
13	275.08	275.03	20.00	23.60	66.30
14	274.92	274.89	20.00	23.60	66.30
15	273.21	273.20	20.00	23.60	66.30
16	273.46	273.41	20.00	23.60	66.30
17	273.50	273.47	20.00	23.60	66.30
18	273.75	273.71	20.00	23.60	66.30
19	273.99	273.89	20.00	23.60	66.30
20	275.04	274.90	20.00	23.60	66.30
21	274.79	274.76	20.00	23.60	66.30
22	273.11	273.08	20.00	23.60	66.30

Table 2-108. Load Case 112, Post Fire at 120 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation, Hypothetical Accident Conditions of Transport – Model AOS-025A

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	1.1927E+01	-2.6408E+01	-6.2339E-01	3.8335E+01	5.9171E+01	
	8.2233E-02	-1.8208E-01	-4.2981E-03	2.6431E-01	4.0797E-01	
2	1.7787E+01	-3.1310E+01	-1.1170E+01	4.9097E+01	9.9401E+01	
	1.2264E-01	-2.1587E-01	-7.7014E-02	3.3851E-01	6.8535E-01	
3	1.0448E+01	-1.9702E+01	1.7856E+00	3.0150E+01	4.3323E+01	
	7.2040E-02	-1.3584E-01	1.2312E-02	2.0788E-01	2.9870E-01	
4	4.7894E+02	-3.7162E+02	-2.8894E+02	8.5056E+02	1.5602E+03	
	3.3021E+00	-2.5623E+00	-1.9921E+00	5.8644E+00	1.0757E+01	
5	4.5334E+02	-1.6530E+02	-5.7514E+02	6.1863E+02	4.5943E+02	
	3.1257E+00	-1.1397E+00	-3.9655E+00	4.2653E+00	3.1677E+00	
6	7.6121E+01	-4.9469E+02	-1.5117E+03	5.7081E+02	8.5689E+02	
	5.2484E-01	-3.4108E+00	-1.0423E+01	3.9356E+00	5.9080E+00	
7	-8.3001E+01	-3.1251E+02	-2.6045E+03	2.2951E+02	6.2268E+01	
	-5.7227E-01	-2.1547E+00	-1.7958E+01	1.5824E+00	4.2932E-01	
8	-8.6920E+01	-3.0736E+02	-2.6061E+03	2.2044E+02	3.9453E+01	
	-5.9929E-01	-2.1192E+00	-1.7968E+01	1.5199E+00	2.7202E-01	
9	-8.3802E+01	-3.1054E+02	-2.6251E+03	2.2674E+02	5.7918E+01	
	-5.7779E-01	-2.1411E+00	-1.8099E+01	1.5633E+00	3.9933E-01	
10	6.7054E+01	-7.9189E+02	-1.3904E+03	8.5895E+02	2.4438E+02	
	4.6232E-01	-5.4599E+00	-9.5864E+00	5.9222E+00	1.6850E+00	
11	-1.1061E+02	-7.1745E+02	-6.6091E+02	6.0684E+02	9.1042E+02	
	-7.6262E-01	-4.9467E+00	-4.5568E+00	4.1840E+00	6.2771E+00	
12	3.1641E+01	-7.2397E+02	-7.0523E+02	7.5561E+02	9.6294E+02	
	2.1816E-01	-4.9916E+00	-4.8624E+00	5.2097E+00	6.6393E+00	
13	1.3584E+02	-2.8562E+02	-7.7972E+01	4.2146E+02	4.9783E+02	
	9.3658E-01	-1.9693E+00	-5.3759E-01	2.9059E+00	3.4324E+00	
14	7.8310E+01	-3.4319E+02	-8.1209E+01	4.2150E+02	7.9167E+02	
	5.3993E-01	-2.3662E+00	-5.5992E-01	2.9061E+00	5.4584E+00	
15	1.0179E+03	-9.6042E+02	-1.0024E+02	1.9784E+03	3.3227E+03	
	7.0185E+00	-6.6219E+00	-6.9114E-01	1.3640E+01	2.2909E+01	

16	3.5603E+02	-7.1199E+02	-2.1592E+02	1.0680E+03	1.7361E+03
	2.4547E+00	-4.9090E+00	-1.4887E+00	7.3637E+00	1.1970E+01
17	1.5572E+02	-4.8522E+02	4.6108E+01	6.4093E+02	1.1071E+03
	1.0736E+00	-3.3454E+00	3.1791E-01	4.4191E+00	7.6335E+00
18	4.4292E+01	-2.5429E+02	1.9642E+02	2.9858E+02	4.9178E+02
	3.0538E-01	-1.7533E+00	1.3543E+00	2.0587E+00	3.3907E+00
19	1.3411E+02	-3.9925E+02	9.2861E+01	5.3337E+02	8.8598E+02
	9.2468E-01	-2.7528E+00	6.4025E-01	3.6774E+00	6.1086E+00
20	1.5523E+02	-5.0742E+02	-1.2026E+01	6.6265E+02	1.2390E+03
	1.0703E+00	-3.4985E+00	-8.2917E-02	4.5688E+00	8.5429E+00
21	1.9407E+01	1.3705E+00	5.7524E+00	1.8037E+01	5.2293E+00
	1.3381E-01	9.4492E-03	3.9662E-02	1.2436E-01	3.6055E-02
22	2.2085E+01	-3.1537E+01	1.8417E+01	5.3622E+01	9.0956E+01
	1.5227E-01	-2.1744E-01	1.2698E-01	3.6971E-01	6.2712E-01

Allowable Stress for Load Case 112 (Post Fire at 120 Minutes)

LOC	Tmax (deg_F)	Tave (deg_F)	Sm (ksi)	Sy (ksi)	Su (ksi)
---	-----	-----	-----	-----	-----
1	274.02	273.84	20.00	23.60	66.30
2	274.16	273.86	20.00	23.60	66.30
3	273.87	273.63	20.00	23.60	66.30
4	274.19	274.16	20.00	23.60	66.30
5	274.72	274.63	20.00	23.60	66.30
6	274.92	274.84	20.00	23.60	66.30
7	275.12	274.98	20.00	23.60	66.30
8	275.10	274.96	20.00	23.60	66.30
9	275.05	274.92	20.00	23.60	66.30
10	275.13	274.96	20.00	23.60	66.30
11	275.33	275.11	20.00	23.60	66.30
12	275.86	275.62	20.00	23.60	66.30
13	274.80	274.70	20.00	23.60	66.30
14	274.55	274.49	20.00	23.60	66.30
15	273.83	273.82	20.00	23.60	66.30
16	274.06	274.02	20.00	23.60	66.30
17	274.10	274.07	20.00	23.60	66.30
18	274.33	274.29	20.00	23.60	66.30
19	274.54	274.46	20.00	23.60	66.30
20	275.52	275.39	20.00	23.60	66.30
21	273.68	273.67	20.00	23.60	66.30
22	273.74	273.71	20.00	23.60	66.30

Table 2-109. Load Case 112, Post Fire at 150 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation, Hypothetical Accident Conditions of Transport – Model AOS-025A

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	1.1841E+01	-2.6178E+01	-7.5417E-01	3.8020E+01	5.9152E+01	
	8.1642E-02	-1.8049E-01	-5.1998E-03	2.6214E-01	4.0784E-01	
2	1.8110E+01	-3.1921E+01	-1.1059E+01	5.0032E+01	1.0191E+02	
	1.2487E-01	-2.2009E-01	-7.6252E-02	3.4496E-01	7.0265E-01	
3	1.1325E+01	-2.1444E+01	4.7776E-01	3.2769E+01	4.7938E+01	
	7.8083E-02	-1.4785E-01	3.2940E-03	2.2593E-01	3.3052E-01	
4	4.8105E+02	-3.7091E+02	-2.9082E+02	8.5196E+02	1.5614E+03	
	3.3167E+00	-2.5573E+00	-2.0051E+00	5.8741E+00	1.0765E+01	
5	4.5653E+02	-1.6472E+02	-5.7252E+02	6.2125E+02	4.5693E+02	
	3.1477E+00	-1.1357E+00	-3.9474E+00	4.2834E+00	3.1504E+00	
6	7.6912E+01	-4.9525E+02	-1.5104E+03	5.7216E+02	8.5869E+02	
	5.3029E-01	-3.4146E+00	-1.0414E+01	3.9449E+00	5.9205E+00	
7	-8.2962E+01	-3.1267E+02	-2.6059E+03	2.2971E+02	6.2431E+01	
	-5.7200E-01	-2.1558E+00	-1.7967E+01	1.5838E+00	4.3045E-01	
8	-8.6892E+01	-3.0737E+02	-2.6061E+03	2.2048E+02	3.9490E+01	
	-5.9910E-01	-2.1193E+00	-1.7969E+01	1.5202E+00	2.7227E-01	
9	-8.3776E+01	-3.1041E+02	-2.6238E+03	2.2664E+02	5.7879E+01	
	-5.7762E-01	-2.1402E+00	-1.8091E+01	1.5626E+00	3.9906E-01	
10	6.6781E+01	-7.9034E+02	-1.3899E+03	8.5712E+02	2.4602E+02	
	4.6044E-01	-5.4492E+00	-9.5834E+00	5.9097E+00	1.6963E+00	
11	-1.1149E+02	-7.1868E+02	-6.6331E+02	6.0719E+02	9.0284E+02	
	-7.6868E-01	-4.9551E+00	-4.5734E+00	4.1864E+00	6.2248E+00	
12	3.0420E+01	-7.2483E+02	-7.0737E+02	7.5525E+02	9.5497E+02	
	2.0974E-01	-4.9975E+00	-4.8771E+00	5.2072E+00	6.5843E+00	
13	1.3235E+02	-2.9025E+02	-7.9868E+01	4.2260E+02	4.9465E+02	
	9.1250E-01	-2.0012E+00	-5.5067E-01	2.9137E+00	3.4105E+00	
14	7.4194E+01	-3.4558E+02	-7.8777E+01	4.1978E+02	7.8883E+02	
	5.1155E-01	-2.3827E+00	-5.4315E-01	2.8943E+00	5.4388E+00	
15	1.0181E+03	-9.6122E+02	-1.0095E+02	1.9793E+03	3.3243E+03	
	7.0197E+00	-6.6274E+00	-6.9604E-01	1.3647E+01	2.2920E+01	

16	3.5616E+02	-7.1254E+02	-2.1532E+02	1.0687E+03	1.7372E+03
	2.4556E+00	-4.9128E+00	-1.4846E+00	7.3684E+00	1.1978E+01
17	1.5577E+02	-4.8548E+02	4.6908E+01	6.4125E+02	1.1077E+03
	1.0740E+00	-3.3473E+00	3.2342E-01	4.4213E+00	7.6372E+00
18	4.4405E+01	-2.5439E+02	1.9371E+02	2.9879E+02	4.9287E+02
	3.0616E-01	-1.7539E+00	1.3356E+00	2.0601E+00	3.3982E+00
19	1.3453E+02	-3.9868E+02	8.9757E+01	5.3321E+02	8.8553E+02
	9.2754E-01	-2.7488E+00	6.1886E-01	3.6764E+00	6.1055E+00
20	1.5680E+02	-5.0700E+02	-1.1362E+01	6.6380E+02	1.2410E+03
	1.0811E+00	-3.4957E+00	-7.8341E-02	4.5768E+00	8.5562E+00
21	2.3394E+01	3.2432E+00	1.1491E+01	2.0151E+01	8.8805E+00
	1.6129E-01	2.2361E-02	7.9225E-02	1.3893E-01	6.1229E-02
22	2.0843E+01	-3.2064E+01	1.6666E+01	5.2906E+01	9.3599E+01
	1.4371E-01	-2.2107E-01	1.1491E-01	3.6478E-01	6.4534E-01

Allowable Stress for Load Case 112 (Post Fire at 150 Minutes)

LOC	Tmax (deg_F)	Tave (deg_F)	Sm (ksi)	Sy (ksi)	Su (ksi)
1	274.10	273.93	20.00	23.60	66.30
2	274.16	273.86	20.00	23.60	66.30
3	273.78	273.52	20.00	23.60	66.30
4	274.30	274.28	20.00	23.60	66.30
5	274.81	274.72	20.00	23.60	66.30
6	275.00	274.92	20.00	23.60	66.30
7	275.15	275.01	20.00	23.60	66.30
8	275.10	274.96	20.00	23.60	66.30
9	275.03	274.89	20.00	23.60	66.30
10	275.04	274.87	20.00	23.60	66.30
11	275.23	275.00	20.00	23.60	66.30
12	275.75	275.51	20.00	23.60	66.30
13	274.68	274.57	20.00	23.60	66.30
14	274.39	274.33	20.00	23.60	66.30
15	274.00	273.99	20.00	23.60	66.30
16	274.22	274.18	20.00	23.60	66.30
17	274.26	274.23	20.00	23.60	66.30
18	274.48	274.44	20.00	23.60	66.30
19	274.69	274.60	20.00	23.60	66.30
20	275.64	275.52	20.00	23.60	66.30
21	273.32	273.30	20.00	23.60	66.30
22	273.90	273.88	20.00	23.60	66.30

Table 2-110. Load Case 112, Post Fire at 180 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation, Hypothetical Accident Conditions of Transport – Model AOS-025A

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	1.1813E+01	-2.6103E+01	-7.9298E-01	3.7917E+01	5.9137E+01	
	8.1450E-02	-1.7998E-01	-5.4674E-03	2.6143E-01	4.0773E-01	
2	1.8216E+01	-3.2117E+01	-1.1023E+01	5.0333E+01	1.0269E+02	
	1.2560E-01	-2.2144E-01	-7.6000E-02	3.4704E-01	7.0801E-01	
3	1.1601E+01	-2.1991E+01	6.7917E-02	3.3592E+01	4.9384E+01	
	7.9986E-02	-1.5162E-01	4.6827E-04	2.3161E-01	3.4049E-01	
4	4.8149E+02	-3.7061E+02	-2.9128E+02	8.5209E+02	1.5613E+03	
	3.3198E+00	-2.5552E+00	-2.0083E+00	5.8750E+00	1.0765E+01	
5	4.5727E+02	-1.6452E+02	-5.7148E+02	6.2179E+02	4.5616E+02	
	3.1527E+00	-1.1344E+00	-3.9402E+00	4.2871E+00	3.1451E+00	
6	7.7103E+01	-4.9522E+02	-1.5093E+03	5.7232E+02	8.5890E+02	
	5.3160E-01	-3.4144E+00	-1.0407E+01	3.9460E+00	5.9219E+00	
7	-8.2924E+01	-3.1258E+02	-2.6050E+03	2.2966E+02	6.2472E+01	
	-5.7174E-01	-2.1552E+00	-1.7961E+01	1.5834E+00	4.3073E-01	
8	-8.6856E+01	-3.0724E+02	-2.6049E+03	2.2038E+02	3.9503E+01	
	-5.9885E-01	-2.1183E+00	-1.7960E+01	1.5195E+00	2.7236E-01	
9	-8.3742E+01	-3.1023E+02	-2.6222E+03	2.2649E+02	5.7858E+01	
	-5.7738E-01	-2.1389E+00	-1.8079E+01	1.5616E+00	3.9892E-01	
10	6.6650E+01	-7.8949E+02	-1.3891E+03	8.5614E+02	2.4648E+02	
	4.5953E-01	-5.4434E+00	-9.5777E+00	5.9029E+00	1.6994E+00	
11	-1.1171E+02	-7.1877E+02	-6.6376E+02	6.0706E+02	9.0002E+02	
	-7.7021E-01	-4.9557E+00	-4.5765E+00	4.1855E+00	6.2054E+00	
12	3.0018E+01	-7.2480E+02	-7.0776E+02	7.5482E+02	9.5201E+02	
	2.0697E-01	-4.9973E+00	-4.8798E+00	5.2043E+00	6.5639E+00	
13	1.3117E+02	-2.9163E+02	-8.0436E+01	4.2280E+02	4.9337E+02	
	9.0435E-01	-2.0107E+00	-5.5459E-01	2.9151E+00	3.4017E+00	
14	7.2847E+01	-3.4623E+02	-7.7975E+01	4.1908E+02	7.8761E+02	
	5.0226E-01	-2.3872E+00	-5.3762E-01	2.8894E+00	5.4304E+00	
15	1.0180E+03	-9.6132E+02	-1.0116E+02	1.9793E+03	3.3242E+03	
	7.0190E+00	-6.6281E+00	-6.9745E-01	1.3647E+01	2.2920E+01	

16	3.5614E+02	-7.1260E+02	-2.1510E+02	1.0687E+03	1.7373E+03
	2.4555E+00	-4.9132E+00	-1.4830E+00	7.3687E+00	1.1978E+01
17	1.5576E+02	-4.8549E+02	4.7148E+01	6.4124E+02	1.1077E+03
	1.0739E+00	-3.3473E+00	3.2508E-01	4.4212E+00	7.6371E+00
18	4.4432E+01	-2.5437E+02	1.9286E+02	2.9881E+02	4.9312E+02
	3.0635E-01	-1.7539E+00	1.3297E+00	2.0602E+00	3.3999E+00
19	1.3463E+02	-3.9845E+02	8.8803E+01	5.3308E+02	8.8525E+02
	9.2826E-01	-2.7472E+00	6.1227E-01	3.6754E+00	6.1036E+00
20	1.5725E+02	-5.0680E+02	-1.1152E+01	6.6405E+02	1.2414E+03
	1.0842E+00	-3.4943E+00	-7.6891E-02	4.5784E+00	8.5589E+00
21	2.4750E+01	3.7115E+00	1.3283E+01	2.1038E+01	1.0026E+01
	1.7064E-01	2.5590E-02	9.1583E-02	1.4505E-01	6.9130E-02
22	2.0461E+01	-3.2237E+01	1.6112E+01	5.2698E+01	9.4422E+01
	1.4107E-01	-2.2227E-01	1.1109E-01	3.6334E-01	6.5102E-01

Allowable Stress for Load Case 112 (Post Fire at 180 Minutes)

LOC	Tmax (deg_F)	Tave (deg_F)	Sm (ksi)	Sy (ksi)	Su (ksi)
1	274.10	273.92	20.00	23.60	66.30
2	274.13	273.83	20.00	23.60	66.30
3	273.72	273.46	20.00	23.60	66.30
4	274.31	274.28	20.00	23.60	66.30
5	274.80	274.72	20.00	23.60	66.30
6	275.00	274.92	20.00	23.60	66.30
7	275.13	274.99	20.00	23.60	66.30
8	275.07	274.93	20.00	23.60	66.30
9	274.99	274.85	20.00	23.60	66.30
10	274.98	274.82	20.00	23.60	66.30
11	275.16	274.94	20.00	23.60	66.30
12	275.69	275.44	20.00	23.60	66.30
13	274.61	274.49	20.00	23.60	66.30
14	274.32	274.25	20.00	23.60	66.30
15	274.02	274.01	20.00	23.60	66.30
16	274.24	274.19	20.00	23.60	66.30
17	274.28	274.25	20.00	23.60	66.30
18	274.49	274.45	20.00	23.60	66.30
19	274.70	274.62	20.00	23.60	66.30
20	275.65	275.52	20.00	23.60	66.30
21	273.18	273.15	20.00	23.60	66.30
22	273.93	273.90	20.00	23.60	66.30

**Table 2-111. Load Case 301, 30-ft. Head-On Drop,
Hypothetical Accident Conditions of Transport – Model AOS-025A**

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	-9.6405E+01	-5.9822E+03	-1.1502E+03	5.8858E+03	1.9762E+03
	-6.6469E-01	-4.1246E+01	-7.9301E+00	4.0581E+01	1.3625E+01
2	5.7295E+01	-2.7939E+03	-2.2671E+02	2.8512E+03	1.5399E+02
	3.9503E-01	-1.9263E+01	-1.5631E+00	1.9658E+01	1.0617E+00
3	-8.0867E+00	-1.1189E+03	-9.8104E+01	1.1108E+03	1.4264E+01
	-5.5756E-02	-7.7143E+00	-6.7641E-01	7.6586E+00	9.8344E-02
4	9.7431E+02	-9.6940E+03	-3.1632E+03	1.0668E+04	4.8467E+03
	6.7176E+00	-6.6838E+01	-2.1809E+01	7.3556E+01	3.3417E+01
5	-1.2894E+02	-3.0192E+03	-1.3322E+03	2.8902E+03	3.4497E+03
	-8.8902E-01	-2.0816E+01	-9.1853E+00	1.9927E+01	2.3785E+01
6	-5.1628E+02	-2.4719E+03	-1.1297E+03	1.9557E+03	6.5895E+02
	-3.5597E+00	-1.7043E+01	-7.7888E+00	1.3484E+01	4.5433E+00
7	-2.8366E+01	-1.9230E+03	-2.8820E+02	1.8946E+03	1.7742E+01
	-1.9557E-01	-1.3259E+01	-1.9871E+00	1.3063E+01	1.2233E-01
8	-2.1253E+01	-1.7954E+03	-2.0339E+02	1.7742E+03	1.8592E-03
	-1.4654E-01	-1.2379E+01	-1.4023E+00	1.2233E+01	1.2818E-05
9	-1.0051E+01	-1.3237E+03	-7.7217E+01	1.3136E+03	3.8105E+00
	-6.9300E-02	-9.1264E+00	-5.3239E-01	9.0571E+00	2.6272E-02
10	-3.1964E+02	-1.9806E+03	-4.2686E+02	1.6610E+03	7.5008E+02
	-2.2039E+00	-1.3656E+01	-2.9431E+00	1.1452E+01	5.1716E+00
11	1.8930E+02	-1.0747E+03	-2.1514E+02	1.2640E+03	4.9607E+02
	1.3052E+00	-7.4099E+00	-1.4834E+00	8.7151E+00	3.4203E+00
12	2.4729E+02	-8.0666E+01	1.4462E+02	3.2795E+02	6.3549E+02
	1.7050E+00	-5.5617E-01	9.9712E-01	2.2611E+00	4.3815E+00
13	1.9171E+02	-8.4764E+02	-9.5911E+01	1.0394E+03	4.8531E+02
	1.3218E+00	-5.8443E+00	-6.6129E-01	7.1661E+00	3.3461E+00
14	1.7143E+02	-6.1792E+02	-1.0243E+01	7.8934E+02	3.0263E+02
	1.1819E+00	-4.2604E+00	-7.0624E-02	5.4423E+00	2.0866E+00
15	7.7714E+02	5.3688E+02	7.4522E+02	2.4025E+02	1.2853E+02
	5.3582E+00	3.7017E+00	5.1381E+00	1.6565E+00	8.8615E-01

16	2.2056E+02	-1.5357E+03	-5.3391E+02	1.7563E+03	1.0856E+02
	1.5207E+00	-1.0588E+01	-3.6812E+00	1.2109E+01	7.4851E-01
17	5.4448E+02	-1.8335E+03	-8.7802E+02	2.3779E+03	1.8534E+03
	3.7541E+00	-1.2641E+01	-6.0537E+00	1.6395E+01	1.2779E+01
18	6.0950E+02	-3.1099E+03	-9.1866E+02	3.7194E+03	3.2647E+03
	4.2023E+00	-2.1442E+01	-6.3339E+00	2.5644E+01	2.2509E+01
19	6.2776E+02	-2.8842E+03	-1.1225E+03	3.5120E+03	1.7382E+03
	4.3282E+00	-1.9886E+01	-7.7396E+00	2.4214E+01	1.1985E+01
20	-5.7449E+02	-1.8134E+03	-1.2748E+03	1.2389E+03	1.5966E+03
	-3.9610E+00	-1.2503E+01	-8.7895E+00	8.5419E+00	1.1008E+01
21	1.2323E+03	1.2135E+02	1.2415E+02	1.1110E+03	3.9580E+02
	8.4964E+00	8.3667E-01	8.5595E-01	7.6598E+00	2.7290E+00
22	1.1247E+03	2.9782E+02	1.1193E+03	8.2689E+02	4.3606E+02
	7.7546E+00	2.0534E+00	7.7171E+00	5.7012E+00	3.0065E+00

**Table 2-112. Load Case 302, 30-ft. Side Drop + Slap-Down,
Hypothetical Accident Conditions of Transport – Model AOS-025A**

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	2.1488E+02	-1.3866E+02	-4.8941E+02	3.8901E+03	8.8439E+02	
	1.4816E+00	-9.5603E-01	-3.3743E+00	2.6821E+01	6.0976E+00	
2	3.3241E+02	-3.7804E+01	-2.4987E+02	3.2923E+03	3.5751E+02	
	2.2919E+00	-2.6065E-01	-1.7228E+00	2.2700E+01	2.4650E+00	
3	2.1237E+02	-1.3471E+02	-4.8535E+02	3.8890E+03	8.8998E+02	
	1.4642E+00	-9.2876E-01	-3.3464E+00	2.6814E+01	6.1362E+00	
4	7.7792E+02	-7.5764E+01	-9.9177E+02	3.8507E+03	4.5050E+02	
	5.3635E+00	-5.2238E-01	-6.8380E+00	2.6549E+01	3.1061E+00	
5	7.6262E+02	-2.9462E+01	-1.3799E+03	4.0958E+03	8.5987E+01	
	5.2581E+00	-2.0313E-01	-9.5138E+00	2.8240E+01	5.9286E-01	
6	3.7337E+02	-1.2243E+02	-1.7502E+03	3.9673E+03	2.1820E+02	
	2.5743E+00	-8.4415E-01	-1.2068E+01	2.7354E+01	1.5044E+00	
7	1.1060E+03	6.0569E+02	1.5356E+01	4.0773E+03	2.2160E+02	
	7.6254E+00	4.1761E+00	1.0587E-01	2.8112E+01	1.5278E+00	
8	1.0822E+03	6.1450E+02	2.3652E+01	4.2542E+03	2.1149E+02	
	7.4617E+00	4.2368E+00	1.6307E-01	2.9332E+01	1.4581E+00	
9	1.1145E+03	5.9637E+02	1.8014E+01	4.0693E+03	2.2416E+02	
	7.6839E+00	4.1118E+00	1.2421E-01	2.8057E+01	1.5455E+00	
10	7.1892E+02	1.7082E+02	-1.0134E+03	3.6008E+03	3.5973E+02	
	4.9568E+00	1.1778E+00	-6.9874E+00	2.4827E+01	2.4802E+00	
11	1.5029E+02	-2.3134E+02	-1.9054E+03	3.6146E+03	1.5697E+03	
	1.0362E+00	-1.5951E+00	-1.3138E+01	2.4922E+01	1.0823E+01	
12	-4.5517E+01	-5.4311E+02	-2.4221E+03	2.5238E+03	2.9713E+02	
	-3.1383E-01	-3.7446E+00	-1.6700E+01	1.7401E+01	2.0487E+00	
13	7.5383E+02	-2.9452E+01	-1.3033E+03	3.9188E+03	1.8193E+02	
	5.1975E+00	-2.0306E-01	-8.9858E+00	2.7019E+01	1.2544E+00	
14	8.5625E+02	-5.3955E+01	-1.1513E+03	4.0280E+03	2.8821E+02	
	5.9036E+00	-3.7201E-01	-7.9380E+00	2.7772E+01	1.9871E+00	
15	-8.7534E+01	-1.4126E+02	-1.5001E+03	1.4369E+03	1.0772E+01	
	-6.0352E-01	-9.7399E-01	-1.0343E+01	9.9074E+00	7.4273E-02	

16	2.4763E+02	-6.0236E+01	-1.3561E+03	2.6353E+03	1.1601E+02
	1.7073E+00	-4.1531E-01	-9.3499E+00	1.8170E+01	7.9987E-01
17	1.6620E+02	-1.0344E+02	-1.4741E+03	2.9163E+03	1.5442E+02
	1.1459E+00	-7.1319E-01	-1.0163E+01	2.0107E+01	1.0647E+00
18	5.5446E+02	-1.5327E+02	-1.3155E+03	4.2621E+03	1.9885E+02
	3.8229E+00	-1.0568E+00	-9.0701E+00	2.9386E+01	1.3710E+00
19	7.9446E+02	-1.0196E+02	-1.2545E+03	4.2566E+03	5.5802E+01
	5.4776E+00	-7.0302E-01	-8.6495E+00	2.9348E+01	3.8474E-01
20	2.4970E+02	-1.0523E+02	-1.4931E+03	3.1055E+03	2.0937E+02
	1.7216E+00	-7.2556E-01	-1.0294E+01	2.1411E+01	1.4435E+00
21	-3.6704E+01	-1.3100E+02	-1.5290E+03	1.5247E+03	4.4725E+01
	-2.5307E-01	-9.0319E-01	-1.0542E+01	1.0512E+01	3.0837E-01
22	-2.7237E+01	-1.3435E+02	-1.5570E+03	1.5613E+03	3.6198E+01
	-1.8779E-01	-9.2631E-01	-1.0735E+01	1.0765E+01	2.4958E-01

**Table 2-113. Load Case 303, 30-ft. Cg/Corner Drop,
Hypothetical Accident Conditions of Transport – Model AOS-025A**

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	6.7746E+02	-6.4396E+02	-5.4027E+03	5.2487E+03	2.4259E+03
	4.6709E+00	-4.4399E+00	-3.7251E+01	3.6189E+01	1.6726E+01
2	4.1698E+02	-2.3686E+02	-5.7179E+02	2.7955E+03	3.0737E+02
	2.8750E+00	-1.6331E+00	-3.9424E+00	1.9274E+01	2.1193E+00
3	5.0172E+03	5.4102E+02	-1.5654E+01	5.0329E+03	1.3794E+03
	3.4592E+01	3.7302E+00	-1.0793E-01	3.4700E+01	9.5105E+00
4	6.0552E+02	4.0116E+01	-3.7707E+03	7.1885E+03	4.7488E+02
	4.1749E+00	2.7659E-01	-2.5998E+01	4.9563E+01	3.2742E+00
5	8.8096E+02	-5.9719E+02	-4.7519E+03	5.9828E+03	2.0231E+02
	6.0740E+00	-4.1175E+00	-3.2763E+01	4.1250E+01	1.3949E+00
6	6.4811E+02	-1.3896E+03	-5.7909E+03	5.8310E+03	6.8104E+02
	4.4686E+00	-9.5811E+00	-3.9927E+01	4.0203E+01	4.6956E+00
7	9.4084E+02	9.1055E+01	-2.9517E+02	5.4967E+03	1.4431E+02
	6.4869E+00	6.2780E-01	-2.0351E+00	3.7898E+01	9.9501E-01
8	6.9203E+02	1.3181E+01	-6.2912E+02	4.0290E+03	6.9759E+01
	4.7713E+00	9.0879E-02	-4.3376E+00	2.7779E+01	4.8097E-01
9	1.0250E+03	-5.3490E+02	-8.9652E+02	2.7753E+03	9.0507E+01
	7.0670E+00	-3.6880E+00	-6.1813E+00	1.9135E+01	6.2402E-01
10	1.0765E+03	-6.3822E+02	-9.5761E+02	2.4280E+03	1.0258E+03
	7.4220E+00	-4.4004E+00	-6.6025E+00	1.6740E+01	7.0726E+00
11	1.7046E+03	-1.1270E+02	-2.9242E+02	2.0632E+03	6.1682E+02
	1.1753E+01	-7.7703E-01	-2.0161E+00	1.4225E+01	4.2528E+00
12	1.1946E+03	1.6630E+02	3.1222E+01	1.1774E+03	2.5886E+02
	8.2367E+00	1.1466E+00	2.1527E-01	8.1178E+00	1.7848E+00
13	1.4537E+03	-4.4662E+02	-9.2468E+02	2.3784E+03	5.2548E+01
	1.0023E+01	-3.0793E+00	-6.3755E+00	1.6398E+01	3.6231E-01
14	1.5032E+03	-4.4892E+02	-9.5053E+02	2.4537E+03	1.7604E+02
	1.0364E+01	-3.0952E+00	-6.5537E+00	1.6918E+01	1.2138E+00
15	8.8620E+02	1.7615E+02	-2.6862E+03	3.6222E+03	9.2058E+01
	6.1101E+00	1.2145E+00	-1.8521E+01	2.4974E+01	6.3472E-01

16	1.1559E+03 7.9694E+00	1.3316E+02 9.1810E-01	-2.7112E+03 -1.8693E+01	6.0915E+03 4.1999E+01	3.5016E+02 2.4143E+00
17	1.1780E+03 8.1221E+00	8.2224E+01 5.6692E-01	-3.2360E+03 -2.2311E+01	6.9719E+03 4.8070E+01	4.5864E+02 3.1622E+00
18	8.5040E+02 5.8633E+00	-2.1577E+02 -1.4877E+00	-4.4449E+03 -3.0646E+01	5.3898E+03 3.7162E+01	2.7889E+02 1.9229E+00
19	9.8981E+02 6.8245E+00	-2.7379E+02 -1.8877E+00	-4.4781E+03 -3.0876E+01	5.6257E+03 3.8788E+01	6.2430E+02 4.3044E+00
20	6.5259E+02 4.4994E+00	-9.3060E+02 -6.4163E+00	-4.7890E+03 -3.3019E+01	5.3639E+03 3.6983E+01	2.5294E+02 1.7440E+00
21	7.6449E+02 5.2709E+00	-4.8707E+01 -3.3583E-01	-5.2781E+02 -3.6391E+00	1.2843E+03 8.8550E+00	7.5736E+01 5.2218E-01
22	1.3972E+03 9.6337E+00	7.8175E+01 5.3900E-01	-2.5048E+03 -1.7270E+01	3.9572E+03 2.7284E+01	3.8968E+02 2.6868E+00

Table 2-114. Load Case 304, 30-ft. Head-On Drop at -40°F, Low Temperature, Hypothetical Accident Conditions of Transport – Model AOS-025A

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	-1.3768E+02 -9.4925E-01	-8.3090E+03 -5.7289E+01	-1.6110E+03 -1.1107E+01	8.1713E+03 5.6339E+01	2.7445E+03 1.8923E+01
2	7.9467E+01 5.4790E-01	-3.8778E+03 -2.6736E+01	-3.1445E+02 -2.1681E+00	3.9573E+03 2.7284E+01	2.1145E+02 1.4579E+00
3	-1.1225E+01 -7.7393E-02	-1.5523E+03 -1.0702E+01	-1.3606E+02 -9.3807E-01	1.5410E+03 1.0625E+01	1.9879E+01 1.3706E-01
4	1.3398E+03 9.2378E+00	-1.3469E+04 -9.2865E+01	-4.4079E+03 -3.0391E+01	1.4809E+04 1.0210E+02	6.7381E+03 4.6457E+01
5	-1.8720E+02 -1.2907E+00	-4.1982E+03 -2.8946E+01	-1.8617E+03 -1.2836E+01	4.0110E+03 2.7655E+01	4.7904E+03 3.3029E+01
6	-7.2035E+02 -4.9666E+00	-3.4293E+03 -2.3645E+01	-1.5759E+03 -1.0865E+01	2.7090E+03 1.8678E+01	9.1709E+02 6.3231E+00
7	-3.9716E+01 -2.7383E-01	-2.6713E+03 -1.8418E+01	-4.0349E+02 -2.7820E+00	2.6316E+03 1.8144E+01	2.4479E+01 1.6878E-01
8	-2.9569E+01 -2.0387E-01	-2.4939E+03 -1.7195E+01	-2.8290E+02 -1.9506E+00	2.4643E+03 1.6991E+01	1.2881E-01 8.8813E-04
9	-1.3944E+01 -9.6140E-02	-1.8380E+03 -1.2672E+01	-1.0709E+02 -7.3835E-01	1.8240E+03 1.2576E+01	5.3223E+00 3.6696E-02
10	-4.4354E+02 -3.0581E+00	-2.7487E+03 -1.8952E+01	-5.9222E+02 -4.0832E+00	2.3052E+03 1.5894E+01	1.0410E+03 7.1774E+00
11	2.6283E+02 1.8122E+00	-1.4914E+03 -1.0283E+01	-2.9843E+02 -2.0576E+00	1.7542E+03 1.2095E+01	6.8834E+02 4.7460E+00
12	3.4338E+02 2.3675E+00	-1.1181E+02 -7.7091E-01	2.0085E+02 1.3848E+00	4.5519E+02 3.1384E+00	8.8186E+02 6.0802E+00
13	2.6614E+02 1.8350E+00	-1.1762E+03 -8.1095E+00	-1.3299E+02 -9.1691E-01	1.4423E+03 9.9445E+00	6.7328E+02 4.6421E+00
14	2.3793E+02 1.6405E+00	-8.5728E+02 -5.9107E+00	-1.4086E+01 -9.7120E-02	1.0952E+03 7.5512E+00	4.1982E+02 2.8946E+00
15	1.0628E+03 7.3275E+00	7.3926E+02 5.0970E+00	1.0175E+03 7.0155E+00	3.2350E+02 2.2305E+00	1.7623E+02 1.2151E+00

16	2.9841E+02	-2.1504E+03	-7.6315E+02	2.4488E+03	1.4964E+02
	2.0574E+00	-1.4827E+01	-5.2618E+00	1.6884E+01	1.0317E+00
17	7.5004E+02	-2.5439E+03	-1.2334E+03	3.2940E+03	2.5661E+03
	5.1713E+00	-1.7540E+01	-8.5042E+00	2.2711E+01	1.7692E+01
18	8.4600E+02	-4.3187E+03	-1.2831E+03	5.1647E+03	4.5363E+03
	5.8329E+00	-2.9776E+01	-8.8465E+00	3.5609E+01	3.1276E+01
19	8.6122E+02	-4.0089E+03	-1.5698E+03	4.8702E+03	2.4137E+03
	5.9379E+00	-2.7641E+01	-1.0823E+01	3.3579E+01	1.6642E+01
20	-8.0680E+02	-2.5182E+03	-1.7777E+03	1.7114E+03	2.2179E+03
	-5.5627E+00	-1.7362E+01	-1.2257E+01	1.1799E+01	1.5292E+01
21	1.7121E+03	1.6870E+02	1.7259E+02	1.5434E+03	5.4993E+02
	1.1805E+01	1.1632E+00	1.1900E+00	1.0641E+01	3.7917E+00
22	1.5338E+03	4.1191E+02	1.5262E+03	1.1219E+03	5.9937E+02
	1.0575E+01	2.8400E+00	1.0523E+01	7.7349E+00	4.1325E+00

Table 2-115. Load Case 305, 30-ft. Side Drop + Slap-Down at -40°F, Low Temperature, Hypothetical Accident Conditions of Transport – Model AOS-025A

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	3.0233E+02	-1.9436E+02	-6.8353E+02	5.4356E+03	1.2239E+03	
	2.0845E+00	-1.3400E+00	-4.7128E+00	3.7477E+01	8.4384E+00	
2	4.6520E+02	-5.3259E+01	-3.5000E+02	4.6104E+03	4.9893E+02	
	3.2075E+00	-3.6721E-01	-2.4132E+00	3.1788E+01	3.4400E+00	
3	2.9823E+02	-1.8907E+02	-6.7782E+02	5.4300E+03	1.2269E+03	
	2.0562E+00	-1.3036E+00	-4.6734E+00	3.7439E+01	8.4594E+00	
4	1.0858E+03	-1.0592E+02	-1.3878E+03	5.3860E+03	6.2929E+02	
	7.4864E+00	-7.3029E-01	-9.5683E+00	3.7135E+01	4.3388E+00	
5	1.0651E+03	-4.1088E+01	-1.9314E+03	5.7325E+03	1.2006E+02	
	7.3434E+00	-2.8330E-01	-1.3317E+01	3.9524E+01	8.2779E-01	
6	5.2285E+02	-1.7121E+02	-2.4502E+03	5.5538E+03	3.0544E+02	
	3.6049E+00	-1.1804E+00	-1.6893E+01	3.8292E+01	2.1060E+00	
7	1.5472E+03	8.4836E+02	2.1518E+01	5.7090E+03	3.1031E+02	
	1.0668E+01	5.8492E+00	1.4836E-01	3.9362E+01	2.1395E+00	
8	1.5135E+03	8.6072E+02	3.3161E+01	5.9561E+03	2.9599E+02	
	1.0435E+01	5.9344E+00	2.2864E-01	4.1066E+01	2.0408E+00	
9	1.5593E+03	8.4728E+02	2.1955E+01	5.6982E+03	3.1398E+02	
	1.0751E+01	5.8418E+00	1.5137E-01	3.9288E+01	2.1648E+00	
10	1.0067E+03	2.3958E+02	-1.4184E+03	5.0451E+03	5.0495E+02	
	6.9407E+00	1.6518E+00	-9.7795E+00	3.4785E+01	3.4815E+00	
11	2.1068E+02	-3.2349E+02	-2.6671E+03	5.0617E+03	2.1998E+03	
	1.4526E+00	-2.2304E+00	-1.8389E+01	3.4899E+01	1.5167E+01	
12	-6.3705E+01	-7.5973E+02	-3.3909E+03	3.5335E+03	4.1649E+02	
	-4.3923E-01	-5.2382E+00	-2.3379E+01	2.4362E+01	2.8716E+00	
13	1.0530E+03	-4.1015E+01	-1.8241E+03	5.4849E+03	2.5527E+02	
	7.2600E+00	-2.8279E-01	-1.2576E+01	3.7817E+01	1.7600E+00	
14	1.1962E+03	-7.5405E+01	-1.6113E+03	5.6365E+03	4.0244E+02	
	8.2472E+00	-5.1990E-01	-1.1109E+01	3.8862E+01	2.7748E+00	
15	-1.2240E+02	-1.9639E+02	-2.0968E+03	2.0085E+03	1.4951E+01	
	-8.4391E-01	-1.3541E+00	-1.4457E+01	1.3848E+01	1.0309E-01	

16	3.3961E+02	-8.4204E+01	-1.8946E+03	3.6754E+03	1.6212E+02
	2.3415E+00	-5.8057E-01	-1.3063E+01	2.5341E+01	1.1178E+00
17	2.2396E+02	-1.4431E+02	-2.0585E+03	4.0654E+03	2.1350E+02
	1.5442E+00	-9.9496E-01	-1.4193E+01	2.8030E+01	1.4720E+00
18	7.7278E+02	-2.1439E+02	-1.8408E+03	5.9595E+03	2.7817E+02
	5.3281E+00	-1.4781E+00	-1.2692E+01	4.1089E+01	1.9179E+00
19	1.1089E+03	-1.4256E+02	-1.7556E+03	5.9546E+03	7.7638E+01
	7.6459E+00	-9.8292E-01	-1.2104E+01	4.1055E+01	5.3530E-01
20	3.4899E+02	-1.4717E+02	-2.0900E+03	4.3467E+03	2.9324E+02
	2.4062E+00	-1.0147E+00	-1.4410E+01	2.9969E+01	2.0218E+00
21	-5.1512E+01	-1.8147E+02	-2.1362E+03	2.1300E+03	6.1849E+01
	-3.5517E-01	-1.2512E+00	-1.4729E+01	1.4686E+01	4.2643E-01
22	-3.8079E+01	-1.8628E+02	-2.1754E+03	2.1816E+03	4.9863E+01
	-2.6255E-01	-1.2844E+00	-1.4999E+01	1.5041E+01	3.4379E-01

Table 2-116. Load Case 306, 30-ft. Cg/Corner Drop at -40°F, Low Temperature, Hypothetical Accident Conditions of Transport – Model AOS-025A

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	9.4841E+02	-9.0159E+02	-7.5640E+03	7.3484E+03	3.4263E+03	
	6.5390E+00	-6.2162E+00	-5.2152E+01	5.0666E+01	2.3623E+01	
2	5.8372E+02	-3.3146E+02	-8.0023E+02	3.9136E+03	4.3031E+02	
	4.0246E+00	-2.2853E+00	-5.5174E+00	2.6984E+01	2.9669E+00	
3	7.0251E+03	7.5759E+02	-2.1857E+01	7.0470E+03	1.9314E+03	
	4.8436E+01	5.2234E+00	-1.5070E-01	4.8587E+01	1.3316E+01	
4	8.4768E+02	5.6125E+01	-5.2790E+03	1.0064E+04	6.6484E+02	
	5.8445E+00	3.8697E-01	-3.6397E+01	6.9386E+01	4.5839E+00	
5	1.2333E+03	-8.3604E+02	-6.6527E+03	8.3758E+03	2.8323E+02	
	8.5034E+00	-5.7643E+00	-4.5869E+01	5.7749E+01	1.9528E+00	
6	9.0796E+02	-1.9454E+03	-8.1072E+03	8.1632E+03	9.5335E+02	
	6.2601E+00	-1.3413E+01	-5.5897E+01	5.6284E+01	6.5731E+00	
7	1.3171E+03	1.2744E+02	-4.1321E+02	7.6951E+03	2.0204E+02	
	9.0808E+00	8.7869E-01	-2.8490E+00	5.3056E+01	1.3930E+00	
8	9.6881E+02	1.8433E+01	-8.8080E+02	5.6405E+03	9.7666E+01	
	6.6797E+00	1.2709E-01	-6.0729E+00	3.8890E+01	6.7338E-01	
9	1.4351E+03	-7.4903E+02	-1.2552E+03	3.8854E+03	1.2671E+02	
	9.8946E+00	-5.1644E+00	-8.6544E+00	2.6789E+01	8.7362E-01	
10	1.5072E+03	-8.9364E+02	-1.3408E+03	3.3993E+03	1.4361E+03	
	1.0392E+01	-6.1614E+00	-9.2444E+00	2.3437E+01	9.9015E+00	
11	2.3867E+03	-1.5783E+02	-4.0944E+02	2.8887E+03	8.6358E+02	
	1.6456E+01	-1.0882E+00	-2.8230E+00	1.9917E+01	5.9542E+00	
12	1.6727E+03	2.3279E+02	4.3710E+01	1.6485E+03	3.6241E+02	
	1.1533E+01	1.6051E+00	3.0137E-01	1.1366E+01	2.4987E+00	
13	2.0354E+03	-6.2532E+02	-1.2947E+03	3.3300E+03	7.3568E+01	
	1.4033E+01	-4.3114E+00	-8.9263E+00	2.2960E+01	5.0724E-01	
14	2.1047E+03	-6.2853E+02	-1.3308E+03	3.4355E+03	2.4649E+02	
	1.4511E+01	-4.3335E+00	-9.1758E+00	2.3687E+01	1.6995E+00	
15	1.2408E+03	2.4666E+02	-3.7614E+03	5.0720E+03	1.2888E+02	
	8.5552E+00	1.7006E+00	-2.5934E+01	3.4970E+01	8.8857E-01	

16	1.6182E+03	1.8644E+02	-3.7959E+03	8.5346E+03	4.9048E+02
	1.1157E+01	1.2854E+00	-2.6172E+01	5.8844E+01	3.3817E+00
17	1.6492E+03	1.1511E+02	-4.5306E+03	9.7710E+03	6.4207E+02
	1.1371E+01	7.9368E-01	-3.1237E+01	6.7369E+01	4.4269E+00
18	1.1905E+03	-3.0208E+02	-6.2229E+03	7.5455E+03	3.9045E+02
	8.2081E+00	-2.0827E+00	-4.2905E+01	5.2025E+01	2.6921E+00
19	1.3857E+03	-3.8331E+02	-6.2694E+03	7.8759E+03	8.7408E+02
	9.5539E+00	-2.6428E+00	-4.3226E+01	5.4302E+01	6.0266E+00
20	9.1433E+02	-1.3028E+03	-6.7047E+03	7.5094E+03	3.5410E+02
	6.3041E+00	-8.9824E+00	-4.6227E+01	5.1776E+01	2.4415E+00
21	1.0704E+03	-6.8196E+01	-7.3896E+02	1.7982E+03	1.0603E+02
	7.3801E+00	-4.7019E-01	-5.0950E+00	1.2398E+01	7.3104E-01
22	1.9563E+03	1.0948E+02	-3.5076E+03	5.5412E+03	5.4557E+02
	1.3488E+01	7.5482E-01	-2.4184E+01	3.8205E+01	3.7616E+00

**Table 2-117. Load Case 311, 4-ft. Drop onto Rod,
Hypothetical Accident Conditions of Transport – Model AOS-025A**

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	4.9603E+01	-5.8890E+02	4.1131E+02	6.3850E+02	4.0271E+02
	3.4200E-01	-4.0603E+00	2.8359E+00	4.4023E+00	2.7766E+00
2	1.5154E+01	-4.6590E+02	1.0076E+02	4.8106E+02	7.5039E+01
	1.0448E-01	-3.2123E+00	6.9475E-01	3.3168E+00	5.1737E-01
3	7.7368E+00	-1.8009E+02	1.0470E+01	1.8783E+02	1.8392E+01
	5.3343E-02	-1.2417E+00	7.2191E-02	1.2950E+00	1.2681E-01
4	1.8903E+03	-1.7594E+03	8.2625E+02	3.6497E+03	4.6125E+03
	1.3033E+01	-1.2130E+01	5.6968E+00	2.5164E+01	3.1802E+01
5	1.4623E+03	-1.5658E+03	7.3875E+02	3.0281E+03	3.7700E+03
	1.0082E+01	-1.0796E+01	5.0935E+00	2.0878E+01	2.5993E+01
6	-3.8121E+02	-2.1378E+03	-1.3872E+02	1.7566E+03	3.4307E+02
	-2.6283E+00	-1.4740E+01	-9.5642E-01	1.2111E+01	2.3654E+00
7	1.5451E+00	-4.4774E+02	5.6310E+01	4.4929E+02	3.8120E+01
	1.0653E-02	-3.0871E+00	3.8824E-01	3.0977E+00	2.6283E-01
8	3.5520E+00	-1.9422E+02	3.4566E+01	1.9777E+02	2.5107E+00
	2.4490E-02	-1.3391E+00	2.3832E-01	1.3636E+00	1.7311E-02
9	1.4893E+00	-1.2321E+02	1.3706E+01	1.2470E+02	2.1363E-01
	1.0269E-02	-8.4953E-01	9.4501E-02	8.5980E-01	1.4729E-03
10	-6.9995E+01	-2.8738E+02	-6.6348E+01	2.1738E+02	9.1327E+01
	-4.8260E-01	-1.9814E+00	-4.5745E-01	1.4988E+00	6.2967E-01
11	9.3899E+01	-1.8536E+02	8.0859E+00	2.7926E+02	1.9239E+02
	6.4741E-01	-1.2780E+00	5.5750E-02	1.9255E+00	1.3265E+00
12	3.4636E+01	-2.3498E+02	1.9409E+01	2.6961E+02	4.2594E+02
	2.3881E-01	-1.6201E+00	1.3382E-01	1.8589E+00	2.9367E+00
13	2.3969E+02	-1.3150E+01	1.1817E+02	2.5284E+02	2.0153E+02
	1.6526E+00	-9.0663E-02	8.1475E-01	1.7433E+00	1.3895E+00
14	2.6022E+02	-6.4443E+00	1.4315E+02	2.6666E+02	8.7788E+01
	1.7941E+00	-4.4432E-02	9.8699E-01	1.8386E+00	6.0527E-01
15	-6.1353E+03	-2.0916E+04	-5.9990E+03	1.4780E+04	5.1674E+03
	-4.2302E+01	-1.4421E+02	-4.1361E+01	1.0191E+02	3.5628E+01

16	6.3812E+02	-1.2334E+03	4.4903E+01	1.8715E+03	1.4585E+03
	4.3997E+00	-8.5037E+00	3.0959E-01	1.2903E+01	1.0056E+01
17	-8.7001E+01	-1.3209E+03	1.1327E+02	1.2339E+03	1.8614E+03
	-5.9985E-01	-9.1070E+00	7.8099E-01	8.5071E+00	1.2834E+01
18	-1.5821E+02	-1.0915E+03	1.3328E+01	9.3334E+02	5.1622E+02
	-1.0908E+00	-7.5260E+00	9.1890E-02	6.4351E+00	3.5592E+00
19	8.5154E+02	-8.3158E+02	2.3348E+02	1.6831E+03	1.7892E+03
	5.8711E+00	-5.7335E+00	1.6098E+00	1.1605E+01	1.2336E+01
20	1.3709E+03	-1.0751E+03	1.8285E+01	2.4460E+03	2.5928E+03
	9.4519E+00	-7.4128E+00	1.2607E-01	1.6865E+01	1.7877E+01
21	1.0044E+02	-1.8842E+02	-1.8477E+02	2.8886E+02	4.0398E+02
	6.9250E-01	-1.2991E+00	-1.2740E+00	1.9916E+00	2.7853E+00
22	-2.2459E+03	-8.9651E+03	-2.4120E+03	6.7192E+03	2.9155E+03
	-1.5485E+01	-6.1812E+01	-1.6630E+01	4.6327E+01	2.0102E+01

**Table 2-118. Load Combination 301, Head-On Drop Orientation,
Hypothetical Accident Conditions of Transport – Model AOS-025A**

Load Cases: 301, 102, 201, 211
 30-ft. Head-On Drop
 100°F Ambient, Maximum Decay Heat, Maximum Insolation
 Internal Design Pressure, 207 kPa (30 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)					MS
	Pm	Pb	Pm+Pb	Sm	Su	
---	--	--	-----	--	--	--
1	6.62	3.01	9.62	20.00	66.30	5.89
	45.61	20.72	66.33	137.90	457.12	
2	3.09	0.30	3.38	20.00	66.30	>10
	21.28	2.04	23.32	137.90	457.12	
3	1.27	0.11	1.38	20.00	66.30	>10
	8.76	0.74	9.51	137.90	457.12	
4	12.02	7.16	19.18	20.00	66.30	2.46
	82.88	49.35	132.23	137.90	457.12	
5	4.12	5.08	9.20	20.00	66.30	6.21
	28.40	35.01	63.41	137.90	457.12	
6	2.69	1.83	4.52	20.00	66.30	>10
	18.55	12.60	31.14	137.90	457.12	
7	2.14	0.07	2.21	20.00	66.30	>10
	14.73	0.50	15.23	137.90	457.12	
8	2.01	0.05	2.06	20.00	66.30	>10
	13.85	0.32	14.17	137.90	457.12	
9	1.59	0.08	1.67	20.00	66.30	>10
	10.95	0.54	11.49	137.90	457.12	
10	2.62	0.87	3.49	20.00	66.30	>10
	18.09	6.00	24.09	137.90	457.12	
11	2.07	1.46	3.53	20.00	66.30	>10
	14.30	10.05	24.35	137.90	457.12	
12	1.18	1.83	3.01	20.00	66.30	>10
	8.12	12.63	20.74	137.90	457.12	

13	2.28	1.36	3.65	20.00	66.30	>10
	15.75	9.40	25.15	137.90	457.12	
14	2.04	1.84	3.87	20.00	66.30	>10
	14.05	12.66	26.71	137.90	457.12	
15	1.80	1.82	3.62	20.00	66.30	>10
	12.39	12.57	24.97	137.90	457.12	
16	3.36	2.64	6.00	20.00	66.30	>10
	23.14	18.21	41.35	137.90	457.12	
17	3.45	3.57	7.02	20.00	66.30	8.45
	23.78	24.59	48.37	137.90	457.12	
18	4.56	4.63	9.19	20.00	66.30	6.22
	31.46	31.89	63.36	137.90	457.12	
19	4.93	3.84	8.76	20.00	66.30	6.56
	33.98	26.44	60.43	137.90	457.12	
20	2.99	4.37	7.36	20.00	66.30	8.01
	20.64	30.10	50.75	137.90	457.12	
21	1.43	0.91	2.34	20.00	66.30	>10
	9.86	6.30	16.16	137.90	457.12	
22	1.22	0.81	2.03	20.00	66.30	>10
	8.41	5.56	13.97	137.90	457.12	

Min MS: 2.457, Location: 4, Combination: Pm+Pb

**Table 2-119. Load Combination 302, Side Drop Orientation,
Hypothetical Accident Conditions of Transport – Model AOS-025A**

Load Cases: 302, 102, 201, 211
 30-ft. Side Drop + Slap-Down
 100°F Ambient, Maximum Decay Heat, Maximum Insolation
 Internal Design Pressure, 207 kPa (30 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
---	--	--	-----	--	--	--
1	4.61 31.82	1.91 13.14	6.52 44.96	20.00 137.90	66.30 457.12	9.06
2	3.53 24.33	0.50 3.43	4.03 27.76	20.00 137.90	66.30 457.12	>10
3	4.04 27.87	0.97 6.71	5.02 34.58	20.00 137.90	66.30 457.12	>10
4	5.20 35.85	2.76 19.03	7.96 54.89	20.00 137.90	66.30 457.12	7.33
5	5.32 36.71	1.71 11.82	7.04 48.53	20.00 137.90	66.30 457.12	7.72
6	4.70 32.42	1.39 9.56	6.09 41.97	20.00 137.90	66.30 457.12	8.87
7	4.32 29.78	0.28 1.90	4.60 31.69	20.00 137.90	66.30 457.12	9.74
8	4.49 30.95	0.26 1.78	4.75 32.73	20.00 137.90	66.30 457.12	9.34
9	4.34 29.96	0.30 2.06	4.64 32.02	20.00 137.90	66.30 457.12	9.68
10	4.57 31.48	0.48 3.31	5.05 34.80	20.00 137.90	66.30 457.12	9.16
11	4.43 30.51	2.53 17.46	6.96 47.97	20.00 137.90	66.30 457.12	8.53
12	3.37 23.26	1.49 10.29	4.87 33.55	20.00 137.90	66.30 457.12	>10

13	5.16	1.06	6.22	20.00	66.30	7.99
	35.60	7.31	42.91	137.90	457.12	
14	5.28	1.82	7.10	20.00	66.30	7.80
	36.37	12.55	48.92	137.90	457.12	
15	2.99	1.71	4.70	20.00	66.30	>10
	20.62	11.76	32.38	137.90	457.12	
16	4.23	2.65	6.88	20.00	66.30	8.64
	29.15	18.26	47.41	137.90	457.12	
17	3.98	1.87	5.85	20.00	66.30	>10
	27.44	12.87	40.30	137.90	457.12	
18	5.10	1.56	6.66	20.00	66.30	8.10
	35.18	10.75	45.93	137.90	457.12	
19	5.67	2.15	7.82	20.00	66.30	7.18
	39.10	14.84	53.94	137.90	457.12	
20	4.86	2.98	7.84	20.00	66.30	7.46
	33.51	20.54	54.05	137.90	457.12	
21	1.84	0.56	2.40	20.00	66.30	>10
	12.70	3.87	16.57	137.90	457.12	
22	1.95	0.41	2.36	20.00	66.30	>10
	13.45	2.80	16.26	137.90	457.12	

Min MS: 7.184, Location: 19, Combination: Pm

Table 2-120. Load Combination 303, Cg/Corner Drop Orientation, Hypothetical Accident Conditions of Transport – Model AOS-025A

Load Cases: 303, 102, 201, 211
 30-ft. Cg/Corner Drop
 100°F Ambient, Maximum Decay Heat, Maximum Insolation
 Internal Design Pressure, 207 kPa (30 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
---	--	--	-----	--	--	--
1	5.98 41.22	3.48 23.97	9.45 65.19	20.00 137.90	66.30 457.12	6.01
2	3.03 20.89	0.45 3.10	3.48 23.99	20.00 137.90	66.30 457.12	>10
3	5.19 35.80	1.47 10.16	6.67 45.96	20.00 137.90	66.30 457.12	7.94
4	8.54 58.88	2.79 19.21	11.33 78.09	20.00 137.90	66.30 457.12	4.43
5	7.21 49.72	1.83 12.62	9.04 62.35	20.00 137.90	66.30 457.12	5.44
6	6.57 45.27	1.85 12.75	8.41 58.02	20.00 137.90	66.30 457.12	6.07
7	5.74 39.57	0.20 1.37	5.94 40.94	20.00 137.90	66.30 457.12	7.09
8	4.26 29.40	0.12 0.80	4.38 30.20	20.00 137.90	66.30 457.12	9.88
9	3.05 21.03	0.16 1.14	3.22 22.17	20.00 137.90	66.30 457.12	>10
10	3.39 23.38	1.15 7.90	4.54 31.28	20.00 137.90	66.30 457.12	>10
11	2.87 19.81	1.58 10.88	4.45 30.69	20.00 137.90	66.30 457.12	>10
12	2.03 13.97	1.45 10.03	3.48 24.00	20.00 137.90	66.30 457.12	>10

13	3.62	0.93	4.55	20.00	66.30	>10
	24.98	6.42	31.40	137.90	457.12	
14	3.70	1.71	5.41	20.00	66.30	>10
	25.53	11.78	37.31	137.90	457.12	
15	5.18	1.79	6.97	20.00	66.30	7.96
	35.71	12.32	48.04	137.90	457.12	
16	7.70	2.88	10.58	20.00	66.30	5.03
	53.06	19.87	72.94	137.90	457.12	
17	8.05	2.17	10.22	20.00	66.30	4.76
	55.51	14.98	70.48	137.90	457.12	
18	6.23	1.64	7.87	20.00	66.30	6.44
	42.98	11.31	54.29	137.90	457.12	
19	7.04	2.72	9.76	20.00	66.30	5.59
	48.56	18.76	67.32	137.90	457.12	
20	7.12	3.02	10.14	20.00	66.30	5.52
	49.08	20.84	69.92	137.90	457.12	
21	1.60	0.59	2.20	20.00	66.30	>10
	11.06	4.09	15.15	137.90	457.12	
22	4.35	0.76	5.11	20.00	66.30	9.67
	30.00	5.24	35.24	137.90	457.12	

Min MS: 4.434, Location: 4, Combination: Pm

Table 2-121. Load Combination 304, Head-On Drop Orientation at -40°F, Cold Environment, Hypothetical Accident Conditions of Transport – Model AOS-025A

Load Cases: 304, 105, 202, 21
 30-ft. Head-On Drop at -40°F, Low Temperature
 -40°F Ambient, Maximum Decay Heat
 Minimum External Pressure, 24 kPa (3.5 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
---	--	--	-----	--	--	--
1	8.91 61.40	3.77 26.00	12.68 87.41	20.00 137.90	70.00 482.63	4.39
2	4.19 28.88	0.35 2.43	4.54 31.31	20.00 137.90	70.00 482.63	>10
3	1.70 11.71	0.11 0.75	1.81 12.47	20.00 137.90	70.00 482.63	>10
4	16.00 110.31	8.71 60.08	24.71 170.39	20.00 137.90	70.00 482.63	1.83
5	5.03 34.71	6.12 42.21	11.16 76.92	20.00 137.90	70.00 482.63	5.27
6	3.36 23.18	1.92 13.25	5.28 36.43	20.00 137.90	70.00 482.63	>10
7	2.90 19.97	0.08 0.54	2.97 20.51	20.00 137.90	70.00 482.63	>10
8	2.72 18.77	0.05 0.32	2.77 19.09	20.00 137.90	70.00 482.63	>10
9	2.12 14.63	0.08 0.55	2.20 15.18	20.00 137.90	70.00 482.63	>10
10	3.36 23.17	1.25 8.65	4.61 31.81	20.00 137.90	70.00 482.63	>10
11	2.55 17.57	1.63 11.26	4.18 28.84	20.00 137.90	70.00 482.63	>10
12	1.29 8.88	1.99 13.69	3.27 22.57	20.00 137.90	70.00 482.63	>10

13	2.58	1.68	4.26	20.00	70.00	>10
	17.80	11.55	29.35	137.90	482.63	
14	2.20	1.79	3.99	20.00	70.00	>10
	15.19	12.31	27.50	137.90	482.63	
15	2.11	2.53	4.65	20.00	70.00	>10
	14.58	17.45	32.03	137.90	482.63	
16	3.80	2.29	6.09	20.00	70.00	>10
	26.22	15.78	42.00	137.90	482.63	
17	4.19	3.99	8.18	20.00	70.00	7.56
	28.90	27.49	56.39	137.90	482.63	
18	5.81	5.56	11.37	20.00	70.00	5.16
	40.03	38.36	78.40	137.90	482.63	
19	5.95	3.96	9.91	20.00	70.00	6.07
	41.01	27.30	68.31	137.90	482.63	
20	3.09	4.29	7.38	20.00	70.00	8.48
	21.32	29.59	50.91	137.90	482.63	
21	1.81	0.92	2.73	20.00	70.00	>10
	12.49	6.31	18.80	137.90	482.63	
22	1.48	0.97	2.45	20.00	70.00	>10
	10.23	6.68	16.91	137.90	482.63	

Min MS: 1.833, Location: 4, Combination: Pm+Pb

Table 2-122. Load Combination 305, Side Drop Orientation at -40°F, Cold Environment, Hypothetical Accident Conditions of Transport – Model AOS-025A

Load Cases: 305, 105, 202, 211
 30-ft. Side Drop + Slap-Down at -40°F, Low Temperature
 -40°F Ambient, Maximum Decay Heat
 Minimum External Pressure, 24 kPa (3.5 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
---	--	--	-----	--	--	--
1	6.17	2.26	8.43	20.00	70.00	6.78
	42.57	15.55	58.11	137.90	482.63	
2	4.84	0.64	5.48	20.00	70.00	8.91
	33.39	4.41	37.80	137.90	482.63	
3	5.59	1.32	6.91	20.00	70.00	7.58
	38.56	9.11	47.67	137.90	482.63	
4	6.58	2.61	9.18	20.00	70.00	6.30
	45.35	17.96	63.31	137.90	482.63	
5	6.76	1.45	8.21	20.00	70.00	6.10
	46.58	10.01	56.59	137.90	482.63	
6	6.21	1.31	7.52	20.00	70.00	6.73
	42.80	9.03	51.83	137.90	482.63	
7	5.97	0.36	6.34	20.00	70.00	7.04
	41.19	2.51	43.70	137.90	482.63	
8	6.21	0.34	6.56	20.00	70.00	6.72
	42.85	2.36	45.21	137.90	482.63	
9	6.00	0.39	6.38	20.00	70.00	7.01
	41.34	2.67	44.01	137.90	482.63	
10	6.10	0.72	6.82	20.00	70.00	6.87
	42.05	4.95	47.00	137.90	482.63	
11	5.86	3.14	9.00	20.00	70.00	6.78
	40.38	21.68	62.06	137.90	482.63	
12	4.37	1.52	5.89	20.00	70.00	9.99
	30.10	10.48	40.58	137.90	482.63	

13	6.62	1.26	7.88	20.00	70.00	6.25
	45.67	8.67	54.34	137.90	482.63	
14	6.75	1.77	8.51	20.00	70.00	6.12
	46.51	12.19	58.70	137.90	482.63	
15	3.80	2.37	6.17	20.00	70.00	>10
	26.19	16.33	42.53	137.90	482.63	
16	5.03	2.30	7.33	20.00	70.00	8.54
	34.71	15.87	50.57	137.90	482.63	
17	4.97	1.64	6.60	20.00	70.00	8.66
	34.26	11.27	45.53	137.90	482.63	
18	6.60	1.31	7.91	20.00	70.00	6.27
	45.53	9.00	54.53	137.90	482.63	
19	7.03	1.62	8.66	20.00	70.00	5.82
	48.49	11.19	59.69	137.90	482.63	
20	5.73	2.37	8.09	20.00	70.00	7.38
	39.49	16.32	55.81	137.90	482.63	
21	2.40	0.43	2.83	20.00	70.00	>10
	16.53	2.95	19.48	137.90	482.63	
22	2.54	0.42	2.96	20.00	70.00	>10
	17.54	2.90	20.44	137.90	482.63	

Min MS: 5.825, Location: 19, Combination: Pm

Table 2-123. Load Combination 306, Cg/Corner Drop Orientation at -40°F, Cold Environment, Hypothetical Accident Conditions of Transport – Model AOS-025A

Load Cases: 306, 105, 202, 211
 30-ft. Cg/Corner Drop at -40°F, Low Temperature
 -40°F Ambient, Maximum Decay Heat
 Minimum External Pressure, 24 kPa (3.5 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
1	8.08 55.73	4.45 30.71	12.54 86.43	20.00 137.90	70.00 482.63	4.58
2	4.15 28.58	0.57 3.94	4.72 32.52	20.00 137.90	70.00 482.63	>10
3	7.20 49.67	2.02 13.93	9.23 63.61	20.00 137.90	70.00 482.63	5.66
4	11.25 77.59	2.64 18.21	13.89 95.80	20.00 137.90	70.00 482.63	3.27
5	9.40 64.80	1.61 11.13	11.01 75.94	20.00 137.90	70.00 482.63	4.11
6	8.82 60.79	1.96 13.50	10.77 74.29	20.00 137.90	70.00 482.63	4.44
7	7.96 54.88	0.26 1.76	8.22 56.64	20.00 137.90	70.00 482.63	5.03
8	5.90 40.67	0.14 0.99	6.04 41.66	20.00 137.90	70.00 482.63	7.14
9	4.18 28.84	0.20 1.38	4.38 30.23	20.00 137.90	70.00 482.63	>10
10	4.45 30.71	1.65 11.37	6.10 42.08	20.00 137.90	70.00 482.63	9.78
11	3.68 25.40	1.81 12.47	5.49 37.87	20.00 137.90	70.00 482.63	>10
12	2.48 17.11	1.47 10.11	3.95 27.22	20.00 137.90	70.00 482.63	>10

13	4.47	1.08	5.54	20.00	70.00	9.74
	30.81	7.42	38.23	137.90	482.63	
14	4.54	1.61	6.16	20.00	70.00	9.56
	31.33	11.11	42.44	137.90	482.63	
15	6.86	2.48	9.35	20.00	70.00	5.99
	47.32	17.12	64.44	137.90	482.63	
16	9.89	2.63	12.52	20.00	70.00	3.85
	68.18	18.13	86.31	137.90	482.63	
17	10.67	2.06	12.73	20.00	70.00	3.50
	73.56	14.23	87.79	137.90	482.63	
18	8.19	1.42	9.61	20.00	70.00	4.86
	56.45	9.78	66.23	137.90	482.63	
19	8.95	2.42	11.37	20.00	70.00	4.36
	61.73	16.69	78.42	137.90	482.63	
20	8.89	2.43	11.32	20.00	70.00	4.40
	61.29	16.74	78.04	137.90	482.63	
21	2.07	0.47	2.54	20.00	70.00	>10
	14.24	3.25	17.49	137.90	482.63	
22	5.90	0.92	6.82	20.00	70.00	7.13
	40.70	6.31	47.01	137.90	482.63	

Min MS: 3.265, Location: 4, Combination: Pm

Table 2-124. Load Combination 310, Additional Increased External Pressure (290 psi), Hypothetical Accident Conditions of Transport – Model AOS-025A

Load Cases: 204, 101, 211

Additional Increased External Pressure, 2 MPa (290 psia)

100°F Ambient, Maximum Decay Heat

Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
1	0.81 5.56	1.11 7.63	1.91 13.19	20.00 137.90	70.00 482.63	>10
2	0.34 2.36	0.15 1.06	0.49 3.41	20.00 137.90	70.00 482.63	>10
3	0.26 1.81	0.21 1.46	0.47 3.27	20.00 137.90	70.00 482.63	>10
4	11.24 77.51	21.49 148.18	32.73 225.69	20.00 137.90	70.00 482.63	1.14
5	11.33 78.12	17.51 120.73	28.84 198.85	20.00 137.90	70.00 482.63	1.43
6	4.80 33.09	7.43 51.21	12.23 84.30	20.00 137.90	70.00 482.63	4.73
7	1.33 9.16	0.07 0.49	1.40 9.64	20.00 137.90	70.00 482.63	>10
8	1.31 9.01	0.05 0.33	1.35 9.34	20.00 137.90	70.00 482.63	>10
9	1.33 9.16	0.08 0.54	1.41 9.70	20.00 137.90	70.00 482.63	>10
10	1.43 9.87	0.68 4.68	2.11 14.55	20.00 137.90	70.00 482.63	>10
11	1.37 9.43	1.68 11.56	3.04 20.99	20.00 137.90	70.00 482.63	>10
12	1.10 7.61	1.80 12.44	2.91 20.05	20.00 137.90	70.00 482.63	>10
13	3.80 26.17	2.71 18.70	6.51 44.87	20.00 137.90	70.00 482.63	9.76

14	3.84	4.29	8.14	20.00	70.00	7.60
	26.51	29.59	56.10	137.90	482.63	
15	2.70	3.62	6.32	20.00	70.00	>10
	18.63	24.97	43.60	137.90	482.63	
16	1.96	3.13	5.09	20.00	70.00	>10
	13.54	21.56	35.10	137.90	482.63	
17	1.26	2.06	3.32	20.00	70.00	>10
	8.70	14.19	22.90	137.90	482.63	
18	1.01	1.67	2.68	20.00	70.00	>10
	6.96	11.52	18.48	137.90	482.63	
19	1.70	2.56	4.26	20.00	70.00	>10
	11.69	17.68	29.37	137.90	482.63	
20	2.19	3.64	5.83	20.00	70.00	>10
	15.13	25.08	40.21	137.90	482.63	
21	1.95	3.87	5.82	20.00	70.00	>10
	13.44	26.67	40.11	137.90	482.63	
22	2.09	3.68	5.77	20.00	70.00	>10
	14.43	25.34	39.77	137.90	482.63	

Min MS: 1.138, Location: 4, Combination: Pm+Pb

**Table 2-125. Load Combination 311, 4-ft. Drop onto Rod,
Hypothetical Accident Conditions of Transport – Model AOS-025A**

Load Cases: 311, 101, 201, 211
 4-ft. Drop onto Rod
 100°F Ambient, Maximum Decay Heat
 Internal Design Pressure, 207 kPa (30 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
1	1.21 8.35	1.33 9.19	2.54 17.54	20.00 137.90	70.00 482.63	>10
2	0.60 4.12	0.20 1.37	0.80 5.48	20.00 137.90	70.00 482.63	>10
3	0.30 2.08	0.11 0.74	0.41 2.82	20.00 137.90	70.00 482.63	>10
4	4.10 28.28	5.79 39.89	9.89 68.17	20.00 137.90	70.00 482.63	6.08
5	3.51 24.20	4.47 30.81	7.98 55.01	20.00 137.90	70.00 482.63	7.77
6	2.06 14.19	1.43 9.84	3.48 24.02	20.00 137.90	70.00 482.63	>10
7	0.58 4.00	0.08 0.57	0.66 4.57	20.00 137.90	70.00 482.63	>10
8	0.38 2.65	0.05 0.33	0.43 2.98	20.00 137.90	70.00 482.63	>10
9	0.37 2.54	0.07 0.51	0.44 3.06	20.00 137.90	70.00 482.63	>10
10	1.13 7.77	0.19 1.30	1.32 9.07	20.00 137.90	70.00 482.63	>10
11	1.02 7.03	1.11 7.63	2.13 14.66	20.00 137.90	70.00 482.63	>10
12	1.05 7.26	1.52 10.46	2.57 17.71	20.00 137.90	70.00 482.63	>10

13	1.43	1.03	2.46	20.00	70.00	>10
	9.89	7.10	16.99	137.90	482.63	
14	1.45	1.60	3.05	20.00	70.00	>10
	9.99	11.02	21.02	137.90	482.63	
15	12.69	5.59	18.28	20.00	70.00	2.78
	87.50	38.53	126.03	137.90	482.63	
16	3.01	3.63	6.64	20.00	70.00	9.54
	20.75	25.03	45.79	137.90	482.63	
17	2.00	3.12	5.12	20.00	70.00	>10
	13.80	21.48	35.28	137.90	482.63	
18	1.55	1.75	3.30	20.00	70.00	>10
	10.67	12.06	22.73	137.90	482.63	
19	2.68	3.44	6.13	20.00	70.00	>10
	18.51	23.75	42.26	137.90	482.63	
20	3.60	4.72	8.32	20.00	70.00	7.41
	24.80	32.56	57.37	137.90	482.63	
21	0.54	0.82	1.36	20.00	70.00	>10
	3.70	5.67	9.37	137.90	482.63	
22	5.46	2.57	8.02	20.00	70.00	7.73
	37.62	17.69	55.31	137.90	482.63	

Min MS: 2.782, Location: 15, Combination: Pm

Table 2-126. Load Combination 312, 4-ft. Drop onto Rod at -40°F, Cold Environment, Hypothetical Accident Conditions of Transport – Model AOS-025A

Load Cases: 311, 104, 201, 211
 4-ft. Drop onto Rod
 -40°F Ambient, Zero Decay Heat, Zero Insolation
 Internal Design Pressure, 207 kPa (30 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
1	1.21 8.35	1.33 9.19	2.54 17.54	20.00 137.90	70.00 482.63	>10
2	0.60 4.12	0.20 1.37	0.80 5.48	20.00 137.90	70.00 482.63	>10
3	0.30 2.08	0.11 0.74	0.41 2.82	20.00 137.90	70.00 482.63	>10
4	4.10 28.28	5.79 39.89	9.89 68.17	20.00 137.90	70.00 482.63	6.08
5	3.51 24.20	4.47 30.81	7.98 55.01	20.00 137.90	70.00 482.63	7.77
6	2.06 14.19	1.43 9.84	3.48 24.02	20.00 137.90	70.00 482.63	>10
7	0.58 4.00	0.08 0.57	0.66 4.57	20.00 137.90	70.00 482.63	>10
8	0.38 2.65	0.05 0.33	0.43 2.98	20.00 137.90	70.00 482.63	>10
9	0.37 2.54	0.07 0.51	0.44 3.06	20.00 137.90	70.00 482.63	>10
10	1.13 7.77	0.19 1.30	1.32 9.07	20.00 137.90	70.00 482.63	>10
11	1.02 7.03	1.11 7.63	2.13 14.66	20.00 137.90	70.00 482.63	>10
12	1.05 7.26	1.52 10.46	2.57 17.71	20.00 137.90	70.00 482.63	>10

13	1.43 9.89	1.03 7.10	2.46 16.99	20.00 137.90	70.00 482.63	>10
14	1.45 9.99	1.60 11.02	3.05 21.02	20.00 137.90	70.00 482.63	>10
15	12.69 87.50	5.59 38.53	18.28 126.03	20.00 137.90	70.00 482.63	2.78
16	3.01 20.75	3.63 25.03	6.64 45.79	20.00 137.90	70.00 482.63	9.54
17	2.00 13.80	3.12 21.48	5.12 35.28	20.00 137.90	70.00 482.63	>10
18	1.55 10.67	1.75 12.06	3.30 22.73	20.00 137.90	70.00 482.63	>10
19	2.68 18.51	3.44 23.75	6.13 42.26	20.00 137.90	70.00 482.63	>10
20	3.60 24.80	4.72 32.56	8.32 57.37	20.00 137.90	70.00 482.63	7.41
21	0.54 3.70	0.82 5.67	1.36 9.37	20.00 137.90	70.00 482.63	>10
22	5.46 37.62	2.57 17.69	8.02 55.31	20.00 137.90	70.00 482.63	7.73

Min MS: 2.782, Location: 15, Combination: Pm

**Table 2-127. Load Combination 350, Fire at 30 Minutes,
Hypothetical Accident Conditions of Transport – Model AOS-025A**

Load Cases: 111, 201, 211

Fire at 30 Minutes, 1,475°F Ambient, Maximum Decay Heat
Internal Design Pressure, 207 kPa (30 psia)
Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
---	--	--	-----	--	--	--
1	0.73 5.03	1.03 7.09	1.76 12.13	20.00 137.90	66.30 457.12	>10
2	0.24 1.62	0.14 0.98	0.38 2.60	20.00 137.90	66.30 457.12	>10
3	0.16 1.10	0.09 0.65	0.25 1.75	20.00 137.90	66.30 457.12	>10
4	1.35 9.32	2.31 15.94	3.66 25.26	20.00 137.90	66.30 457.12	>10
5	1.23 8.47	1.63 11.23	2.86 19.70	20.00 137.90	66.30 457.12	>10
6	0.73 5.06	1.17 8.05	1.90 13.12	20.00 137.90	66.30 457.12	>10
7	0.24 1.67	0.05 0.38	0.30 2.04	20.00 137.90	66.30 457.12	>10
8	0.24 1.62	0.05 0.32	0.28 1.94	20.00 137.90	66.30 457.12	>10
9	0.27 1.90	0.07 0.51	0.35 2.41	20.00 137.90	66.30 457.12	>10
10	0.96 6.64	0.12 0.83	1.08 7.47	20.00 137.90	66.30 457.12	>10
11	0.81 5.58	0.96 6.63	1.77 12.21	20.00 137.90	66.30 457.12	>10
12	0.85 5.86	1.20 8.24	2.04 14.10	20.00 137.90	66.30 457.12	>10
13	1.24 8.58	0.88 6.06	2.12 14.64	20.00 137.90	66.30 457.12	>10

14	1.25	1.53	2.78	20.00	66.30	>10
	8.61	10.57	19.18	137.90	457.12	
15	1.56	1.70	3.25	20.00	66.30	>10
	10.74	11.69	22.42	137.90	457.12	
16	1.60	2.53	4.13	20.00	66.30	>10
	11.03	17.46	28.49	137.90	457.12	
17	1.07	1.71	2.78	20.00	66.30	>10
	7.39	11.81	19.20	137.90	457.12	
18	0.84	1.36	2.20	20.00	66.30	>10
	5.82	9.38	15.20	137.90	457.12	
19	1.42	2.10	3.51	20.00	66.30	>10
	9.77	14.46	24.23	137.90	457.12	
20	1.76	2.77	4.52	20.00	66.30	>10
	12.10	19.10	31.20	137.90	457.12	
21	0.32	0.52	0.84	20.00	66.30	>10
	2.20	3.57	5.77	137.90	457.12	
22	0.39	0.37	0.76	20.00	66.30	>10
	2.71	2.55	5.26	137.90	457.12	

Min MS: 13.653, Location: 20, Combination: Pm+Pb

**Table 2-128. Load Combination 351, Post Fire at 60 Minutes,
Hypothetical Accident Conditions of Transport – Model AOS-025A**

Load Cases: 112, 201, 211

Post Fire at 60 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation

Internal Design Pressure, 207 kPa (30 psia)

Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
1	0.73 5.03	1.03 7.09	1.76 12.13	20.00 137.90	66.30 457.12	>10
2	0.24 1.62	0.14 0.98	0.38 2.60	20.00 137.90	66.30 457.12	>10
3	0.16 1.10	0.09 0.65	0.25 1.75	20.00 137.90	66.30 457.12	>10
4	1.35 9.32	2.31 15.94	3.66 25.26	20.00 137.90	66.30 457.12	>10
5	1.23 8.47	1.63 11.23	2.86 19.70	20.00 137.90	66.30 457.12	>10
6	0.73 5.06	1.17 8.05	1.90 13.12	20.00 137.90	66.30 457.12	>10
7	0.24 1.67	0.05 0.38	0.30 2.04	20.00 137.90	66.30 457.12	>10
8	0.24 1.62	0.05 0.32	0.28 1.94	20.00 137.90	66.30 457.12	>10
9	0.27 1.90	0.07 0.51	0.35 2.41	20.00 137.90	66.30 457.12	>10
10	0.96 6.64	0.12 0.83	1.08 7.47	20.00 137.90	66.30 457.12	>10
11	0.81 5.58	0.96 6.63	1.77 12.21	20.00 137.90	66.30 457.12	>10
12	0.85 5.86	1.20 8.24	2.04 14.10	20.00 137.90	66.30 457.12	>10
13	1.24 8.58	0.88 6.06	2.12 14.64	20.00 137.90	66.30 457.12	>10

14	1.25	1.53	2.78	20.00	66.30	>10
	8.61	10.57	19.18	137.90	457.12	
15	1.56	1.70	3.25	20.00	66.30	>10
	10.74	11.69	22.42	137.90	457.12	
16	1.60	2.53	4.13	20.00	66.30	>10
	11.03	17.46	28.49	137.90	457.12	
17	1.07	1.71	2.78	20.00	66.30	>10
	7.39	11.81	19.20	137.90	457.12	
18	0.84	1.36	2.20	20.00	66.30	>10
	5.82	9.38	15.20	137.90	457.12	
19	1.42	2.10	3.51	20.00	66.30	>10
	9.77	14.46	24.23	137.90	457.12	
20	1.76	2.77	4.52	20.00	66.30	>10
	12.10	19.10	31.20	137.90	457.12	
21	0.32	0.52	0.84	20.00	66.30	>10
	2.20	3.57	5.77	137.90	457.12	
22	0.39	0.37	0.76	20.00	66.30	>10
	2.71	2.55	5.26	137.90	457.12	

Min MS: 13.653, Location: 20, Combination: Pm+Pb

**Table 2-129. Load Combination 352, Post Fire at 90 Minutes,
Hypothetical Accident Conditions of Transport – Model AOS-025A**

Load Cases: 112, 201, 211

Post Fire at 90 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation

Internal Design Pressure, 207 kPa (30 psia)

Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
1	0.73 5.03	1.03 7.09	1.76 12.13	20.00 137.90	66.30 457.12	>10
2	0.24 1.62	0.14 0.98	0.38 2.60	20.00 137.90	66.30 457.12	>10
3	0.16 1.10	0.09 0.65	0.25 1.75	20.00 137.90	66.30 457.12	>10
4	1.35 9.32	2.31 15.94	3.66 25.26	20.00 137.90	66.30 457.12	>10
5	1.23 8.47	1.63 11.23	2.86 19.70	20.00 137.90	66.30 457.12	>10
6	0.73 5.06	1.17 8.05	1.90 13.12	20.00 137.90	66.30 457.12	>10
7	0.24 1.67	0.05 0.38	0.30 2.04	20.00 137.90	66.30 457.12	>10
8	0.24 1.62	0.05 0.32	0.28 1.94	20.00 137.90	66.30 457.12	>10
9	0.27 1.90	0.07 0.51	0.35 2.41	20.00 137.90	66.30 457.12	>10
10	0.96 6.64	0.12 0.83	1.08 7.47	20.00 137.90	66.30 457.12	>10
11	0.81 5.58	0.96 6.63	1.77 12.21	20.00 137.90	66.30 457.12	>10
12	0.85 5.86	1.20 8.24	2.04 14.10	20.00 137.90	66.30 457.12	>10
13	1.24 8.58	0.88 6.06	2.12 14.64	20.00 137.90	66.30 457.12	>10

14	1.25	1.53	2.78	20.00	66.30	>10
	8.61	10.57	19.18	137.90	457.12	
15	1.56	1.70	3.25	20.00	66.30	>10
	10.74	11.69	22.42	137.90	457.12	
16	1.60	2.53	4.13	20.00	66.30	>10
	11.03	17.46	28.49	137.90	457.12	
17	1.07	1.71	2.78	20.00	66.30	>10
	7.39	11.81	19.20	137.90	457.12	
18	0.84	1.36	2.20	20.00	66.30	>10
	5.82	9.38	15.20	137.90	457.12	
19	1.42	2.10	3.51	20.00	66.30	>10
	9.77	14.46	24.23	137.90	457.12	
20	1.76	2.77	4.52	20.00	66.30	>10
	12.10	19.10	31.20	137.90	457.12	
21	0.32	0.52	0.84	20.00	66.30	>10
	2.20	3.57	5.77	137.90	457.12	
22	0.39	0.37	0.76	20.00	66.30	>10
	2.71	2.55	5.26	137.90	457.12	

Min MS: 13.653, Location: 20, Combination: Pm+Pb

Table 2-130. Load Combination 353, Post Fire at 120 Minutes, Hypothetical Accident Conditions of Transport – Model AOS-025A

Load Cases: 112, 201, 211

Post Fire at 120 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation
 Internal Design Pressure, 207 kPa (30 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
1	0.73 5.03	1.03 7.09	1.76 12.13	20.00 137.90	66.30 457.12	>10
2	0.24 1.62	0.14 0.98	0.38 2.60	20.00 137.90	66.30 457.12	>10
3	0.16 1.10	0.09 0.65	0.25 1.75	20.00 137.90	66.30 457.12	>10
4	1.35 9.32	2.31 15.94	3.66 25.26	20.00 137.90	66.30 457.12	>10
5	1.23 8.47	1.63 11.23	2.86 19.70	20.00 137.90	66.30 457.12	>10
6	0.73 5.06	1.17 8.05	1.90 13.12	20.00 137.90	66.30 457.12	>10
7	0.24 1.67	0.05 0.38	0.30 2.04	20.00 137.90	66.30 457.12	>10
8	0.24 1.62	0.05 0.32	0.28 1.94	20.00 137.90	66.30 457.12	>10
9	0.27 1.90	0.07 0.51	0.35 2.41	20.00 137.90	66.30 457.12	>10
10	0.96 6.64	0.12 0.83	1.08 7.47	20.00 137.90	66.30 457.12	>10
11	0.81 5.58	0.96 6.63	1.77 12.21	20.00 137.90	66.30 457.12	>10
12	0.85 5.86	1.20 8.24	2.04 14.10	20.00 137.90	66.30 457.12	>10
13	1.24 8.58	0.88 6.06	2.12 14.64	20.00 137.90	66.30 457.12	>10

14	1.25 8.61	1.53 10.57	2.78 19.18	20.00 137.90	66.30 457.12	>10
15	1.56 10.74	1.70 11.69	3.25 22.42	20.00 137.90	66.30 457.12	>10
16	1.60 11.03	2.53 17.46	4.13 28.49	20.00 137.90	66.30 457.12	>10
17	1.07 7.39	1.71 11.81	2.78 19.20	20.00 137.90	66.30 457.12	>10
18	0.84 5.82	1.36 9.38	2.20 15.20	20.00 137.90	66.30 457.12	>10
19	1.42 9.77	2.10 14.46	3.51 24.23	20.00 137.90	66.30 457.12	>10
20	1.76 12.10	2.77 19.10	4.52 31.20	20.00 137.90	66.30 457.12	>10
21	0.32 2.20	0.52 3.57	0.84 5.77	20.00 137.90	66.30 457.12	>10
22	0.39 2.71	0.37 2.55	0.76 5.26	20.00 137.90	66.30 457.12	>10

Min MS: 13.653, Location: 20, Combination: Pm+Pb

**Table 2-131. Load Combination 354, Post Fire at 150 Minutes,
Hypothetical Accident Conditions of Transport – Model AOS-025A**

Load Cases: 112, 201, 211

Post Fire at 150 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation
Internal Design Pressure, 207 kPa (30 psia)
Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
---	--	--	-----	--	--	--
1	0.73	1.03	1.76	20.00	66.30	>10
	5.03	7.09	12.13	137.90	457.12	
2	0.24	0.14	0.38	20.00	66.30	>10
	1.62	0.98	2.60	137.90	457.12	
3	0.16	0.09	0.25	20.00	66.30	>10
	1.10	0.65	1.75	137.90	457.12	
4	1.35	2.31	3.66	20.00	66.30	>10
	9.32	15.94	25.26	137.90	457.12	
5	1.23	1.63	2.86	20.00	66.30	>10
	8.47	11.23	19.70	137.90	457.12	
6	0.73	1.17	1.90	20.00	66.30	>10
	5.06	8.05	13.12	137.90	457.12	
7	0.24	0.05	0.30	20.00	66.30	>10
	1.67	0.38	2.04	137.90	457.12	
8	0.24	0.05	0.28	20.00	66.30	>10
	1.62	0.32	1.94	137.90	457.12	
9	0.27	0.07	0.35	20.00	66.30	>10
	1.90	0.51	2.41	137.90	457.12	
10	0.96	0.12	1.08	20.00	66.30	>10
	6.64	0.83	7.47	137.90	457.12	
11	0.81	0.96	1.77	20.00	66.30	>10
	5.58	6.63	12.21	137.90	457.12	
12	0.85	1.20	2.04	20.00	66.30	>10
	5.86	8.24	14.10	137.90	457.12	
13	1.24	0.88	2.12	20.00	66.30	>10
	8.58	6.06	14.64	137.90	457.12	

14	1.25	1.53	2.78	20.00	66.30	>10
	8.61	10.57	19.18	137.90	457.12	
15	1.56	1.70	3.25	20.00	66.30	>10
	10.74	11.69	22.42	137.90	457.12	
16	1.60	2.53	4.13	20.00	66.30	>10
	11.03	17.46	28.49	137.90	457.12	
17	1.07	1.71	2.78	20.00	66.30	>10
	7.39	11.81	19.20	137.90	457.12	
18	0.84	1.36	2.20	20.00	66.30	>10
	5.82	9.38	15.20	137.90	457.12	
19	1.42	2.10	3.51	20.00	66.30	>10
	9.77	14.46	24.23	137.90	457.12	
20	1.76	2.77	4.52	20.00	66.30	>10
	12.10	19.10	31.20	137.90	457.12	
21	0.32	0.52	0.84	20.00	66.30	>10
	2.20	3.57	5.77	137.90	457.12	
22	0.39	0.37	0.76	20.00	66.30	>10
	2.71	2.55	5.26	137.90	457.12	

Min MS: 13.653, Location: 20, Combination: Pm+Pb

Table 2-132. Load Combination 355, Post Fire at 180 Minutes, Hypothetical Accident Conditions of Transport – Model AOS-025A

Load Cases: 112, 201, 211

Post Fire at 180 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation
 Internal Design Pressure, 207 kPa (30 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
1	0.73 5.03	1.03 7.09	1.76 12.13	20.00 137.90	66.30 457.12	>10
2	0.24 1.62	0.14 0.98	0.38 2.60	20.00 137.90	66.30 457.12	>10
3	0.16 1.10	0.09 0.65	0.25 1.75	20.00 137.90	66.30 457.12	>10
4	1.35 9.32	2.31 15.94	3.66 25.26	20.00 137.90	66.30 457.12	>10
5	1.23 8.47	1.63 11.23	2.86 19.70	20.00 137.90	66.30 457.12	>10
6	0.73 5.06	1.17 8.05	1.90 13.12	20.00 137.90	66.30 457.12	>10
7	0.24 1.67	0.05 0.38	0.30 2.04	20.00 137.90	66.30 457.12	>10
8	0.24 1.62	0.05 0.32	0.28 1.94	20.00 137.90	66.30 457.12	>10
9	0.27 1.90	0.07 0.51	0.35 2.41	20.00 137.90	66.30 457.12	>10
10	0.96 6.64	0.12 0.83	1.08 7.47	20.00 137.90	66.30 457.12	>10
11	0.81 5.58	0.96 6.63	1.77 12.21	20.00 137.90	66.30 457.12	>10
12	0.85 5.86	1.20 8.24	2.04 14.10	20.00 137.90	66.30 457.12	>10
13	1.24 8.58	0.88 6.06	2.12 14.64	20.00 137.90	66.30 457.12	>10

14	1.25	1.53	2.78	20.00	66.30	>10
	8.61	10.57	19.18	137.90	457.12	
15	1.56	1.70	3.25	20.00	66.30	>10
	10.74	11.69	22.42	137.90	457.12	
16	1.60	2.53	4.13	20.00	66.30	>10
	11.03	17.46	28.49	137.90	457.12	
17	1.07	1.71	2.78	20.00	66.30	>10
	7.39	11.81	19.20	137.90	457.12	
18	0.84	1.36	2.20	20.00	66.30	>10
	5.82	9.38	15.20	137.90	457.12	
19	1.42	2.10	3.51	20.00	66.30	>10
	9.77	14.46	24.23	137.90	457.12	
20	1.76	2.77	4.52	20.00	66.30	>10
	12.10	19.10	31.20	137.90	457.12	
21	0.32	0.52	0.84	20.00	66.30	>10
	2.20	3.57	5.77	137.90	457.12	
22	0.39	0.37	0.76	20.00	66.30	>10
	2.71	2.55	5.26	137.90	457.12	

Min MS: 13.653, Location: 20, Combination: Pm+Pb

2.12.2.2 Structural Evaluation Results – Model AOS-050A

This appendix presents the following information, specific to the Model AOS-050A transport package:

- Normal Conditions of Transport Stress Summary and Comparisons with Allowable – Model AOS-050A
- Hypothetical Accident Conditions of Transport Summary of Damages (Stresses) – Model AOS-050A

2.12.2.2.1 Normal Conditions of Transport Stress Summary and Comparisons with Allowable – Model AOS-050A

Table 2-133 and Table 2-134 present Model AOS-050A transport package Load Cases and Load Combinations, respectively, under Normal conditions of transport:

- Table 2-135 through Table 2-152 present Load Case output data. Comparisons with allowable stress limits are included for Load Cases 101, 102, 103, 104, 105, and 106.
- Table 2-153 through Table 2-170 present Load Combination output data.

Table 2-133. Load Cases Associated with Allowable Stresses under Normal Conditions of Transport – Model AOS-050A

Load Case	Description	Data
101	100°F Ambient, Maximum Decay Heat	Table 2-135
102	100°F Ambient, Maximum Decay Heat, Maximum Insolation	Table 2-136
103	-20°F Ambient, Zero Decay Heat, Zero Insolation	Table 2-137
104	-40°F Ambient, Zero Decay Heat, Zero Insolation	Table 2-138
105	-40°F Ambient, Maximum Decay Heat	Table 2-139
106	-20°F Ambient, Maximum Decay Heat	Table 2-140
201	Internal Design Pressure, 414 kPa (60 psia)	Table 2-141
202	Minimum External Pressure, 24 kPa (3.5 psia)	Table 2-142
203	Maximum Increased External Pressure, 140 kPa (20 psia)	Table 2-143
204	Additional Increased External Pressure, 2 MPa (290 psia)	Table 2-144
211	Fabrication Stress	Table 2-145
215	Compression Load (5x weight)	Table 2-146
216	Rod Drop onto Cask	Table 2-147
221	Forward 10g Vibration Inertia Load	Table 2-148
222	Lateral 5g Vibration Inertia Load	Table 2-149
223	Vertical 2g Vibration Inertia Load	Table 2-150
231	4-ft. Head-On Drop	Table 2-151
232	30-ft. Head-On Drop Impact Test, Normal Conditions	Table 2-152

Table 2-134. Load Combinations Associated with Allowable Stresses under Normal Conditions of Transport – Model AOS-050A

Load Combination	Load Cases	Description	Data
101	102, 201, 211	Hot Environment	Table 2-153
102	104, 201, 211	Cold Environment	Table 2-154
103	103, 202, 211	Increased External Pressure	Table 2-155
104	101, 201, 202, 211	Minimum External Pressure	Table 2-156
105	105, 201, 202, 211	Cold Environment with Maximum Decay Heat	Table 2-157
106	101, 201, 203, 211	Maximum Pressure, Hot Environment	Table 2-158
107	105, 201, 203, 211	Maximum Pressure, Cold Environment	Table 2-159
215	215, 101, 201, 211	Compression Load	Table 2-160
216	216, 101, 201, 211	Rod Drop	Table 2-161
217	216, 104, 201, 211	Rod Drop, Cold Environment	Table 2-162
221	221, 101, 201, 211	Forward Vibration	Table 2-163
222	222, 101, 201, 211	Lateral Vibration	Table 2-164
223	223, 101, 201, 211	Vertical Vibration	Table 2-165
224	221, 103, 201, 211	Forward Vibration at Cold Temperature	Table 2-166
225	222, 103, 201, 211	Lateral Vibration at Cold Temperature	Table 2-167
226	223, 103, 201, 211	Vertical Vibration at Cold Temperature	Table 2-168
231	231, 102, 201, 211	4-ft. Head-On Drop, Normal Conditions	Table 2-169
232	232, 102, 201, 211	30-ft. Head-On Drop, Normal Conditions (Impact Test)	Table 2-170
233	231, 103, 211	4-ft. Drop at Cold Temperature	Table 2-171

**Table 2-135. Load Case 101, 100°F Ambient, Maximum Decay Heat,
Normal Conditions of Transport – Model AOS-050A**

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	5.0983E+01	-1.0957E+02	-2.1641E+01	1.6055E+02	2.5535E+02
	3.5151E-01	-7.5544E-01	-1.4921E-01	1.1070E+00	1.7606E+00
2	6.1579E+01	-1.4600E+02	-1.8781E+01	2.0758E+02	4.2119E+02
	4.2457E-01	-1.0066E+00	-1.2949E-01	1.4312E+00	2.9040E+00
3	5.2022E+01	-1.0195E+02	-7.1029E+00	1.5397E+02	2.3914E+02
	3.5868E-01	-7.0290E-01	-4.8973E-02	1.0616E+00	1.6488E+00
4	2.1572E+02	-9.1625E+02	-1.9724E+02	1.1320E+03	2.2401E+03
	1.4874E+00	-6.3173E+00	-1.3599E+00	7.8047E+00	1.5445E+01
5	1.9711E+02	-9.8229E+02	-6.4541E+02	1.1794E+03	1.8500E+03
	1.3590E+00	-6.7727E+00	-4.4500E+00	8.1317E+00	1.2755E+01
6	2.5459E+01	-5.1469E+02	-9.1093E+02	5.4015E+02	6.2083E+02
	1.7553E-01	-3.5486E+00	-6.2807E+00	3.7242E+00	4.2804E+00
7	-3.9486E+01	-1.8746E+02	-4.3852E+02	1.4798E+02	2.0576E+02
	-2.7225E-01	-1.2925E+00	-3.0235E+00	1.0203E+00	1.4186E+00
8	-3.9611E+01	-1.8733E+02	-4.4531E+02	1.4772E+02	2.0547E+02
	-2.7311E-01	-1.2916E+00	-3.0703E+00	1.0185E+00	1.4167E+00
9	-4.0479E+01	-1.8627E+02	-4.5882E+02	1.4579E+02	2.0040E+02
	-2.7909E-01	-1.2843E+00	-3.1634E+00	1.0052E+00	1.3817E+00
10	1.5765E+01	-4.3796E+02	-9.4487E+01	4.5372E+02	6.9574E+02
	1.0870E-01	-3.0196E+00	-6.5146E-01	3.1283E+00	4.7970E+00
11	-1.1675E+02	-5.8621E+02	-3.1189E+02	4.6946E+02	1.5875E+02
	-8.0496E-01	-4.0418E+00	-2.1504E+00	3.2368E+00	1.0945E+00
12	1.4648E+00	-6.9981E+02	-6.9521E+02	7.0128E+02	1.8196E+02
	1.0100E-02	-4.8250E+00	-4.7933E+00	4.8351E+00	1.2546E+00
13	-3.0732E+01	-7.2585E+02	-6.8918E+01	6.9512E+02	8.3651E+01
	-2.1189E-01	-5.0046E+00	-4.7517E-01	4.7927E+00	5.7676E-01
14	-6.5893E+01	-6.3576E+02	6.8736E+01	5.6987E+02	4.8608E+02
	-4.5432E-01	-4.3834E+00	4.7391E-01	3.9291E+00	3.3514E+00
15	7.0612E+02	-7.0239E+02	-2.9121E+00	1.4085E+03	2.3761E+03
	4.8685E+00	-4.8428E+00	-2.0078E-02	9.7114E+00	1.6383E+01

16	1.7608E+02	-3.1436E+02	-1.5377E+02	4.9044E+02	7.9644E+02
	1.2140E+00	-2.1674E+00	-1.0602E+00	3.3814E+00	5.4913E+00
17	7.8085E+01	-2.1398E+02	-5.6290E+01	2.9207E+02	5.0506E+02
	5.3837E-01	-1.4754E+00	-3.8811E-01	2.0137E+00	3.4822E+00
18	5.2701E+01	-1.3938E+02	6.5634E+02	1.9208E+02	3.8182E+01
	3.6336E-01	-9.6101E-01	4.5253E+00	1.3244E+00	2.6326E-01
19	-1.4122E+01	-2.9148E+02	7.2132E+02	2.7736E+02	3.9503E+02
	-9.7365E-02	-2.0097E+00	4.9733E+00	1.9123E+00	2.7237E+00
20	-2.0709E+01	-5.7822E+02	5.2506E+01	5.5751E+02	6.9097E+01
	-1.4279E-01	-3.9867E+00	3.6202E-01	3.8439E+00	4.7641E-01
21	1.6800E+01	-1.0547E+01	6.2925E+00	2.7347E+01	5.3309E+01
	1.1583E-01	-7.2718E-02	4.3385E-02	1.8855E-01	3.6755E-01
22	-2.0512E+01	-9.3130E+01	-3.6011E+01	7.2618E+01	1.5539E+02
	-1.4143E-01	-6.4211E-01	-2.4829E-01	5.0069E-01	1.0714E+00

Allowable Stress for Load Case 101

LOC	Tmax (deg_F)	Tave (deg_F)	Sm (ksi)	Sy (ksi)	Su (ksi)
---	-----	-----	-----	-----	-----
1	215.29	214.44	20.00	25.00	66.30
2	215.51	213.44	20.00	25.00	66.30
3	215.35	214.53	20.00	25.00	66.30
4	216.67	216.56	20.00	25.00	66.30
5	219.04	218.65	20.00	25.00	66.30
6	220.00	219.58	20.00	25.00	66.30
7	220.62	219.93	20.00	25.00	66.30
8	220.65	219.96	20.00	25.00	66.30
9	220.71	220.01	20.00	25.00	66.30
10	221.28	220.39	20.00	25.00	66.30
11	222.29	221.17	20.00	25.00	66.30
12	224.99	223.71	20.00	25.00	66.30
13	219.61	219.12	20.00	25.00	66.30
14	218.36	218.07	20.00	25.00	66.30
15	215.93	215.90	20.00	25.00	66.30
16	216.78	216.59	20.00	25.00	66.30
17	216.94	216.80	20.00	25.00	66.30
18	217.90	217.69	20.00	25.00	66.30
19	218.86	218.46	20.00	25.00	66.30
20	223.43	222.81	20.00	25.00	66.30
21	214.87	214.80	20.00	25.00	66.30
22	215.46	215.39	20.00	25.00	66.30

Table 2-136. Load Case 102, 100°F Ambient, Maximum Decay Heat, Maximum Insolation, Normal Conditions of Transport – Model AOS-050A

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	4.6230E+01	-1.0386E+02	-2.5844E+01	1.5009E+02	2.4183E+02	
	3.1875E-01	-7.1607E-01	-1.7819E-01	1.0348E+00	1.6674E+00	
2	5.6787E+01	-1.3727E+02	-7.9275E+00	1.9405E+02	3.8942E+02	
	3.9153E-01	-9.4643E-01	-5.4659E-02	1.3380E+00	2.6849E+00	
3	5.3378E+01	-9.8542E+01	-7.6213E+00	1.5192E+02	2.3448E+02	
	3.6803E-01	-6.7943E-01	-5.2547E-02	1.0475E+00	1.6167E+00	
4	4.3735E+02	-9.1795E+02	-3.4836E+02	1.3553E+03	2.6809E+03	
	3.0155E+00	-6.3290E+00	-2.4019E+00	9.3445E+00	1.8484E+01	
5	3.4319E+02	-7.6386E+02	-9.0477E+02	1.1070E+03	1.6564E+03	
	2.3662E+00	-5.2666E+00	-6.2382E+00	7.6328E+00	1.1421E+01	
6	1.7645E+01	-6.4881E+02	-1.7320E+03	6.6646E+02	1.0025E+03	
	1.2166E-01	-4.4734E+00	-1.1941E+01	4.5950E+00	6.9121E+00	
7	-1.0537E+02	-3.2530E+02	-2.1215E+03	2.1993E+02	2.1383E+02	
	-7.2653E-01	-2.2429E+00	-1.4627E+01	1.5163E+00	1.4743E+00	
8	-1.0983E+02	-3.2034E+02	-2.1299E+03	2.1050E+02	1.9672E+02	
	-7.5728E-01	-2.2086E+00	-1.4685E+01	1.4514E+00	1.3563E+00	
9	-1.0774E+02	-3.2317E+02	-2.1648E+03	2.1543E+02	2.0456E+02	
	-7.4284E-01	-2.2282E+00	-1.4926E+01	1.4853E+00	1.4104E+00	
10	6.0058E+01	-8.6588E+02	-9.6955E+02	9.2593E+02	7.8500E+02	
	4.1409E-01	-5.9700E+00	-6.6848E+00	6.3841E+00	5.4124E+00	
11	-1.8286E+02	-9.2728E+02	-6.6824E+02	7.4442E+02	7.3835E+02	
	-1.2608E+00	-6.3933E+00	-4.6073E+00	5.1326E+00	5.0907E+00	
12	2.3527E+00	-1.0214E+03	-1.0163E+03	1.0237E+03	7.8038E+02	
	1.6221E-02	-7.0423E+00	-7.0072E+00	7.0585E+00	5.3806E+00	
13	2.2747E+01	-6.9578E+02	-8.4108E+01	7.1853E+02	2.9726E+02	
	1.5683E-01	-4.7972E+00	-5.7990E-01	4.9541E+00	2.0495E+00	
14	-6.2364E+01	-6.4557E+02	1.7843E+01	5.8320E+02	8.6998E+02	
	-4.2998E-01	-4.4510E+00	1.2302E-01	4.0211E+00	5.9983E+00	
15	1.0380E+03	-1.0666E+03	-3.8747E+01	2.1047E+03	3.5508E+03	
	7.1570E+00	-7.3542E+00	-2.6715E-01	1.4511E+01	2.4482E+01	

16	2.6063E+02	-4.8203E+02	-1.8953E+02	7.4266E+02	1.2050E+03
	1.7970E+00	-3.3235E+00	-1.3068E+00	5.1205E+00	8.3082E+00
17	1.1458E+02	-3.2024E+02	-3.1572E+01	4.3483E+02	7.4874E+02
	7.9002E-01	-2.2080E+00	-2.1768E-01	2.9980E+00	5.1624E+00
18	4.0402E+01	-1.5380E+02	6.3354E+02	1.9420E+02	3.4897E+01
	2.7856E-01	-1.0604E+00	4.3681E+00	1.3390E+00	2.4061E-01
19	-2.9257E+00	-3.1945E+02	6.7747E+02	3.1652E+02	4.9011E+02
	-2.0172E-02	-2.2025E+00	4.6710E+00	2.1823E+00	3.3792E+00
20	-3.6221E+01	-5.6814E+02	4.6641E+01	5.3192E+02	2.3743E+02
	-2.4974E-01	-3.9172E+00	3.2158E-01	3.6675E+00	1.6370E+00
21	1.8711E+01	-1.1642E+01	7.0702E+00	3.0353E+01	5.8956E+01
	1.2901E-01	-8.0267E-02	4.8747E-02	2.0928E-01	4.0648E-01
22	-1.7445E+01	-1.3227E+02	-3.4003E+01	1.1483E+02	2.0598E+02
	-1.2028E-01	-9.1199E-01	-2.3445E-01	7.9171E-01	1.4202E+00

Allowable Stress for Load Case 102

LOC	Tmax (deg_F)	Tave (deg_F)	Sm (ksi)	Sy (ksi)	Su (ksi)
1	285.77	284.89	20.00	23.60	66.30
2	286.21	284.12	20.00	23.60	66.30
3	286.55	285.90	20.00	23.60	66.30
4	287.11	287.00	20.00	23.60	66.30
5	289.41	289.03	20.00	23.60	66.30
6	290.34	289.93	20.00	23.60	66.30
7	290.97	290.30	20.00	23.60	66.30
8	291.14	290.47	20.00	23.60	66.30
9	291.36	290.68	20.00	23.60	66.30
10	292.10	291.22	20.00	23.60	66.30
11	293.09	292.03	20.00	23.60	66.30
12	295.71	294.48	20.00	23.60	66.30
13	290.56	290.12	20.00	23.60	66.30
14	289.43	289.16	20.00	23.60	66.30
15	286.42	286.39	20.00	23.60	66.30
16	287.16	286.99	20.00	23.60	66.30
17	287.30	287.18	20.00	23.60	66.30
18	288.23	288.03	20.00	23.60	66.30
19	289.15	288.77	20.00	23.60	66.30
20	293.49	292.91	20.00	23.60	66.30
21	286.27	286.21	20.00	23.60	66.30
22	286.03	285.98	20.00	23.60	66.30

Table 2-137. Load Case 103, -20°F Ambient, Zero Decay Heat, Zero Insolation, Normal Conditions of Transport – Model AOS-050A

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	1.6850E+01	-5.7642E+01	-1.2011E+01	7.4491E+01	7.4156E+01	
	1.1617E-01	-3.9743E-01	-8.2811E-02	5.1360E-01	5.1129E-01	
2	5.2966E+01	-7.2093E-01	-1.7049E+01	5.3686E+01	6.2906E+00	
	3.6518E-01	-4.9706E-03	-1.1755E-01	3.7016E-01	4.3372E-02	
3	6.3488E+01	-7.0567E+00	-1.0242E+01	7.0545E+01	8.0488E+01	
	4.3774E-01	-4.8654E-02	-7.0617E-02	4.8639E-01	5.5494E-01	
4	5.5406E+03	-3.3127E+03	-2.5172E+02	8.8533E+03	1.8218E+04	
	3.8201E+01	-2.2840E+01	-1.7355E+00	6.1041E+01	1.2561E+02	
5	8.3774E+03	-3.7199E+03	-3.7144E+02	1.2097E+04	1.6026E+04	
	5.7760E+01	-2.5648E+01	-2.5610E+00	8.3408E+01	1.1049E+02	
6	5.4241E+03	-3.1938E+02	1.5464E+03	5.7435E+03	9.8360E+03	
	3.7398E+01	-2.2020E+00	1.0662E+01	3.9600E+01	6.7817E+01	
7	2.6398E+03	2.9829E-01	-7.0236E+01	2.6395E+03	7.6393E+01	
	1.8201E+01	2.0566E-03	-4.8426E-01	1.8199E+01	5.2671E-01	
8	2.6366E+03	1.8166E-02	2.7199E+00	2.6365E+03	6.2703E-01	
	1.8178E+01	1.2525E-04	1.8753E-02	1.8178E+01	4.3232E-03	
9	2.6375E+03	-5.2561E-02	-3.8085E+01	2.6375E+03	2.2161E+01	
	1.8185E+01	-3.6239E-04	-2.6259E-01	1.8185E+01	1.5279E-01	
10	2.6582E+03	-2.3659E+02	1.2395E+03	2.8948E+03	1.4578E+03	
	1.8328E+01	-1.6312E+00	8.5458E+00	1.9959E+01	1.0051E+01	
11	7.2041E+02	-6.9588E+02	2.1569E+02	1.4163E+03	1.1990E+03	
	4.9671E+00	-4.7979E+00	1.4871E+00	9.7650E+00	8.2670E+00	
12	4.7851E+02	-2.1300E+02	2.6203E+02	6.9150E+02	1.2938E+03	
	3.2992E+00	-1.4685E+00	1.8066E+00	4.7678E+00	8.9205E+00	
13	3.6711E+03	-1.3545E+03	4.0530E+02	5.0257E+03	3.5441E+03	
	2.5312E+01	-9.3392E+00	2.7945E+00	3.4651E+01	2.4436E+01	
14	2.9070E+03	-1.1628E+03	3.9355E+02	4.0697E+03	4.8272E+03	
	2.0043E+01	-8.0170E+00	2.7134E+00	2.8060E+01	3.3283E+01	
15	2.8905E+02	-7.8743E+01	2.6000E+02	3.6779E+02	3.2041E+01	
	1.9929E+00	-5.4291E-01	1.7927E+00	2.5358E+00	2.2091E-01	

16	1.0613E+03	-4.3425E+02	3.7751E+02	1.4955E+03	1.9830E+03
	7.3171E+00	-2.9940E+00	2.6028E+00	1.0311E+01	1.3672E+01
17	1.1013E+03	-1.7666E+02	-7.6683E+01	1.2779E+03	2.2490E+03
	7.5931E+00	-1.2181E+00	-5.2871E-01	8.8111E+00	1.5506E+01
18	1.1521E+03	-1.8406E+02	-1.3282E+02	1.3361E+03	2.3457E+03
	7.9433E+00	-1.2690E+00	-9.1573E-01	9.2123E+00	1.6173E+01
19	1.2608E+03	-5.1856E+02	3.2010E+02	1.7794E+03	2.4779E+03
	8.6929E+00	-3.5754E+00	2.2070E+00	1.2268E+01	1.7084E+01
20	1.3175E+03	-6.5056E+02	1.6353E+02	1.9680E+03	3.6550E+03
	9.0836E+00	-4.4854E+00	1.1275E+00	1.3569E+01	2.5200E+01
21	2.2245E+02	-4.9835E+02	-4.6625E+01	7.2080E+02	1.7043E+03
	1.5338E+00	-3.4360E+00	-3.2147E-01	4.9698E+00	1.1751E+01
22	3.2992E+01	-5.9942E+01	3.3119E+01	9.2934E+01	3.3780E+00
	2.2747E-01	-4.1329E-01	2.2835E-01	6.4076E-01	2.3290E-02

Allowable Stress for Load Case 103

LOC	Tmax (deg_F)	Tave (deg_F)	Sm (ksi)	Sy (ksi)	Su (ksi)
1	0.00	-20.00	20.00	30.00	70.00
2	0.00	-20.00	20.00	30.00	70.00
3	0.00	-20.00	20.00	30.00	70.00
4	0.00	-20.00	20.00	30.00	70.00
5	0.00	-20.00	20.00	30.00	70.00
6	0.00	-20.00	20.00	30.00	70.00
7	0.00	-20.00	20.00	30.00	70.00
8	0.00	-20.00	20.00	30.00	70.00
9	0.00	-20.00	20.00	30.00	70.00
10	0.00	-20.00	20.00	30.00	70.00
11	0.00	-20.00	20.00	30.00	70.00
12	0.00	-20.00	20.00	30.00	70.00
13	0.00	-20.00	20.00	30.00	70.00
14	0.00	-20.00	20.00	30.00	70.00
15	0.00	-20.00	20.00	30.00	70.00
16	0.00	-20.00	20.00	30.00	70.00
17	0.00	-20.00	20.00	30.00	70.00
18	0.00	-20.00	20.00	30.00	70.00
19	0.00	-20.00	20.00	30.00	70.00
20	0.00	-20.00	20.00	30.00	70.00
21	0.00	-20.00	20.00	30.00	70.00
22	0.00	-20.00	20.00	30.00	70.00

Table 2-138. Load Case 104, -40°F Ambient, Zero Decay Heat, Zero Insolation, Normal Conditions of Transport – Model AOS-050A

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	2.0594E+01	-7.0451E+01	-1.4680E+01	9.1045E+01	9.0635E+01
	1.4199E-01	-4.8574E-01	-1.0121E-01	6.2773E-01	6.2491E-01
2	6.4736E+01	-8.8114E-01	-2.0838E+01	6.5617E+01	7.6885E+00
	4.4634E-01	-6.0752E-03	-1.4367E-01	4.5241E-01	5.3010E-02
3	7.7597E+01	-8.6248E+00	-1.2518E+01	8.6222E+01	9.8374E+01
	5.3501E-01	-5.9466E-02	-8.6310E-02	5.9448E-01	6.7826E-01
4	6.7716E+03	-4.0488E+03	-3.0745E+02	1.0820E+04	2.2265E+04
	4.6689E+01	-2.7915E+01	-2.1198E+00	7.4604E+01	1.5351E+02
5	1.0239E+04	-4.5464E+03	-4.5364E+02	1.4785E+04	1.9587E+04
	7.0595E+01	-3.1346E+01	-3.1278E+00	1.0194E+02	1.3505E+02
6	6.6294E+03	-3.9027E+02	1.8903E+03	7.0197E+03	1.2021E+04
	4.5708E+01	-2.6909E+00	1.3033E+01	4.8399E+01	8.2885E+01
7	3.2265E+03	3.6449E-01	-8.5844E+01	3.2261E+03	9.3362E+01
	2.2246E+01	2.5130E-03	-5.9188E-01	2.2243E+01	6.4371E-01
8	3.2225E+03	2.2195E-02	3.3242E+00	3.2225E+03	7.6651E-01
	2.2218E+01	1.5303E-04	2.2920E-02	2.2218E+01	5.2849E-03
9	3.2236E+03	-6.4251E-02	-4.6549E+01	3.2237E+03	2.7085E+01
	2.2226E+01	-4.4300E-04	-3.2094E-01	2.2226E+01	1.8675E-01
10	3.2489E+03	-2.8916E+02	1.5149E+03	3.5381E+03	1.7818E+03
	2.2401E+01	-1.9937E+00	1.0445E+01	2.4394E+01	1.2285E+01
11	8.8051E+02	-8.5052E+02	2.6362E+02	1.7310E+03	1.4655E+03
	6.0709E+00	-5.8641E+00	1.8176E+00	1.1935E+01	1.0104E+01
12	5.8485E+02	-2.6033E+02	3.2026E+02	8.4517E+02	1.5813E+03
	4.0324E+00	-1.7949E+00	2.2081E+00	5.8273E+00	1.0903E+01
13	4.4870E+03	-1.6556E+03	4.9537E+02	6.1425E+03	4.3317E+03
	3.0937E+01	-1.1415E+01	3.4155E+00	4.2351E+01	2.9866E+01
14	3.5530E+03	-1.4212E+03	4.8101E+02	4.9742E+03	5.9000E+03
	2.4497E+01	-9.7987E+00	3.3164E+00	3.4296E+01	4.0679E+01
15	3.5383E+02	-9.9180E+01	3.1738E+02	4.5301E+02	1.0049E+01
	2.4396E+00	-6.8382E-01	2.1882E+00	3.1234E+00	6.9287E-02

16	1.2958E+03	-5.3016E+02	4.6107E+02	1.8260E+03	2.4200E+03
	8.9345E+00	-3.6553E+00	3.1790E+00	1.2590E+01	1.6685E+01
17	1.3450E+03	-2.1565E+02	-9.3592E+01	1.5606E+03	2.7464E+03
	9.2732E+00	-1.4868E+00	-6.4530E-01	1.0760E+01	1.8936E+01
18	1.4090E+03	-2.2572E+02	-1.6263E+02	1.6347E+03	2.8697E+03
	9.7147E+00	-1.5563E+00	-1.1213E+00	1.1271E+01	1.9786E+01
19	1.5420E+03	-6.3407E+02	3.9162E+02	2.1761E+03	3.0303E+03
	1.0632E+01	-4.3718E+00	2.7001E+00	1.5004E+01	2.0893E+01
20	1.6114E+03	-7.9560E+02	2.0012E+02	2.4070E+03	4.4702E+03
	1.1110E+01	-5.4855E+00	1.3797E+00	1.6595E+01	3.0821E+01
21	2.7189E+02	-6.0909E+02	-5.6986E+01	8.8098E+02	2.0830E+03
	1.8746E+00	-4.1996E+00	-3.9290E-01	6.0741E+00	1.4362E+01
22	4.0429E+01	-7.4955E+01	4.0488E+01	1.1538E+02	5.8085E-01
	2.7875E-01	-5.1680E-01	2.7915E-01	7.9555E-01	4.0048E-03

Allowable Stress for Load Case 104

LOC	Tmax (deg_F)	Tave (deg_F)	Sm (ksi)	Sy (ksi)	Su (ksi)
1	0.00	-40.00	20.00	30.00	70.00
2	0.00	-40.00	20.00	30.00	70.00
3	0.00	-40.00	20.00	30.00	70.00
4	0.00	-40.00	20.00	30.00	70.00
5	0.00	-40.00	20.00	30.00	70.00
6	0.00	-40.00	20.00	30.00	70.00
7	0.00	-40.00	20.00	30.00	70.00
8	0.00	-40.00	20.00	30.00	70.00
9	0.00	-40.00	20.00	30.00	70.00
10	0.00	-40.00	20.00	30.00	70.00
11	0.00	-40.00	20.00	30.00	70.00
12	0.00	-40.00	20.00	30.00	70.00
13	0.00	-40.00	20.00	30.00	70.00
14	0.00	-40.00	20.00	30.00	70.00
15	0.00	-40.00	20.00	30.00	70.00
16	0.00	-40.00	20.00	30.00	70.00
17	0.00	-40.00	20.00	30.00	70.00
18	0.00	-40.00	20.00	30.00	70.00
19	0.00	-40.00	20.00	30.00	70.00
20	0.00	-40.00	20.00	30.00	70.00
21	0.00	-40.00	20.00	30.00	70.00
22	0.00	-40.00	20.00	30.00	70.00

Table 2-139. Load Case 105, -40°F Ambient, Maximum Decay Heat, Normal Conditions of Transport – Model AOS-050A

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	5.5839E+01	-1.1883E+02	-2.2736E+01	1.7467E+02	2.7716E+02	
	3.8500E-01	-8.1929E-01	-1.5676E-01	1.2043E+00	1.9109E+00	
2	6.5948E+01	-1.5751E+02	-1.5452E+01	2.2346E+02	4.5242E+02	
	4.5469E-01	-1.0860E+00	-1.0654E-01	1.5407E+00	3.1193E+00	
3	5.5860E+01	-1.1037E+02	-6.8416E+00	1.6623E+02	2.5835E+02	
	3.8514E-01	-7.6101E-01	-4.7171E-02	1.1461E+00	1.7813E+00	
4	1.9042E+02	-1.0004E+03	-1.8727E+02	1.1909E+03	2.3369E+03	
	1.3129E+00	-6.8978E+00	-1.2912E+00	8.2107E+00	1.6113E+01	
5	1.9786E+02	-1.1294E+03	-6.4891E+02	1.3273E+03	2.0827E+03	
	1.3642E+00	-7.7872E+00	-4.4741E+00	9.1513E+00	1.4359E+01	
6	4.1004E+01	-5.4237E+02	-7.9853E+02	5.8337E+02	5.9323E+02	
	2.8271E-01	-3.7395E+00	-5.5057E+00	4.0222E+00	4.0902E+00	
7	-9.5409E+00	-1.7703E+02	1.0790E+01	1.6748E+02	2.1977E+02	
	-6.5782E-02	-1.2205E+00	7.4396E-02	1.1548E+00	1.5152E+00	
8	-9.4034E+00	-1.7740E+02	1.6039E-01	1.6799E+02	2.2197E+02	
	-6.4834E-02	-1.2231E+00	1.1059E-03	1.1583E+00	1.5304E+00	
9	-1.0023E+01	-1.7620E+02	-8.2646E+00	1.6617E+02	2.1010E+02	
	-6.9104E-02	-1.2148E+00	-5.6983E-02	1.1457E+00	1.4486E+00	
10	1.8427E+01	-3.5550E+02	1.5696E+02	3.7393E+02	7.2509E+02	
	1.2705E-01	-2.4511E+00	1.0822E+00	2.5782E+00	4.9993E+00	
11	-1.0196E+02	-5.3089E+02	-2.3148E+02	4.2894E+02	9.7031E+00	
	-7.0296E-01	-3.6604E+00	-1.5960E+00	2.9574E+00	6.6901E-02	
12	1.6215E+00	-6.5490E+02	-6.4984E+02	6.5652E+02	9.1107E+00	
	1.1180E-02	-4.5154E+00	-4.4805E+00	4.5265E+00	6.2816E-02	
13	-4.8748E+01	-7.9395E+02	-7.2535E+01	7.4520E+02	2.0897E+02	
	-3.3611E-01	-5.4741E+00	-5.0011E-01	5.1380E+00	1.4408E+00	
14	-6.3816E+01	-6.9168E+02	8.9448E+01	6.2787E+02	4.0639E+02	
	-4.4000E-01	-4.7690E+00	6.1672E-01	4.3290E+00	2.8020E+00	
15	9.5656E+01	-4.4706E+01	5.7432E+01	1.4036E+02	2.1843E+02	
	6.5953E-01	-3.0823E-01	3.9598E-01	9.6776E-01	1.5060E+00	

16	2.5575E+01	-1.6982E+01	-8.7265E+01	4.2556E+01	6.4542E+01
	1.7633E-01	-1.1709E-01	-6.0167E-01	2.9342E-01	4.4500E-01
17	1.3134E+01	-2.5814E+01	-9.7813E+01	3.8948E+01	6.8735E+01
	9.0556E-02	-1.7798E-01	-6.7440E-01	2.6854E-01	4.7391E-01
18	8.2458E+01	-1.2727E+02	7.0961E+02	2.0973E+02	1.5466E+02
	5.6853E-01	-8.7749E-01	4.8926E+00	1.4460E+00	1.0663E+00
19	-1.7161E+01	-2.6883E+02	8.1056E+02	2.5167E+02	2.5669E+02
	-1.1832E-01	-1.8535E+00	5.5886E+00	1.7352E+00	1.7698E+00
20	4.7242E+00	-6.1232E+02	6.1728E+01	6.1704E+02	1.8718E+02
	3.2573E-02	-4.2218E+00	4.2560E-01	4.2543E+00	1.2906E+00
21	1.6107E+01	-1.1244E+01	4.9746E+00	2.7351E+01	5.3830E+01
	1.1105E-01	-7.7522E-02	3.4298E-02	1.8858E-01	3.7115E-01
22	-7.0050E+00	-4.0466E+01	-3.9284E+01	3.3461E+01	4.0684E+01
	-4.8298E-02	-2.7900E-01	-2.7085E-01	2.3071E-01	2.8051E-01

Allowable Stress for Load Case 105

LOC	Tmax (deg_F)	Tave (deg_F)	Sm (ksi)	Sy (ksi)	Su (ksi)
1	85.20	84.29	20.00	30.00	70.00
2	85.37	83.11	20.00	30.00	70.00
3	85.14	84.25	20.00	30.00	70.00
4	86.74	86.62	20.00	30.00	70.00
5	89.32	88.89	20.00	30.00	70.00
6	90.33	89.90	20.00	30.00	70.00
7	91.10	90.35	20.00	30.00	70.00
8	91.11	90.36	20.00	30.00	70.00
9	91.15	90.39	20.00	30.00	70.00
10	91.69	90.75	20.00	30.00	70.00
11	92.75	91.53	20.00	30.00	70.00
12	95.64	94.26	20.00	30.00	70.00
13	89.82	89.27	20.00	30.00	70.00
14	88.42	88.10	20.00	30.00	70.00
15	86.11	86.07	20.00	30.00	70.00
16	87.10	86.89	20.00	30.00	70.00
17	87.28	87.12	20.00	30.00	70.00
18	88.28	88.07	20.00	30.00	70.00
19	89.34	88.91	20.00	30.00	70.00
20	94.39	93.69	20.00	30.00	70.00
21	84.61	84.53	20.00	30.00	70.00
22	85.45	85.36	20.00	30.00	70.00

Table 2-140. Load Case 106, -20°F Ambient, Maximum Decay Heat, Normal Conditions of Transport – Model AOS-050A

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	5.5124E+01	-1.1744E+02	-2.2543E+01	1.7256E+02	2.7388E+02
	3.8006E-01	-8.0973E-01	-1.5543E-01	1.1898E+00	1.8883E+00
2	6.5288E+01	-1.5579E+02	-1.5919E+01	2.2107E+02	4.4774E+02
	4.5014E-01	-1.0741E+00	-1.0975E-01	1.5242E+00	3.0870E+00
3	5.5268E+01	-1.0911E+02	-6.8729E+00	1.6438E+02	2.5546E+02
	3.8106E-01	-7.5229E-01	-4.7387E-02	1.1334E+00	1.7614E+00
4	1.8296E+02	-9.7592E+02	-1.8240E+02	1.1589E+03	2.2727E+03
	1.2615E+00	-6.7287E+00	-1.2576E+00	7.9902E+00	1.5670E+01
5	1.9071E+02	-1.1021E+03	-6.3851E+02	1.2928E+03	2.0277E+03
	1.3149E+00	-7.5990E+00	-4.4024E+00	8.9139E+00	1.3980E+01
6	3.6860E+01	-5.2883E+02	-7.8545E+02	5.6569E+02	5.6960E+02
	2.5414E-01	-3.6462E+00	-5.4155E+00	3.9003E+00	3.9272E+00
7	-9.4953E+00	-1.7511E+02	1.0512E+01	1.6562E+02	2.1714E+02
	-6.5468E-02	-1.2073E+00	7.2474E-02	1.1419E+00	1.4971E+00
8	-9.3313E+00	-1.7552E+02	1.6311E-01	1.6618E+02	2.1949E+02
	-6.4337E-02	-1.2101E+00	1.1246E-03	1.1458E+00	1.5133E+00
9	-9.9130E+00	-1.7436E+02	-8.2176E+00	1.6445E+02	2.0776E+02
	-6.8348E-02	-1.2022E+00	-5.6658E-02	1.1338E+00	1.4324E+00
10	1.8043E+01	-3.5160E+02	1.5578E+02	3.6964E+02	7.1652E+02
	1.2440E-01	-2.4242E+00	1.0740E+00	2.5486E+00	4.9402E+00
11	-1.0083E+02	-5.2419E+02	-2.2793E+02	4.2336E+02	7.7954E+00
	-6.9519E-01	-3.6142E+00	-1.5716E+00	2.9190E+00	5.3747E-02
12	1.6112E+00	-6.4693E+02	-6.4192E+02	6.4854E+02	1.0921E+01
	1.1109E-02	-4.4604E+00	-4.4259E+00	4.4715E+00	7.5299E-02
13	-4.8038E+01	-7.8334E+02	-7.1148E+01	7.3530E+02	2.0637E+02
	-3.3121E-01	-5.4010E+00	-4.9055E-01	5.0697E+00	1.4228E+00
14	-6.3042E+01	-6.8245E+02	8.7911E+01	6.1940E+02	4.0256E+02
	-4.3466E-01	-4.7053E+00	6.0613E-01	4.2706E+00	2.7756E+00
15	1.6311E+02	-1.3068E+02	4.7634E+01	2.9378E+02	4.8759E+02
	1.1246E+00	-9.0099E-01	3.2842E-01	2.0256E+00	3.3618E+00

16	4.5134E+01	-5.7895E+01	-9.6748E+01	1.0303E+02	1.6613E+02
	3.1119E-01	-3.9917E-01	-6.6705E-01	7.1036E-01	1.1454E+00
17	2.1050E+01	-5.2514E+01	-9.1912E+01	7.3563E+01	1.3076E+02
	1.4513E-01	-3.6207E-01	-6.3371E-01	5.0720E-01	9.0154E-01
18	7.4037E+01	-1.3023E+02	7.0274E+02	2.0427E+02	1.2020E+02
	5.1047E-01	-8.9794E-01	4.8452E+00	1.4084E+00	8.2877E-01
19	-1.8398E+01	-2.7632E+02	7.9460E+02	2.5792E+02	3.0566E+02
	-1.2685E-01	-1.9052E+00	5.4786E+00	1.7783E+00	2.1075E+00
20	-6.3668E+00	-6.0830E+02	5.8336E+01	6.0193E+02	1.0142E+02
	-4.3897E-02	-4.1941E+00	4.0222E-01	4.1502E+00	6.9930E-01
21	1.6196E+01	-1.1100E+01	5.1929E+00	2.7296E+01	5.3636E+01
	1.1167E-01	-7.6532E-02	3.5804E-02	1.8820E-01	3.6981E-01
22	-1.3398E+01	-4.3555E+01	-3.8401E+01	3.0156E+01	6.2234E+01
	-9.2377E-02	-3.0030E-01	-2.6476E-01	2.0792E-01	4.2909E-01

Allowable Stress for Load Case 106

LOC	Tmax (deg_F)	Tave (deg_F)	Sm (ksi)	Sy (ksi)	Su (ksi)
---	-----	-----	-----	-----	-----
1	104.04	103.14	20.00	30.00	70.00
2	104.22	101.99	20.00	30.00	70.00
3	104.01	103.12	20.00	30.00	70.00
4	105.56	105.44	20.00	30.00	70.00
5	108.10	107.68	20.00	30.00	70.00
6	109.11	108.68	20.00	30.00	70.00
7	109.86	109.11	20.00	30.00	70.00
8	109.87	109.12	20.00	30.00	70.00
9	109.91	109.16	20.00	30.00	70.00
10	110.45	109.52	20.00	30.00	70.00
11	111.51	110.31	20.00	30.00	70.00
12	114.37	113.01	20.00	30.00	70.00
13	108.62	108.08	20.00	30.00	70.00
14	107.24	106.92	20.00	30.00	70.00
15	104.91	104.87	20.00	30.00	70.00
16	105.88	105.67	20.00	30.00	70.00
17	106.05	105.90	20.00	30.00	70.00
18	107.05	106.84	20.00	30.00	70.00
19	108.09	107.67	20.00	30.00	70.00
20	113.06	112.39	20.00	30.00	70.00
21	103.48	103.40	20.00	30.00	70.00
22	104.28	104.20	20.00	30.00	70.00

**Table 2-141. Load Case 201, Internal Design Pressure, 414 kPa (60 psia),
Normal Conditions of Transport – Model AOS-050A**

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	-9.9637E+00 -6.8698E-02	-1.4964E+01 -1.0317E-01	-3.4826E+01 -2.4012E-01	5.0003E+00 3.4476E-02	1.7422E+00 1.2012E-02
2	-9.3770E+00 -6.4652E-02	-1.4507E+01 -1.0002E-01	-3.4263E+01 -2.3623E-01	5.1301E+00 3.5371E-02	2.0523E-02 1.4150E-04
3	-1.0205E+01 -7.0362E-02	-1.5403E+01 -1.0620E-01	-3.3406E+01 -2.3033E-01	5.1980E+00 3.5839E-02	1.0146E+00 6.9954E-03
4	2.1308E+02 1.4691E+00	-8.4345E+01 -5.8154E-01	2.0480E+02 1.4121E+00	2.9742E+02 2.0507E+00	4.5758E+02 3.1549E+00
5	1.0676E+02 7.3612E-01	-8.0446E+01 -5.5466E-01	2.2057E+02 1.5208E+00	1.8721E+02 1.2908E+00	3.0364E+02 2.0935E+00
6	1.1886E+01 8.1950E-02	-3.5988E+01 -2.4813E-01	2.5276E+02 1.7427E+00	4.7874E+01 3.3008E-01	2.5236E+01 1.7399E-01
7	-2.0116E+01 -1.3870E-01	-3.4486E+01 -2.3777E-01	2.2998E+02 1.5857E+00	1.4370E+01 9.9075E-02	2.4817E-01 1.7111E-03
8	-2.0060E+01 -1.3831E-01	-3.4547E+01 -2.3819E-01	2.2980E+02 1.5844E+00	1.4487E+01 9.9882E-02	1.4077E-02 9.7059E-05
9	-2.0262E+01 -1.3970E-01	-3.4384E+01 -2.3707E-01	2.3562E+02 1.6245E+00	1.4122E+01 9.7370E-02	1.2728E+00 8.7756E-03
10	8.0771E+01 5.5690E-01	-7.8965E+01 -5.4444E-01	3.7800E+01 2.6062E-01	1.5974E+02 1.1013E+00	1.6498E+02 1.1375E+00
11	5.4384E+01 3.7496E-01	-3.4294E+01 -2.3645E-01	1.9712E+01 1.3591E-01	8.8678E+01 6.1141E-01	3.7104E+01 2.5582E-01
12	-1.1232E+01 -7.7443E-02	-1.5844E+02 -1.0924E+00	-7.9868E+00 -5.5067E-02	1.4721E+02 1.0150E+00	1.8325E+01 1.2635E-01
13	2.0214E+01 1.3937E-01	-1.2905E+02 -8.8979E-01	-1.9451E+01 -1.3411E-01	1.4927E+02 1.0292E+00	1.2676E+02 8.7397E-01
14	2.0505E+01 1.4138E-01	-1.0978E+02 -7.5688E-01	-2.0240E+01 -1.3955E-01	1.3028E+02 8.9826E-01	1.3482E+02 9.2955E-01
15	3.4270E+02 2.3628E+00	-1.6295E+02 -1.1235E+00	-1.4325E+02 -9.8765E-01	5.0564E+02 3.4863E+00	5.7893E+02 3.9916E+00

16	8.4824E+00	-3.2435E+02	-2.0810E+02	3.3283E+02	4.6608E+02
	5.8484E-02	-2.2363E+00	-1.4348E+00	2.2948E+00	3.2135E+00
17	-2.3511E+01	-2.6230E+02	-2.3195E+02	2.3879E+02	3.1791E+02
	-1.6211E-01	-1.8085E+00	-1.5993E+00	1.6464E+00	2.1919E+00
18	-7.4818E+00	-3.0591E+02	-2.0375E+02	2.9842E+02	4.3205E+02
	-5.1585E-02	-2.1092E+00	-1.4048E+00	2.0576E+00	2.9789E+00
19	6.0670E+01	-4.1318E+02	-2.0065E+02	4.7385E+02	7.3127E+02
	4.1830E-01	-2.8488E+00	-1.3835E+00	3.2671E+00	5.0419E+00
20	2.0599E+01	-3.2032E+02	-1.5665E+02	3.4092E+02	6.1980E+02
	1.4203E-01	-2.2085E+00	-1.0801E+00	2.3506E+00	4.2734E+00
21	-1.0848E+01	-1.0589E+02	-1.3598E+01	9.5043E+01	1.0176E+02
	-7.4791E-02	-7.3009E-01	-9.3757E-02	6.5530E-01	7.0159E-01
22	1.7178E+02	-7.3973E+00	7.2357E+01	1.7918E+02	1.2413E+02
	1.1844E+00	-5.1002E-02	4.9889E-01	1.2354E+00	8.5586E-01

Table 2-142. Load Case 202, Minimum External Pressure, 24 kPa (3.5 psia), Normal Conditions of Transport – Model AOS-050A

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	-2.3776E+00 -1.6393E-02	-3.5614E+00 -2.4555E-02	-8.2912E+00 -5.7166E-02	1.1839E+00 8.1624E-03	4.2463E-01 2.9278E-03	
2	-2.2321E+00 -1.5390E-02	-3.4436E+00 -2.3743E-02	-8.1611E+00 -5.6269E-02	1.2115E+00 8.3529E-03	1.9912E-03 1.3729E-05	
3	-2.4296E+00 -1.6751E-02	-3.6560E+00 -2.5207E-02	-7.9521E+00 -5.4828E-02	1.2264E+00 8.4556E-03	2.2792E-01 1.5714E-03	
4	5.3650E+01 3.6990E-01	-2.1226E+01 -1.4635E-01	5.0491E+01 3.4812E-01	7.4876E+01 5.1625E-01	1.1577E+02 7.9822E-01	
5	2.7425E+01 1.8909E-01	-2.0098E+01 -1.3857E-01	5.4283E+01 3.7427E-01	4.7524E+01 3.2766E-01	7.7386E+01 5.3356E-01	
6	3.5221E+00 2.4284E-02	-8.6393E+00 -5.9566E-02	6.2349E+01 4.2988E-01	1.2161E+01 8.3850E-02	7.3443E+00 5.0637E-02	
7	-4.7350E+00 -3.2647E-02	-8.2580E+00 -5.6937E-02	5.6335E+01 3.8842E-01	3.5229E+00 2.4290E-02	5.6483E-02 3.8944E-04	
8	-4.7226E+00 -3.2561E-02	-8.2719E+00 -5.7033E-02	5.6301E+01 3.8818E-01	3.5493E+00 2.4472E-02	3.0827E-03 2.1254E-05	
9	-4.7763E+00 -3.2932E-02	-8.2282E+00 -5.6731E-02	5.7728E+01 3.9802E-01	3.4519E+00 2.3800E-02	3.1828E-01 2.1944E-03	
10	2.0028E+01 1.3809E-01	-1.9130E+01 -1.3190E-01	9.2455E+00 6.3746E-02	3.9157E+01 2.6998E-01	4.0700E+01 2.8062E-01	
11	1.3447E+01 9.2715E-02	-8.3763E+00 -5.7753E-02	4.8736E+00 3.3602E-02	2.1824E+01 1.5047E-01	9.2090E+00 6.3494E-02	
12	-2.6943E+00 -1.8577E-02	-3.8340E+01 -2.6434E-01	-1.8871E+00 -1.3011E-02	3.5645E+01 2.4577E-01	3.6784E+00 2.5361E-02	
13	4.9184E+00 3.3911E-02	-3.1373E+01 -2.1631E-01	-4.6707E+00 -3.2204E-02	3.6291E+01 2.5022E-01	3.0661E+01 2.1140E-01	
14	5.0053E+00 3.4511E-02	-2.6701E+01 -1.8410E-01	-4.8796E+00 -3.3644E-02	3.1706E+01 2.1861E-01	3.2957E+01 2.2723E-01	
15	8.5421E+01 5.8896E-01	-3.9614E+01 -2.7313E-01	-3.4938E+01 -2.4089E-01	1.2503E+02 8.6208E-01	1.4257E+02 9.8298E-01	

16	2.0120E+00	-7.9314E+01	-5.0964E+01	8.1326E+01	1.1389E+02
	1.3872E-02	-5.4685E-01	-3.5138E-01	5.6072E-01	7.8523E-01
17	-5.7662E+00	-6.4115E+01	-5.6869E+01	5.8349E+01	7.7560E+01
	-3.9756E-02	-4.4206E-01	-3.9210E-01	4.0230E-01	5.3476E-01
18	-1.8090E+00	-7.4860E+01	-4.9901E+01	7.3051E+01	1.0570E+02
	-1.2473E-02	-5.1614E-01	-3.4405E-01	5.0367E-01	7.2876E-01
19	1.4857E+01	-1.0116E+02	-4.9100E+01	1.1601E+02	1.7915E+02
	1.0244E-01	-6.9746E-01	-3.3853E-01	7.9989E-01	1.2352E+00
20	5.0682E+00	-7.8519E+01	-3.8307E+01	8.3588E+01	1.5189E+02
	3.4944E-02	-5.4137E-01	-2.6412E-01	5.7632E-01	1.0473E+00
21	-2.5780E+00	-2.5274E+01	-3.2441E+00	2.2696E+01	2.4499E+01
	-1.7775E-02	-1.7426E-01	-2.2367E-02	1.5649E-01	1.6891E-01
22	4.2655E+01	-1.7449E+00	1.7863E+01	4.4400E+01	3.0631E+01
	2.9409E-01	-1.2031E-02	1.2316E-01	3.0612E-01	2.1120E-01

Table 2-143. Load Case 203, Maximum Increased External Pressure, 140 kPa (20 psia), Normal Conditions of Transport – Model AOS-050A

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	-1.2540E+01 -8.6459E-02	-2.0150E+01 -1.3893E-01	-4.7181E+01 -3.2530E-01	7.6097E+00 5.2467E-02	4.5725E-01 3.1526E-03
2	-1.2778E+01 -8.8101E-02	-2.0895E+01 -1.4406E-01	-4.6164E+01 -3.1829E-01	8.1166E+00 5.5962E-02	2.9930E-01 2.0636E-03
3	-1.3847E+01 -9.5470E-02	-2.2191E+01 -1.5300E-01	-4.5381E+01 -3.1289E-01	8.3448E+00 5.7535E-02	3.1926E+00 2.2012E-02
4	6.8813E+01 4.7445E-01	-1.6936E+02 -1.1677E+00	4.5984E+00 3.1705E-02	2.3817E+02 1.6422E+00	4.3118E+02 2.9729E+00
5	6.3656E+01 4.3889E-01	-1.9258E+02 -1.3278E+00	1.8359E+01 1.2658E-01	2.5623E+02 1.7667E+00	3.6937E+02 2.5467E+00
6	-1.5294E+01 -1.0545E-01	-1.1635E+02 -8.0222E-01	-1.9555E+00 -1.3483E-02	1.0106E+02 6.9678E-01	1.6920E+02 1.1666E+00
7	-6.6334E+00 -4.5736E-02	-7.1881E+01 -4.9560E-01	5.7740E+01 3.9810E-01	6.5247E+01 4.4986E-01	7.3452E-01 5.0643E-03
8	-6.6350E+00 -4.5747E-02	-7.1852E+01 -4.9540E-01	5.6277E+01 3.8802E-01	6.5217E+01 4.4965E-01	6.2788E-02 4.3291E-04
9	-6.6170E+00 -4.5622E-02	-7.1819E+01 -4.9518E-01	5.7419E+01 3.9589E-01	6.5203E+01 4.4956E-01	7.2927E-01 5.0282E-03
10	-2.9634E+00 -2.0432E-02	-7.3126E+01 -5.0418E-01	1.0679E+01 7.3629E-02	7.0162E+01 4.8375E-01	4.2061E+00 2.9000E-02
11	4.6213E+00 3.1863E-02	-2.4193E+01 -1.6681E-01	-2.6994E+00 -1.8612E-02	2.8815E+01 1.9867E-01	1.1263E+01 7.7656E-02
12	-9.5967E+00 -6.6167E-02	-1.1993E+02 -8.2690E-01	-1.3685E+01 -9.4354E-02	1.1033E+02 7.6073E-01	1.3594E+02 9.3725E-01
13	1.3364E+01 9.2145E-02	-7.6836E+01 -5.2976E-01	-2.0824E+01 -1.4358E-01	9.0200E+01 6.2191E-01	9.8887E+01 6.8180E-01
14	9.9218E+00 6.8408E-02	-6.2354E+01 -4.2991E-01	-1.8430E+01 -1.2707E-01	7.2276E+01 4.9832E-01	4.9187E+01 3.3913E-01
15	-9.2832E+01 -6.4006E-01	-2.7126E+02 -1.8703E+00	-7.2167E+01 -4.9757E-01	1.7843E+02 1.2302E+00	1.1370E+02 7.8393E-01

16	1.1254E+01	-1.0328E+02	-5.4667E+01	1.1454E+02	1.5876E+02
	7.7592E-02	-7.1210E-01	-3.7691E-01	7.8969E-01	1.0946E+00
17	-6.0309E+00	-8.7812E+01	-5.1732E+01	8.1781E+01	1.2528E+02
	-4.1581E-02	-6.0544E-01	-3.5668E-01	5.6386E-01	8.6376E-01
18	-1.8069E+00	-9.8323E+01	-5.2057E+01	9.6516E+01	1.5327E+02
	-1.2458E-02	-6.7791E-01	-3.5892E-01	6.6545E-01	1.0568E+00
19	2.0858E+01	-1.2553E+02	-6.3299E+01	1.4639E+02	2.0466E+02
	1.4381E-01	-8.6549E-01	-4.3643E-01	1.0093E+00	1.4111E+00
20	1.1169E+01	-8.5757E+01	-5.3655E+01	9.6926E+01	1.7056E+02
	7.7007E-02	-5.9127E-01	-3.6994E-01	6.6828E-01	1.1760E+00
21	-1.5260E+01	-1.3431E+02	-1.7384E+01	1.1905E+02	9.5926E+01
	-1.0522E-01	-9.2603E-01	-1.1986E-01	8.2081E-01	6.6139E-01
22	-2.5216E+00	-7.5985E+01	-3.5531E+00	7.3463E+01	2.8480E+01
	-1.7386E-02	-5.2389E-01	-2.4498E-02	5.0651E-01	1.9636E-01

Table 2-144. Load Case 204, Additional Increased External Pressure, 2 MPa (290 psia), Normal Conditions of Transport – Model AOS-050A

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	-1.7897E+02 -1.2340E+00	-2.9203E+02 -2.0135E+00	-6.8423E+02 -4.7176E+00	1.1305E+02 7.7948E-01	2.0488E+00 1.4126E-02	
2	-1.8533E+02 -1.2778E+00	-3.0584E+02 -2.1087E+00	-6.6821E+02 -4.6071E+00	1.2050E+02 8.3085E-01	5.1960E+00 3.5825E-02	
3	-2.0060E+02 -1.3831E+00	-3.2485E+02 -2.2398E+00	-6.5786E+02 -4.5358E+00	1.2425E+02 8.5670E-01	5.0674E+01 3.4938E-01	
4	1.4297E+03 9.8572E+00	-3.5578E+03 -2.4530E+01	-6.7935E+02 -4.6840E+00	4.9875E+03 3.4388E+01	8.7446E+03 6.0292E+01	
5	1.2332E+03 8.5023E+00	-3.4653E+03 -2.3892E+01	-5.2014E+02 -3.5862E+00	4.6984E+03 3.2395E+01	7.1641E+03 4.9395E+01	
6	-2.4249E+02 -1.6719E+00	-1.9408E+03 -1.3381E+01	-9.9559E+02 -6.8644E+00	1.6983E+03 1.1710E+01	2.8135E+03 1.9398E+01	
7	-6.8967E+00 -4.7551E-02	-1.1877E+03 -8.1889E+00	7.7235E+01 5.3251E-01	1.1808E+03 8.1413E+00	1.1018E+01 7.5968E-02	
8	-6.8962E+00 -4.7548E-02	-1.1873E+03 -8.1859E+00	5.3832E+01 3.7116E-01	1.1804E+03 8.1384E+00	1.0414E+00 7.1800E-03	
9	-6.6293E+00 -4.5707E-02	-1.1865E+03 -8.1807E+00	5.0562E+01 3.4862E-01	1.1799E+03 8.1350E+00	1.7881E+01 1.2328E-01	
10	-1.4409E+02 -9.9348E-01	-1.2350E+03 -8.5148E+00	1.8382E+01 1.2674E-01	1.0909E+03 7.5213E+00	7.2991E+02 5.0325E+00	
11	1.2791E+02 8.8194E-01	-5.5687E+02 -3.8395E+00	-1.3223E+02 -9.1167E-01	6.8478E+02 4.7214E+00	3.6345E+02 2.5059E+00	
12	-1.0473E+02 -7.2209E-01	-1.4921E+03 -1.0287E+01	-2.1354E+02 -1.4723E+00	1.3873E+03 9.5654E+00	2.3063E+03 1.5901E+01	
13	1.7994E+02 1.2406E+00	-8.8841E+02 -6.1254E+00	-2.9578E+02 -2.0393E+00	1.0683E+03 7.3660E+00	1.2740E+03 8.7837E+00	
14	1.1494E+02 7.9249E-01	-7.0107E+02 -4.8337E+00	-2.5025E+02 -1.7254E+00	8.1601E+02 5.6262E+00	3.7610E+02 2.5931E+00	
15	-1.3860E+03 -9.5564E+00	-6.0918E+03 -4.2001E+01	-7.2401E+02 -4.9919E+00	4.7057E+03 3.2445E+01	2.2382E+02 1.5432E+00	

16	1.4912E+02	-5.0348E+02	-1.2405E+02	6.5260E+02	8.4995E+02
	1.0281E+00	-3.4714E+00	-8.5532E-01	4.4995E+00	5.8602E+00
17	-1.4252E+01	-5.0311E+02	1.0876E+01	4.8886E+02	8.4925E+02
	-9.8267E-02	-3.4688E+00	7.4990E-02	3.3706E+00	5.8553E+00
18	5.4514E+01	-6.3618E+02	-8.8589E+01	6.9070E+02	1.2132E+03
	3.7586E-01	-4.3863E+00	-6.1080E-01	4.7622E+00	8.3646E+00
19	2.1856E+02	-7.3199E+02	-3.5686E+02	9.5055E+02	1.0213E+03
	1.5069E+00	-5.0469E+00	-2.4605E+00	6.5538E+00	7.0418E+00
20	4.6757E+02	-6.3862E+02	-3.6205E+02	1.1062E+03	9.5716E+02
	3.2238E+00	-4.4031E+00	-2.4962E+00	7.6269E+00	6.5994E+00
21	-2.2209E+02	-1.9226E+03	-2.4916E+02	1.7005E+03	1.2828E+03
	-1.5312E+00	-1.3256E+01	-1.7179E+00	1.1724E+01	8.8449E+00
22	-2.7064E+02	-1.8039E+03	-3.2746E+02	1.5333E+03	3.0855E+02
	-1.8660E+00	-1.2438E+01	-2.2578E+00	1.0572E+01	2.1274E+00

**Table 2-145. Load Case 211, Fabrication Stress,
Normal Conditions of Transport – Model AOS-050A**

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	9.7351E+02	-2.1563E+02	8.5266E+01	1.1891E+03	1.7001E+03
	6.7121E+00	-1.4867E+00	5.8789E-01	8.1988E+00	1.1722E+01
2	1.3459E+01	-5.8805E+01	6.7805E+01	7.2264E+01	5.2992E+01
	9.2798E-02	-4.0544E-01	4.6750E-01	4.9824E-01	3.6536E-01
3	1.4657E+00	-2.8786E+01	9.1236E+00	3.0252E+01	1.2115E+01
	1.0106E-02	-1.9847E-01	6.2905E-02	2.0858E-01	8.3530E-02
4	9.5184E+02	-4.5862E+02	2.1372E+01	1.4105E+03	2.2342E+03
	6.5627E+00	-3.1621E+00	1.4736E-01	9.7248E+00	1.5405E+01
5	9.9352E+02	-4.6663E+02	-5.1619E+01	1.4601E+03	2.2298E+03
	6.8501E+00	-3.2173E+00	-3.5590E-01	1.0067E+01	1.5374E+01
6	6.1320E+02	5.0514E+01	1.8716E+02	5.6268E+02	9.9432E+02
	4.2278E+00	3.4828E-01	1.2904E+00	3.8795E+00	6.8556E+00
7	3.2774E+02	1.7666E+00	7.7846E+00	3.2597E+02	1.0225E+00
	2.2597E+00	1.2180E-02	5.3673E-02	2.2475E+00	7.0498E-03
8	3.2770E+02	1.6260E+00	1.4504E+01	3.2608E+02	3.1287E-01
	2.2594E+00	1.1211E-02	1.0000E-01	2.2482E+00	2.1572E-03
9	3.2766E+02	1.5739E+00	1.1271E+01	3.2609E+02	6.1901E-01
	2.2592E+00	1.0852E-02	7.7709E-02	2.2483E+00	4.2679E-03
10	3.2876E+02	-4.3942E+00	1.2904E+02	3.3315E+02	4.9381E+01
	2.2667E+00	-3.0297E-02	8.8969E-01	2.2970E+00	3.4047E-01
11	1.3106E+02	-4.8099E+01	8.5113E+01	1.7916E+02	1.2564E+02
	9.0360E-01	-3.3163E-01	5.8683E-01	1.2352E+00	8.6628E-01
12	1.4923E+02	6.3354E+01	9.8866E+01	8.5875E+01	9.1623E+01
	1.0289E+00	4.3681E-01	6.8166E-01	5.9209E-01	6.3172E-01
13	5.8070E+02	-8.9612E+01	1.7635E+02	6.7031E+02	7.6593E+02
	4.0038E+00	-6.1785E-01	1.2159E+00	4.6216E+00	5.2809E+00
14	5.8048E+02	-9.9058E+01	1.8936E+02	6.7954E+02	5.0988E+02
	4.0023E+00	-6.8298E-01	1.3056E+00	4.6852E+00	3.5155E+00
15	1.0967E+03	2.4792E+02	1.3063E+02	8.4879E+02	6.8606E+01
	7.5616E+00	1.7094E+00	9.0068E-01	5.8522E+00	4.7302E-01

16	3.7161E+01	6.6692E+00	1.4060E+01	3.0492E+01	3.1036E+00
	2.5621E-01	4.5982E-02	9.6941E-02	2.1023E-01	2.1398E-02
17	4.8153E+01	3.7694E+00	-3.7879E+01	4.4383E+01	3.0663E+01
	3.3200E-01	2.5989E-02	-2.6116E-01	3.0601E-01	2.1142E-01
18	1.5031E+02	-6.3520E+01	-9.5799E+01	2.1383E+02	3.8267E+02
	1.0363E+00	-4.3795E-01	-6.6051E-01	1.4743E+00	2.6384E+00
19	1.5796E+02	-1.1219E+02	1.9872E+01	2.7015E+02	2.3392E+02
	1.0891E+00	-7.7349E-01	1.3701E-01	1.8626E+00	1.6128E+00
20	1.7985E+02	-2.1071E+02	2.8922E+01	3.9057E+02	3.9100E+02
	1.2401E+00	-1.4528E+00	1.9941E-01	2.6929E+00	2.6958E+00
21	5.3589E+01	-2.4012E+01	-3.4314E+00	7.7601E+01	1.8597E+02
	3.6948E-01	-1.6556E-01	-2.3659E-02	5.3504E-01	1.2822E+00
22	7.6580E+02	2.2399E+02	7.1270E+02	5.4181E+02	2.3627E+02
	5.2800E+00	1.5444E+00	4.9139E+00	3.7357E+00	1.6291E+00

**Table 2-146. Load Case 215, Compression Load (5x weight),
Normal Conditions of Transport – Model AOS-050A**

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	7.2799E-01	-6.2272E+01	-7.5879E+00	6.3000E+01	9.4946E+01	
	5.0193E-03	-4.2935E-01	-5.2317E-02	4.3437E-01	6.5463E-01	
2	8.9059E-01	-4.7835E+01	5.8525E+00	4.8725E+01	5.7911E-01	
	6.1404E-03	-3.2981E-01	4.0352E-02	3.3595E-01	3.9928E-03	
3	-1.4882E+00	-5.6659E+01	2.3238E+00	5.5171E+01	1.7928E+01	
	-1.0261E-02	-3.9065E-01	1.6022E-02	3.8039E-01	1.2361E-01	
4	1.0378E+02	-1.2713E+02	3.2866E+01	2.3091E+02	3.7745E+02	
	7.1555E-01	-8.7655E-01	2.2661E-01	1.5921E+00	2.6024E+00	
5	9.6289E+01	-1.3834E+02	2.9853E+01	2.3463E+02	3.1335E+02	
	6.6389E-01	-9.5383E-01	2.0583E-01	1.6177E+00	2.1604E+00	
6	-3.1494E+01	-1.3958E+02	-2.5039E+01	1.0808E+02	7.0674E+01	
	-2.1715E-01	-9.6235E-01	-1.7264E-01	7.4521E-01	4.8728E-01	
7	-2.0563E-01	-8.2596E+01	-1.2495E+00	8.2390E+01	8.9403E-01	
	-1.4178E-03	-5.6948E-01	-8.6151E-03	5.6806E-01	6.1641E-03	
8	-1.9330E-01	-6.1219E+01	-1.3690E+00	6.1026E+01	2.3658E-02	
	-1.3328E-03	-4.2209E-01	-9.4392E-03	4.2076E-01	1.6312E-04	
9	-2.0146E-01	-5.5872E+01	-1.1292E+00	5.5670E+01	4.1784E-01	
	-1.3890E-03	-3.8522E-01	-7.7858E-03	3.8383E-01	2.8809E-03	
10	-3.5180E+00	-6.4776E+01	-1.4338E+01	6.1258E+01	9.3357E+00	
	-2.4256E-02	-4.4662E-01	-9.8857E-02	4.2236E-01	6.4367E-02	
11	4.9695E+00	-2.0625E+01	-8.5401E+00	2.5595E+01	2.5705E+01	
	3.4263E-02	-1.4220E-01	-5.8882E-02	1.7647E-01	1.7723E-01	
12	-8.0941E+00	-4.6860E+01	-1.1010E+01	3.8766E+01	5.8231E+01	
	-5.5807E-02	-3.2309E-01	-7.5912E-02	2.6728E-01	4.0149E-01	
13	1.9496E+01	-7.4830E+01	-1.7225E+01	9.4326E+01	9.3052E+01	
	1.3442E-01	-5.1594E-01	-1.1876E-01	6.5036E-01	6.4157E-01	
14	1.6234E+01	-6.2968E+01	-1.6182E+01	7.9202E+01	6.6222E+01	
	1.1193E-01	-4.3415E-01	-1.1157E-01	5.4608E-01	4.5659E-01	
15	-2.9345E+02	-1.2709E+03	-1.5635E+02	9.7745E+02	6.3209E+01	
	-2.0233E+00	-8.7625E+00	-1.0780E+00	6.7393E+00	4.3581E-01	

16	6.5558E+01	-1.5926E+02	-2.1510E+01	2.2482E+02	2.7652E+02
	4.5201E-01	-1.0980E+00	-1.4831E-01	1.5501E+00	1.9065E+00
17	-4.4574E+01	-1.9762E+02	-3.1382E+01	1.5305E+02	1.6259E+02
	-3.0733E-01	-1.3626E+00	-2.1637E-01	1.0552E+00	1.1210E+00
18	-2.1987E+01	-1.1124E+02	-1.6639E+01	8.9248E+01	8.1231E+01
	-1.5160E-01	-7.6694E-01	-1.1472E-01	6.1534E-01	5.6007E-01
19	6.0220E+01	-9.0619E+01	-8.8800E+00	1.5084E+02	1.8711E+02
	4.1520E-01	-6.2479E-01	-6.1225E-02	1.0400E+00	1.2901E+00
20	8.4368E+01	-9.4085E+01	-1.9170E+01	1.7845E+02	2.7240E+02
	5.8170E-01	-6.4870E-01	-1.3217E-01	1.2304E+00	1.8782E+00
21	-7.0632E+00	-7.5153E+01	-7.3015E+00	6.8090E+01	3.3872E+01
	-4.8699E-02	-5.1816E-01	-5.0342E-02	4.6946E-01	2.3354E-01
22	-1.2477E+02	-3.7019E+02	-1.4589E+02	2.4541E+02	1.4858E+02
	-8.6027E-01	-2.5523E+00	-1.0059E+00	1.6921E+00	1.0244E+00

**Table 2-147. Load Case 216, Rod Drop onto Cask,
Normal Conditions of Transport – Model AOS-050A**

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	6.0149E+00	-3.5028E+01	3.4399E+01	4.1043E+01	7.4091E+00
	4.1471E-02	-2.4151E-01	2.3717E-01	2.8298E-01	5.1084E-02
2	6.6401E-01	-4.7941E+01	2.3717E+00	4.8605E+01	8.2904E+00
	4.5782E-03	-3.3054E-01	1.6353E-02	3.3512E-01	5.7160E-02
3	4.0693E+00	-5.5503E+01	2.1065E+00	5.9572E+01	9.1304E+00
	2.8057E-02	-3.8268E-01	1.4524E-02	4.1074E-01	6.2952E-02
4	2.4233E+02	-5.9070E+01	1.4809E+02	3.0140E+02	3.1217E+02
	1.6708E+00	-4.0727E-01	1.0210E+00	2.0781E+00	2.1524E+00
5	1.4727E+02	-5.6513E+01	1.1170E+02	2.0378E+02	8.6796E+01
	1.0154E+00	-3.8964E-01	7.7012E-01	1.4050E+00	5.9844E-01
6	8.3725E+00	-2.5080E+02	4.0039E+01	2.5917E+02	1.7897E+02
	5.7726E-02	-1.7292E+00	2.7606E-01	1.7869E+00	1.2340E+00
7	-3.7564E-01	-1.5776E+02	-4.4347E+00	1.5738E+02	2.7150E+00
	-2.5899E-03	-1.0877E+00	-3.0576E-02	1.0851E+00	1.8719E-02
8	-3.4907E-01	-1.0885E+02	-2.6551E+00	1.0850E+02	7.3890E-03
	-2.4068E-03	-7.5050E-01	-1.8306E-02	7.4809E-01	5.0945E-05
9	-3.5832E-01	-9.1583E+01	-1.8729E+00	9.1225E+01	3.7882E-01
	-2.4705E-03	-6.3145E-01	-1.2913E-02	6.2898E-01	2.6119E-03
10	-2.7700E+00	-9.8007E+01	-2.6502E+01	9.5237E+01	1.1577E+00
	-1.9098E-02	-6.7573E-01	-1.8272E-01	6.5663E-01	7.9821E-03
11	1.1201E+01	-2.7402E+01	-9.4454E+00	3.8603E+01	4.3591E+01
	7.7229E-02	-1.8893E-01	-6.5124E-02	2.6616E-01	3.0055E-01
12	-1.0519E+01	-5.7455E+01	-1.3360E+01	4.6936E+01	6.0875E+01
	-7.2527E-02	-3.9614E-01	-9.2112E-02	3.2361E-01	4.1972E-01
13	3.7904E+01	-1.1975E+02	-2.0129E+01	1.5765E+02	1.4607E+02
	2.6134E-01	-8.2561E-01	-1.3878E-01	1.0870E+00	1.0071E+00
14	3.5501E+01	-1.0597E+02	-1.9398E+01	1.4147E+02	1.2560E+02
	2.4477E-01	-7.3063E-01	-1.3374E-01	9.7540E-01	8.6598E-01
15	-1.5498E+03	-8.9488E+03	-5.5380E+02	7.3990E+03	5.1906E+02
	-1.0686E+01	-6.1700E+01	-3.8183E+00	5.1014E+01	3.5788E+00

16	2.6423E+02	-5.7804E+02	1.9906E+01	8.4226E+02	1.1825E+03
	1.8218E+00	-3.9854E+00	1.3724E-01	5.8072E+00	8.1531E+00
17	-8.0922E+00	-5.2509E+02	8.4148E+01	5.1700E+02	8.6095E+02
	-5.5794E-02	-3.6204E+00	5.8018E-01	3.5646E+00	5.9361E+00
18	2.0418E+01	-2.3526E+02	-6.0660E+01	2.5568E+02	2.0053E+02
	1.4078E-01	-1.6221E+00	-4.1823E-01	1.7628E+00	1.3826E+00
19	1.1115E+02	-5.8673E+01	3.1446E+01	1.6982E+02	6.5049E+01
	7.6634E-01	-4.0454E-01	2.1681E-01	1.1709E+00	4.4850E-01
20	1.8887E+02	-1.0380E+02	-2.0982E+01	2.9267E+02	1.1612E+02
	1.3022E+00	-7.1565E-01	-1.4467E-01	2.0179E+00	8.0061E-01
21	-4.7524E+00	-6.3298E+01	-4.9087E+00	5.8546E+01	2.8537E+01
	-3.2766E-02	-4.3643E-01	-3.3844E-02	4.0366E-01	1.9675E-01
22	3.0372E+02	-3.5147E+03	-8.4847E+02	3.8184E+03	3.1093E+03
	2.0941E+00	-2.4233E+01	-5.8500E+00	2.6327E+01	2.1438E+01

Table 2-148. Load Case 221, Forward 10g Vibration Inertia Load, Normal Conditions of Transport – Model AOS-050A

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	4.3509E+00	1.4348E+00	-2.9530E+00	7.3072E+00	2.3874E+00
	2.9999E-02	9.8925E-03	-2.0360E-02	5.0382E-02	1.6461E-02
2	9.7532E+01	1.6723E+00	-3.3953E+00	1.3601E+02	1.5213E+01
	6.7246E-01	1.1530E-02	-2.3410E-02	9.3778E-01	1.0489E-01
3	2.1800E+00	8.5932E-01	-1.5968E+00	3.7305E+00	2.3712E+00
	1.5030E-02	5.9248E-03	-1.1009E-02	2.5721E-02	1.6349E-02
4	2.9082E+01	-9.7039E+00	-2.9082E+01	3.6638E+01	1.9915E+01
	2.0051E-01	-6.6906E-02	-2.0051E-01	2.5261E-01	1.3731E-01
5	1.7028E+01	-9.8758E+00	-1.7028E+01	1.2422E+01	8.2783E+00
	1.1741E-01	-6.8091E-02	-1.1741E-01	8.5646E-02	5.7077E-02
6	2.2740E+01	-8.1148E+00	-2.2740E+01	2.9001E+01	2.9977E+00
	1.5679E-01	-5.5950E-02	-1.5679E-01	1.9995E-01	2.0669E-02
7	1.0452E+00	-5.5670E-01	-1.0453E+00	1.6790E+00	5.2159E-01
	7.2062E-03	-3.8383E-03	-7.2072E-03	1.1576E-02	3.5963E-03
8	2.0517E+00	4.1873E-01	-1.9301E+00	3.9490E+00	2.9575E-01
	1.4146E-02	2.8870E-03	-1.3307E-02	2.7228E-02	2.0392E-03
9	2.8162E+00	-3.0414E-01	-1.6945E+00	4.3532E+00	1.0684E-01
	1.9417E-02	-2.0970E-03	-1.1683E-02	3.0014E-02	7.3667E-04
10	1.9379E+01	9.2204E+00	5.2539E+00	2.1348E+01	6.7182E+00
	1.3361E-01	6.3573E-02	3.6224E-02	1.4719E-01	4.6320E-02
11	1.8921E+01	4.2413E+00	-2.6684E+00	2.1590E+01	1.8327E+01
	1.3046E-01	2.9243E-02	-1.8398E-02	1.4886E-01	1.2636E-01
12	3.7749E+00	1.6394E-01	-3.0092E+00	6.7841E+00	3.2100E-01
	2.6027E-02	1.1303E-03	-2.0748E-02	4.6775E-02	2.2132E-03
13	1.0751E+01	3.3716E+00	-1.0751E+01	1.2840E+01	5.1452E+00
	7.4122E-02	2.3246E-02	-7.4123E-02	8.8529E-02	3.5475E-02
14	1.7924E+01	4.7885E+00	-2.2859E+00	2.0210E+01	6.8329E+00
	1.2358E-01	3.3016E-02	-1.5761E-02	1.3934E-01	4.7112E-02
15	4.1164E+00	-9.3427E-02	-3.9639E+00	8.0818E+00	3.2024E-02
	2.8382E-02	-6.4415E-04	-2.7330E-02	5.5722E-02	2.2079E-04

16	8.0606E+00	1.1142E+00	-2.9266E+00	1.0987E+01	1.1137E+01
	5.5576E-02	7.6821E-03	-2.0178E-02	7.5754E-02	7.6788E-02
17	8.3142E+00	-1.7259E+00	-3.7140E+00	1.2028E+01	4.5579E+00
	5.7325E-02	-1.1900E-02	-2.5607E-02	8.2932E-02	3.1425E-02
18	1.0749E+01	4.8734E+00	-1.0749E+01	8.3549E+00	4.8390E+00
	7.4115E-02	3.3601E-02	-7.4114E-02	5.7605E-02	3.3364E-02
19	2.0545E+01	-4.3129E+00	-2.0545E+01	3.0599E+01	1.3239E+01
	1.4165E-01	-2.9736E-02	-1.4165E-01	2.1097E-01	9.1278E-02
20	1.8364E+01	-4.6632E+00	-1.8364E+01	2.2267E+01	1.6083E+00
	1.2662E-01	-3.2152E-02	-1.2662E-01	1.5353E-01	1.1089E-02
21	2.7873E+00	4.4081E-03	-2.7874E+00	5.4935E+00	6.0605E-01
	1.9218E-02	3.0393E-05	-1.9218E-02	3.7876E-02	4.1785E-03
22	2.7803E+00	4.4518E-02	-2.3648E+00	5.1451E+00	2.8651E-01
	1.9169E-02	3.0694E-04	-1.6305E-02	3.5474E-02	1.9754E-03

Table 2-149. Load Case 222, Lateral 5g Vibration Inertia Load, Normal Conditions of Transport – Model AOS-050A

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	2.1755E+00	7.1739E-01	-1.4765E+00	3.6536E+00	1.1937E+00
	1.4999E-02	4.9462E-03	-1.0180E-02	2.5191E-02	8.2304E-03
2	4.8766E+01	8.3613E-01	-1.6977E+00	6.8006E+01	7.6067E+00
	3.3623E-01	5.7649E-03	-1.1705E-02	4.6889E-01	5.2446E-02
3	1.0900E+00	4.2966E-01	-7.9839E-01	1.8652E+00	1.1856E+00
	7.5152E-03	2.9624E-03	-5.5047E-03	1.2860E-02	8.1744E-03
4	1.4541E+01	-4.8519E+00	-1.4541E+01	1.8319E+01	9.9574E+00
	1.0026E-01	-3.3453E-02	-1.0026E-01	1.2631E-01	6.8654E-02
5	8.5141E+00	-4.9379E+00	-8.5141E+00	6.2110E+00	4.1391E+00
	5.8703E-02	-3.4046E-02	-5.8703E-02	4.2823E-02	2.8538E-02
6	1.1370E+01	-4.0574E+00	-1.1370E+01	1.4500E+01	1.4989E+00
	7.8395E-02	-2.7975E-02	-7.8395E-02	9.9976E-02	1.0334E-02
7	5.2259E-01	-2.7835E-01	-5.2265E-01	8.3949E-01	2.6080E-01
	3.6031E-03	-1.9192E-03	-3.6036E-03	5.7881E-03	1.7981E-03
8	1.0259E+00	2.0936E-01	-9.6503E-01	1.9745E+00	1.4788E-01
	7.0730E-03	1.4435E-03	-6.6536E-03	1.3614E-02	1.0196E-03
9	1.4081E+00	-1.5207E-01	-8.4723E-01	2.1766E+00	5.3422E-02
	9.7085E-03	-1.0485E-03	-5.8415E-03	1.5007E-02	3.6833E-04
10	9.6896E+00	4.6102E+00	2.6270E+00	1.0674E+01	3.3591E+00
	6.6807E-02	3.1786E-02	1.8112E-02	7.3594E-02	2.3160E-02
11	9.4606E+00	2.1207E+00	-1.3342E+00	1.0795E+01	9.1635E+00
	6.5229E-02	1.4621E-02	-9.1991E-03	7.4428E-02	6.3180E-02
12	1.8875E+00	8.1970E-02	-1.5046E+00	3.3921E+00	1.6050E-01
	1.3014E-02	5.6516E-04	-1.0374E-02	2.3387E-02	1.1066E-03
13	5.3753E+00	1.6858E+00	-5.3753E+00	6.4201E+00	2.5726E+00
	3.7061E-02	1.1623E-02	-3.7061E-02	4.4265E-02	1.7737E-02
14	8.9618E+00	2.3943E+00	-1.1430E+00	1.0105E+01	3.4165E+00
	6.1789E-02	1.6508E-02	-7.8805E-03	6.9670E-02	2.3556E-02
15	2.0582E+00	-4.6713E-02	-1.9819E+00	4.0409E+00	1.6012E-02
	1.4191E-02	-3.2208E-04	-1.3665E-02	2.7861E-02	1.1040E-04

16	4.0303E+00	5.5710E-01	-1.4633E+00	5.4936E+00	5.5686E+00
	2.7788E-02	3.8410E-03	-1.0089E-02	3.7877E-02	3.8394E-02
17	4.1571E+00	-8.6294E-01	-1.8570E+00	6.0141E+00	2.2789E+00
	2.8662E-02	-5.9498E-03	-1.2804E-02	4.1466E-02	1.5713E-02
18	5.3747E+00	2.4367E+00	-5.3746E+00	4.1775E+00	2.4195E+00
	3.7057E-02	1.6801E-02	-3.7057E-02	2.8803E-02	1.6682E-02
19	1.0273E+01	-2.1564E+00	-1.0273E+01	1.5300E+01	6.6194E+00
	7.0827E-02	-1.4868E-02	-7.0827E-02	1.0549E-01	4.5639E-02
20	9.1820E+00	-2.3316E+00	-9.1820E+00	1.1134E+01	8.0416E-01
	6.3308E-02	-1.6076E-02	-6.3308E-02	7.6763E-02	5.5445E-03
21	1.3937E+00	2.2040E-03	-1.3937E+00	2.7467E+00	3.0302E-01
	9.6090E-03	1.5196E-05	-9.6092E-03	1.8938E-02	2.0893E-03
22	1.3901E+00	2.2259E-02	-1.1824E+00	2.5725E+00	1.4326E-01
	9.5846E-03	1.5347E-04	-8.1524E-03	1.7737E-02	9.8772E-04

Table 2-150. Load Case 223, Vertical 2g Vibration Inertia Load, Normal Conditions of Transport – Model AOS-050A

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	1.0195E+00	2.6090E-02	-9.9812E-02	1.1477E+00	8.5736E-02
	7.0292E-03	1.7988E-04	-6.8818E-04	7.9133E-03	5.9113E-04
2	6.8545E+00	3.3509E-01	-5.7483E-02	1.1281E+01	4.2216E+00
	4.7260E-02	2.3104E-03	-3.9633E-04	7.7776E-02	2.9107E-02
3	2.4187E-01	6.1706E-03	-2.2134E-01	1.3723E+00	1.6300E-01
	1.6676E-03	4.2545E-05	-1.5261E-03	9.4614E-03	1.1239E-03
4	8.6053E-01	9.1570E-02	-4.1071E-01	1.2109E+00	3.8899E-01
	5.9331E-03	6.3136E-04	-2.8318E-03	8.3486E-03	2.6820E-03
5	5.9144E-01	1.4320E-01	-3.8119E-01	7.7930E-01	1.3081E-01
	4.0778E-03	9.8732E-04	-2.6282E-03	5.3731E-03	9.0188E-04
6	5.4478E-01	2.0284E-01	-2.9430E-01	7.2300E-01	1.2664E-01
	3.7561E-03	1.3985E-03	-2.0292E-03	4.9849E-03	8.7316E-04
7	7.2082E-01	1.9114E-01	6.4772E-02	6.5605E-01	6.8904E-02
	4.9699E-03	1.3179E-03	4.4659E-04	4.5233E-03	4.7508E-04
8	8.9867E-02	4.3753E-02	-2.7483E-02	1.1836E-01	7.7670E-03
	6.1961E-04	3.0166E-04	-1.8949E-04	8.1607E-04	5.3552E-05
9	4.3280E-01	2.2470E-01	-5.7104E-01	5.2221E-01	6.9084E-02
	2.9840E-03	1.5493E-03	-3.9372E-03	3.6005E-03	4.7632E-04
10	1.7035E-01	-1.9751E-01	-6.4368E-01	1.1804E+00	1.3445E-01
	1.1745E-03	-1.3618E-03	-4.4380E-03	8.1383E-03	9.2697E-04
11	2.5184E-01	-6.9699E-02	-4.0688E-01	9.9174E-01	4.9297E-01
	1.7364E-03	-4.8056E-04	-2.8054E-03	6.8378E-03	3.3989E-03
12	2.0547E-01	-1.2037E-02	-3.1461E-01	5.2048E-01	5.6022E-02
	1.4167E-03	-8.2991E-05	-2.1692E-03	3.5886E-03	3.8626E-04
13	2.0800E-01	-1.8625E-01	-3.3192E-01	7.4802E-01	3.6848E-01
	1.4341E-03	-1.2841E-03	-2.2885E-03	5.1574E-03	2.5406E-03
14	2.6140E-01	1.2441E-01	-2.6289E-01	9.4280E-01	3.5615E-01
	1.8023E-03	8.5781E-04	-1.8125E-03	6.5004E-03	2.4556E-03
15	4.2596E-01	6.0972E-02	-1.1413E-01	5.3992E-01	2.0856E-02
	2.9369E-03	4.2039E-04	-7.8687E-04	3.7226E-03	1.4380E-04

16	6.5471E-01 4.5141E-03	2.9926E-02 2.0633E-04	-3.3671E-01 -2.3215E-03	8.2950E-01 5.7192E-03	1.1848E-01 8.1693E-04
17	4.0222E-01 2.7732E-03	8.9842E-02 6.1944E-04	-1.6897E-01 -1.1650E-03	6.9567E-01 4.7965E-03	3.0951E-01 2.1340E-03
18	3.3807E-01 2.3309E-03	1.0834E-01 7.4696E-04	-1.6130E-01 -1.1121E-03	5.3704E-01 3.7027E-03	2.1514E-01 1.4833E-03
19	1.0127E+00 6.9826E-03	2.7975E-02 1.9288E-04	-4.6173E-01 -3.1835E-03	1.1071E+00 7.6331E-03	7.7497E-02 5.3432E-04
20	5.8408E-01 4.0271E-03	1.3782E-01 9.5023E-04	-2.4431E-01 -1.6844E-03	6.9754E-01 4.8094E-03	2.7622E-02 1.9045E-04
21	-3.5197E-02 -2.4267E-04	-1.8696E-01 -1.2890E-03	-6.5293E-01 -4.5018E-03	6.1796E-01 4.2607E-03	1.6975E-01 1.1704E-03
22	5.6683E-01 3.9081E-03	2.7404E-02 1.8894E-04	-1.0338E-01 -7.1278E-04	6.7024E-01 4.6211E-03	9.9472E-02 6.8583E-04

Table 2-151. Load Case 231, 4-ft. Head-On Drop, Normal Conditions of Transport – Model AOS-050A

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	2.5081E+01	-8.0590E+02	2.9077E+01	8.3098E+02	2.5110E+02
	1.7293E-01	-5.5565E+00	2.0048E-01	5.7294E+00	1.7313E+00
2	1.1076E+01	-4.2209E+02	-2.2676E+01	4.3317E+02	4.7028E+01
	7.6369E-02	-2.9102E+00	-1.5635E-01	2.9866E+00	3.2425E-01
3	-3.5670E+00	-1.5070E+02	-5.5195E+00	1.4714E+02	9.8840E+00
	-2.4594E-02	-1.0391E+00	-3.8055E-02	1.0145E+00	6.8148E-02
4	4.4411E+02	-1.1686E+03	-1.0719E+02	1.6127E+03	1.0200E+03
	3.0620E+00	-8.0571E+00	-7.3902E-01	1.1119E+01	7.0326E+00
5	2.3446E+02	-5.0894E+02	6.3021E+00	7.4340E+02	8.3938E+02
	1.6165E+00	-3.5090E+00	4.3451E-02	5.1256E+00	5.7873E+00
6	-9.3121E+01	-7.4048E+02	-1.2968E+02	6.4736E+02	8.2209E+01
	-6.4205E-01	-5.1054E+00	-8.9412E-01	4.4634E+00	5.6681E-01
7	-3.0654E-01	-3.2215E+02	4.0210E+00	3.2184E+02	6.1986E+00
	-2.1135E-03	-2.2211E+00	2.7724E-02	2.2190E+00	4.2738E-02
8	-6.8691E-01	-2.3375E+02	-5.2667E+00	2.3307E+02	6.2432E-01
	-4.7361E-03	-1.6117E+00	-3.6313E-02	1.6069E+00	4.3046E-03
9	-6.5915E-01	-2.0957E+02	-6.5272E+00	2.0891E+02	3.8681E-01
	-4.5447E-03	-1.4449E+00	-4.5003E-02	1.4404E+00	2.6670E-03
10	-4.7699E+01	-3.4766E+02	-1.7391E+01	2.9996E+02	2.0507E+02
	-3.2888E-01	-2.3970E+00	-1.1991E-01	2.0682E+00	1.4139E+00
11	6.7773E+01	-1.9481E+02	-2.2237E+00	2.6258E+02	8.9717E+01
	4.6728E-01	-1.3432E+00	-1.5332E-02	1.8104E+00	6.1858E-01
12	6.7768E+01	-5.3668E+01	5.8299E+01	1.2144E+02	2.3071E+02
	4.6724E-01	-3.7003E-01	4.0196E-01	8.3727E-01	1.5907E+00
13	7.9508E+01	-1.4393E+02	1.3652E+01	2.2344E+02	7.6129E+01
	5.4819E-01	-9.9238E-01	9.4126E-02	1.5406E+00	5.2489E-01
14	7.6913E+01	-9.0796E+01	3.6403E+01	1.6771E+02	5.0712E+01
	5.3030E-01	-6.2601E-01	2.5099E-01	1.1563E+00	3.4965E-01
15	-7.9538E+02	-3.0569E+03	-5.9343E+02	2.2616E+03	1.3954E+02
	-5.4839E+00	-2.1077E+01	-4.0915E+00	1.5593E+01	9.6208E-01

16	1.3964E+02	-4.5686E+02	3.4294E+01	5.9650E+02	3.6570E+02
	9.6278E-01	-3.1499E+00	2.3645E-01	4.1127E+00	2.5214E+00
17	-8.4400E+01	-1.0522E+03	-2.1359E+02	9.6782E+02	1.9075E+02
	-5.8192E-01	-7.2548E+00	-1.4726E+00	6.6729E+00	1.3152E+00
18	-4.0819E+01	-5.4141E+02	-3.8096E+01	5.0060E+02	2.8556E+02
	-2.8144E-01	-3.7329E+00	-2.6266E-01	3.4515E+00	1.9689E+00
19	2.8037E+02	-3.9524E+02	5.6069E+01	6.7562E+02	4.2483E+02
	1.9331E+00	-2.7251E+00	3.8658E-01	4.6582E+00	2.9291E+00
20	2.9901E+02	-4.5679E+02	-4.7247E+01	7.5580E+02	4.6828E+02
	2.0616E+00	-3.1495E+00	-3.2576E-01	5.2111E+00	3.2287E+00
21	-4.0078E+01	-9.8076E+01	-8.7314E+01	5.7998E+01	2.2693E+01
	-2.7633E-01	-6.7621E-01	-6.0201E-01	3.9988E-01	1.5646E-01
22	-1.2036E+02	-1.5632E+03	-1.0933E+02	1.4428E+03	3.9576E+02
	-8.2985E-01	-1.0778E+01	-7.5381E-01	9.9477E+00	2.7287E+00

**Table 2-152. Load Case 232, 30-ft. Head-On Drop Impact Test, Normal Conditions,
Normal Conditions of Transport – Model AOS-050A**

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	-4.3851E+01 -3.0234E-01	-3.2062E+03 -2.2106E+01	-5.9694E+02 -4.1157E+00	3.1624E+03 2.1804E+01	1.2779E+03 8.8110E+00
2	3.6608E+01 2.5240E-01	-1.7299E+03 -1.1927E+01	-1.0905E+02 -7.5189E-01	1.7665E+03 1.2180E+01	8.2715E+01 5.7030E-01
3	1.4808E+01 1.0210E-01	-1.0201E+03 -7.0335E+00	-3.7223E+01 -2.5664E-01	1.0349E+03 7.1356E+00	8.9395E+01 6.1636E-01
4	8.7090E+02 6.0047E+00	-5.1268E+03 -3.5348E+01	-1.6448E+03 -1.1341E+01	5.9977E+03 4.1353E+01	4.3668E+03 3.0108E+01
5	1.4694E+02 1.0131E+00	-1.9133E+03 -1.3192E+01	-8.0020E+02 -5.5172E+00	2.0603E+03 1.4205E+01	2.9578E+03 2.0393E+01
6	-3.3587E+02 -2.3157E+00	-1.3042E+03 -8.9919E+00	-6.9110E+02 -4.7650E+00	9.6830E+02 6.6762E+00	5.0009E+02 3.4480E+00
7	-6.4298E+00 -4.4332E-02	-8.8189E+02 -6.0804E+00	-5.5845E+01 -3.8504E-01	8.7546E+02 6.0361E+00	1.6685E+01 1.1504E-01
8	-3.9646E+00 -2.7335E-02	-8.4322E+02 -5.8138E+00	-3.9722E+01 -2.7387E-01	8.3925E+02 5.7864E+00	8.5101E-01 5.8675E-03
9	-3.2081E+00 -2.2119E-02	-8.1085E+02 -5.5906E+00	-2.7565E+01 -1.9006E-01	8.0765E+02 5.5685E+00	5.7717E-01 3.9795E-03
10	-1.5792E+02 -1.0888E+00	-1.3134E+03 -9.0557E+00	-9.6320E+01 -6.6410E-01	1.1555E+03 7.9668E+00	6.8283E+02 4.7080E+00
11	2.0361E+02 1.4038E+00	-6.7121E+02 -4.6278E+00	-4.4778E+01 -3.0873E-01	8.7482E+02 6.0316E+00	3.1955E+02 2.2032E+00
12	1.9175E+02 1.3221E+00	-1.8880E+02 -1.3018E+00	1.4942E+02 1.0302E+00	3.8055E+02 2.6238E+00	7.7647E+02 5.3536E+00
13	2.5373E+02 1.7494E+00	-7.1035E+02 -4.8977E+00	-3.8245E+01 -2.6369E-01	9.6407E+02 6.6471E+00	6.7407E+02 4.6476E+00
14	2.4952E+02 1.7204E+00	-5.6415E+02 -3.8897E+00	2.2970E+01 1.5837E-01	8.1367E+02 5.6101E+00	3.5190E+02 2.4263E+00
15	8.3614E+02 5.7650E+00	1.8534E+02 1.2778E+00	1.3136E+02 9.0573E-01	6.5081E+02 4.4872E+00	2.3281E+01 1.6052E-01

16	2.8958E+02	-9.1798E+02	-4.4126E+02	1.2076E+03	5.6522E+02
	1.9966E+00	-6.3292E+00	-3.0424E+00	8.3258E+00	3.8970E+00
17	4.9047E+02	-8.8069E+02	-4.9980E+02	1.3712E+03	1.1635E+03
	3.3817E+00	-6.0722E+00	-3.4460E+00	9.4538E+00	8.0221E+00
18	4.6270E+02	-1.4211E+03	-2.9977E+02	1.8838E+03	2.1661E+03
	3.1902E+00	-9.7984E+00	-2.0668E+00	1.2989E+01	1.4935E+01
19	4.0197E+02	-1.4487E+03	-5.6530E+02	1.8507E+03	1.2611E+03
	2.7715E+00	-9.9885E+00	-3.8976E+00	1.2760E+01	8.6948E+00
20	-9.7709E+01	-9.6214E+02	-6.2784E+02	8.6443E+02	1.4123E+03
	-6.7368E-01	-6.6337E+00	-4.3288E+00	5.9600E+00	9.7373E+00
21	1.6604E+02	1.2645E+00	-3.2787E-01	1.6478E+02	9.0540E+00
	1.1448E+00	8.7186E-03	-2.2606E-03	1.1361E+00	6.2425E-02
22	5.3497E+02	1.2521E+02	3.5320E+02	4.0975E+02	3.3572E+02
	3.6885E+00	8.6331E-01	2.4353E+00	2.8252E+00	2.3147E+00

**Table 2-153. Load Combination 101, Hot Environment,
Normal Conditions of Transport – Model AOS-050A**

Load Cases: 102, 201, 211
 100°F Ambient, Maximum Decay Heat, Maximum Insolation
 Internal Design Pressure, 414 kPa (60 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
---	--	--	-	-----	-----	--	--	--
1	1.19	1.70	0.15	2.90	3.05	20.00	66.30	9.36
	8.23	11.73	1.03	19.97	21.00	137.90	457.12	
2	0.08	0.05	0.19	0.13	0.32	20.00	66.30	>10
	0.53	0.37	1.34	0.90	2.24	137.90	457.12	
3	0.04	0.01	0.15	0.05	0.20	20.00	66.30	>10
	0.24	0.09	1.05	0.33	1.38	137.90	457.12	
4	1.71	2.69	1.36	4.40	5.76	20.00	66.30	5.82
	11.78	18.56	9.34	30.33	39.68	137.90	457.12	
5	1.65	2.53	1.11	4.18	5.29	20.00	66.30	6.18
	11.36	17.47	7.63	28.83	36.46	137.90	457.12	
6	0.61	1.02	0.67	1.63	2.30	20.00	66.30	>10
	4.21	7.03	4.60	11.24	15.83	137.90	457.12	
7	0.34	0.00	0.22	0.34	0.56	20.00	66.30	>10
	2.35	0.01	1.52	2.36	3.87	137.90	457.12	
8	0.34	0.00	0.21	0.34	0.55	20.00	66.30	>10
	2.35	0.00	1.45	2.35	3.80	137.90	457.12	
9	0.34	0.00	0.22	0.34	0.56	20.00	66.30	>10
	2.35	0.01	1.49	2.36	3.84	137.90	457.12	
10	0.49	0.21	0.93	0.71	1.63	20.00	66.30	>10
	3.40	1.48	6.38	4.88	11.26	137.90	457.12	
11	0.27	0.16	0.74	0.43	1.18	20.00	66.30	>10
	1.85	1.12	5.13	2.97	8.10	137.90	457.12	
12	0.23	0.11	1.02	0.34	1.37	20.00	66.30	>10
	1.61	0.76	7.06	2.37	9.42	137.90	457.12	
13	0.82	0.89	0.72	1.71	2.43	20.00	66.30	>10
	5.65	6.15	4.95	11.81	16.76	137.90	457.12	

14	0.81 5.58	0.64 4.45	0.58 4.02	1.45 10.03	2.04 14.05	20.00 137.90	66.30 457.12	>10
15	1.35 9.34	0.65 4.46	2.10 14.51	2.00 13.80	4.11 28.31	20.00 137.90	66.30 457.12	>10
16	0.36 2.51	0.47 3.23	0.74 5.12	0.83 5.74	1.58 10.86	20.00 137.90	66.30 457.12	>10
17	0.28 1.95	0.35 2.40	0.43 3.00	0.63 4.36	1.07 7.35	20.00 137.90	66.30 457.12	>10
18	0.51 3.53	0.81 5.62	0.19 1.34	1.33 9.15	1.52 10.49	20.00 137.90	66.30 457.12	>10
19	0.74 5.13	0.97 6.65	0.32 2.18	1.71 11.78	2.03 13.97	20.00 137.90	66.30 457.12	>10
20	0.73 5.04	1.01 6.97	0.53 3.67	1.74 12.01	2.27 15.68	20.00 137.90	66.30 457.12	>10
21	0.17 1.19	0.29 1.98	0.03 0.21	0.46 3.17	0.49 3.38	20.00 137.90	66.30 457.12	>10
22	0.72 4.97	0.36 2.48	0.11 0.79	1.08 7.46	1.20 8.25	20.00 137.90	66.30 457.12	>10

Min MS: 5.819, Location: 4, Combination: Pm+Pb

**Table 2-154. Load Combination 102, Cold Environment,
Normal Conditions of Transport – Model AOS-050A**

Load Cases: 104, 201, 211
 -40°F Ambient, Zero Decay Heat, Zero Insolation
 Internal Design Pressure, 414 kPa (60 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	1.19 8.23	1.70 11.73	0.09 0.63	2.90 19.97	2.99 20.59	20.00 137.90	70.00 482.63	9.36
2	0.08 0.53	0.05 0.37	0.07 0.45	0.13 0.90	0.20 1.35	20.00 137.90	70.00 482.63	>10
3	0.04 0.24	0.01 0.09	0.09 0.59	0.05 0.33	0.13 0.93	20.00 137.90	70.00 482.63	>10
4	1.71 11.78	2.69 18.56	10.82 74.60	4.40 30.33	15.22 104.94	20.00 137.90	70.00 482.63	2.94
5	1.65 11.36	2.53 17.47	14.79 101.94	4.18 28.83	18.97 130.76	20.00 137.90	70.00 482.63	2.16
6	0.61 4.21	1.02 7.03	7.02 48.40	1.63 11.24	8.65 59.64	20.00 137.90	70.00 482.63	5.94
7	0.34 2.35	0.00 0.01	3.23 22.24	0.34 2.36	3.57 24.60	20.00 137.90	70.00 482.63	>10
8	0.34 2.35	0.00 0.00	3.22 22.22	0.34 2.35	3.56 24.57	20.00 137.90	70.00 482.63	>10
9	0.34 2.35	0.00 0.01	3.22 22.23	0.34 2.36	3.57 24.59	20.00 137.90	70.00 482.63	>10
10	0.49 3.40	0.21 1.48	3.54 24.39	0.71 4.88	4.25 29.27	20.00 137.90	70.00 482.63	>10
11	0.27 1.85	0.16 1.12	1.73 11.93	0.43 2.97	2.16 14.90	20.00 137.90	70.00 482.63	>10
12	0.23 1.61	0.11 0.76	0.85 5.83	0.34 2.37	1.19 8.19	20.00 137.90	70.00 482.63	>10
13	0.82 5.65	0.89 6.15	6.14 42.35	1.71 11.81	7.85 54.16	20.00 137.90	70.00 482.63	6.64

14	0.81 5.58	0.64 4.45	4.97 34.30	1.45 10.03	6.43 44.32	20.00 137.90	70.00 482.63	8.33
15	1.35 9.34	0.65 4.46	0.45 3.12	2.00 13.80	2.45 16.93	20.00 137.90	70.00 482.63	>10
16	0.36 2.51	0.47 3.23	1.83 12.59	0.83 5.74	2.66 18.33	20.00 137.90	70.00 482.63	>10
17	0.28 1.95	0.35 2.40	1.56 10.76	0.63 4.36	2.19 15.12	20.00 137.90	70.00 482.63	>10
18	0.51 3.53	0.81 5.62	1.63 11.27	1.33 9.15	2.96 20.42	20.00 137.90	70.00 482.63	>10
19	0.74 5.13	0.97 6.65	2.18 15.00	1.71 11.78	3.89 26.79	20.00 137.90	70.00 482.63	>10
20	0.73 5.04	1.01 6.97	2.41 16.60	1.74 12.01	4.15 28.61	20.00 137.90	70.00 482.63	>10
21	0.17 1.19	0.29 1.98	0.88 6.07	0.46 3.17	1.34 9.25	20.00 137.90	70.00 482.63	>10
22	0.72 4.97	0.36 2.48	0.12 0.80	1.08 7.46	1.20 8.25	20.00 137.90	70.00 482.63	>10

Min MS: 2.164, Location: 5, Combination: Pm+Pb+Q

Table 2-155. Load Combination 103, Increased External Pressure, Normal Conditions of Transport – Model AOS-050A

Load Cases: 103, 202, 211
 -20°F Ambient, Zero Decay Heat, Zero Insolation
 Minimum External Pressure, 24 kPa (3.5 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	1.19 8.21	1.70 11.72	0.07 0.51	2.89 19.93	2.97 20.45	20.00 137.90	70.00 482.63	9.38
2	0.07 0.51	0.05 0.37	0.05 0.37	0.13 0.87	0.18 1.24	20.00 137.90	70.00 482.63	>10
3	0.03 0.22	0.01 0.09	0.07 0.49	0.04 0.30	0.11 0.79	20.00 137.90	70.00 482.63	>10
4	1.49 10.24	2.35 16.20	8.85 61.04	3.84 26.44	12.69 87.49	20.00 137.90	70.00 482.63	3.73
5	1.51 10.39	2.31 15.91	12.10 83.41	3.81 26.30	15.91 109.71	20.00 137.90	70.00 482.63	2.77
6	0.57 3.96	1.00 6.91	5.74 39.60	1.58 10.87	7.32 50.47	20.00 137.90	70.00 482.63	7.20
7	0.33 2.27	0.00 0.01	2.64 18.20	0.33 2.28	2.97 20.48	20.00 137.90	70.00 482.63	>10
8	0.33 2.27	0.00 0.00	2.64 18.18	0.33 2.27	2.97 20.45	20.00 137.90	70.00 482.63	>10
9	0.33 2.27	0.00 0.01	2.64 18.18	0.33 2.28	2.97 20.46	20.00 137.90	70.00 482.63	>10
10	0.37 2.57	0.09 0.62	2.89 19.96	0.46 3.19	3.36 23.15	20.00 137.90	70.00 482.63	>10
11	0.20 1.39	0.13 0.93	1.42 9.77	0.34 2.32	1.75 12.08	20.00 137.90	70.00 482.63	>10
12	0.12 0.84	0.10 0.66	0.69 4.77	0.22 1.49	0.91 6.26	20.00 137.90	70.00 482.63	>10
13	0.71 4.87	0.80 5.49	5.03 34.65	1.50 10.36	6.53 45.02	20.00 137.90	70.00 482.63	8.19

14	0.71 4.90	0.54 3.74	4.07 28.06	1.25 8.65	5.32 36.71	20.00 137.90	70.00 482.63	>10
15	0.97 6.71	0.21 1.46	0.37 2.54	1.18 8.17	1.55 10.71	20.00 137.90	70.00 482.63	>10
16	0.11 0.77	0.12 0.81	1.50 10.31	0.23 1.58	1.72 11.89	20.00 137.90	70.00 482.63	>10
17	0.10 0.71	0.11 0.75	1.28 8.81	0.21 1.45	1.49 10.27	20.00 137.90	70.00 482.63	>10
18	0.29 1.98	0.49 3.37	1.34 9.21	0.78 5.35	2.11 14.56	20.00 137.90	70.00 482.63	>10
19	0.39 2.66	0.41 2.85	1.78 12.27	0.80 5.51	2.58 17.78	20.00 137.90	70.00 482.63	>10
20	0.47 3.27	0.54 3.74	1.97 13.57	1.02 7.01	2.99 20.58	20.00 137.90	70.00 482.63	>10
21	0.10 0.69	0.21 1.45	0.72 4.97	0.31 2.14	1.03 7.11	20.00 137.90	70.00 482.63	>10
22	0.59 4.04	0.27 1.84	0.09 0.64	0.85 5.88	0.95 6.52	20.00 137.90	70.00 482.63	>10

Min MS: 2.771, Location: 5, Combination: Pm+Pb+Q

Table 2-156. Load Combination 104, Minimum External Pressure, Normal Conditions of Transport – Model AOS-050A

Load Cases: 101, 201, 202, 211
 100°F Ambient, Maximum Decay Heat
 Internal Design Pressure, 414 kPa (60 psia)
 Minimum External Pressure, 24 kPa (3.5 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
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1	1.20	1.70	0.16	2.90	3.06	20.00	66.30	9.35
	8.24	11.74	1.11	19.98	21.08	137.90	457.12	
2	0.08	0.05	0.21	0.13	0.34	20.00	66.30	>10
	0.54	0.37	1.43	0.91	2.34	137.90	457.12	
3	0.04	0.01	0.15	0.05	0.20	20.00	66.30	>10
	0.25	0.09	1.06	0.34	1.41	137.90	457.12	
4	1.78	2.81	1.13	4.59	5.72	20.00	66.30	5.54
	12.29	19.36	7.80	31.65	39.45	137.90	457.12	
5	1.69	2.61	1.18	4.31	5.49	20.00	66.30	5.97
	11.69	18.00	8.13	29.69	37.82	137.90	457.12	
6	0.62	1.03	0.54	1.65	2.19	20.00	66.30	>10
	4.29	7.08	3.72	11.37	15.10	137.90	457.12	
7	0.34	0.00	0.15	0.35	0.49	20.00	66.30	>10
	2.37	0.01	1.02	2.38	3.40	137.90	457.12	
8	0.34	0.00	0.15	0.34	0.49	20.00	66.30	>10
	2.37	0.00	1.02	2.37	3.39	137.90	457.12	
9	0.34	0.00	0.15	0.35	0.49	20.00	66.30	>10
	2.37	0.02	1.01	2.38	3.39	137.90	457.12	
10	0.53	0.26	0.45	0.79	1.24	20.00	66.30	>10
	3.67	1.76	3.13	5.43	8.56	137.90	457.12	
11	0.29	0.17	0.47	0.46	0.93	20.00	66.30	>10
	2.00	1.19	3.24	3.18	6.42	137.90	457.12	
12	0.27	0.11	0.70	0.38	1.08	20.00	66.30	>10
	1.85	0.78	4.84	2.64	7.47	137.90	457.12	

13	0.86 5.90	0.92 6.37	0.70 4.79	1.78 12.27	2.47 17.06	20.00 137.90	66.30 457.12	>10
14	0.84 5.80	0.68 4.67	0.57 3.93	1.52 10.47	2.09 14.40	20.00 137.90	66.30 457.12	>10
15	1.48 10.20	0.79 5.45	1.41 9.71	2.27 15.65	3.68 25.36	20.00 137.90	66.30 457.12	>10
16	0.44 3.07	0.58 4.02	0.49 3.38	1.03 7.09	1.52 10.47	20.00 137.90	66.30 457.12	>10
17	0.34 2.35	0.43 2.94	0.29 2.01	0.77 5.29	1.06 7.31	20.00 137.90	66.30 457.12	>10
18	0.59 4.04	0.92 6.35	0.19 1.32	1.51 10.38	1.70 11.71	20.00 137.90	66.30 457.12	>10
19	0.86 5.93	1.14 7.89	0.28 1.91	2.00 13.82	2.28 15.73	20.00 137.90	66.30 457.12	>10
20	0.82 5.62	1.16 8.02	0.56 3.84	1.98 13.64	2.54 17.48	20.00 137.90	66.30 457.12	>10
21	0.20 1.35	0.31 2.15	0.03 0.19	0.51 3.50	0.53 3.69	20.00 137.90	66.30 457.12	>10
22	0.77 5.28	0.39 2.70	0.07 0.50	1.16 7.97	1.23 8.47	20.00 137.90	66.30 457.12	>10

Min MS: 5.535, Location: 4, Combination: Pm+Pb

Table 2-157. Load Combination 105, Cold Environment with Maximum Decay Heat, Normal Conditions of Transport – Model AOS-050A

Load Cases: 105, 201, 202, 211
 -40°F Ambient, Maximum Decay Heat
 Internal Design Pressure, 414 kPa (60 psia)
 Minimum External Pressure, 24 kPa (3.5 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	1.20	1.70	0.17	2.90	3.07	20.00	70.00	9.35
	8.24	11.74	1.20	19.98	21.18	137.90	482.63	
2	0.08	0.05	0.22	0.13	0.36	20.00	70.00	>10
	0.54	0.37	1.54	0.91	2.45	137.90	482.63	
3	0.04	0.01	0.17	0.05	0.22	20.00	70.00	>10
	0.25	0.09	1.15	0.34	1.49	137.90	482.63	
4	1.78	2.81	1.19	4.59	5.78	20.00	70.00	5.54
	12.29	19.36	8.21	31.65	39.86	137.90	482.63	
5	1.69	2.61	1.33	4.31	5.63	20.00	70.00	5.97
	11.69	18.00	9.15	29.69	38.84	137.90	482.63	
6	0.62	1.03	0.58	1.65	2.23	20.00	70.00	>10
	4.29	7.08	4.02	11.37	15.40	137.90	482.63	
7	0.34	0.00	0.17	0.35	0.51	20.00	70.00	>10
	2.37	0.01	1.15	2.38	3.53	137.90	482.63	
8	0.34	0.00	0.17	0.34	0.51	20.00	70.00	>10
	2.37	0.00	1.16	2.37	3.53	137.90	482.63	
9	0.34	0.00	0.17	0.35	0.51	20.00	70.00	>10
	2.37	0.02	1.15	2.38	3.53	137.90	482.63	
10	0.53	0.26	0.37	0.79	1.16	20.00	70.00	>10
	3.67	1.76	2.58	5.43	8.01	137.90	482.63	
11	0.29	0.17	0.43	0.46	0.89	20.00	70.00	>10
	2.00	1.19	2.96	3.18	6.14	137.90	482.63	
12	0.27	0.11	0.66	0.38	1.04	20.00	70.00	>10
	1.85	0.78	4.53	2.64	7.16	137.90	482.63	

13	0.86 5.90	0.92 6.37	0.75 5.14	1.78 12.27	2.52 17.41	20.00 137.90	70.00 482.63	>10
14	0.84 5.80	0.68 4.67	0.63 4.33	1.52 10.47	2.15 14.80	20.00 137.90	70.00 482.63	>10
15	1.48 10.20	0.79 5.45	0.14 0.97	2.27 15.65	2.41 16.62	20.00 137.90	70.00 482.63	>10
16	0.44 3.07	0.58 4.02	0.04 0.29	1.03 7.09	1.07 7.38	20.00 137.90	70.00 482.63	>10
17	0.34 2.35	0.43 2.94	0.04 0.27	0.77 5.29	0.81 5.56	20.00 137.90	70.00 482.63	>10
18	0.59 4.04	0.92 6.35	0.21 1.45	1.51 10.38	1.72 11.83	20.00 137.90	70.00 482.63	>10
19	0.86 5.93	1.14 7.89	0.25 1.74	2.00 13.82	2.26 15.55	20.00 137.90	70.00 482.63	>10
20	0.82 5.62	1.16 8.02	0.62 4.25	1.98 13.64	2.59 17.89	20.00 137.90	70.00 482.63	>10
21	0.20 1.35	0.31 2.15	0.03 0.19	0.51 3.50	0.53 3.69	20.00 137.90	70.00 482.63	>10
22	0.77 5.28	0.39 2.70	0.03 0.23	1.16 7.97	1.19 8.20	20.00 137.90	70.00 482.63	>10

Min MS: 5.535, Location: 4, Combination: Pm+Pb

Table 2-158. Load Combination 106, Maximum Pressure, Hot Environment, Normal Conditions of Transport – Model AOS-050A

Load Cases: 101, 201, 203, 211
 100°F Ambient, Maximum Decay Heat
 Internal Design Pressure, 414 kPa (60 psia)
 Maximum Increased External Pressure, 140 kPa (20 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	1.20	1.70	0.16	2.90	3.06	20.00	66.30	9.33
	8.29	11.74	1.11	20.02	21.13	137.90	457.12	
2	0.09	0.05	0.21	0.14	0.35	20.00	66.30	>10
	0.59	0.37	1.43	0.96	2.39	137.90	457.12	
3	0.04	0.02	0.15	0.06	0.21	20.00	66.30	>10
	0.30	0.11	1.06	0.41	1.48	137.90	457.12	
4	1.95	3.12	1.13	5.07	6.20	20.00	66.30	4.92
	13.42	21.53	7.80	34.95	42.75	137.90	457.12	
5	1.90	2.90	1.18	4.81	5.99	20.00	66.30	5.24
	13.12	20.01	8.13	33.14	41.27	137.90	457.12	
6	0.71	1.19	0.54	1.90	2.44	20.00	66.30	>10
	4.91	8.20	3.72	13.10	16.83	137.90	457.12	
7	0.41	0.00	0.15	0.41	0.56	20.00	66.30	>10
	2.80	0.01	1.02	2.81	3.83	137.90	457.12	
8	0.41	0.00	0.15	0.41	0.55	20.00	66.30	>10
	2.80	0.00	1.02	2.80	3.82	137.90	457.12	
9	0.41	0.00	0.15	0.41	0.55	20.00	66.30	>10
	2.80	0.02	1.01	2.81	3.82	137.90	457.12	
10	0.56	0.22	0.45	0.78	1.24	20.00	66.30	>10
	3.88	1.51	3.13	5.39	8.52	137.90	457.12	
11	0.30	0.17	0.47	0.47	0.94	20.00	66.30	>10
	2.05	1.20	3.24	3.25	6.48	137.90	457.12	
12	0.34	0.25	0.70	0.59	1.29	20.00	66.30	>10
	2.37	1.70	4.84	4.06	8.90	137.90	457.12	

13	0.91 6.27	0.99 6.84	0.70 4.79	1.90 13.11	2.60 17.90	20.00 137.90	66.30 457.12	>10
14	0.88 6.08	0.69 4.78	0.57 3.93	1.58 10.87	2.15 14.80	20.00 137.90	66.30 457.12	>10
15	1.53 10.57	0.76 5.25	1.41 9.71	2.29 15.82	3.70 25.53	20.00 137.90	66.30 457.12	>10
16	0.48 3.29	0.63 4.33	0.49 3.38	1.11 7.62	1.60 11.01	20.00 137.90	66.30 457.12	>10
17	0.36 2.52	0.47 3.27	0.29 2.01	0.84 5.78	1.13 7.80	20.00 137.90	66.30 457.12	>10
18	0.61 4.20	0.97 6.67	0.19 1.32	1.58 10.87	1.77 12.20	20.00 137.90	66.30 457.12	>10
19	0.89 6.14	1.17 8.07	0.28 1.91	2.06 14.20	2.34 16.12	20.00 137.90	66.30 457.12	>10
20	0.83 5.71	1.18 8.15	0.56 3.84	2.01 13.86	2.57 17.70	20.00 137.90	66.30 457.12	>10
21	0.29 2.01	0.38 2.65	0.03 0.19	0.68 4.66	0.70 4.84	20.00 137.90	66.30 457.12	>10
22	0.79 5.48	0.39 2.68	0.07 0.50	1.18 8.16	1.26 8.66	20.00 137.90	66.30 457.12	>10

Min MS: 4.918, Location: 4, Combination: Pm+Pb

Table 2-159. Load Combination 107, Maximum Pressure, Cold Environment, Normal Conditions of Transport – Model AOS-050A

Load Cases: 105, 201, 203, 211
 -40°F Ambient, Maximum Decay Heat
 Internal Design Pressure, 414 kPa (60 psia)
 Maximum Increased External Pressure, 140 kPa (20 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	1.20 8.29	1.70 11.74	0.17 1.20	2.90 20.02	3.08 21.23	20.00 137.90	70.00 482.63	9.33
2	0.09 0.59	0.05 0.37	0.22 1.54	0.14 0.96	0.36 2.50	20.00 137.90	70.00 482.63	>10
3	0.04 0.30	0.02 0.11	0.17 1.15	0.06 0.41	0.23 1.56	20.00 137.90	70.00 482.63	>10
4	1.95 13.42	3.12 21.53	1.19 8.21	5.07 34.95	6.26 43.16	20.00 137.90	70.00 482.63	4.92
5	1.90 13.12	2.90 20.01	1.33 9.15	4.81 33.14	6.13 42.29	20.00 137.90	70.00 482.63	5.24
6	0.71 4.91	1.19 8.20	0.58 4.02	1.90 13.10	2.48 17.12	20.00 137.90	70.00 482.63	>10
7	0.41 2.80	0.00 0.01	0.17 1.15	0.41 2.81	0.58 3.96	20.00 137.90	70.00 482.63	>10
8	0.41 2.80	0.00 0.00	0.17 1.16	0.41 2.80	0.57 3.96	20.00 137.90	70.00 482.63	>10
9	0.41 2.80	0.00 0.02	0.17 1.15	0.41 2.81	0.57 3.96	20.00 137.90	70.00 482.63	>10
10	0.56 3.88	0.22 1.51	0.37 2.58	0.78 5.39	1.16 7.97	20.00 137.90	70.00 482.63	>10
11	0.30 2.05	0.17 1.20	0.43 2.96	0.47 3.25	0.90 6.20	20.00 137.90	70.00 482.63	>10
12	0.34 2.37	0.25 1.70	0.66 4.53	0.59 4.06	1.25 8.59	20.00 137.90	70.00 482.63	>10

13	0.91 6.27	0.99 6.84	0.75 5.14	1.90 13.11	2.65 18.25	20.00 137.90	70.00 482.63	>10
14	0.88 6.08	0.69 4.78	0.63 4.33	1.58 10.87	2.20 15.20	20.00 137.90	70.00 482.63	>10
15	1.53 10.57	0.76 5.25	0.14 0.97	2.29 15.82	2.43 16.78	20.00 137.90	70.00 482.63	>10
16	0.48 3.29	0.63 4.33	0.04 0.29	1.11 7.62	1.15 7.92	20.00 137.90	70.00 482.63	>10
17	0.36 2.52	0.47 3.27	0.04 0.27	0.84 5.78	0.88 6.05	20.00 137.90	70.00 482.63	>10
18	0.61 4.20	0.97 6.67	0.21 1.45	1.58 10.87	1.79 12.32	20.00 137.90	70.00 482.63	>10
19	0.89 6.14	1.17 8.07	0.25 1.74	2.06 14.20	2.31 15.94	20.00 137.90	70.00 482.63	>10
20	0.83 5.71	1.18 8.15	0.62 4.25	2.01 13.86	2.63 18.11	20.00 137.90	70.00 482.63	>10
21	0.29 2.01	0.38 2.65	0.03 0.19	0.68 4.66	0.70 4.84	20.00 137.90	70.00 482.63	>10
22	0.79 5.48	0.39 2.68	0.03 0.23	1.18 8.16	1.22 8.39	20.00 137.90	70.00 482.63	>10

Min MS: 4.918, Location: 4, Combination: Pm+Pb

Table 2-160. Load Combination 215, Compression Load, Normal Conditions of Transport – Model AOS-050A

Load Cases: 215, 101, 201, 211
 Compression Load (5x weight)
 100°F Ambient, Maximum Decay Heat
 Internal Design Pressure, 414 kPa (60 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	1.26 8.67	1.80 12.39	0.16 1.11	3.05 21.06	3.21 22.16	20.00 137.90	66.30 457.12	8.82
2	0.13 0.87	0.05 0.37	0.21 1.43	0.18 1.24	0.39 2.67	20.00 137.90	66.30 457.12	>10
3	0.09 0.62	0.03 0.21	0.15 1.06	0.12 0.84	0.28 1.90	20.00 137.90	66.30 457.12	>10
4	1.94 13.37	3.07 21.16	1.13 7.80	5.01 34.53	6.14 42.33	20.00 137.90	66.30 457.12	4.99
5	1.88 12.98	2.85 19.63	1.18 8.13	4.73 32.60	5.91 40.74	20.00 137.90	66.30 457.12	5.34
6	0.72 4.95	1.09 7.52	0.54 3.72	1.81 12.47	2.35 16.20	20.00 137.90	66.30 457.12	>10
7	0.42 2.91	0.00 0.01	0.15 1.02	0.42 2.93	0.57 3.95	20.00 137.90	66.30 457.12	>10
8	0.40 2.77	0.00 0.00	0.15 1.02	0.40 2.77	0.55 3.79	20.00 137.90	66.30 457.12	>10
9	0.40 2.73	0.00 0.02	0.15 1.01	0.40 2.75	0.54 3.75	20.00 137.90	66.30 457.12	>10
10	0.55 3.82	0.22 1.54	0.45 3.13	0.78 5.36	1.23 8.49	20.00 137.90	66.30 457.12	>10
11	0.29 2.02	0.19 1.30	0.47 3.24	0.48 3.32	0.95 6.56	20.00 137.90	66.30 457.12	>10
12	0.27 1.87	0.17 1.16	0.70 4.84	0.44 3.03	1.14 7.87	20.00 137.90	66.30 457.12	>10

13	0.91 6.30	0.99 6.80	0.70 4.79	1.90 13.10	2.59 17.89	20.00 137.90	66.30 457.12	>10
14	0.89 6.13	0.71 4.90	0.57 3.93	1.60 11.03	2.17 14.96	20.00 137.90	66.30 457.12	>10
15	2.33 16.08	0.71 4.90	1.41 9.71	3.04 20.98	4.45 30.69	20.00 137.90	66.30 457.12	7.58
16	0.59 4.06	0.75 5.14	0.49 3.38	1.33 9.20	1.82 12.58	20.00 137.90	66.30 457.12	>10
17	0.44 3.01	0.51 3.52	0.29 2.01	0.95 6.53	1.24 8.55	20.00 137.90	66.30 457.12	>10
18	0.60 4.15	0.90 6.18	0.19 1.32	1.50 10.32	1.69 11.65	20.00 137.90	66.30 457.12	>10
19	0.89 6.17	1.15 7.94	0.28 1.91	2.05 14.11	2.32 16.03	20.00 137.90	66.30 457.12	>10
20	0.91 6.27	1.28 8.85	0.56 3.84	2.19 15.12	2.75 18.97	20.00 137.90	66.30 457.12	>10
21	0.24 1.66	0.32 2.22	0.03 0.19	0.56 3.88	0.59 4.07	20.00 137.90	66.30 457.12	>10
22	0.97 6.66	0.51 3.51	0.07 0.50	1.48 10.17	1.55 10.67	20.00 137.90	66.30 457.12	>10

Min MS: 4.990, Location: 4, Combination: Pm+Pb

**Table 2-161. Load Combination 216, Rod Drop,
Normal Conditions of Transport – Model AOS-050A**

Load Cases: 216, 101, 201, 211
 Rod Drop onto Cask
 100°F Ambient, Maximum Decay Heat
 Internal Design Pressure, 414 kPa (60 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	1.24 8.52	1.71 11.78	0.16 1.11	2.94 20.30	3.10 21.41	20.00 137.90	66.30 457.12	9.19
2	0.13 0.87	0.06 0.42	0.21 1.43	0.19 1.29	0.39 2.72	20.00 137.90	66.30 457.12	>10
3	0.10 0.66	0.02 0.15	0.15 1.06	0.12 0.81	0.27 1.87	20.00 137.90	66.30 457.12	>10
4	2.01 13.85	3.00 20.71	1.13 7.80	5.01 34.57	6.15 42.37	20.00 137.90	66.30 457.12	4.98
5	1.85 12.76	2.62 18.07	1.18 8.13	4.47 30.83	5.65 38.96	20.00 137.90	66.30 457.12	5.71
6	0.87 6.00	1.20 8.26	0.54 3.72	2.07 14.26	2.61 17.98	20.00 137.90	66.30 457.12	>10
7	0.50 3.43	0.00 0.03	0.15 1.02	0.50 3.46	0.65 4.48	20.00 137.90	66.30 457.12	>10
8	0.45 3.10	0.00 0.00	0.15 1.02	0.45 3.10	0.60 4.12	20.00 137.90	66.30 457.12	>10
9	0.43 2.97	0.00 0.02	0.15 1.01	0.43 2.99	0.58 4.00	20.00 137.90	66.30 457.12	>10
10	0.59 4.05	0.22 1.49	0.45 3.13	0.80 5.54	1.26 8.67	20.00 137.90	66.30 457.12	>10
11	0.31 2.11	0.21 1.42	0.47 3.24	0.51 3.54	0.98 6.77	20.00 137.90	66.30 457.12	>10
12	0.28 1.93	0.17 1.18	0.70 4.84	0.45 3.11	1.15 7.94	20.00 137.90	66.30 457.12	>10

13	0.98 6.74	1.04 7.16	0.70 4.79	2.02 13.90	2.71 18.69	20.00 137.90	66.30 457.12	>10
14	0.95 6.56	0.77 5.31	0.57 3.93	1.72 11.87	2.29 15.80	20.00 137.90	66.30 457.12	>10
15	8.75 60.35	1.17 8.04	1.41 9.71	9.92 68.40	11.33 78.11	20.00 137.90	66.30 457.12	1.28
16	1.21 8.31	1.65 11.39	0.49 3.38	2.86 19.70	3.35 23.08	20.00 137.90	66.30 457.12	9.50
17	0.80 5.52	1.21 8.34	0.29 2.01	2.01 13.86	2.30 15.87	20.00 137.90	66.30 457.12	>10
18	0.77 5.29	1.02 7.00	0.19 1.32	1.78 12.29	1.98 13.62	20.00 137.90	66.30 457.12	>10
19	0.91 6.30	1.03 7.10	0.28 1.91	1.94 13.40	2.22 15.32	20.00 137.90	66.30 457.12	>10
20	1.02 7.06	1.13 7.77	0.56 3.84	2.15 14.83	2.71 18.68	20.00 137.90	66.30 457.12	>10
21	0.23 1.59	0.32 2.18	0.03 0.19	0.55 3.77	0.57 3.96	20.00 137.90	66.30 457.12	>10
22	4.54 31.30	3.47 23.92	0.07 0.50	8.01 55.22	8.08 55.72	20.00 137.90	66.30 457.12	2.75

Min MS: 1.285, Location: 15, Combination: Pm

**Table 2-162. Load Combination 217, Rod Drop, Cold Environment,
Normal Conditions of Transport – Model AOS-050A**

Load Cases: 216, 104, 201, 211

Rod Drop onto Cask

-40°F Ambient, Zero Decay Heat, Zero Insolation

Internal Design Pressure, 414 kPa (60 psia)

Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	1.24 8.52	1.71 11.78	0.09 0.63	2.94 20.30	3.04 20.93	20.00 137.90	70.00 482.63	9.19
2	0.13 0.87	0.06 0.42	0.07 0.45	0.19 1.29	0.25 1.74	20.00 137.90	70.00 482.63	>10
3	0.10 0.66	0.02 0.15	0.09 0.59	0.12 0.81	0.20 1.40	20.00 137.90	70.00 482.63	>10
4	2.01 13.85	3.00 20.71	10.82 74.60	5.01 34.57	15.83 109.17	20.00 137.90	70.00 482.63	2.79
5	1.85 12.76	2.62 18.07	14.79 101.94	4.47 30.83	19.26 132.77	20.00 137.90	70.00 482.63	2.12
6	0.87 6.00	1.20 8.26	7.02 48.40	2.07 14.26	9.09 62.66	20.00 137.90	70.00 482.63	5.60
7	0.50 3.43	0.00 0.03	3.23 22.24	0.50 3.46	3.73 25.70	20.00 137.90	70.00 482.63	>10
8	0.45 3.10	0.00 0.00	3.22 22.22	0.45 3.10	3.67 25.32	20.00 137.90	70.00 482.63	>10
9	0.43 2.97	0.00 0.02	3.22 22.23	0.43 2.99	3.66 25.22	20.00 137.90	70.00 482.63	>10
10	0.59 4.05	0.22 1.49	3.54 24.39	0.80 5.54	4.34 29.94	20.00 137.90	70.00 482.63	>10
11	0.31 2.11	0.21 1.42	1.73 11.93	0.51 3.54	2.24 15.47	20.00 137.90	70.00 482.63	>10
12	0.28 1.93	0.17 1.18	0.85 5.83	0.45 3.11	1.30 8.94	20.00 137.90	70.00 482.63	>10

13	0.98 6.74	1.04 7.16	6.14 42.35	2.02 13.90	8.16 56.25	20.00 137.90	70.00 482.63	6.35
14	0.95 6.56	0.77 5.31	4.97 34.30	1.72 11.87	6.70 46.17	20.00 137.90	70.00 482.63	7.96
15	8.75 60.35	1.17 8.04	0.45 3.12	9.92 68.40	10.37 71.52	20.00 137.90	70.00 482.63	1.28
16	1.21 8.31	1.65 11.39	1.83 12.59	2.86 19.70	4.68 32.29	20.00 137.90	70.00 482.63	9.50
17	0.80 5.52	1.21 8.34	1.56 10.76	2.01 13.86	3.57 24.62	20.00 137.90	70.00 482.63	>10
18	0.77 5.29	1.02 7.00	1.63 11.27	1.78 12.29	3.42 23.57	20.00 137.90	70.00 482.63	>10
19	0.91 6.30	1.03 7.10	2.18 15.00	1.94 13.40	4.12 28.41	20.00 137.90	70.00 482.63	>10
20	1.02 7.06	1.13 7.77	2.41 16.60	2.15 14.83	4.56 31.43	20.00 137.90	70.00 482.63	>10
21	0.23 1.59	0.32 2.18	0.88 6.07	0.55 3.77	1.43 9.85	20.00 137.90	70.00 482.63	>10
22	4.54 31.30	3.47 23.92	0.12 0.80	8.01 55.22	8.12 56.02	20.00 137.90	70.00 482.63	2.75

Min MS: 1.285, Location: 15, Combination: Pm

**Table 2-163. Load Combination 221, Forward Vibration,
Normal Conditions of Transport – Model AOS-050A**

Load Cases: 221, 101, 201, 211
 Forward 10g Vibration Inertia Load
 100°F Ambient, Maximum Decay Heat
 Internal Design Pressure, 414 kPa (60 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	1.20	1.70	0.16	2.91	3.07	20.00	66.30	9.32
	8.28	11.75	1.11	20.03	21.14	137.90	457.12	
2	0.21	0.07	0.21	0.28	0.49	20.00	66.30	>10
	1.47	0.47	1.43	1.94	3.37	137.90	457.12	
3	0.04	0.02	0.15	0.05	0.21	20.00	66.30	>10
	0.27	0.11	1.06	0.38	1.44	137.90	457.12	
4	1.74	2.71	1.13	4.46	5.59	20.00	66.30	5.73
	12.03	18.70	7.80	30.72	38.53	137.90	457.12	
5	1.66	2.54	1.18	4.20	5.38	20.00	66.30	6.14
	11.44	17.52	8.13	28.97	37.10	137.90	457.12	
6	0.64	1.02	0.54	1.66	2.20	20.00	66.30	>10
	4.41	7.05	3.72	11.46	15.18	137.90	457.12	
7	0.34	0.00	0.15	0.34	0.49	20.00	66.30	>10
	2.36	0.01	1.02	2.37	3.39	137.90	457.12	
8	0.34	0.00	0.15	0.35	0.49	20.00	66.30	>10
	2.38	0.00	1.02	2.38	3.40	137.90	457.12	
9	0.34	0.00	0.15	0.35	0.49	20.00	66.30	>10
	2.38	0.01	1.01	2.39	3.39	137.90	457.12	
10	0.51	0.22	0.45	0.74	1.19	20.00	66.30	>10
	3.55	1.52	3.13	5.07	8.20	137.90	457.12	
11	0.29	0.18	0.47	0.47	0.94	20.00	66.30	>10
	2.00	1.25	3.24	3.24	6.48	137.90	457.12	
12	0.24	0.11	0.70	0.35	1.05	20.00	66.30	>10
	1.65	0.76	4.84	2.41	7.25	137.90	457.12	

13	0.83 5.74	0.90 6.19	0.70 4.79	1.73 11.93	2.43 16.72	20.00 137.90	66.30 457.12	>10
14	0.83 5.72	0.65 4.49	0.57 3.93	1.48 10.22	2.05 14.14	20.00 137.90	66.30 457.12	>10
15	1.36 9.39	0.65 4.46	1.41 9.71	2.01 13.86	3.42 23.57	20.00 137.90	66.30 457.12	>10
16	0.37 2.58	0.48 3.31	0.49 3.38	0.85 5.89	1.35 9.27	20.00 137.90	66.30 457.12	>10
17	0.30 2.04	0.35 2.43	0.29 2.01	0.65 4.47	0.94 6.48	20.00 137.90	66.30 457.12	>10
18	0.52 3.59	0.82 5.65	0.19 1.32	1.34 9.24	1.53 10.56	20.00 137.90	66.30 457.12	>10
19	0.77 5.34	0.98 6.75	0.28 1.91	1.75 12.09	2.03 14.00	20.00 137.90	66.30 457.12	>10
20	0.75 5.20	1.01 6.98	0.56 3.84	1.77 12.18	2.32 16.02	20.00 137.90	66.30 457.12	>10
21	0.18 1.23	0.29 1.99	0.03 0.19	0.47 3.22	0.49 3.40	20.00 137.90	66.30 457.12	>10
22	0.73 5.01	0.36 2.49	0.07 0.50	1.09 7.49	1.16 7.99	20.00 137.90	66.30 457.12	>10

Min MS: 5.732, Location: 4, Combination: Pm+Pb

**Table 2-164. Load Combination 222, Lateral Vibration,
Normal Conditions of Transport – Model AOS-050A**

Load Cases: 222, 101, 201, 211
 Lateral 5g Vibration Inertia Load
 100°F Ambient, Maximum Decay Heat
 Internal Design Pressure, 414 kPa (60 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	1.20 8.26	1.70 11.74	0.16 1.11	2.90 20.00	3.06 21.11	20.00 137.90	66.30 457.12	9.34
2	0.15 1.00	0.06 0.42	0.21 1.43	0.21 1.42	0.41 2.85	20.00 137.90	66.30 457.12	>10
3	0.04 0.26	0.01 0.10	0.15 1.06	0.05 0.36	0.21 1.42	20.00 137.90	66.30 457.12	>10
4	1.73 11.90	2.70 18.63	1.13 7.80	4.43 30.53	5.56 38.33	20.00 137.90	66.30 457.12	5.78
5	1.65 11.40	2.54 17.50	1.18 8.13	4.19 28.90	5.37 37.03	20.00 137.90	66.30 457.12	6.16
6	0.63 4.31	1.02 7.04	0.54 3.72	1.65 11.35	2.19 15.07	20.00 137.90	66.30 457.12	>10
7	0.34 2.35	0.00 0.01	0.15 1.02	0.34 2.36	0.49 3.38	20.00 137.90	66.30 457.12	>10
8	0.34 2.36	0.00 0.00	0.15 1.02	0.34 2.37	0.49 3.38	20.00 137.90	66.30 457.12	>10
9	0.34 2.36	0.00 0.01	0.15 1.01	0.34 2.37	0.49 3.38	20.00 137.90	66.30 457.12	>10
10	0.50 3.47	0.22 1.50	0.45 3.13	0.72 4.97	1.18 8.10	20.00 137.90	66.30 457.12	>10
11	0.28 1.92	0.17 1.19	0.47 3.24	0.45 3.11	0.92 6.34	20.00 137.90	66.30 457.12	>10
12	0.24 1.63	0.11 0.76	0.70 4.84	0.35 2.39	1.05 7.22	20.00 137.90	66.30 457.12	>10

13	0.83 5.70	0.90 6.17	0.70 4.79	1.72 11.87	2.42 16.66	20.00 137.90	66.30 457.12	>10
14	0.82 5.65	0.65 4.47	0.57 3.93	1.47 10.12	2.04 14.05	20.00 137.90	66.30 457.12	>10
15	1.36 9.37	0.65 4.46	1.41 9.71	2.01 13.83	3.41 23.54	20.00 137.90	66.30 457.12	>10
16	0.37 2.54	0.47 3.27	0.49 3.38	0.84 5.82	1.33 9.20	20.00 137.90	66.30 457.12	>10
17	0.29 1.99	0.35 2.42	0.29 2.01	0.64 4.41	0.93 6.43	20.00 137.90	66.30 457.12	>10
18	0.52 3.56	0.82 5.63	0.19 1.32	1.33 9.19	1.53 10.52	20.00 137.90	66.30 457.12	>10
19	0.76 5.24	0.97 6.70	0.28 1.91	1.73 11.94	2.01 13.85	20.00 137.90	66.30 457.12	>10
20	0.74 5.12	1.01 6.97	0.56 3.84	1.75 12.09	2.31 15.94	20.00 137.90	66.30 457.12	>10
21	0.18 1.21	0.29 1.99	0.03 0.19	0.46 3.20	0.49 3.38	20.00 137.90	66.30 457.12	>10
22	0.72 4.99	0.36 2.49	0.07 0.50	1.08 7.47	1.16 7.98	20.00 137.90	66.30 457.12	>10

Min MS: 5.775, Location: 4, Combination: Pm+Pb

**Table 2-165. Load Combination 223, Vertical Vibration,
Normal Conditions of Transport – Model AOS-050A**

Load Cases: 223, 101, 201, 211
 Vertical 2g Vibration Inertia Load
 100°F Ambient, Maximum Decay Heat
 Internal Design Pressure, 414 kPa (60 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	1.20 8.24	1.70 11.73	0.16 1.11	2.90 19.98	3.06 21.08	20.00 137.90	66.30 457.12	9.35
2	0.09 0.61	0.06 0.39	0.21 1.43	0.15 1.01	0.35 2.44	20.00 137.90	66.30 457.12	>10
3	0.04 0.25	0.01 0.09	0.15 1.06	0.05 0.35	0.20 1.41	20.00 137.90	66.30 457.12	>10
4	1.71 11.78	2.69 18.56	1.13 7.80	4.40 30.35	5.53 38.15	20.00 137.90	66.30 457.12	5.82
5	1.65 11.36	2.53 17.47	1.18 8.13	4.18 28.83	5.36 36.96	20.00 137.90	66.30 457.12	6.17
6	0.61 4.21	1.02 7.03	0.54 3.72	1.63 11.25	2.17 14.97	20.00 137.90	66.30 457.12	>10
7	0.34 2.35	0.00 0.01	0.15 1.02	0.34 2.36	0.49 3.38	20.00 137.90	66.30 457.12	>10
8	0.34 2.35	0.00 0.00	0.15 1.02	0.34 2.35	0.49 3.37	20.00 137.90	66.30 457.12	>10
9	0.34 2.35	0.00 0.01	0.15 1.01	0.34 2.36	0.49 3.37	20.00 137.90	66.30 457.12	>10
10	0.49 3.41	0.21 1.48	0.45 3.13	0.71 4.89	1.16 8.01	20.00 137.90	66.30 457.12	>10
11	0.27 1.85	0.16 1.13	0.47 3.24	0.43 2.98	0.90 6.22	20.00 137.90	66.30 457.12	>10
12	0.23 1.61	0.11 0.76	0.70 4.84	0.34 2.37	1.04 7.20	20.00 137.90	66.30 457.12	>10

13	0.82 5.66	0.89 6.16	0.70 4.79	1.71 11.81	2.41 16.61	20.00 137.90	66.30 457.12	>10
14	0.81 5.59	0.65 4.45	0.57 3.93	1.46 10.04	2.03 13.97	20.00 137.90	66.30 457.12	>10
15	1.35 9.34	0.65 4.46	1.41 9.71	2.00 13.81	3.41 23.52	20.00 137.90	66.30 457.12	>10
16	0.36 2.51	0.47 3.24	0.49 3.38	0.83 5.75	1.32 9.13	20.00 137.90	66.30 457.12	>10
17	0.28 1.96	0.35 2.41	0.29 2.01	0.63 4.36	0.92 6.38	20.00 137.90	66.30 457.12	>10
18	0.51 3.54	0.81 5.62	0.19 1.32	1.33 9.15	1.52 10.48	20.00 137.90	66.30 457.12	>10
19	0.75 5.14	0.97 6.66	0.28 1.91	1.71 11.79	1.99 13.70	20.00 137.90	66.30 457.12	>10
20	0.73 5.05	1.01 6.97	0.56 3.84	1.74 12.02	2.30 15.86	20.00 137.90	66.30 457.12	>10
21	0.17 1.19	0.29 1.98	0.03 0.19	0.46 3.18	0.49 3.37	20.00 137.90	66.30 457.12	>10
22	0.72 4.98	0.36 2.49	0.07 0.50	1.08 7.46	1.15 7.96	20.00 137.90	66.30 457.12	>10

Min MS: 5.816, Location: 4, Combination: Pm+Pb

Table 2-166. Load Combination 224, Forward Vibration at Cold Temperature, Normal Conditions of Transport – Model AOS-050A

Load Cases: 221, 103, 201, 211
 Forward 10g Vibration Inertia Load
 -20°F Ambient, Zero Decay Heat, Zero Insolation
 Internal Design Pressure, 414 kPa (60 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	1.20 8.28	1.70 11.75	0.07 0.51	2.91 20.03	2.98 20.55	20.00 137.90	70.00 482.63	9.32
2	0.21 1.47	0.07 0.47	0.05 0.37	0.28 1.94	0.34 2.31	20.00 137.90	70.00 482.63	>10
3	0.04 0.27	0.02 0.11	0.07 0.49	0.05 0.38	0.13 0.86	20.00 137.90	70.00 482.63	>10
4	1.74 12.03	2.71 18.70	8.85 61.04	4.46 30.72	13.31 91.77	20.00 137.90	70.00 482.63	3.51
5	1.66 11.44	2.54 17.52	12.10 83.41	4.20 28.97	16.30 112.37	20.00 137.90	70.00 482.63	2.68
6	0.64 4.41	1.02 7.05	5.74 39.60	1.66 11.46	7.41 51.06	20.00 137.90	70.00 482.63	7.10
7	0.34 2.36	0.00 0.01	2.64 18.20	0.34 2.37	2.98 20.57	20.00 137.90	70.00 482.63	>10
8	0.34 2.38	0.00 0.00	2.64 18.18	0.35 2.38	2.98 20.56	20.00 137.90	70.00 482.63	>10
9	0.34 2.38	0.00 0.01	2.64 18.18	0.35 2.39	2.98 20.57	20.00 137.90	70.00 482.63	>10
10	0.51 3.55	0.22 1.52	2.89 19.96	0.74 5.07	3.63 25.03	20.00 137.90	70.00 482.63	>10
11	0.29 2.00	0.18 1.25	1.42 9.77	0.47 3.24	1.89 13.01	20.00 137.90	70.00 482.63	>10
12	0.24 1.65	0.11 0.76	0.69 4.77	0.35 2.41	1.04 7.18	20.00 137.90	70.00 482.63	>10

13	0.83 5.74	0.90 6.19	5.03 34.65	1.73 11.93	6.76 46.58	20.00 137.90	70.00 482.63	7.88
14	0.83 5.72	0.65 4.49	4.07 28.06	1.48 10.22	5.55 38.27	20.00 137.90	70.00 482.63	9.81
15	1.36 9.39	0.65 4.46	0.37 2.54	2.01 13.86	2.38 16.39	20.00 137.90	70.00 482.63	>10
16	0.37 2.58	0.48 3.31	1.50 10.31	0.85 5.89	2.35 16.20	20.00 137.90	70.00 482.63	>10
17	0.30 2.04	0.35 2.43	1.28 8.81	0.65 4.47	1.93 13.28	20.00 137.90	70.00 482.63	>10
18	0.52 3.59	0.82 5.65	1.34 9.21	1.34 9.24	2.68 18.45	20.00 137.90	70.00 482.63	>10
19	0.77 5.34	0.98 6.75	1.78 12.27	1.75 12.09	3.53 24.36	20.00 137.90	70.00 482.63	>10
20	0.75 5.20	1.01 6.98	1.97 13.57	1.77 12.18	3.73 25.75	20.00 137.90	70.00 482.63	>10
21	0.18 1.23	0.29 1.99	0.72 4.97	0.47 3.22	1.19 8.19	20.00 137.90	70.00 482.63	>10
22	0.73 5.01	0.36 2.49	0.09 0.64	1.09 7.49	1.18 8.13	20.00 137.90	70.00 482.63	>10

Min MS: 2.681, Location: 5, Combination: Pm+Pb+Q

Table 2-167. Load Combination 225, Lateral Vibration at Cold Temperature, Normal Conditions of Transport – Model AOS-050A

Load Cases: 222, 103, 201, 211
 Lateral 5g Vibration Inertia Load
 -20°F Ambient, Zero Decay Heat, Zero Insolation
 Internal Design Pressure, 414 kPa (60 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	1.20 8.26	1.70 11.74	0.07 0.51	2.90 20.00	2.98 20.51	20.00 137.90	70.00 482.63	9.34
2	0.15 1.00	0.06 0.42	0.05 0.37	0.21 1.42	0.26 1.79	20.00 137.90	70.00 482.63	>10
3	0.04 0.26	0.01 0.10	0.07 0.49	0.05 0.36	0.12 0.84	20.00 137.90	70.00 482.63	>10
4	1.73 11.90	2.70 18.63	8.85 61.04	4.43 30.53	13.28 91.57	20.00 137.90	70.00 482.63	3.52
5	1.65 11.40	2.54 17.50	12.10 83.41	4.19 28.90	16.29 112.30	20.00 137.90	70.00 482.63	2.68
6	0.63 4.31	1.02 7.04	5.74 39.60	1.65 11.35	7.39 50.95	20.00 137.90	70.00 482.63	7.12
7	0.34 2.35	0.00 0.01	2.64 18.20	0.34 2.36	2.98 20.56	20.00 137.90	70.00 482.63	>10
8	0.34 2.36	0.00 0.00	2.64 18.18	0.34 2.37	2.98 20.54	20.00 137.90	70.00 482.63	>10
9	0.34 2.36	0.00 0.01	2.64 18.18	0.34 2.37	2.98 20.56	20.00 137.90	70.00 482.63	>10
10	0.50 3.47	0.22 1.50	2.89 19.96	0.72 4.97	3.62 24.93	20.00 137.90	70.00 482.63	>10
11	0.28 1.92	0.17 1.19	1.42 9.77	0.45 3.11	1.87 12.87	20.00 137.90	70.00 482.63	>10
12	0.24 1.63	0.11 0.76	0.69 4.77	0.35 2.39	1.04 7.16	20.00 137.90	70.00 482.63	>10

13	0.83 5.70	0.90 6.17	5.03 34.65	1.72 11.87	6.75 46.52	20.00 137.90	70.00 482.63	7.89
14	0.82 5.65	0.65 4.47	4.07 28.06	1.47 10.12	5.54 38.18	20.00 137.90	70.00 482.63	9.83
15	1.36 9.37	0.65 4.46	0.37 2.54	2.01 13.83	2.37 16.37	20.00 137.90	70.00 482.63	>10
16	0.37 2.54	0.47 3.27	1.50 10.31	0.84 5.82	2.34 16.13	20.00 137.90	70.00 482.63	>10
17	0.29 1.99	0.35 2.42	1.28 8.81	0.64 4.41	1.92 13.22	20.00 137.90	70.00 482.63	>10
18	0.52 3.56	0.82 5.63	1.34 9.21	1.33 9.19	2.67 18.41	20.00 137.90	70.00 482.63	>10
19	0.76 5.24	0.97 6.70	1.78 12.27	1.73 11.94	3.51 24.20	20.00 137.90	70.00 482.63	>10
20	0.74 5.12	1.01 6.97	1.97 13.57	1.75 12.09	3.72 25.66	20.00 137.90	70.00 482.63	>10
21	0.18 1.21	0.29 1.99	0.72 4.97	0.46 3.20	1.18 8.16	20.00 137.90	70.00 482.63	>10
22	0.72 4.99	0.36 2.49	0.09 0.64	1.08 7.47	1.18 8.12	20.00 137.90	70.00 482.63	>10

Min MS: 2.684, Location: 5, Combination: Pm+Pb+Q

Table 2-168. Load Combination 226, Vertical Vibration at Cold Temperature, Normal Conditions of Transport – Model AOS-050A

Load Cases: 223, 103, 201, 211
 Vertical 2g Vibration Inertia Load
 -20°F Ambient, Zero Decay Heat, Zero Insolation
 Internal Design Pressure, 414 kPa (60 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	1.20 8.24	1.70 11.73	0.07 0.51	2.90 19.98	2.97 20.49	20.00 137.90	70.00 482.63	9.35
2	0.09 0.61	0.06 0.39	0.05 0.37	0.15 1.01	0.20 1.38	20.00 137.90	70.00 482.63	>10
3	0.04 0.25	0.01 0.09	0.07 0.49	0.05 0.35	0.12 0.83	20.00 137.90	70.00 482.63	>10
4	1.71 11.78	2.69 18.56	8.85 61.04	4.40 30.35	13.25 91.39	20.00 137.90	70.00 482.63	3.53
5	1.65 11.36	2.53 17.47	12.10 83.41	4.18 28.83	16.28 112.24	20.00 137.90	70.00 482.63	2.69
6	0.61 4.21	1.02 7.03	5.74 39.60	1.63 11.25	7.37 50.85	20.00 137.90	70.00 482.63	7.14
7	0.34 2.35	0.00 0.01	2.64 18.20	0.34 2.36	2.98 20.56	20.00 137.90	70.00 482.63	>10
8	0.34 2.35	0.00 0.00	2.64 18.18	0.34 2.35	2.98 20.53	20.00 137.90	70.00 482.63	>10
9	0.34 2.35	0.00 0.01	2.64 18.18	0.34 2.36	2.98 20.55	20.00 137.90	70.00 482.63	>10
10	0.49 3.41	0.21 1.48	2.89 19.96	0.71 4.89	3.60 24.84	20.00 137.90	70.00 482.63	>10
11	0.27 1.85	0.16 1.13	1.42 9.77	0.43 2.98	1.85 12.74	20.00 137.90	70.00 482.63	>10
12	0.23 1.61	0.11 0.76	0.69 4.77	0.34 2.37	1.04 7.14	20.00 137.90	70.00 482.63	>10

13	0.82 5.66	0.89 6.16	5.03 34.65	1.71 11.81	6.74 46.46	20.00 137.90	70.00 482.63	7.90
14	0.81 5.59	0.65 4.45	4.07 28.06	1.46 10.04	5.53 38.10	20.00 137.90	70.00 482.63	9.86
15	1.35 9.34	0.65 4.46	0.37 2.54	2.00 13.81	2.37 16.34	20.00 137.90	70.00 482.63	>10
16	0.36 2.51	0.47 3.24	1.50 10.31	0.83 5.75	2.33 16.06	20.00 137.90	70.00 482.63	>10
17	0.28 1.96	0.35 2.41	1.28 8.81	0.63 4.36	1.91 13.17	20.00 137.90	70.00 482.63	>10
18	0.51 3.54	0.81 5.62	1.34 9.21	1.33 9.15	2.66 18.37	20.00 137.90	70.00 482.63	>10
19	0.75 5.14	0.97 6.66	1.78 12.27	1.71 11.79	3.49 24.06	20.00 137.90	70.00 482.63	>10
20	0.73 5.05	1.01 6.97	1.97 13.57	1.74 12.02	3.71 25.59	20.00 137.90	70.00 482.63	>10
21	0.17 1.19	0.29 1.98	0.72 4.97	0.46 3.18	1.18 8.15	20.00 137.90	70.00 482.63	>10
22	0.72 4.98	0.36 2.49	0.09 0.64	1.08 7.46	1.18 8.10	20.00 137.90	70.00 482.63	>10

Min MS: 2.686, Location: 5, Combination: Pm+Pb+Q

Table 2-169. Load Combination 231, 4-ft. Head-On Drop, Normal Conditions, Normal Conditions of Transport – Model AOS-050A

Load Cases: 231, 102, 201, 211
 4-ft. Head-On Drop
 100°F Ambient, Maximum Decay Heat, Maximum Insolation
 Internal Design Pressure, 414 kPa (60 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	2.03	1.95	0.15	3.98	4.13	20.00	66.30	6.54
	13.96	13.47	1.03	27.43	28.46	137.90	457.12	
2	0.51	0.10	0.19	0.61	0.80	20.00	66.30	>10
	3.52	0.69	1.34	4.21	5.55	137.90	457.12	
3	0.18	0.02	0.15	0.21	0.36	20.00	66.30	>10
	1.26	0.16	1.05	1.42	2.47	137.90	457.12	
4	3.32	3.71	1.36	7.03	8.39	20.00	66.30	3.27
	22.89	25.59	9.34	48.49	57.83	137.90	457.12	
5	2.39	3.37	1.11	5.76	6.87	20.00	66.30	4.21
	16.48	23.25	7.63	39.74	47.37	137.90	457.12	
6	1.26	1.10	0.67	2.36	3.03	20.00	66.30	>10
	8.67	7.60	4.60	16.27	20.86	137.90	457.12	
7	0.66	0.01	0.22	0.67	0.89	20.00	66.30	>10
	4.57	0.05	1.52	4.62	6.13	137.90	457.12	
8	0.57	0.00	0.21	0.57	0.79	20.00	66.30	>10
	3.96	0.01	1.45	3.96	5.41	137.90	457.12	
9	0.55	0.00	0.22	0.55	0.77	20.00	66.30	>10
	3.79	0.02	1.49	3.80	5.29	137.90	457.12	
10	0.79	0.42	0.93	1.21	2.14	20.00	66.30	>10
	5.47	2.89	6.38	8.36	14.74	137.90	457.12	
11	0.53	0.25	0.74	0.78	1.53	20.00	66.30	>10
	3.66	1.74	5.13	5.40	10.53	137.90	457.12	
12	0.35	0.34	1.02	0.70	1.72	20.00	66.30	>10
	2.44	2.35	7.06	4.79	11.85	137.90	457.12	

13	1.04 7.19	0.97 6.68	0.72 4.95	2.01 13.87	2.73 18.83	20.00 137.90	66.30 457.12	>10
14	0.98 6.74	0.70 4.79	0.58 4.02	1.67 11.53	2.26 15.56	20.00 137.90	66.30 457.12	>10
15	3.62 24.93	0.79 5.43	2.10 14.51	4.40 30.36	6.51 44.87	20.00 137.90	66.30 457.12	4.53
16	0.96 6.62	0.83 5.76	0.74 5.12	1.79 12.37	2.54 17.49	20.00 137.90	66.30 457.12	>10
17	1.25 8.63	0.54 3.72	0.43 3.00	1.79 12.34	2.23 15.34	20.00 137.90	66.30 457.12	>10
18	1.01 6.98	1.10 7.59	0.19 1.34	2.11 14.57	2.31 15.91	20.00 137.90	66.30 457.12	>10
19	1.42 9.79	1.39 9.58	0.32 2.18	2.81 19.37	3.13 21.55	20.00 137.90	66.30 457.12	9.68
20	1.49 10.25	1.48 10.20	0.53 3.67	2.97 20.45	3.50 24.12	20.00 137.90	66.30 457.12	9.11
21	0.23 1.59	0.31 2.14	0.03 0.21	0.54 3.73	0.57 3.94	20.00 137.90	66.30 457.12	>10
22	2.16 14.92	0.76 5.21	0.11 0.79	2.92 20.13	3.03 20.92	20.00 137.90	66.30 457.12	8.24

Min MS: 3.266, Location: 4, Combination: Pm+Pb

Table 2-170. Load Combination 232, 30-ft. Head-On Drop, Normal Conditions (Impact Test), Normal Conditions of Transport – Model AOS-050A

Load Cases: 232, 102, 201, 211
 30-ft. Head-On Drop Impact Test, Normal Conditions
 100°F Ambient, Maximum Decay Heat, Maximum Insolation
 Internal Design Pressure, 414 kPa (60 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	4.36 30.04	2.98 20.54	0.15 1.03	7.34 50.58	7.49 51.62	20.00 137.90	66.30 457.12	3.09
2	1.84 12.71	0.14 0.94	0.19 1.34	1.98 13.65	2.17 14.99	20.00 137.90	66.30 457.12	9.85
3	1.07 7.38	0.10 0.71	0.15 1.05	1.17 8.09	1.32 9.13	20.00 137.90	66.30 457.12	>10
4	7.71 53.13	7.06 48.67	1.36 9.34	14.76 101.80	16.12 111.14	20.00 137.90	66.30 457.12	1.03
5	3.71 25.56	5.49 37.86	1.11 7.63	9.20 63.42	10.31 71.06	20.00 137.90	66.30 457.12	2.26
6	1.58 10.89	1.52 10.48	0.67 4.60	3.10 21.36	3.76 25.96	20.00 137.90	66.30 457.12	8.68
7	1.22 8.38	0.02 0.12	0.22 1.52	1.23 8.51	1.45 10.02	20.00 137.90	66.30 457.12	>10
8	1.18 8.13	0.00 0.01	0.21 1.45	1.18 8.14	1.39 9.59	20.00 137.90	66.30 457.12	>10
9	1.15 7.91	0.00 0.02	0.22 1.49	1.15 7.93	1.37 9.42	20.00 137.90	66.30 457.12	>10
10	1.65 11.37	0.90 6.19	0.93 6.38	2.55 17.55	3.47 23.94	20.00 137.90	66.30 457.12	>10
11	1.14 7.88	0.48 3.33	0.74 5.13	1.62 11.20	2.37 16.34	20.00 137.90	66.30 457.12	>10
12	0.61 4.23	0.89 6.11	1.02 7.06	1.50 10.34	2.52 17.40	20.00 137.90	66.30 457.12	>10

13	1.78 12.30	1.57 10.80	0.72 4.95	3.35 23.10	4.07 28.05	20.00 137.90	66.30 457.12	7.95
14	1.62 11.19	1.00 6.87	0.58 4.02	2.62 18.06	3.20 22.09	20.00 137.90	66.30 457.12	>10
15	2.01 13.83	0.67 4.63	2.10 14.51	2.68 18.45	4.78 32.96	20.00 137.90	66.30 457.12	8.97
16	1.57 10.83	1.03 7.13	0.74 5.12	2.61 17.96	3.35 23.08	20.00 137.90	66.30 457.12	>10
17	1.65 11.41	1.51 10.43	0.43 3.00	3.17 21.83	3.60 24.83	20.00 137.90	66.30 457.12	8.47
18	2.40 16.52	2.98 20.55	0.19 1.34	5.38 37.07	5.57 38.41	20.00 137.90	66.30 457.12	4.58
19	2.59 17.89	2.23 15.35	0.32 2.18	4.82 33.24	5.14 35.42	20.00 137.90	66.30 457.12	5.22
20	1.60 11.00	2.42 16.71	0.53 3.67	4.02 27.71	4.55 31.38	20.00 137.90	66.30 457.12	6.46
21	0.34 2.33	0.30 2.05	0.03 0.21	0.63 4.37	0.66 4.58	20.00 137.90	66.30 457.12	>10
22	1.13 7.80	0.70 4.80	0.11 0.79	1.83 12.60	1.94 13.39	20.00 137.90	66.30 457.12	>10

Min MS: 1.032, Location: 4, Combination: Pm+Pb

Table 2-171. Load Combination 233, 4-ft. Drop at Cold Temperature, Normal Conditions of Transport – Model AOS-050A

Load Cases: 231, 103, 211
 4-ft. Head-On Drop
 -20°F Ambient, Zero Decay Heat, Zero Insolation
 Fabrication Stress

Loc	Stress (ksi/MPa)							
	Pm	Pb	Q	Pm+Pb	Pm+Pb+Q	Sm	Su	MS
1	2.02 13.93	1.95 13.45	0.07 0.51	3.97 27.38	4.05 27.89	20.00 137.90	70.00 482.63	6.55
2	0.51 3.48	0.10 0.69	0.05 0.37	0.61 4.17	0.66 4.54	20.00 137.90	70.00 482.63	>10
3	0.18 1.22	0.02 0.15	0.07 0.49	0.20 1.37	0.27 1.86	20.00 137.90	70.00 482.63	>10
4	3.02 20.84	3.25 22.44	8.85 61.04	6.28 43.28	15.13 104.32	20.00 137.90	70.00 482.63	2.97
5	2.20 15.19	3.07 21.16	12.10 83.41	5.27 36.35	17.37 119.76	20.00 137.90	70.00 482.63	2.45
6	1.21 8.34	1.08 7.42	5.74 39.60	2.29 15.77	8.03 55.37	20.00 137.90	70.00 482.63	6.47
7	0.65 4.47	0.01 0.05	2.64 18.20	0.66 4.52	3.29 22.71	20.00 137.90	70.00 482.63	>10
8	0.56 3.86	0.00 0.01	2.64 18.18	0.56 3.86	3.20 22.04	20.00 137.90	70.00 482.63	>10
9	0.54 3.69	0.00 0.01	2.64 18.18	0.54 3.70	3.17 21.88	20.00 137.90	70.00 482.63	>10
10	0.63 4.37	0.25 1.75	2.89 19.96	0.89 6.12	3.78 26.08	20.00 137.90	70.00 482.63	>10
11	0.44 3.05	0.22 1.48	1.42 9.77	0.66 4.53	2.07 14.30	20.00 137.90	70.00 482.63	>10
12	0.21 1.43	0.32 2.22	0.69 4.77	0.53 3.65	1.22 8.42	20.00 137.90	70.00 482.63	>10
13	0.89 6.16	0.84 5.81	5.03 34.65	1.74 11.97	6.76 46.62	20.00 137.90	70.00 482.63	7.87

14	0.85 5.84	0.56 3.87	4.07 28.06	1.41 9.71	5.48 37.77	20.00 137.90	70.00 482.63	9.95
15	3.11 21.45	0.21 1.44	0.37 2.54	3.32 22.88	3.69 25.42	20.00 137.90	70.00 482.63	5.43
16	0.63 4.32	0.37 2.54	1.50 10.31	1.00 6.87	2.49 17.18	20.00 137.90	70.00 482.63	>10
17	1.01 6.98	0.22 1.53	1.28 8.81	1.23 8.51	2.51 17.32	20.00 137.90	70.00 482.63	>10
18	0.71 4.93	0.67 4.61	1.34 9.21	1.38 9.53	2.72 18.75	20.00 137.90	70.00 482.63	>10
19	0.95 6.52	0.66 4.54	1.78 12.27	1.60 11.06	3.38 23.33	20.00 137.90	70.00 482.63	>10
20	1.15 7.90	0.86 5.92	1.97 13.57	2.01 13.83	3.97 27.40	20.00 137.90	70.00 482.63	>10
21	0.14 0.93	0.21 1.44	0.72 4.97	0.34 2.37	1.07 7.34	20.00 137.90	70.00 482.63	>10
22	1.98 13.68	0.63 4.36	0.09 0.64	2.62 18.04	2.71 18.68	20.00 137.90	70.00 482.63	9.08

Min MS: 2.454, Location: 5, Combination: Pm+Pb+Q

2.12.2.2 Hypothetical Accident Conditions of Transport Summary of Damages (Stresses) – Model AOS-050A

Table 2-172 and Table 2-173 present Model AOS-050A transport package Load Cases and Load Combinations, respectively, under Hypothetical Accident conditions of transport:

- Table 2-174 through Table 2-186 present Model AOS-050A transport package output data, for the Load Cases listed in Table 2-172. Comparisons with allowable stress limits are included for Load Cases 111 and 112.
- Table 2-187 through Table 2-201 present Model AOS-050A transport package output data, for the Load Combinations listed in Table 2-173.

Table 2-172. Load Cases Associated with Allowable Stresses under Hypothetical Accident Conditions of Transport – Model AOS-050A

Load Case	Description	Data
111	Fire at 30 Minutes, 1,475°F Ambient, Maximum Decay Heat	Table 2-174
112	Post Fire at 60 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation	Table 2-175
	Post Fire at 90 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation	Table 2-176
	Post Fire at 120 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation	Table 2-177
	Post Fire at 150 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation	Table 2-178
	Post Fire at 180 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation	Table 2-179
301	30-ft. Head-On Drop	Table 2-180
302	30-ft. Side Drop + Slap-Down	Table 2-181
303	30-ft. Cg/Corner Drop	Table 2-182
304	30-ft. Head-On Drop at -40°F, Low Temperature	Table 2-183
305	30-ft. Side Drop + Slap-Down at -40°F, Low Temperature	Table 2-184
306	30-ft. Cg/Corner Drop at -40°F, Low Temperature	Table 2-185
311	4-ft. Drop onto Rod	Table 2-186

Table 2-173. Load Combinations Associated with Allowable Stresses under Hypothetical Accident Conditions of Transport – Model AOS-050A

Load Combination	Load Cases ^a	Description	Data
301	301, 102, 201, 211	Head-On Drop Orientation	Table 2-187
302	302, 102, 201, 211	Side Drop Orientation	Table 2-188
303	303, 102, 201, 211	Cg/Corner Drop Orientation	Table 2-189
304	304, 105, 202, 211	Head-On Drop Orientation at -40°F, Cold Environment	Table 2-190
305	305, 105, 202, 211	Side Drop Orientation at -40°F, Cold Environment	Table 2-191
306	306, 105, 202, 211	Cg/Corner Drop Orientation at -40°F, Cold Environment	Table 2-192
310	204, 101, 211	Additional Increased External Pressure (290 psi)	Table 2-193
311	311, 101, 201, 211	4-ft. Drop onto Rod	Table 2-194
312	311, 104, 201, 211	4-ft. Drop onto Rod at -40°F, Cold Environment	Table 2-195
350	111, 201, 211	Fire at 30 Minutes	Table 2-196
351	112, 201, 211	Post Fire at 60 Minutes	Table 2-197
352		Post Fire at 90 Minutes	Table 2-198
353		Post Fire at 120 Minutes	Table 2-199
354		Post Fire at 150 Minutes	Table 2-200
355		Post Fire at 180 Minutes	Table 2-201

a. Some Normal conditions of transport Load Cases are included in Hypothetical Accident conditions of transport Load Combinations, to meet regulatory requirements.

Table 2-174. Load Case 111, Fire at 30 Minutes, 1,475°F Ambient, Maximum Decay Heat, Hypothetical Accident Conditions of Transport – Model AOS-050A

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	4.5796E+03	-1.2819E+03	4.4694E+03	5.8615E+03	1.2021E+04
	3.1575E+01	-8.8387E+00	3.0815E+01	4.0414E+01	8.2879E+01
2	2.6180E+03	-2.5618E+03	-2.8452E+03	5.1798E+03	3.4052E+02
	1.8051E+01	-1.7663E+01	-1.9617E+01	3.5714E+01	2.3478E+00
3	1.7950E+04	1.4247E+03	4.7503E+03	1.6525E+04	3.7483E+04
	1.2376E+02	9.8227E+00	3.2752E+01	1.1394E+02	2.5843E+02
4	2.7618E+05	-1.2650E+05	5.1951E+04	4.0268E+05	7.8198E+05
	1.9042E+03	-8.7220E+02	3.5819E+02	2.7764E+03	5.3916E+03
5	3.0065E+05	-1.2122E+05	4.3394E+04	4.2188E+05	6.5632E+05
	2.0729E+03	-8.3580E+02	2.9919E+02	2.9087E+03	4.5251E+03
6	1.5728E+05	-1.8310E+04	7.8580E+04	1.7559E+05	2.6006E+05
	1.0844E+03	-1.2624E+02	5.4179E+02	1.2107E+03	1.7931E+03
7	5.3806E+04	-3.5585E+02	-4.9957E+03	5.4162E+04	5.6408E+02
	3.7098E+02	-2.4535E+00	-3.4444E+01	3.7344E+02	3.8892E+00
8	5.3765E+04	-4.2570E+02	-3.6996E+03	5.4191E+04	3.5821E+02
	3.7070E+02	-2.9351E+00	-2.5508E+01	3.7363E+02	2.4698E+00
9	5.3768E+04	-3.7319E+02	-3.8451E+03	5.4141E+04	2.9466E+02
	3.7072E+02	-2.5731E+00	-2.6511E+01	3.7329E+02	2.0316E+00
10	5.4166E+04	-3.4384E+03	2.2364E+04	5.7604E+04	1.4717E+04
	3.7346E+02	-2.3707E+01	1.5420E+02	3.9717E+02	1.0147E+02
11	2.6135E+04	-7.9723E+03	1.9351E+04	3.4108E+04	1.2764E+04
	1.8020E+02	-5.4967E+01	1.3342E+02	2.3516E+02	8.8006E+01
12	2.2493E+04	4.3957E+01	2.2447E+04	2.2449E+04	1.3230E+04
	1.5508E+02	3.0307E-01	1.5477E+02	1.5478E+02	9.1218E+01
13	1.0535E+05	-1.0239E+04	3.7221E+04	1.1559E+05	1.1863E+05
	7.2639E+02	-7.0596E+01	2.5663E+02	7.9699E+02	8.1793E+02
14	9.1204E+04	-7.7992E+03	3.7840E+04	9.9003E+04	8.3276E+04
	6.2883E+02	-5.3773E+01	2.6090E+02	6.8260E+02	5.7417E+02
15	1.0334E+03	-1.3703E+03	-1.1719E+02	2.4037E+03	4.1770E+03
	7.1252E+00	-9.4478E+00	-8.0802E-01	1.6573E+01	2.8799E+01

16	4.2120E+02	-2.9970E+02	2.6328E+02	7.2090E+02	1.0227E+03
	2.9040E+00	-2.0664E+00	1.8152E+00	4.9704E+00	7.0514E+00
17	2.8206E+02	-1.4335E+02	7.1079E+01	4.2541E+02	6.4594E+02
	1.9447E+00	-9.8835E-01	4.9007E-01	2.9331E+00	4.4536E+00
18	3.8532E+02	-1.7315E+02	-6.6447E+02	5.5847E+02	7.7538E+02
	2.6567E+00	-1.1938E+00	-4.5814E+00	3.8505E+00	5.3461E+00
19	4.7407E+02	-5.2052E+01	-9.9344E+02	5.2612E+02	1.0959E+03
	3.2686E+00	-3.5888E-01	-6.8495E+00	3.6275E+00	7.5558E+00
20	8.1099E+02	3.9024E+01	-5.7322E+02	7.7197E+02	3.9559E+02
	5.5916E+00	2.6906E-01	-3.9522E+00	5.3225E+00	2.7275E+00
21	1.1293E+04	-1.2886E+04	-1.5824E+03	2.4179E+04	4.7502E+04
	7.7862E+01	-8.8843E+01	-1.0910E+01	1.6671E+02	3.2751E+02
22	1.4512E+03	-3.6346E+03	-2.2596E+03	5.0858E+03	9.1212E+03
	1.0006E+01	-2.5060E+01	-1.5580E+01	3.5065E+01	6.2889E+01

Allowable Stress for Load Case 111

LOC	Tmax (deg_F)	Tave (deg_F)	Sm (ksi)	Sy (ksi)	Su (ksi)
1	285.29	284.34	20.00	23.60	66.30
2	375.45	298.79	20.00	23.60	66.30
3	286.05	285.07	20.00	23.60	66.30
4	286.71	286.65	20.00	23.60	66.30
5	288.11	287.85	20.00	23.60	66.30
6	289.77	288.99	20.00	23.60	66.30
7	289.77	289.05	20.00	23.60	66.30
8	289.88	289.16	20.00	23.60	66.30
9	290.06	289.34	20.00	23.60	66.30
10	290.46	289.60	20.00	23.60	66.30
11	291.45	289.96	20.00	23.60	66.30
12	294.02	292.02	20.00	23.60	66.30
13	288.33	288.10	20.00	23.60	66.30
14	287.79	287.70	20.00	23.60	66.30
15	286.74	286.40	20.00	23.60	66.30
16	286.19	286.04	20.00	23.60	66.30
17	286.29	286.07	20.00	23.60	66.30
18	287.11	286.89	20.00	23.60	66.30
19	287.35	287.21	20.00	23.60	66.30
20	289.77	289.13	20.00	23.60	66.30
21	286.68	285.78	20.00	23.60	66.30
22	285.98	285.56	20.00	23.60	66.30

Table 2-175. Load Case 112, Post Fire at 60 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation, Hypothetical Accident Conditions of Transport – Model AOS-050A

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	7.0929E+02	-7.3560E+02	3.6014E+02	1.4449E+03	1.2677E+03
	4.8904E+00	-5.0718E+00	2.4831E+00	9.9621E+00	8.7402E+00
2	6.3836E+02	-1.5380E+03	-2.7042E+02	2.1764E+03	4.2658E+03
	4.4013E+00	-1.0604E+01	-1.8645E+00	1.5006E+01	2.9411E+01
3	4.1814E+02	-1.0720E+03	7.1345E+01	1.4902E+03	2.4856E+03
	2.8829E+00	-7.3913E+00	4.9191E-01	1.0274E+01	1.7138E+01
4	3.2879E+04	-1.5295E+04	7.1709E+03	4.8175E+04	9.3393E+04
	2.2670E+02	-1.0546E+02	4.9441E+01	3.3215E+02	6.4392E+02
5	3.6141E+04	-1.4881E+04	2.8287E+03	5.1023E+04	7.9321E+04
	2.4919E+02	-1.0260E+02	1.9503E+01	3.5179E+02	5.4690E+02
6	1.8440E+04	-2.3419E+03	5.1506E+03	2.0782E+04	3.0984E+04
	1.2714E+02	-1.6147E+01	3.5512E+01	1.4329E+02	2.1363E+02
7	6.4546E+03	-6.9622E+02	-6.2455E+03	7.1508E+03	1.9337E+02
	4.4503E+01	-4.8003E+00	-4.3061E+01	4.9303E+01	1.3332E+00
8	6.4512E+03	-7.0700E+02	-6.1298E+03	7.1582E+03	2.6885E+02
	4.4480E+01	-4.8746E+00	-4.2264E+01	4.9354E+01	1.8536E+00
9	6.4504E+03	-6.9892E+02	-6.1680E+03	7.1493E+03	2.9066E+02
	4.4474E+01	-4.8189E+00	-4.2527E+01	4.9293E+01	2.0040E+00
10	6.6925E+03	-1.9986E+03	-3.8192E+02	8.6910E+03	4.7106E+03
	4.6143E+01	-1.3780E+01	-2.6332E+00	5.9922E+01	3.2478E+01
11	7.6085E+02	-3.3081E+03	-1.6278E+03	4.0689E+03	3.3079E+03
	5.2459E+00	-2.2808E+01	-1.1223E+01	2.8054E+01	2.2807E+01
12	2.8410E+02	-1.9155E+03	-1.6648E+03	2.1996E+03	3.4228E+03
	1.9588E+00	-1.3207E+01	-1.1478E+01	1.5166E+01	2.3600E+01
13	9.6008E+03	-4.7170E+03	1.6518E+03	1.4318E+04	1.2645E+04
	6.6195E+01	-3.2522E+01	1.1389E+01	9.8718E+01	8.7181E+01
14	8.2849E+03	-4.0899E+03	3.6470E+03	1.2375E+04	1.1345E+04
	5.7123E+01	-2.8199E+01	2.5145E+01	8.5322E+01	7.8223E+01
15	7.7385E+02	-2.7673E+02	6.2302E+02	1.0506E+03	1.4804E+03
	5.3355E+00	-1.9080E+00	4.2955E+00	7.2435E+00	1.0207E+01

16	2.1092E+02	-7.9022E+01	-7.8407E+02	2.8994E+02	3.2378E+02
	1.4542E+00	-5.4484E-01	-5.4060E+00	1.9991E+00	2.2324E+00
17	1.0275E+02	-1.7187E+02	-7.6653E+02	2.7463E+02	4.4204E+02
	7.0845E-01	-1.1850E+00	-5.2851E+00	1.8935E+00	3.0477E+00
18	3.4845E+02	-4.8784E+02	2.4617E+03	8.3629E+02	8.1017E+02
	2.4025E+00	-3.3635E+00	1.6973E+01	5.7660E+00	5.5860E+00
19	-3.5492E+01	-9.2616E+02	2.7862E+03	8.9067E+02	7.8904E+02
	-2.4471E-01	-6.3856E+00	1.9210E+01	6.1409E+00	5.4402E+00
20	9.5752E+01	-2.0131E+03	-3.7772E+02	2.1088E+03	1.1919E+03
	6.6019E-01	-1.3879E+01	-2.6043E+00	1.4540E+01	8.2178E+00
21	1.1655E+03	2.0969E+01	1.1637E+03	1.1446E+03	9.1766E+02
	8.0360E+00	1.4457E-01	8.0236E+00	7.8914E+00	6.3270E+00
22	1.3167E+03	-6.0887E+01	1.3189E+03	1.3776E+03	1.0254E+03
	9.0784E+00	-4.1980E-01	9.0937E+00	9.4982E+00	7.0702E+00

Allowable Stress for Load Case 112 (Post Fire at 60 Minutes)

LOC	Tmax (deg_F)	Tave (deg_F)	Sm (ksi)	Sy (ksi)	Su (ksi)
1	443.49	438.67	18.70	20.70	59.70
2	467.28	465.01	18.70	20.70	59.70
3	448.40	442.79	18.70	20.70	59.70
4	425.18	424.14	18.70	20.70	59.70
5	441.89	438.61	18.70	20.70	59.70
6	446.64	444.69	18.70	20.70	59.70
7	468.28	467.45	18.70	20.70	59.70
8	470.98	470.30	18.70	20.70	59.70
9	468.68	467.86	18.70	20.70	59.70
10	452.91	449.74	18.70	20.70	59.70
11	445.89	439.23	18.70	20.70	59.70
12	441.98	440.63	18.70	20.70	59.70
13	431.37	424.91	18.70	20.70	59.70
14	417.35	414.03	18.70	20.70	59.70
15	383.58	383.40	20.00	22.40	61.80
16	392.70	391.63	20.00	22.40	61.80
17	393.81	393.29	20.00	22.40	61.80
18	401.55	400.06	18.70	20.70	59.70
19	405.42	403.67	18.70	20.70	59.70
20	425.55	422.26	18.70	20.70	59.70
21	375.35	374.88	20.00	22.40	61.80
22	382.00	381.78	20.00	22.40	61.80

Table 2-176. Load Case 112, Post Fire at 90 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation, Hypothetical Accident Conditions of Transport – Model AOS-050A

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	4.8584E+02	-3.1556E+02	6.4749E+01	8.0140E+02	2.3623E+02	
	3.3498E+00	-2.1757E+00	4.4643E-01	5.5255E+00	1.6287E+00	
2	6.9159E+01	-6.9507E+02	9.0200E+01	7.6423E+02	1.4424E+03	
	4.7683E-01	-4.7923E+00	6.2191E-01	5.2692E+00	9.9451E+00	
3	1.1609E+02	-6.1606E+02	-5.3632E+01	7.3215E+02	1.3665E+03	
	8.0042E-01	-4.2476E+00	-3.6978E-01	5.0480E+00	9.4217E+00	
4	4.0413E+04	-1.8074E+04	7.7971E+03	5.8487E+04	1.1354E+05	
	2.7864E+02	-1.2462E+02	5.3759E+01	4.0325E+02	7.8286E+02	
5	4.4661E+04	-1.7632E+04	5.2931E+03	6.2293E+04	9.7109E+04	
	3.0793E+02	-1.2157E+02	3.6494E+01	4.2949E+02	6.6955E+02	
6	2.2722E+04	-2.7706E+03	8.5261E+03	2.5492E+04	3.7379E+04	
	1.5666E+02	-1.9103E+01	5.8785E+01	1.7576E+02	2.5772E+02	
7	7.8776E+03	-6.3221E+02	-5.7598E+03	8.5098E+03	1.3341E+02	
	5.4314E+01	-4.3589E+00	-3.9712E+01	5.8673E+01	9.1982E-01	
8	7.8746E+03	-6.3738E+02	-5.5257E+03	8.5120E+03	1.9615E+02	
	5.4294E+01	-4.3946E+00	-3.8098E+01	5.8688E+01	1.3524E+00	
9	7.8736E+03	-6.3552E+02	-5.6682E+03	8.5091E+03	2.2456E+02	
	5.4286E+01	-4.3817E+00	-3.9081E+01	5.8668E+01	1.5483E+00	
10	8.1527E+03	-2.2092E+03	8.5173E+02	1.0362E+04	4.6429E+03	
	5.6211E+01	-1.5232E+01	5.8725E+00	7.1443E+01	3.2012E+01	
11	1.7578E+03	-2.8963E+03	-8.1345E+01	4.6541E+03	1.7949E+03	
	1.2120E+01	-1.9970E+01	-5.6086E-01	3.2089E+01	1.2376E+01	
12	3.9001E+02	-5.6919E+02	-1.9537E+02	9.5920E+02	1.8120E+03	
	2.6890E+00	-3.9244E+00	-1.3470E+00	6.6134E+00	1.2493E+01	
13	1.3292E+04	-3.5876E+03	3.2089E+03	1.6879E+04	1.6293E+04	
	9.1643E+01	-2.4736E+01	2.2125E+01	1.1638E+02	1.1234E+02	
14	1.1340E+04	-3.0368E+03	3.8959E+03	1.4377E+04	1.3108E+04	
	7.8188E+01	-2.0938E+01	2.6862E+01	9.9125E+01	9.0373E+01	
15	3.4476E+02	-3.3150E+02	1.8745E+02	6.7626E+02	1.0419E+03	
	2.3770E+00	-2.2856E+00	1.2924E+00	4.6626E+00	7.1838E+00	

16	1.2660E+02	-1.4731E+02	-3.1231E+02	2.7392E+02	4.1758E+02
	8.7289E-01	-1.0157E+00	-2.1533E+00	1.8886E+00	2.8791E+00
17	5.7671E+01	-1.5080E+02	-2.6642E+02	2.0847E+02	3.6118E+02
	3.9762E-01	-1.0397E+00	-1.8369E+00	1.4373E+00	2.4903E+00
18	1.6867E+02	-2.3117E+02	1.0525E+03	3.9984E+02	4.9722E+02
	1.1630E+00	-1.5938E+00	7.2568E+00	2.7568E+00	3.4282E+00
19	8.5039E+00	-3.8015E+02	1.2473E+03	3.8866E+02	2.2473E+02
	5.8633E-02	-2.6211E+00	8.6001E+00	2.6797E+00	1.5495E+00
20	6.4266E+01	-8.8456E+02	-5.0844E+01	9.4882E+02	6.9044E+02
	4.4310E-01	-6.0988E+00	-3.5056E-01	6.5419E+00	4.7604E+00
21	4.7576E+02	6.3512E+00	4.7560E+02	4.6941E+02	3.3736E+02
	3.2803E+00	4.3790E-02	3.2792E+00	3.2365E+00	2.3260E+00
22	3.0383E+02	-1.0215E+02	2.6332E+02	4.0598E+02	6.7062E+02
	2.0948E+00	-7.0432E-01	1.8155E+00	2.7991E+00	4.6238E+00

Allowable Stress for Load Case 112 (Post Fire at 90 Minutes)

LOC	Tmax (deg_F)	Tave (deg_F)	Sm (ksi)	Sy (ksi)	Su (ksi)
1	438.87	437.16	18.70	20.70	59.70
2	443.48	439.44	18.70	20.70	59.70
3	441.27	439.79	18.70	20.70	59.70
4	435.23	434.91	18.70	20.70	59.70
5	440.59	439.57	18.70	20.70	59.70
6	442.04	441.58	18.70	20.70	59.70
7	447.99	447.32	18.70	20.70	59.70
8	448.70	448.04	18.70	20.70	59.70
9	448.53	447.86	18.70	20.70	59.70
10	444.18	443.35	18.70	20.70	59.70
11	442.82	440.85	18.70	20.70	59.70
12	444.09	442.89	18.70	20.70	59.70
13	437.61	435.46	18.70	20.70	59.70
14	432.83	431.70	18.70	20.70	59.70
15	421.93	421.87	18.70	20.70	59.70
16	425.18	424.79	18.70	20.70	59.70
17	425.55	425.38	18.70	20.70	59.70
18	428.34	427.85	18.70	20.70	59.70
19	430.05	429.32	18.70	20.70	59.70
20	438.41	437.13	18.70	20.70	59.70
21	417.33	417.13	18.70	20.70	59.70
22	421.36	421.26	18.70	20.70	59.70

Table 2-177. Load Case 112, Post Fire at 120 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation, Hypothetical Accident Conditions of Transport – Model AOS-050A

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	2.9874E+02	-1.9490E+02	-3.5440E+01	4.9364E+02	1.7513E+02	
	2.0597E+00	-1.3438E+00	-2.4435E-01	3.4036E+00	1.2075E+00	
2	-2.2246E+01	-3.8579E+02	1.1290E+02	3.6355E+02	7.0767E+02	
	-1.5338E-01	-2.6599E+00	7.7839E-01	2.5066E+00	4.8792E+00	
3	5.7393E+01	-3.7110E+02	-5.6239E+01	4.2849E+02	8.0780E+02	
	3.9571E-01	-2.5586E+00	-3.8776E-01	2.9544E+00	5.5696E+00	
4	2.5728E+04	-1.1252E+04	4.6014E+03	3.6979E+04	7.1790E+04	
	1.7739E+02	-7.7577E+01	3.1725E+01	2.5496E+02	4.9498E+02	
5	2.8742E+04	-1.1073E+04	3.0491E+03	3.9814E+04	6.2177E+04	
	1.9817E+02	-7.6344E+01	2.1023E+01	2.7451E+02	4.2870E+02	
6	1.4342E+04	-1.7959E+03	4.4316E+03	1.6138E+04	2.3376E+04	
	9.8883E+01	-1.2382E+01	3.0554E+01	1.1127E+02	1.6117E+02	
7	4.9997E+03	-6.2494E+02	-5.6025E+03	5.6246E+03	1.6323E+02	
	3.4471E+01	-4.3088E+00	-3.8628E+01	3.8780E+01	1.1254E+00	
8	4.9987E+03	-6.2700E+02	-5.4389E+03	5.6257E+03	1.8013E+02	
	3.4465E+01	-4.3230E+00	-3.7500E+01	3.8788E+01	1.2420E+00	
9	4.9976E+03	-6.2706E+02	-5.5732E+03	5.6247E+03	2.0961E+02	
	3.4457E+01	-4.3234E+00	-3.8426E+01	3.8781E+01	1.4452E+00	
10	5.2883E+03	-2.0479E+03	-3.1479E+02	7.3361E+03	3.2121E+03	
	3.6461E+01	-1.4120E+01	-2.1704E+00	5.0581E+01	2.2147E+01	
11	9.3734E+02	-2.1417E+03	-3.0698E+02	3.0790E+03	5.2413E+01	
	6.4627E+00	-1.4767E+01	-2.1166E+00	2.1229E+01	3.6137E-01	
12	2.9010E+01	-5.1422E+02	-5.1196E+02	5.4323E+02	2.1921E+01	
	2.0001E-01	-3.5454E+00	-3.5298E+00	3.7454E+00	1.5114E-01	
13	8.7383E+03	-2.1121E+03	2.2068E+03	1.0850E+04	1.1083E+04	
	6.0248E+01	-1.4563E+01	1.5215E+01	7.4811E+01	7.6415E+01	
14	7.2448E+03	-1.6996E+03	2.3868E+03	8.9444E+03	7.6440E+03	
	4.9951E+01	-1.1718E+01	1.6457E+01	6.1670E+01	5.2703E+01	
15	6.7176E+02	-7.3529E+02	1.7788E+01	1.4071E+03	2.3707E+03	
	4.6316E+00	-5.0697E+00	1.2264E-01	9.7013E+00	1.6345E+01	

16	1.8515E+02	-3.2376E+02	-1.8830E+02	5.0891E+02	8.2230E+02
	1.2766E+00	-2.2322E+00	-1.2983E+00	3.5088E+00	5.6696E+00
17	8.1133E+01	-2.3143E+02	-8.4627E+01	3.1256E+02	5.4349E+02
	5.5939E-01	-1.5957E+00	-5.8348E-01	2.1550E+00	3.7472E+00
18	6.5241E+01	-1.4160E+02	6.3520E+02	2.0684E+02	1.7101E+02
	4.4982E-01	-9.7627E-01	4.3795E+00	1.4261E+00	1.1791E+00
19	-1.1909E+01	-2.5073E+02	7.2978E+02	2.3882E+02	2.8255E+02
	-8.2110E-02	-1.7287E+00	5.0317E+00	1.6466E+00	1.9481E+00
20	2.3506E+00	-5.5184E+02	4.3315E+01	5.5419E+02	1.4211E+02
	1.6207E-02	-3.8048E+00	2.9865E-01	3.8210E+00	9.7978E-01
21	1.0093E+02	2.0068E+01	9.5572E+01	8.0864E+01	5.2142E+00
	6.9590E-01	1.3837E-01	6.5895E-01	5.5754E-01	3.5951E-02
22	9.8070E+01	-2.7328E+02	-8.0117E+01	3.7135E+02	8.1464E+02
	6.7617E-01	-1.8842E+00	-5.5239E-01	2.5604E+00	5.6168E+00

Allowable Stress for Load Case 112 (Post Fire at 120 Minutes)

LOC	Tmax (deg_F)	Tave (deg_F)	Sm (ksi)	Sy (ksi)	Su (ksi)
---	-----	-----	-----	-----	-----
1	434.50	433.48	18.70	20.70	59.70
2	433.99	429.55	18.70	20.70	59.70
3	435.69	435.02	18.70	20.70	59.70
4	435.54	435.43	18.70	20.70	59.70
5	437.84	437.45	18.70	20.70	59.70
6	438.68	438.34	18.70	20.70	59.70
7	439.45	438.81	18.70	20.70	59.70
8	439.55	438.90	18.70	20.70	59.70
9	439.91	439.27	18.70	20.70	59.70
10	440.18	439.47	18.70	20.70	59.70
11	441.01	439.94	18.70	20.70	59.70
12	443.43	442.29	18.70	20.70	59.70
13	438.31	437.70	18.70	20.70	59.70
14	436.81	436.45	18.70	20.70	59.70
15	432.59	432.55	18.70	20.70	59.70
16	433.82	433.61	18.70	20.70	59.70
17	434.00	433.88	18.70	20.70	59.70
18	435.18	434.99	18.70	20.70	59.70
19	436.19	435.79	18.70	20.70	59.70
20	440.78	440.15	18.70	20.70	59.70
21	432.40	432.28	18.70	20.70	59.70
22	432.18	432.10	18.70	20.70	59.70

Table 2-178. Load Case 112, Post Fire at 150 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation, Hypothetical Accident Conditions of Transport – Model AOS-050A

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	1.6427E+02	-1.4887E+02	-8.3512E+01	3.1315E+02	2.8102E+02
	1.1326E+00	-1.0264E+00	-5.7579E-01	2.1591E+00	1.9375E+00
2	-9.7236E+00	-2.4509E+02	8.7475E+01	2.3537E+02	4.8005E+02
	-6.7042E-02	-1.6899E+00	6.0312E-01	1.6228E+00	3.3099E+00
3	4.3712E+01	-2.2367E+02	-5.5058E+01	2.6738E+02	5.2638E+02
	3.0138E-01	-1.5421E+00	-3.7961E-01	1.8435E+00	3.6293E+00
4	1.1558E+04	-4.7612E+03	1.7291E+03	1.6319E+04	3.1663E+04
	7.9691E+01	-3.2827E+01	1.1922E+01	1.1252E+02	2.1831E+02
5	1.3321E+04	-4.8267E+03	7.3113E+02	1.8147E+04	2.8457E+04
	9.1843E+01	-3.3279E+01	5.0410E+00	1.2512E+02	1.9621E+02
6	6.2624E+03	-8.7330E+02	3.3519E+02	7.1357E+03	9.9667E+03
	4.3177E+01	-6.0212E+00	2.3111E+00	4.9199E+01	6.8718E+01
7	2.2265E+03	-6.2619E+02	-5.5180E+03	2.8527E+03	2.0037E+02
	1.5351E+01	-4.3174E+00	-3.8045E+01	1.9669E+01	1.3815E+00
8	2.2274E+03	-6.2644E+02	-5.4367E+03	2.8538E+03	1.7741E+02
	1.5357E+01	-4.3192E+00	-3.7485E+01	1.9676E+01	1.2232E+00
9	2.2262E+03	-6.2733E+02	-5.5463E+03	2.8536E+03	2.0807E+02
	1.5349E+01	-4.3253E+00	-3.8240E+01	1.9675E+01	1.4346E+00
10	2.5414E+03	-1.8837E+03	-1.5439E+03	4.4251E+03	1.9984E+03
	1.7522E+01	-1.2988E+01	-1.0644E+01	3.0510E+01	1.3779E+01
11	7.0462E+01	-1.6045E+03	-8.0316E+02	1.6750E+03	1.1497E+03
	4.8582E-01	-1.1063E+01	-5.5376E+00	1.1549E+01	7.9269E+00
12	2.8207E+01	-1.0800E+03	-1.0702E+03	1.1082E+03	1.2509E+03
	1.9448E-01	-7.4465E+00	-7.3790E+00	7.6410E+00	8.6243E+00
13	4.0564E+03	-1.0489E+03	1.0109E+03	5.1053E+03	5.8248E+03
	2.7968E+01	-7.2320E+00	6.9701E+00	3.5200E+01	4.0161E+01
14	3.0978E+03	-7.4968E+02	9.9739E+02	3.8475E+03	2.6175E+03
	2.1359E+01	-5.1689E+00	6.8768E+00	2.6527E+01	1.8047E+01
15	1.2460E+03	-1.3009E+03	-6.2961E+01	2.5468E+03	4.2964E+03
	8.5907E+00	-8.9691E+00	-4.3410E-01	1.7560E+01	2.9622E+01

16	3.1219E+02	-5.8405E+02	-2.0676E+02	8.9624E+02	1.4540E+03
	2.1525E+00	-4.0269E+00	-1.4256E+00	6.1793E+00	1.0025E+01
17	1.3734E+02	-3.8545E+02	-1.1003E+01	5.2279E+02	8.9981E+02
	9.4696E-01	-2.6576E+00	-7.5866E-02	3.6045E+00	6.2040E+00
18	2.7248E+01	-1.5219E+02	5.3208E+02	1.7944E+02	1.0355E+02
	1.8787E-01	-1.0493E+00	3.6686E+00	1.2372E+00	7.1393E-01
19	1.1110E+01	-3.0792E+02	5.5162E+02	3.1903E+02	5.1693E+02
	7.6599E-02	-2.1230E+00	3.8033E+00	2.1996E+00	3.5641E+00
20	-4.4081E+01	-4.9303E+02	6.0572E+01	4.4895E+02	3.6950E+02
	-3.0392E-01	-3.3993E+00	4.1763E-01	3.0954E+00	2.5476E+00
21	2.1029E+01	-3.8417E+01	-3.7864E+01	5.9446E+01	5.5341E+01
	1.4499E-01	-2.6488E-01	-2.6106E-01	4.0986E-01	3.8157E-01
22	-1.0427E+01	-2.5726E+02	-1.2604E+02	2.4683E+02	6.0835E+02
	-7.1889E-02	-1.7737E+00	-8.6902E-01	1.7018E+00	4.1945E+00

Allowable Stress for Load Case 112 (Post Fire at 150 Minutes)

LOC	Tmax (deg_F)	Tave (deg_F)	Sm (ksi)	Sy (ksi)	Su (ksi)
1	430.53	429.62	18.70	20.70	59.70
2	428.45	423.93	18.70	20.70	59.70
3	431.30	430.74	18.70	20.70	59.70
4	432.91	432.85	18.70	20.70	59.70
5	434.32	434.12	18.70	20.70	59.70
6	435.18	434.68	18.70	20.70	59.70
7	434.21	433.56	18.70	20.70	59.70
8	434.10	433.46	18.70	20.70	59.70
9	434.64	433.98	18.70	20.70	59.70
10	436.92	435.78	18.70	20.70	59.70
11	438.13	437.27	18.70	20.70	59.70
12	440.87	439.74	18.70	20.70	59.70
13	436.23	436.11	18.70	20.70	59.70
14	435.80	435.70	18.70	20.70	59.70
15	433.14	433.11	18.70	20.70	59.70
16	433.78	433.62	18.70	20.70	59.70
17	433.93	433.79	18.70	20.70	59.70
18	434.68	434.51	18.70	20.70	59.70
19	435.41	435.10	18.70	20.70	59.70
20	438.87	438.44	18.70	20.70	59.70
21	434.84	434.79	18.70	20.70	59.70
22	432.76	432.67	18.70	20.70	59.70

Table 2-179. Load Case 112, Post Fire at 180 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation, Hypothetical Accident Conditions of Transport – Model AOS-050A

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	8.1736E+01	-1.5244E+02	-1.1229E+02	2.3417E+02	3.9852E+02
	5.6355E-01	-1.0510E+00	-7.7422E-01	1.6146E+00	2.7477E+00
2	3.4940E+01	-1.8029E+02	5.7543E+01	2.1523E+02	4.0211E+02
	2.4091E-01	-1.2430E+00	3.9675E-01	1.4839E+00	2.7724E+00
3	5.9785E+01	-1.4019E+02	-5.7046E+01	1.9998E+02	3.6104E+02
	4.1220E-01	-9.6661E-01	-3.9332E-01	1.3788E+00	2.4893E+00
4	6.7053E+02	3.2549E+01	-4.7267E+02	6.3798E+02	1.3841E+02
	4.6231E+00	2.2441E-01	-3.2589E+00	4.3987E+00	9.5433E-01
5	1.2572E+03	-5.0233E+01	-1.1051E+03	1.3075E+03	1.7297E+03
	8.6684E+00	-3.4634E-01	-7.6191E+00	9.0148E+00	1.1926E+01
6	3.3741E+02	-6.1390E+02	-2.9095E+03	9.5130E+02	6.4181E+02
	2.3263E+00	-4.2327E+00	-2.0060E+01	6.5590E+00	4.4251E+00
7	3.4539E+01	-6.2731E+02	-5.4488E+03	6.6184E+02	2.3201E+02
	2.3814E-01	-4.3251E+00	-3.7568E+01	4.5633E+00	1.5996E+00
8	3.6574E+01	-6.2618E+02	-5.4362E+03	6.6276E+02	1.7811E+02
	2.5217E-01	-4.3174E+00	-3.7481E+01	4.5695E+00	1.2281E+00
9	3.5708E+01	-6.2785E+02	-5.5220E+03	6.6356E+02	2.1018E+02
	2.4620E-01	-4.3289E+00	-3.8073E+01	4.5751E+00	1.4492E+00
10	4.3003E+02	-1.8033E+03	-2.5304E+03	2.2333E+03	1.0730E+03
	2.9649E+00	-1.2433E+01	-1.7447E+01	1.5398E+01	7.3979E+00
11	-2.8429E+02	-1.5590E+03	-1.2485E+03	1.2747E+03	1.9819E+03
	-1.9601E+00	-1.0749E+01	-8.6081E+00	8.7888E+00	1.3665E+01
12	4.3691E+01	-1.6037E+03	-1.5580E+03	1.6474E+03	2.0740E+03
	3.0124E-01	-1.1057E+01	-1.0742E+01	1.1358E+01	1.4300E+01
13	5.0467E+02	-4.9086E+02	3.1225E+01	9.9554E+02	1.6252E+03
	3.4796E+00	-3.3844E+00	2.1529E-01	6.8640E+00	1.1205E+01
14	2.0860E+02	-4.9426E+02	-5.9350E+01	7.0286E+02	1.2996E+03
	1.4383E+00	-3.4078E+00	-4.0921E-01	4.8461E+00	8.9601E+00
15	1.6631E+03	-1.7573E+03	-1.1208E+02	3.4204E+03	5.7693E+03
	1.1466E+01	-1.2116E+01	-7.7279E-01	2.3583E+01	3.9778E+01

16	4.2031E+02	-7.9958E+02	-2.4917E+02	1.2199E+03	1.9788E+03
	2.8979E+00	-5.5129E+00	-1.7179E+00	8.4108E+00	1.3643E+01
17	1.8438E+02	-5.2246E+02	2.3224E+01	7.0685E+02	1.2147E+03
	1.2713E+00	-3.6023E+00	1.6013E-01	4.8736E+00	8.3751E+00
18	2.4126E+01	-1.8400E+02	5.0427E+02	2.0813E+02	2.0070E+02
	1.6634E-01	-1.2686E+00	3.4768E+00	1.4350E+00	1.3838E+00
19	3.3252E+01	-3.5178E+02	4.9819E+02	3.8503E+02	6.4014E+02
	2.2926E-01	-2.4255E+00	3.4349E+00	2.6547E+00	4.4136E+00
20	-4.8086E+01	-5.0044E+02	6.5246E+01	4.5235E+02	5.9658E+02
	-3.3154E-01	-3.4504E+00	4.4985E-01	3.1188E+00	4.1133E+00
21	3.0044E-01	-7.2825E+01	-7.2621E+01	7.3126E+01	1.0566E+01
	2.0715E-03	-5.0211E-01	-5.0070E-01	5.0418E-01	7.2848E-02
22	-5.0145E+01	-2.2962E+02	-9.2711E+01	1.7948E+02	3.9815E+02
	-3.4574E-01	-1.5832E+00	-6.3922E-01	1.2374E+00	2.7452E+00

Allowable Stress for Load Case 112 (Post Fire at 180 Minutes)

LOC	Tmax (deg_F)	Tave (deg_F)	Sm (ksi)	Sy (ksi)	Su (ksi)
---	-----	-----	-----	-----	-----
1	426.72	425.79	18.70	20.70	59.70
2	424.18	419.68	18.70	20.70	59.70
3	427.33	426.76	18.70	20.70	59.70
4	429.45	429.39	18.70	20.70	59.70
5	430.60	430.44	18.70	20.70	59.70
6	431.46	430.92	18.70	20.70	59.70
7	430.00	429.35	18.70	20.70	59.70
8	429.84	429.20	18.70	20.70	59.70
9	430.42	429.76	18.70	20.70	59.70
10	433.34	432.06	18.70	20.70	59.70
11	434.69	433.88	18.70	20.70	59.70
12	437.53	436.40	18.70	20.70	59.70
13	433.15	433.06	18.70	20.70	59.70
14	432.97	432.92	18.70	20.70	59.70
15	430.59	430.57	18.70	20.70	59.70
16	431.06	430.91	18.70	20.70	59.70
17	431.20	431.07	18.70	20.70	59.70
18	431.84	431.66	18.70	20.70	59.70
19	432.48	432.20	18.70	20.70	59.70
20	435.62	435.25	18.70	20.70	59.70
21	432.79	432.77	18.70	20.70	59.70
22	430.22	430.14	18.70	20.70	59.70

**Table 2-180. Load Case 301, 30-ft. Head-On Drop,
Hypothetical Accident Conditions of Transport – Model AOS-050A**

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	-3.5116E+01 -2.4211E-01	-2.9001E+03 -1.9996E+01	-5.5330E+02 -3.8148E+00	2.8650E+03 1.9754E+01	1.1789E+03 8.1279E+00
2	3.3916E+01 2.3384E-01	-1.3934E+03 -9.6069E+00	-9.0219E+01 -6.2203E-01	1.4273E+03 9.8407E+00	5.3870E+01 3.7142E-01
3	1.4267E+00 9.8365E-03	-5.4534E+02 -3.7600E+00	-4.7895E+01 -3.3023E-01	5.4677E+02 3.7698E+00	3.3162E+01 2.2865E-01
4	7.7808E+02 5.3646E+00	-4.7237E+03 -3.2569E+01	-1.5509E+03 -1.0693E+01	5.5018E+03 3.7933E+01	3.9945E+03 2.7541E+01
5	1.1872E+02 8.1855E-01	-1.7425E+03 -1.2014E+01	-7.5377E+02 -5.1971E+00	1.8612E+03 1.2832E+01	2.6817E+03 1.8489E+01
6	-2.7831E+02 -1.9189E+00	-1.0850E+03 -7.4810E+00	-6.1748E+02 -4.2574E+00	8.0671E+02 5.5621E+00	5.1541E+02 3.5536E+00
7	-5.2503E+00 -3.6199E-02	-7.1220E+02 -4.9105E+00	-4.9558E+01 -3.4169E-01	7.0695E+02 4.8743E+00	1.5190E+01 1.0473E-01
8	-3.1436E+00 -2.1675E-02	-6.4805E+02 -4.4682E+00	-3.4302E+01 -2.3650E-01	6.4491E+02 4.4465E+00	1.1054E+00 7.6218E-03
9	-2.4186E+00 -1.6676E-02	-5.4079E+02 -3.7286E+00	-2.3776E+01 -1.6393E-01	5.3837E+02 3.7119E+00	1.3545E+00 9.3389E-03
10	-8.9156E+01 -6.1471E-01	-6.7229E+02 -4.6353E+00	-4.7569E+01 -3.2798E-01	5.8314E+02 4.0206E+00	3.7204E+02 2.5651E+00
11	1.1772E+02 8.1162E-01	-3.4634E+02 -2.3879E+00	-1.9542E+01 -1.3473E-01	4.6405E+02 3.1995E+00	1.5388E+02 1.0609E+00
12	1.3958E+02 9.6238E-01	-4.7826E+01 -3.2975E-01	9.0518E+01 6.2410E-01	1.8741E+02 1.2921E+00	3.6107E+02 2.4895E+00
13	1.3854E+02 9.5520E-01	-2.7560E+02 -1.9002E+00	3.7434E+00 2.5810E-02	4.1414E+02 2.8554E+00	1.8586E+02 1.2815E+00
14	1.3380E+02 9.2253E-01	-1.7833E+02 -1.2295E+00	4.6187E+01 3.1845E-01	3.1213E+02 2.1520E+00	1.1527E+02 7.9474E-01
15	8.6155E+02 5.9402E+00	2.2188E+02 1.5298E+00	1.6629E+02 1.1465E+00	6.3967E+02 4.4104E+00	2.4334E+01 1.6778E-01

16	3.2008E+02	-8.6857E+02	-3.8581E+02	1.1887E+03	5.7904E+02
	2.2069E+00	-5.9886E+00	-2.6600E+00	8.1955E+00	3.9923E+00
17	5.2320E+02	-8.2819E+02	-4.4192E+02	1.3514E+03	1.1426E+03
	3.6074E+00	-5.7102E+00	-3.0470E+00	9.3175E+00	7.8778E+00
18	5.0319E+02	-1.3152E+03	-2.6974E+02	1.8183E+03	2.0601E+03
	3.4693E+00	-9.0677E+00	-1.8598E+00	1.2537E+01	1.4204E+01
19	3.6845E+02	-1.3417E+03	-5.4649E+02	1.7101E+03	1.1334E+03
	2.5404E+00	-9.2506E+00	-3.7679E+00	1.1791E+01	7.8143E+00
20	-1.2184E+02	-8.5843E+02	-5.8185E+02	7.3659E+02	1.2655E+03
	-8.4007E-01	-5.9187E+00	-4.0117E+00	5.0786E+00	8.7250E+00
21	1.0029E+03	9.6474E+01	8.7138E+01	9.0639E+02	2.5673E+02
	6.9145E+00	6.6516E-01	6.0079E-01	6.2493E+00	1.7701E+00
22	5.5755E+02	1.4411E+02	3.8842E+02	4.1344E+02	3.2933E+02
	3.8442E+00	9.9363E-01	2.6781E+00	2.8505E+00	2.2707E+00

**Table 2-181. Load Case 302, 30-ft. Side Drop + Slap-Down,
Hypothetical Accident Conditions of Transport – Model AOS-050A**

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	1.6541E+02	-4.5912E+01	-6.0601E+02	4.0576E+03	1.2379E+03
	1.1405E+00	-3.1655E-01	-4.1783E+00	2.7976E+01	8.5349E+00
2	1.1180E+03	1.2822E+02	-3.0835E+02	1.0751E+03	1.0217E+03
	7.7081E+00	8.8405E-01	-2.1260E+00	7.4126E+00	7.0446E+00
3	1.6154E+02	-4.1720E+01	-6.0587E+02	4.0573E+03	1.2418E+03
	1.1138E+00	-2.8765E-01	-4.1774E+00	2.7974E+01	8.5621E+00
4	7.7054E+02	-4.0454E+01	-1.0613E+03	2.7347E+03	3.9787E+02
	5.3127E+00	-2.7892E-01	-7.3171E+00	1.8855E+01	2.7432E+00
5	1.2475E+03	-1.9604E+02	-1.4070E+03	2.7876E+03	9.4642E+01
	8.6015E+00	-1.3516E+00	-9.7006E+00	1.9220E+01	6.5253E-01
6	1.2282E+03	-3.3666E+02	-1.5636E+03	2.6357E+03	1.1918E+02
	8.4681E+00	-2.3212E+00	-1.0780E+01	1.8173E+01	8.2172E-01
7	1.9713E+02	9.2049E+01	-1.8501E+01	1.4709E+03	7.4553E+01
	1.3591E+00	6.3466E-01	-1.2756E-01	1.0142E+01	5.1402E-01
8	9.8975E+01	7.5648E+01	1.7793E+01	7.0487E+02	1.2318E+02
	6.8241E-01	5.2158E-01	1.2268E-01	4.8599E+00	8.4928E-01
9	1.9594E+02	9.1246E+01	-1.8590E+01	1.4535E+03	7.5795E+01
	1.3510E+00	6.2912E-01	-1.2817E-01	1.0022E+01	5.2258E-01
10	1.4394E+03	-1.4019E+02	-1.5843E+03	2.1244E+03	8.0793E+02
	9.9246E+00	-9.6658E-01	-1.0923E+01	1.4647E+01	5.5705E+00
11	7.4679E+02	-3.5841E+02	-1.7708E+03	2.0617E+03	7.0617E+02
	5.1490E+00	-2.4712E+00	-1.2209E+01	1.4215E+01	4.8689E+00
12	-2.9026E+01	-3.3606E+02	-1.3343E+03	1.3053E+03	1.0596E+02
	-2.0012E-01	-2.3170E+00	-9.1999E+00	8.9998E+00	7.3054E-01
13	1.2678E+03	-2.0114E+02	-1.3391E+03	2.7529E+03	7.9651E+01
	8.7414E+00	-1.3868E+00	-9.2329E+00	1.8980E+01	5.4917E-01
14	1.0115E+03	-1.2945E+02	-1.2263E+03	2.6979E+03	4.2554E+02
	6.9742E+00	-8.9253E-01	-8.4548E+00	1.8601E+01	2.9340E+00
15	-4.0810E+01	-3.0469E+02	-1.4456E+03	1.4716E+03	3.0999E+01
	-2.8138E-01	-2.1008E+00	-9.9670E+00	1.0146E+01	2.1373E-01

16	1.7310E+02	-5.3771E+01	-1.1908E+03	2.7937E+03	1.7134E+02
	1.1935E+00	-3.7074E-01	-8.2104E+00	1.9262E+01	1.1814E+00
17	2.9150E+02	-4.1475E+01	-1.1724E+03	2.8857E+03	1.9079E+02
	2.0098E+00	-2.8596E-01	-8.0837E+00	1.9896E+01	1.3154E+00
18	8.5918E+02	-1.3055E+02	-1.1857E+03	2.9929E+03	1.4956E+02
	5.9239E+00	-9.0014E-01	-8.1752E+00	2.0635E+01	1.0312E+00
19	1.0019E+03	-1.9561E+02	-1.3569E+03	2.9706E+03	2.3880E+02
	6.9078E+00	-1.3487E+00	-9.3552E+00	2.0481E+01	1.6464E+00
20	9.0894E+02	-2.6122E+02	-1.3854E+03	2.3040E+03	1.0307E+02
	6.2669E+00	-1.8011E+00	-9.5521E+00	1.5886E+01	7.1063E-01
21	-1.6703E+01	-3.5213E+02	-1.5582E+03	1.6117E+03	1.7836E+02
	-1.1516E-01	-2.4278E+00	-1.0743E+01	1.1112E+01	1.2298E+00
22	-1.5636E+01	-3.7289E+02	-1.6116E+03	1.6630E+03	1.3679E+02
	-1.0780E-01	-2.5710E+00	-1.1111E+01	1.1466E+01	9.4315E-01

**Table 2-182. Load Case 303, 30-ft. Cg/Corner Drop,
Hypothetical Accident Conditions of Transport – Model AOS-050A**

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	2.5701E+02	-2.6745E+02	-2.1557E+03	2.1163E+03	9.2973E+02
	1.7720E+00	-1.8440E+00	-1.4863E+01	1.4591E+01	6.4103E+00
2	1.6433E+02	-9.2145E+01	-2.3264E+02	1.0880E+03	1.3700E+02
	1.1330E+00	-6.3532E-01	-1.6040E+00	7.5013E+00	9.4460E-01
3	1.9994E+03	2.1350E+02	-1.1081E+01	2.0105E+03	5.6937E+02
	1.3785E+01	1.4720E+00	-7.6402E-02	1.3862E+01	3.9257E+00
4	2.2346E+02	8.1579E+00	-1.5277E+03	3.1410E+03	2.9858E+02
	1.5407E+00	5.6247E-02	-1.0533E+01	2.1656E+01	2.0586E+00
5	3.3744E+02	-2.3627E+02	-1.9440E+03	2.2466E+03	1.2180E+02
	2.3265E+00	-1.6290E+00	-1.3404E+01	1.5489E+01	8.3977E-01
6	2.4504E+02	-5.1990E+02	-2.2210E+03	2.2996E+03	3.2604E+02
	1.6895E+00	-3.5846E+00	-1.5313E+01	1.5855E+01	2.2480E+00
7	3.6734E+02	3.7477E+01	-1.1148E+02	2.1271E+03	6.0993E+01
	2.5327E+00	2.5839E-01	-7.6865E-01	1.4666E+01	4.2053E-01
8	2.1693E+02	4.6502E+00	-2.4376E+02	1.5598E+03	2.7507E+01
	1.4957E+00	3.2062E-02	-1.6806E+00	1.0755E+01	1.8965E-01
9	3.9893E+02	-2.1034E+02	-3.5078E+02	1.0727E+03	3.6927E+01
	2.7506E+00	-1.4502E+00	-2.4185E+00	7.3960E+00	2.5460E-01
10	4.1028E+02	-2.5828E+02	-3.9179E+02	9.6869E+02	4.1412E+02
	2.8288E+00	-1.7808E+00	-2.7013E+00	6.6789E+00	2.8553E+00
11	6.6814E+02	-5.6125E+01	-1.3145E+02	8.2192E+02	2.3771E+02
	4.6067E+00	-3.8697E-01	-9.0634E-01	5.6669E+00	1.6390E+00
12	4.6909E+02	6.1672E+01	9.3444E+00	4.6651E+02	1.0903E+02
	3.2343E+00	4.2521E-01	6.4427E-02	3.2165E+00	7.5174E-01
13	6.1537E+02	-1.6862E+02	-3.5689E+02	9.7226E+02	2.3268E+01
	4.2428E+00	-1.1626E+00	-2.4607E+00	6.7035E+00	1.6043E-01
14	6.4493E+02	-1.6404E+02	-3.5092E+02	9.9585E+02	1.0501E+02
	4.4466E+00	-1.1310E+00	-2.4195E+00	6.8661E+00	7.2404E-01
15	3.4366E+02	6.7605E+01	-1.0765E+03	1.4438E+03	3.0378E+01
	2.3695E+00	4.6612E-01	-7.4225E+00	9.9545E+00	2.0945E-01

16	4.5978E+02	3.3047E+01	-1.2048E+03	2.6438E+03	2.1964E+02
	3.1701E+00	2.2785E-01	-8.3067E+00	1.8228E+01	1.5144E+00
17	4.5231E+02	6.8367E+01	-1.2967E+03	2.7945E+03	2.9933E+02
	3.1185E+00	4.7137E-01	-8.9401E+00	1.9268E+01	2.0638E+00
18	3.4295E+02	-6.6787E+01	-1.7027E+03	2.1467E+03	1.5108E+02
	2.3646E+00	-4.6048E-01	-1.1740E+01	1.4801E+01	1.0417E+00
19	3.8126E+02	-1.4676E+02	-1.9014E+03	2.1102E+03	3.8729E+02
	2.6287E+00	-1.0118E+00	-1.3110E+01	1.4549E+01	2.6703E+00
20	1.9062E+02	-3.5358E+02	-1.8875E+03	2.0605E+03	1.1304E+02
	1.3143E+00	-2.4378E+00	-1.3014E+01	1.4207E+01	7.7940E-01
21	3.1154E+02	-1.9187E+01	-2.1272E+02	5.2125E+02	2.9505E+01
	2.1480E+00	-1.3229E-01	-1.4666E+00	3.5939E+00	2.0343E-01
22	5.2669E+02	3.0133E+01	-1.0409E+03	1.5918E+03	1.3825E+02
	3.6314E+00	2.0776E-01	-7.1766E+00	1.0975E+01	9.5323E-01

Table 2-183. Load Case 304, 30-ft. Head-On Drop at -40°F, Low Temperature, Hypothetical Accident Conditions of Transport – Model AOS-050A

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	-5.0687E+01 -3.4947E-01	-3.9919E+03 -2.7523E+01	-7.5881E+02 -5.2318E+00	3.9412E+03 2.7173E+01	1.6842E+03 1.1612E+01	
2	4.6885E+01 3.2326E-01	-1.9176E+03 -1.3222E+01	-1.2056E+02 -8.3124E-01	1.9645E+03 1.3545E+01	7.3792E+01 5.0878E-01	
3	1.8846E+00 1.2994E-02	-7.5175E+02 -5.1831E+00	-6.5726E+01 -4.5316E-01	7.5363E+02 5.1961E+00	4.5429E+01 3.1322E-01	
4	1.0866E+03 7.4920E+00	-6.5700E+03 -4.5299E+01	-2.1553E+03 -1.4860E+01	7.6567E+03 5.2791E+01	5.5695E+03 3.8400E+01	
5	1.6469E+02 1.1355E+00	-2.4236E+03 -1.6710E+01	-1.0495E+03 -7.2359E+00	2.5883E+03 1.7845E+01	3.7299E+03 2.5717E+01	
6	-3.8984E+02 -2.6879E+00	-1.5144E+03 -1.0442E+01	-8.6182E+02 -5.9420E+00	1.1246E+03 7.7537E+00	7.1310E+02 4.9167E+00	
7	-7.1583E+00 -4.9355E-02	-9.9119E+02 -6.8340E+00	-6.7122E+01 -4.6279E-01	9.8403E+02 6.7847E+00	2.0818E+01 1.4353E-01	
8	-4.2370E+00 -2.9213E-02	-8.9825E+02 -6.1932E+00	-4.6180E+01 -3.1840E-01	8.9401E+02 6.1640E+00	1.5353E+00 1.0585E-02	
9	-3.3001E+00 -2.2753E-02	-7.4826E+02 -5.1591E+00	-3.2299E+01 -2.2269E-01	7.4496E+02 5.1363E+00	1.8184E+00 1.2538E-02	
10	-1.2319E+02 -8.4939E-01	-9.3015E+02 -6.4131E+00	-6.5732E+01 -4.5320E-01	8.0695E+02 5.5638E+00	5.1422E+02 3.5454E+00	
11	1.6270E+02 1.1218E+00	-4.7892E+02 -3.3021E+00	-2.7013E+01 -1.8625E-01	6.4162E+02 4.4238E+00	2.1281E+02 1.4673E+00	
12	1.9261E+02 1.3280E+00	-6.6476E+01 -4.5833E-01	1.2508E+02 8.6243E-01	2.5909E+02 1.7864E+00	4.9969E+02 3.4452E+00	
13	1.9135E+02 1.3193E+00	-3.8226E+02 -2.6356E+00	4.8390E+00 3.3364E-02	5.7361E+02 3.9549E+00	2.5929E+02 1.7878E+00	
14	1.8463E+02 1.2730E+00	-2.4779E+02 -1.7085E+00	6.3387E+01 4.3704E-01	4.3242E+02 2.9814E+00	1.6017E+02 1.1043E+00	
15	1.1874E+03 8.1869E+00	2.8310E+02 1.9519E+00	2.0638E+02 1.4229E+00	9.0431E+02 6.2350E+00	3.5890E+01 2.4745E-01	

16	4.3424E+02	-1.2296E+03	-5.6563E+02	1.6638E+03	7.9864E+02
	2.9940E+00	-8.4775E+00	-3.8999E+00	1.1471E+01	5.5064E+00
17	7.1724E+02	-1.1463E+03	-6.3420E+02	1.8635E+03	1.5770E+03
	4.9452E+00	-7.9034E+00	-4.3727E+00	1.2849E+01	1.0873E+01
18	6.9599E+02	-1.8304E+03	-3.7892E+02	2.5264E+03	2.8644E+03
	4.7986E+00	-1.2620E+01	-2.6126E+00	1.7419E+01	1.9749E+01
19	5.1032E+02	-1.8680E+03	-7.6163E+02	2.3783E+03	1.5816E+03
	3.5186E+00	-1.2879E+01	-5.2513E+00	1.6398E+01	1.0905E+01
20	-1.6961E+02	-1.1956E+03	-8.1091E+02	1.0260E+03	1.7615E+03
	-1.1694E+00	-8.2436E+00	-5.5910E+00	7.0742E+00	1.2145E+01
21	1.3789E+03	1.3274E+02	1.1990E+02	1.2461E+03	3.5286E+02
	9.5070E+00	9.1518E-01	8.2668E-01	8.5919E+00	2.4329E+00
22	7.4664E+02	1.8287E+02	4.9662E+02	5.6377E+02	4.4612E+02
	5.1479E+00	1.2608E+00	3.4240E+00	3.8871E+00	3.0759E+00

Table 2-184. Load Case 305, 30-ft. Side Drop + Slap-Down at -40°F, Low Temperature, Hypothetical Accident Conditions of Transport – Model AOS-050A

Location	Stress (psi/MPa)					
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb	
1	2.3156E+02	-6.4154E+01	-8.4731E+02	5.6803E+03	1.7329E+03	
	1.5965E+00	-4.4232E-01	-5.8420E+00	3.9164E+01	1.1948E+01	
2	1.5651E+03	1.7952E+02	-4.3127E+02	1.5051E+03	1.4304E+03	
	1.0791E+01	1.2377E+00	-2.9735E+00	1.0377E+01	9.8621E+00	
3	2.2614E+02	-5.8279E+01	-8.4711E+02	5.6799E+03	1.7384E+03	
	1.5592E+00	-4.0182E-01	-5.8406E+00	3.9161E+01	1.1986E+01	
4	1.0787E+03	-5.6726E+01	-1.4852E+03	3.8282E+03	5.5696E+02	
	7.4372E+00	-3.9111E-01	-1.0240E+01	2.6395E+01	3.8401E+00	
5	1.7464E+03	-2.7452E+02	-1.9691E+03	3.9023E+03	1.3248E+02	
	1.2041E+01	-1.8927E+00	-1.3577E+01	2.6905E+01	9.1343E-01	
6	1.7194E+03	-4.7133E+02	-2.1884E+03	3.6895E+03	1.6681E+02	
	1.1855E+01	-3.2497E+00	-1.5088E+01	2.5439E+01	1.1501E+00	
7	2.7577E+02	1.2851E+02	-2.5959E+01	2.0590E+03	1.0431E+02	
	1.9014E+00	8.8608E-01	-1.7898E-01	1.4196E+01	7.1916E-01	
8	1.3828E+02	1.0549E+02	2.4849E+01	9.8660E+02	1.7246E+02	
	9.5342E-01	7.2736E-01	1.7133E-01	6.8024E+00	1.1891E+00	
9	2.7411E+02	1.2739E+02	-2.6084E+01	2.0346E+03	1.0604E+02	
	1.8900E+00	8.7832E-01	-1.7984E-01	1.4028E+01	7.3115E-01	
10	2.0151E+03	-1.9647E+02	-2.2175E+03	2.9738E+03	1.1310E+03	
	1.3893E+01	-1.3546E+00	-1.5289E+01	2.0504E+01	7.7983E+00	
11	1.0455E+03	-5.0175E+02	-2.4785E+03	2.8860E+03	9.8837E+02	
	7.2083E+00	-3.4594E+00	-1.7088E+01	1.9898E+01	6.8146E+00	
12	-4.0632E+01	-4.7056E+02	-1.8677E+03	1.8270E+03	1.4830E+02	
	-2.8015E-01	-3.2444E+00	-1.2877E+01	1.2597E+01	1.0225E+00	
13	1.7748E+03	-2.8165E+02	-1.8742E+03	3.8536E+03	1.1148E+02	
	1.2237E+01	-1.9419E+00	-1.2922E+01	2.6570E+01	7.6863E-01	
14	1.4160E+03	-1.8130E+02	-1.7162E+03	3.7766E+03	5.9570E+02	
	9.7631E+00	-1.2500E+00	-1.1833E+01	2.6039E+01	4.1072E+00	
15	-5.7119E+01	-4.2663E+02	-2.0235E+03	2.0599E+03	4.3397E+01	
	-3.9382E-01	-2.9415E+00	-1.3952E+01	1.4203E+01	2.9921E-01	

16	2.4232E+02	-7.5334E+01	-1.6666E+03	3.9109E+03	2.3986E+02
	1.6707E+00	-5.1941E-01	-1.1491E+01	2.6964E+01	1.6538E+00
17	4.0807E+02	-5.8127E+01	-1.6408E+03	4.0396E+03	2.6708E+02
	2.8135E+00	-4.0077E-01	-1.1313E+01	2.7852E+01	1.8415E+00
18	1.2028E+03	-1.8282E+02	-1.6593E+03	4.1896E+03	2.0937E+02
	8.2928E+00	-1.2605E+00	-1.1441E+01	2.8887E+01	1.4435E+00
19	1.4025E+03	-2.7389E+02	-1.8989E+03	4.1584E+03	3.3429E+02
	9.6702E+00	-1.8884E+00	-1.3093E+01	2.8671E+01	2.3048E+00
20	1.2724E+03	-3.6571E+02	-1.9390E+03	3.2252E+03	1.4427E+02
	8.7732E+00	-2.5214E+00	-1.3369E+01	2.2237E+01	9.9472E-01
21	-2.3378E+01	-4.9304E+02	-2.1812E+03	2.2561E+03	2.4968E+02
	-1.6119E-01	-3.3994E+00	-1.5039E+01	1.5555E+01	1.7215E+00
22	-2.1886E+01	-5.2210E+02	-2.2559E+03	2.3279E+03	1.9149E+02
	-1.5090E-01	-3.5998E+00	-1.5554E+01	1.6050E+01	1.3203E+00

Table 2-185. Load Case 306, 30-ft. Cg/Corner Drop at -40°F, Low Temperature, Hypothetical Accident Conditions of Transport – Model AOS-050A

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	3.6241E+02	-3.7796E+02	-3.0391E+03	2.9609E+03	1.3012E+03
	2.4987E+00	-2.6060E+00	-2.0954E+01	2.0415E+01	8.9712E+00
2	2.2850E+02	-1.2931E+02	-3.1748E+02	1.5271E+03	1.9067E+02
	1.5754E+00	-8.9153E-01	-2.1889E+00	1.0529E+01	1.3146E+00
3	2.8247E+03	3.0180E+02	-1.3501E+01	2.8382E+03	8.0357E+02
	1.9476E+01	2.0808E+00	-9.3084E-02	1.9569E+01	5.5404E+00
4	3.1109E+02	9.7584E+00	-2.1404E+03	4.4027E+03	4.1819E+02
	2.1449E+00	6.7282E-02	-1.4758E+01	3.0355E+01	2.8833E+00
5	4.7118E+02	-3.2844E+02	-2.7219E+03	3.1441E+03	1.7093E+02
	3.2487E+00	-2.2645E+00	-1.8767E+01	2.1678E+01	1.1785E+00
6	3.4172E+02	-7.2535E+02	-3.1089E+03	3.2182E+03	4.5712E+02
	2.3560E+00	-5.0011E+00	-2.1435E+01	2.2189E+01	3.1517E+00
7	5.1542E+02	5.1444E+01	-1.5408E+02	2.9736E+03	8.5737E+01
	3.5537E+00	3.5470E-01	-1.0624E+00	2.0502E+01	5.9113E-01
8	3.0008E+02	5.9366E+00	-3.4162E+02	2.1812E+03	3.8402E+01
	2.0690E+00	4.0931E-02	-2.3554E+00	1.5039E+01	2.6477E-01
9	5.5770E+02	-2.9654E+02	-4.9361E+02	1.5012E+03	5.1661E+01
	3.8452E+00	-2.0446E+00	-3.4033E+00	1.0350E+01	3.5619E-01
10	5.7426E+02	-3.6453E+02	-5.5427E+02	1.3589E+03	5.8017E+02
	3.9594E+00	-2.5134E+00	-3.8215E+00	9.3690E+00	4.0001E+00
11	9.3689E+02	-8.0768E+01	-1.8664E+02	1.1546E+03	3.3133E+02
	6.4596E+00	-5.5687E-01	-1.2869E+00	7.9606E+00	2.2844E+00
12	6.5987E+02	8.6933E+01	1.3263E+01	6.5611E+02	1.5374E+02
	4.5496E+00	5.9938E-01	9.1445E-02	4.5237E+00	1.0600E+00
13	8.6383E+02	-2.3720E+02	-5.0409E+02	1.3679E+03	3.2579E+01
	5.9559E+00	-1.6354E+00	-3.4756E+00	9.4315E+00	2.2462E-01
14	9.0588E+02	-2.3021E+02	-4.9478E+02	1.4007E+03	1.4811E+02
	6.2458E+00	-1.5872E+00	-3.4114E+00	9.6572E+00	1.0212E+00
15	4.8358E+02	9.5041E+01	-1.5041E+03	2.0207E+03	4.2676E+01
	3.3342E+00	6.5529E-01	-1.0370E+01	1.3932E+01	2.9424E-01

16	6.4475E+02 4.4454E+00	4.6722E+01 3.2214E-01	-1.6870E+03 -1.1631E+01	3.6998E+03 2.5510E+01	3.0764E+02 2.1211E+00
17	6.3405E+02 4.3716E+00	9.6125E+01 6.6276E-01	-1.8168E+03 -1.2526E+01	3.9130E+03 2.6979E+01	4.2075E+02 2.9010E+00
18	4.7992E+02 3.3090E+00	-9.2365E+01 -6.3684E-01	-2.3860E+03 -1.6451E+01	3.0079E+03 2.0739E+01	2.1165E+02 1.4593E+00
19	5.3286E+02 3.6739E+00	-2.0447E+02 -1.4098E+00	-2.6632E+03 -1.8362E+01	2.9540E+03 2.0367E+01	5.4281E+02 3.7426E+00
20	2.6583E+02 1.8329E+00	-4.9436E+02 -3.4085E+00	-2.6420E+03 -1.8216E+01	2.8836E+03 1.9881E+01	1.5858E+02 1.0934E+00
21	4.3560E+02 3.0033E+00	-2.7056E+01 -1.8654E-01	-2.9845E+02 -2.0578E+00	7.2983E+02 5.0320E+00	4.1409E+01 2.8551E-01
22	7.4081E+02 5.1077E+00	4.2418E+01 2.9246E-01	-1.4528E+03 -1.0017E+01	2.2275E+03 1.5358E+01	1.9433E+02 1.3399E+00

**Table 2-186. Load Case 311, 4-ft. Drop onto Rod,
Hypothetical Accident Conditions of Transport – Model AOS-050A**

Location	Stress (psi/MPa)				
	Sigma_1	Sigma_2	Sigma_3	Pm	Pb
1	1.6974E+02	-6.4945E+02	5.1804E+02	8.1919E+02	3.0668E+02
	1.1703E+00	-4.4778E+00	3.5717E+00	5.6481E+00	2.1145E+00
2	1.1445E+01	-4.3328E+02	5.5915E+01	4.4472E+02	1.0559E+02
	7.8908E-02	-2.9874E+00	3.8552E-01	3.0663E+00	7.2800E-01
3	-9.5691E-01	-1.6421E+02	-4.6289E-01	1.6326E+02	6.0573E+00
	-6.5977E-03	-1.1322E+00	-3.1915E-03	1.1256E+00	4.1764E-02
4	1.1516E+03	-5.1307E+02	9.6764E+02	1.6647E+03	1.6562E+03
	7.9399E+00	-3.5375E+00	6.6716E+00	1.1477E+01	1.1419E+01
5	1.2021E+03	-1.1314E+03	7.9134E+02	2.3335E+03	2.2243E+03
	8.2884E+00	-7.8007E+00	5.4561E+00	1.6089E+01	1.5336E+01
6	-2.7456E+02	-2.0689E+03	2.5927E+01	1.7944E+03	7.1126E+01
	-1.8930E+00	-1.4265E+01	1.7876E-01	1.2372E+01	4.9040E-01
7	-2.1855E+00	-1.1668E+03	-2.3357E+01	1.1646E+03	1.7503E+01
	-1.5069E-02	-8.0448E+00	-1.6104E-01	8.0297E+00	1.2068E-01
8	-1.3331E+00	-6.5760E+02	-1.5021E+01	6.5627E+02	7.0483E-02
	-9.1911E-03	-4.5340E+00	-1.0357E-01	4.5248E+00	4.8597E-04
9	-3.5221E-01	-3.4780E+02	-1.2974E+01	3.4745E+02	4.1675E+00
	-2.4284E-03	-2.3980E+00	-8.9453E-02	2.3956E+00	2.8734E-02
10	-4.4026E+00	-2.0145E+02	1.3960E+02	1.9705E+02	3.1541E+02
	-3.0355E-02	-1.3889E+00	9.6252E-01	1.3586E+00	2.1747E+00
11	1.5797E+02	-1.7579E+02	9.4606E+01	3.3375E+02	3.5381E+01
	1.0891E+00	-1.2120E+00	6.5228E-01	2.3012E+00	2.4395E-01
12	1.2004E+02	-3.0655E+02	1.0044E+02	4.2659E+02	6.4229E+02
	8.2763E-01	-2.1136E+00	6.9252E-01	2.9412E+00	4.4284E+00
13	4.4846E+02	-2.4516E+01	1.7786E+02	4.7298E+02	5.0223E+02
	3.0920E+00	-1.6903E-01	1.2263E+00	3.2611E+00	3.4627E+00
14	4.8460E+02	-4.1545E+01	2.0762E+02	5.2614E+02	3.8715E+02
	3.3412E+00	-2.8644E-01	1.4315E+00	3.6276E+00	2.6693E+00
15	-8.3867E+03	-4.0915E+04	-3.9021E+03	3.2528E+04	1.0345E+03
	-5.7825E+01	-2.8210E+02	-2.6904E+01	2.2427E+02	7.1324E+00

16	2.0267E+03	-4.0934E+03	6.5762E+00	6.1201E+03	7.7446E+03
	1.3974E+01	-2.8223E+01	4.5342E-02	4.2197E+01	5.3397E+01
17	-8.5409E+02	-4.3894E+03	2.2172E+01	3.5353E+03	5.2415E+03
	-5.8887E+00	-3.0264E+01	1.5287E-01	2.4375E+01	3.6139E+01
18	-2.6582E+02	-2.1098E+03	-3.9135E+02	1.8440E+03	2.2186E+02
	-1.8327E+00	-1.4547E+01	-2.6983E+00	1.2714E+01	1.5297E+00
19	9.3488E+02	-1.1226E+03	1.7267E+01	2.0575E+03	2.3177E+03
	6.4458E+00	-7.7401E+00	1.1905E-01	1.4186E+01	1.5980E+01
20	1.3799E+03	-1.2267E+03	-2.3507E+02	2.6066E+03	3.3942E+03
	9.5140E+00	-8.4577E+00	-1.6207E+00	1.7972E+01	2.3402E+01
21	4.5185E+01	-1.8479E+02	-5.9691E+01	2.2997E+02	3.2562E+02
	3.1154E-01	-1.2741E+00	-4.1155E-01	1.5856E+00	2.2450E+00
22	-2.8736E+03	-1.2749E+04	-3.9544E+03	9.8759E+03	6.9379E+01
	-1.9812E+01	-8.7905E+01	-2.7264E+01	6.8092E+01	4.7835E-01

**Table 2-187. Load Combination 301, Head-On Drop Orientation,
Hypothetical Accident Conditions of Transport – Model AOS-050A**

Load Cases: 301, 102, 201, 211
 30-ft. Head-On Drop
 100°F Ambient, Maximum Decay Heat, Maximum Insolation
 Internal Design Pressure, 414 kPa (60 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
---	--	--	-----	--	--	--
1	4.06 27.99	2.88 19.86	6.94 47.85	20.00 137.90	66.30 457.12	8.55
2	1.50 10.37	0.11 0.74	1.61 11.11	20.00 137.90	66.30 457.12	>10
3	0.58 4.01	0.05 0.32	0.63 4.33	20.00 137.90	66.30 457.12	>10
4	7.21 49.71	6.69 46.10	13.90 95.81	20.00 137.90	66.30 457.12	3.77
5	3.51 24.19	5.22 35.96	8.72 60.15	20.00 137.90	66.30 457.12	6.60
6	1.42 9.77	1.53 10.58	2.95 20.35	20.00 137.90	66.30 457.12	>10
7	1.05 7.22	0.02 0.11	1.06 7.33	20.00 137.90	66.30 457.12	>10
8	0.99 6.79	0.00 0.01	0.99 6.80	20.00 137.90	66.30 457.12	>10
9	0.88 6.06	0.00 0.02	0.88 6.08	20.00 137.90	66.30 457.12	>10
10	1.08 7.42	0.59 4.04	1.66 11.46	20.00 137.90	66.30 457.12	>10
11	0.73 5.05	0.32 2.18	1.05 7.23	20.00 137.90	66.30 457.12	>10
12	0.42 2.90	0.47 3.25	0.89 6.15	20.00 137.90	66.30 457.12	>10

13	1.23 8.51	1.08 7.44	2.31 15.94	20.00 137.90	66.30 457.12	>10
14	1.12 7.74	0.76 5.24	1.88 12.98	20.00 137.90	66.30 457.12	>10
15	1.99 13.75	0.67 4.63	2.67 18.38	20.00 137.90	66.30 457.12	>10
16	1.55 10.70	1.05 7.23	2.60 17.93	20.00 137.90	66.30 457.12	>10
17	1.63 11.27	1.49 10.28	3.13 21.55	20.00 137.90	66.30 457.12	>10
18	2.33 16.07	2.87 19.82	5.21 35.89	20.00 137.90	66.30 457.12	>10
19	2.45 16.92	2.10 14.47	4.55 31.39	20.00 137.90	66.30 457.12	>10
20	1.47 10.12	2.28 15.69	3.74 25.82	20.00 137.90	66.30 457.12	>10
21	1.08 7.44	0.54 3.75	1.62 11.19	20.00 137.90	66.30 457.12	>10
22	1.13 7.82	0.69 4.76	1.82 12.58	20.00 137.90	66.30 457.12	>10

Min MS: 3.771, Location: 4, Combination: Pm+Pb

**Table 2-188. Load Combination 302, Side Drop Orientation,
Hypothetical Accident Conditions of Transport – Model AOS-050A**

Load Cases: 302, 102, 201, 211
 30-ft. Side Drop + Slap-Down
 100°F Ambient, Maximum Decay Heat, Maximum Insolation
 Internal Design Pressure, 414 kPa (60 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
1	5.25 36.21	2.94 20.27	8.19 56.48	20.00 137.90	66.30 457.12	7.09
2	1.15 7.95	1.07 7.41	2.23 15.36	20.00 137.90	66.30 457.12	>10
3	4.09 28.22	1.25 8.65	5.35 36.87	20.00 137.90	66.30 457.12	>10
4	4.44 30.63	3.09 21.30	7.53 51.93	20.00 137.90	66.30 457.12	7.80
5	4.43 30.58	2.63 18.12	7.06 48.70	20.00 137.90	66.30 457.12	8.39
6	3.25 22.38	1.14 7.85	4.38 30.23	20.00 137.90	66.30 457.12	>10
7	1.81 12.49	0.08 0.52	1.89 13.01	20.00 137.90	66.30 457.12	>10
8	1.05 7.21	0.12 0.85	1.17 8.06	20.00 137.90	66.30 457.12	>10
9	1.79 12.37	0.08 0.54	1.87 12.90	20.00 137.90	66.30 457.12	>10
10	2.62 18.05	1.02 7.05	3.64 25.09	20.00 137.90	66.30 457.12	>10
11	2.33 16.06	0.87 5.99	3.20 22.05	20.00 137.90	66.30 457.12	>10
12	1.54 10.61	0.22 1.49	1.75 12.10	20.00 137.90	66.30 457.12	>10

13	3.57 24.63	0.97 6.70	4.54 31.34	20.00 137.90	66.30 457.12	>10
14	3.51 24.18	1.07 7.38	4.58 31.56	20.00 137.90	66.30 457.12	>10
15	2.83 19.48	0.68 4.68	3.50 24.16	20.00 137.90	66.30 457.12	>10
16	3.16 21.77	0.64 4.42	3.80 26.18	20.00 137.90	66.30 457.12	>10
17	3.17 21.85	0.54 3.72	3.71 25.57	20.00 137.90	66.30 457.12	>10
18	3.51 24.17	0.96 6.65	4.47 30.82	20.00 137.90	66.30 457.12	>10
19	3.71 25.61	1.20 8.30	4.92 33.91	20.00 137.90	66.30 457.12	>10
20	3.04 20.93	1.11 7.68	4.15 28.61	20.00 137.90	66.30 457.12	>10
21	1.78 12.30	0.47 3.21	2.25 15.52	20.00 137.90	66.30 457.12	>10
22	2.38 16.44	0.50 3.43	2.88 19.87	20.00 137.90	66.30 457.12	>10

Min MS: 7.094, Location: 1, Combination: Pm+Pb

Table 2-189. Load Combination 303, Cg/Corner Drop Orientation, Hypothetical Accident Conditions of Transport – Model AOS-050A

Load Cases: 303, 102, 201, 211
 30-ft. Cg/Corner Drop
 100°F Ambient, Maximum Decay Heat, Maximum Insolation
 Internal Design Pressure, 414 kPa (60 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
---	--	--	-----	--	--	--
1	3.31 22.82	2.63 18.14	5.94 40.97	20.00 137.90	66.30 457.12	>10
2	1.17 8.04	0.19 1.31	1.36 9.35	20.00 137.90	66.30 457.12	>10
3	2.05 14.11	0.58 4.02	2.63 18.12	20.00 137.90	66.30 457.12	>10
4	4.85 33.43	2.99 20.62	7.84 54.05	20.00 137.90	66.30 457.12	7.46
5	3.89 26.85	2.66 18.31	6.55 45.15	20.00 137.90	66.30 457.12	9.12
6	2.91 20.06	1.35 9.28	4.26 29.34	20.00 137.90	66.30 457.12	>10
7	2.47 17.01	0.06 0.43	2.53 17.44	20.00 137.90	66.30 457.12	>10
8	1.90 13.10	0.03 0.19	1.93 13.29	20.00 137.90	66.30 457.12	>10
9	1.41 9.74	0.04 0.27	1.45 10.01	20.00 137.90	66.30 457.12	>10
10	1.46 10.08	0.63 4.33	2.09 14.41	20.00 137.90	66.30 457.12	>10
11	1.09 7.51	0.40 2.76	1.49 10.27	20.00 137.90	66.30 457.12	>10
12	0.70 4.82	0.22 1.51	0.92 6.33	20.00 137.90	66.30 457.12	>10

13	1.79 12.35	0.92 6.32	2.71 18.67	20.00 137.90	66.30 457.12	>10
14	1.81 12.45	0.75 5.17	2.56 17.62	20.00 137.90	66.30 457.12	>10
15	2.80 19.29	0.68 4.67	3.48 23.97	20.00 137.90	66.30 457.12	>10
16	3.01 20.73	0.69 4.75	3.70 25.48	20.00 137.90	66.30 457.12	>10
17	3.08 21.22	0.65 4.47	3.73 25.69	20.00 137.90	66.30 457.12	>10
18	2.66 18.33	0.97 6.66	3.62 24.99	20.00 137.90	66.30 457.12	>10
19	2.85 19.68	1.35 9.33	4.21 29.00	20.00 137.90	66.30 457.12	>10
20	2.79 19.25	1.12 7.75	3.92 27.00	20.00 137.90	66.30 457.12	>10
21	0.69 4.78	0.32 2.19	1.01 6.97	20.00 137.90	66.30 457.12	>10
22	2.31 15.95	0.50 3.44	2.81 19.38	20.00 137.90	66.30 457.12	>10

Min MS: 7.457, Location: 4, Combination: Pm+Pb

Table 2-190. Load Combination 304, Head-On Drop Orientation at -40°F, Cold Environment, Hypothetical Accident Conditions of Transport – Model AOS-050A

Load Cases: 304, 105, 202, 211
 30-ft. Head-On Drop at -40°F, Low Temperature
 -40°F Ambient, Maximum Decay Heat
 Minimum External Pressure, 24 kPa (3.5 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
1	5.13 35.38	3.38 23.34	8.52 58.72	20.00 137.90	70.00 482.63	7.22
2	2.04 14.05	0.13 0.87	2.16 14.93	20.00 137.90	70.00 482.63	>10
3	0.79 5.41	0.06 0.40	0.84 5.81	20.00 137.90	70.00 482.63	>10
4	9.14 63.03	7.92 54.60	17.06 117.64	20.00 137.90	70.00 482.63	3.10
5	4.10 28.24	6.04 41.62	10.13 69.86	20.00 137.90	70.00 482.63	5.91
6	1.70 11.72	1.71 11.82	3.41 23.54	20.00 137.90	70.00 482.63	>10
7	1.31 9.06	0.02 0.15	1.34 9.21	20.00 137.90	70.00 482.63	>10
8	1.22 8.44	0.00 0.01	1.23 8.45	20.00 137.90	70.00 482.63	>10
9	1.07 7.41	0.00 0.02	1.08 7.43	20.00 137.90	70.00 482.63	>10
10	1.18 8.13	0.60 4.17	1.78 12.30	20.00 137.90	70.00 482.63	>10
11	0.84 5.81	0.35 2.40	1.19 8.21	20.00 137.90	70.00 482.63	>10
12	0.38 2.62	0.59 4.10	0.98 6.73	20.00 137.90	70.00 482.63	>10

13	1.28 8.83	1.06 7.28	2.34 16.11	20.00 137.90	70.00 482.63	>10
14	1.14 7.89	0.70 4.85	1.85 12.73	20.00 137.90	70.00 482.63	>10
15	1.88 12.95	0.25 1.70	2.13 14.65	20.00 137.90	70.00 482.63	>10
16	1.78 12.24	0.92 6.31	2.69 18.56	20.00 137.90	70.00 482.63	>10
17	1.97 13.56	1.69 11.62	3.65 25.18	20.00 137.90	70.00 482.63	>10
18	2.81 19.40	3.35 23.12	6.17 42.51	20.00 137.90	70.00 482.63	>10
19	2.76 19.06	1.99 13.75	4.76 32.81	20.00 137.90	70.00 482.63	>10
20	1.50 10.34	2.30 15.89	3.80 26.23	20.00 137.90	70.00 482.63	>10
21	1.35 9.28	0.56 3.88	1.91 13.17	20.00 137.90	70.00 482.63	>10
22	1.15 7.93	0.71 4.92	1.86 12.84	20.00 137.90	70.00 482.63	>10

Min MS: 3.103, Location: 4, Combination: Pm+Pb

Table 2-191. Load Combination 305, Side Drop Orientation at -40°F, Cold Environment, Hypothetical Accident Conditions of Transport – Model AOS-050A

Load Cases: 305, 105, 202, 211
 30-ft. Side Drop + Slap-Down at -40°F, Low Temperature
 -40°F Ambient, Maximum Decay Heat
 Minimum External Pressure, 24 kPa (3.5 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
---	--	--	-----	--	--	--
1	6.87 47.37	3.43 23.67	10.30 71.04	20.00 137.90	70.00 482.63	5.79
2	1.58 10.88	1.48 10.23	3.06 21.11	20.00 137.90	70.00 482.63	>10
3	5.71 39.38	1.75 12.07	7.46 51.45	20.00 137.90	70.00 482.63	7.40
4	5.31 36.64	2.91 20.04	8.22 56.68	20.00 137.90	70.00 482.63	7.52
5	5.41 37.30	2.44 16.82	7.85 54.12	20.00 137.90	70.00 482.63	7.87
6	4.26 29.40	1.17 8.06	5.43 37.46	20.00 137.90	70.00 482.63	>10
7	2.39 16.47	0.11 0.73	2.49 17.19	20.00 137.90	70.00 482.63	>10
8	1.32 9.08	0.17 1.19	1.49 10.27	20.00 137.90	70.00 482.63	>10
9	2.36 16.30	0.11 0.74	2.47 17.04	20.00 137.90	70.00 482.63	>10
10	3.35 23.07	1.22 8.42	4.57 31.49	20.00 137.90	70.00 482.63	>10
11	3.09 21.28	1.12 7.74	4.21 29.03	20.00 137.90	70.00 482.63	>10
12	1.95 13.43	0.24 1.68	2.19 15.11	20.00 137.90	70.00 482.63	>10

13	4.56 31.44	0.91 6.26	5.47 37.70	20.00 137.90	70.00 482.63	9.53
14	4.49 30.94	1.14 7.85	5.63 38.79	20.00 137.90	70.00 482.63	9.70
15	3.03 20.92	0.25 1.76	3.29 22.67	20.00 137.90	70.00 482.63	>10
16	4.02 27.74	0.36 2.46	4.38 30.20	20.00 137.90	70.00 482.63	>10
17	4.14 28.56	0.38 2.59	4.52 31.15	20.00 137.90	70.00 482.63	>10
18	4.48 30.86	0.70 4.81	5.17 35.67	20.00 137.90	70.00 482.63	9.72
19	4.54 31.33	0.75 5.15	5.29 36.49	20.00 137.90	70.00 482.63	9.56
20	3.70 25.51	0.69 4.74	4.39 30.24	20.00 137.90	70.00 482.63	>10
21	2.36 16.25	0.46 3.17	2.82 19.42	20.00 137.90	70.00 482.63	>10
22	2.91 20.09	0.46 3.16	3.37 23.25	20.00 137.90	70.00 482.63	>10

Min MS: 5.793, Location: 1, Combination: Pm+Pb

Table 2-192. Load Combination 306, Cg/Corner Drop Orientation at -40°F, Cold Environment, Hypothetical Accident Conditions of Transport – Model AOS-050A

Load Cases: 306, 105, 202, 211
 30-ft. Cg/Corner Drop at -40°F, Low Temperature
 -40°F Ambient, Maximum Decay Heat
 Minimum External Pressure, 24 kPa (3.5 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
1	4.15 28.62	3.00 20.70	7.15 49.32	20.00 137.90	70.00 482.63	8.79
2	1.60 11.04	0.24 1.68	1.84 12.72	20.00 137.90	70.00 482.63	>10
3	2.87 19.79	0.82 5.63	3.69 25.41	20.00 137.90	70.00 482.63	>10
4	5.89 40.60	2.77 19.09	8.66 59.68	20.00 137.90	70.00 482.63	7.09
5	4.65 32.07	2.48 17.09	7.13 49.16	20.00 137.90	70.00 482.63	8.82
6	3.79 26.15	1.46 10.06	5.25 36.21	20.00 137.90	70.00 482.63	>10
7	3.30 22.77	0.09 0.60	3.39 23.37	20.00 137.90	70.00 482.63	>10
8	2.51 17.31	0.04 0.27	2.55 17.58	20.00 137.90	70.00 482.63	>10
9	1.83 12.62	0.05 0.36	1.88 12.99	20.00 137.90	70.00 482.63	>10
10	1.73 11.94	0.67 4.62	2.40 16.56	20.00 137.90	70.00 482.63	>10
11	1.36 9.35	0.47 3.21	1.82 12.56	20.00 137.90	70.00 482.63	>10
12	0.78 5.36	0.25 1.72	1.03 7.08	20.00 137.90	70.00 482.63	>10

13	2.07	0.83	2.90	20.00	70.00	>10
	14.30	5.72	20.02	137.90	482.63	
14	2.11	0.69	2.80	20.00	70.00	>10
	14.56	4.76	19.33	137.90	482.63	
15	2.99	0.25	3.25	20.00	70.00	>10
	20.65	1.75	22.40	137.90	482.63	
16	3.81	0.42	4.24	20.00	70.00	>10
	26.28	2.93	29.21	137.90	482.63	
17	4.02	0.53	4.54	20.00	70.00	>10
	27.69	3.65	31.33	137.90	482.63	
18	3.29	0.70	3.99	20.00	70.00	>10
	22.72	4.83	27.54	137.90	482.63	
19	3.34	0.96	4.30	20.00	70.00	>10
	23.03	6.59	29.62	137.90	482.63	
20	3.36	0.70	4.06	20.00	70.00	>10
	23.15	4.84	27.99	137.90	482.63	
21	0.83	0.25	1.08	20.00	70.00	>10
	5.72	1.74	7.46	137.90	482.63	
22	2.81	0.46	3.27	20.00	70.00	>10
	19.40	3.18	22.58	137.90	482.63	

Min MS: 7.087, Location: 4, Combination: Pm+Pb

Table 2-193. Load Combination 310, Additional Increased External Pressure (290 psi), Hypothetical Accident Conditions of Transport – Model AOS-050A

Load Cases: 204, 101, 211
 Additional Increased External Pressure, 2 MPa (290 psia)
 100°F Ambient, Maximum Decay Heat
 Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
1	1.30 8.98	1.70 11.74	3.00 20.71	20.00 137.90	66.30 457.12	>10
2	0.19 1.33	0.06 0.40	0.25 1.73	20.00 137.90	66.30 457.12	>10
3	0.15 1.07	0.06 0.43	0.22 1.50	20.00 137.90	66.30 457.12	>10
4	6.40 44.11	10.98 75.70	17.38 119.81	20.00 137.90	66.30 457.12	2.82
5	6.16 42.46	9.39 64.77	15.55 107.23	20.00 137.90	66.30 457.12	3.26
6	2.26 15.59	3.81 26.25	6.07 41.84	20.00 137.90	66.30 457.12	9.92
7	1.51 10.39	0.01 0.08	1.52 10.47	20.00 137.90	66.30 457.12	>10
8	1.51 10.39	0.00 0.01	1.51 10.40	20.00 137.90	66.30 457.12	>10
9	1.51 10.38	0.02 0.13	1.52 10.51	20.00 137.90	66.30 457.12	>10
10	1.42 9.82	0.78 5.37	2.20 15.19	20.00 137.90	66.30 457.12	>10
11	0.86 5.96	0.49 3.37	1.35 9.33	20.00 137.90	66.30 457.12	>10
12	1.47 10.16	2.40 16.53	3.87 26.69	20.00 137.90	66.30 457.12	>10
13	1.74 11.99	2.04 14.06	3.78 26.05	20.00 137.90	66.30 457.12	>10

14	1.50	0.89	2.38	20.00	66.30	>10
	10.31	6.11	16.42	137.90	457.12	
15	5.55	0.29	5.85	20.00	66.30	7.36
	38.30	2.02	40.31	137.90	457.12	
16	0.68	0.85	1.54	20.00	66.30	>10
	4.71	5.88	10.59	137.90	457.12	
17	0.53	0.88	1.41	20.00	66.30	>10
	3.68	6.07	9.74	137.90	457.12	
18	0.90	1.60	2.50	20.00	66.30	>10
	6.24	11.00	17.24	137.90	457.12	
19	1.22	1.26	2.48	20.00	66.30	>10
	8.42	8.65	17.07	137.90	457.12	
20	1.50	1.35	2.84	20.00	66.30	>10
	10.32	9.30	19.62	137.90	457.12	
21	1.78	1.47	3.25	20.00	66.30	>10
	12.26	10.13	22.39	137.90	457.12	
22	2.08	0.54	2.62	20.00	66.30	>10
	14.31	3.76	18.06	137.90	457.12	

Min MS: 2.815, Location: 4, Combination: Pm+Pb

**Table 2-194. Load Combination 311, 4-ft. Drop onto Rod,
Hypothetical Accident Conditions of Transport – Model AOS-050A**

Load Cases: 311, 101, 201, 211
 4-ft. Drop onto Rod
 100°F Ambient, Maximum Decay Heat
 Internal Design Pressure, 414 kPa (60 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
1	2.01 13.88	2.01 13.85	4.02 27.73	20.00 137.90	66.30 457.12	>10
2	0.52 3.60	0.16 1.09	0.68 4.69	20.00 137.90	66.30 457.12	>10
3	0.20 1.37	0.02 0.13	0.22 1.50	20.00 137.90	66.30 457.12	>10
4	3.37 23.25	4.35 29.98	7.72 53.23	20.00 137.90	66.30 457.12	7.59
5	3.98 27.45	4.76 32.80	8.74 60.25	20.00 137.90	66.30 457.12	6.59
6	2.40 16.58	1.09 7.52	3.50 24.10	20.00 137.90	66.30 457.12	>10
7	1.50 10.38	0.02 0.13	1.52 10.51	20.00 137.90	66.30 457.12	>10
8	1.00 6.87	0.00 0.00	1.00 6.88	20.00 137.90	66.30 457.12	>10
9	0.69 4.74	0.01 0.04	0.69 4.78	20.00 137.90	66.30 457.12	>10
10	0.69 4.76	0.53 3.65	1.22 8.41	20.00 137.90	66.30 457.12	>10
11	0.60 4.15	0.20 1.37	0.80 5.51	20.00 137.90	66.30 457.12	>10
12	0.66 4.55	0.75 5.19	1.41 9.73	20.00 137.90	66.30 457.12	>10

13	1.29 8.91	1.39 9.62	2.69 18.53	20.00 137.90	66.30 457.12	>10
14	1.34 9.21	1.03 7.11	2.37 16.33	20.00 137.90	66.30 457.12	>10
15	33.88 233.61	1.68 11.60	35.56 245.21	20.00 137.90	66.30 457.12	0.37
16	6.48 44.70	8.21 56.63	14.70 101.33	20.00 137.90	66.30 457.12	3.51
17	3.82 26.33	5.59 38.54	9.41 64.87	20.00 137.90	66.30 457.12	6.05
18	2.36 16.25	1.04 7.15	3.39 23.39	20.00 137.90	66.30 457.12	>10
19	2.80 19.32	3.28 22.63	6.08 41.95	20.00 137.90	66.30 457.12	9.90
20	3.34 23.02	4.41 30.37	7.74 53.39	20.00 137.90	66.30 457.12	7.56
21	0.40 2.78	0.61 4.23	1.02 7.00	20.00 137.90	66.30 457.12	>10
22	10.60 73.06	0.43 2.96	11.03 76.03	20.00 137.90	66.30 457.12	3.38

Min MS: 0.370, Location: 15, Combination: Pm

Table 2-195. Load Combination 312, 4-ft. Drop onto Rod at -40°F, Cold Environment, Hypothetical Accident Conditions of Transport – Model AOS-050A

Load Cases: 311, 104, 201, 211
 4-ft. Drop onto Rod
 -40°F Ambient, Zero Decay Heat, Zero Insolation
 Internal Design Pressure, 414 kPa (60 psia)
 Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
1	2.01 13.88	2.01 13.85	4.02 27.73	20.00 137.90	70.00 482.63	>10
2	0.52 3.60	0.16 1.09	0.68 4.69	20.00 137.90	70.00 482.63	>10
3	0.20 1.37	0.02 0.13	0.22 1.50	20.00 137.90	70.00 482.63	>10
4	3.37 23.25	4.35 29.98	7.72 53.23	20.00 137.90	70.00 482.63	8.07
5	3.98 27.45	4.76 32.80	8.74 60.25	20.00 137.90	70.00 482.63	7.01
6	2.40 16.58	1.09 7.52	3.50 24.10	20.00 137.90	70.00 482.63	>10
7	1.50 10.38	0.02 0.13	1.52 10.51	20.00 137.90	70.00 482.63	>10
8	1.00 6.87	0.00 0.00	1.00 6.88	20.00 137.90	70.00 482.63	>10
9	0.69 4.74	0.01 0.04	0.69 4.78	20.00 137.90	70.00 482.63	>10
10	0.69 4.76	0.53 3.65	1.22 8.41	20.00 137.90	70.00 482.63	>10
11	0.60 4.15	0.20 1.37	0.80 5.51	20.00 137.90	70.00 482.63	>10
12	0.66 4.55	0.75 5.19	1.41 9.73	20.00 137.90	70.00 482.63	>10

13	1.29	1.39	2.69	20.00	70.00	>10
	8.91	9.62	18.53	137.90	482.63	
14	1.34	1.03	2.37	20.00	70.00	>10
	9.21	7.11	16.33	137.90	482.63	
15	33.88	1.68	35.56	20.00	70.00	0.42
	233.61	11.60	245.21	137.90	482.63	
16	6.48	8.21	14.70	20.00	70.00	3.76
	44.70	56.63	101.33	137.90	482.63	
17	3.82	5.59	9.41	20.00	70.00	6.44
	26.33	38.54	64.87	137.90	482.63	
18	2.36	1.04	3.39	20.00	70.00	>10
	16.25	7.15	23.39	137.90	482.63	
19	2.80	3.28	6.08	20.00	70.00	>10
	19.32	22.63	41.95	137.90	482.63	
20	3.34	4.41	7.74	20.00	70.00	8.04
	23.02	30.37	53.39	137.90	482.63	
21	0.40	0.61	1.02	20.00	70.00	>10
	2.78	4.23	7.00	137.90	482.63	
22	10.60	0.43	11.03	20.00	70.00	3.53
	73.06	2.96	76.03	137.90	482.63	

Min MS: 0.417, Location: 15, Combination: Pm

**Table 2-196. Load Combination 350, Fire at 30 Minutes,
Hypothetical Accident Conditions of Transport – Model AOS-050A**

Load Cases: 111, 201, 211

Fire at 30 Minutes, 1,475°F Ambient, Maximum Decay Heat
Internal Design Pressure, 414 kPa (60 psia)

Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
1	1.19 8.23	1.70 11.73	2.90 19.97	20.00 137.90	66.30 457.12	>10
2	0.08 0.53	0.05 0.37	0.13 0.90	20.00 137.90	66.30 457.12	>10
3	0.04 0.24	0.01 0.09	0.05 0.33	20.00 137.90	66.30 457.12	>10
4	1.71 11.78	2.69 18.56	4.40 30.33	20.00 137.90	66.30 457.12	>10
5	1.65 11.36	2.53 17.47	4.18 28.83	20.00 137.90	66.30 457.12	>10
6	0.61 4.21	1.02 7.03	1.63 11.24	20.00 137.90	66.30 457.12	>10
7	0.34 2.35	0.00 0.01	0.34 2.36	20.00 137.90	66.30 457.12	>10
8	0.34 2.35	0.00 0.00	0.34 2.35	20.00 137.90	66.30 457.12	>10
9	0.34 2.35	0.00 0.01	0.34 2.36	20.00 137.90	66.30 457.12	>10
10	0.49 3.40	0.21 1.48	0.71 4.88	20.00 137.90	66.30 457.12	>10
11	0.27 1.85	0.16 1.12	0.43 2.97	20.00 137.90	66.30 457.12	>10
12	0.23 1.61	0.11 0.76	0.34 2.37	20.00 137.90	66.30 457.12	>10
13	0.82 5.65	0.89 6.15	1.71 11.81	20.00 137.90	66.30 457.12	>10

14	0.81 5.58	0.64 4.45	1.45 10.03	20.00 137.90	66.30 457.12	>10
15	1.35 9.34	0.65 4.46	2.00 13.80	20.00 137.90	66.30 457.12	>10
16	0.36 2.51	0.47 3.23	0.83 5.74	20.00 137.90	66.30 457.12	>10
17	0.28 1.95	0.35 2.40	0.63 4.36	20.00 137.90	66.30 457.12	>10
18	0.51 3.53	0.81 5.62	1.33 9.15	20.00 137.90	66.30 457.12	>10
19	0.74 5.13	0.97 6.65	1.71 11.78	20.00 137.90	66.30 457.12	>10
20	0.73 5.04	1.01 6.97	1.74 12.01	20.00 137.90	66.30 457.12	>10
21	0.17 1.19	0.29 1.98	0.46 3.17	20.00 137.90	66.30 457.12	>10
22	0.72 4.97	0.36 2.48	1.08 7.46	20.00 137.90	66.30 457.12	>10

Min MS: 14.069, Location: 4, Combination: Pm+Pb

**Table 2-197. Load Combination 351, Post Fire at 60 Minutes,
Hypothetical Accident Conditions of Transport – Model AOS-050A**

Load Cases: 112, 201, 211

Post Fire at 60 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation

Internal Design Pressure, 414 kPa (60 psia)

Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
1	1.19 8.23	1.70 11.73	2.90 19.97	18.70 128.93	59.70 411.62	>10
2	0.08 0.53	0.05 0.37	0.13 0.90	18.70 128.93	59.70 411.62	>10
3	0.04 0.24	0.01 0.09	0.05 0.33	18.70 128.93	59.70 411.62	>10
4	1.71 11.78	2.69 18.56	4.40 30.33	18.70 128.93	59.70 411.62	>10
5	1.65 11.36	2.53 17.47	4.18 28.83	18.70 128.93	59.70 411.62	>10
6	0.61 4.21	1.02 7.03	1.63 11.24	18.70 128.93	59.70 411.62	>10
7	0.34 2.35	0.00 0.01	0.34 2.36	18.70 128.93	59.70 411.62	>10
8	0.34 2.35	0.00 0.00	0.34 2.35	18.70 128.93	59.70 411.62	>10
9	0.34 2.35	0.00 0.01	0.34 2.36	18.70 128.93	59.70 411.62	>10
10	0.49 3.40	0.21 1.48	0.71 4.88	18.70 128.93	59.70 411.62	>10
11	0.27 1.85	0.16 1.12	0.43 2.97	18.70 128.93	59.70 411.62	>10
12	0.23 1.61	0.11 0.76	0.34 2.37	18.70 128.93	59.70 411.62	>10
13	0.82 5.65	0.89 6.15	1.71 11.81	18.70 128.93	59.70 411.62	>10

14	0.81	0.64	1.45	18.70	59.70	>10
	5.58	4.45	10.03	128.93	411.62	
15	1.35	0.65	2.00	20.00	61.80	>10
	9.34	4.46	13.80	137.90	426.10	
16	0.36	0.47	0.83	20.00	61.80	>10
	2.51	3.23	5.74	137.90	426.10	
17	0.28	0.35	0.63	20.00	61.80	>10
	1.95	2.40	4.36	137.90	426.10	
18	0.51	0.81	1.33	18.70	59.70	>10
	3.53	5.62	9.15	128.93	411.62	
19	0.74	0.97	1.71	18.70	59.70	>10
	5.13	6.65	11.78	128.93	411.62	
20	0.73	1.01	1.74	18.70	59.70	>10
	5.04	6.97	12.01	128.93	411.62	
21	0.17	0.29	0.46	20.00	61.80	>10
	1.19	1.98	3.17	137.90	426.10	
22	0.72	0.36	1.08	20.00	61.80	>10
	4.97	2.48	7.46	137.90	426.10	

Min MS: 12.569, Location: 4, Combination: Pm+Pb

**Table 2-198. Load Combination 352, Post Fire at 90 Minutes,
Hypothetical Accident Conditions of Transport – Model AOS-050A**

Load Cases: 112, 201, 211

Post Fire at 90 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation

Internal Design Pressure, 414 kPa (60 psia)

Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
1	1.19 8.23	1.70 11.73	2.90 19.97	18.70 128.93	59.70 411.62	>10
2	0.08 0.53	0.05 0.37	0.13 0.90	18.70 128.93	59.70 411.62	>10
3	0.04 0.24	0.01 0.09	0.05 0.33	18.70 128.93	59.70 411.62	>10
4	1.71 11.78	2.69 18.56	4.40 30.33	18.70 128.93	59.70 411.62	>10
5	1.65 11.36	2.53 17.47	4.18 28.83	18.70 128.93	59.70 411.62	>10
6	0.61 4.21	1.02 7.03	1.63 11.24	18.70 128.93	59.70 411.62	>10
7	0.34 2.35	0.00 0.01	0.34 2.36	18.70 128.93	59.70 411.62	>10
8	0.34 2.35	0.00 0.00	0.34 2.35	18.70 128.93	59.70 411.62	>10
9	0.34 2.35	0.00 0.01	0.34 2.36	18.70 128.93	59.70 411.62	>10
10	0.49 3.40	0.21 1.48	0.71 4.88	18.70 128.93	59.70 411.62	>10
11	0.27 1.85	0.16 1.12	0.43 2.97	18.70 128.93	59.70 411.62	>10
12	0.23 1.61	0.11 0.76	0.34 2.37	18.70 128.93	59.70 411.62	>10
13	0.82 5.65	0.89 6.15	1.71 11.81	18.70 128.93	59.70 411.62	>10

14	0.81	0.64	1.45	18.70	59.70	>10
	5.58	4.45	10.03	128.93	411.62	
15	1.35	0.65	2.00	18.70	59.70	>10
	9.34	4.46	13.80	128.93	411.62	
16	0.36	0.47	0.83	18.70	59.70	>10
	2.51	3.23	5.74	128.93	411.62	
17	0.28	0.35	0.63	18.70	59.70	>10
	1.95	2.40	4.36	128.93	411.62	
18	0.51	0.81	1.33	18.70	59.70	>10
	3.53	5.62	9.15	128.93	411.62	
19	0.74	0.97	1.71	18.70	59.70	>10
	5.13	6.65	11.78	128.93	411.62	
20	0.73	1.01	1.74	18.70	59.70	>10
	5.04	6.97	12.01	128.93	411.62	
21	0.17	0.29	0.46	18.70	59.70	>10
	1.19	1.98	3.17	128.93	411.62	
22	0.72	0.36	1.08	18.70	59.70	>10
	4.97	2.48	7.46	128.93	411.62	

Min MS: 12.569, Location: 4, Combination: Pm+Pb

**Table 2-199. Load Combination 353, Post Fire at 120 Minutes,
Hypothetical Accident Conditions of Transport – Model AOS-050A**

Load Cases: 112, 201, 211

Post Fire at 120 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation
Internal Design Pressure, 414 kPa (60 psia)
Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
---	--	--	-----	---	--	--
1	1.19	1.70	2.90	18.70	59.70	>10
	8.23	11.73	19.97	128.93	411.62	
2	0.08	0.05	0.13	18.70	59.70	>10
	0.53	0.37	0.90	128.93	411.62	
3	0.04	0.01	0.05	18.70	59.70	>10
	0.24	0.09	0.33	128.93	411.62	
4	1.71	2.69	4.40	18.70	59.70	>10
	11.78	18.56	30.33	128.93	411.62	
5	1.65	2.53	4.18	18.70	59.70	>10
	11.36	17.47	28.83	128.93	411.62	
6	0.61	1.02	1.63	18.70	59.70	>10
	4.21	7.03	11.24	128.93	411.62	
7	0.34	0.00	0.34	18.70	59.70	>10
	2.35	0.01	2.36	128.93	411.62	
8	0.34	0.00	0.34	18.70	59.70	>10
	2.35	0.00	2.35	128.93	411.62	
9	0.34	0.00	0.34	18.70	59.70	>10
	2.35	0.01	2.36	128.93	411.62	
10	0.49	0.21	0.71	18.70	59.70	>10
	3.40	1.48	4.88	128.93	411.62	
11	0.27	0.16	0.43	18.70	59.70	>10
	1.85	1.12	2.97	128.93	411.62	
12	0.23	0.11	0.34	18.70	59.70	>10
	1.61	0.76	2.37	128.93	411.62	
13	0.82	0.89	1.71	18.70	59.70	>10
	5.65	6.15	11.81	128.93	411.62	

14	0.81 5.58	0.64 4.45	1.45 10.03	18.70 128.93	59.70 411.62	>10
15	1.35 9.34	0.65 4.46	2.00 13.80	18.70 128.93	59.70 411.62	>10
16	0.36 2.51	0.47 3.23	0.83 5.74	18.70 128.93	59.70 411.62	>10
17	0.28 1.95	0.35 2.40	0.63 4.36	18.70 128.93	59.70 411.62	>10
18	0.51 3.53	0.81 5.62	1.33 9.15	18.70 128.93	59.70 411.62	>10
19	0.74 5.13	0.97 6.65	1.71 11.78	18.70 128.93	59.70 411.62	>10
20	0.73 5.04	1.01 6.97	1.74 12.01	18.70 128.93	59.70 411.62	>10
21	0.17 1.19	0.29 1.98	0.46 3.17	18.70 128.93	59.70 411.62	>10
22	0.72 4.97	0.36 2.48	1.08 7.46	18.70 128.93	59.70 411.62	>10

Min MS: 12.569, Location: 4, Combination: Pm+Pb

**Table 2-200. Load Combination 354, Post Fire at 150 Minutes,
Hypothetical Accident Conditions of Transport – Model AOS-050A**

Load Cases: 112, 201, 211

Post Fire at 150 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation
Internal Design Pressure, 414 kPa (60 psia)

Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
1	1.19 8.23	1.70 11.73	2.90 19.97	18.70 128.93	59.70 411.62	>10
2	0.08 0.53	0.05 0.37	0.13 0.90	18.70 128.93	59.70 411.62	>10
3	0.04 0.24	0.01 0.09	0.05 0.33	18.70 128.93	59.70 411.62	>10
4	1.71 11.78	2.69 18.56	4.40 30.33	18.70 128.93	59.70 411.62	>10
5	1.65 11.36	2.53 17.47	4.18 28.83	18.70 128.93	59.70 411.62	>10
6	0.61 4.21	1.02 7.03	1.63 11.24	18.70 128.93	59.70 411.62	>10
7	0.34 2.35	0.00 0.01	0.34 2.36	18.70 128.93	59.70 411.62	>10
8	0.34 2.35	0.00 0.00	0.34 2.35	18.70 128.93	59.70 411.62	>10
9	0.34 2.35	0.00 0.01	0.34 2.36	18.70 128.93	59.70 411.62	>10
10	0.49 3.40	0.21 1.48	0.71 4.88	18.70 128.93	59.70 411.62	>10
11	0.27 1.85	0.16 1.12	0.43 2.97	18.70 128.93	59.70 411.62	>10
12	0.23 1.61	0.11 0.76	0.34 2.37	18.70 128.93	59.70 411.62	>10
13	0.82 5.65	0.89 6.15	1.71 11.81	18.70 128.93	59.70 411.62	>10

14	0.81 5.58	0.64 4.45	1.45 10.03	18.70 128.93	59.70 411.62	>10
15	1.35 9.34	0.65 4.46	2.00 13.80	18.70 128.93	59.70 411.62	>10
16	0.36 2.51	0.47 3.23	0.83 5.74	18.70 128.93	59.70 411.62	>10
17	0.28 1.95	0.35 2.40	0.63 4.36	18.70 128.93	59.70 411.62	>10
18	0.51 3.53	0.81 5.62	1.33 9.15	18.70 128.93	59.70 411.62	>10
19	0.74 5.13	0.97 6.65	1.71 11.78	18.70 128.93	59.70 411.62	>10
20	0.73 5.04	1.01 6.97	1.74 12.01	18.70 128.93	59.70 411.62	>10
21	0.17 1.19	0.29 1.98	0.46 3.17	18.70 128.93	59.70 411.62	>10
22	0.72 4.97	0.36 2.48	1.08 7.46	18.70 128.93	59.70 411.62	>10

Min MS: 12.569, Location: 4, Combination: Pm+Pb

**Table 2-201. Load Combination 355, Post Fire at 180 Minutes,
Hypothetical Accident Conditions of Transport – Model AOS-050A**

Load Cases: 112, 201, 211

Post Fire at 180 Minutes, 100°F, Maximum Decay Heat, Maximum Insolation

Internal Design Pressure, 414 kPa (60 psia)

Fabrication Stress

Loc	Stress (ksi/MPa)					
	Pm	Pb	Pm+Pb	Sm	Su	MS
1	1.19	1.70	2.90	18.70	59.70	>10
	8.23	11.73	19.97	128.93	411.62	
2	0.08	0.05	0.13	18.70	59.70	>10
	0.53	0.37	0.90	128.93	411.62	
3	0.04	0.01	0.05	18.70	59.70	>10
	0.24	0.09	0.33	128.93	411.62	
4	1.71	2.69	4.40	18.70	59.70	>10
	11.78	18.56	30.33	128.93	411.62	
5	1.65	2.53	4.18	18.70	59.70	>10
	11.36	17.47	28.83	128.93	411.62	
6	0.61	1.02	1.63	18.70	59.70	>10
	4.21	7.03	11.24	128.93	411.62	
7	0.34	0.00	0.34	18.70	59.70	>10
	2.35	0.01	2.36	128.93	411.62	
8	0.34	0.00	0.34	18.70	59.70	>10
	2.35	0.00	2.35	128.93	411.62	
9	0.34	0.00	0.34	18.70	59.70	>10
	2.35	0.01	2.36	128.93	411.62	
10	0.49	0.21	0.71	18.70	59.70	>10
	3.40	1.48	4.88	128.93	411.62	
11	0.27	0.16	0.43	18.70	59.70	>10
	1.85	1.12	2.97	128.93	411.62	
12	0.23	0.11	0.34	18.70	59.70	>10
	1.61	0.76	2.37	128.93	411.62	
13	0.82	0.89	1.71	18.70	59.70	>10
	5.65	6.15	11.81	128.93	411.62	

14	0.81 5.58	0.64 4.45	1.45 10.03	18.70 128.93	59.70 411.62	>10
15	1.35 9.34	0.65 4.46	2.00 13.80	18.70 128.93	59.70 411.62	>10
16	0.36 2.51	0.47 3.23	0.83 5.74	18.70 128.93	59.70 411.62	>10
17	0.28 1.95	0.35 2.40	0.63 4.36	18.70 128.93	59.70 411.62	>10
18	0.51 3.53	0.81 5.62	1.33 9.15	18.70 128.93	59.70 411.62	>10
19	0.74 5.13	0.97 6.65	1.71 11.78	18.70 128.93	59.70 411.62	>10
20	0.73 5.04	1.01 6.97	1.74 12.01	18.70 128.93	59.70 411.62	>10
21	0.17 1.19	0.29 1.98	0.46 3.17	18.70 128.93	59.70 411.62	>10
22	0.72 4.97	0.36 2.48	1.08 7.46	18.70 128.93	59.70 411.62	>10

Min MS: 12.569, Location: 4, Combination: Pm+Pb