



RECEIVED  
PUBLIC SERVICE  
COMMISSION  
CSEC-FILES-ALBANY  
Jeremy J Euto  
Associate Counsel  
2004 SEP 30 AM 10:52

**VIA AIRBORNE EXPRESS**

September 29, 2004

Honorable Jaclyn Brilling  
Secretary  
State of New York  
Public Service Commission  
Three Empire State Plaza  
Albany, NY 12223

RE: Case No. 04-M-1177

**Joint Petition of Niagara Mohawk Power Corporation and National Grid Communications, Inc., for Approval under Public Service Law Sections 70 to Authorize Installation of Wireless Facilities on Niagara Mohawk Power Corporation Property.**

Dear Secretary Brilling:

Enclosed please find for filing an original and five (5) copies of the Joint Petition of Niagara Mohawk Power Corporation ("Niagara Mohawk") and National Grid Communications, Inc. ("Gridcom") for approval under Sections 70 of the Public Service Law of a master license agreement between Niagara Mohawk and Gridcom authorizing installation of wireless facilities on Niagara Mohawk property.

Kindly acknowledge receipt of this filing by date-stamping as received the enclosed duplicate copy of this letter and returning it in the enclosed, self-addressed envelope.

Respectfully submitted,

Jeremy J. Euto

Enclosures

cc: Gregory A. Hale, Esq. (w/encl.)  
Maureen Farley, Esq. (w/encl.)  
Robert Vasalli (w/o encl.)

**BEFORE THE  
NEW YORK STATE  
PUBLIC SERVICE COMMISSION**

-----  
**In the Matter of the Joint Petition of  
NIAGARA MOHAWK POWER CORPORATION  
and NATIONAL GRID COMMUNICATIONS, INC.**

**Case No. 04-M-\_\_\_\_\_**

**for Approval to Authorize Attachment of Cingular Wireless  
Facilities to Niagara Mohawk Electric Transmission Facilities**  
-----

**Joint Petition of Niagara Mohawk Power Corporation and  
National Grid Communications, Inc. Under Public Service Law Section 70  
to Authorize Attachment of Cingular Wireless Facilities to  
Niagara Mohawk Electric Transmission Facilities**

**NIAGARA MOHAWK POWER CORPORATION**

**By:   Jeremy J. Euto, Esq.**  
Niagara Mohawk Power Corporation  
300 Erie Blvd. West  
Syracuse, NY 13202  
Telephone: (315) 428-3310  
Facsimile (315) 460-8031

**NATIONAL GRID COMMUNICATIONS, INC.**

**By:   Gregory A. Hale, Esq.**  
National Grid USA Service Company, Inc.  
25 Research Drive  
Westborough, MA 01582  
Telephone: (508) 389-3187  
Facsimile: (508) 389-3518

September 27, 2004

**BEFORE THE  
NEW YORK STATE  
PUBLIC SERVICE COMMISSION**

-----  
**In the Matter of the Joint Petition of  
NIAGARA MOHAWK POWER CORPORATION  
and NATIONAL GRID COMMUNICATIONS, INC.**

**Case No. 04-M-\_\_\_\_\_**

**for Approval to Authorize Attachment of Cingular Wireless  
Facilities to Niagara Mohawk Electric Transmission Facilities**  
-----

**Joint Petition of Niagara Mohawk Power Corporation and  
National Grid Communications, Inc. Under Public Service Law Section 70 to Authorize  
Attachment of Cingular Wireless Facilities to  
Niagara Mohawk Electric Transmission Facilities**

**TO: THE STATE OF NEW YORK PUBLIC SERVICE COMMISSION**

Niagara Mohawk Power Corporation ("Niagara Mohawk") and National Grid Communications, Inc. ("Gridcom", and collectively with Niagara Mohawk, the "Petitioners") hereby respectfully petition the New York State Public Service Commission (the "Commission") for approval, pursuant to Public Service Law ("PSL") Section 70, authorizing Gridcom to permit attachment of wireless facilities belonging to Cingular Wireless to Niagara Mohawk's electric transmission tower no. 98 on the Clay-Dewitt #5 (115kV) and #13 (345 kV) transmission lines in the Town of Manlius (the "Wireless Attachment"). In support of this petition (the "Joint Petition"), the Petitioners state the following:

## Parties

1. Niagara Mohawk is a corporation duly organized and existing under the laws of the State of New York, having its principal office at 300 Erie Boulevard West, Syracuse, New York 13202.

2. Certified copies of the Company's certificate of incorporation, certificate of merger and consolidation, and all amendments thereto have heretofore been filed with the Commission.

3. By Opinion 01-06 issued and effective December 3, 2001 in Case 01-M-0075, the Commission authorized the merger and stock acquisition of Niagara Mohawk and its parent company by National Grid USA. The closing of the merger and acquisition occurred on January 31, 2002.

4. Gridcom is a corporation organized and existing under the laws of the Commonwealth of Massachusetts, having its principal office at 25 Research Drive, Westborough, Massachusetts 01582.

5. Gridcom and Niagara Mohawk are separate subsidiaries of National Grid USA, and thus the proposed transaction and agreements are between affiliated interests, as defined by Public Service Law Section 110 (2)(g).

6. Communications in this proceeding should be addressed to the attention of:

Herbert Schrayshuen  
Niagara Mohawk Power Corporation  
300 Erie Blvd. West  
Syracuse, New York 13202

Douglas C. Wiest  
National Grid Communications, Inc.  
25 Research Drive  
Westborough, Massachusetts 01582

## **Background**

7. On May 15, 2003, an order was issued approving an agreement between Niagara Mohawk and Gridcom to sublicense wireless attachments to Niagara Mohawk's transmission facilities.<sup>1</sup> The May 15, 2003 order states that Niagara Mohawk must obtain Commission approval pursuant to Section 70 of the Public Service Law for each new wireless attachment that occupies a Niagara Mohawk transmission tower. Further, the May 15, 2003 order states that the requirements of 16 NYCRR Sections 31.1 (f), (g), (h), (i), (j), (k), and (l) shall not apply with respect to such future filings for approval pursuant to Section 70 of the Public Service Law (i.e., including this Petition).

8. The May 15, 2003 order required Niagara Mohawk to submit a generic procedure for the attachment of wireless facilities to its transmission towers for Commission approval.

9. On January 6, 2004, Niagara Mohawk filed its proposed generic procedure/plan for the attachment of wireless facilities to its transmission towers (the "Generic Procedure") with the Commission.

10. On April 14, 2004, an order was issued in this proceeding approving Niagara Mohawk's proposed Generic Procedure.<sup>2</sup>

---

<sup>1</sup> Case 02-M-1288, Petition of Niagara Mohawk Power Corporation and National Grid Communication, Inc. for Approval to Authorize National Grid Communications to Attach Wireless Facilities on Niagara Mohawk's Transmission Facilities, Order Approving Agreement (issued May 15, 2003) (the "May 15, 2003 order").

<sup>2</sup> Case 02-M-1288, Petition of Niagara Mohawk Power Corporation and National Grid Communication, Inc. for Approval to Authorize National Grid Communications to Attach Wireless Facilities on Niagara Mohawk's Transmission Facilities, Order Approving Procedure (issued April 14, 2004) (the "April 14, 2004 Order").

11. In accordance with the April 14, 2004 Order and the Generic Procedure, for each proposed wireless attachment to its transmission facilities, Niagara Mohawk is required to submit the following documentation to the Commission for review and approval pursuant to PSL §70:

- (1) Supplemental agreement for the particular attachment.
- (2) Process completion checklist.
- (3) Construction drawings.
- (4) Structural analysis report.
- (5) Environmental Assessment Form (EAF).
- (6) SEQR Determination (if available).
- (7) For transmission facilities certified under Article VII of the Public Service Law, a determination as to whether the wireless facilities would affect conformance of the transmission facilities with the Article VII Certificate.
- (8) For transmission facilities certified under Article VII of the Public Service Law, a determination as to whether a revision or supplement to the Environmental management and Construction Plan (EM&CP) is required and where necessary a request to PSC staff to revise or supplement the existing EM&CP.
- (9) Copies of municipal and regulatory permits and approvals obtained.
- (10) Niagara Mohawk's point of contact for each petition filed.
- (11) Niagara Mohawk's point of contact for site construction/restoration.
- (12) Assessment and explanation of co-location opportunities among wireless service providers at the site.

12. In compliance with the Generic Procedure, the Supplemental Agreement, Process Completion Checklist, Construction Diagrams, Structural Analysis Report, Environmental Assessment Form, SEQR Determination (if available), and copies of municipal and regulatory permits and approvals obtained for the Wireless Attachment are attached as Exhibits hereto. Niagara Mohawk's point of contact for this petition is stated in paragraph 6, above.

13. Niagara Mohawk's point of contact for site construction/restoration is:

Michael Ludovico  
Niagara Mohawk Power Corporation  
300 Erie Blvd. West  
Syracuse, New York 13202  
315-428-6688

14. The Wireless Attachment located on an Article VII right of way. Niagara Mohawk has reviewed the Article VII Certificate for the site and concluded that the wireless attachments do not affect conformance with Certificate requirements. The Company has further determined that no revision to the respective EM&CPs are required; rather, by separate filing with the Commission, revised construction drawings will be filed with Staff, as a supplement to the original construction drawings in the EM&CP file.

15. Since there are no other facilities located on this electric transmission tower, there were no opportunities for co-location with an existing wireless service provider.

16. Niagara Mohawk, in its October 7, 2002 petition to the Commission in Case 02-M-1288, stated that the "occupancy fees ... will be captured in Prime Account 611.00 Rents from Electric Property – Transmission." Niagara Mohawk will account for occupancy fees from the attachments under this Petition in the same manner, i.e., capturing such fees as Rents from Electric Property. Since the October 7, 2002 petition, however, Niagara Mohawk has changed its accounting code block to resemble FERC accounting. Since Niagara Mohawk has eliminated the mapping to Prime Account 611.00, we are accounting for such occupancy fees directly under the corresponding FERC account 454 – Rent from Electric Property.

### **Present Petition**

17. In compliance with the requirements of the April 14, 2004 order, Niagara Mohawk hereby submits the materials required under the Generic Procedure for the Wireless Attachment for review and approval under PSL §70. Because this filing is considered a compliance filing pursuant to the April 14, 2004 order, no proposed public notice, pursuant to the State Administrative Procedures Act, is submitted herewith.

18. Pursuant to and in compliance with the requirements of the Commission's April 14, 2004 order, the Company is providing all applicable information required under a PSL §70 filing, subject to (i) the waiver of certain requirements of 16 N.Y.C.R.R. Sections 31.1 under the Commission's May 15, 2003 order; and (ii) the Commission determining that this compliance filing, in accordance with the requirements of the April 14, 2004 order, is otherwise responsive to the requirements of 16 N.Y.C.R.R. Section 31.1.

19. The transfer of rights for the Wireless Attachment is in the public interest because it will allow Niagara Mohawk to continue to offer use of transmission facilities to other wireless service providers in the State of New York for attachments.

20. The transfer of rights will in no way inhibit or impact the conduct of the Company's business, and, indeed, the Company will retain the right to utilize its facilities for the transmission of electricity.

21. The occupancy fees in connection with the Wireless Attachment are established pursuant to the fee schedule in Exhibit "B" of the October 4, 2002 master license agreement between Niagara Mohawk and Gridcom, approved in the Commission's May 15, 2003 Order. Occupancy fees in connection with the Wireless Attachment will be captured in account 454 - Rent from Electric Property.

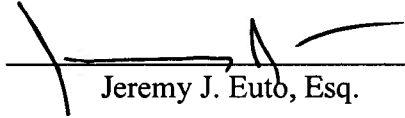


**WHEREFORE**, for the reasons set forth herein, and in compliance with the Commission's April 14, 2004 order in this proceeding, the Company respectfully requests that the Commission issue an Order, pursuant to Public Service Law §70; (i) authorizing the attachment of the above-described wireless facilities on Niagara Mohawk transmission structures and associated facilities and property; and (ii) issuing such other approvals and consents as are necessary and appropriate.

Respectfully submitted:

**NIAGARA MOHAWK POWER CORPORATION**

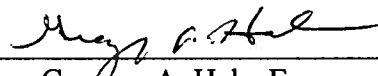
By:

  
Jeremy J. Euto, Esq.

300 Erie Blvd. West  
Syracuse, New York 13202  
(315) 428-3310

**NATIONAL GRID COMMUNICATIONS, INC.**

By:

  
Gregory A. Hale, Esq.

National Grid USA Service Company, Inc.  
25 Research Drive  
Westborough, Massachusetts 01582  
(508) 389-3187

Dated: September 27, 2004

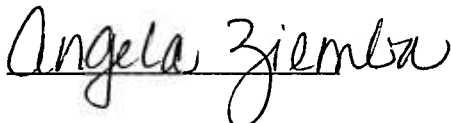
**VERIFICATION**

STATE OF NEW YORK     )  
                                      ) SS.  
COUNTY OF ONONDAGA )

PETER H. LEBRO, being duly sworn, deposes and says: I am the Vice  
President – Network Services for NIAGARA MOHAWK POWER CORPORATION, the  
Petitioner named above; I have read the foregoing Petition and know the contents thereof;  
and the same is true to the best of my knowledge, information and belief

  
Peter H. Lebro

Sworn to before me this  
29 day of September 2004



ANGELA ZIEMBA  
Notary Public in the State of New York  
Qualified in Onondaga Co. No. 4857037  
My Commission Expires 4-28-06

## VERIFICATION

COMMONWEALTH OF MASSACHUSETTS           )  
                                                                      ) SS.  
COUNTY OF WORCESTER                     )

DOUGLAS C Wiest, being duly sworn, deposes and says:

I am the PRESIDENT for NATIONAL GRID

COMMUNICATIONS, INC., the Petitioner named above; I have read the foregoing Petition and know the contents thereof; and the same is true to the best of my knowledge, information and belief

Sworn to before me this  
24 day of September 2004

Shylka

**SHERYL L. KEDDY**  
Notary Public  
My Commission Expires  
March 21, 2008

## EXHIBIT INDEX

| <u>EXHIBIT NO.</u> | <u>EXHIBIT SUBSTANCE</u>                                                                                                                                                                |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                  | Supplemental Agreement - authorizing Gridcom to sub license attachment to and occupancy of Niagara Mohawk Power Corporation's electric transmission facilities and associated property. |
| 2                  | Completed Checklist from Niagara Mohawk's Wireless Attachment Process                                                                                                                   |
| 3                  | Final Construction Drawings                                                                                                                                                             |
| 4                  | Structural Analysis Report                                                                                                                                                              |
| 5                  | Environmental Assessment Form and SEQRA Determination (if available)                                                                                                                    |
| 6                  | Copies of Local/Municipal Authorizations                                                                                                                                                |



Reorder No. 5105  
JULIUS BLUMBERG, INC.  
NYC 10013  
©10% P.C.W.

**EXHIBIT A  
SUPPLEMENTAL AGREEMENT (SA)**

This Supplemental Agreement dated September 15, 2004, to the Wireless facilities Right of Occupancy Agreement between Niagara Mohawk Power Corporation (NMPC), a New York corporation and National Grid Communications Inc. (Gridcom), a Massachusetts corporation, dated October 4, 2002 ("Master Agreement"), the terms and conditions of which are incorporated by reference herein, agree as follows:

**1. Site No. /Name:**

Site Name: Fremont (S-02-001)/Pencee Lane, East Syracuse (Town of Manlius), NY 13057. NMPC tower number 98 on the Clay-Dewitt #5 (115 kV) & #13 (345 kV) transmission lines. Drawing number # C-21652-S, sheets 4-7.

**2. Name of Occupant:**

National Grid Communications, Inc. (Gridcom)

**3. Site Address (Street address, municipality):**

The tower is located off of Pencee Lane in Manlius, NY.

**4. Site Latitude and Longitude:**

43-04-07.1N, 76-02-18.0W (NAD 83)

**5. Payment Commencement Date:**

Earlier to occur of: (a) the date Gridcom notifies NMPC that Gridcom has obtained all of the approvals required for the Installation of its Wireless Facilities; or (b) the date Gridcom begins Installation of its Wireless Facilities.

**6. Occupancy Fee:**

\$1,600 per month; \$19,200 per year. Occupancy fee may be adjusted in actual number of towers occupied by Gridcom.

**7. Term:**

5 years. Expiring: on the fifth anniversary of the Commencement Date subject to four (4) additional terms of five (5) years each, pursuant to section 6 of the Agreement.

**8. Property Owned:**

Owner: Niagara Mohawk Power Corporation. The property is owned in fee. Deed dated September 24, 1964 from Bianche A. Neider to NMPC recorded in the Onondaga County's Clerk's Office in Book 2217 of Deeds at Page 283. Doc. 145216 and 145218.

Article VII Right of Way      Yes   X        No           

**9. Access Requirements:**

Tower #98 is located on land owned in fee by NMPC.

Tower #98 is located outside of the railroad right-of way and cannot be accessed from Pencee Lane under any of NMPC's existing rights. A double circuit 115 kV line and Telergy and MCI fiber optic cables also occupy the right-of-way in this location.

Access is off of Pencee Lane. Wireless Service Provider has secured an easement for vehicular access from the public right of way to NMPC land owned in fee. The easement has been executed by Grantor (Linda Myers) and Grantee (Southwestern Bell Mobile Systems, LLC).

NGrid shall have unescorted access to NGrid's ground level facilities, subject to prior notification. Unless otherwise approved by NMPC, access to the electric transmission tower shall be restricted to NMPC personnel only.

**10. NMPC Contact for Emergency Access:**

Planned/Scheduled Access:

Primary: Shift Supv. Central Region Control Ctr. (315) 460-2421  
Operations: Tom Turo (315) 452-7516  
T&D: John Spink (315) 452-7505

Emergency/Unplanned Access:

Primary: Shift Supv. Central Region Control Ctr. (315) 460-2421  
Alternate: Tom Turo (315) 452-7516

**11. Gridcom Emergency Contact:**

(877) 633-1010

**12. Gridcom address for Notice Purposes:**

National Grid Communications Inc., 25 Research Drive, Westborough, MA 01582  
Attn: Keith Tornifoglio

**13. Gridcom address for Billing Purposes:**

National Grid Communications Inc., 25 Research Drive, Westborough, MA 01582  
Attn: Accounts Payable



#### **14. Environmental Matters:**

To the extent that any such documented impact requires obtaining environmental permits from any local, state, or federal agency, Gridcom agrees that it will provide a list of such permits to NMPC, prepare draft permit applications for NMPC's review, obtain such permits, and furnish copies of such permits to NMPC before commencing construction of the proposed project.

To the extent that NMPC is aware of any relevant environmental information that may aid Gridcom in completing the environmental review described above, NMPC agrees to promptly inform Gridcom in writing of such information.

#### **15. Special provisions/site limitations:**

NMPC's approval of this Supplemental Agreement No. 04 is contingent on:

A. Gridcom compliance with state or local laws, including municipal ordinances, permit approvals and building permits issued for the proposed wireless facility. Gridcom shall obtain or cause its Sub-licensees to obtain, at its own cost and expense, all necessary franchises, licenses, permits or rights which relate to any use of the wireless facilities and/or the property by them, and Gridcom shall provide or cause its Sub-Licensee's to provide a copy of such documents to NMPC upon request at Gridcom's sole cost and expense.

B. NMPC review and acceptance of Gridcom site construction drawings, but not limited to the location and size of equipment shelter, and antenna location and mounting details with appropriate conductor clearances and site grounding details. These construction drawings will depict the location route of access roadways and/or services on proposed site plans. Upon NMPC approval of construction drawings, Gridcom to contact NMPC Land & ROW (Frank Sciortino (315) 428-5075 to secure necessary rights to occupy NMPC lands (e.g., easement for site utility services).

C. Gridcom submittal of an acceptable tower structural analysis.

D. Filing and approval of this Supplemental Agreement No. 04 with the New York State Public Service Commission.

E. Gridcom satisfying all other requirements contained in this Agreement No. 04 or the Master Agreement.

F. GridCom shall design the Wireless Facilities such that installation, operation and maintenance of the Wireless Facilities can be performed without requiring an outage (interruption) of the electric circuits on this tower. In the event an outage of the electric circuit is required, GridCom may realize delays in scheduling such an outage and may be liable for costs attributable to the GridCom requested outage. Scheduling of electric circuit outages is at NMPC and the New York System Operators' (ISO) sole discretion. Notwithstanding the above, Construction and Maintenance activities shall at all times comply with applicable OSHA, NESC and NMPC safety standards, including but not limited to worker and equipment clearances.

#### **16. Current site communication uses:**

None

17. The parties agree that in the event of conflict between the terms of this Supplemental Agreement No. 04 and the Master Agreement dated October 4, 2002, the Master Agreement shall govern.

**National Grid USA**

Accepted By:   
Name: Herbert Schrayshuen  
Title: Vice President Commercial Services  
Date: 9/20/04

**National Grid Communications Inc.**

Accepted By:   
Name: Douglas C. Wiest  
Title: President  
Date: 9/15/04

### Attachments

Construction Drawings: S-02-001/Fremont/Pencee Lane, East Syracuse, NY

#### Note:

1. Final construction drawings shall be approved by NMPC prior to construction.
2. Tower structural analysis must be submitted for NMPC review and approval prior to construction.
3. Grounding design conforming to IEEE 80 shall be submitted to NMPC for review and approval prior to construction.



Reorder No. 5105  
JULIUS BLUMBERG, INC.  
NYC 10013  
010% P.C.W.

Site Name: Gridcom S02001

Location: Freemont

# **Niagara Mohawk Wireless Attachment Checklist**

ESB #106  
Attachment #1  
07/06/2004

|                                                                                                                                | Accepted |    |     |
|--------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|
|                                                                                                                                | Yes      | No | n/a |
| <b>Property Rights</b>                                                                                                         |          |    |     |
| Niagara Mohawk fee owned property                                                                                              | ✓        |    |     |
| Are add'l property rights req'd                                                                                                |          | ✓  |     |
| Reviewed by: <u>    JL Frankl    </u> date: <u>8/6/04</u> comments attached [ ]                                                |          |    |     |
| <b>Environmental</b>                                                                                                           |          |    |     |
| Article VII right-of-way - Installation of Wireless Facilities would not affect conformance with Article VII Certificate.      |          |    |     |
| Article VII right-of-way - Any required supplement to the Environmental Mngt. & Construction Plan (EM&CP) is submitted herein. |          |    |     |
| Licensee prepared Environmental Assessment Form (EAF) reviewed and acceptable                                                  |          |    |     |
| Reviewed by: _____ date: _____ comments attached [ ]                                                                           |          |    |     |
| <b>Design, Construction Dwg., and Reliability Review</b>                                                                       |          |    |     |
| Drawing review - General Arrangement & Design details acceptable                                                               |          |    |     |
| Tower structural analysis acceptable                                                                                           |          |    |     |
| Wireless attachment details acceptable                                                                                         |          |    |     |
| Coax cable routing & mounting details acceptable                                                                               |          |    |     |
| Tower & electrical system access acceptable                                                                                    |          |    |     |
| Site utility improvements acceptable                                                                                           |          |    |     |
| Site access improvements acceptable                                                                                            |          |    |     |
| Reviewed by: _____ date: _____ comments attached [ ]                                                                           |          |    |     |
| Reviewed by: _____ date: _____ comments attached [ ]                                                                           |          |    |     |
| Site grounding plan acceptable                                                                                                 |          |    |     |
| Reviewed by: _____ date: _____ comments attached [ ]                                                                           |          |    |     |
| There are no significant adverse impacts to the reliability of the Transmission System                                         |          |    |     |
| Reviewed by: _____ date: _____ comments attached [ ]                                                                           |          |    |     |

Site Name: Gridcom S02001

# Niagara Mohawk Wireless Attachment Checklist

ESB #106  
Attachment #1  
07/06/2004

Location: Freemont

|                                                                                                                                                                | Accepted |    |     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|
|                                                                                                                                                                | Yes      | No | n/a |
| <b>Property Rights</b>                                                                                                                                         |          |    |     |
| Niagara Mohawk fee owned property                                                                                                                              |          |    |     |
| Are add'l property rights req'd                                                                                                                                |          |    |     |
| Reviewed by: _____ date: _____ comments attached [ ]                                                                                                           |          |    |     |
| <b>Environmental</b>                                                                                                                                           |          |    |     |
| Article VII right-of-way - Installation of Wireless Facilities would not affect conformance with Article VII Certificate. <i>(EM&amp;CP CHANGE REQUIRED)**</i> | ✓**      |    |     |
| Article VII right-of-way - Any required supplement to the Environmental Mngt. & Construction Plan (EM&CP) is submitted herein. <i>(To BE SUBMITTED LATER)</i>  | ✓**      |    |     |
| Licensee prepared Environmental Assessment Form (EAF) reviewed and acceptable                                                                                  | ✓*       |    |     |
| Reviewed by: <u>Scott Shupe</u> date: <u>8/2/04</u> comments attached [ ]                                                                                      |          |    |     |
| <i>* Permits issued by NYSDOC and T. of Martins based on C&amp;S work for SW Bell Mobile</i>                                                                   |          |    |     |
| <b>Design, Construction Dwg., and Reliability Review</b> <i>** REVISED BY M. W. SHERMAN, FORS. STAFF</i>                                                       |          |    |     |
| Drawing review - General Arrangement & Design details acceptable                                                                                               |          |    |     |
| Tower structural analysis acceptable                                                                                                                           |          |    |     |
| Wireless attachment details acceptable                                                                                                                         |          |    |     |
| Coax cable routing & mounting details acceptable                                                                                                               |          |    |     |
| Tower & electrical system access acceptable                                                                                                                    |          |    |     |
| Site utility improvements acceptable                                                                                                                           |          |    |     |
| Site access improvements acceptable                                                                                                                            |          |    |     |
| Reviewed by: _____ date: _____ comments attached [ ]                                                                                                           |          |    |     |
| Reviewed by: _____ date: _____ comments attached [ ]                                                                                                           |          |    |     |
| Site grounding plan acceptable                                                                                                                                 |          |    |     |
| Reviewed by: _____ date: _____ comments attached [ ]                                                                                                           |          |    |     |
|                                                                                                                                                                |          |    |     |
| There are no significant adverse impacts to the reliability of the Transmission System                                                                         |          |    |     |
| Reviewed by: _____ date: _____ comments attached [ ]                                                                                                           |          |    |     |

Site Name: Gridcom S02001

Location: Freemont

# **Niagara Mohawk Wireless Attachment Checklist**

ESB #106  
Attachment #1  
07/06/2004

|                                                                                                                                | Accepted |    |     |
|--------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|
|                                                                                                                                | Yes      | No | n/a |
| <b>Property Rights</b>                                                                                                         |          |    |     |
| Niagara Mohawk fee owned property                                                                                              |          |    |     |
| Are add'l property rights req'd                                                                                                |          |    |     |
| Reviewed by: _____ date: _____ comments attached [ ]                                                                           |          |    |     |
| <b>Environmental</b>                                                                                                           |          |    |     |
| Article VII right-of-way - Installation of Wireless Facilities would not affect conformance with Article VII Certificate.      |          |    |     |
| Article VII right-of-way - Any required supplement to the Environmental Mngt. & Construction Plan (EM&CP) is submitted herein. |          |    |     |
| Licensee prepared Environmental Assessment Form (EAF) reviewed and acceptable                                                  |          |    |     |
| Reviewed by: _____ date: _____ comments attached [ ]                                                                           |          |    |     |
| <b>Design, Construction Dwg., and Reliability Review</b>                                                                       |          |    |     |
| Drawing review - General Arrangement & Design details acceptable                                                               |          |    |     |
| Tower structural analysis acceptable                                                                                           |          |    |     |
| Wireless attachment details acceptable                                                                                         |          |    |     |
| Coax cable routing & mounting details acceptable                                                                               |          |    |     |
| Tower & electrical system access acceptable                                                                                    |          |    |     |
| Site utility improvements acceptable                                                                                           |          |    |     |
| Site access improvements acceptable                                                                                            |          |    |     |
| Reviewed by: _____ date: _____ comments attached [ ]                                                                           |          |    |     |
| Reviewed by: _____ date: _____ comments attached [ ]                                                                           |          |    |     |
| Site grounding plan acceptable                                                                                                 |          |    |     |
| Reviewed by: <u>Kennel Heron</u> date: <u>9-9-04</u> comments attached [✓]                                                     |          |    |     |
| There are no significant adverse impacts to the reliability of the Transmission System                                         |          |    |     |
| Reviewed by: _____ date: _____ comments attached [ ]                                                                           |          |    |     |



Accepted Lyncole GPR study dated July 17, 2004.

Accepted construction drawings revision 1 dated June 28, 2004.

---

Site Name: Gridcom S02001

Location: Freemont

# Niagara Mohawk Wireless Attachment Checklist

ESB #106  
Attachment #1  
07/06/2004

|                                                                                                                                | Accepted |    |     |
|--------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|
|                                                                                                                                | Yes      | No | n/a |
| <b>Property Rights</b>                                                                                                         |          |    |     |
| Niagara Mohawk fee owned property                                                                                              |          |    |     |
| Are add'l property rights req'd                                                                                                |          |    |     |
| Reviewed by: _____ date: _____ comments attached [ ]                                                                           |          |    |     |
| <b>Environmental</b>                                                                                                           |          |    |     |
| Article VII right-of-way - Installation of Wireless Facilities would not affect conformance with Article VII Certificate.      |          |    |     |
| Article VII right-of-way - Any required supplement to the Environmental Mngt. & Construction Plan (EM&CP) is submitted herein. |          |    |     |
| Licensee prepared Environmental Assessment Form (EAF) reviewed and acceptable                                                  |          |    |     |
| Reviewed by: _____ date: _____ comments attached [ ]                                                                           |          |    |     |
| <b>Design, Construction Dwg., and Reliability Review</b>                                                                       |          |    |     |
| Drawing review - General Arrangement & Design details acceptable                                                               | ✓        |    |     |
| Tower structural analysis acceptable                                                                                           | ✓        |    |     |
| Wireless attachment details acceptable                                                                                         | ✓        |    |     |
| Coax cable routing & mounting details acceptable                                                                               | ✓        |    |     |
| Tower & electrical system access acceptable                                                                                    | ✓        |    |     |
| Site utility improvements acceptable                                                                                           | ✓        |    |     |
| Site access improvements acceptable                                                                                            | ✓        |    |     |
| Reviewed by: <u>Jeffrey Golding</u> date: <u>8/19/04</u> comments attached <u>14</u>                                           |          |    |     |
| Reviewed by: <u>Maureen</u> date: <u>8/23/04</u> comments attached <u>1</u>                                                    |          |    |     |
| Site grounding plan acceptable                                                                                                 |          |    |     |
| Reviewed by: _____ date: _____ comments attached [ ]                                                                           |          |    |     |
| There are no significant adverse impacts to the reliability of the Transmission System                                         |          |    |     |
| Reviewed by: <u>Theresa Gatto</u> date: <u>8/23/04</u> comments attached [ ]                                                   |          |    |     |

**Site Name:** Gridcom S02001

**Niagara Mohawk  
Wireless Attachment  
Checklist Comments**

**ESB #106  
Attachment #1  
08/06/04**

**Attached Comment:**

**Design, Construction Drawing, and Reliability Review**

There are no significant adverse impacts to the reliability of the transmission line with the addition of the proposed cell facilities.



Reorder No. 5105  
JULIUS BLUMBERG, INC  
NYC 10013  
©10% P.C.W.



Reorder No. 5105  
JULIUS BLUMBERG, INC.  
NYC 10013  
©10% P.C.W.

**Report**

**GRIDCOM - Cingular Wireless Site, Fremont, NY**  
**NIMO Double Circuit Clay-Dewitt line 5 and Clay-Dewitt line 13, 345 kV lines**  
**Tower 98**

**Project Description**

RCP Engineering analyzed the existing 345 kV double circuit lattice steel tower number 98 to determine the suitability of this structure to accommodate the additional loading associated with the installation of a 9 PCS antennas located approximately 12 feet below the tower top.

**Conclusions**

Our analysis shows that the structure has sufficient strength to withstand the additional loads associated with the installation of the antennas and associated coax cables.

**Methodology**

The structure was analyzed using PLS-TOWER version 6.32, a PC based computer program developed by Power Line Systems, Inc. A non-linear analysis was used. TOWER is a finite element model.

**Structure Loading**

The structure is a heavy angle 90 degree dead end type G double circuit 345 kV tower.

The following loading conditions from were considered:

NESC Heavy, ½ inch of ice, 4 psf wind,  
vertical OCF=1.5, transverse OCF=2.5, longitudinal OCF=1.65

NY Heavy Ice, 1.5 inch ice, 2 psf wind,  
vertical OCF=1.1, transverse OCF=1.1, longitudinal OCF=1.1

NESC high wind (90 mph wind from figure 250-2), no ice, 33.90 psf wind on structure, 48.12 psf wind on antenna and 19.26 psf wind on wire,  
vertical OCF=1.1, transverse OCF=1.1, longitudinal OCF=1.1.  
Note that a 1.1 overload factor is used so that the NESC high wind will replace the GRIDCOM high wind load.

Tangent wind span 700 ft, weight span 700 ft, 78 degree line angle.

Conductor: Bluebird, 2156 kcmil, 84/19 ACSR

Shield wire: 7/16 inch 7 strand EHS steel

Wire and antenna load calculations are shown on the spreadsheets.



## Reference Drawings

### GRIDCOM drawings:

Niagara Mohawk type G tower drawings C-21652-S, 24 sheets.  
GridCom transmittal sheet T1.  
Cingular Wireless antenna mount details sheets E6 and E2  
Andrew catalog cut 775G90V1ESXM antenna.  
E-mail from Robert Ducios dated April 13, 2004, stating number of coax cables.

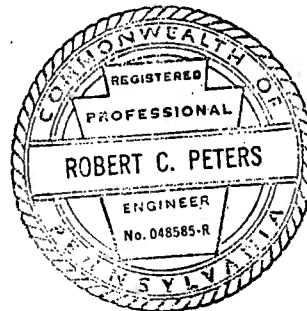
## Submittal

This Report  
GRIDCOM Consultant Submittal Form S1  
Loading chart for NIMO tower 98 (EXCEL spreadsheet).  
Loading chart for Microflex antenna installation (EXCEL spreadsheet).  
PLS-TOWER output.  
Computer files for above reports.

Submitted by  
RCP Engineering



Robert C. Peters  
Owner



April 27, 2004

James L. Rarig



April 27, 2004

**Consultant Submittal – SI tracking #575**  
**Structural Analysis Report for Telecommunications Installation**

Job Order #: \_\_\_\_\_  
 (NG use only)

| FROM             |                   | TO                    |                          |
|------------------|-------------------|-----------------------|--------------------------|
| Consultant       | RCP Engineering   | Transmission Engineer | Mark Browne              |
| Contact Engineer | Robert C. Peters  | Phone Number          | 508-389-2858             |
| Phone Number     | 610- 775-2003     | Fax Number            | 508-389-2890             |
| Fax Number       | 610- 775-7044     | e-mail                | Mark.browne@us.ngrid.com |
| e-mail           | rcpenginrg@cs.com |                       |                          |
| Date             | 6/25/04           | Date                  | 6/25/04                  |

**SECTION 1. Site Information**

|                   |                                                                                                                                      |                |                                                                                                                                                |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Line Name / #     | Rotterdam-New Scotland #19 & Rotterdam-Aktamont #17 115 kV Lines                                                                     |                |                                                                                                                                                |
| Structure Number  | 5                                                                                                                                    | Structure Type | Suspension <input checked="" type="checkbox"/> Strain <input type="checkbox"/> Dead End <input type="checkbox"/> R.A. <input type="checkbox"/> |
| Installation Type | Monopole <input type="checkbox"/> Attachment <input type="checkbox"/> Extension (FWT PowerMount) <input checked="" type="checkbox"/> |                |                                                                                                                                                |

**SECTION 2. Submittals**  
 (check all applicable)

| Engineering Analysis                                                       | Construction Drawings                                                                        |
|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Analysis Report (2 copies) <input checked="" type="checkbox"/>             | Paper copy (2 sets ANSI B size) <input type="checkbox"/>                                     |
| Electronic File of Structural Analysis <input checked="" type="checkbox"/> | Electronic files on CD-R                                                                     |
| Calculations <input checked="" type="checkbox"/>                           | *.CIT <input type="checkbox"/> *.DWG <input type="checkbox"/> *.DGN <input type="checkbox"/> |
| Grounding Report/Analysis <input type="checkbox"/>                         |                                                                                              |

**SECTION 3. Structural Analysis**

Report the maximum member usage for each load case in the table below.

| Load Case                               | Structure Wind Load (p.s.f.) | Structure Section (e.g. body, leg, x-arm) | Allowable Capacity (kips) | Maximum Force (kips) | % of Capacity |
|-----------------------------------------|------------------------------|-------------------------------------------|---------------------------|----------------------|---------------|
| I. NESC Heavy                           | 16                           | leg                                       | -61.62                    | -24.6                | 40            |
| II. Extreme Wind                        | 26.07                        | leg                                       | -61.62                    | -22.8                | 37            |
| III. Heavy Ice                          | 3.52                         | X-brace bottom panel                      | -1.97                     | -1.7                 | 85            |
| IV. NESC Heavy w/ Antenna Installation  | 16                           | leg                                       | -61.62                    | -29.6                | 48            |
| V. Extreme Wind w/ Antenna Installation | 26.07                        | leg                                       | -61.62                    | -29.6                | 48            |
| VI. Heavy Ice w/ Antenna Installation   | 3.52                         | X-brace bottom panel                      | -1.97                     | -1.8                 | 92            |

NOTE: Use '+' to indicate tension, '-' to indicate compression

**SECTION 4. Antenna Support Structure Analysis**

The responsible engineer shall initial each box to verify that the component sufficiently meets the analysis requirements for each respective load case.

| Load Case                       | Connections to<br>Transmission<br>Structure | Support Frame/<br>Monopole | Antenna<br>Connection |
|---------------------------------|---------------------------------------------|----------------------------|-----------------------|
| ANSI/TIA-EIA-222-F-1966 Loading | <i>RB</i>                                   | <i>RB</i>                  | <i>RB</i>             |
| I. NESC Heavy Antenna           | <i>RB</i>                                   | <i>RB</i>                  | <i>RB</i>             |
| II. NESC Extreme Wind Antenna   | <i>RB</i>                                   | <i>RB</i>                  | <i>RB</i>             |
| III. Heavy Ice Antenna          | <i>RB</i>                                   | <i>RB</i>                  | <i>RB</i>             |

Note: TIA/EIA loads are exceeded by the extreme wind load and the NESC heavy load. The shape factor for the antenna TIA/EIA wind load is 2.0 which is higher than the 1.6 shape factor used for flat surfaces. The 2.0 shape factor was used in the calculation of extreme wind on the antennas and therefore the extreme wind load complies with and exceeds all requirements for TIA/EIA.

CONSULTANT SUBMITTAL S-1  
STRUCTURAL ANALYSIS REPORT FOR TELECOMMUNICATIONS INSTALLATION

The consulting engineer for this project hereby states that the engineering analysis and all related documents contained within this submittal comply with the National Grid Transmission Line Engineering Specification WRLS602 and all applicable codes, standards, and regulations corresponding to the development of these documents.

Robert C. Peters

Prepared By

June 25, 2004

Date

James Rarig

Approved By

Date



Engineering license stamp area.

[illegible]

CINGULAR WIRELESS SITE  
GRIDCOM NIMO TOWER 98, CLAY DEWITT 345 KV LINE, FREMONT, NY  
MICROFLECT PIPE MOUNT

PIPE MOUNT DESIGN SPREADSHEET  
DEVELOPED BY RCP ENGINEERING 1/3/2000

April 27, 2004

|                    |             |      |                    |        |                           |
|--------------------|-------------|------|--------------------|--------|---------------------------|
| Input Data         |             |      | Attachment Heights |        | antenna dimensions inches |
| main pipe          | OD pipe     | 4.50 | center ant 1       | 174.00 | ht 60.00                  |
| area antenna       | bare        | 5.42 | top att            | 180.00 | w 13.00                   |
|                    | 1/2 in. ice | 5.93 | bot att            | 170.00 | d 5.00                    |
|                    | 1.5 in. ice | 7.00 |                    |        |                           |
| antenna pipe mount | OD pipe     | 2.38 | Shape Factors      | 2.00   | antenna pipe              |
| No. of antenna     |             | 3.00 |                    |        | 1.00                      |
|                    |             |      | Offset             | 12.00  |                           |

|           |      |       |      |
|-----------|------|-------|------|
|           | ice  | wind  | OCF  |
| NESC Load | 0.50 | 4.00  | 2.50 |
| Wind Load | 0.00 | 24.06 | 1.10 |
| Ice Load  | 1.50 | 2.00  | 1.10 |

|               |                     |        |        |         |         |         |
|---------------|---------------------|--------|--------|---------|---------|---------|
| Calculations  | NESC                | Wind   | Ice    | NESC    | Wind    | ICE     |
|               | Pounds              | Pounds | Pounds | lb./ft. | lb./ft. | lb./ft. |
| Antenna       | 355.83              | 985.81 | 92.40  | Pipe    | 3.75    | 9.92    |
|               | transverse load lbs |        |        |         |         | 1.38    |
|               | NESC                | Wind   | Ice    |         |         |         |
| Reaction @ c1 | 595                 | 579    | 604    |         |         |         |
| Reaction @ c2 | -224                | 447    | -506   |         |         |         |

Vertical cable pipe and antenna loads

|                         |         |             |          |          |
|-------------------------|---------|-------------|----------|----------|
|                         | unit wt | length pipe | quantity | total wt |
| wt of pipe bare         | 10.79   | 5.00        | 1.00     | 53.95    |
| wt of pipe w/.5 ice     | 13.59   | 5.00        | 1.00     | 67.94    |
| wt of pipe w/heavy ice  | 19.18   | 5.00        | 1.00     | 95.92    |
| wt of antenna 1         | 12.00   |             | 3.00     | 36.00    |
| wt of ant1 w/.5 ice     | 40.17   |             | 3.00     | 120.51   |
| wt of ant 1 w/heavy ice | 78.50   |             | 3.00     | 235.50   |
| wt of ant mnt pipe bare | 3.65    | 4.00        | 3.00     | 43.80    |
| wt of pipe w/.5 ice     | 5.13    | 4.00        | 3.00     | 61.52    |
| wt of pipe w/heavy ice  | 8.08    | 4.00        | 3.00     | 96.96    |

|                       |         |        |             |   |
|-----------------------|---------|--------|-------------|---|
| Cable weight          | # cable | 9      | wt ea.cable | 1 |
| total weight per foot |         |        | wt ladder   | 0 |
| wt bare               | 9       | 174.00 |             |   |
| wt 0.5 in ice         | 51.75   | 174.00 |             |   |
| wt heavy ice          | 137.25  | 174.00 |             |   |

Vertical overload factors

|                |                      |       |       |
|----------------|----------------------|-------|-------|
|                | ice                  | wind  | OCF   |
| NESC Load      | 0.50                 | 4.00  | 1.50  |
| Wind Load      | 0.00                 | 24.06 | 1.10  |
| Heavy Ice Load | 1.50                 | 2.00  | 1.10  |
|                | vertical load pounds |       |       |
| Totals         | antenna              | cable | total |
| NESC           | 375                  | 13507 | 13882 |
| Wind           | 147                  | 1723  | 1870  |
| Heavy Ice      | 471                  | 26270 | 26741 |

CALCULATE 2002 NESC WIND LOADS

|                              |        |               |        |                          |
|------------------------------|--------|---------------|--------|--------------------------|
| INPUT                        |        | kz STRUCTURE  | 1.3072 | VELOCITY PRESSURE        |
| WIND FROM FIG 250-2          | 90     | Grf STRUCTURE | 0.8240 | WIND ON ANTENNA 97 24.06 |
| HEIGHT OF ANTENNA ATTACHMENT | 174.00 |               |        |                          |

## ALUMINUM COMPANY OF AMERICA SAG AND TENSION DATA

GRIDCOM NIMO TOWER 98  
CONDUCTOR TENSIONS

Conductor BLUEBIRD 2156.0 Kcmil 84/19 Stranding ACSR  
 F:\PROJECTS\NATION-1\TWR98-1\98COND.PRF Time:12:21PM Date:04/26/2004  
 Area= 1.8309 Sq. In Dia= 1.762 In Wt= 2.511 Lb/F RTS= 60300 Lb  
 Data from Chart No. 1-1020  
 English Units

Span= 700.0 Feet NESC Heavy Load Zone  
 Creep IS a Factor

| Design Points |      |       | Final |        |       |         | Initial |       |         |       |
|---------------|------|-------|-------|--------|-------|---------|---------|-------|---------|-------|
| Temp          | Ice  | Wind  | K     | Weight | Sag   | Tension | RTS     | Sag   | Tension | RTS   |
| F             | In   | Psf   | Lb/F  | Lb/F   | Ft    | Lb      | %       | Ft    | Lb      | %     |
| 0.            | .50  | 4.00  | .30   | 4.325  | 17.42 | 15252.  | 25.3    | 15.62 | 17000.  | 28.2* |
| 30.           | 1.50 | 2.00  | .00   | 8.634  | 21.67 | 24526.  | 40.7    | 21.02 | 25285.  | 41.9  |
| 32.           | .50  | .00   | .00   | 3.918  | 18.57 | 12970.  | 21.5    | 16.49 | 14592.  | 24.2  |
| 60.           | .00  | 20.00 | .00   | 3.864  | 19.81 | 11996.  | 19.9    | 17.66 | 13445.  | 22.3  |
| -20.          | .00  | .00   | .00   | 2.511  | 14.50 | 10629.  | 17.6    | 11.94 | 12903.  | 21.4  |
| 0.            | .00  | .00   | .00   | 2.511  | 15.61 | 9878.   | 16.4    | 12.97 | 11883.  | 19.7  |
| 30.           | .00  | .00   | .00   | 2.511  | 17.21 | 8967.   | 14.9    | 14.53 | 10612.  | 17.6  |
| 60.           | .00  | .00   | .00   | 2.511  | 18.73 | 8244.   | 13.7    | 16.06 | 9601.   | 15.9  |
| 167.          | .00  | .00   | .00   | 2.511  | 23.57 | 6565.   | 10.9    | 21.14 | 7309.   | 12.1  |
| 212.          | .00  | .00   | .00   | 2.511  | 25.27 | 6128.   | 10.2    | 23.07 | 6705.   | 11.1  |

\* Design Condition

# ALUMINUM COMPANY OF AMERICA SAG AND TENSION DATA

## GRIDCOM NIMO TOWER 98 STATIC WIRE TENSIONS

Conductor Nominal Diameter 7/16x 7 Strand SteelEHS

F:\PROJECTS\NATION~1\TWR98~1\98SW.PRF Time:12:21PM Date:04/26/2004

Area= .1156 Sq. In Dia= .435 In Wt= .399 Lb/F RTS= 20800 Lb

Data from Chart No. 1-1293

English Units

Span= 700.0 Feet NESC Heavy Load Zone

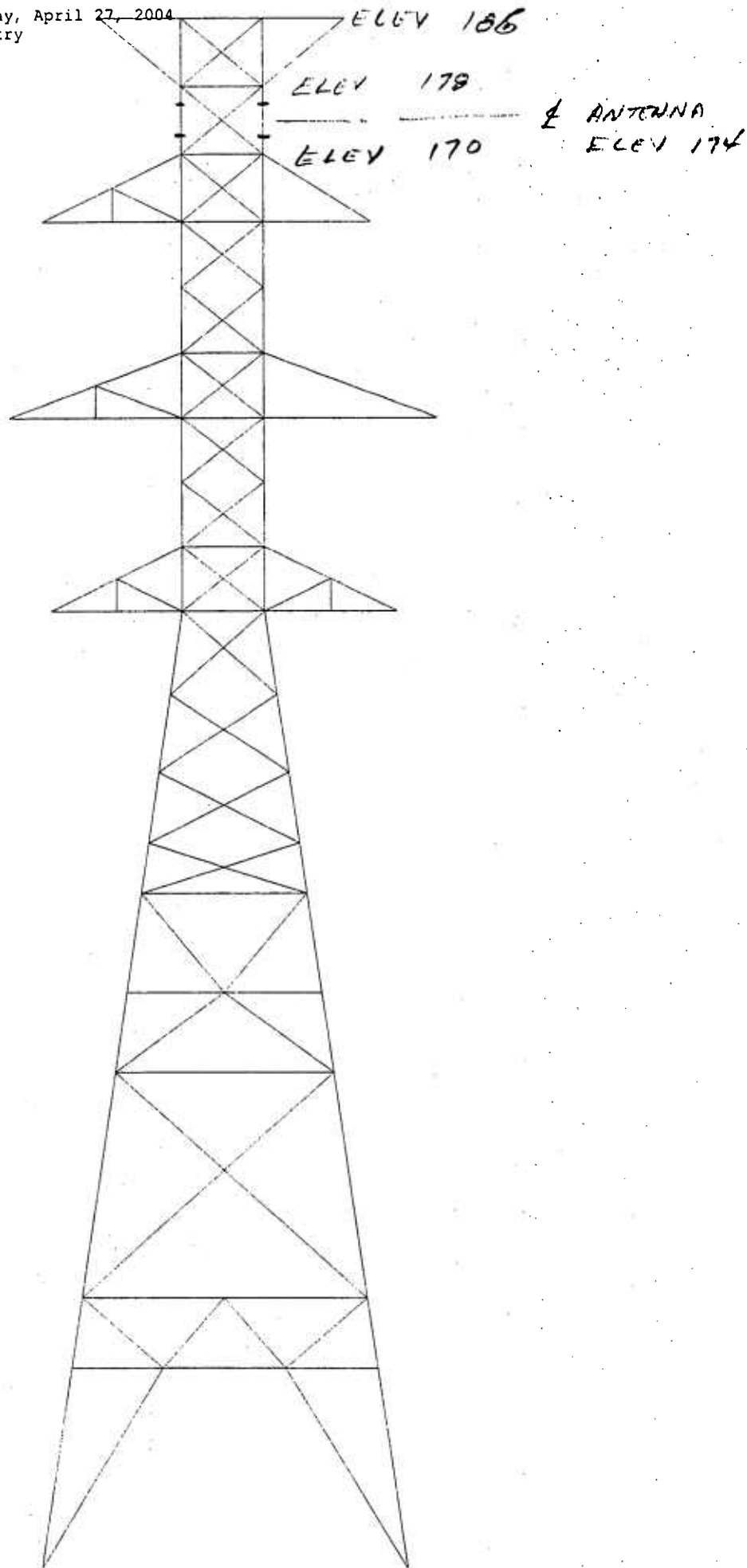
Creep is NOT a Factor

| Design Points |      |       |      | Final  |       |         |      | Initial |         |       |  |
|---------------|------|-------|------|--------|-------|---------|------|---------|---------|-------|--|
| Temp          | Ice  | Wind  | K    | Weight | Sag   | Tension | RTS  | Sag     | Tension | RTS   |  |
| F             | In   | Psf   | Lb/F | Lb/F   | Ft    | Lb      | %    | Ft      | Lb      | %     |  |
| 0.            | .50  | 4.00  | .30  | 1.391  | 15.06 | 5672.   | 27.3 | 14.23   | 6000.   | 28.8* |  |
| 30.           | 1.50 | 2.00  | .00  | 4.050  | 23.84 | 10472.  | 50.3 | 23.84   | 10472.  | 50.3  |  |
| 32.           | .50  | .00   | .00  | .981   | 13.60 | 4424.   | 21.3 | 12.56   | 4789.   | 23.0  |  |
| 60.           | .00  | 20.00 | .00  | .828   | 13.36 | 3802.   | 18.3 | 12.19   | 4166.   | 20.0  |  |
| -20.          | .00  | .00   | .00  | .399   | 7.35  | 3328.   | 16.0 | 6.21    | 3935.   | 18.9  |  |
| 0.            | .00  | .00   | .00  | .399   | 7.91  | 3092.   | 14.9 | 6.65    | 3674.   | 17.7  |  |
| 30.           | .00  | .00   | .00  | .399   | 8.81  | 2775.   | 13.3 | 7.39    | 3310.   | 15.9  |  |
| 60.           | .00  | .00   | .00  | .399   | 9.78  | 2502.   | 12.0 | 8.20    | 2983.   | 14.3  |  |
| 167.          | .00  | .00   | .00  | .399   | 13.37 | 1831.   | 8.8  | 11.51   | 2126.   | 10.2  |  |
| 212.          | .00  | .00   | .00  | .399   | 14.84 | 1650.   | 7.9  | 12.97   | 1888.   | 9.1   |  |

\* Design Condition



R.C.P. Engineering, Project: "twr 98"  
Tower Version 6.32, 8:45:19 AM Tuesday, April 27, 2004  
Load case displayed: Undeformed Geometry



Z

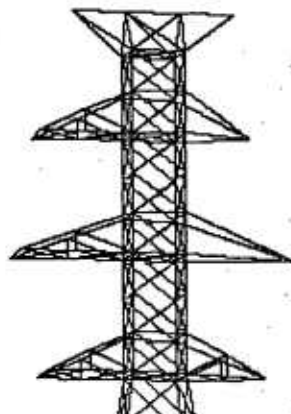
X-Y

\*\*\*\*\*  
 \* TOWER ANALYSIS AND DESIGN - (C) 1986-2000 Power Line Systems, Inc. \*  
 \*\*\*\*\*

Project Name : GRIDCOM Niagara Mohawk Tower 98 Clay Dewitt 345 kV Transmission Tower  
 Project Notes: 185 foot Type G tower Bethlehem  
 Project File : c:\pls\tower\projects\national grid\twr 98.tow  
 Date run : 1:58:35 PM Tuesday, April 27, 2004  
 by : Tower Version 6.32  
 Licensed to : R.C.P. Engineering

Successfully performed nonlinear analysis

The model has 0 warnings.



Nonlinear convergence parameters: Use Standard Parameters  
 Member check option: ASCE 10  
 Connection rupture check: Not Checked  
 Apply wind only to face: No

Joints Geometry:

| Joint Label | Symmetry Code | X Coord. (ft) | Y Coord. (ft) | Z Coord. (ft) | X Disp. Rest. | Y Disp. Rest. | Z Disp. Rest. | X Rot. Rest. | Y Rot. Rest. | Z Rot. Rest. |
|-------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--------------|--------------|--------------|
| ZP          | XY-Symmetry   | 22            | 22            | 1             | Fixed         | Fixed         | Fixed         | Fixed        | Fixed        | Fixed        |
| WP          | XY-Symmetry   | 5             | 5             | 116           | Free          | Free          | Free          | Free         | Free         | Free         |
| AP          | XY-Symmetry   | 5             | 5             | 178           | Free          | Free          | Free          | Free         | Free         | Free         |
| TOPP        | X-Symmetry    | 0             | 5             | 186           | Free          | Free          | Free          | Free         | Free         | Free         |
| SWP         | X-Symmetry    | 0             | 15            | 186           | Free          | Free          | Free          | Free         | Free         | Free         |
| TAP         | None          | 0             | 18            | 162           | Free          | Free          | Free          | Free         | Free         | Free         |
| TASQP       | Y-Symmetry    | 5             | -22           | 162           | Free          | Free          | Free          | Free         | Free         | Free         |
| MAP         | None          | 0             | 26            | 139           | Free          | Free          | Free          | Free         | Free         | Free         |
| MASQP       | Y-Symmetry    | 5             | -26           | 139           | Free          | Free          | Free          | Free         | Free         | Free         |
| BAP         | None          | 0             | 21            | 116           | Free          | Free          | Free          | Free         | Free         | Free         |
| BASQP       | Y-Symmetry    | 5             | -21           | 116           | Free          | Free          | Free          | Free         | Free         | Free         |
| ZX          | X-GenXY       | 22            | -22           | 1             | Fixed         | Fixed         | Fixed         | Fixed        | Fixed        | Fixed        |
| ZXY         | XY-GenXY      | -22           | -22           | 1             | Fixed         | Fixed         | Fixed         | Fixed        | Fixed        | Fixed        |
| ZY          | Y-GenXY       | -22           | 22            | 1             | Fixed         | Fixed         | Fixed         | Fixed        | Fixed        | Fixed        |
| WX          | X-GenXY       | 5             | -5            | 116           | Free          | Free          | Free          | Free         | Free         | Free         |

|       |          |    |     |     |      |      |      |      |      |      |
|-------|----------|----|-----|-----|------|------|------|------|------|------|
| WXY   | XY-GenXY | -5 | -5  | 116 | Free | Free | Free | Free | Free | Free |
| WY    | Y-GenXY  | -5 | 5   | 116 | Free | Free | Free | Free | Free | Free |
| AX    | X-GenXY  | 5  | -5  | 178 | Free | Free | Free | Free | Free | Free |
| AXY   | XY-GenXY | -5 | -5  | 178 | Free | Free | Free | Free | Free | Free |
| AY    | Y-GenXY  | -5 | 5   | 178 | Free | Free | Free | Free | Free | Free |
| TOPX  | X-Gen    | 0  | -5  | 186 | Free | Free | Free | Free | Free | Free |
| SWX   | X-Gen    | 0  | -15 | 186 | Free | Free | Free | Free | Free | Free |
| TASQY | Y-Gen    | -5 | -22 | 162 | Free | Free | Free | Free | Free | Free |
| MASQY | Y-Gen    | -5 | -26 | 139 | Free | Free | Free | Free | Free | Free |
| BASQY | Y-Gen    | -5 | -21 | 116 | Free | Free | Free | Free | Free | Free |

Secondary Joints:

| Joint Label | Symmetry Code | Origin Joint | End Joint | Fraction | Elevation (ft) | X Disp. Rest. | Y Disp. Rest. | Z Disp. Rest. | X Rot. Rest. | Y Rot. Rest. | Z Rot. Rest. |
|-------------|---------------|--------------|-----------|----------|----------------|---------------|---------------|---------------|--------------|--------------|--------------|
| BS          | XY-Symmetry   | AP           | WP        | 0        | 170            | Free          | Free          | Free          | Free         | Free         | Free         |
| CS          | XY-Symmetry   | AP           | WP        | 0        | 162            | Free          | Free          | Free          | Free         | Free         | Free         |
| DS          | XY-Symmetry   | AP           | WP        | 0        | 154.3          | Free          | Free          | Free          | Free         | Free         | Free         |
| ES          | XY-Symmetry   | AP           | WP        | 0        | 146.7          | Free          | Free          | Free          | Free         | Free         | Free         |
| FS          | XY-Symmetry   | AP           | WP        | 0        | 139            | Free          | Free          | Free          | Free         | Free         | Free         |
| GS          | XY-Symmetry   | AP           | WP        | 0        | 131.3          | Free          | Free          | Free          | Free         | Free         | Free         |
| HS          | XY-Symmetry   | AP           | WP        | 0        | 123.7          | Free          | Free          | Free          | Free         | Free         | Free         |
| IS          | XY-Symmetry   | WP           | ZP        | 0        | 106            | Free          | Free          | Free          | Free         | Free         | Free         |
| JS          | XY-Symmetry   | WP           | ZP        | 0        | 96.5           | Free          | Free          | Free          | Free         | Free         | Free         |
| KS          | XY-Symmetry   | WP           | ZP        | 0        | 88             | Free          | Free          | Free          | Free         | Free         | Free         |
| LS          | XY-Symmetry   | WP           | ZP        | 0        | 82             | Free          | Free          | Free          | Free         | Free         | Free         |
| MS          | XY-Symmetry   | WP           | ZP        | 0        | 70             | Free          | Free          | Free          | Free         | Free         | Free         |
| NS          | XY-Symmetry   | WP           | ZP        | 0        | 60.5           | Free          | Free          | Free          | Free         | Free         | Free         |
| OS          | XY-Symmetry   | WP           | ZP        | 0        | 33.5           | Free          | Free          | Free          | Free         | Free         | Free         |
| PS          | XY-Symmetry   | WP           | ZP        | 0        | 25             | Free          | Free          | Free          | Free         | Free         | Free         |
| L1S         | XY-Symmetry   | PS           | PX        | 0.3      | 0              | Free          | Free          | Free          | Free         | Free         | Free         |
| L3S         | XY-Symmetry   | PS           | PY        | 0.3      | 0              | Free          | Free          | Free          | Free         | Free         | Free         |
| O1S         | Y-Symmetry    | OS           | OX        | 0.5      | 0              | Free          | Free          | Free          | Free         | Free         | Free         |
| O2S         | X-Symmetry    | OS           | OY        | 0.5      | 0              | Free          | Free          | Free          | Free         | Free         | Free         |
| M1S         | Y-Symmetry    | MS           | MX        | 0.5      | 0              | Free          | Free          | Free          | Free         | Free         | Free         |
| M2S         | X-Symmetry    | MS           | MY        | 0.5      | 0              | Free          | Free          | Free          | Free         | Free         | Free         |
| BMS         | Y-Symmetry    | BASQP        | WX        | 0.5      | 0              | Free          | Free          | Free          | Free         | Free         | Free         |
| BMXS        | Y-Symmetry    | BASQP        | HX        | 0.5      | 0              | Free          | Free          | Free          | Free         | Free         | Free         |
| MMS         | Y-Symmetry    | MASQP        | FX        | 0.5      | 0              | Free          | Free          | Free          | Free         | Free         | Free         |
| MMXS        | Y-Symmetry    | MASQP        | EX        | 0.5      | 0              | Free          | Free          | Free          | Free         | Free         | Free         |
| TMS         | Y-Symmetry    | TASQP        | CX        | 0.5      | 0              | Free          | Free          | Free          | Free         | Free         | Free         |
| TMXS        | Y-Symmetry    | TASQP        | BX        | 0.5      | 0              | Free          | Free          | Free          | Free         | Free         | Free         |
| BPMs        | Y-Symmetry    | BAP          | WP        | 0.5      | 0              | Free          | Free          | Free          | Free         | Free         | Free         |
| BPMXS       | Y-Symmetry    | BAP          | HS        | 0.5      | 0              | Free          | Free          | Free          | Free         | Free         | Free         |
| BX          | X-GenXY       | AP           | WP        | 0        | 170            | Free          | Free          | Free          | Free         | Free         | Free         |
| BXY         | XY-GenXY      | AP           | WP        | 0        | 170            | Free          | Free          | Free          | Free         | Free         | Free         |
| BY          | Y-GenXY       | AP           | WP        | 0        | 170            | Free          | Free          | Free          | Free         | Free         | Free         |
| CX          | X-GenXY       | AP           | WP        | 0        | 162            | Free          | Free          | Free          | Free         | Free         | Free         |
| CKY         | XY-GenXY      | AP           | WP        | 0        | 162            | Free          | Free          | Free          | Free         | Free         | Free         |
| CY          | Y-GenXY       | AP           | WP        | 0        | 162            | Free          | Free          | Free          | Free         | Free         | Free         |
| DX          | X-GenXY       | AP           | WP        | 0        | 154.3          | Free          | Free          | Free          | Free         | Free         | Free         |
| DXY         | XY-GenXY      | AP           | WP        | 0        | 154.3          | Free          | Free          | Free          | Free         | Free         | Free         |
| DY          | Y-GenXY       | AP           | WP        | 0        | 154.3          | Free          | Free          | Free          | Free         | Free         | Free         |
| EX          | X-GenXY       | AP           | WP        | 0        | 146.7          | Free          | Free          | Free          | Free         | Free         | Free         |
| EXY         | XY-GenXY      | AP           | WP        | 0        | 146.7          | Free          | Free          | Free          | Free         | Free         | Free         |
| EY          | Y-GenXY       | AP           | WP        | 0        | 146.7          | Free          | Free          | Free          | Free         | Free         | Free         |
| FX          | X-GenXY       | AP           | WP        | 0        | 139            | Free          | Free          | Free          | Free         | Free         | Free         |
| FXY         | XY-GenXY      | AP           | WP        | 0        | 139            | Free          | Free          | Free          | Free         | Free         | Free         |
| FY          | Y-GenXY       | AP           | WP        | 0        | 139            | Free          | Free          | Free          | Free         | Free         | Free         |
| GX          | X-GenXY       | AP           | WP        | 0        | 131.3          | Free          | Free          | Free          | Free         | Free         | Free         |
| GXY         | XY-GenXY      | AP           | WP        | 0        | 131.3          | Free          | Free          | Free          | Free         | Free         | Free         |
| GY          | Y-GenXY       | AP           | WP        | 0        | 131.3          | Free          | Free          | Free          | Free         | Free         | Free         |
| HX          | X-GenXY       | AP           | WP        | 0        | 123.7          | Free          | Free          | Free          | Free         | Free         | Free         |
| HXY         | XY-GenXY      | AP           | WP        | 0        | 123.7          | Free          | Free          | Free          | Free         | Free         | Free         |
| HY          | Y-GenXY       | AP           | WP        | 0        | 123.7          | Free          | Free          | Free          | Free         | Free         | Free         |
| IX          | X-GenXY       | WP           | ZP        | 0        | 106            | Free          | Free          | Free          | Free         | Free         | Free         |
| IXY         | XY-GenXY      | WP           | ZP        | 0        | 106            | Free          | Free          | Free          | Free         | Free         | Free         |
| IY          | Y-GenXY       | WP           | ZP        | 0        | 106            | Free          | Free          | Free          | Free         | Free         | Free         |

|       |          |       |    |     |      |      |      |      |      |      |      |
|-------|----------|-------|----|-----|------|------|------|------|------|------|------|
| JX    | X-GenXY  | WP    | ZP | 0   | 96.5 | Free | Free | Free | Free | Free | Free |
| JXY   | XY-GenXY | WP    | ZP | 0   | 96.5 | Free | Free | Free | Free | Free | Free |
| JY    | Y-GenXY  | WP    | ZP | 0   | 96.5 | Free | Free | Free | Free | Free | Free |
| KX    | X-GenXY  | WP    | ZP | 0   | 88   | Free | Free | Free | Free | Free | Free |
| KXY   | XY-GenXY | WP    | ZP | 0   | 88   | Free | Free | Free | Free | Free | Free |
| KY    | Y-GenXY  | WP    | ZP | 0   | 88   | Free | Free | Free | Free | Free | Free |
| LX    | X-GenXY  | WP    | ZP | 0   | 82   | Free | Free | Free | Free | Free | Free |
| LXY   | XY-GenXY | WP    | ZP | 0   | 82   | Free | Free | Free | Free | Free | Free |
| LY    | Y-GenXY  | WP    | ZP | 0   | 82   | Free | Free | Free | Free | Free | Free |
| MX    | X-GenXY  | WP    | ZP | 0   | 70   | Free | Free | Free | Free | Free | Free |
| MXY   | XY-GenXY | WP    | ZP | 0   | 70   | Free | Free | Free | Free | Free | Free |
| MY    | Y-GenXY  | WP    | ZP | 0   | 70   | Free | Free | Free | Free | Free | Free |
| NX    | X-GenXY  | WP    | ZP | 0   | 60.5 | Free | Free | Free | Free | Free | Free |
| NXY   | XY-GenXY | WP    | ZP | 0   | 60.5 | Free | Free | Free | Free | Free | Free |
| NY    | Y-GenXY  | WP    | ZP | 0   | 60.5 | Free | Free | Free | Free | Free | Free |
| OX    | X-GenXY  | WP    | ZP | 0   | 33.5 | Free | Free | Free | Free | Free | Free |
| OXY   | XY-GenXY | WP    | ZP | 0   | 33.5 | Free | Free | Free | Free | Free | Free |
| OY    | Y-GenXY  | WP    | ZP | 0   | 33.5 | Free | Free | Free | Free | Free | Free |
| PX    | X-GenXY  | WP    | ZP | 0   | 25   | Free | Free | Free | Free | Free | Free |
| PXY   | XY-GenXY | WP    | ZP | 0   | 25   | Free | Free | Free | Free | Free | Free |
| PY    | Y-GenXY  | WP    | ZP | 0   | 25   | Free | Free | Free | Free | Free | Free |
| L1X   | X-GenXY  | PS    | PX | 0.3 | 0    | Free | Free | Free | Free | Free | Free |
| L1XY  | XY-GenXY | PS    | PX | 0.3 | 0    | Free | Free | Free | Free | Free | Free |
| L1Y   | Y-GenXY  | PS    | PX | 0.3 | 0    | Free | Free | Free | Free | Free | Free |
| L3X   | X-GenXY  | PS    | PY | 0.3 | 0    | Free | Free | Free | Free | Free | Free |
| L3XY  | XY-GenXY | PS    | PY | 0.3 | 0    | Free | Free | Free | Free | Free | Free |
| L3Y   | Y-GenXY  | PS    | PY | 0.3 | 0    | Free | Free | Free | Free | Free | Free |
| O1Y   | Y-Gen    | OS    | OX | 0.5 | 0    | Free | Free | Free | Free | Free | Free |
| O2X   | X-Gen    | OS    | OY | 0.5 | 0    | Free | Free | Free | Free | Free | Free |
| M1Y   | Y-Gen    | MS    | MX | 0.5 | 0    | Free | Free | Free | Free | Free | Free |
| M2X   | X-Gen    | MS    | MY | 0.5 | 0    | Free | Free | Free | Free | Free | Free |
| BMX   | Y-Gen    | BASQP | WX | 0.5 | 0    | Free | Free | Free | Free | Free | Free |
| BMXY  | Y-Gen    | BASQP | HX | 0.5 | 0    | Free | Free | Free | Free | Free | Free |
| MMY   | Y-Gen    | MASQP | FX | 0.5 | 0    | Free | Free | Free | Free | Free | Free |
| MMXY  | Y-Gen    | MASQP | EX | 0.5 | 0    | Free | Free | Free | Free | Free | Free |
| TMX   | Y-Gen    | TASQP | CX | 0.5 | 0    | Free | Free | Free | Free | Free | Free |
| TMXY  | Y-Gen    | TASQP | BX | 0.5 | 0    | Free | Free | Free | Free | Free | Free |
| BPMY  | Y-Gen    | BAP   | WP | 0.5 | 0    | Free | Free | Free | Free | Free | Free |
| BPMXY | Y-Gen    | BAP   | HS | 0.5 | 0    | Free | Free | Free | Free | Free | Free |

Steel Material Properties:

| Steel Material Label | Modulus of Elasticity (ksi) | Yield Stress (ksi) | Ultimate Stress (ksi) | Member All. Stress Hyp. 1 (ksi) | Member Stress Hyp. 2 (ksi) | Member Rupture Hyp. 1 (ksi) | Member Rupture Hyp. 2 (ksi) | Member Bearing Hyp. 1 (ksi) | Member Bearing Hyp. 2 (ksi) |
|----------------------|-----------------------------|--------------------|-----------------------|---------------------------------|----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| A 36                 | 2.9e+004                    | 36                 | 48                    | 0                               | 0                          | 0                           | 0                           | 0                           | 0                           |
| A572-50              | 2.9e+004                    | 50                 | 65                    | 0                               | 0                          | 0                           | 0                           | 0                           | 0                           |

Angle Properties:

| Angle Type | Angle Size (in) | Long Leg (in) | Short Leg (in) | Thick. (in) | Unit Weight (lbs/ft) | Gross Area (in^2) | w/t Ratio | Radius of Gyration Rx (in) | Radius of Gyration Ry (in) | Radius of Gyration Rz (in) | Number of Angles | Wind Width (in) | Short Edge Dist. (in) | Long Edge Dist. (in) | Section Modulus (in^3) |
|------------|-----------------|---------------|----------------|-------------|----------------------|-------------------|-----------|----------------------------|----------------------------|----------------------------|------------------|-----------------|-----------------------|----------------------|------------------------|
| SAE        | 6X6X0.375       | 6             | 6              | 0.375       | 15                   | 4.36              | 14        | 1.88                       | 1.88                       | 1.19                       | 1                | 6               | 0                     | 0                    | 0                      |
| SAE        | 5X5X0.375       | 5             | 5              | 0.375       | 12                   | 3.61              | 11        | 1.56                       | 1.56                       | 0.99                       | 1                | 5               | 0                     | 0                    | 0                      |
| SAE        | 5X5X0.3125      | 5             | 5              | 0.3125      | 10                   | 3.03              | 13        | 1.57                       | 1.57                       | 0.994                      | 1                | 5               | 0                     | 0                    | 0                      |
| SAE        | 4X4X0.3125      | 4             | 4              | 0.3125      | 8.2                  | 2.4               | 11        | 1.24                       | 1.24                       | 0.791                      | 1                | 4               | 0                     | 0                    | 0                      |
| SAE        | 4X4X0.25        | 4             | 4              | 0.25        | 6.6                  | 1.94              | 14        | 1.25                       | 1.25                       | 0.795                      | 1                | 4               | 0                     | 0                    | 0                      |
| SAE        | 3X3X0.25        | 3             | 3              | 0.25        | 4.9                  | 1.44              | 9.8       | 0.93                       | 0.93                       | 0.592                      | 1                | 3               | 0                     | 0                    | 0                      |
| SAE        | 3X3X0.1875      | 3             | 3              | 0.1875      | 3.7                  | 1.09              | 13        | 0.939                      | 0.939                      | 0.596                      | 1                | 3               | 0                     | 0                    | 0                      |
| SAE        | 2.5X2.5X0.25    | 2.5           | 2.5            | 0.25        | 4.1                  | 1.19              | 8.8       | 0.769                      | 0.769                      | 0.491                      | 1                | 2.5             | 0                     | 0                    | 0                      |
| SAE        | 2X2X0.25        | 2             | 2              | 0.25        | 3.2                  | 0.94              | 5         | 0.609                      | 0.609                      | 0.391                      | 1                | 2               | 0                     | 0                    | 0                      |
| SAU        | 3X2.5X0.25      | 3             | 2.5            | 0.25        | 4.5                  | 1.31              | 9.5       | 0.945                      | 0.753                      | 0.528                      | 1                | 3               | 0                     | 0                    | 0                      |
| SAU        | 3X2X0.25        | 3             | 2              | 0.25        | 4.1                  | 1.19              | 9.8       | 0.957                      | 0.574                      | 0.435                      | 1                | 3               | 0                     | 0                    | 0                      |
| SAU        | 2.5X2X0.1875    | 2.5           | 2              | 0.1875      | 2.8                  | 0.81              | 11        | 0.793                      | 0.6                        | 0.427                      | 1                | 2.5             | 0                     | 0                    | 0                      |
| SAU        | 2.5X1.5X0.1875  | 2.5           | 1.5            | 0.1875      | 2.4                  | 0.71              | 11        | 0.803                      | 0.422                      | 0.327                      | 1                | 2.5             | 0                     | 0                    | 0                      |

|     |              |     |     |        |     |      |     |       |       |       |   |     |   |   |   |
|-----|--------------|-----|-----|--------|-----|------|-----|-------|-------|-------|---|-----|---|---|---|
| SAE | 8X8X1.125    | 8   | 8   | 1.125  | 57  | 16.7 | 5.6 | 2.42  | 2.42  | 1.56  | 1 | 8   | 0 | 0 | 0 |
| SAE | 8X8X1        | 8   | 8   | 1      | 51  | 15   | 6.4 | 2.44  | 2.44  | 1.56  | 1 | 8   | 0 | 0 | 0 |
| SAE | 8X8X0.75     | 8   | 8   | 0.75   | 39  | 11.4 | 8.8 | 2.47  | 2.47  | 1.58  | 1 | 8   | 0 | 0 | 0 |
| SAE | 6X6X0.5      | 6   | 6   | 0.5    | 20  | 5.75 | 10  | 1.86  | 1.86  | 1.18  | 1 | 6   | 0 | 0 | 0 |
| SAE | 6X6X0.3125   | 6   | 6   | 0.3125 | 13  | 3.65 | 17  | 1.89  | 1.89  | 1.2   | 1 | 6   | 0 | 0 | 0 |
| SAE | 4X4X0.375    | 4   | 4   | 0.375  | 9.8 | 2.86 | 8.7 | 1.23  | 1.23  | 0.788 | 1 | 4   | 0 | 0 | 0 |
| SAU | 6X4X0.4375   | 6   | 4   | 0.4375 | 14  | 4.18 | 12  | 1.92  | 1.16  | 0.873 | 1 | 6   | 0 | 0 | 0 |
| SAU | 6X4X0.25     | 6   | 4   | 0.25   | 8.3 | 2.44 | 21  | 1.95  | 1.18  | 0.887 | 1 | 6   | 0 | 0 | 0 |
| SAU | 6X3.5X0.25   | 6   | 3.5 | 0.25   | 7.9 | 2.31 | 21  | 1.96  | 1.01  | 0.777 | 1 | 6   | 0 | 0 | 0 |
| SAU | 5X3.5X0.3125 | 5   | 3.5 | 0.3125 | 8.7 | 2.56 | 13  | 1.61  | 1.03  | 0.766 | 1 | 5   | 0 | 0 | 0 |
| SAU | 5X3.5X0.25   | 5   | 3.5 | 0.25   | 7   | 2.06 | 17  | 1.62  | 1.04  | 0.77  | 1 | 5   | 0 | 0 | 0 |
| SAU | 4X3.5X0.25   | 4   | 3.5 | 0.25   | 6.2 | 1.81 | 13  | 1.27  | 1.07  | 0.734 | 1 | 4   | 0 | 0 | 0 |
| SAU | 4X3X0.3125   | 4   | 3   | 0.3125 | 7.2 | 2.09 | 10  | 1.27  | 0.887 | 0.647 | 1 | 4   | 0 | 0 | 0 |
| SAU | 4X3X0.25     | 4   | 3   | 0.25   | 5.8 | 1.69 | 13  | 1.28  | 0.896 | 0.651 | 1 | 4   | 0 | 0 | 0 |
| SAU | 3.5X3X0.25   | 3.5 | 3   | 0.25   | 5.4 | 1.56 | 11  | 1.11  | 0.914 | 0.631 | 1 | 3.5 | 0 | 0 | 0 |
| SAU | 3.5X2.5X0.25 | 3.5 | 2.5 | 0.25   | 4.9 | 1.44 | 11  | 1.12  | 0.735 | 0.544 | 1 | 3.5 | 0 | 0 | 0 |
| SAU | 3X2.5X0.3125 | 3   | 2.5 | 0.3125 | 5.6 | 1.62 | 7.4 | 0.937 | 0.744 | 0.525 | 1 | 3   | 0 | 0 | 0 |
| SAU | 2.5X2X0.25   | 2.5 | 2   | 0.25   | 3.6 | 1.06 | 7.8 | 0.784 | 0.592 | 0.424 | 1 | 2.5 | 0 | 0 | 0 |
| SAU | 2.5X1.5X0.25 | 2.5 | 1.5 | 0.25   | 3.2 | 0.94 | 7.8 | 0.794 | 0.415 | 0.324 | 1 | 2.5 | 0 | 0 | 0 |
| SAU | 2X1.5X0.1875 | 2   | 1.5 | 0.1875 | 2.1 | 0.62 | 8.3 | 0.632 | 0.44  | 0.322 | 1 | 2   | 0 | 0 | 0 |
| ST  | 4WF23        | 6.5 | 4   | 0.398  | 6   | 3.53 | 16  | 1     | 1.61  | 1.6   | 1 | 4   | 0 | 0 | 0 |

# Angle Groups:

| Group Label | Group Description | Angle Type | Angle Size     | Material Type | Element Type | Group Type | Optimize Group | Allow. Angle (in) | Add. Width For Optimize |
|-------------|-------------------|------------|----------------|---------------|--------------|------------|----------------|-------------------|-------------------------|
| 102         | TOWER             | SAE        | 8X8X1          | A572-50       | Beam         | Leg        | None           | 0.000             |                         |
| 114         | TOWER             | SAE        | 8X8X1          | A572-50       | Beam         | Leg        | None           | 0.000             |                         |
| 117         | TOWER             | SAU        | 3X2.5X0.25     | A 36          | T-Only       | Other      | None           | 0.000             |                         |
| 123         | TOWER             | SAE        | 3X3X0.25       | A 36          | Beam         | Other      | None           | 0.000             |                         |
| 124         | TOWER             | SAU        | 4X3X0.25       | A 36          | Beam         | Other      | None           | 0.000             |                         |
| 135         | TOWER             | SAE        | 4X4X0.3125     | A 36          | Truss        | Other      | None           | 0.000             |                         |
| 137         | TOWER             | SAE        | 4X4X0.3125     | A 36          | Truss        | Other      | None           | 0.000             |                         |
| 300         | TOWER             | SAE        | 8X8X1.125      | A572-50       | Beam         | Leg        | None           | 0.000             |                         |
| 317         | TOWER             | SAE        | 8X8X1.125      | A572-50       | Beam         | Leg        | None           | 0.000             |                         |
| 302         | TOWER             | SAU        | 4X3X0.3125     | A 36          | Truss        | Other      | None           | 0.000             |                         |
| 320         | TOWER             | SAU        | 6X3.5X0.25     | A 36          | Beam         | Other      | None           | 0.000             |                         |
| 321         | TOWER             | SAU        | 3X2X0.25       | A 36          | T-Only       | Other      | None           | 0.000             |                         |
| 327         | TOWER             | SAE        | 4X4X0.375      | A 36          | T-Only       | Other      | None           | 0.000             |                         |
| 350         | TOWER             | SAE        | 8X8X1          | A572-50       | Beam         | Leg        | None           | 0.000             |                         |
| 395         | TOWER             | SAU        | 5X3.5X0.25     | A 36          | Truss        | Other      | None           | 0.000             |                         |
| 1031        | TOWER             | SAE        | 5X5X0.3125     | A 36          | Truss        | Other      | None           | 0.000             |                         |
| 1033        | TOWER             | SAE        | 4X4X0.375      | A 36          | Truss        | Other      | None           | 0.000             |                         |
| 1036        | TOWER             | SAE        | 4X4X0.25       | A 36          | Truss        | Other      | None           | 0.000             |                         |
| 2100        | TOWER             | SAE        | 8X8X0.75       | A572-50       | Beam         | Leg        | None           | 0.000             |                         |
| 2103        | TOWER             | SAE        | 5X5X0.375      | A 36          | Truss        | Other      | None           | 0.000             |                         |
| 2111        | TOWER             | SAU        | 2.5X1.5X0.25   | A 36          | T-Only       | Other      | None           | 0.000             |                         |
| 2112        | TOWER             | SAE        | 6X6X0.5        | A572-50       | Beam         | Leg        | None           | 0.000             |                         |
| 2115        | TOWER             | SAE        | 4X4X0.3125     | A 36          | Truss        | Other      | None           | 0.000             |                         |
| 2119        | TOWER             | SAU        | 2.5X1.5X0.25   | A 36          | T-Only       | Other      | None           | 0.000             |                         |
| 2129        | TOWER             | SAE        | 4X4X0.25       | A572-50       | Beam         | Leg        | None           | 0.000             |                         |
| 2131        | TOWER             | SAE        | 2.5X2.5X0.25   | A 36          | Truss        | Other      | None           | 0.000             |                         |
| 2134        | TOWER             | SAU        | 2.5X1.5X0.25   | A 36          | T-Only       | Other      | None           | 0.000             |                         |
| 2140        | TOWER             | SAE        | 3X3X0.25       | A 36          | Truss        | Other      | None           | 0.000             |                         |
| 2142        | TOWER             | SAU        | 2.5X2X0.25     | A 36          | Truss        | Other      | None           | 0.000             |                         |
| 2145        | TOWER             | ST         | 4WF23          | A 36          | Beam         | Other      | None           | 0.000             |                         |
| 2148        | TOWER             | SAE        | 3X3X0.25       | A 36          | Truss        | Other      | None           | 0.000             |                         |
| 2157        | TOWER             | SAU        | 3.5X2.5X0.25   | A 36          | Truss        | Other      | None           | 0.000             |                         |
| 2162        | TOWER             | SAU        | 5X3.5X0.3125   | A 36          | Truss        | Other      | None           | 0.000             |                         |
| 2163        | TOWER             | SAE        | 5X5X0.3125     | A 36          | Truss        | Other      | None           | 0.000             |                         |
| 2165        | TOWER             | SAE        | 3X3X0.25       | A 36          | T-Only       | Other      | None           | 0.000             |                         |
| 2166        | TOWER             | SAE        | 3X3X0.1875     | A 36          | T-Only       | Other      | None           | 0.000             |                         |
| 2167        | TOWER             | SAU        | 2.5X1.5X0.1875 | A 36          | Truss        | Other      | None           | 0.000             |                         |
| 2168        | TOWER             | SAE        | 2.5X2.5X0.25   | A 36          | Truss        | Other      | None           | 0.000             |                         |
| 2169        | TOWER             | SAE        | 2.5X2.5X0.25   | A 36          | Truss        | Other      | None           | 0.000             |                         |
| 2170        | TOWER             | SAE        | 5X5X0.375      | A 36          | Truss        | Other      | None           | 0.000             |                         |
| 2177        | TOWER             | SAU        | 3.5X3X0.25     | A 36          | Truss        | Other      | None           | 0.000             |                         |

|      |       |     |              |      |              |      |       |
|------|-------|-----|--------------|------|--------------|------|-------|
| 2179 | TOWER | SAE | 2X2X0.25     | A 36 | T-Only Other | None | 0.000 |
| 2181 | TOWER | SAU | 2X1.5X0.1875 | A 36 | Truss Other  | None | 0.000 |
| 2183 | TOWER | SAU | 2.5X2X0.1875 | A 36 | T-Only Other | None | 0.000 |
| 2189 | TOWER | SAU | 2.5X2X0.1875 | A 36 | T-Only Other | None | 0.000 |
| 2192 | TOWER | SAU | 6X4X0.4375   | A 36 | Truss Other  | None | 0.000 |
| 2194 | TOWER | SAE | 6X6X0.3125   | A 36 | Truss Other  | None | 0.000 |
| 2195 | TOWER | SAE | 3X3X0.25     | A 36 | Truss Other  | None | 0.000 |
| 2199 | TOWER | SAE | 6X6X0.375    | A 36 | Truss Other  | None | 0.000 |
| 2401 | TOWER | SAE | 3X3X0.25     | A 36 | Truss Other  | None | 0.000 |
| 2403 | TOWER | SAU | 3.5X3X0.25   | A 36 | Truss Other  | None | 0.000 |
| 2407 | TOWER | SAU | 2.5X2X0.25   | A 36 | T-Only Other | None | 0.000 |
| 2417 | TOWER | SAE | 3X3X0.1875   | A 36 | T-Only Other | None | 0.000 |
| 2419 | TOWER | SAU | 2X1.5X0.1875 | A 36 | Truss Other  | None | 0.000 |
| 2422 | TOWER | SAU | 5X3.5X0.3125 | A 36 | Truss Other  | None | 0.000 |
| 2426 | TOWER | SAE | 3X3X0.25     | A 36 | Truss Other  | None | 0.000 |
| 2427 | TOWER | SAE | 5X5X0.3125   | A 36 | Truss Other  | None | 0.000 |
| 2428 | TOWER | SAE | 2.5X2.5X0.25 | A 36 | Truss Other  | None | 0.000 |
| 2430 | TOWER | SAE | 5X5X0.375    | A 36 | Truss Other  | None | 0.000 |
| 2437 | TOWER | SAE | 2X2X0.25     | A 36 | T-Only Other | None | 0.000 |
| 2443 | TOWER | SAE | 3X3X0.25     | A 36 | Truss Other  | None | 0.000 |
| 3108 | TOWER | SAU | 3X2.5X0.3125 | A 36 | T-Only Other | None | 0.000 |
| 3109 | TOWER | SAU | 6X3.5X0.25   | A 36 | Beam Other   | None | 0.000 |
| 3114 | TOWER | SAU | 4X3.5X0.25   | A 36 | Truss Other  | None | 0.000 |
| 3154 | TOWER | SAU | 6X4X0.25     | A 36 | Beam Other   | None | 0.000 |

#### Aggregate Angle Information:

| Angle Type | Angle Material Size | Total Type Length (ft) | Total Surface Area (ft^2) | Total Weight (lbs) |
|------------|---------------------|------------------------|---------------------------|--------------------|
| SAE        | 8X8X1               | A572-50 286.05         | 762.81                    | 14588.72           |
| SAU        | 4X3X0.3125          | A 36 226.60            | 264.37                    | 1631.52            |
| SAU        | 6X3.5X0.25          | A 36 285.18            | 451.54                    | 2252.94            |
| SAU        | 4X3.5X0.25          | A 36 159.90            | 199.88                    | 991.39             |
| SAE        | 8X8X1.125           | A572-50 183.89         | 490.38                    | 10463.42           |
| SAE        | 4X4X0.375           | A 36 228.83            | 305.10                    | 2242.49            |
| SAU        | 3X2X0.25            | A 36 104.36            | 86.96                     | 427.86             |
| SAU        | 3X2.5X0.3125        | A 36 326.84            | 299.60                    | 1830.28            |
| SAU        | 6X4X0.25            | A 36 105.63            | 176.06                    | 876.77             |
| SAU        | 4X3X0.25            | A 36 94.40             | 110.13                    | 547.52             |
| SAE        | 3X3X0.25            | A 36 332.51            | 332.51                    | 1629.31            |
| SAU        | 3X2.5X0.25          | A 36 125.90            | 115.41                    | 566.55             |
| SAU        | 5X3.5X0.25          | A 36 130.62            | 185.04                    | 914.32             |
| SAE        | 4X4X0.3125          | A 36 615.77            | 821.03                    | 5049.34            |
| SAE        | 5X5X0.3125          | A 36 162.36            | 270.60                    | 1672.30            |
| SAE        | 4X4X0.25            | A 36 56.72             | 75.62                     | 374.33             |
| SAE        | 8X8X0.75            | A572-50 92.00          | 245.33                    | 3578.80            |
| SAE        | 6X6X0.5             | A572-50 92.00          | 184.00                    | 1803.20            |
| SAE        | 2.5X2.5X0.25        | A 36 391.90            | 326.58                    | 1606.78            |
| SAE        | 5X5X0.375           | A 36 368.42            | 614.03                    | 4531.53            |
| SAE        | 4X4X0.25            | A572-50 64.00          | 85.33                     | 422.40             |
| SAU        | 5X3.5X0.3125        | A 36 61.38             | 86.96                     | 534.03             |
| SAU        | 3.5X3X0.25          | A 36 30.00             | 32.50                     | 162.00             |
| SAU        | 2.5X1.5X0.25        | A 36 40.00             | 26.67                     | 127.60             |
| SAE        | 2X2X0.25            | A 36 162.05            | 108.03                    | 516.95             |
| SAE        | 6X6X0.375           | A 36 42.00             | 84.00                     | 625.80             |
| SAU        | 6X4X0.4375          | A 36 43.17             | 71.96                     | 617.39             |
| SAE        | 6X6X0.3125          | A 36 20.00             | 40.00                     | 250.00             |
| SAU        | 2.5X2X0.25          | A 36 118.81            | 89.11                     | 430.10             |
| ST         | 4WF23               | A 36 30.00             | 52.35                     | 180.00             |
| SAU        | 3.5X2.5X0.25        | A 36 54.99             | 54.99                     | 269.46             |
| SAU        | 2X1.5X0.1875        | A 36 31.00             | 18.08                     | 65.72              |
| SAU        | 2.5X2X0.1875        | A 36 54.96             | 41.22                     | 151.15             |
| SAE        | 3X3X0.1875          | A 36 33.32             | 33.32                     | 123.62             |
| SAU        | 2.5X1.5X0.1875      | A 36 5.00              | 3.33                      | 12.20              |

#### Sections:

The adjustment factors below only apply to dead load and wind areas that are calculated for members in the model.

They do not apply to equipment or to manually input dead load and drag areas.

| Section Label | Joint Defining Section Bottom | Dead Load Adj. Factor | Transverse Drag Area Adj. Factor<br>(Also SAPS) | Longitudinal Drag Area Adj. Factor<br>For All | Transverse Drag Area Adj. Factor<br>For Face | Longitudinal Drag Area Adj. Factor<br>For Face | Adj. Factor for Face A<br>EIA Only | Adj. Factor for Face B<br>EIA Only |
|---------------|-------------------------------|-----------------------|-------------------------------------------------|-----------------------------------------------|----------------------------------------------|------------------------------------------------|------------------------------------|------------------------------------|
|---------------|-------------------------------|-----------------------|-------------------------------------------------|-----------------------------------------------|----------------------------------------------|------------------------------------------------|------------------------------------|------------------------------------|

|       |    |       |       |       |       |       |       |       |
|-------|----|-------|-------|-------|-------|-------|-------|-------|
| TOWER | ZP | 1.000 | 1.000 | 1.000 | 0.000 | 0.000 | 0.000 | 0.000 |
|-------|----|-------|-------|-------|-------|-------|-------|-------|

Angle Member Connectivity:

| Member Label | Group Label | Section Label | Symmetry Code | Origin Joint | End Joint | Ecc. Code | Rest. Code | Ratio RLX | Ratio RLY | Ratio RLZ | Bolt Type | # Bolts | # Holes | # Shear Planes | Connect Leg | Short Edge Dist. (in) | Long Edge Dist. (in) | End Dist. (in) | Bolt Spacing (in) | Rest. Coef. |
|--------------|-------------|---------------|---------------|--------------|-----------|-----------|------------|-----------|-----------|-----------|-----------|---------|---------|----------------|-------------|-----------------------|----------------------|----------------|-------------------|-------------|
| g1P          | 350         | TOWER         | XY-Symmetry   | PS           | ZP        | 1         | 4          | 0.3       | 0.3       | 0.3       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g5P          | 302         | TOWER         | XY-Symmetry   | L1S          | ZP        | 1         | 4          | 0.3       | 0.3       | 0.3       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g6P          | 302         | TOWER         | XY-Symmetry   | L3S          | ZP        | 1         | 4          | 0.3       | 0.3       | 0.3       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g13P         | 320         | TOWER         | XY-Symmetry   | PS           | L1S       | 1         | 4          | 1         | 1         | 1         |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g14P         | 320         | TOWER         | XY-Symmetry   | PS           | L3S       | 1         | 4          | 1         | 1         | 1         |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g17P         | 320         | TOWER         | Y-Symmetry    | L1S          | L1X       | 1         | 4          | 0.5       | 0.5       | 0.5       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g21P         | 320         | TOWER         | X-Symmetry    | L3S          | L3Y       | 1         | 4          | 0.5       | 0.5       | 0.5       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g25P         | 3114        | TOWER         | XY-Symmetry   | L1X          | L3X       | 1         | 4          | 0.5       | 0.5       | 0.5       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g29P         | 300         | TOWER         | XY-Symmetry   | MS           | NS        | 1         | 4          | 1         | 1         | 1         |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g30P         | 317         | TOWER         | XY-Symmetry   | OS           | PS        | 1         | 4          | 1         | 1         | 1         |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g33P         | 317         | TOWER         | XY-Symmetry   | NS           | OS        | 1         | 4          | 0.3       | 0.3       | 0.3       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g41P         | 3109        | TOWER         | XY-Symmetry   | OS           | O1S       | 1         | 4          | 0.5       | 0.5       | 0.5       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g42P         | 3109        | TOWER         | XY-Symmetry   | OS           | O2S       | 1         | 4          | 0.5       | 0.5       | 0.5       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g49P         | 327         | TOWER         | XY-Symmetry   | O1S          | L1S       | 1         | 4          | 1         | 1         | 1         |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g50P         | 327         | TOWER         | XY-Symmetry   | O2S          | L3S       | 1         | 4          | 1         | 1         | 1         |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g57P         | 321         | TOWER         | XY-Symmetry   | OS           | L1S       | 1         | 4          | 0.5       | 0.5       | 0.5       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g58P         | 321         | TOWER         | XY-Symmetry   | OS           | L3S       | 1         | 4          | 0.5       | 0.5       | 0.5       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g65P         | 3114        | TOWER         | XY-Symmetry   | O1Y          | O2S       | 1         | 4          | 0.5       | 0.5       | 0.5       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g69P         | 3108        | TOWER         | XY-Symmetry   | NY           | OXY       | 1         | 4          | 0.3       | 0.3       | 0.3       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g70P         | 3108        | TOWER         | XY-Symmetry   | NY           | OS        | 1         | 4          | 0.3       | 0.3       | 0.3       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g77P         | 3154        | TOWER         | Y-Symmetry    | NS           | NX        | 1         | 4          | 0.5       | 0.5       | 0.5       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g78P         | 3154        | TOWER         | X-Symmetry    | NS           | NY        | 1         | 4          | 0.5       | 0.5       | 0.5       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g81P         | 124         | TOWER         | XY-Symmetry   | MS           | M1S       | 1         | 4          | 0.8       | 0.8       | 0.8       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g82P         | 124         | TOWER         | XY-Symmetry   | MS           | M2S       | 1         | 4          | 0.9       | 0.9       | 0.9       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g85P         | 123         | TOWER         | X-Symmetry    | LS           | LY        | 1         | 4          | 0.45      | 0.45      | 0.45      |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g89P         | 123         | TOWER         | Y-Symmetry    | LX           | LS        | 1         | 4          | 0.45      | 0.45      | 0.45      |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g93P         | 114         | TOWER         | XY-Symmetry   | LS           | MS        | 1         | 4          | 0.5       | 0.5       | 0.5       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g97P         | 114         | TOWER         | XY-Symmetry   | JS           | KS        | 1         | 4          | 1         | 1         | 1         |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g98P         | 114         | TOWER         | XY-Symmetry   | KS           | LS        | 1         | 4          | 1         | 1         | 1         |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g105P        | 102         | TOWER         | XY-Symmetry   | WP           | IS        | 1         | 4          | 1         | 1         | 1         |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g106P        | 102         | TOWER         | XY-Symmetry   | IS           | JS        | 1         | 4          | 1         | 1         | 1         |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g113P        | 117         | TOWER         | XY-Symmetry   | LS           | M1S       | 1         | 4          | 0.5       | 0.5       | 0.5       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g114P        | 117         | TOWER         | XY-Symmetry   | LS           | M2S       | 1         | 4          | 0.5       | 0.5       | 0.5       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g121P        | 395         | TOWER         | XY-Symmetry   | M1S          | NS        | 1         | 4          | 0.5       | 0.5       | 0.5       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g122P        | 395         | TOWER         | XY-Symmetry   | M2S          | NS        | 1         | 4          | 0.5       | 0.5       | 0.5       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g129P        | 137         | TOWER         | XY-Symmetry   | KS           | LX        | 1         | 4          | 0.5       | 0.5       | 0.5       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g130P        | 137         | TOWER         | XY-Symmetry   | KS           | LY        | 1         | 4          | 0.5       | 0.5       | 0.5       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g133P        | 135         | TOWER         | XY-Symmetry   | JS           | KX        | 1         | 4          | 0.5       | 0.5       | 0.5       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g137P        | 135         | TOWER         | XY-Symmetry   | JS           | KY        | 1         | 4          | 0.5       | 0.5       | 0.5       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g141P        | 1033        | TOWER         | XY-Symmetry   | IS           | JX        | 1         | 4          | 0.5       | 0.5       | 0.5       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g145P        | 1033        | TOWER         | XY-Symmetry   | IS           | JY        | 1         | 4          | 0.5       | 0.5       | 0.5       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g149P        | 1031        | TOWER         | XY-Symmetry   | WP           | IX        | 1         | 4          | 0.5       | 0.5       | 0.5       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g153P        | 1031        | TOWER         | XY-Symmetry   | WP           | IY        | 1         | 4          | 0.5       | 0.5       | 0.5       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g161P        | 1036        | TOWER         | X-Symmetry    | LS           | LXY       | 1         | 4          | 0.45      | 0.45      | 0.45      |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g163P        | 2100        | TOWER         | XY-Symmetry   | FS           | GS        | 1         | 4          | 1         | 1         | 1         |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g164P        | 2100        | TOWER         | XY-Symmetry   | GS           | HS        | 1         | 4          | 1         | 1         | 1         |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g167P        | 2100        | TOWER         | XY-Symmetry   | HS           | WP        | 1         | 4          | 1         | 1         | 1         |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g171P        | 2112        | TOWER         | XY-Symmetry   | CS           | DS        | 1         | 4          | 1         | 1         | 1         |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g175P        | 2112        | TOWER         | XY-Symmetry   | DS           | ES        | 1         | 4          | 1         | 1         | 1         |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g179P        | 2112        | TOWER         | XY-Symmetry   | ES           | FS        | 1         | 4          | 1         | 1         | 1         |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g187P        | 2163        | TOWER         | Y-Symmetry    | WP           | WX        | 1         | 4          | 1         | 1         | 1         |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g188P        | 2165        | TOWER         | X-Symmetry    | WP           | WY        | 1         | 4          | 0.95      | 0.95      | 0.95      |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |
| g189P        | 2168        | TOWER         | X-Symmetry    | WP           | WXY       | 1         | 4          | 0.5       | 0.5       | 0.5       |           | 0       | 0       | 0              |             | 0                     | 0                    | 0              | 0                 | 0           |

|       |      |             |       |       |   |   |      |      |      |   |   |   |   |   |   |   |   |
|-------|------|-------------|-------|-------|---|---|------|------|------|---|---|---|---|---|---|---|---|
| g193P | 2103 | XY-Symmetry | HY    | WXY   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g194P | 2103 | XY-Symmetry | HY    | WP    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g197P | 2103 | XY-Symmetry | GY    | HS    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g201P | 2103 | XY-Symmetry | GY    | HXY   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g205P | 2103 | XY-Symmetry | FY    | GXY   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g209P | 2103 | XY-Symmetry | FY    | GS    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g217P | 2115 | XY-Symmetry | ES    | FX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g218P | 2115 | XY-Symmetry | EY    | FS    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g221P | 2115 | XY-Symmetry | DY    | EXY   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g225P | 2115 | XY-Symmetry | DY    | ES    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g229P | 2115 | XY-Symmetry | CY    | DXY   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g233P | 2115 | XY-Symmetry | CY    | DS    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g237P | 2131 | XY-Symmetry | BY    | CS    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g241P | 2131 | XY-Symmetry | BY    | CXY   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g245P | 2131 | XY-Symmetry | AY    | BS    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g249P | 2131 | XY-Symmetry | AY    | BXY   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g257P | 2131 | XY-Symmetry | TOPP  | AX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g261P | 2129 | XY-Symmetry | AY    | BY    | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g262P | 2129 | XY-Symmetry | BY    | CY    | 1 | 4 | 0.98 | 0.98 | 0.98 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g269P | 2148 | XY-Symmetry | TOPP  | AY    | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g273P | 2162 | Y-Symmetry  | WY    | BPMY  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| X273P | 2162 | Y-Symmetry  | BPMY  | BAP   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g275P | 2170 | Y-Symmetry  | BASQY | BMX   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| X275P | 2170 | Y-Symmetry  | BMX   | WXY   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g277P | 2177 | None        | BASQY | BASQP | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g278P | 2111 | Y-Symmetry  | HY    | HXY   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| X280P | 2179 | Y-Symmetry  | HY    | BPMXY | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g280P | 2179 | Y-Symmetry  | BPMXY | BAP   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| X281P | 2179 | Y-Symmetry  | HXY   | BMXY  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g281P | 2179 | Y-Symmetry  | BMXY  | BASQY | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g284P | 2199 | Y-Symmetry  | MASQY | MMY   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| X284P | 2199 | Y-Symmetry  | MMY   | FXM   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g286P | 2192 | Y-Symmetry  | FY    | MAP   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g288P | 2194 | Y-Symmetry  | FX    | FS    | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g290P | 2195 | X-Symmetry  | FY    | FS    | 1 | 4 | 0.95 | 0.95 | 0.95 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g292P | 2443 | X-Symmetry  | FY    | FX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g294P | 2403 | None        | MASQY | MASQP | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g295P | 2407 | Y-Symmetry  | EY    | MAP   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| X296P | 2407 | Y-Symmetry  | EXY   | MMXY  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g296P | 2407 | Y-Symmetry  | MMXY  | MASQY | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g299P | 2119 | Y-Symmetry  | EXY   | EY    | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g301P | 2422 | Y-Symmetry  | CY    | TAP   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| X303P | 2430 | Y-Symmetry  | TASQP | TMS   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g303P | 2430 | Y-Symmetry  | TMS   | CX    | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g305P | 2427 | Y-Symmetry  | CXY   | CY    | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g307P | 2426 | X-Symmetry  | CY    | CS    | 1 | 4 | 0.95 | 0.95 | 0.95 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g309P | 2426 | X-Symmetry  | CY    | CX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g311P | 2177 | None        | TASQP | TASQY | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g312P | 2437 | Y-Symmetry  | BY    | TAP   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| X313P | 2437 | Y-Symmetry  | BXY   | TMXY  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g313P | 2437 | Y-Symmetry  | TMXY  | TASQY | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g316P | 2437 | Y-Symmetry  | BXY   | BY    | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g318P | 2140 | Y-Symmetry  | AXY   | AY    | 1 | 4 | 0.95 | 0.95 | 0.95 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g319P | 2140 | X-Symmetry  | AY    | AP    | 1 | 4 | 0.95 | 0.95 | 0.95 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g322P | 2145 | X-Symmetry  | SWP   | TOPP  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g323P | 2145 | None        | TOPP  | TOPX  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g325P | 2157 | XY-Symmetry | SWP   | AY    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g329P | 2142 | X-Symmetry  | AY    | AX    | 1 | 4 | 0.49 | 0.49 | 0.49 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g335P | 2169 | Y-Symmetry  | BASQY | BMS   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g336P | 2169 | Y-Symmetry  | BMS   | WXY   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g339P | 2181 | Y-Symmetry  | BMXY  | BMX   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g341P | 2189 | Y-Symmetry  | BMXS  | WX    | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g351P | 2401 | Y-Symmetry  | MASQY | MMS   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g352P | 2401 | Y-Symmetry  | MMY   | FX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g355P | 2419 | Y-Symmetry  | MMXS  | MMS   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g357P | 2417 | Y-Symmetry  | MMXS  | FX    | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g359P | 2169 | Y-Symmetry  | TASQY | TMS   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g360P | 2169 | Y-Symmetry  | TMY   | CX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g361P | 2181 | Y-Symmetry  | TMXS  | TMS   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g363P | 2189 | Y-Symmetry  | TMXS  | CX    | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



|       |      |            |          |      |      |   |   |      |      |      |   |   |   |   |   |   |   |
|-------|------|------------|----------|------|------|---|---|------|------|------|---|---|---|---|---|---|---|
| g367P | 2183 | Y-Symmetry | BPMXY    | WY   | 1    | 4 | 1 | 1    | 1    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g369P | 2181 | Y-Symmetry | BPMXY    | BPMY | 1    | 4 | 1 | 1    | 1    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g373P | 2166 | None       | BPMY     | WP   | 1    | 4 | 1 | 1    | 1    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g374P | 2167 | None       | BPMY     | BPMS | 1    | 4 | 1 | 1    | 1    | 0    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g1X   | 350  | TOWER      | X-GenXY  | PX   | 2X   | 1 | 4 | 0.3  | 0.3  | 0.3  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g1XY  | 350  | TOWER      | XY-GenXY | PXY  | ZXY  | 1 | 4 | 0.3  | 0.3  | 0.3  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g1Y   | 350  | TOWER      | Y-GenXY  | PY   | ZY   | 1 | 4 | 0.3  | 0.3  | 0.3  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g5X   | 302  | TOWER      | X-GenXY  | L1X  | ZX   | 1 | 4 | 0.3  | 0.3  | 0.3  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g5XY  | 302  | TOWER      | XY-GenXY | L1XY | ZXY  | 1 | 4 | 0.3  | 0.3  | 0.3  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g5Y   | 302  | TOWER      | Y-GenXY  | L1Y  | ZY   | 1 | 4 | 0.3  | 0.3  | 0.3  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g6X   | 302  | TOWER      | X-GenXY  | L3X  | ZX   | 1 | 4 | 0.3  | 0.3  | 0.3  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g6XY  | 302  | TOWER      | XY-GenXY | L3XY | ZXY  | 1 | 4 | 0.3  | 0.3  | 0.3  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g6Y   | 302  | TOWER      | Y-GenXY  | L3Y  | ZY   | 1 | 4 | 0.3  | 0.3  | 0.3  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g13X  | 320  | TOWER      | X-GenXY  | PX   | L1X  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g13XY | 320  | TOWER      | XY-GenXY | PXY  | L1XY | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g13Y  | 320  | TOWER      | Y-GenXY  | PY   | L1Y  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g14X  | 320  | TOWER      | X-GenXY  | PX   | L3X  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g14XY | 320  | TOWER      | XY-GenXY | PXY  | L3XY | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g14Y  | 320  | TOWER      | Y-GenXY  | PY   | L3Y  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g17Y  | 320  | TOWER      | Y-Gen    | L1Y  | L1XY | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g21X  | 320  | TOWER      | X-Gen    | L3X  | L3XY | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g25X  | 3114 | TOWER      | X-GenXY  | L1S  | L3S  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g25XY | 3114 | TOWER      | XY-GenXY | L1Y  | L3Y  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g25Y  | 3114 | TOWER      | Y-GenXY  | L1XY | L3XY | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g29X  | 300  | TOWER      | X-GenXY  | MX   | NX   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g29XY | 300  | TOWER      | XY-GenXY | MX   | NXY  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g29Y  | 300  | TOWER      | Y-GenXY  | MY   | NY   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g30X  | 317  | TOWER      | X-GenXY  | OX   | PX   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g30XY | 317  | TOWER      | XY-GenXY | OX   | PXY  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g30Y  | 317  | TOWER      | Y-GenXY  | OY   | PY   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g33X  | 317  | TOWER      | X-GenXY  | NX   | OX   | 1 | 4 | 0.3  | 0.3  | 0.3  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g33XY | 317  | TOWER      | XY-GenXY | NXY  | OX   | 1 | 4 | 0.3  | 0.3  | 0.3  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g33Y  | 317  | TOWER      | Y-GenXY  | NY   | OY   | 1 | 4 | 0.3  | 0.3  | 0.3  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g41X  | 3109 | TOWER      | X-GenXY  | OX   | O1S  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g41XY | 3109 | TOWER      | XY-GenXY | OX   | O1Y  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g41Y  | 3109 | TOWER      | Y-GenXY  | OY   | O1Y  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g42X  | 3109 | TOWER      | X-GenXY  | OX   | O2X  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g42XY | 3109 | TOWER      | XY-GenXY | OX   | O2X  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g42Y  | 3109 | TOWER      | Y-GenXY  | OY   | O2S  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g49X  | 327  | TOWER      | X-GenXY  | O1S  | L1X  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g49XY | 327  | TOWER      | XY-GenXY | O1Y  | L1XY | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g49Y  | 327  | TOWER      | Y-GenXY  | O1Y  | L1Y  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g50X  | 327  | TOWER      | X-GenXY  | O2X  | L3X  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g50XY | 327  | TOWER      | XY-GenXY | O2X  | L3XY | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g50Y  | 327  | TOWER      | Y-GenXY  | O2S  | L3Y  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g57X  | 321  | TOWER      | X-GenXY  | OX   | L1X  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g57XY | 321  | TOWER      | XY-GenXY | OX   | L1XY | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g57Y  | 321  | TOWER      | Y-GenXY  | OY   | L1Y  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g58X  | 321  | TOWER      | X-GenXY  | OX   | L3X  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g58XY | 321  | TOWER      | XY-GenXY | OX   | L3XY | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g58Y  | 321  | TOWER      | Y-GenXY  | OY   | L3Y  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g65X  | 3114 | TOWER      | X-GenXY  | O1Y  | O2X  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g65XY | 3114 | TOWER      | XY-GenXY | O1S  | O2X  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g65Y  | 3114 | TOWER      | Y-GenXY  | O1S  | O2S  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g69X  | 3108 | TOWER      | X-GenXY  | NXY  | OY   | 1 | 4 | 0.3  | 0.3  | 0.3  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g69XY | 3108 | TOWER      | XY-GenXY | NX   | OS   | 1 | 4 | 0.3  | 0.3  | 0.3  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g69Y  | 3108 | TOWER      | Y-GenXY  | NS   | OX   | 1 | 4 | 0.3  | 0.3  | 0.3  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g70X  | 3108 | TOWER      | X-GenXY  | NXY  | OX   | 1 | 4 | 0.3  | 0.3  | 0.3  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g70XY | 3108 | TOWER      | XY-GenXY | NX   | OX   | 1 | 4 | 0.3  | 0.3  | 0.3  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g70Y  | 3108 | TOWER      | Y-GenXY  | NS   | OY   | 1 | 4 | 0.3  | 0.3  | 0.3  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g77Y  | 3154 | TOWER      | Y-Gen    | NY   | NXY  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g78X  | 3154 | TOWER      | X-Gen    | NX   | NXY  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g81X  | 124  | TOWER      | X-GenXY  | MX   | M1S  | 1 | 4 | 0.8  | 0.8  | 0.8  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g81XY | 124  | TOWER      | XY-GenXY | MX   | M1Y  | 1 | 4 | 0.8  | 0.8  | 0.8  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g81Y  | 124  | TOWER      | Y-GenXY  | MY   | M1Y  | 1 | 4 | 0.8  | 0.8  | 0.8  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g82X  | 124  | TOWER      | X-GenXY  | MX   | M2X  | 1 | 4 | 0.9  | 0.9  | 0.9  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g82XY | 124  | TOWER      | XY-GenXY | MX   | M2X  | 1 | 4 | 0.9  | 0.9  | 0.9  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g82Y  | 124  | TOWER      | Y-GenXY  | MY   | M2S  | 1 | 4 | 0.9  | 0.9  | 0.9  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g85X  | 123  | TOWER      | X-Gen    | LX   | LXY  | 1 | 4 | 0.45 | 0.45 | 0.45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g89Y  | 123  | TOWER      | Y-Gen    | LXY  | LY   | 1 | 4 | 0.45 | 0.45 | 0.45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

|        |      |       |          |     |     |   |   |      |      |      |   |   |   |   |   |   |   |   |
|--------|------|-------|----------|-----|-----|---|---|------|------|------|---|---|---|---|---|---|---|---|
| g93X   | 114  | TOWER | X-GenXY  | LX  | MX  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g93XY  | 114  | TOWER | XY-GenXY | LXY | MX  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g93Y   | 114  | TOWER | Y-GenXY  | LY  | MY  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g97X   | 114  | TOWER | X-GenXY  | JX  | KX  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g97XY  | 114  | TOWER | XY-GenXY | JXY | KXY | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g97Y   | 114  | TOWER | Y-GenXY  | JY  | KY  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g98X   | 114  | TOWER | X-GenXY  | KX  | LX  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g98XY  | 114  | TOWER | XY-GenXY | KXY | LXY | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g98Y   | 114  | TOWER | Y-GenXY  | KY  | LY  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g105X  | 102  | TOWER | X-GenXY  | WX  | IX  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g105XY | 102  | TOWER | XY-GenXY | WXY | IXY | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g105Y  | 102  | TOWER | Y-GenXY  | WY  | IY  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g106X  | 102  | TOWER | X-GenXY  | IX  | JX  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g106XY | 102  | TOWER | XY-GenXY | IXY | JXY | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g106Y  | 102  | TOWER | Y-GenXY  | IY  | JY  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g113X  | 117  | TOWER | X-GenXY  | LX  | M1S | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g113XY | 117  | TOWER | XY-GenXY | LXY | M1Y | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g113Y  | 117  | TOWER | Y-GenXY  | LY  | M1Y | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g114X  | 117  | TOWER | X-GenXY  | LX  | M2X | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g114XY | 117  | TOWER | XY-GenXY | LXY | M2X | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g114Y  | 117  | TOWER | Y-GenXY  | LY  | M2S | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g121X  | 395  | TOWER | X-GenXY  | M1S | NX  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g121XY | 395  | TOWER | XY-GenXY | M1Y | NXY | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g121Y  | 395  | TOWER | Y-GenXY  | M1Y | NY  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g122X  | 395  | TOWER | X-GenXY  | M2X | NX  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g122XY | 395  | TOWER | XY-GenXY | M2X | NXY | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g122Y  | 395  | TOWER | Y-GenXY  | M2S | NY  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g129X  | 137  | TOWER | X-GenXY  | KX  | LS  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g129XY | 137  | TOWER | XY-GenXY | KXY | LY  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g129Y  | 137  | TOWER | Y-GenXY  | KY  | LXY | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g130X  | 137  | TOWER | X-GenXY  | KX  | LXY | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g130XY | 137  | TOWER | XY-GenXY | KXY | LX  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g130Y  | 137  | TOWER | Y-GenXY  | KY  | LS  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g133X  | 135  | TOWER | X-GenXY  | JX  | KS  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g133XY | 135  | TOWER | XY-GenXY | JXY | KY  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g133Y  | 135  | TOWER | Y-GenXY  | JY  | KXY | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g137X  | 135  | TOWER | X-GenXY  | JX  | KXY | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g137XY | 135  | TOWER | XY-GenXY | JXY | KX  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g137Y  | 135  | TOWER | Y-GenXY  | JY  | KS  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g141X  | 1033 | TOWER | X-GenXY  | IX  | JS  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g141XY | 1033 | TOWER | XY-GenXY | IXY | JY  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g141Y  | 1033 | TOWER | Y-GenXY  | IY  | JXY | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g145X  | 1033 | TOWER | X-GenXY  | IX  | JXY | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g145XY | 1033 | TOWER | XY-GenXY | IXY | JX  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g145Y  | 1033 | TOWER | Y-GenXY  | IY  | JS  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g149X  | 1031 | TOWER | X-GenXY  | WX  | IS  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g149XY | 1031 | TOWER | XY-GenXY | WXY | IY  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g149Y  | 1031 | TOWER | Y-GenXY  | WY  | IXY | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g153X  | 1031 | TOWER | X-GenXY  | WX  | IXY | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g153XY | 1031 | TOWER | XY-GenXY | WXY | IX  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g153Y  | 1031 | TOWER | Y-GenXY  | WY  | IS  | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g161X  | 1036 | TOWER | X-Gen    | LX  | LY  | 1 | 4 | 0.45 | 0.45 | 0.45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g163X  | 2100 | TOWER | X-GenXY  | FX  | GX  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g163XY | 2100 | TOWER | XY-GenXY | FX  | GXY | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g163Y  | 2100 | TOWER | Y-GenXY  | FY  | GY  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g164X  | 2100 | TOWER | X-GenXY  | GX  | HX  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g164XY | 2100 | TOWER | XY-GenXY | GXY | HXY | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g164Y  | 2100 | TOWER | Y-GenXY  | GY  | HY  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g167X  | 2100 | TOWER | X-GenXY  | HX  | WX  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g167XY | 2100 | TOWER | XY-GenXY | HXY | WXY | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g167Y  | 2100 | TOWER | Y-GenXY  | HY  | WY  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g171X  | 2112 | TOWER | X-GenXY  | CX  | DX  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g171XY | 2112 | TOWER | XY-GenXY | CXY | DX  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g171Y  | 2112 | TOWER | Y-GenXY  | CY  | DY  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g175X  | 2112 | TOWER | X-GenXY  | DX  | EX  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g175XY | 2112 | TOWER | XY-GenXY | DX  | EXY | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g175Y  | 2112 | TOWER | Y-GenXY  | DY  | EY  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g179X  | 2112 | TOWER | X-GenXY  | EX  | FX  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g179XY | 2112 | TOWER | XY-GenXY | EXY | FX  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g179Y  | 2112 | TOWER | Y-GenXY  | EY  | FY  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

|        |      |       |          |       |       |   |   |      |      |      |   |   |   |   |   |   |   |
|--------|------|-------|----------|-------|-------|---|---|------|------|------|---|---|---|---|---|---|---|
| g187Y  | 2163 | TOWER | Y-Gen    | WY    | WXY   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g188X  | 2165 | TOWER | X-Gen    | WX    | WXY   | 1 | 4 | 0.95 | 0.95 | 0.95 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g189X  | 2168 | TOWER | X-Gen    | WX    | WY    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g193X  | 2103 |       | X-GenXY  | HXY   | WY    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g193XY | 2103 |       | XY-GenXY | HX    | WP    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g193Y  | 2103 |       | Y-GenXY  | HS    | WX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g194X  | 2103 |       | X-GenXY  | HXY   | WX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g194XY | 2103 |       | XY-GenXY | HX    | WXY   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g194Y  | 2103 |       | Y-GenXY  | HS    | WY    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g197X  | 2103 |       | X-GenXY  | GXY   | HX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g197XY | 2103 |       | XY-GenXY | GX    | HXY   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g197Y  | 2103 |       | Y-GenXY  | GS    | HY    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g201X  | 2103 |       | X-GenXY  | GXY   | HY    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g201XY | 2103 |       | XY-GenXY | GX    | HS    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g201Y  | 2103 |       | Y-GenXY  | GS    | HX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g205X  | 2103 |       | X-GenXY  | FX    | GY    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g205XY | 2103 |       | XY-GenXY | FX    | GS    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g205Y  | 2103 |       | Y-GenXY  | FS    | GX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g209X  | 2103 |       | X-GenXY  | FX    | GX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g209XY | 2103 |       | XY-GenXY | FX    | GXY   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g209Y  | 2103 |       | Y-GenXY  | FS    | GY    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g217X  | 2115 |       | X-GenXY  | EX    | FS    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g217XY | 2115 |       | XY-GenXY | EX    | FY    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g217Y  | 2115 |       | Y-GenXY  | EY    | FX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g218X  | 2115 |       | X-GenXY  | EX    | FX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g218XY | 2115 |       | XY-GenXY | EX    | FX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g218Y  | 2115 |       | Y-GenXY  | ES    | FY    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g221X  | 2115 |       | X-GenXY  | DX    | EY    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g221XY | 2115 |       | XY-GenXY | DX    | ES    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g221Y  | 2115 |       | Y-GenXY  | DS    | EX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g225X  | 2115 |       | X-GenXY  | DX    | EX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g225XY | 2115 |       | XY-GenXY | DX    | EY    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g225Y  | 2115 |       | Y-GenXY  | DS    | EY    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g229X  | 2115 |       | X-GenXY  | CXY   | DY    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g229XY | 2115 |       | XY-GenXY | CX    | DS    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g229Y  | 2115 |       | Y-GenXY  | CS    | DX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g233X  | 2115 |       | X-GenXY  | CXY   | DX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g233XY | 2115 |       | XY-GenXY | CX    | DX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g233Y  | 2115 |       | Y-GenXY  | CS    | DY    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g237X  | 2131 |       | X-GenXY  | BXY   | CX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g237XY | 2131 |       | XY-GenXY | BX    | CXY   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g237Y  | 2131 |       | Y-GenXY  | BS    | CY    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g241X  | 2131 |       | X-GenXY  | BXY   | CY    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g241XY | 2131 |       | XY-GenXY | BX    | CS    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g241Y  | 2131 |       | Y-GenXY  | BS    | CX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g245X  | 2131 |       | X-GenXY  | AXY   | BX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g245XY | 2131 |       | XY-GenXY | AX    | BXY   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g245Y  | 2131 |       | Y-GenXY  | AP    | BY    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g249X  | 2131 |       | X-GenXY  | AXY   | BY    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g249XY | 2131 |       | XY-GenXY | AX    | BS    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g249Y  | 2131 |       | Y-GenXY  | AP    | BX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g257X  | 2131 |       | X-GenXY  | TOPX  | AP    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g257XY | 2131 |       | XY-GenXY | TOPX  | AY    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g257Y  | 2131 |       | Y-GenXY  | TOPP  | AXY   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g261X  | 2129 |       | X-GenXY  | AXY   | BXY   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g261XY | 2129 |       | XY-GenXY | AX    | BX    | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g261Y  | 2129 |       | Y-GenXY  | AP    | BS    | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g262X  | 2129 |       | X-GenXY  | BXY   | CXY   | 1 | 4 | 0.98 | 0.98 | 0.98 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g262XY | 2129 |       | XY-GenXY | BX    | CX    | 1 | 4 | 0.98 | 0.98 | 0.98 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g262Y  | 2129 |       | Y-GenXY  | BS    | CS    | 1 | 4 | 0.98 | 0.98 | 0.98 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g269X  | 2148 |       | X-GenXY  | TOPX  | AXY   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g269XY | 2148 |       | XY-GenXY | TOPX  | AX    | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g269Y  | 2148 |       | Y-GenXY  | TOPP  | AP    | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g273Y  | 2162 |       | Y-Gen    | WP    | BPMS  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| X273Y  | 2162 |       | Y-Gen    | BPMS  | BAP   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g275Y  | 2170 |       | Y-Gen    | BASQP | BMS   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| X275Y  | 2170 |       | Y-Gen    | BMS   | WX    | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g278Y  | 2111 |       | Y-Gen    | HS    | HX    | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| X280Y  | 2179 |       | Y-Gen    | HS    | BPMXS | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g280Y  | 2179 |       | Y-Gen    | BPMXS | BAP   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

|        |      |          |       |       |   |   |      |      |      |   |   |   |   |   |   |   |   |   |
|--------|------|----------|-------|-------|---|---|------|------|------|---|---|---|---|---|---|---|---|---|
| X281Y  | 2179 | Y-Gen    | HX    | BMXS  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g281Y  | 2179 | Y-Gen    | BMXS  | BASQP | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g284Y  | 2199 | Y-Gen    | MASQP | MMS   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| X284Y  | 2199 | Y-Gen    | MMS   | FX    | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g286Y  | 2192 | Y-Gen    | FS    | MAP   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g288Y  | 2194 | Y-Gen    | FX    | FX    | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g290X  | 2195 | X-Gen    | FX    | FX    | 1 | 4 | 0.95 | 0.95 | 0.95 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g292X  | 2443 | X-Gen    | FX    | FS    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g295Y  | 2407 | Y-Gen    | ES    | MAP   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| X296Y  | 2407 | Y-Gen    | EX    | MMXS  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g296Y  | 2407 | Y-Gen    | MMXS  | MASQP | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g299Y  | 2119 | Y-Gen    | EX    | ES    | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g301Y  | 2422 | Y-Gen    | CS    | TAP   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| X303Y  | 2430 | Y-Gen    | TASQY | TMY   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g303Y  | 2430 | Y-Gen    | TMY   | CXY   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g305Y  | 2427 | Y-Gen    | CX    | CS    | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g307X  | 2426 | X-Gen    | CXY   | CX    | 1 | 4 | 0.95 | 0.95 | 0.95 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g309X  | 2426 | X-Gen    | CXY   | CS    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g312Y  | 2437 | Y-Gen    | BS    | TAP   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| X313Y  | 2437 | Y-Gen    | BK    | TMXS  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g313Y  | 2437 | Y-Gen    | TMXS  | TASQP | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g316Y  | 2437 | Y-Gen    | BK    | BS    | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g318Y  | 2140 | Y-Gen    | AX    | AP    | 1 | 4 | 0.95 | 0.95 | 0.95 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g319X  | 2140 | X-Gen    | AXY   | AX    | 1 | 4 | 0.95 | 0.95 | 0.95 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g322X  | 2145 | X-Gen    | SWX   | TOPX  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g325X  | 2157 | X-GenXY  | SWX   | AXY   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g325XY | 2157 | XY-GenXY | SWX   | AX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g325Y  | 2157 | Y-GenXY  | SWP   | AP    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g329X  | 2142 | X-Gen    | AXY   | AP    | 1 | 4 | 0.49 | 0.49 | 0.49 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g335Y  | 2169 | Y-Gen    | BASQP | BMV   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g336Y  | 2169 | Y-Gen    | BMV   | WX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g339Y  | 2181 | Y-Gen    | BMXS  | BMS   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g341Y  | 2189 | Y-Gen    | BMXY  | WXY   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g351Y  | 2401 | Y-Gen    | MASQP | MMY   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g352Y  | 2401 | Y-Gen    | MMS   | FX    | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g355Y  | 2419 | Y-Gen    | MMXY  | MMY   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g357Y  | 2417 | Y-Gen    | MMXY  | FX    | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g359Y  | 2169 | Y-Gen    | TASQP | TMY   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g360Y  | 2169 | Y-Gen    | TMS   | CXY   | 1 | 4 | 0.5  | 0.5  | 0.5  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g361Y  | 2181 | Y-Gen    | TMXY  | TMY   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g363Y  | 2189 | Y-Gen    | TMXY  | CXY   | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g367Y  | 2183 | Y-Gen    | BPMXS | WP    | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| g369Y  | 2181 | Y-Gen    | BPMXS | BPMS  | 1 | 4 | 1    | 1    | 1    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Member Capacities:

| Member Label | Group Label | Design Comp. Capacity | Comp. Control Criterion | Design Tension Capacity | Tension Control Criterion | L/r | Length | L/r Comp. Capacity | Connection Shear Capacity | Connection Bearing Capacity | Net Section Tension Capacity | Rupture Tension Capacity | RTE Dist. Tension Capacity | RTE Edge Dist. Tension Capacity | Override Comp. Capacity | Override Comp. Control Criterion | Override Tension Capacity | Override Tension Control Criterion | Warnings Tension or Errors |
|--------------|-------------|-----------------------|-------------------------|-------------------------|---------------------------|-----|--------|--------------------|---------------------------|-----------------------------|------------------------------|--------------------------|----------------------------|---------------------------------|-------------------------|----------------------------------|---------------------------|------------------------------------|----------------------------|
|              |             | (kips)                |                         | (kips)                  |                           |     | (ft)   | (kips)             | (kips)                    | (kips)                      | (kips)                       | (kips)                   | (kips)                     | (kips)                          | (kips)                  |                                  | (kips)                    |                                    |                            |
| g1P          | 350         | 645.135               | L/r                     | 749.999                 | Net Sect                  | 57  | 24.52  | 645.135            | 0.000                     | 0.000                       | 749.999                      | 0.000                    | 0.000                      | 0.000                           | 0.000                   |                                  | 0.000                     |                                    |                            |
| g5P          | 302         | 24.083                | L/r                     | 75.240                  | Net Sect                  | 158 | 28.33  | 24.083             | 0.000                     | 0.000                       | 75.240                       | 0.000                    | 0.000                      | 0.000                           | 0.000                   |                                  | 0.000                     |                                    |                            |
| g6P          | 302         | 24.083                | L/r                     | 75.240                  | Net Sect                  | 158 | 28.33  | 24.083             | 0.000                     | 0.000                       | 75.240                       | 0.000                    | 0.000                      | 0.000                           | 0.000                   |                                  | 0.000                     |                                    |                            |
| g13P         | 320         | 22.615                | L/r                     | 83.160                  | Net Sect                  | 171 | 11.07  | 22.615             | 0.000                     | 0.000                       | 83.160                       | 0.000                    | 0.000                      | 0.000                           | 0.000                   |                                  | 0.000                     |                                    |                            |
| g14P         | 320         | 22.615                | L/r                     | 83.160                  | Net Sect                  | 171 | 11.07  | 22.615             | 0.000                     | 0.000                       | 83.160                       | 0.000                    | 0.000                      | 0.000                           | 0.000                   |                                  | 0.000                     |                                    |                            |
| g17P         | 320         | 38.115                | L/r                     | 83.160                  | Net Sect                  | 114 | 14.76  | 38.115             | 0.000                     | 0.000                       | 83.160                       | 0.000                    | 0.000                      | 0.000                           | 0.000                   |                                  | 0.000                     |                                    |                            |
| g21P         | 320         | 38.115                | L/r                     | 83.160                  | Net Sect                  | 114 | 14.76  | 38.115             | 0.000                     | 0.000                       | 83.160                       | 0.000                    | 0.000                      | 0.000                           | 0.000                   |                                  | 0.000                     |                                    |                            |
| g25P         | 3114        | 31.626                | L/r                     | 65.160                  | Net Sect                  | 128 | 15.66  | 31.626             | 0.000                     | 0.000                       | 65.160                       | 0.000                    | 0.000                      | 0.000                           | 0.000                   |                                  | 0.000                     |                                    |                            |
| g29P         | 300         | 632.882               | L/r                     | 836.499                 | Net Sect                  | 75  | 9.71   | 632.882            | 0.000                     | 0.000                       | 836.499                      | 0.000                    | 0.000                      | 0.000                           | 0.000                   |                                  | 0.000                     |                                    |                            |
| g30P         | 317         | 673.492               | L/r                     | 836.499                 | Net Sect                  | 67  | 8.68   | 673.492            | 0.000                     | 0.000                       | 836.499                      | 0.000                    | 0.000                      | 0.000                           | 0.000                   |                                  | 0.000                     |                                    |                            |
| g33P         | 317         | 688.473               | L/r                     | 836.499                 | Net Sect                  | 64  | 27.58  | 688.473            | 0.000                     | 0.000                       | 836.499                      | 0.000                    | 0.000                      | 0.000                           | 0.000                   |                                  | 0.000                     |                                    |                            |
| g41P         | 3109        | 33.591                | L/r                     | 83.160                  | Net Sect                  | 133 | 17.20  | 33.591             | 0.000                     | 0.000                       | 83.160                       | 0.000                    | 0.000                      | 0.000                           | 0.000                   |                                  | 0.000                     |                                    |                            |
| g42P         | 3109        | 33.591                | L/r                     | 83.160                  | Net Sect                  | 133 | 17.20  | 33.591             | 0.000                     | 0.000                       | 83.160                       | 0.000                    | 0.000                      | 0.000                           | 0.000                   |                                  | 0.000                     |                                    |                            |
| g49P         | 327         | 27.511                | L/r                     | 102.960                 | Net Sect                  | 172 | 11.33  | 27.511             | 0.000                     | 0.000                       | 102.960                      | 0.000                    | 0.000                      | 0.000                           | 0.000                   |                                  | 0.000                     |                                    |                            |
| g50P         | 327         | 27.511                | L/r                     | 102.960                 | Net Sect                  | 172 | 11.33  | 27.511             | 0.000                     | 0.000                       | 102.960                      | 0.000                    | 0.000                      | 0.000                           | 0.000                   |                                  | 0.000                     |                                    |                            |
| g57P         | 321         | 10.521                | L/r                     | 42.840                  | Net Sect                  | 180 | 13.04  | 10.521             | 0.000                     | 0.000                       | 42.840                       | 0.000                    | 0.000                      | 0.000                           | 0.000                   |                                  | 0.000                     |                                    |                            |
| g58P         | 321         | 10.521                | L/r                     | 42.840                  | Net Sect                  | 180 | 13.04  | 10.521             | 0.000                     | 0.000                       | 42.840                       | 0.000                    | 0.000                      | 0.000                           | 0.000                   |                                  | 0.000                     |                                    |                            |
| g65P         | 3114        | 13.110                | L/r                     | 65.160                  | Net Sect                  | 199 | 24.32  | 13.110             | 0.000                     | 0.000                       | 65.160                       | 0.000                    | 0.000                      | 0.000                           | 0.000                   |                                  | 0.000                     |                                    |                            |

|       |      |         |     |         |          |     |       |         |       |       |         |       |       |       |       |       |
|-------|------|---------|-----|---------|----------|-----|-------|---------|-------|-------|---------|-------|-------|-------|-------|-------|
| g69P  | 3108 | 5.908   | L/r | 58.320  | Net Sect | 280 | 40.85 | 5.908   | 0.000 | 0.000 | 58.320  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g70P  | 3108 | 5.908   | L/r | 58.320  | Net Sect | 280 | 40.85 | 5.908   | 0.000 | 0.000 | 58.320  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g77P  | 3154 | 21.885  | L/r | 87.840  | Net Sect | 179 | 26.41 | 21.885  | 0.000 | 0.000 | 87.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g78P  | 3154 | 21.885  | L/r | 87.840  | Net Sect | 179 | 26.41 | 21.885  | 0.000 | 0.000 | 87.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g81P  | 124  | 15.975  | L/r | 60.840  | Net Sect | 174 | 11.80 | 15.975  | 0.000 | 0.000 | 60.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g82P  | 124  | 12.622  | L/r | 60.840  | Net Sect | 196 | 11.80 | 12.622  | 0.000 | 0.000 | 60.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g85P  | 123  | 12.320  | L/r | 51.840  | Net Sect | 183 | 20.05 | 12.320  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g89P  | 123  | 12.320  | L/r | 51.840  | Net Sect | 183 | 20.05 | 12.320  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g93P  | 114  | 677.176 | L/r | 749.999 | Net Sect | 47  | 12.26 | 677.176 | 0.000 | 0.000 | 749.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g97P  | 114  | 603.848 | L/r | 749.999 | Net Sect | 67  | 8.68  | 603.848 | 0.000 | 0.000 | 749.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g98P  | 114  | 677.176 | L/r | 749.999 | Net Sect | 47  | 6.13  | 677.176 | 0.000 | 0.000 | 749.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g105P | 102  | 547.714 | L/r | 749.999 | Net Sect | 79  | 10.22 | 547.714 | 0.000 | 0.000 | 749.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g106P | 102  | 567.437 | L/r | 749.999 | Net Sect | 75  | 9.71  | 567.437 | 0.000 | 0.000 | 749.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g113P | 117  | 11.724  | L/r | 47.160  | Net Sect | 179 | 15.74 | 11.724  | 0.000 | 0.000 | 47.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g114P | 117  | 11.724  | L/r | 47.160  | Net Sect | 179 | 15.74 | 11.724  | 0.000 | 0.000 | 47.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g121P | 395  | 35.354  | L/r | 74.160  | Net Sect | 127 | 16.33 | 35.354  | 0.000 | 0.000 | 74.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g122P | 395  | 35.354  | L/r | 74.160  | Net Sect | 127 | 16.33 | 35.354  | 0.000 | 0.000 | 74.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g129P | 137  | 29.545  | L/r | 86.400  | Net Sect | 152 | 20.10 | 29.545  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g130P | 137  | 29.545  | L/r | 86.400  | Net Sect | 152 | 20.10 | 29.545  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g133P | 135  | 32.838  | L/r | 86.400  | Net Sect | 145 | 19.07 | 32.838  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g137P | 135  | 32.838  | L/r | 86.400  | Net Sect | 145 | 19.07 | 32.838  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g141P | 1033 | 47.308  | L/r | 102.960 | Net Sect | 132 | 17.28 | 47.308  | 0.000 | 0.000 | 102.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g145P | 1033 | 47.308  | L/r | 102.960 | Net Sect | 132 | 17.28 | 47.308  | 0.000 | 0.000 | 102.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g149P | 1031 | 79.672  | L/r | 109.080 | Net Sect | 92  | 15.29 | 79.672  | 0.000 | 0.000 | 109.080 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g153P | 1031 | 79.672  | L/r | 109.080 | Net Sect | 92  | 15.29 | 79.672  | 0.000 | 0.000 | 109.080 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g161P | 1036 | 14.966  | L/r | 69.840  | Net Sect | 193 | 28.36 | 14.966  | 0.000 | 0.000 | 69.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g163P | 2100 | 487.295 | L/r | 571.999 | Net Sect | 58  | 7.67  | 487.295 | 0.000 | 0.000 | 571.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g164P | 2100 | 487.317 | L/r | 571.999 | Net Sect | 58  | 7.67  | 487.317 | 0.000 | 0.000 | 571.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g167P | 2100 | 487.295 | L/r | 571.999 | Net Sect | 58  | 7.67  | 487.295 | 0.000 | 0.000 | 571.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g171P | 2112 | 211.169 | L/r | 287.500 | Net Sect | 78  | 7.67  | 211.169 | 0.000 | 0.000 | 287.500 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g175P | 2112 | 211.189 | L/r | 287.500 | Net Sect | 78  | 7.67  | 211.189 | 0.000 | 0.000 | 287.500 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g179P | 2112 | 211.169 | L/r | 287.500 | Net Sect | 78  | 7.67  | 211.169 | 0.000 | 0.000 | 287.500 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g187P | 2163 | 59.059  | L/r | 109.080 | Net Sect | 121 | 10.00 | 59.059  | 0.000 | 0.000 | 109.080 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g188P | 2165 | 11.115  | L/r | 51.840  | Net Sect | 193 | 10.00 | 11.115  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g189P | 2168 | 11.404  | L/r | 42.840  | Net Sect | 173 | 14.14 | 11.404  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g193P | 2103 | 106.126 | L/r | 129.960 | Net Sect | 76  | 12.60 | 106.126 | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g194P | 2103 | 106.126 | L/r | 129.960 | Net Sect | 76  | 12.60 | 106.126 | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g197P | 2103 | 106.129 | L/r | 129.960 | Net Sect | 76  | 12.60 | 106.129 | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g201P | 2103 | 106.129 | L/r | 129.960 | Net Sect | 76  | 12.60 | 106.129 | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g205P | 2103 | 106.126 | L/r | 129.960 | Net Sect | 76  | 12.60 | 106.126 | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g209P | 2103 | 106.126 | L/r | 129.960 | Net Sect | 76  | 12.60 | 106.126 | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g217P | 2115 | 61.579  | L/r | 86.400  | Net Sect | 96  | 12.60 | 61.579  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g218P | 2115 | 61.579  | L/r | 86.400  | Net Sect | 96  | 12.60 | 61.579  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g221P | 2115 | 61.582  | L/r | 86.400  | Net Sect | 96  | 12.60 | 61.582  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g225P | 2115 | 61.582  | L/r | 86.400  | Net Sect | 96  | 12.60 | 61.582  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g229P | 2115 | 61.579  | L/r | 86.400  | Net Sect | 96  | 12.60 | 61.579  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g233P | 2115 | 61.579  | L/r | 86.400  | Net Sect | 96  | 12.60 | 61.579  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g237P | 2131 | 13.908  | L/r | 42.840  | Net Sect | 156 | 12.81 | 13.908  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g241P | 2131 | 13.908  | L/r | 42.840  | Net Sect | 156 | 12.81 | 13.908  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g245P | 2131 | 13.908  | L/r | 42.840  | Net Sect | 156 | 12.81 | 13.908  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g249P | 2131 | 13.908  | L/r | 42.840  | Net Sect | 156 | 12.81 | 13.908  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g257P | 2131 | 12.068  | L/r | 42.840  | Net Sect | 168 | 13.75 | 12.068  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g261P | 2129 | 38.080  | L/r | 97.000  | Net Sect | 121 | 8.00  | 38.080  | 0.000 | 0.000 | 97.000  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g262P | 2129 | 39.650  | L/r | 97.000  | Net Sect | 118 | 8.00  | 39.650  | 0.000 | 0.000 | 97.000  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g269P | 2148 | 11.271  | L/r | 51.840  | Net Sect | 191 | 9.43  | 11.271  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g273P | 2162 | 42.500  | L/r | 92.160  | Net Sect | 131 | 8.38  | 42.500  | 0.000 | 0.000 | 92.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| X273P | 2162 | 42.500  | L/r | 92.160  | Net Sect | 131 | 8.38  | 42.500  | 0.000 | 0.000 | 92.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g275P | 2170 | 91.534  | L/r | 129.960 | Net Sect | 97  | 8.00  | 91.534  | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| X275P | 2170 | 91.534  | L/r | 129.960 | Net Sect | 97  | 8.00  | 91.534  | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g277P | 2177 | 12.346  | L/r | 56.160  | Net Sect | 190 | 10.00 | 12.346  | 0.000 | 0.000 | 56.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g278P | 2111 | 1.961   | L/r | 33.840  | Net Sect | 370 | 10.00 | 1.961   | 0.000 | 0.000 | 33.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| X280P | 2179 | 3.363   | L/r | 33.840  | Net Sect | 283 | 9.22  | 3.363   | 0.000 | 0.000 | 33.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g280P | 2179 | 3.363   | L/r | 33.840  | Net Sect | 283 | 9.22  | 3.363   | 0.000 | 0.000 | 33.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| X281P | 2179 | 3.630   | L/r | 33.840  | Net Sect | 272 | 8.87  | 3.630   | 0.000 | 0.000 | 33.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g281P | 2179 | 3.630   | L/r | 33.840  | Net Sect | 272 | 8.87  | 3.630   | 0.000 | 0.000 | 33.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g284P | 2199 | 100.820 | L/r | 156.960 | Net Sect | 106 | 10.50 | 100.820 | 0.000 | 0.000 | 156.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| X284P | 2199 | 100.820 | L/r | 156.960 | Net Sect | 106 | 10.50 | 100.820 | 0.000 | 0.000 | 156.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g286P | 2192 | 54.352  | L/r | 150.480 | Net Sect | 148 | 21.59 | 54.352  | 0.000 | 0.000 | 150.480 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g288P | 2194 | 80.857  | L/r | 131.400 | Net Sect | 100 | 10.00 | 80.857  | 0.000 | 0.000 | 131.400 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g290P | 2195 | 11.115  | L/r | 51.840  | Net Sect | 193 | 10.00 | 11.115  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

|       |      |         |     |         |          |     |       |         |       |       |         |       |       |       |       |       |
|-------|------|---------|-----|---------|----------|-----|-------|---------|-------|-------|---------|-------|-------|-------|-------|-------|
| g292P | 2443 | 20.062  | L/r | 51.840  | Net Sect | 143 | 14.14 | 20.062  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g294P | 2403 | 12.346  | L/r | 56.160  | Net Sect | 190 | 10.00 | 12.346  | 0.000 | 0.000 | 56.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g295P | 2407 | 2.887   | L/r | 38.160  | Net Sect | 324 | 22.91 | 2.887   | 0.000 | 0.000 | 38.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| X296P | 2407 | 3.031   | L/r | 38.160  | Net Sect | 316 | 11.18 | 3.031   | 0.000 | 0.000 | 38.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g296P | 2407 | 3.031   | L/r | 38.160  | Net Sect | 316 | 11.18 | 3.031   | 0.000 | 0.000 | 38.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g299P | 2119 | 1.961   | L/r | 33.840  | Net Sect | 370 | 10.00 | 1.961   | 0.000 | 0.000 | 33.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g301P | 2422 | 57.588  | L/r | 92.160  | Net Sect | 109 | 13.93 | 57.588  | 0.000 | 0.000 | 92.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| X303P | 2430 | 86.581  | L/r | 129.960 | Net Sect | 103 | 8.50  | 86.581  | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g303P | 2430 | 86.581  | L/r | 129.960 | Net Sect | 103 | 8.50  | 86.581  | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g305P | 2427 | 59.059  | L/r | 109.080 | Net Sect | 121 | 10.00 | 59.059  | 0.000 | 0.000 | 109.080 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g307P | 2426 | 11.115  | L/r | 51.840  | Net Sect | 193 | 10.00 | 11.115  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g309P | 2426 | 20.062  | L/r | 51.840  | Net Sect | 143 | 14.14 | 20.062  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g311P | 2177 | 12.346  | L/r | 56.160  | Net Sect | 190 | 10.00 | 12.346  | 0.000 | 0.000 | 56.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g312P | 2437 | 4.429   | L/r | 33.840  | Net Sect | 246 | 16.06 | 4.429   | 0.000 | 0.000 | 33.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| X313P | 2437 | 3.237   | L/r | 33.840  | Net Sect | 288 | 9.39  | 3.237   | 0.000 | 0.000 | 33.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g313P | 2437 | 3.237   | L/r | 33.840  | Net Sect | 288 | 9.39  | 3.237   | 0.000 | 0.000 | 33.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g316P | 2437 | 2.856   | L/r | 33.840  | Net Sect | 307 | 10.00 | 2.856   | 0.000 | 0.000 | 33.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g318P | 2140 | 11.115  | L/r | 51.840  | Net Sect | 193 | 10.00 | 11.115  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g319P | 2140 | 11.115  | L/r | 51.840  | Net Sect | 193 | 10.00 | 11.115  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g322P | 2145 | 66.573  | L/r | 127.080 | Net Sect | 120 | 10.00 | 66.573  | 0.000 | 0.000 | 127.080 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g323P | 2145 | 66.573  | L/r | 127.080 | Net Sect | 120 | 10.00 | 66.573  | 0.000 | 0.000 | 127.080 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g325P | 2157 | 17.926  | L/r | 51.840  | Net Sect | 152 | 13.75 | 17.926  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g329P | 2142 | 7.888   | L/r | 38.160  | Net Sect | 196 | 14.14 | 7.888   | 0.000 | 0.000 | 38.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g335P | 2169 | 13.908  | L/r | 42.840  | Net Sect | 156 | 12.81 | 13.908  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g336P | 2169 | 13.908  | L/r | 42.840  | Net Sect | 156 | 12.81 | 13.908  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g339P | 2181 | 8.695   | L/r | 22.320  | Net Sect | 143 | 3.83  | 8.695   | 0.000 | 0.000 | 22.320  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g341P | 2189 | 3.730   | L/r | 29.160  | Net Sect | 249 | 8.87  | 3.730   | 0.000 | 0.000 | 29.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g351P | 2401 | 19.084  | L/r | 51.840  | Net Sect | 147 | 14.50 | 19.084  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g352P | 2401 | 19.084  | L/r | 51.840  | Net Sect | 147 | 14.50 | 19.084  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g355P | 2419 | 8.695   | L/r | 22.320  | Net Sect | 143 | 3.83  | 8.695   | 0.000 | 0.000 | 22.320  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g357P | 2417 | 6.159   | L/r | 39.240  | Net Sect | 225 | 11.18 | 6.159   | 0.000 | 0.000 | 39.240  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g359P | 2169 | 13.242  | L/r | 42.840  | Net Sect | 160 | 13.12 | 13.242  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g360P | 2169 | 13.242  | L/r | 42.840  | Net Sect | 160 | 13.12 | 13.242  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g361P | 2181 | 7.986   | L/r | 22.320  | Net Sect | 149 | 4.00  | 7.986   | 0.000 | 0.000 | 22.320  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g363P | 2189 | 3.326   | L/r | 29.160  | Net Sect | 264 | 9.39  | 3.326   | 0.000 | 0.000 | 29.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g367P | 2183 | 3.456   | L/r | 29.160  | Net Sect | 259 | 9.22  | 3.456   | 0.000 | 0.000 | 29.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g369P | 2181 | 8.695   | L/r | 22.320  | Net Sect | 143 | 3.83  | 8.695   | 0.000 | 0.000 | 22.320  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g373P | 2166 | 6.400   | L/r | 39.240  | Net Sect | 221 | 10.97 | 6.400   | 0.000 | 0.000 | 39.240  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g374P | 2167 | 6.036   | L/r | 25.560  | Net Sect | 183 | 5.00  | 6.036   | 0.000 | 0.000 | 25.560  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g1X   | 350  | 645.135 | L/r | 749.999 | Net Sect | 57  | 24.52 | 645.135 | 0.000 | 0.000 | 749.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g1XY  | 350  | 645.135 | L/r | 749.999 | Net Sect | 57  | 24.52 | 645.135 | 0.000 | 0.000 | 749.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g1Y   | 350  | 645.135 | L/r | 749.999 | Net Sect | 57  | 24.52 | 645.135 | 0.000 | 0.000 | 749.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g5X   | 302  | 24.083  | L/r | 75.240  | Net Sect | 158 | 28.33 | 24.083  | 0.000 | 0.000 | 75.240  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g5XY  | 302  | 24.083  | L/r | 75.240  | Net Sect | 158 | 28.33 | 24.083  | 0.000 | 0.000 | 75.240  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g5Y   | 302  | 24.083  | L/r | 75.240  | Net Sect | 158 | 28.33 | 24.083  | 0.000 | 0.000 | 75.240  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g6X   | 302  | 24.083  | L/r | 75.240  | Net Sect | 158 | 28.33 | 24.083  | 0.000 | 0.000 | 75.240  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g6XY  | 302  | 24.083  | L/r | 75.240  | Net Sect | 158 | 28.33 | 24.083  | 0.000 | 0.000 | 75.240  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g6Y   | 302  | 24.083  | L/r | 75.240  | Net Sect | 158 | 28.33 | 24.083  | 0.000 | 0.000 | 75.240  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g13X  | 320  | 22.615  | L/r | 83.160  | Net Sect | 171 | 11.07 | 22.615  | 0.000 | 0.000 | 83.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g13XY | 320  | 22.615  | L/r | 83.160  | Net Sect | 171 | 11.07 | 22.615  | 0.000 | 0.000 | 83.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g13Y  | 320  | 22.615  | L/r | 83.160  | Net Sect | 171 | 11.07 | 22.615  | 0.000 | 0.000 | 83.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g14X  | 320  | 22.615  | L/r | 83.160  | Net Sect | 171 | 11.07 | 22.615  | 0.000 | 0.000 | 83.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g14XY | 320  | 22.615  | L/r | 83.160  | Net Sect | 171 | 11.07 | 22.615  | 0.000 | 0.000 | 83.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g14Y  | 320  | 22.615  | L/r | 83.160  | Net Sect | 171 | 11.07 | 22.615  | 0.000 | 0.000 | 83.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g17Y  | 320  | 38.115  | L/r | 83.160  | Net Sect | 114 | 14.76 | 38.115  | 0.000 | 0.000 | 83.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g21X  | 320  | 38.115  | L/r | 83.160  | Net Sect | 114 | 14.76 | 38.115  | 0.000 | 0.000 | 83.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g25X  | 3114 | 31.626  | L/r | 65.160  | Net Sect | 128 | 15.66 | 31.626  | 0.000 | 0.000 | 65.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g25XY | 3114 | 31.626  | L/r | 65.160  | Net Sect | 128 | 15.66 | 31.626  | 0.000 | 0.000 | 65.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g25Y  | 3114 | 31.626  | L/r | 65.160  | Net Sect | 128 | 15.66 | 31.626  | 0.000 | 0.000 | 65.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g29X  | 300  | 632.882 | L/r | 836.499 | Net Sect | 75  | 9.71  | 632.882 | 0.000 | 0.000 | 836.499 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g29XY | 300  | 632.882 | L/r | 836.499 | Net Sect | 75  | 9.71  | 632.882 | 0.000 | 0.000 | 836.499 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g29Y  | 300  | 632.882 | L/r | 836.499 | Net Sect | 75  | 9.71  | 632.882 | 0.000 | 0.000 | 836.499 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g30X  | 317  | 673.492 | L/r | 836.499 | Net Sect | 67  | 8.68  | 673.492 | 0.000 | 0.000 | 836.499 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g30XY | 317  | 673.492 | L/r | 836.499 | Net Sect | 67  | 8.68  | 673.492 | 0.000 | 0.000 | 836.499 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g30Y  | 317  | 673.492 | L/r | 836.499 | Net Sect | 67  | 8.68  | 673.492 | 0.000 | 0.000 | 836.499 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g33X  | 317  | 688.473 | L/r | 836.499 | Net Sect | 64  | 27.58 | 688.473 | 0.000 | 0.000 | 836.499 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g33XY | 317  | 688.473 | L/r | 836.499 | Net Sect | 64  | 27.58 | 688.473 | 0.000 | 0.000 | 836.499 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g33Y  | 317  | 688.473 | L/r | 836.499 | Net Sect | 64  | 27.58 | 688.473 | 0.000 | 0.000 | 836.499 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g41X  | 3109 | 33.591  | L/r | 83.160  | Net Sect | 133 | 17.20 | 33.591  | 0.000 | 0.000 | 83.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g41XY | 3109 | 33.591  | L/r | 83.160  | Net Sect | 133 | 17.20 | 33.591  | 0.000 | 0.000 | 83.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

|       |      |         |     |         |     |      |     |       |         |       |       |         |       |       |       |       |       |       |       |
|-------|------|---------|-----|---------|-----|------|-----|-------|---------|-------|-------|---------|-------|-------|-------|-------|-------|-------|-------|
| q41Y  | 3109 | 33.591  | L/r | 83.160  | Net | Sect | 133 | 17.20 | 33.591  | 0.000 | 0.000 | 83.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q42X  | 3109 | 33.591  | L/r | 83.160  | Net | Sect | 133 | 17.20 | 33.591  | 0.000 | 0.000 | 83.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q42X  | 3109 | 33.591  | L/r | 83.160  | Net | Sect | 133 | 17.20 | 33.591  | 0.000 | 0.000 | 83.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q42Y  | 3109 | 33.591  | L/r | 83.160  | Net | Sect | 133 | 17.20 | 33.591  | 0.000 | 0.000 | 83.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q49X  | 327  | 27.511  | L/r | 102.960 | Net | Sect | 172 | 11.33 | 27.511  | 0.000 | 0.000 | 102.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q49X  | 327  | 27.511  | L/r | 102.960 | Net | Sect | 172 | 11.33 | 27.511  | 0.000 | 0.000 | 102.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q49Y  | 327  | 27.511  | L/r | 102.960 | Net | Sect | 172 | 11.33 | 27.511  | 0.000 | 0.000 | 102.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q49Y  | 327  | 27.511  | L/r | 102.960 | Net | Sect | 172 | 11.33 | 27.511  | 0.000 | 0.000 | 102.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q50X  | 327  | 27.511  | L/r | 102.960 | Net | Sect | 172 | 11.33 | 27.511  | 0.000 | 0.000 | 102.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q50X  | 327  | 27.511  | L/r | 102.960 | Net | Sect | 172 | 11.33 | 27.511  | 0.000 | 0.000 | 102.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q50Y  | 327  | 27.511  | L/r | 102.960 | Net | Sect | 172 | 11.33 | 27.511  | 0.000 | 0.000 | 102.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q50Y  | 327  | 27.511  | L/r | 102.960 | Net | Sect | 172 | 11.33 | 27.511  | 0.000 | 0.000 | 102.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q57X  | 321  | 10.521  | L/r | 42.840  | Net | Sect | 180 | 13.04 | 10.521  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q57X  | 321  | 10.521  | L/r | 42.840  | Net | Sect | 180 | 13.04 | 10.521  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q57Y  | 321  | 10.521  | L/r | 42.840  | Net | Sect | 180 | 13.04 | 10.521  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q58X  | 321  | 10.521  | L/r | 42.840  | Net | Sect | 180 | 13.04 | 10.521  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q58X  | 321  | 10.521  | L/r | 42.840  | Net | Sect | 180 | 13.04 | 10.521  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q58Y  | 321  | 10.521  | L/r | 42.840  | Net | Sect | 180 | 13.04 | 10.521  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q58Y  | 321  | 10.521  | L/r | 42.840  | Net | Sect | 180 | 13.04 | 10.521  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q65X  | 3114 | 13.110  | L/r | 65.160  | Net | Sect | 199 | 24.32 | 13.110  | 0.000 | 0.000 | 65.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q65X  | 3114 | 13.110  | L/r | 65.160  | Net | Sect | 199 | 24.32 | 13.110  | 0.000 | 0.000 | 65.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q65Y  | 3114 | 13.110  | L/r | 65.160  | Net | Sect | 199 | 24.32 | 13.110  | 0.000 | 0.000 | 65.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q65Y  | 3114 | 13.110  | L/r | 65.160  | Net | Sect | 199 | 24.32 | 13.110  | 0.000 | 0.000 | 65.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q69X  | 3108 | 5.908   | L/r | 58.320  | Net | Sect | 280 | 40.85 | 5.908   | 0.000 | 0.000 | 58.320  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q69X  | 3108 | 5.908   | L/r | 58.320  | Net | Sect | 280 | 40.85 | 5.908   | 0.000 | 0.000 | 58.320  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q69Y  | 3108 | 5.908   | L/r | 58.320  | Net | Sect | 280 | 40.85 | 5.908   | 0.000 | 0.000 | 58.320  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q70X  | 3108 | 5.908   | L/r | 58.320  | Net | Sect | 280 | 40.85 | 5.908   | 0.000 | 0.000 | 58.320  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q70X  | 3108 | 5.908   | L/r | 58.320  | Net | Sect | 280 | 40.85 | 5.908   | 0.000 | 0.000 | 58.320  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q70Y  | 3108 | 5.908   | L/r | 58.320  | Net | Sect | 280 | 40.85 | 5.908   | 0.000 | 0.000 | 58.320  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q77Y  | 3154 | 21.885  | L/r | 87.840  | Net | Sect | 179 | 26.41 | 21.885  | 0.000 | 0.000 | 87.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q78X  | 3154 | 21.885  | L/r | 87.840  | Net | Sect | 179 | 26.41 | 21.885  | 0.000 | 0.000 | 87.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q81X  | 124  | 15.975  | L/r | 60.840  | Net | Sect | 174 | 11.80 | 15.975  | 0.000 | 0.000 | 60.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q81X  | 124  | 15.975  | L/r | 60.840  | Net | Sect | 174 | 11.80 | 15.975  | 0.000 | 0.000 | 60.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q81Y  | 124  | 15.975  | L/r | 60.840  | Net | Sect | 174 | 11.80 | 15.975  | 0.000 | 0.000 | 60.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q82X  | 124  | 12.622  | L/r | 60.840  | Net | Sect | 196 | 11.80 | 12.622  | 0.000 | 0.000 | 60.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q82X  | 124  | 12.622  | L/r | 60.840  | Net | Sect | 196 | 11.80 | 12.622  | 0.000 | 0.000 | 60.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q82Y  | 124  | 12.622  | L/r | 60.840  | Net | Sect | 196 | 11.80 | 12.622  | 0.000 | 0.000 | 60.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q85X  | 123  | 12.320  | L/r | 51.840  | Net | Sect | 183 | 20.05 | 12.320  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q85X  | 123  | 12.320  | L/r | 51.840  | Net | Sect | 183 | 20.05 | 12.320  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q93X  | 114  | 677.176 | L/r | 749.999 | Net | Sect | 47  | 12.26 | 677.176 | 0.000 | 0.000 | 749.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q93X  | 114  | 677.176 | L/r | 749.999 | Net | Sect | 47  | 12.26 | 677.176 | 0.000 | 0.000 | 749.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q93Y  | 114  | 677.176 | L/r | 749.999 | Net | Sect | 47  | 12.26 | 677.176 | 0.000 | 0.000 | 749.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q93Y  | 114  | 677.176 | L/r | 749.999 | Net | Sect | 47  | 12.26 | 677.176 | 0.000 | 0.000 | 749.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q97X  | 114  | 603.848 | L/r | 749.999 | Net | Sect | 67  | 8.68  | 603.848 | 0.000 | 0.000 | 749.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q97X  | 114  | 603.848 | L/r | 749.999 | Net | Sect | 67  | 8.68  | 603.848 | 0.000 | 0.000 | 749.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q97Y  | 114  | 603.848 | L/r | 749.999 | Net | Sect | 67  | 8.68  | 603.848 | 0.000 | 0.000 | 749.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q97Y  | 114  | 603.848 | L/r | 749.999 | Net | Sect | 67  | 8.68  | 603.848 | 0.000 | 0.000 | 749.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q98X  | 114  | 677.176 | L/r | 749.999 | Net | Sect | 47  | 6.13  | 677.176 | 0.000 | 0.000 | 749.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q98X  | 114  | 677.176 | L/r | 749.999 | Net | Sect | 47  | 6.13  | 677.176 | 0.000 | 0.000 | 749.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q105X | 102  | 547.714 | L/r | 749.999 | Net | Sect | 79  | 10.22 | 547.714 | 0.000 | 0.000 | 749.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q105X | 102  | 547.714 | L/r | 749.999 | Net | Sect | 79  | 10.22 | 547.714 | 0.000 | 0.000 | 749.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q105Y | 102  | 547.714 | L/r | 749.999 | Net | Sect | 79  | 10.22 | 547.714 | 0.000 | 0.000 | 749.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q105Y | 102  | 547.714 | L/r | 749.999 | Net | Sect | 79  | 10.22 | 547.714 | 0.000 | 0.000 | 749.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q106X | 102  | 567.437 | L/r | 749.999 | Net | Sect | 75  | 9.71  | 567.437 | 0.000 | 0.000 | 749.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q106X | 102  | 567.437 | L/r | 749.999 | Net | Sect | 75  | 9.71  | 567.437 | 0.000 | 0.000 | 749.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q106Y | 102  | 567.437 | L/r | 749.999 | Net | Sect | 75  | 9.71  | 567.437 | 0.000 | 0.000 | 749.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q106Y | 102  | 567.437 | L/r | 749.999 | Net | Sect | 75  | 9.71  | 567.437 | 0.000 | 0.000 | 749.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q113X | 117  | 11.724  | L/r | 47.160  | Net | Sect | 179 | 15.74 | 11.724  | 0.000 | 0.000 | 47.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q113X | 117  | 11.724  | L/r | 47.160  | Net | Sect | 179 | 15.74 | 11.724  | 0.000 | 0.000 | 47.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q113Y | 117  | 11.724  | L/r | 47.160  | Net | Sect | 179 | 15.74 | 11.724  | 0.000 | 0.000 | 47.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q113Y | 117  | 11.724  | L/r | 47.160  | Net | Sect | 179 | 15.74 | 11.724  | 0.000 | 0.000 | 47.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q114X | 117  | 11.724  | L/r | 47.160  | Net | Sect | 179 | 15.74 | 11.724  | 0.000 | 0.000 | 47.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q114X | 117  | 11.724  | L/r | 47.160  | Net | Sect | 179 | 15.74 | 11.724  | 0.000 | 0.000 | 47.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q114Y | 117  | 11.724  | L/r | 47.160  | Net | Sect | 179 | 15.74 | 11.724  | 0.000 | 0.000 | 47.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| q121X | 395  | 35.354  | L/r | 74.160  | Net | Sect | 127 | 16.33 |         |       |       |         |       |       |       |       |       |       |       |

|       |      |         |     |         |          |     |       |         |       |       |         |       |       |       |       |       |
|-------|------|---------|-----|---------|----------|-----|-------|---------|-------|-------|---------|-------|-------|-------|-------|-------|
| g133X | 135  | 32.838  | L/r | 86.400  | Net Sect | 145 | 19.07 | 32.838  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g137X | 135  | 32.838  | L/r | 86.400  | Net Sect | 145 | 19.07 | 32.838  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g137X | 135  | 32.838  | L/r | 86.400  | Net Sect | 145 | 19.07 | 32.838  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g137Y | 135  | 32.838  | L/r | 86.400  | Net Sect | 145 | 19.07 | 32.838  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g141X | 1033 | 47.308  | L/r | 102.960 | Net Sect | 132 | 17.28 | 47.308  | 0.000 | 0.000 | 102.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g141X | 1033 | 47.308  | L/r | 102.960 | Net Sect | 132 | 17.28 | 47.308  | 0.000 | 0.000 | 102.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g141Y | 1033 | 47.308  | L/r | 102.960 | Net Sect | 132 | 17.28 | 47.308  | 0.000 | 0.000 | 102.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g145X | 1033 | 47.308  | L/r | 102.960 | Net Sect | 132 | 17.28 | 47.308  | 0.000 | 0.000 | 102.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g145X | 1033 | 47.308  | L/r | 102.960 | Net Sect | 132 | 17.28 | 47.308  | 0.000 | 0.000 | 102.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g145Y | 1033 | 47.308  | L/r | 102.960 | Net Sect | 132 | 17.28 | 47.308  | 0.000 | 0.000 | 102.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g149X | 1031 | 79.672  | L/r | 109.080 | Net Sect | 92  | 15.29 | 79.672  | 0.000 | 0.000 | 109.080 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g149X | 1031 | 79.672  | L/r | 109.080 | Net Sect | 92  | 15.29 | 79.672  | 0.000 | 0.000 | 109.080 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g149Y | 1031 | 79.672  | L/r | 109.080 | Net Sect | 92  | 15.29 | 79.672  | 0.000 | 0.000 | 109.080 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g153X | 1031 | 79.672  | L/r | 109.080 | Net Sect | 92  | 15.29 | 79.672  | 0.000 | 0.000 | 109.080 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g153X | 1031 | 79.672  | L/r | 109.080 | Net Sect | 92  | 15.29 | 79.672  | 0.000 | 0.000 | 109.080 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g153Y | 1031 | 79.672  | L/r | 109.080 | Net Sect | 92  | 15.29 | 79.672  | 0.000 | 0.000 | 109.080 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g161X | 1036 | 14.966  | L/r | 69.840  | Net Sect | 193 | 28.36 | 14.966  | 0.000 | 0.000 | 69.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g163X | 2100 | 487.295 | L/r | 571.999 | Net Sect | 58  | 7.67  | 487.295 | 0.000 | 0.000 | 571.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g163X | 2100 | 487.295 | L/r | 571.999 | Net Sect | 58  | 7.67  | 487.295 | 0.000 | 0.000 | 571.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g163Y | 2100 | 487.295 | L/r | 571.999 | Net Sect | 58  | 7.67  | 487.295 | 0.000 | 0.000 | 571.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g164X | 2100 | 487.317 | L/r | 571.999 | Net Sect | 58  | 7.67  | 487.317 | 0.000 | 0.000 | 571.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g164X | 2100 | 487.317 | L/r | 571.999 | Net Sect | 58  | 7.67  | 487.317 | 0.000 | 0.000 | 571.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g164Y | 2100 | 487.317 | L/r | 571.999 | Net Sect | 58  | 7.67  | 487.317 | 0.000 | 0.000 | 571.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g167X | 2100 | 487.295 | L/r | 571.999 | Net Sect | 58  | 7.67  | 487.295 | 0.000 | 0.000 | 571.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g167X | 2100 | 487.295 | L/r | 571.999 | Net Sect | 58  | 7.67  | 487.295 | 0.000 | 0.000 | 571.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g167Y | 2100 | 487.295 | L/r | 571.999 | Net Sect | 58  | 7.67  | 487.295 | 0.000 | 0.000 | 571.999 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g171X | 2112 | 211.169 | L/r | 287.500 | Net Sect | 78  | 7.67  | 211.169 | 0.000 | 0.000 | 287.500 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g171X | 2112 | 211.169 | L/r | 287.500 | Net Sect | 78  | 7.67  | 211.169 | 0.000 | 0.000 | 287.500 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g171Y | 2112 | 211.169 | L/r | 287.500 | Net Sect | 78  | 7.67  | 211.169 | 0.000 | 0.000 | 287.500 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g175X | 2112 | 211.189 | L/r | 287.500 | Net Sect | 78  | 7.67  | 211.189 | 0.000 | 0.000 | 287.500 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g175X | 2112 | 211.189 | L/r | 287.500 | Net Sect | 78  | 7.67  | 211.189 | 0.000 | 0.000 | 287.500 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g175Y | 2112 | 211.189 | L/r | 287.500 | Net Sect | 78  | 7.67  | 211.189 | 0.000 | 0.000 | 287.500 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g198X | 2112 | 211.169 | L/r | 287.500 | Net Sect | 78  | 7.67  | 211.169 | 0.000 | 0.000 | 287.500 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g198X | 2112 | 211.169 | L/r | 287.500 | Net Sect | 78  | 7.67  | 211.169 | 0.000 | 0.000 | 287.500 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g179Y | 2112 | 211.169 | L/r | 287.500 | Net Sect | 78  | 7.67  | 211.169 | 0.000 | 0.000 | 287.500 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g187Y | 2163 | 59.059  | L/r | 109.080 | Net Sect | 121 | 10.00 | 59.059  | 0.000 | 0.000 | 109.080 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g188X | 2165 | 11.115  | L/r | 51.840  | Net Sect | 193 | 10.00 | 11.115  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g189X | 2168 | 11.404  | L/r | 42.840  | Net Sect | 173 | 14.14 | 11.404  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g193X | 2103 | 106.126 | L/r | 129.960 | Net Sect | 76  | 12.60 | 106.126 | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g193X | 2103 | 106.126 | L/r | 129.960 | Net Sect | 76  | 12.60 | 106.126 | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g193Y | 2103 | 106.126 | L/r | 129.960 | Net Sect | 76  | 12.60 | 106.126 | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g194X | 2103 | 106.126 | L/r | 129.960 | Net Sect | 76  | 12.60 | 106.126 | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g194X | 2103 | 106.126 | L/r | 129.960 | Net Sect | 76  | 12.60 | 106.126 | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g194Y | 2103 | 106.126 | L/r | 129.960 | Net Sect | 76  | 12.60 | 106.126 | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g197X | 2103 | 106.129 | L/r | 129.960 | Net Sect | 76  | 12.60 | 106.129 | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g197X | 2103 | 106.129 | L/r | 129.960 | Net Sect | 76  | 12.60 | 106.129 | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g197Y | 2103 | 106.129 | L/r | 129.960 | Net Sect | 76  | 12.60 | 106.129 | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g201X | 2103 | 106.129 | L/r | 129.960 | Net Sect | 76  | 12.60 | 106.129 | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g201X | 2103 | 106.129 | L/r | 129.960 | Net Sect | 76  | 12.60 | 106.129 | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g201Y | 2103 | 106.129 | L/r | 129.960 | Net Sect | 76  | 12.60 | 106.129 | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g205X | 2103 | 106.126 | L/r | 129.960 | Net Sect | 76  | 12.60 | 106.126 | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g205X | 2103 | 106.126 | L/r | 129.960 | Net Sect | 76  | 12.60 | 106.126 | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g205Y | 2103 | 106.126 | L/r | 129.960 | Net Sect | 76  | 12.60 | 106.126 | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g209X | 2103 | 106.126 | L/r | 129.960 | Net Sect | 76  | 12.60 | 106.126 | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g209X | 2103 | 106.126 | L/r | 129.960 | Net Sect | 76  | 12.60 | 106.126 | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g209Y | 2103 | 106.126 | L/r | 129.960 | Net Sect | 76  | 12.60 | 106.126 | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g217X | 2115 | 61.579  | L/r | 86.400  | Net Sect | 96  | 12.60 | 61.579  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g217X | 2115 | 61.579  | L/r | 86.400  | Net Sect | 96  | 12.60 | 61.579  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g217Y | 2115 | 61.579  | L/r | 86.400  | Net Sect | 96  | 12.60 | 61.579  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g218X | 2115 | 61.579  | L/r | 86.400  | Net Sect | 96  | 12.60 | 61.579  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g218X | 2115 | 61.579  | L/r | 86.400  | Net Sect | 96  | 12.60 | 61.579  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g218Y | 2115 | 61.579  | L/r | 86.400  | Net Sect | 96  | 12.60 | 61.579  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g221X | 2115 | 61.582  | L/r | 86.400  | Net Sect | 96  | 12.60 | 61.582  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g221X | 2115 | 61.582  | L/r | 86.400  | Net Sect | 96  | 12.60 | 61.582  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g221Y | 2115 | 61.582  | L/r | 86.400  | Net Sect | 96  | 12.60 | 61.582  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g225X | 2115 | 61.582  | L/r | 86.400  | Net Sect | 96  | 12.60 | 61.582  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g225X | 2115 | 61.582  | L/r | 86.400  | Net Sect | 96  | 12.60 | 61.582  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g225Y | 2115 | 61.582  | L/r | 86.400  | Net Sect | 96  | 12.60 | 61.582  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g229X | 2115 | 61.579  | L/r | 86.400  | Net Sect | 96  | 12.60 | 61.579  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g229X | 2115 | 61.579  | L/r | 86.400  | Net Sect | 96  | 12.60 | 61.579  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |



|        |      |         |     |         |          |     |       |         |       |       |         |       |       |       |       |       |
|--------|------|---------|-----|---------|----------|-----|-------|---------|-------|-------|---------|-------|-------|-------|-------|-------|
| g229Y  | 2115 | 61.579  | L/r | 86.400  | Net Sect | 96  | 12.60 | 61.579  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g233X  | 2115 | 61.579  | L/r | 86.400  | Net Sect | 96  | 12.60 | 61.579  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g233XY | 2115 | 61.579  | L/r | 86.400  | Net Sect | 96  | 12.60 | 61.579  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g233Y  | 2115 | 61.579  | L/r | 86.400  | Net Sect | 96  | 12.60 | 61.579  | 0.000 | 0.000 | 86.400  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g237X  | 2131 | 13.908  | L/r | 42.840  | Net Sect | 156 | 12.81 | 13.908  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g237XY | 2131 | 13.908  | L/r | 42.840  | Net Sect | 156 | 12.81 | 13.908  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g237Y  | 2131 | 13.908  | L/r | 42.840  | Net Sect | 156 | 12.81 | 13.908  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g241X  | 2131 | 13.908  | L/r | 42.840  | Net Sect | 156 | 12.81 | 13.908  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g241XY | 2131 | 13.908  | L/r | 42.840  | Net Sect | 156 | 12.81 | 13.908  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g241Y  | 2131 | 13.908  | L/r | 42.840  | Net Sect | 156 | 12.81 | 13.908  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g245X  | 2131 | 13.908  | L/r | 42.840  | Net Sect | 156 | 12.81 | 13.908  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g245XY | 2131 | 13.908  | L/r | 42.840  | Net Sect | 156 | 12.81 | 13.908  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g245Y  | 2131 | 13.908  | L/r | 42.840  | Net Sect | 156 | 12.81 | 13.908  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g249X  | 2131 | 13.908  | L/r | 42.840  | Net Sect | 156 | 12.81 | 13.908  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g249XY | 2131 | 13.908  | L/r | 42.840  | Net Sect | 156 | 12.81 | 13.908  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g249Y  | 2131 | 13.908  | L/r | 42.840  | Net Sect | 156 | 12.81 | 13.908  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g257X  | 2131 | 12.068  | L/r | 42.840  | Net Sect | 168 | 13.75 | 12.068  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g257XY | 2131 | 12.068  | L/r | 42.840  | Net Sect | 168 | 13.75 | 12.068  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g257Y  | 2131 | 12.068  | L/r | 42.840  | Net Sect | 168 | 13.75 | 12.068  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g261X  | 2129 | 38.080  | L/r | 97.000  | Net Sect | 121 | 8.00  | 38.080  | 0.000 | 0.000 | 97.000  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g261XY | 2129 | 38.080  | L/r | 97.000  | Net Sect | 121 | 8.00  | 38.080  | 0.000 | 0.000 | 97.000  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g261Y  | 2129 | 38.080  | L/r | 97.000  | Net Sect | 121 | 8.00  | 38.080  | 0.000 | 0.000 | 97.000  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g262X  | 2129 | 39.650  | L/r | 97.000  | Net Sect | 118 | 8.00  | 39.650  | 0.000 | 0.000 | 97.000  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g262XY | 2129 | 39.650  | L/r | 97.000  | Net Sect | 118 | 8.00  | 39.650  | 0.000 | 0.000 | 97.000  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g262Y  | 2129 | 39.650  | L/r | 97.000  | Net Sect | 118 | 8.00  | 39.650  | 0.000 | 0.000 | 97.000  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g269X  | 2148 | 11.271  | L/r | 51.840  | Net Sect | 191 | 9.43  | 11.271  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g269XY | 2148 | 11.271  | L/r | 51.840  | Net Sect | 191 | 9.43  | 11.271  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g269Y  | 2148 | 11.271  | L/r | 51.840  | Net Sect | 191 | 9.43  | 11.271  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g273X  | 2162 | 42.500  | L/r | 92.160  | Net Sect | 131 | 8.38  | 42.500  | 0.000 | 0.000 | 92.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g273XY | 2162 | 42.500  | L/r | 92.160  | Net Sect | 131 | 8.38  | 42.500  | 0.000 | 0.000 | 92.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g273Y  | 2162 | 42.500  | L/r | 92.160  | Net Sect | 131 | 8.38  | 42.500  | 0.000 | 0.000 | 92.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g275X  | 2170 | 91.534  | L/r | 129.960 | Net Sect | 97  | 8.00  | 91.534  | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g275XY | 2170 | 91.534  | L/r | 129.960 | Net Sect | 97  | 8.00  | 91.534  | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g275Y  | 2170 | 91.534  | L/r | 129.960 | Net Sect | 97  | 8.00  | 91.534  | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g278X  | 2111 | 1.961   | L/r | 33.840  | Net Sect | 370 | 10.00 | 1.961   | 0.000 | 0.000 | 33.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g280Y  | 2179 | 3.363   | L/r | 33.840  | Net Sect | 283 | 9.22  | 3.363   | 0.000 | 0.000 | 33.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g280Y  | 2179 | 3.363   | L/r | 33.840  | Net Sect | 283 | 9.22  | 3.363   | 0.000 | 0.000 | 33.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g281Y  | 2179 | 3.630   | L/r | 33.840  | Net Sect | 272 | 8.87  | 3.630   | 0.000 | 0.000 | 33.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g281Y  | 2179 | 3.630   | L/r | 33.840  | Net Sect | 272 | 8.87  | 3.630   | 0.000 | 0.000 | 33.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g284Y  | 2199 | 100.820 | L/r | 156.960 | Net Sect | 106 | 10.00 | 100.820 | 0.000 | 0.000 | 156.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g284Y  | 2199 | 100.820 | L/r | 156.960 | Net Sect | 106 | 10.00 | 100.820 | 0.000 | 0.000 | 156.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g286Y  | 2192 | 54.352  | L/r | 150.480 | Net Sect | 148 | 21.59 | 54.352  | 0.000 | 0.000 | 150.480 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g288Y  | 2194 | 80.857  | L/r | 131.400 | Net Sect | 100 | 10.00 | 80.857  | 0.000 | 0.000 | 131.400 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g290X  | 2195 | 11.115  | L/r | 51.840  | Net Sect | 193 | 10.00 | 11.115  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g292X  | 2443 | 20.062  | L/r | 51.840  | Net Sect | 143 | 14.14 | 20.062  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g295Y  | 2407 | 2.887   | L/r | 38.160  | Net Sect | 324 | 22.91 | 2.887   | 0.000 | 0.000 | 38.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g296Y  | 2407 | 3.031   | L/r | 38.160  | Net Sect | 316 | 11.18 | 3.031   | 0.000 | 0.000 | 38.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g296Y  | 2407 | 3.031   | L/r | 38.160  | Net Sect | 316 | 11.18 | 3.031   | 0.000 | 0.000 | 38.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g299Y  | 2119 | 1.961   | L/r | 33.840  | Net Sect | 370 | 10.00 | 1.961   | 0.000 | 0.000 | 33.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g301Y  | 2422 | 57.588  | L/r | 92.160  | Net Sect | 109 | 13.93 | 57.588  | 0.000 | 0.000 | 92.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g303Y  | 2430 | 86.581  | L/r | 129.960 | Net Sect | 103 | 8.50  | 86.581  | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g303Y  | 2430 | 86.581  | L/r | 129.960 | Net Sect | 103 | 8.50  | 86.581  | 0.000 | 0.000 | 129.960 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g305Y  | 2427 | 59.059  | L/r | 109.080 | Net Sect | 121 | 10.00 | 59.059  | 0.000 | 0.000 | 109.080 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g307X  | 2426 | 11.115  | L/r | 51.840  | Net Sect | 193 | 10.00 | 11.115  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g309X  | 2426 | 20.062  | L/r | 51.840  | Net Sect | 143 | 14.14 | 20.062  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g312Y  | 2437 | 4.429   | L/r | 33.840  | Net Sect | 246 | 16.06 | 4.429   | 0.000 | 0.000 | 33.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g313Y  | 2437 | 3.237   | L/r | 33.840  | Net Sect | 288 | 9.39  | 3.237   | 0.000 | 0.000 | 33.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g313Y  | 2437 | 3.237   | L/r | 33.840  | Net Sect | 288 | 9.39  | 3.237   | 0.000 | 0.000 | 33.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g316Y  | 2437 | 2.856   | L/r | 33.840  | Net Sect | 307 | 10.00 | 2.856   | 0.000 | 0.000 | 33.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g318Y  | 2140 | 11.115  | L/r | 51.840  | Net Sect | 193 | 10.00 | 11.115  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g319X  | 2140 | 11.115  | L/r | 51.840  | Net Sect | 193 | 10.00 | 11.115  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g322X  | 2145 | 66.573  | L/r | 127.080 | Net Sect | 120 | 10.00 | 66.573  | 0.000 | 0.000 | 127.080 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g325X  | 2157 | 17.926  | L/r | 51.840  | Net Sect | 152 | 13.75 | 17.926  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g325XY | 2157 | 17.926  | L/r | 51.840  | Net Sect | 152 | 13.75 | 17.926  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g325Y  | 2157 | 17.926  | L/r | 51.840  | Net Sect | 152 | 13.75 | 17.926  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g329X  | 2142 | 7.888   | L/r | 38.160  | Net Sect | 196 | 14.14 | 7.888   | 0.000 | 0.000 | 38.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g335Y  | 2169 | 13.908  | L/r | 42.840  | Net Sect | 156 | 12.81 | 13.908  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g336Y  | 2169 | 13.908  | L/r | 42.840  | Net Sect | 156 | 12.81 | 13.908  | 0.000 | 0.000 | 42.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g339Y  | 2181 | 8.695   | L/r | 22.320  | Net Sect | 143 | 3.83  | 8.695   | 0.000 | 0.000 | 22.320  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g341Y  | 2189 | 3.730   | L/r | 29.160  | Net Sect | 249 | 8.87  | 3.730   | 0.000 | 0.000 | 29.160  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g351Y  | 2401 | 19.084  | L/r | 51.840  | Net Sect | 147 | 14.50 | 19.084  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g352Y  | 2401 | 19.084  | L/r | 51.840  | Net Sect | 147 | 14.50 | 19.084  | 0.000 | 0.000 | 51.840  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

|       |      |        |     |        |          |     |       |        |       |       |        |       |       |       |       |       |
|-------|------|--------|-----|--------|----------|-----|-------|--------|-------|-------|--------|-------|-------|-------|-------|-------|
| g355Y | 2419 | 8.695  | L/r | 22.320 | Net Sect | 143 | 3.83  | 8.695  | 0.000 | 0.000 | 22.320 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g357Y | 2417 | 6.159  | L/r | 39.240 | Net Sect | 225 | 11.18 | 6.159  | 0.000 | 0.000 | 39.240 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g359Y | 2169 | 13.242 | L/r | 42.840 | Net Sect | 160 | 13.12 | 13.242 | 0.000 | 0.000 | 42.840 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g360Y | 2169 | 13.242 | L/r | 42.840 | Net Sect | 160 | 13.12 | 13.242 | 0.000 | 0.000 | 42.840 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g361Y | 2181 | 7.986  | L/r | 22.320 | Net Sect | 149 | 4.00  | 7.986  | 0.000 | 0.000 | 22.320 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g363Y | 2189 | 3.326  | L/r | 29.160 | Net Sect | 264 | 9.39  | 3.326  | 0.000 | 0.000 | 29.160 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g367Y | 2183 | 3.456  | L/r | 29.160 | Net Sect | 259 | 9.22  | 3.456  | 0.000 | 0.000 | 29.160 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| g369Y | 2181 | 8.695  | L/r | 22.320 | Net Sect | 143 | 3.83  | 8.695  | 0.000 | 0.000 | 22.320 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Sum of Dead Load and Drag Areas From Equipment, Input and Calculated:

| Joint Label | Dead Load (kips) | X-Drag Area (ft <sup>2</sup> ) | Y-Drag Area (ft <sup>2</sup> ) |
|-------------|------------------|--------------------------------|--------------------------------|
| ZP          | 0.829            | 16.814                         | 16.814                         |
| WP          | 0.897            | 22.141                         | 19.652                         |
| AP          | 0.238            | 9.994                          | 9.330                          |
| TOPP        | 0.163            | 7.976                          | 4.324                          |
| SWP         | 0.0974           | 5.389                          | 2.752                          |
| TAP         | 0.172            | 7.961                          | 3.656                          |
| TASQP       | 0.121            | 3.439                          | 2.833                          |
| MHP         | 0.392            | 15.157                         | 4.407                          |
| MASQP       | 0.161            | 5.102                          | 3.108                          |
| BAP         | 0.102            | 4.812                          | 1.804                          |
| BASQP       | 0.117            | 3.239                          | 2.819                          |
| ZX          | 0.829            | 16.814                         | 16.814                         |
| ZXY         | 0.829            | 16.814                         | 16.814                         |
| ZY          | 0.829            | 16.814                         | 16.814                         |
| WX          | 0.915            | 21.974                         | 19.158                         |
| WXY         | 0.915            | 21.974                         | 19.158                         |
| WY          | 0.876            | 21.141                         | 18.714                         |
| AX          | 0.238            | 9.994                          | 9.330                          |
| AXY         | 0.238            | 9.994                          | 9.330                          |
| AY          | 0.238            | 9.994                          | 9.330                          |
| TOPX        | 0.163            | 7.976                          | 4.324                          |
| SWX         | 0.0974           | 5.389                          | 2.752                          |
| TASQY       | 0.121            | 3.439                          | 2.833                          |
| MASQY       | 0.161            | 5.102                          | 3.108                          |
| BASQY       | 0.117            | 3.239                          | 2.819                          |
| BS          | 0.199            | 9.107                          | 7.787                          |
| CS          | 0.429            | 14.837                         | 12.337                         |
| DS          | 0.357            | 10.589                         | 10.589                         |
| ES          | 0.414            | 13.959                         | 11.542                         |
| FS          | 0.759            | 21.073                         | 15.823                         |
| GS          | 0.608            | 13.556                         | 13.556                         |
| HS          | 0.639            | 15.337                         | 13.937                         |
| IS          | 0.835            | 16.318                         | 16.318                         |
| JS          | 0.795            | 15.139                         | 15.139                         |
| KS          | 0.699            | 13.847                         | 13.847                         |
| LS          | 0.896            | 19.743                         | 19.743                         |
| MS          | 0.657            | 9.211                          | 9.211                          |
| NS          | 1.62             | 32.785                         | 32.785                         |
| OS          | 1.45             | 27.452                         | 27.452                         |
| PS          | 0.96             | 13.719                         | 13.719                         |
| L1S         | 0.335            | 16.486                         | 8.395                          |
| L3S         | 0.335            | 8.395                          | 16.486                         |
| O1S         | 0.398            | 18.082                         | 8.596                          |
| O2S         | 0.398            | 8.596                          | 18.082                         |
| M1S         | 0.254            | 14.620                         | 7.034                          |
| M2S         | 0.254            | 7.034                          | 14.620                         |
| BMS         | 0.155            | 5.319                          | 2.403                          |
| BMXS        | 0.0446           | 2.722                          | 1.358                          |
| MMS         | 0.232            | 8.194                          | 2.819                          |
| MMXS        | 0.0653           | 4.045                          | 1.597                          |
| TMS         | 0.163            | 5.646                          | 2.417                          |
| TMXS        | 0.0471           | 2.878                          | 1.417                          |
| BPMS        | 0.0831           | 3.653                          | 1.882                          |
| BPMXS       | 0.0461           | 2.722                          | 1.559                          |
| BX          | 0.189            | 8.617                          | 7.335                          |

|       |        |          |          |
|-------|--------|----------|----------|
| BXY   | 0.189  | 8.617    | 7.335    |
| BY    | 0.199  | 9.107    | 7.787    |
| CX    | 0.46   | 15.764   | 12.754   |
| CXY   | 0.46   | 15.764   | 12.754   |
| CY    | 0.429  | 14.837   | 12.337   |
| DX    | 0.357  | 10.589   | 10.589   |
| DXY   | 0.357  | 10.589   | 10.589   |
| DY    | 0.357  | 10.589   | 10.589   |
| EX    | 0.393  | 12.795   | 10.988   |
| EXY   | 0.393  | 12.795   | 10.988   |
| EY    | 0.414  | 13.959   | 11.542   |
| FX    | 0.739  | 21.158   | 16.302   |
| FXY   | 0.739  | 21.158   | 16.302   |
| FY    | 0.759  | 21.073   | 15.823   |
| GX    | 0.608  | 13.556   | 13.556   |
| GXY   | 0.608  | 13.556   | 13.556   |
| GY    | 0.608  | 13.556   | 13.556   |
| HX    | 0.638  | 15.337   | 13.875   |
| HXY   | 0.638  | 15.337   | 13.875   |
| HY    | 0.639  | 15.337   | 13.937   |
| IX    | 0.835  | 16.318   | 16.318   |
| IXY   | 0.835  | 16.318   | 16.318   |
| IY    | 0.835  | 16.318   | 16.318   |
| JX    | 0.795  | 15.139   | 15.139   |
| JXY   | 0.795  | 15.139   | 15.139   |
| JY    | 0.795  | 15.139   | 15.139   |
| KX    | 0.699  | 13.847   | 13.847   |
| KXY   | 0.699  | 13.847   | 13.847   |
| KY    | 0.699  | 13.847   | 13.847   |
| LX    | 0.896  | 19.743   | 19.743   |
| LXY   | 0.896  | 19.743   | 19.743   |
| LY    | 0.896  | 19.743   | 19.743   |
| MX    | 0.657  | 9.211    | 9.211    |
| MXY   | 0.657  | 9.211    | 9.211    |
| MY    | 0.657  | 9.211    | 9.211    |
| NX    | 1.62   | 32.785   | 32.785   |
| NXY   | 1.62   | 32.785   | 32.785   |
| NY    | 1.62   | 32.785   | 32.785   |
| OX    | 1.45   | 27.452   | 27.452   |
| OKY   | 1.45   | 27.452   | 27.452   |
| OY    | 1.45   | 27.452   | 27.452   |
| PX    | 0.96   | 13.719   | 13.719   |
| PXY   | 0.96   | 13.719   | 13.719   |
| PY    | 0.96   | 13.719   | 13.719   |
| L1X   | 0.335  | 16.486   | 8.395    |
| L1XY  | 0.335  | 16.486   | 8.395    |
| L1Y   | 0.335  | 16.486   | 8.395    |
| L3X   | 0.335  | 8.395    | 16.486   |
| L3XY  | 0.335  | 8.395    | 16.486   |
| L3Y   | 0.335  | 8.395    | 16.486   |
| O1Y   | 0.398  | 18.082   | 8.596    |
| O2X   | 0.398  | 8.596    | 18.082   |
| M1Y   | 0.254  | 14.620   | 7.034    |
| M2X   | 0.254  | 7.034    | 14.620   |
| BMX   | 0.155  | 5.319    | 2.403    |
| BMXY  | 0.0446 | 2.722    | 1.358    |
| MMY   | 0.232  | 8.194    | 2.819    |
| MMXY  | 0.0653 | 4.045    | 1.597    |
| TMY   | 0.163  | 5.646    | 2.417    |
| TMXY  | 0.0471 | 2.878    | 1.417    |
| BPMY  | 0.103  | 4.653    | 2.819    |
| BPMXY | 0.0461 | 2.722    | 1.559    |
| Total | 62.1   | 1525.630 | 1385.620 |

Unadjusted Dead Load and Drag Areas by Section:

| Section | Unfactored     | X-Drag   | Y-Drag   | X-Drag    | Y-Drag    |
|---------|----------------|----------|----------|-----------|-----------|
| Label   | Dead Load Area | All Area | All Area | Face Area | Face Area |
|         | (kips)         | (ft^2)   | (ft^2)   | (ft^2)    | (ft^2)    |
| -----   |                |          |          |           |           |

|       |        |          |          |         |         |
|-------|--------|----------|----------|---------|---------|
| TOWER | 62.068 | 1525.630 | 1385.620 | 600.280 | 475.060 |
| Total | 62.068 | 1525.630 | 1385.620 | 600.280 | 475.060 |

Angle Member Weights and Surface Areas by Section:

| Section Label | Unfactored Weight (kips) | Factored Weight (kips) | Unfactored Surface Area (ft^2) | Factored Surface Area (ft^2) |
|---------------|--------------------------|------------------------|--------------------------------|------------------------------|
| TOWER         | 62.068                   | 62.068                 | 7144.843                       | 7144.843                     |
| Total         | 62.068                   | 62.068                 | 7144.843                       | 7144.843                     |

\*\*\* Insulator Data

Clamp Properties:

| Label     | Stock Number | Holding Capacity (lbs) |
|-----------|--------------|------------------------|
| CLAMP     |              | 2.5e+004               |
| CLAMP 50K |              | 5e+004                 |

Clamp Insulator Connectivity:

| Clamp Label | Structure And Tip Attach | Property Set |
|-------------|--------------------------|--------------|
| SW1         | SWP CLAMP 50K            |              |
| SW2         | SWX CLAMP 50K            |              |
| 1A          | TASQY CLAMP 50K          |              |
| 1B          | TASQP CLAMP 50K          |              |
| 2A          | MASQY CLAMP 50K          |              |
| 2B          | MASQP CLAMP 50K          |              |
| 3A          | BASQY CLAMP 50K          |              |
| 3B          | BASQP CLAMP 50K          |              |
| 4           | TAP CLAMP 50K            |              |
| 5           | MAP CLAMP 50K            |              |
| 6           | BAP CLAMP 50K            |              |
| A1T         | AXY CLAMP                |              |
| A1B         | BXY CLAMP                |              |
| A2T         | AX CLAMP                 |              |
| A2B         | BX CLAMP                 |              |
| A3T         | AP CLAMP                 |              |
| A3B         | BS CLAMP                 |              |
| COAX1       | CS CLAMP                 |              |
| COAX2       | WP CLAMP                 |              |

\*\*\* Loads Data

Loads from file: c:\pls\tower\projects\national grid\twr 98.lca

Vector Load Cases:

| Load Case Description | Dead Load Factor | SF for Steel Tubular Arms and Towers | SF for Wood Poles | SF for Conc. Ult. | SF for Conc. First Crack | SF for Conc. Zero Tens. | SF for Guys and Tubular Cables | SF for Non Braces | SF for Insuls. | SF for Found. | Trans. Wind Pressure (psf) | Longit. Wind Pressure (psf) | Point Loads | Wind Model | EDF Load Type | Joint Displ. |
|-----------------------|------------------|--------------------------------------|-------------------|-------------------|--------------------------|-------------------------|--------------------------------|-------------------|----------------|---------------|----------------------------|-----------------------------|-------------|------------|---------------|--------------|
| NESC 1.5000           |                  | 1.00000                              | 0.6700            | 0.6700            | 0.0000                   | 0.0000                  | 0.9000                         | 1.0000            | 1.0000         | 1.0000        | 0.9000                     | 16                          | 0 11 loads  | Standard   | Hyp 1         |              |
| WIND 1.1000           |                  | 1.00000                              | 0.6700            | 0.6700            | 0.0000                   | 0.0000                  | 0.9000                         | 1.0000            | 1.0000         | 1.0000        | 0.9000                     | 33.9                        | 0 11 loads  | Standard   | Hyp 1         |              |
| ICE 1.2000            |                  | 1.00000                              | 0.6700            | 0.6700            | 0.0000                   | 0.0000                  | 0.9000                         | 1.0000            | 1.0000         | 1.0000        | 0.9000                     | 3.52                        | 0 11 loads  | Standard   | Hyp 1         |              |
| NESCA 1.5000          |                  | 1.00000                              | 0.6700            | 0.6700            | 0.0000                   | 0.0000                  | 0.9000                         | 1.0000            | 1.0000         | 1.0000        | 0.9000                     | 16                          | 0 19 loads  | Standard   | Hyp 1         |              |
| WINDA 1.2500          |                  | 1.00000                              | 0.6700            | 0.6700            | 0.0000                   | 0.0000                  | 0.9000                         | 1.0000            | 1.0000         | 1.0000        | 0.9000                     | 33.9                        | 0 19 loads  | Standard   | Hyp 1         |              |
| ICEA 1.2500           |                  | 1.00000                              | 0.6700            | 0.6700            | 0.0000                   | 0.0000                  | 0.9000                         | 1.0000            | 1.0000         | 1.0000        | 0.9000                     | 3.52                        | 0 19 loads  | Standard   | Hyp 1         |              |

Point Loads for Load Case "NESC":

| Joint Label | Vertical Load (lbs) | Transverse Load (lbs) | Longitudinal Load (lbs) |
|-------------|---------------------|-----------------------|-------------------------|
| SWP         | 1029                | 13298                 | 0                       |
| SWX         | 1029                | 13298                 | 0                       |
| TASQY       | 2056.5              | 18458                 | 0                       |
| TASQP       | 2056.5              | 18458                 | 0                       |
| MASQY       | 2056.5              | 18458                 | 0                       |
| MASQP       | 2056.5              | 18458                 | 0                       |
| BASQY       | 2056.5              | 18458                 | 0                       |
| BASQP       | 2056.5              | 18458                 | 0                       |
| TAP         | 4113                | 36916                 | 0                       |
| MAP         | 4113                | 36916                 | 0                       |
| BAP         | 4113                | 36916                 | 0                       |

Point Loads for Load Case "WIND":

| Joint Label | Vertical Load (lbs) | Transverse Load (lbs) | Longitudinal Load (lbs) |
|-------------|---------------------|-----------------------|-------------------------|
| SWP         | 307                 | 6305                  | 0                       |
| SWX         | 307                 | 6305                  | 0                       |
| TASQY       | 966.5               | 10396                 | 0                       |
| TASQP       | 966.5               | 10396                 | 0                       |
| MASQY       | 966.5               | 10396                 | 0                       |
| MASQP       | 966.5               | 10396                 | 0                       |
| BASQY       | 966.5               | 10396                 | 0                       |
| BASQP       | 966.5               | 10396                 | 0                       |
| TAP         | 1933                | 20792                 | 0                       |
| MAP         | 1933                | 20792                 | 0                       |
| BAP         | 1933                | 20792                 | 0                       |

Point Loads for Load Case "ICE":

| Joint Label | Vertical Load (lbs) | Transverse Load (lbs) | Longitudinal Load (lbs) |
|-------------|---------------------|-----------------------|-------------------------|
| SWP         | 3086                | 14939                 | 0                       |
| SWX         | 3086                | 14939                 | 0                       |
| TASQY       | 3309.5              | 17809                 | 0                       |
| TASQP       | 3309.5              | 17809                 | 0                       |
| MASQY       | 3309.5              | 17809                 | 0                       |
| MASQP       | 3309.5              | 17809                 | 0                       |

|       |        |       |   |
|-------|--------|-------|---|
| BASQY | 3309.5 | 17809 | 0 |
| BASQP | 3309.5 | 17809 | 0 |
| TAP   | 6619   | 35618 | 0 |
| MAP   | 6619   | 35618 | 0 |
| BAP   | 6619   | 35618 | 0 |

Point Loads for Load Case "NESCA":

| Joint Label | Vertical Load (lbs) | Transverse Load (lbs) | Longitudinal Load (lbs) |
|-------------|---------------------|-----------------------|-------------------------|
| SWP         | 1029                | 13298                 | 0                       |
| SWX         | 1029                | 13298                 | 0                       |
| TASQY       | 2056.5              | 18458                 | 0                       |
| TASQP       | 2056.5              | 18458                 | 0                       |
| MASQY       | 2056.5              | 18458                 | 0                       |
| MASQP       | 2056.5              | 18458                 | 0                       |
| BASQY       | 2056.5              | 18458                 | 0                       |
| BASQP       | 2056.5              | 18458                 | 0                       |
| TAP         | 4113                | 36916                 | 0                       |
| MAP         | 4113                | 36916                 | 0                       |
| BAP         | 4113                | 36916                 | 0                       |
| AXY         | 0                   | 595                   | 0                       |
| AX          | 0                   | 595                   | 0                       |
| AP          | 0                   | 595                   | 0                       |
| BXY         | 375                 | -224                  | 0                       |
| BX          | 375                 | -224                  | 0                       |
| BS          | 375                 | -224                  | 0                       |
| CS          | 6754                | 0                     | 0                       |
| WP          | 6754                | 0                     | 0                       |

Point Loads for Load Case "WINDA":

| Joint Label | Vertical Load (lbs) | Transverse Load (lbs) | Longitudinal Load (lbs) |
|-------------|---------------------|-----------------------|-------------------------|
| SWP         | 307                 | 6305                  | 0                       |
| SWX         | 307                 | 6305                  | 0                       |
| TASQY       | 966.5               | 10396                 | 0                       |
| TASQP       | 966.5               | 10396                 | 0                       |
| MASQY       | 966.5               | 10396                 | 0                       |
| MASQP       | 966.5               | 10396                 | 0                       |
| BASQY       | 966.5               | 10396                 | 0                       |
| BASQP       | 966.5               | 10396                 | 0                       |
| TAP         | 1933                | 20792                 | 0                       |
| MAP         | 1933                | 20792                 | 0                       |
| BAP         | 1933                | 20792                 | 0                       |
| AXY         | 0                   | 579                   | 0                       |
| AX          | 0                   | 579                   | 0                       |
| AP          | 0                   | 579                   | 0                       |
| BXY         | 147                 | 447                   | 0                       |
| BX          | 147                 | 447                   | 0                       |
| BS          | 147                 | 447                   | 0                       |
| CS          | 862                 | 0                     | 0                       |
| WP          | 862                 | 0                     | 0                       |

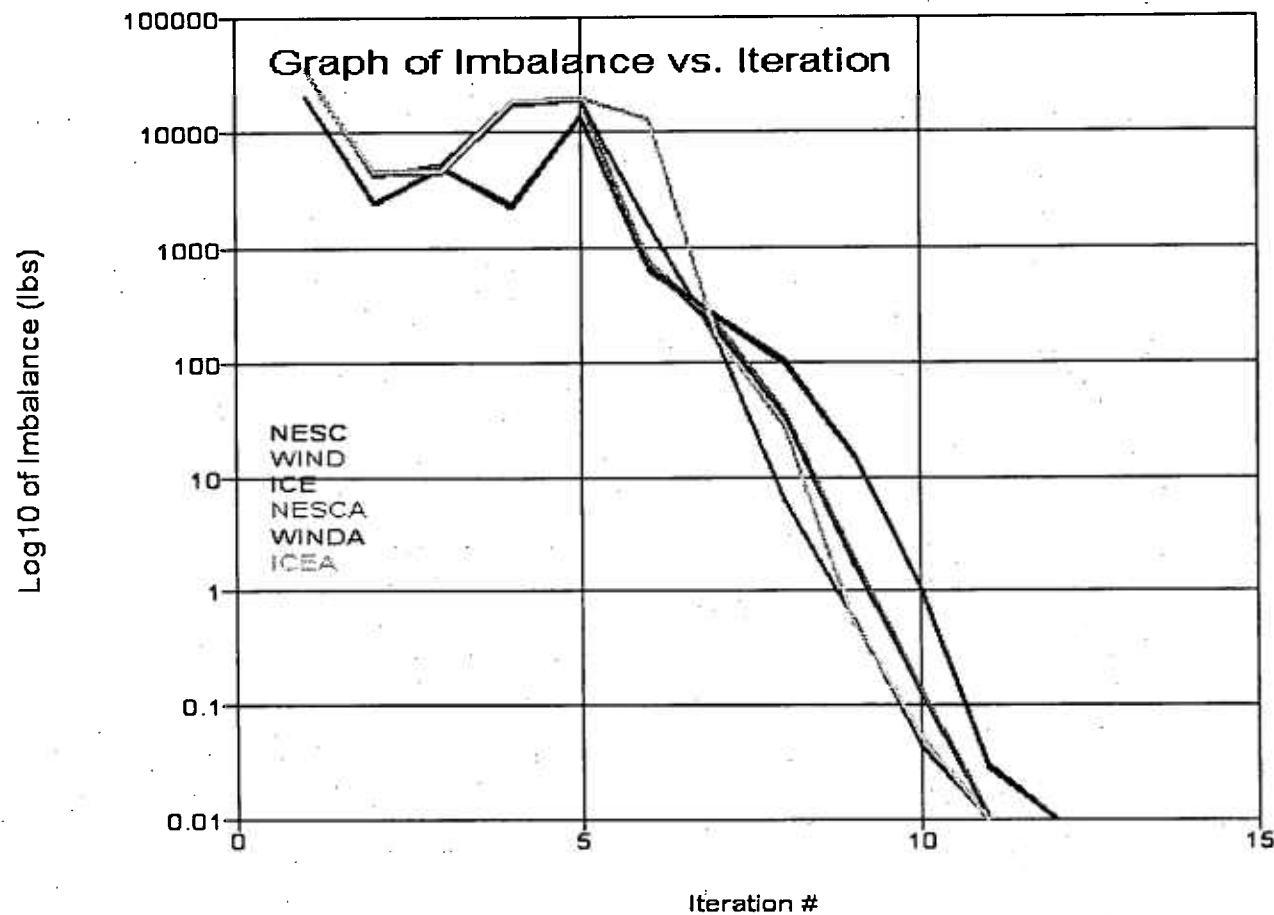
Point Loads for Load Case "ICEA":

| Joint Label | Vertical Load (lbs) | Transverse Load (lbs) | Longitudinal Load (lbs) |
|-------------|---------------------|-----------------------|-------------------------|
| SWP         | 3086                | 14939                 | 0                       |
| SWX         | 3086                | 14939                 | 0                       |
| TASQY       | 3309.5              | 17809                 | 0                       |
| TASQP       | 3309.5              | 17809                 | 0                       |
| MASQY       | 3309.5              | 17809                 | 0                       |
| MASQP       | 3309.5              | 17809                 | 0                       |

|       |        |       |   |
|-------|--------|-------|---|
| BASQY | 3309.5 | 17809 | 0 |
| BASQP | 3309.5 | 17809 | 0 |
| TAP   | 6619   | 35618 | 0 |
| MAP   | 6619   | 35618 | 0 |
| BAP   | 6619   | 35618 | 0 |
| AXY   | 0      | 604   | 0 |
| AX    | 0      | 604   | 0 |
| AP    | 0      | 604   | 0 |
| BXY   | 471    | -506  | 0 |
| BX    | 471    | -506  | 0 |
| BS    | 471    | -506  | 0 |
| CS    | 13135  | 0     | 0 |
| WP    | 13135  | 0     | 0 |

\*\*\* Analysis Results:

Maximum element utilization is 95.26% for Angle "g69XY" in load case "ICEA"  
Maximum insulator utilization is 74.57% for Clamp "5" in load case "NESC"



Angle Forces For All Load Cases:

Positive for tension - negative for compression

| Group | Angle | Max. Tens. | Max. Comp. | LC 1     | LC 2     | LC 3     | LC 4     | LC 5     | LC 6     |
|-------|-------|------------|------------|----------|----------|----------|----------|----------|----------|
| Label | Label | For All LC | For All LC | (kips)   | (kips)   | (kips)   | (kips)   | (kips)   | (kips)   |
|       |       | (kips)     | (kips)     |          |          |          |          |          |          |
| 350   | g1P   | 0.000      | -459.164   | -450.358 | -279.442 | -432.765 | -459.164 | -289.031 | -446.623 |
| 302   | g5P   | 0.000      | -16.094    | -14.445  | -16.094  | -8.932   | -14.299  | -16.021  | -9.005   |
| 302   | g6P   | 0.000      | -1.344     | -1.344   | -0.966   | -1.119   | -1.142   | -0.968   | -0.958   |
| 320   | g13P  | 0.345      | -0.203     | -0.191   | 0.345    | -0.134   | -0.203   | 0.331    | -0.168   |
| 320   | g14P  | 0.000      | -0.644     | -0.540   | -0.644   | -0.332   | -0.522   | -0.642   | -0.399   |



|      |       |        |          |          |          |          |          |          |          |
|------|-------|--------|----------|----------|----------|----------|----------|----------|----------|
| 320  | g17P  | 0.000  | -3.931   | -3.681   | -1.329   | -2.682   | -3.931   | -1.512   | -3.200   |
| 320  | g21P  | 0.000  | -0.802   | -0.802   | -0.677   | -0.621   | -0.800   | -0.728   | -0.649   |
| 3114 | g25P  | 0.000  | -0.797   | -0.430   | -0.789   | -0.159   | -0.433   | -0.797   | -0.173   |
| 300  | g29P  | 0.000  | -441.453 | -432.084 | -258.327 | -419.519 | -441.453 | -267.394 | -433.194 |
| 317  | g30P  | 0.000  | -457.767 | -448.978 | -278.358 | -431.744 | -457.767 | -287.809 | -445.481 |
| 317  | g33P  | 0.000  | -458.954 | -450.081 | -279.642 | -428.364 | -458.954 | -288.919 | -442.148 |
| 3109 | g41P  | 5.509  | 0.000    | 3.454    | 4.066    | 5.164    | 3.556    | 4.069    | 5.509    |
| 3109 | g42P  | 0.059  | -0.306   | -0.057   | 0.059    | -0.058   | -0.153   | 0.014    | -0.306   |
| 327  | g49P  | 0.000  | -14.292  | -11.490  | -14.292  | -6.822   | -11.190  | -14.075  | -6.565   |
| 327  | g50P  | 0.000  | -0.545   | -0.545   | -0.304   | -0.491   | -0.362   | -0.235   | -0.420   |
| 321  | g57P  | 0.000  | -5.085   | -4.929   | -4.294   | -3.144   | -5.085   | -4.371   | -3.516   |
| 321  | g58P  | 0.000  | 0.000    | 0.000    | 0.000    | 0.000    | 0.000    | 0.000    | 0.000    |
| 3114 | g65P  | 0.601  | -0.014   | 0.188    | 0.535    | -0.014   | 0.221    | 0.601    | 0.028    |
| 3108 | g69P  | 14.122 | 0.000    | 13.414   | 14.122   | 3.723    | 12.333   | 13.273   | 2.631    |
| 3108 | g70P  | 0.000  | 0.000    | 0.000    | 0.000    | 0.000    | 0.000    | 0.000    | 0.000    |
| 3154 | g77P  | 1.363  | -4.915   | -4.558   | -4.915   | 0.874    | -4.281   | -4.805   | 1.363    |
| 3154 | g78P  | 4.944  | 0.000    | 0.085    | 4.798    | 0.070    | 0.090    | 4.944    | 0.210    |
| 124  | g81P  | 1.082  | 0.000    | 0.455    | 1.082    | 0.116    | 0.434    | 1.074    | 0.074    |
| 124  | g82P  | 0.185  | -1.561   | -0.579   | 0.185    | -0.549   | -0.892   | 0.141    | -1.561   |
| 123  | g85P  | 1.674  | -0.944   | -0.887   | 1.644    | -0.713   | -0.944   | 1.674    | -0.602   |
| 123  | g89P  | 1.358  | 0.000    | 1.280    | 0.702    | 0.851    | 1.358    | 0.719    | 0.979    |
| 114  | g93P  | 0.000  | -440.451 | -431.127 | -257.811 | -418.713 | -440.451 | -266.774 | -432.172 |
| 114  | g97P  | 0.000  | -421.583 | -410.875 | -246.292 | -401.724 | -421.583 | -255.639 | -417.781 |
| 114  | g98P  | 0.000  | -433.792 | -423.638 | -245.331 | -412.884 | -433.792 | -264.604 | -427.954 |
| 102  | g105P | 0.000  | -383.814 | -367.530 | -217.353 | -363.341 | -380.830 | -227.511 | -383.814 |
| 102  | g106P | 0.000  | -426.537 | -414.108 | -246.868 | -406.567 | -426.537 | -257.066 | -425.438 |
| 117  | g113P | 6.604  | 0.000    | 6.604    | 5.940    | 5.349    | 6.210    | 5.721    | 4.886    |
| 117  | g114P | 0.000  | -5.378   | 0.000    | -5.227   | 0.000    | 0.000    | -5.378   | 0.000    |
| 395  | g121P | 0.000  | -10.246  | -10.246  | -9.319   | -6.837   | -10.232  | -9.279   | -7.091   |
| 395  | g122P | 0.000  | -7.480   | -7.480   | -4.329   | -7.246   | -0.329   | -7.480   | -0.041   |
| 137  | g129P | 7.486  | 0.000    | 7.486    | 5.914    | 5.938    | 7.065    | 5.439    | 5.266    |
| 137  | g130P | 3.670  | 0.000    | 3.670    | 2.948    | 3.527    | 2.962    | 2.942    | 1.469    |
| 135  | g133P | 7.641  | 0.000    | 7.641    | 6.014    | 5.995    | 6.994    | 5.650    | 4.927    |
| 135  | g137P | 0.000  | -9.411   | -8.696   | -5.431   | -8.329   | -9.384   | -5.847   | -9.411   |
| 1033 | g141P | 9.484  | 0.000    | 9.484    | 6.884    | 8.017    | 8.895    | 6.444    | 7.138    |
| 1033 | g145P | 16.122 | 0.000    | 16.122   | 9.682    | 15.515   | 15.970   | 9.906    | 15.034   |
| 1031 | g149P | 13.533 | 0.000    | 13.533   | 9.418    | 10.874   | 12.309   | 8.772    | 8.818    |
| 1031 | g153P | 0.000  | -31.069  | -29.411  | -17.600  | -28.354  | -31.069  | -18.680  | -31.063  |
| 1036 | g161P | 0.000  | -2.006   | -1.171   | -0.194   | -1.268   | -1.524   | -0.397   | -2.006   |
| 2100 | g163P | 0.000  | -196.276 | -182.668 | -105.345 | -185.286 | -190.312 | -112.211 | -196.276 |
| 2100 | g164P | 0.000  | -287.806 | -276.385 | -161.175 | -276.370 | -284.819 | -169.892 | -287.806 |
| 2100 | g167P | 0.000  | -326.072 | -317.775 | -186.572 | -316.744 | -325.266 | -195.621 | -326.072 |
| 2112 | g171P | 0.000  | -70.056  | -52.921  | -28.719  | -57.214  | -60.501  | -32.184  | -70.056  |
| 2112 | g175P | 0.000  | -114.876 | -97.869  | -54.774  | -102.143 | -105.791 | -59.597  | -114.876 |
| 2112 | g179P | 0.000  | -151.840 | -136.043 | -77.388  | -140.411 | -143.599 | -83.208  | -151.840 |
| 2163 | g187P | 0.000  | -4.279   | -0.959   | -0.236   | -2.759   | -0.132   | -4.279   | 0.000    |
| 2165 | g188P | 0.000  | 0.000    | 0.000    | 0.000    | 0.000    | 0.000    | 0.000    | 0.000    |
| 2168 | g189P | 0.000  | -8.808   | -8.219   | -4.728   | -8.164   | -8.615   | -4.922   | -8.808   |
| 2103 | g193P | 57.168 | 0.000    | 56.669   | 34.277   | 54.707   | 57.168   | 35.067   | 55.207   |
| 2103 | g194P | 0.000  | -29.657  | -29.125  | -17.068  | -28.585  | -29.657  | -17.640  | -29.269  |
| 2103 | g197P | 21.013 | 0.000    | 20.239   | 12.000   | 18.901   | 21.013   | 12.750   | 19.992   |
| 2103 | g201P | 59.031 | 0.000    | 58.591   | 35.139   | 57.719   | 59.031   | 36.012   | 58.122   |
| 2103 | g205P | 55.195 | 0.000    | 54.744   | 32.680   | 51.787   | 55.195   | 33.493   | 52.184   |
| 2103 | g209P | 0.000  | -15.944  | -15.706  | -9.277   | -14.550  | -15.944  | -9.531   | -14.813  |
| 2115 | g217P | 33.416 | 0.000    | 33.416   | 19.813   | 33.343   | 33.366   | 20.817   | 32.590   |
| 2115 | g218P | 0.000  | -4.372   | -3.838   | -2.118   | -4.372   | -3.758   | -2.073   | -4.248   |
| 2115 | g221P | 35.156 | 0.000    | 34.264   | 19.992   | 34.710   | 34.742   | 20.855   | 35.156   |
| 2115 | g225P | 2.751  | 0.000    | 2.348    | 1.337    | 1.902    | 2.751    | 1.625    | 2.514    |
| 2115 | g229P | 31.329 | 0.000    | 30.854   | 17.828   | 29.607   | 31.329   | 18.629   | 30.033   |
| 2115 | g233P | 0.000  | -2.413   | -2.413   | -1.370   | -1.973   | -2.343   | -1.295   | -1.863   |
| 2131 | g237P | 0.000  | -3.591   | -2.855   | -1.492   | -3.591   | -2.757   | -1.508   | -3.398   |
| 2131 | g241P | 9.198  | 0.000    | 9.198    | 4.554    | 8.837    | 8.780    | 5.306    | 9.198    |
| 2131 | g245P | 1.545  | 0.000    | 1.308    | 0.697    | 1.061    | 1.545    | 0.903    | 1.360    |
| 2131 | g249P | 11.157 | 0.000    | 9.415    | 4.936    | 10.495   | 9.963    | 5.359    | 11.157   |
| 2131 | g257P | 10.177 | 0.000    | 9.121    | 4.437    | 10.177   | 9.061    | 4.407    | 10.084   |
| 2129 | g261P | 0.000  | -21.822  | -18.400  | -9.284   | -21.095  | -18.963  | -9.767   | -21.822  |
| 2129 | g262P | 0.000  | -34.193  | -28.287  | -14.603  | -32.571  | -29.640  | -16.014  | -34.193  |
| 2148 | g269P | 0.000  | -7.166   | -6.420   | -3.156   | -7.122   | -6.439   | -3.168   | -7.166   |
| 2162 | g273P | 15.189 | 0.000    | 15.189   | 8.930    | 11.779   | 15.137   | 8.892    | 11.680   |
| 2162 | x273P | 15.136 | 0.000    | 15.136   | 8.835    | 11.762   | 15.084   | 8.796    | 11.662   |

|      |       |         |          |          |          |          |          |          |          |
|------|-------|---------|----------|----------|----------|----------|----------|----------|----------|
| 2170 | g275P | 0.000   | -23.291  | -21.347  | -11.785  | -23.291  | -21.318  | -11.782  | -23.276  |
| 2170 | X275P | 0.000   | -26.156  | -24.300  | -13.610  | -26.141  | -24.309  | -13.673  | -26.156  |
| 2177 | g277P | 1.850   | 0.000    | 1.824    | 1.090    | 1.777    | 1.850    | 1.133    | 1.800    |
| 2111 | g278P | 3.304   | 0.000    | 1.958    | 0.973    | 3.292    | 1.952    | 1.013    | 3.304    |
| 2179 | X280P | 7.976   | 0.000    | 4.925    | 2.523    | 7.843    | 4.989    | 2.596    | 7.976    |
| 2179 | g280P | 7.741   | 0.000    | 4.649    | 2.302    | 7.618    | 4.714    | 2.347    | 7.741    |
| 2179 | X281P | 7.860   | 0.000    | 5.049    | 2.612    | 7.843    | 5.041    | 2.681    | 7.860    |
| 2179 | g281P | 7.618   | 0.000    | 4.749    | 2.395    | 7.612    | 4.741    | 2.429    | 7.618    |
| 2199 | g284P | 0.000   | -27.477  | -24.791  | -13.779  | -27.463  | -24.786  | -13.852  | -27.477  |
| 2199 | X284P | 0.000   | -26.363  | -23.688  | -13.193  | -26.363  | -23.657  | -13.229  | -26.351  |
| 2192 | g286P | 13.193  | 0.000    | 13.193   | 7.695    | 9.143    | 13.193   | 7.591    | 9.125    |
| 2194 | g288P | 0.000   | -7.760   | -5.214   | -2.857   | -7.760   | -4.967   | -2.891   | -7.324   |
| 2195 | g290P | 12.584  | 0.000    | 11.371   | 6.603    | 12.052   | 11.762   | 7.023    | 12.584   |
| 2443 | g292P | 0.000   | -0.460   | -0.190   | -0.087   | -0.460   | -0.079   | -0.069   | -0.288   |
| 2403 | g294P | 0.000   | -0.574   | -0.563   | -0.330   | -0.547   | -0.574   | -0.347   | -0.556   |
| 2407 | g295P | 9.827   | 0.000    | 6.208    | 3.266    | 9.788    | 6.219    | 3.383    | 9.827    |
| 2407 | X296P | 10.104  | 0.000    | 6.623    | 3.545    | 10.073   | 6.609    | 3.669    | 10.104   |
| 2407 | g296P | 9.631   | 0.000    | 6.038    | 3.115    | 9.622    | 6.024    | 3.174    | 9.631    |
| 2119 | g299P | 5.817   | 0.000    | 3.809    | 2.068    | 5.780    | 3.817    | 2.156    | 5.817    |
| 2422 | g301P | 16.552  | 0.000    | 16.552   | 9.533    | 13.710   | 16.526   | 9.427    | 13.692   |
| 2430 | X303P | 0.000   | -24.816  | -22.852  | -12.722  | -24.810  | -22.844  | -12.758  | -24.816  |
| 2430 | g303P | 0.000   | -24.588  | -22.647  | -12.671  | -24.579  | -22.636  | -12.695  | -24.588  |
| 2427 | g305P | 0.000   | -3.615   | -1.969   | -1.032   | -3.558   | -1.996   | -1.054   | -3.615   |
| 2426 | g307P | 0.543   | -0.937   | -0.937   | -0.681   | 0.344    | -0.786   | -0.528   | 0.543    |
| 2426 | g309P | 0.000   | -1.292   | -1.164   | -0.657   | -1.217   | -1.203   | -0.716   | -1.292   |
| 2177 | g311P | 0.000   | -0.160   | -0.155   | -0.082   | -0.154   | -0.160   | -0.091   | -0.157   |
| 2437 | g312P | 6.303   | 0.000    | 3.793    | 1.939    | 6.266    | 3.833    | 2.066    | 6.303    |
| 2437 | X313P | 7.798   | 0.000    | 4.955    | 2.612    | 7.787    | 4.939    | 2.680    | 7.798    |
| 2437 | g313P | 7.536   | 0.000    | 4.631    | 2.379    | 7.536    | 4.616    | 2.410    | 7.535    |
| 2437 | g316P | 5.310   | 0.000    | 3.074    | 1.610    | 5.076    | 3.196    | 1.564    | 5.310    |
| 2140 | g318P | 0.000   | -2.418   | -0.892   | -0.389   | -2.166   | -1.122   | -0.585   | -2.418   |
| 2140 | g319P | 7.906   | 0.000    | 6.191    | 2.953    | 7.906    | 6.168    | 2.918    | 7.902    |
| 2145 | g322P | 18.668  | 0.000    | 14.534   | 6.838    | 18.668   | 14.528   | 6.853    | 18.668   |
| 2145 | g323P | 3.913   | 0.000    | 1.341    | 0.532    | 3.886    | 1.359    | 0.572    | 3.913    |
| 2157 | g325P | 0.000   | -2.519   | -0.806   | -0.300   | -2.519   | -0.799   | -0.308   | -2.512   |
| 2142 | g329P | 0.000   | -0.551   | -0.161   | -0.072   | -0.329   | -0.326   | -0.201   | -0.551   |
| 2169 | g335P | 0.000   | -2.373   | -2.337   | -1.396   | -2.278   | -2.373   | -1.452   | -2.312   |
| 2169 | g336P | 2.362   | 0.000    | 2.326    | 1.392    | 2.268    | 2.362    | 1.448    | 2.301    |
| 2181 | g339P | 0.202   | 0.000    | 0.202    | 0.161    | 0.145    | 0.202    | 0.184    | 0.152    |
| 2189 | g341P | 0.000   | -0.326   | -0.326   | -0.269   | -0.240   | -0.326   | -0.304   | -0.252   |
| 2401 | g351P | 0.818   | 0.000    | 0.806    | 0.475    | 0.781    | 0.818    | 0.498    | 0.788    |
| 2401 | g352P | 0.000   | -0.804   | -0.786   | -0.468   | -0.757   | -0.804   | -0.495   | -0.775   |
| 2419 | g355P | 0.308   | 0.000    | 0.308    | 0.243    | 0.222    | 0.308    | 0.277    | 0.233    |
| 2417 | g357P | 0.000   | -0.616   | -0.616   | -0.489   | -0.464   | -0.616   | -0.554   | -0.486   |
| 2169 | g359P | 0.200   | 0.000    | 0.197    | 0.106    | 0.194    | 0.200    | 0.116    | 0.193    |
| 2169 | g360P | 0.000   | -0.194   | -0.184   | -0.102   | -0.179   | -0.194   | -0.115   | -0.190   |
| 2181 | g361P | 0.213   | 0.000    | 0.213    | 0.169    | 0.153    | 0.213    | 0.194    | 0.162    |
| 2189 | g363P | 0.000   | -0.352   | -0.352   | -0.287   | -0.262   | -0.352   | -0.324   | -0.275   |
| 2183 | g367P | 0.000   | -0.250   | -0.249   | -0.166   | -0.222   | -0.250   | -0.193   | -0.232   |
| 2181 | g369P | 0.148   | 0.000    | 0.147    | 0.110    | 0.124    | 0.148    | 0.126    | 0.130    |
| 2166 | g373P | 0.004   | -0.015   | -0.014   | 0.004    | -0.014   | -0.015   | 0.004    | -0.015   |
| 2167 | g374P | 0.019   | -0.001   | 0.005    | 0.019    | -0.001   | 0.004    | 0.019    | -0.001   |
| 350  | g1X   | 385.363 | 0.000    | 385.363  | 236.049  | 365.954  | 384.830  | 240.055  | 360.862  |
| 350  | g1XY  | 385.915 | 0.000    | 385.363  | 236.042  | 365.955  | 385.915  | 239.730  | 362.434  |
| 350  | g1Y   | 0.000   | -456.153 | -450.353 | -279.434 | -432.762 | -456.153 | -288.208 | -440.201 |
| 302  | g5X   | 13.634  | 0.000    | 9.458    | 13.634   | 5.514    | 9.004    | 13.219   | 4.871    |
| 302  | g5XY  | 13.632  | 0.000    | 9.456    | 13.632   | 5.513    | 8.762    | 13.089   | 4.147    |
| 302  | g5Y   | 0.000   | -16.091  | -14.443  | -16.091  | -8.931   | -13.859  | -15.796  | -8.005   |
| 302  | g6X   | 13.882  | 0.000    | 13.522   | 8.209    | 12.908   | 13.882   | 8.270    | 13.600   |
| 302  | g6XY  | 13.521  | 0.000    | 13.521   | 8.210    | 12.907   | 13.163   | 8.306    | 11.851   |
| 302  | g6Y   | 0.000   | -1.560   | -1.345   | -0.968   | -1.119   | -1.560   | -1.169   | -1.361   |
| 320  | g13X  | 0.000   | -1.931   | -1.903   | -0.814   | -1.904   | -1.931   | -0.881   | -1.914   |
| 320  | g13XY | 0.000   | -1.980   | -1.903   | -0.815   | -1.904   | -1.964   | -0.891   | -1.980   |
| 320  | g13Y  | 0.346   | -0.191   | -0.191   | 0.346    | -0.134   | -0.183   | 0.343    | -0.128   |
| 320  | g14X  | 0.000   | -1.117   | -1.117   | -0.451   | -1.099   | -1.090   | -0.485   | -1.029   |
| 320  | g14XY | 0.000   | -1.154   | -1.117   | -0.450   | -1.099   | -1.147   | -0.484   | -1.154   |
| 320  | g14Y  | 0.000   | -0.696   | -0.540   | -0.645   | -0.332   | -0.558   | -0.696   | -0.299   |
| 320  | g17Y  | 0.000   | -3.785   | -3.680   | -1.328   | -2.682   | -3.785   | -1.439   | -3.002   |
| 320  | g21X  | 19.758  | 0.000    | 19.756   | 11.956   | 18.840   | 19.758   | 12.149   | 18.615   |
| 3114 | g25X  | 0.388   | -0.043   | 0.111    | 0.388    | -0.043   | 0.110    | 0.378    | -0.041   |

|      |        |         |          |          |          |          |          |          |          |
|------|--------|---------|----------|----------|----------|----------|----------|----------|----------|
| 3114 | g25XY  | 0.388   | -0.052   | 0.111    | 0.388    | -0.043   | 0.117    | 0.387    | -0.052   |
| 3114 | g25Y   | 0.000   | -0.799   | -0.430   | -0.789   | -0.159   | -0.425   | -0.799   | -0.151   |
| 300  | g29X   | 383.434 | 0.000    | 383.434  | 231.508  | 365.962  | 382.507  | 236.231  | 359.665  |
| 300  | g29XY  | 385.697 | 0.000    | 383.437  | 231.512  | 365.965  | 385.697  | 236.847  | 365.907  |
| 300  | g29Y   | 0.000   | -438.774 | -432.081 | -258.326 | -419.516 | -438.774 | -267.180 | -428.196 |
| 317  | g30X   | 387.223 | 0.000    | 387.223  | 237.189  | 367.569  | 386.688  | 241.352  | 362.512  |
| 317  | g30XY  | 387.787 | 0.000    | 387.222  | 237.183  | 367.570  | 387.787  | 241.027  | 364.113  |
| 317  | g30Y   | 0.000   | -454.797 | -448.973 | -278.349 | -431.741 | -454.797 | -286.977 | -439.205 |
| 317  | g33X   | 386.934 | 0.000    | 386.934  | 235.014  | 372.667  | 386.259  | 239.494  | 367.117  |
| 317  | g33XY  | 388.322 | 0.000    | 386.936  | 235.014  | 372.668  | 388.322  | 239.721  | 370.139  |
| 317  | g33Y   | 0.000   | -455.910 | -450.076 | -279.633 | -428.362 | -455.910 | -288.039 | -436.837 |
| 3109 | g41X   | 0.000   | -13.131  | -10.498  | -13.131  | -3.211   | -10.064  | -12.906  | -2.581   |
| 3109 | g41XY  | 0.000   | -13.125  | -10.496  | -13.125  | -3.211   | -9.632   | -12.517  | -2.133   |
| 3109 | g41Y   | 5.163   | 0.000    | 3.454    | 4.065    | 5.163    | 3.415    | 3.994    | 4.673    |
| 3109 | g42X   | 0.000   | -21.655  | -21.376  | -13.076  | -20.346  | -21.655  | -13.401  | -20.756  |
| 3109 | g42XY  | 0.000   | -21.375  | -21.375  | -13.075  | -20.346  | -21.114  | -13.310  | -19.516  |
| 3109 | g42Y   | 0.060   | -0.254   | -0.057   | 0.060    | -0.058   | 0.041    | 0.054    | -0.254   |
| 327  | g49X   | 13.644  | 0.000    | 10.646   | 13.644   | 6.166    | 10.347   | 13.348   | 5.880    |
| 327  | g49XY  | 13.642  | 0.000    | 10.644   | 13.642   | 6.166    | 9.993    | 13.164   | 4.999    |
| 327  | g49Y   | 0.000   | -14.290  | -11.488  | -14.290  | -6.821   | -10.835  | -13.891  | -5.684   |
| 327  | g50X   | 0.612   | -0.343   | -0.343   | -0.233   | -0.270   | 0.026    | -0.291   | 0.612    |
| 327  | g50XY  | 0.000   | -1.180   | -0.343   | -0.231   | -0.271   | -0.714   | -0.255   | -1.180   |
| 327  | g50Y   | 0.006   | -0.740   | -0.546   | -0.307   | -0.491   | -0.740   | -0.467   | -0.597   |
| 321  | g57X   | 2.900   | 0.000    | 0.972    | 2.902    | 0.727    | 0.731    | 2.782    | 0.256    |
| 321  | g57XY  | 2.902   | 0.000    | 0.972    | 2.902    | 0.727    | 0.820    | 2.826    | 0.319    |
| 321  | g57Y   | 0.000   | -4.929   | -4.929   | -4.293   | -3.144   | -4.919   | -4.293   | -3.220   |
| 321  | g58X   | 18.645  | 0.000    | 18.603   | 11.411   | 17.587   | 18.645   | 11.630   | 17.497   |
| 321  | g58XY  | 18.603  | 0.000    | 18.603   | 11.411   | 17.587   | 18.565   | 11.637   | 17.290   |
| 321  | g58Y   | 0.000   | 0.000    | 0.000    | 0.000    | 0.000    | 0.000    | 0.000    | 0.000    |
| 3114 | g65X   | 0.000   | -0.569   | -0.284   | -0.481   | -0.094   | -0.324   | -0.569   | -0.146   |
| 3114 | g65XY  | 0.000   | -0.479   | -0.283   | -0.479   | -0.094   | -0.240   | -0.408   | -0.045   |
| 3114 | g65Y   | 0.000   | -0.062   | 0.188    | 0.533    | 0.014    | 0.147    | 0.445    | -0.062   |
| 3108 | g69X   | 0.000   | -5.509   | 0.000    | 0.000    | -5.509   | 0.000    | 0.000    | -4.721   |
| 3108 | g69XY  | 0.000   | -5.628   | 0.000    | 0.000    | -5.509   | 0.000    | 0.000    | -5.628   |
| 3108 | g69Y   | 14.130  | 0.000    | 13.418   | 14.130   | 3.724    | 13.071   | 13.904   | 3.348    |
| 3108 | g70X   | 9.935   | 0.000    | 9.529    | 5.633    | 9.267    | 9.886    | 5.812    | 9.935    |
| 3108 | g70XY  | 9.529   | 0.000    | 9.529    | 5.632    | 9.267    | 9.195    | 5.671    | 8.385    |
| 3108 | g70Y   | 0.672   | 0.000    | 0.000    | 0.000    | 0.000    | 0.000    | 0.000    | 0.672    |
| 3154 | g77X   | 1.105   | -4.912   | -4.557   | -4.912   | -1.874   | -4.120   | -4.597   | 1.105    |
| 3154 | g78X   | 0.000   | -19.147  | -19.119  | -11.988  | -18.258  | -19.147  | -12.245  | -18.086  |
| 124  | g81X   | 0.000   | -2.064   | -2.059   | -1.596   | -1.515   | -2.064   | -1.631   | -1.521   |
| 124  | g81XY  | 0.000   | -2.059   | -2.059   | -1.596   | -1.515   | -2.038   | -1.608   | -1.492   |
| 124  | g81Y   | 1.082   | 0.000    | 0.455    | 1.082    | 0.116    | 0.432    | 1.058    | 0.096    |
| 124  | g82X   | 0.000   | -0.613   | -0.602   | -0.328   | -0.536   | -0.613   | -0.355   | -0.560   |
| 124  | g82XY  | 0.000   | -0.602   | -0.602   | -0.328   | -0.536   | -0.592   | -0.346   | -0.516   |
| 124  | g82Y   | 0.443   | -0.577   | -0.577   | 0.186    | -0.549   | -0.292   | 0.201    | 0.443    |
| 123  | g85X   | 0.000   | -5.153   | -5.153   | -3.618   | -5.153   | -3.694   | -4.740   | 0.000    |
| 123  | g85Y   | 1.280   | 0.000    | 1.280    | 0.702    | 0.851    | 1.272    | 0.688    | 0.849    |
| 114  | g93X   | 384.770 | 0.000    | 384.770  | 232.472  | 367.026  | 383.845  | 237.301  | 360.766  |
| 114  | g93XY  | 387.029 | 0.000    | 384.773  | 232.476  | 367.029  | 387.029  | 237.913  | 366.999  |
| 114  | g93Y   | 0.000   | -437.854 | -431.124 | -257.810 | -418.710 | -437.854 | -266.566 | -427.487 |
| 114  | g97X   | 378.434 | 0.000    | 378.434  | 225.640  | 363.756  | 377.568  | 231.216  | 357.007  |
| 114  | g97XY  | 382.338 | 0.000    | 378.440  | 225.650  | 363.761  | 382.338  | 232.367  | 366.579  |
| 114  | g97Y   | 0.000   | -417.844 | -410.871 | -246.298 | -401.721 | -417.844 | -255.595 | -410.937 |
| 114  | g98X   | 386.503 | 0.000    | 386.503  | 231.576  | 370.702  | 385.354  | 236.818  | 363.489  |
| 114  | g98XY  | 389.980 | 0.000    | 386.509  | 231.586  | 370.706  | 389.980  | 237.997  | 372.795  |
| 114  | g98Y   | 0.000   | -430.821 | -423.635 | -255.335 | -412.881 | -430.821 | -264.696 | -422.728 |
| 102  | g105X  | 347.279 | 0.000    | 347.036  | 204.593  | 336.557  | 347.279  | 211.471  | 331.501  |
| 102  | g105XY | 352.837 | 0.000    | 347.044  | 204.605  | 336.562  | 352.837  | 212.527  | 342.525  |
| 102  | g105Y  | 0.000   | -374.019 | -367.523 | -217.351 | -363.335 | -374.019 | -226.842 | -371.024 |
| 102  | g106X  | 378.711 | 0.000    | 378.711  | 224.793  | 365.041  | 378.245  | 231.148  | 358.701  |
| 102  | g106XY | 383.503 | 0.000    | 378.717  | 224.803  | 365.045  | 383.503  | 232.288  | 369.190  |
| 102  | g106Y  | 0.000   | -421.447 | -414.103 | -246.869 | -406.563 | -421.447 | -256.757 | -416.004 |
| 117  | g113X  | 0.000   | -9.553   | -9.553   | -8.418   | -6.626   | -9.453   | -8.781   | -6.767   |
| 117  | g113XY | 0.000   | -9.551   | -9.551   | -8.412   | -6.625   | -8.765   | -7.768   | -5.400   |
| 117  | g113Y  | 6.602   | 0.000    | 6.602    | 5.934    | 5.348    | 5.801    | 5.312    | 3.858    |
| 117  | g114X  | 11.692  | 0.000    | 11.692   | 7.471    | 11.070   | 11.204   | 7.534    | 9.825    |
| 117  | g114XY | 12.222  | 0.000    | 11.693   | 7.472    | 11.070   | 12.222   | 7.734    | 12.129   |
| 117  | g114Y  | 0.000   | -5.417   | 0.000    | -5.228   | 0.000    | 0.000    | -5.417   | -0.896   |
| 395  | g121X  | 5.727   | 0.000    | 5.727    | 5.598    | 4.643    | 5.331    | 5.389    | 4.089    |

|      |        |         |          |          |          |          |          |          |          |
|------|--------|---------|----------|----------|----------|----------|----------|----------|----------|
| 395  | g121XY | 5.726   | 0.000    | 5.726    | 5.594    | 4.643    | 5.065    | 5.071    | 3.364    |
| 395  | g121Y  | 0.000   | -10.244  | -10.244  | -9.313   | -6.836   | -9.600   | -8.823   | -5.922   |
| 395  | g122X  | 15.469  | 0.000    | 15.029   | 9.649    | 14.244   | 15.469   | 9.913    | 15.047   |
| 395  | g122XY | 15.029  | 0.000    | 15.029   | 9.647    | 14.244   | 14.642   | 9.745    | 13.177   |
| 395  | g122Y  | 0.000   | -7.523   | -0.441   | -7.246   | -0.330   | -0.812   | -7.523   | -1.812   |
| 137  | g129X  | 0.000   | -7.138   | -7.138   | -5.784   | -5.670   | -6.632   | -5.515   | -4.851   |
| 137  | g129XY | 0.000   | -7.137   | -7.137   | -5.782   | -5.670   | -6.756   | -5.421   | -5.171   |
| 137  | g129Y  | 7.485   | 0.000    | 7.485    | 5.912    | 5.938    | 7.082    | 5.516    | 5.423    |
| 137  | g130X  | 0.000   | -3.642   | -3.433   | -2.278   | -3.257   | -3.624   | -2.296   | -3.642   |
| 137  | g130XY | 0.000   | -3.433   | -3.433   | -2.280   | -3.257   | -3.288   | -2.404   | -2.904   |
| 137  | g130Y  | 6.038   | 0.000    | 3.674    | 2.951    | 3.529    | 4.620    | 3.205    | 6.038    |
| 135  | g133X  | 0.000   | -8.544   | -8.544   | -6.384   | -6.994   | -8.064   | -6.070   | -6.256   |
| 135  | g133XY | 0.000   | -8.543   | -8.543   | -6.382   | -6.994   | -8.074   | -5.941   | -6.393   |
| 135  | g133Y  | 7.639   | 0.000    | 7.639    | 6.011    | 5.994    | 7.186    | 5.550    | 5.410    |
| 135  | g137X  | 5.169   | 0.000    | 5.169    | 3.250    | 5.006    | 5.028    | 3.424    | 4.619    |
| 135  | g137XY | 5.448   | 0.000    | 5.168    | 3.248    | 5.006    | 5.410    | 3.279    | 5.448    |
| 135  | g137Y  | 0.000   | -8.694   | -8.694   | -5.427   | -8.328   | -8.526   | -5.519   | -8.052   |
| 1033 | g141X  | 0.000   | -9.978   | -9.978   | -7.160   | -7.963   | -9.134   | -6.714   | -6.558   |
| 1033 | g141XY | 0.000   | -9.976   | -9.976   | -7.156   | -7.962   | -9.405   | -6.586   | -7.234   |
| 1033 | g141Y  | 9.483   | 0.000    | 9.483    | 6.882    | 8.017    | 8.857    | 6.273    | 7.214    |
| 1033 | g145X  | 0.000   | -10.148  | -9.783   | -5.927   | -9.474   | -10.148  | -6.068   | -10.099  |
| 1033 | g145XY | 0.000   | -9.784   | -9.784   | -5.930   | -9.474   | -9.633   | -6.247   | -8.983   |
| 1033 | g145Y  | 17.354  | 0.000    | 16.125   | 9.686    | 15.516   | 17.218   | 10.322   | 17.354   |
| 1031 | g149X  | 0.000   | -15.598  | -15.598  | -10.498  | -13.787  | -14.915  | -10.007  | -12.789  |
| 1031 | g149XY | 0.000   | -15.597  | -15.597  | -10.495  | -13.787  | -14.791  | -9.761   | -12.747  |
| 1031 | g149Y  | 13.530  | 0.000    | 13.530   | 9.412    | 10.873   | 12.736   | 8.595    | 9.843    |
| 1031 | g153X  | 18.423  | 0.000    | 18.423   | 10.771   | 17.924   | 18.303   | 11.317   | 17.310   |
| 1031 | g153XY | 18.985  | 0.000    | 18.422   | 10.767   | 17.924   | 18.985   | 11.060   | 18.785   |
| 1031 | g153Y  | 0.000   | -29.408  | -29.408  | -17.594  | -28.353  | -29.368  | -18.099  | -27.964  |
| 1036 | g161X  | 0.000   | -1.267   | -1.169   | -0.190   | -1.267   | -0.811   | -0.016   | -0.361   |
| 2100 | g163X  | 171.941 | 0.000    | 171.554  | 98.236   | 169.667  | 171.941  | 103.210  | 166.665  |
| 2100 | g163XY | 175.989 | 0.000    | 171.555  | 98.237   | 169.668  | 175.989  | 103.799  | 174.477  |
| 2100 | g163Y  | 0.000   | -190.411 | -182.667 | -105.343 | -185.286 | -187.195 | -111.750 | -190.411 |
| 2100 | g164X  | 250.655 | 0.000    | 250.062  | 145.221  | 244.336  | 250.655  | 151.492  | 240.698  |
| 2100 | g164XY | 255.477 | 0.000    | 250.060  | 145.219  | 244.335  | 255.477  | 152.231  | 250.131  |
| 2100 | g164Y  | 0.000   | -283.256 | -276.386 | -161.176 | -276.370 | -282.327 | -169.577 | -283.256 |
| 2100 | g167X  | 299.763 | 0.000    | 299.096  | 175.174  | 290.783  | 299.763  | 182.037  | 286.789  |
| 2100 | g167XY | 305.114 | 0.000    | 299.100  | 175.179  | 290.785  | 305.114  | 182.927  | 297.344  |
| 2100 | g167Y  | 0.000   | -323.809 | -317.781 | -186.579 | -316.749 | -323.809 | -195.526 | -323.617 |
| 2112 | g171X  | 48.148  | 0.000    | 46.880   | 25.131   | 48.148   | 47.120   | 27.142   | 47.090   |
| 2112 | g171XY | 50.107  | 0.000    | 46.879   | 25.131   | 48.148   | 48.718   | 27.348   | 50.107   |
| 2112 | g171Y  | 0.000   | -59.558  | -52.921  | -28.719  | -57.214  | -55.017  | -31.371  | -59.558  |
| 2112 | g175X  | 87.135  | 0.000    | 86.843   | 48.276   | 86.609   | 87.135   | 51.450   | 84.811   |
| 2112 | g175XY | 89.613  | 0.000    | 86.843   | 48.275   | 86.609   | 89.613   | 51.750   | 89.553   |
| 2112 | g175Y  | 0.000   | -105.801 | -97.869  | -54.774  | -102.143 | -101.043 | -58.880  | -105.801 |
| 2112 | g179X  | 121.573 | 0.000    | 121.051  | 68.659   | 119.235  | 121.573  | 72.767   | 117.208  |
| 2112 | g179XY | 124.674 | 0.000    | 121.051  | 68.658   | 119.235  | 124.674  | 73.167   | 123.154  |
| 2112 | g179Y  | 0.000   | -144.767 | -136.042 | -77.387  | -140.411 | -139.892 | -82.652  | -144.767 |
| 2163 | g187Y  | 0.000   | -3.663   | -0.966   | -0.118   | -3.663   | -0.847   | -0.107   | -3.506   |
| 2165 | g188X  | 22.009  | 0.000    | 21.699   | 13.007   | 21.139   | 22.009   | 13.512   | 21.406   |
| 2168 | g189X  | 0.000   | -8.523   | -8.222   | -4.735   | -8.165   | -8.455   | -4.993   | -8.523   |
| 2103 | g193X  | 0.000   | -55.523  | -55.088  | -33.430  | -52.757  | -55.523  | -34.264  | -53.157  |
| 2103 | g193XY | 0.000   | -55.639  | -55.083  | -33.423  | -52.753  | -55.639  | -34.536  | -53.141  |
| 2103 | g193Y  | 56.662  | 0.000    | 56.662   | 34.269   | 54.702   | 56.574   | 35.229   | 53.835   |
| 2103 | g194X  | 16.399  | 0.000    | 16.399   | 9.509    | 16.021   | 16.394   | 9.717    | 15.808   |
| 2103 | g194XY | 16.826  | 0.000    | 16.400   | 9.510    | 16.020   | 16.826   | 10.105   | 16.483   |
| 2103 | g194Y  | 0.000   | -30.051  | -29.121  | -17.063  | -28.582  | -30.051  | -17.995  | -29.890  |
| 2103 | g197X  | 0.000   | -11.766  | -11.397  | -6.770   | -11.153  | -11.766  | -7.242   | -11.605  |
| 2103 | g197XY | 0.000   | -11.397  | -11.397  | -6.770   | -11.153  | -11.298  | -6.848   | -10.848  |
| 2103 | g197Y  | 20.586  | 0.000    | 20.240   | 12.000   | 18.901   | 20.586   | 12.368   | 19.315   |
| 2103 | g201X  | 0.000   | -56.149  | -55.675  | -33.627  | -52.415  | -56.149  | -34.461  | -52.836  |
| 2103 | g201XY | 0.000   | -55.971  | -55.677  | -33.629  | -52.416  | -55.971  | -34.733  | -52.242  |
| 2103 | g201Y  | 58.949  | 0.000    | 58.590   | 35.136   | 57.718   | 58.949   | 36.274   | 57.728   |
| 2103 | g205X  | 0.000   | -58.405  | -57.962  | -34.242  | -57.295  | -58.405  | -35.110  | -57.704  |
| 2103 | g205XY | 0.000   | -58.316  | -57.960  | -34.240  | -57.295  | -58.316  | -35.372  | -57.294  |
| 2103 | g205Y  | 55.020  | 0.000    | 54.745   | 32.681   | 51.788   | 55.020   | 33.765   | 51.593   |
| 2103 | g209X  | 8.773   | 0.000    | 8.773    | 5.259    | 8.625    | 8.645    | 5.278    | 8.309    |
| 2103 | g209XY | 9.095   | 0.000    | 8.773    | 5.259    | 8.625    | 9.095    | 5.672    | 9.028    |
| 2103 | g209Y  | 0.000   | -16.372  | -15.706  | -9.278   | -14.549  | -16.372  | -9.913   | -15.492  |
| 2115 | g217X  | 0.000   | -32.414  | -31.800  | -19.031  | -30.568  | -32.414  | -20.158  | -31.045  |

|      |        |        |         |         |         |         |         |         |         |
|------|--------|--------|---------|---------|---------|---------|---------|---------|---------|
| 2115 | q217XY | 0.000  | -32.312 | -31.800 | -19.031 | -30.568 | -32.312 | -19.865 | -31.034 |
| 2115 | q217Y  | 33.888 | 0.000   | 33.416  | 19.813  | 33.343  | 33.888  | 20.629  | 33.762  |
| 2115 | q218X  | 2.686  | 0.000   | 2.661   | 1.456   | 2.686   | 2.460   | 1.376   | 2.315   |
| 2115 | q218XY | 3.083  | 0.000   | 2.661   | 1.456   | 2.686   | 2.956   | 1.744   | 3.083   |
| 2115 | q218Y  | 0.000  | -4.973  | -3.838  | -2.117  | -4.372  | -4.224  | -2.413  | -4.973  |
| 2115 | q221X  | 0.000  | -31.509 | -31.029 | -18.252 | -29.370 | -31.509 | -19.054 | -30.002 |
| 2115 | q221XY | 0.000  | -31.288 | -31.029 | -18.252 | -29.370 | -31.288 | -19.348 | -29.364 |
| 2115 | q221Y  | 34.710 | 0.000   | 34.264  | 19.992  | 34.710  | 34.610  | 21.138  | 34.708  |
| 2115 | q225X  | 0.000  | -2.851  | -2.426  | -1.345  | -2.453  | -2.717  | -1.623  | -2.851  |
| 2115 | q225XY | 0.000  | -2.453  | -2.426  | -1.345  | -2.453  | -2.220  | -1.253  | -2.082  |
| 2115 | q225Y  | 2.348  | 0.000   | 2.348   | 1.337   | 1.902   | 2.276   | 1.263   | 1.787   |
| 2115 | q229X  | 0.000  | -34.980 | -33.950 | -19.476 | -34.531 | -34.431 | -20.338 | -34.980 |
| 2115 | q229XY | 0.000  | -34.551 | -33.950 | -19.476 | -34.531 | -34.309 | -20.623 | -34.551 |
| 2115 | q229Y  | 31.096 | 0.000   | 30.854  | 17.828  | 29.607  | 31.096  | 18.922  | 29.371  |
| 2115 | q233X  | 2.313  | 0.000   | 2.276   | 1.264   | 2.313   | 2.070   | 1.167   | 1.945   |
| 2115 | q233XY | 2.707  | 0.000   | 2.276   | 1.264   | 2.313   | 2.563   | 1.537   | 2.707   |
| 2115 | q233Y  | 0.000  | -2.821  | -2.413  | -1.370  | -1.973  | -2.821  | -1.657  | -2.596  |
| 2131 | q237X  | 1.268  | 0.000   | 1.268   | 0.648   | 1.247   | 1.103   | 0.584   | 0.977   |
| 2131 | q237XY | 1.495  | 0.000   | 1.268   | 0.648   | 1.247   | 1.460   | 0.829   | 1.495   |
| 2131 | q237Y  | 0.000  | -3.873  | -2.855  | -1.492  | -3.591  | -3.067  | -1.661  | -3.873  |
| 2131 | q241X  | 0.000  | -8.403  | -7.827  | -4.320  | -8.087  | -8.272  | -5.179  | -8.403  |
| 2131 | q241XY | 0.000  | -8.163  | -7.827  | -4.320  | -8.087  | -8.163  | -5.457  | -8.005  |
| 2131 | q241Y  | 0.000  | 8.329   | 4.554   | 8.837   | 8.554   | 5.624   | 8.621   | 8.329   |
| 2131 | q245X  | 0.000  | -1.450  | -1.228  | -0.632  | -1.204  | -1.419  | -0.810  | -1.450  |
| 2131 | q245XY | 0.000  | -1.228  | -1.228  | -0.632  | -1.204  | -1.062  | -0.566  | -0.933  |
| 2131 | q245Y  | 1.308  | 0.000   | 1.308   | 0.697   | 1.061   | 1.193   | 0.661   | 0.853   |
| 2131 | q249X  | 0.000  | -9.422  | -8.154  | -4.254  | -8.798  | -8.723  | -4.818  | -9.422  |
| 2131 | q249XY | 0.000  | -9.308  | -8.154  | -4.254  | -8.798  | -8.735  | -4.878  | -9.308  |
| 2131 | q249Y  | 11.021 | 0.000   | 9.415   | 4.936   | 10.495  | 10.004  | 5.555   | 11.021  |
| 2131 | q257X  | 0.000  | -10.457 | -9.335  | -4.562  | -10.457 | -9.265  | -4.531  | -10.357 |
| 2131 | q257XY | 0.000  | -10.598 | -9.335  | -4.562  | -10.457 | -9.439  | -4.629  | -10.598 |
| 2131 | q257Y  | 10.233 | 0.000   | 9.121   | 4.437   | 10.177  | 9.149   | 4.433   | 10.233  |
| 2129 | q261X  | 17.056 | 0.000   | 15.651  | 7.766   | 16.399  | 16.216  | 8.220   | 17.056  |
| 2129 | q261XY | 16.427 | 0.000   | 15.651  | 7.766   | 16.399  | 15.845  | 8.031   | 16.427  |
| 2129 | q261Y  | 0.000  | -21.189 | -18.400 | -9.284  | -21.095 | -18.610 | -9.661  | -21.189 |
| 2129 | q262X  | 24.035 | 0.000   | 22.466  | 11.429  | 22.924  | 23.485  | 12.565  | 24.035  |
| 2129 | q262XY | 22.924 | 0.000   | 22.466  | 11.429  | 22.924  | 22.625  | 12.368  | 22.924  |
| 2129 | q262Y  | 0.000  | -32.953 | -28.287 | -14.603 | -32.571 | -29.066 | -15.929 | -32.953 |
| 2148 | q269X  | 7.163  | 0.000   | 6.270   | 3.031   | 7.070   | 6.342   | 3.062   | 7.163   |
| 2148 | q269XY | 7.070  | 0.000   | 6.270   | 3.031   | 7.070   | 6.222   | 2.995   | 6.996   |
| 2148 | q269Y  | 0.000  | -7.122  | -6.420  | -3.156  | -7.122  | -6.378  | -3.150  | -7.062  |
| 2162 | q273Y  | 15.238 | 0.000   | 15.172  | 8.899   | 11.772  | 15.238  | 8.915   | 11.874  |
| 2162 | X273Y  | 15.207 | 0.000   | 15.140  | 8.832   | 11.764  | 15.207  | 8.848   | 11.867  |
| 2170 | q275Y  | 0.000  | -23.291 | -21.347 | -11.785 | -23.291 | -21.321 | -11.783 | -23.283 |
| 2170 | X275Y  | 0.000  | -26.174 | -24.300 | -13.610 | -26.174 | -24.320 | -13.677 | -26.174 |
| 2111 | q278Y  | 3.613  | 0.000   | 1.955   | 0.970   | 3.290   | 2.109   | 1.023   | 3.613   |
| 2179 | X280Y  | 7.835  | 0.000   | 4.913   | 2.510   | 7.835   | 4.833   | 2.512   | 7.717   |
| 2179 | q280Y  | 7.639  | 0.000   | 4.673   | 2.315   | 7.639   | 4.594   | 2.294   | 7.513   |
| 2179 | X281Y  | 7.861  | 0.000   | 5.049   | 2.612   | 7.843   | 5.041   | 2.681   | 7.861   |
| 2179 | q281Y  | 7.618  | 0.000   | 4.749   | 2.395   | 7.612   | 4.741   | 2.429   | 7.618   |
| 2199 | q284Y  | 0.000  | -27.487 | -24.791 | -13.779 | -27.463 | -24.792 | -13.854 | -27.487 |
| 2199 | X284Y  | 0.000  | -26.378 | -23.688 | -13.194 | -26.363 | -23.672 | -13.236 | -26.378 |
| 2192 | q286Y  | 13.221 | 0.000   | 13.193  | 7.695   | 9.143   | 13.221  | 7.659   | 9.135   |
| 2194 | q288Y  | 0.000  | -7.854  | -5.214  | -2.856  | -7.760  | -5.253  | -2.957  | -7.854  |
| 2195 | q290X  | 0.000  | -8.168  | -8.013  | -4.694  | -7.768  | -8.168  | -4.946  | -7.892  |
| 2443 | q292X  | 0.000  | -0.460  | -0.189  | -0.086  | -0.460  | -0.142  | -0.046  | -0.362  |
| 2407 | q295Y  | 9.788  | 0.000   | 6.208   | 3.266   | 9.788   | 6.169   | 3.301   | 9.779   |
| 2407 | X296Y  | 10.106 | 0.000   | 6.623   | 3.545   | 10.073  | 6.610   | 3.669   | 10.106  |
| 2407 | q296Y  | 9.633  | 0.000   | 6.038   | 3.115   | 9.622   | 6.025   | 3.174   | 9.633   |
| 2119 | q299Y  | 6.196  | 0.000   | 3.809   | 2.068   | 5.780   | 4.009   | 2.165   | 6.196   |
| 2422 | q301Y  | 16.603 | 0.000   | 16.552  | 9.533   | 13.710  | 16.603  | 9.614   | 13.739  |
| 2430 | X303Y  | 0.000  | -24.810 | -22.851 | -12.721 | -24.810 | -22.840 | -12.757 | -24.809 |
| 2430 | q303Y  | 0.000  | -24.579 | -22.647 | -12.671 | -24.579 | -22.623 | -12.689 | -24.566 |
| 2427 | q305Y  | 0.000  | -3.558  | -1.969  | -1.032  | -3.558  | -1.822  | -0.985  | -3.335  |
| 2426 | q307X  | 0.000  | -1.911  | -1.847  | -0.968  | -1.831  | -1.911  | -1.084  | -1.873  |
| 2426 | q309X  | 0.000  | -1.217  | -1.164  | -0.658  | -1.217  | -1.053  | -0.575  | -1.024  |
| 2437 | q312Y  | 6.266  | 0.000   | 3.793   | 1.939   | 6.266   | 3.727   | 1.843   | 6.220   |
| 2437 | X313Y  | 7.798  | 0.000   | 4.955   | 2.612   | 7.787   | 4.939   | 2.679   | 7.798   |
| 2437 | q313Y  | 7.536  | 0.000   | 4.631   | 2.379   | 7.536   | 4.616   | 2.409   | 7.534   |
| 2437 | q316Y  | 5.106  | 0.000   | 3.074   | 1.610   | 5.076   | 3.078   | 1.630   | 5.106   |

|      |        |       |         |         |        |         |         |        |         |
|------|--------|-------|---------|---------|--------|---------|---------|--------|---------|
| 2140 | g318Y  | 0.000 | -2.166  | -0.892  | -0.389 | -2.166  | -0.872  | -0.376 | -2.149  |
| 2140 | g319X  | 0.000 | -5.362  | -5.279  | -2.569 | -5.362  | -5.245  | -2.495 | -5.342  |
| 2145 | g322X  | 0.000 | -12.175 | -12.169 | -5.958 | -11.312 | -12.175 | -5.944 | -11.314 |
| 2157 | g325X  | 0.000 | -2.536  | -0.819  | -0.305 | -2.536  | -0.812  | -0.314 | -2.530  |
| 2157 | g325XY | 0.000 | -2.541  | -0.819  | -0.305 | -2.536  | -0.818  | -0.316 | -2.541  |
| 2157 | g325Y  | 0.000 | -2.524  | -0.806  | -0.300 | -2.519  | -0.805  | -0.311 | -2.524  |
| 2142 | g329X  | 0.003 | -0.329  | -0.161  | -0.072 | -0.329  | -0.069  | 0.003  | -0.187  |
| 2169 | g335Y  | 0.000 | -2.368  | -2.337  | -1.396 | -2.278  | -2.368  | -1.450 | -2.302  |
| 2169 | g336Y  | 2.356 | 0.000   | 2.326   | 1.392  | 2.268   | 2.356   | 1.445  | 2.292   |
| 2181 | g339Y  | 0.202 | 0.000   | 0.202   | 0.161  | 0.145   | 0.202   | 0.184  | 0.152   |
| 2189 | g341Y  | 0.000 | -0.326  | -0.326  | -0.269 | -0.240  | -0.326  | -0.304 | -0.251  |
| 2401 | g351Y  | 0.825 | 0.000   | 0.806   | 0.475  | 0.781   | 0.825   | 0.501  | 0.799   |
| 2401 | g352Y  | 0.000 | -0.798  | -0.786  | -0.468 | -0.757  | -0.798  | -0.492 | -0.763  |
| 2419 | g355Y  | 0.308 | 0.000   | 0.308   | 0.243  | 0.222   | 0.308   | 0.277  | 0.233   |
| 2417 | g357Y  | 0.000 | -0.616  | -0.616  | -0.489 | -0.464  | -0.616  | -0.554 | -0.486  |
| 2169 | g359Y  | 0.207 | 0.000   | 0.197   | 0.106  | 0.194   | 0.207   | 0.119  | 0.204   |
| 2169 | g360Y  | 0.000 | -0.187  | -0.184  | -0.102 | -0.179  | -0.187  | -0.112 | -0.178  |
| 2181 | g361Y  | 0.213 | 0.000   | 0.213   | 0.169  | 0.153   | 0.213   | 0.194  | 0.162   |
| 2189 | g363Y  | 0.000 | -0.352  | -0.352  | -0.287 | -0.262  | -0.352  | -0.324 | -0.275  |
| 2183 | g367Y  | 0.000 | -0.213  | -0.213  | -0.139 | -0.193  | -0.213  | -0.163 | -0.200  |
| 2181 | g369Y  | 0.117 | 0.000   | 0.117   | 0.088  | 0.100   | 0.117   | 0.101  | 0.104   |

\*\*\* Analysis Results for Load Case No. 1 "NESC" - Number of iterations in SAPS 11

Equilibrium Joint Positions and Rotations:

| Joint Label | X-Displ (ft) | Y-Displ (ft) | Z-Displ (ft) | X-Rot (deg) | Y-Rot (deg) | Z-Rot (deg) | X-Pos (ft)  | Y-Pos (ft) | Z-Pos (ft) |
|-------------|--------------|--------------|--------------|-------------|-------------|-------------|-------------|------------|------------|
| ZP          | 0            | 0            | 0            | 0.0000      | 0.0000      | 0.0000      | 22          | 22         | 1          |
| WP          | -0.007252    | 0.4255       | -0.05364     | -0.5260     | 0.0309      | -0.3952     | 4.993       | 5.426      | 115.9      |
| AP          | 0.0007455    | 1.308        | -0.09782     | -0.9487     | -0.0254     | -0.3938     | 5.001       | 6.308      | 177.9      |
| TOPF        | 5.181e-006   | 1.445        | -0.1012      | -0.9659     | -0.0000     | 0.0000      | 5.181e-006  | 6.445      | 185.9      |
| SWP         | 1.031e-006   | 1.445        | -0.2731      | -0.9947     | -0.0000     | 0.0000      | 1.031e-006  | 16.44      | 185.7      |
| TAP         | -3.038e-006  | 1.05         | -0.2983      | 0.0000      | 0.0000      | 0.0000      | -3.038e-006 | 19.05      | 161.7      |
| TASQP       | -3.522e-006  | 1.056        | 0.317        | 0.0000      | 0.0000      | 0.0000      | 5           | -20.94     | 162.3      |
| MAP         | -9.004e-006  | 0.7038       | -0.3847      | 0.0000      | 0.0000      | 0.0000      | -9.004e-006 | 26.7       | 138.6      |
| MASQP       | -4.96e-005   | 0.7111       | 0.3266       | 0.0000      | 0.0000      | 0.0000      | 5           | -25.29     | 139.3      |
| BAP         | -1.7e-005    | 0.4304       | -0.2263      | 0.0000      | 0.0000      | 0.0000      | -1.7e-005   | 21.43      | 115.8      |
| BASQP       | 0.0002103    | 0.4304       | 0.2028       | 0.0000      | 0.0000      | 0.0000      | 5           | -20.57     | 116.2      |
| ZX          | 0            | 0            | 0            | 0.0000      | 0.0000      | 0.0000      | 22          | -22        | 1          |
| ZXY         | 0            | 0            | 0            | 0.0000      | 0.0000      | 0.0000      | -22         | -22        | 1          |
| ZY          | 0            | 0            | 0            | 0.0000      | 0.0000      | 0.0000      | -22         | 22         | 1          |
| WX          | 0.002599     | 0.426        | 0.03712      | -0.5396     | -0.0132     | -0.1509     | 5.003       | -4.574     | 116        |
| WXY         | -0.002597    | 0.426        | 0.03712      | -0.5396     | 0.0132      | 0.1509      | -5.003      | -4.574     | 116        |
| WY          | 0.007245     | 0.4255       | -0.05363     | -0.5260     | -0.0309     | 0.3952      | -4.993      | 5.426      | 115.9      |
| AX          | -0.0006236   | 1.309        | 0.0645       | -0.9643     | 0.0121      | -0.1515     | 4.999       | -3.691     | 178.1      |
| AXY         | 0.0006404    | 1.309        | 0.0645       | -0.9643     | -0.0121     | 0.1515      | -4.999      | -3.691     | 178.1      |
| AY          | -0.000737    | 1.308        | -0.09782     | -0.9487     | 0.0254      | 0.3937      | -5.001      | 6.308      | 177.9      |
| TOPF        | 9.337e-006   | 1.446        | 0.0654       | -0.9604     | -0.0000     | 0.0000      | 9.337e-006  | -3.554     | 186.1      |
| SWX         | 1.35e-005    | 1.449        | 0.2357       | -0.9837     | -0.0000     | 0.0000      | 1.35e-005   | -13.55     | 186.2      |
| TASQY       | 3.069e-005   | 1.056        | 0.317        | 0.0000      | 0.0000      | 0.0000      | -5          | -20.94     | 162.3      |
| MASQY       | 7.487e-005   | 0.7111       | 0.3266       | 0.0000      | 0.0000      | 0.0000      | -5          | -25.29     | 139.3      |
| BASQY       | -0.0001929   | 0.4304       | 0.2028       | 0.0000      | 0.0000      | 0.0000      | -5          | -20.57     | 116.2      |
| ES          | 0.001976     | 1.176        | -0.09412     | -0.9264     | 0.0049      | -0.3943     | 5.002       | 6.176      | 169.9      |
| CS          | -0.0001098   | 1.049        | -0.08908     | -0.9121     | -0.0144     | -0.3940     | 5           | 6.049      | 161.9      |
| DS          | 0.001428     | 0.928        | -0.0857      | -0.8841     | -0.0171     | -0.3939     | 5.001       | 5.928      | 154.2      |
| ES          | 0.002557     | 0.813        | -0.08034     | -0.8406     | -0.0134     | -0.3940     | 5.003       | 5.813      | 146.6      |
| FS          | 0.001361     | 0.704        | -0.07331     | -0.7779     | 0.0381      | -0.3947     | 5.001       | 5.704      | 138.9      |
| GS          | -0.0005088   | 0.6029       | -0.06842     | -0.7266     | -0.0662     | -0.3934     | 4.999       | 5.603      | 131.3      |
| HS          | 0.000847     | 0.5094       | -0.06145     | -0.6820     | 0.0395      | -0.3945     | 5.008       | 5.509      | 123.6      |
| IS          | 0.01039      | 0.3411       | -0.05432     | -0.3659     | 0.0144      | -0.3402     | 6.499       | 6.819      | 105.9      |
| JS          | -0.001253    | 0.2739       | -0.0563      | -0.3288     | 0.0676      | -0.2964     | 7.881       | 8.156      | 96.44      |
| KS          | 0.003074     | 0.2219       | -0.05481     | -0.2708     | 0.0213      | -0.2664     | 9.142       | 9.361      | 87.95      |
| LS          | -0.0002207   | 0.1897       | -0.05386     | -0.2663     | 0.0606      | -0.2405     | 10.03       | 10.22      | 81.95      |
| MS          | -0.0003212   | 0.1268       | -0.05062     | -0.2084     | 0.0155      | -0.2170     | 11.8        | 11.93      | 69.95      |
| NS          | 2.77e-005    | 0.0928       | -0.0467      | -0.1537     | 0.0176      | -0.1756     | 13.2        | 13.3       | 60.45      |
| OS          | -6.242e-005  | 0.009439     | -0.03277     | -0.1113     | 0.0170      | -0.1333     | 17.2        | 17.21      | 33.47      |
| PS          | -0.0004249   | 0.006271     | -0.02693     | -0.0322     | 0.0187      | -0.1385     | 18.45       | 18.45      | 24.97      |
| LIS         | -0.06443     | -0.006053    | -0.02127     | -0.0740     | -0.0020     | -0.0719     | 18.39       | 7.375      | 24.98      |
| L3S         | -9.538e-005  | 0.05792      | 0.007692     | -0.0292     | 0.1883      | -0.3117     | 7.381       | 18.51      | 25.01      |
| O1S         | 0.02602      | 0.008607     | 0.002209     | -0.0912     | -0.0176     | 0.0403      | 17.22       | 0.008607   | 33.5       |
| O2S         | -2.477e-006  | -0.01733     | -0.003792    | -0.1120     | -0.0000     | 0.0000      | -2.477e-006 | 17.18      | 33.5       |
| M1S         | -0.02542     | 0.1267       | -0.008267    | -0.2247     | 0.0103      | 0.0741      | 11.77       | 0.1267     | 69.99      |
| M2S         | 1.045e-005   | 0.1917       | -0.03283     | -0.2053     | 0.0000      | 0.0000      | 1.045e-005  | 11.99      | 69.97      |
| BMS         | -2.48e-006   | 0.4284       | 0.1252       | 0.0000      | 0.0000      | 0.0000      | 5           | -12.57     | 116.1      |
| BMKS        | -0.002732    | 0.4689       | 0.125        | 0.0000      | 0.0000      | 0.0000      | 4.997       | -12.53     | 120        |
| MMKS        | 0.002638     | 0.7083       | 0.1977       | 0.0000      | 0.0000      | 0.0000      | 5.003       | -14.79     | 139.2      |
| MMKS        | -0.001175    | 0.7597       | 0.1974       | 0.0000      | 0.0000      | 0.0000      | 4.999       | -14.74     | 143        |
| TMKS        | 0.001702     | 1.053        | 0.1947       | 0.0000      | 0.0000      | 0.0000      | 5.002       | -12.45     | 162.2      |
| TMKS        | -0.0007843   | 1.114        | 0.1943       | 0.0000      | 0.0000      | 0.0000      | 4.999       | -12.39     | 166.2      |
| BPMS        | -0.002192    | 0.4284       | -0.1419      | 0.0000      | 0.0000      | 0.0000      | 2.498       | 13.43      | 115.9      |
| BPMKS       | 0.0112       | 0.4729       | -0.1422      | 0.0000      | 0.0000      | 0.0000      | 2.511       | 13.47      | 119.7      |
| BK          | -0.001725    | 1.176        | 0.06338      | -0.9242     | -0.0081     | -0.1512     | 4.998       | -3.824     | 170.1      |
| BKY         | 0.00174      | 1.176        | 0.06338      | -0.9242     | 0.0081      | 0.1512      | -4.998      | -3.824     | 170.1      |
| EY          | -0.001969    | 1.176        | -0.09412     | -0.9264     | -0.0049     | 0.3942      | 5           | 6.176      | 169.9      |
| CK          | -0.0002146   | 1.05         | 0.06118      | -0.9049     | -0.0032     | -0.1512     | 5           | -3.95      | 162.1      |
| CKY         | 0.0002276    | 1.05         | 0.06118      | -0.9049     | 0.0033      | 0.1513      | -5          | -3.95      | 162.1      |
| CY          | 0.0001145    | 1.049        | -0.08908     | -0.9121     | 0.0144      | 0.3939      | -5          | 6.049      | 161.9      |
| DX          | -0.0009069   | 0.9293       | 0.05998      | -0.8959     | 0.0113      | -0.1515     | 4.999       | -4.071     | 154.4      |

|       |             |           |           |         |         |         |             |          |       |
|-------|-------------|-----------|-----------|---------|---------|---------|-------------|----------|-------|
| DKY   | 0.0009182   | 0.9293    | 0.05998   | -0.8959 | -0.0112 | 0.1515  | -4.999      | -4.071   | 154.4 |
| DY    | -0.001426   | 0.9279    | -0.0857   | -0.8841 | 0.0171  | 0.3939  | -5.001      | 5.928    | 154.2 |
| EX    | -0.002698   | 0.8125    | 0.05688   | -0.8368 | -0.0004 | -0.1513 | 4.997       | -4.187   | 146.7 |
| EXY   | 0.002707    | 0.8125    | 0.05688   | -0.8368 | 0.0004  | 0.1514  | -4.997      | -4.187   | 146.7 |
| EY    | -0.002556   | 0.813     | -0.08033  | -0.8406 | 0.0134  | 0.3939  | -5.003      | 5.813    | 146.6 |
| FX    | -0.0009556  | 0.7053    | 0.05206   | -0.7758 | -0.0220 | -0.1510 | 4.999       | -4.295   | 139.1 |
| FXI   | 0.0009632   | 0.7053    | 0.05206   | -0.7758 | 0.0221  | 0.1510  | -4.999      | -4.295   | 139.1 |
| FY    | -0.001362   | 0.704     | -0.0733   | -0.7779 | -0.0380 | 0.3947  | -5.001      | 5.704    | 138.9 |
| GX    | -0.0007477  | 0.6034    | 0.04877   | -0.7359 | 0.0338  | -0.1517 | 4.999       | -4.397   | 131.4 |
| GXY   | 0.0007535   | 0.6034    | 0.04877   | -0.7359 | -0.0338 | 0.1518  | -4.999      | -4.397   | 131.4 |
| GY    | 0.0005064   | 0.6029    | -0.06842  | -0.7266 | 0.0662  | 0.3933  | -4.999      | 5.603    | 131.3 |
| HX    | -0.005408   | 0.5092    | 0.04357   | -0.6740 | -0.0263 | -0.1511 | 4.995       | -4.491   | 123.7 |
| HXY   | 0.005412    | 0.5092    | 0.04357   | -0.6740 | 0.0263  | 0.1512  | -4.995      | -4.491   | 123.7 |
| HY    | -0.008474   | 0.5094    | -0.06145  | -0.6820 | -0.0395 | 0.3944  | -5.008      | 5.509    | 123.6 |
| IX    | -0.006787   | 0.4113    | 0.04029   | -0.4072 | 0.0051  | -0.1262 | 6.471       | -6.137   | 106   |
| IXY   | 0.006788    | 0.4113    | 0.04029   | -0.4072 | -0.0051 | 0.1262  | -6.471      | -6.137   | 106   |
| IY    | -0.0104     | 0.3411    | -0.05432  | -0.3659 | -0.0144 | 0.3402  | -6.489      | 6.819    | 105.9 |
| JX    | -0.000791   | 0.2739    | 0.04275   | -0.3521 | -0.0367 | -0.1034 | 7.882       | -7.609   | 96.54 |
| JXY   | 0.0007913   | 0.2739    | 0.04275   | -0.3521 | 0.0367  | 0.1034  | -7.882      | -7.609   | 96.54 |
| JY    | 0.001241    | 0.2739    | -0.0563   | -0.3288 | -0.0676 | 0.2964  | -7.881      | 8.156    | 96.44 |
| KX    | -0.001534   | 0.2225    | 0.04267   | -0.3013 | 0.0020  | -0.0948 | 9.138       | -8.917   | 88.04 |
| KXY   | 0.001533    | 0.2224    | 0.04268   | -0.3013 | -0.0020 | 0.0948  | -9.138      | -8.917   | 88.04 |
| KY    | -0.00219    | 0.2219    | -0.0548   | -0.2708 | -0.0213 | 0.2664  | 9.361       | 87.25    |       |
| LX    | -0.001236   | 0.1894    | 0.04214   | -0.2959 | -0.0152 | -0.0863 | 10.02       | -9.837   | 82.04 |
| LXY   | 0.001235    | 0.1893    | 0.04214   | -0.2959 | 0.0152  | 0.0863  | -10.02      | -9.837   | 82.04 |
| LY    | 0.0002053   | 0.1897    | -0.05386  | -0.2663 | -0.0606 | 0.2405  | -10.03      | 10.22    | 81.95 |
| MX    | -0.0002449  | 0.1274    | 0.04052   | -0.2204 | 0.0037  | -0.0789 | 11.8        | -11.67   | 70.04 |
| MXI   | 0.0002442   | 0.1274    | 0.04052   | -0.2204 | -0.0037 | 0.0789  | -11.8       | -11.67   | 70.04 |
| MY    | 0.0003417   | 0.1267    | -0.05062  | -0.2084 | -0.0156 | 0.2169  | -11.8       | 11.93    | 69.95 |
| NX    | -0.003568   | 0.09463   | 0.03709   | -0.1651 | 0.0220  | -0.0711 | 13.2        | -13.11   | 60.54 |
| NXY   | 0.003567    | 0.09463   | 0.03709   | -0.1651 | -0.0220 | 0.0711  | -13.2       | -13.11   | 60.54 |
| NY    | -3.972e-006 | 0.0928    | -0.0467   | -0.1537 | -0.0176 | 0.1756  | -13.2       | 13.3     | 60.45 |
| OX    | -0.005521   | 0.01135   | 0.02676   | -0.1195 | -0.0521 | -0.0824 | 17.19       | -17.18   | 33.53 |
| OKY   | 0.005521    | 0.01135   | 0.02676   | -0.1195 | 0.0521  | 0.0824  | -17.19      | -17.18   | 33.53 |
| OY    | 5.732e-005  | 0.009436  | -0.03277  | -0.1113 | -0.0170 | 0.1333  | -17.2       | 17.21    | 33.47 |
| PX    | 0.001967    | -0.004636 | 0.02316   | -0.0474 | -0.0423 | -0.0702 | 18.45       | -18.46   | 25.02 |
| PKY   | -0.001968   | -0.004639 | 0.02317   | -0.0474 | 0.0423  | 0.0702  | -18.45      | -18.46   | 25.02 |
| PL    | 0.0004109   | 0.02274   | -0.00632  | -0.0322 | -0.0187 | 0.1385  | -18.45      | 18.45    | 24.97 |
| L1X   | 0.01905     | -0.004971 | 0.01105   | -0.1050 | -0.0255 | 0.1681  | 18.47       | -7.386   | 25.01 |
| L1XY  | -0.01905    | -0.004973 | 0.01105   | -0.1050 | 0.0255  | -0.1680 | -18.47      | -7.386   | 25.01 |
| L1Y   | 0.06441     | -0.006056 | -0.02127  | -0.0740 | 0.0020  | 0.0719  | -18.39      | 7.375    | 24.98 |
| L3X   | 0.002177    | 0.01211   | 0.00699   | -0.0477 | -0.0757 | -0.0691 | 7.383       | -18.44   | 25.01 |
| L3XY  | -0.002177   | 0.01211   | 0.00699   | -0.0477 | 0.0757  | 0.0691  | -7.383      | -18.44   | 25.01 |
| L3Y   | 8.14e-005   | 0.05791   | 0.007699  | -0.0292 | -0.1883 | 0.3117  | -7.381      | 18.51    | 25.01 |
| O1Y   | -0.02602    | 0.008605  | 0.002209  | -0.0912 | 0.0176  | -0.0403 | 17.22       | 0.008605 | 33.5  |
| O2X   | -1.629e-007 | 0.03485   | 0.001644  | -0.1204 | 0.0000  | 0.0000  | -1.629e-007 | -17.16   | 33.5  |
| M1Y   | 0.02542     | 0.1267    | -0.008267 | -0.2247 | -0.0103 | -0.0742 | -11.77      | 0.1267   | 69.99 |
| M2X   | -3.409e-007 | 0.1757    | 0.03678   | -0.2209 | 0.0000  | 0.0000  | -3.409e-007 | -11.62   | 70.04 |
| BM1   | 1.224e-005  | 0.4284    | 0.1252    | 0.0000  | 0.0000  | 0.0000  | -5          | -12.57   | 116.1 |
| BMXY  | 0.002742    | 0.4689    | 0.125     | 0.0000  | 0.0000  | 0.0000  | -4.997      | -12.53   | 120   |
| MMY   | -0.002621   | 0.7083    | 0.1977    | 0.0000  | 0.0000  | 0.0000  | -5.003      | -14.79   | 139.2 |
| MMXY  | 0.001192    | 0.7597    | 0.1974    | 0.0000  | 0.0000  | 0.0000  | -4.999      | -14.74   | 143   |
| THY   | -0.001682   | 1.053     | 0.1947    | 0.0000  | 0.0000  | 0.0000  | -5.002      | -12.45   | 162.2 |
| THXY  | 0.0008054   | 1.114     | 0.1943    | 0.0000  | 0.0000  | 0.0000  | -4.999      | -12.39   | 166.2 |
| BPMY  | -0.002193   | 0.4298    | -0.142    | 0.0000  | 0.0000  | 0.0000  | -2.502      | 13.43    | 115.9 |
| BPMXY | -0.0113     | 0.473     | -0.1422   | 0.0000  | 0.0000  | 0.0000  | -2.511      | 13.47    | 119.7 |

# Joint Support Reactions:

| Joint Label | X-Force<br>(kips) | Y-Force<br>(kips) | Z-Force<br>(kips) | Comp.<br>Usage | Uplift<br>Usage | X-Moment<br>(ft-k) | Y-Moment<br>(ft-k) | Z-Moment<br>(ft-k) | Max.<br>Usage |        |     |        |     |     |
|-------------|-------------------|-------------------|-------------------|----------------|-----------------|--------------------|--------------------|--------------------|---------------|--------|-----|--------|-----|-----|
| ZP          | -67.723           | 0.0               | -72.936           | 0.0            | 455.457         | 0.0                | 0.0                | -3.308             | 0.0           | 0.938  | 0.0 | 0.0    |     |     |
| ZX          | 63.663            | 0.0               | -62.196           | 0.0            | -395.537        | 0.0                | 0.0                | -2.968             | 0.0           | -1.681 | 0.0 | 0.494  | 0.0 | 0.0 |
| ZXY         | -63.662           | 0.0               | -62.195           | 0.0            | -395.535        | 0.0                | 0.0                | -2.968             | 0.0           | 1.681  | 0.0 | -0.494 | 0.0 | 0.0 |
| ZY          | 67.723            | 0.0               | -72.935           | 0.0            | 455.452         | 0.0                | 0.0                | -3.308             | 0.0           | -0.554 | 0.0 | -0.937 | 0.0 | 0.0 |

# Joint Displacements, Loads and Member Forces on Joints:



| Joint X<br>Label | External Y<br>Load<br>(kips) | External Z<br>Load<br>(kips) | External X<br>Load<br>(kips) | Member Y<br>Force<br>(kips) | Member Z<br>Force<br>(kips) | Member X<br>Force<br>(kips) | X<br>Disp.<br>(ft) | Y<br>Disp.<br>(ft) | Z<br>Disp.<br>(ft) |
|------------------|------------------------------|------------------------------|------------------------------|-----------------------------|-----------------------------|-----------------------------|--------------------|--------------------|--------------------|
| ZP               | 0.0000                       | 0.2690                       | -1.2438                      | 67.7234                     | 72.6673                     | -454.2134                   | 0.0000             | 0.0000             | 0.0000             |
| WP               | 0.0000                       | 0.3144                       | -1.3449                      | -0.0000                     | -0.3144                     | 1.3449                      | -0.0073            | 0.4255             | -0.0536            |
| AP               | 0.0000                       | 0.1493                       | -0.3577                      | 0.0000                      | -0.1493                     | 0.3577                      | 0.0007             | 1.3077             | -0.0978            |
| TOPP             | 0.0000                       | 0.0692                       | -0.2439                      | 0.0000                      | -0.0692                     | 0.2439                      | 0.0000             | 1.4448             | -0.1012            |
| SWP              | 0.0000                       | 13.3420                      | -1.1750                      | 0.0000                      | -13.3420                    | 1.1750                      | 0.0000             | 1.4447             | -0.2731            |
| TAP              | 0.0000                       | 36.9745                      | -4.3716                      | 0.0000                      | -36.9745                    | 4.3716                      | -0.0000            | 1.0505             | -0.2983            |
| TASQP            | 0.0000                       | 18.5033                      | -2.2382                      | -0.0000                     | -18.5033                    | 2.2382                      | -0.0000            | 1.0558             | 0.3170             |
| MAP              | 0.0000                       | 36.9865                      | -4.7004                      | 0.0000                      | -36.9865                    | 4.7004                      | -0.0000            | 0.7038             | -0.3847            |
| MASQP            | 0.0000                       | 18.5077                      | -2.2980                      | -0.0000                     | -18.5077                    | 2.2980                      | -0.0000            | 0.7111             | 0.3266             |
| BAP              | 0.0000                       | 36.9449                      | -4.2665                      | 0.0000                      | -36.9449                    | 4.2665                      | -0.0000            | 0.4304             | -0.2263            |
| BASQP            | 0.0000                       | 18.5031                      | -2.2314                      | -0.0000                     | -18.5031                    | 2.2314                      | 0.0002             | 0.4304             | 0.2028             |
| ZX               | 0.0000                       | 0.2690                       | -1.2438                      | -63.6628                    | 61.9269                     | 396.7803                    | 0.0000             | 0.0000             | 0.0000             |
| ZXY              | 0.0000                       | 0.2690                       | -1.2438                      | 63.6624                     | 61.9259                     | 396.7784                    | 0.0000             | 0.0000             | 0.0000             |
| ZY               | 0.0000                       | 0.2690                       | -1.2438                      | -67.7230                    | 72.6657                     | -454.2079                   | 0.0000             | 0.0000             | 0.0000             |
| WX               | 0.0000                       | -0.3065                      | -1.3722                      | -0.0000                     | -0.3065                     | 1.3722                      | 0.0026             | 0.4260             | 0.0371             |
| WXY              | 0.0000                       | -0.3065                      | -1.3722                      | 0.0000                      | -0.3065                     | 1.3722                      | -0.0026            | 0.4260             | 0.0371             |
| WY               | 0.0000                       | 0.2994                       | -1.3144                      | 0.0000                      | -0.2994                     | 1.3144                      | 0.0072             | 0.4255             | -0.0536            |
| AX               | 0.0000                       | 0.1493                       | -0.3577                      | 0.0000                      | -0.1493                     | 0.3577                      | -0.0006            | 1.3093             | 0.0645             |
| AXY              | 0.0000                       | 0.1493                       | -0.3577                      | -0.0000                     | -0.1493                     | 0.3577                      | 0.0006             | 1.3092             | 0.0645             |
| AY               | 0.0000                       | 0.1493                       | -0.3577                      | -0.0000                     | -0.1493                     | 0.3577                      | -0.0007            | 1.3077             | -0.0978            |
| TOPX             | 0.0000                       | 0.0692                       | -0.2439                      | 0.0000                      | -0.0692                     | 0.2439                      | 0.0000             | 1.4461             | 0.0654             |
| SWX              | 0.0000                       | 13.3420                      | -1.1750                      | -0.0000                     | -13.3420                    | 1.1750                      | 0.0000             | 1.4487             | 0.2357             |
| TASQY            | 0.0000                       | 18.5033                      | -2.2382                      | -0.0000                     | -18.5033                    | 2.2382                      | 0.0000             | 1.0558             | 0.3170             |
| MASQY            | 0.0000                       | 18.5077                      | -2.2980                      | -0.0000                     | -18.5077                    | 2.2980                      | 0.0001             | 0.7111             | 0.3266             |
| BASQY            | 0.0000                       | 18.5031                      | -2.2314                      | -0.0000                     | -18.5031                    | 2.2314                      | -0.0002            | 0.4304             | 0.2028             |
| BS               | 0.0000                       | 0.1246                       | -0.2991                      | 0.0000                      | -0.1246                     | 0.2991                      | 0.0020             | 1.1763             | -0.0941            |
| CS               | 0.0000                       | 0.1974                       | -0.6429                      | 0.0000                      | -0.1974                     | 0.6429                      | -0.0001            | 1.0488             | -0.0891            |
| DS               | 0.0000                       | 0.1694                       | -0.5354                      | 0.0000                      | -0.1694                     | 0.5354                      | 0.0014             | 0.9280             | -0.0857            |
| ES               | 0.0000                       | 0.1847                       | -0.6215                      | -0.0000                     | -0.1847                     | 0.6215                      | 0.0026             | 0.8130             | -0.0803            |
| FS               | 0.0000                       | 0.2532                       | -1.1379                      | -0.0000                     | -0.2532                     | 1.1379                      | 0.0014             | 0.7040             | -0.0733            |
| GS               | 0.0000                       | 0.2169                       | -0.9123                      | -0.0000                     | -0.2169                     | 0.9123                      | -0.0005            | 0.6029             | -0.0684            |
| HS               | 0.0000                       | 0.2230                       | -0.9583                      | -0.0000                     | -0.2230                     | 0.9583                      | 0.0085             | 0.5094             | -0.0615            |
| IS               | 0.0000                       | 0.2611                       | -1.2523                      | -0.0000                     | -0.2611                     | 1.2523                      | 0.0104             | 0.3411             | -0.0543            |
| JS               | 0.0000                       | 0.2422                       | -1.1919                      | 0.0000                      | -0.2422                     | 1.1919                      | -0.0013            | 0.2739             | -0.0563            |
| KS               | 0.0000                       | 0.2215                       | -1.0484                      | 0.0000                      | -0.2215                     | 1.0484                      | 0.0031             | 0.2219             | -0.0548            |
| LS               | 0.0000                       | 0.3159                       | -1.3446                      | -0.0000                     | -0.3159                     | 1.3446                      | -0.0002            | 0.1897             | -0.0539            |
| MS               | 0.0000                       | 0.1474                       | -0.9858                      | 0.0000                      | -0.1474                     | 0.9858                      | -0.0003            | 0.1268             | -0.0506            |
| NS               | 0.0000                       | 0.5246                       | -2.4347                      | -0.0000                     | -0.5246                     | 2.4347                      | 0.0000             | 0.0928             | -0.0467            |
| OS               | 0.0000                       | 0.4392                       | -2.1749                      | 0.0000                      | -0.4392                     | 2.1749                      | -0.0001            | 0.0094             | -0.0328            |
| PS               | 0.0000                       | 0.2195                       | -1.4396                      | -0.0000                     | -0.2195                     | 1.4396                      | -0.0004            | -0.0063            | -0.0269            |
| L1S              | 0.0000                       | 0.1343                       | -0.5022                      | -0.0000                     | -0.1343                     | 0.5022                      | -0.0644            | -0.0061            | -0.0213            |
| L3S              | 0.0000                       | 0.2638                       | -0.5022                      | -0.0000                     | -0.2638                     | 0.5022                      | -0.0001            | 0.0579             | 0.0077             |
| O1S              | 0.0000                       | 0.1375                       | -0.5964                      | 0.0000                      | -0.1375                     | 0.5964                      | 0.0260             | 0.0086             | 0.0022             |
| O2S              | 0.0000                       | 0.2893                       | -0.5964                      | 0.0000                      | -0.2893                     | 0.5964                      | -0.0000            | -0.0173            | -0.0038            |
| M1S              | 0.0000                       | 0.1125                       | -0.3803                      | 0.0000                      | -0.1125                     | 0.3803                      | -0.0254            | 0.1267             | -0.0083            |
| M2S              | 0.0000                       | 0.2339                       | -0.3803                      | -0.0000                     | -0.2339                     | 0.3803                      | 0.0000             | 0.1917             | -0.0328            |
| BMS              | 0.0000                       | 0.0384                       | -0.2325                      | -0.0000                     | -0.0384                     | 0.2325                      | -0.0000            | 0.4284             | 0.1252             |
| BMXS             | 0.0000                       | 0.0217                       | -0.0668                      | -0.0000                     | -0.0217                     | 0.0668                      | -0.0027            | 0.4689             | 0.1250             |
| MMS              | 0.0000                       | 0.0451                       | -0.3473                      | 0.0000                      | -0.0451                     | 0.3473                      | 0.0026             | 0.7083             | 0.1977             |
| MMXS             | 0.0000                       | 0.0256                       | -0.0979                      | -0.0000                     | -0.0256                     | 0.0979                      | -0.0012            | 0.7597             | 0.1974             |
| TMS              | 0.0000                       | 0.0387                       | -0.2439                      | 0.0000                      | -0.0387                     | 0.2439                      | 0.0017             | 1.0530             | 0.1947             |
| TMXS             | 0.0000                       | 0.0227                       | -0.0707                      | -0.0000                     | -0.0227                     | 0.0707                      | -0.0008            | 1.1142             | 0.1943             |
| BPMS             | 0.0000                       | 0.0301                       | -0.1246                      | 0.0000                      | -0.0301                     | 0.1246                      | -0.0022            | 0.4284             | -0.1419            |
| BPMXS            | 0.0000                       | 0.0249                       | -0.0692                      | 0.0000                      | -0.0249                     | 0.0692                      | 0.0111             | 0.4729             | -0.1422            |
| BX               | 0.0000                       | 0.1174                       | -0.2831                      | 0.0000                      | -0.1174                     | 0.2831                      | -0.0017            | 1.1764             | 0.0634             |
| BXY              | 0.0000                       | 0.1174                       | -0.2831                      | -0.0000                     | -0.1174                     | 0.2831                      | 0.0017             | 1.1764             | 0.0634             |
| BY               | 0.0000                       | 0.1246                       | -0.2991                      | -0.0000                     | -0.1246                     | 0.2991                      | -0.0020            | 1.1763             | -0.0941            |
| CX               | 0.0000                       | 0.2041                       | -0.6902                      | 0.0000                      | -0.2041                     | 0.6902                      | -0.0002            | 1.0501             | 0.0612             |
| CXY              | 0.0000                       | 0.2041                       | -0.6902                      | -0.0000                     | -0.2041                     | 0.6902                      | 0.0002             | 1.0501             | 0.0612             |
| CY               | 0.0000                       | 0.1974                       | -0.6429                      | -0.0000                     | -0.1974                     | 0.6429                      | 0.0001             | 1.0488             | -0.0891            |
| DX               | 0.0000                       | 0.1694                       | -0.5354                      | 0.0000                      | -0.1694                     | 0.5354                      | -0.0009            | 0.9293             | 0.0600             |
| DXY              | 0.0000                       | 0.1694                       | -0.5354                      | -0.0000                     | -0.1694                     | 0.5354                      | 0.0009             | 0.9293             | 0.0600             |
| DY               | 0.0000                       | 0.1694                       | -0.5354                      | -0.0000                     | -0.1694                     | 0.5354                      | -0.0014            | 0.9279             | -0.0857            |
| EX               | 0.0000                       | 0.1758                       | -0.5896                      | -0.0000                     | -0.1758                     | 0.5896                      | -0.0027            | 0.8125             | 0.0569             |
| EXY              | 0.0000                       | 0.1758                       | -0.5896                      | 0.0000                      | -0.1758                     | 0.5896                      | 0.0027             | 0.8125             | 0.0569             |
| EY               | 0.0000                       | 0.1847                       | -0.6215                      | 0.0000                      | -0.1847                     | 0.6215                      | -0.0026            | 0.8130             | -0.0803            |

|       |        |        |         |         |         |        |         |         |         |
|-------|--------|--------|---------|---------|---------|--------|---------|---------|---------|
| FX    | 0.0000 | 0.2608 | -1.1081 | -0.0000 | -0.2608 | 1.1081 | -0.0010 | 0.7053  | 0.0521  |
| FXV   | 0.0000 | 0.2608 | -1.1081 | 0.0000  | -0.2608 | 1.1081 | 0.0010  | 0.7053  | 0.0521  |
| FY    | 0.0000 | 0.2532 | -1.1379 | 0.0000  | -0.2532 | 1.1379 | -0.0014 | 0.7040  | -0.0733 |
| GX    | 0.0000 | 0.2169 | -0.9123 | -0.0000 | -0.2169 | 0.9123 | -0.0007 | 0.6034  | 0.0488  |
| GXY   | 0.0000 | 0.2169 | -0.9123 | 0.0000  | -0.2169 | 0.9123 | 0.0008  | 0.6034  | 0.0488  |
| GY    | 0.0000 | 0.2422 | -0.9123 | 0.0000  | -0.2169 | 0.9123 | 0.0005  | 0.6029  | -0.0584 |
| HX    | 0.0000 | 0.2220 | -0.9575 | -0.0000 | -0.2220 | 0.9575 | -0.0054 | 0.5092  | 0.0436  |
| HXY   | 0.0000 | 0.2220 | -0.9575 | 0.0000  | -0.2220 | 0.9575 | 0.0054  | 0.5092  | 0.0436  |
| HY    | 0.0000 | 0.2230 | -0.9583 | 0.0000  | -0.2230 | 0.9583 | -0.0085 | 0.5094  | -0.0615 |
| IX    | 0.0000 | 0.2611 | -1.2523 | -0.0000 | -0.2611 | 1.2523 | -0.0068 | 0.3413  | 0.0403  |
| IXY   | 0.0000 | 0.2611 | -1.2523 | 0.0000  | -0.2611 | 1.2523 | 0.0068  | 0.3413  | 0.0403  |
| IY    | 0.0000 | 0.2611 | -1.2523 | 0.0000  | -0.2611 | 1.2523 | -0.0104 | 0.3411  | -0.0543 |
| JX    | 0.0000 | 0.2422 | -1.1919 | 0.0000  | -0.2422 | 1.1919 | -0.0008 | 0.2739  | 0.0427  |
| JXY   | 0.0000 | 0.2422 | -1.1919 | -0.0000 | -0.2422 | 1.1919 | 0.0008  | 0.2739  | 0.0427  |
| JY    | 0.0000 | 0.2422 | -1.1919 | -0.0000 | -0.2422 | 1.1919 | 0.0012  | 0.2739  | -0.0563 |
| KX    | 0.0000 | 0.2215 | -1.0484 | 0.0000  | -0.2215 | 1.0484 | -0.0015 | 0.2225  | 0.0427  |
| KXY   | 0.0000 | 0.2215 | -1.0484 | -0.0000 | -0.2215 | 1.0484 | 0.0015  | 0.2224  | 0.0427  |
| KY    | 0.0000 | 0.2215 | -1.0484 | -0.0000 | -0.2215 | 1.0484 | -0.0031 | 0.2219  | -0.0548 |
| LX    | 0.0000 | 0.3159 | -1.3446 | -0.0000 | -0.3159 | 1.3446 | -0.0012 | 0.1894  | 0.0421  |
| LXY   | 0.0000 | 0.3159 | -1.3446 | 0.0000  | -0.3159 | 1.3446 | 0.0012  | 0.1893  | 0.0421  |
| LY    | 0.0000 | 0.3159 | -1.3446 | 0.0000  | -0.3159 | 1.3446 | 0.0002  | 0.1897  | -0.0539 |
| MX    | 0.0000 | 0.1474 | -0.9858 | -0.0000 | -0.1474 | 0.9858 | -0.0002 | 0.1274  | 0.0405  |
| MXY   | 0.0000 | 0.1474 | -0.9858 | 0.0000  | -0.1474 | 0.9858 | 0.0002  | 0.1274  | 0.0405  |
| MY    | 0.0000 | 0.1474 | -0.9858 | -0.0000 | -0.1474 | 0.9858 | 0.0003  | 0.1267  | -0.0506 |
| NX    | 0.0000 | 0.5246 | -2.4347 | 0.0000  | -0.5246 | 2.4347 | -0.0036 | 0.0946  | 0.0371  |
| NXY   | 0.0000 | 0.5246 | -2.4347 | -0.0000 | -0.5246 | 2.4347 | 0.0036  | 0.0946  | 0.0371  |
| NY    | 0.0000 | 0.5246 | -2.4347 | 0.0000  | -0.5246 | 2.4347 | -0.0000 | 0.0928  | -0.0467 |
| OX    | 0.0000 | 0.4392 | -2.1749 | 0.0000  | -0.4392 | 2.1749 | -0.0055 | 0.0113  | 0.0268  |
| OXV   | 0.0000 | 0.4392 | -2.1749 | -0.0000 | -0.4392 | 2.1749 | 0.0055  | 0.0113  | 0.0268  |
| OY    | 0.0000 | 0.4392 | -2.1749 | -0.0000 | -0.4392 | 2.1749 | 0.0001  | 0.0094  | -0.0328 |
| PX    | 0.0000 | 0.2195 | -1.4396 | 0.0000  | -0.2195 | 1.4396 | 0.0020  | -0.0046 | 0.0232  |
| PXY   | 0.0000 | 0.2195 | -1.4396 | -0.0000 | -0.2195 | 1.4396 | -0.0020 | -0.0046 | 0.0232  |
| PY    | 0.0000 | 0.2195 | -1.4396 | 0.0000  | -0.2195 | 1.4396 | 0.0004  | -0.0063 | -0.0269 |
| L1X   | 0.0000 | 0.1343 | -0.5022 | -0.0000 | -0.1343 | 0.5022 | 0.0191  | -0.0050 | 0.0111  |
| L1XY  | 0.0000 | 0.1343 | -0.5022 | 0.0000  | -0.1343 | 0.5022 | -0.0191 | -0.0050 | 0.0111  |
| L1Y   | 0.0000 | 0.1343 | -0.5022 | 0.0000  | -0.1343 | 0.5022 | 0.0644  | -0.0061 | -0.0213 |
| L3X   | 0.0000 | 0.2638 | -0.5022 | -0.0000 | -0.2638 | 0.5022 | 0.0022  | 0.0121  | 0.0070  |
| L3XY  | 0.0000 | 0.2638 | -0.5022 | 0.0000  | -0.2638 | 0.5022 | -0.0022 | 0.0121  | 0.0070  |
| L3Y   | 0.0000 | 0.2638 | -0.5022 | 0.0000  | -0.2638 | 0.5022 | 0.0001  | 0.0579  | 0.0077  |
| O1Y   | 0.0000 | 0.1375 | -0.5964 | -0.0000 | -0.1375 | 0.5964 | -0.0260 | 0.0086  | 0.0022  |
| O2X   | 0.0000 | 0.2893 | -0.5964 | 0.0000  | -0.2893 | 0.5964 | -0.0000 | 0.0348  | 0.0016  |
| M1Y   | 0.0000 | 0.1125 | -0.3803 | -0.0000 | -0.1125 | 0.3803 | 0.0254  | 0.1267  | -0.0083 |
| M2X   | 0.0000 | 0.2339 | -0.3803 | 0.0000  | -0.2339 | 0.3803 | -0.0000 | 0.1757  | 0.0368  |
| BMV   | 0.0000 | 0.0384 | -0.2325 | 0.0000  | -0.0384 | 0.2325 | 0.0000  | 0.4284  | 0.1252  |
| BKXY  | 0.0000 | 0.0217 | -0.0668 | 0.0000  | -0.0217 | 0.0668 | 0.0027  | 0.4689  | 0.1250  |
| MMV   | 0.0000 | 0.0451 | -0.3473 | -0.0000 | -0.0451 | 0.3473 | -0.0026 | 0.7083  | 0.1977  |
| MMXY  | 0.0000 | 0.0256 | -0.0979 | 0.0000  | -0.0256 | 0.0979 | 0.0012  | 0.7597  | 0.1974  |
| TMV   | 0.0000 | 0.0387 | -0.2439 | -0.0000 | -0.0387 | 0.2439 | -0.0017 | 1.0530  | 0.1947  |
| TPXY  | 0.0000 | 0.0227 | -0.0707 | 0.0000  | -0.0227 | 0.0707 | 0.0008  | 1.1142  | 0.1943  |
| BPMV  | 0.0000 | 0.0451 | -0.1551 | -0.0000 | -0.0451 | 0.1551 | -0.0022 | 0.4298  | -0.1420 |
| BPMXY | 0.0000 | 0.0249 | -0.0692 | -0.0000 | -0.0249 | 0.0692 | -0.0113 | 0.4730  | -0.1422 |

Moments for Angles Modeled as Beams:

| Angle Label | Torsion (ft-lbs) | Origin X Moment (ft-lbs) | Origin Z Moment (ft-lbs) | End X Moment (ft-lbs) | End Z Moment (ft-lbs) | Shear (lbs) | Shear (lbs) |
|-------------|------------------|--------------------------|--------------------------|-----------------------|-----------------------|-------------|-------------|
| g1P         | -1316.10         | -3652.14                 | -2680.82                 | -2733.19              | -1711.59              | -260.53     | -179.59     |
| g13P        | 28.70            | 283.44                   | 963.13                   | 518.45                | 1062.85               | 72.47       | 182.98      |
| g14P        | -3.52            | -1752.28                 | 609.68                   | -796.08               | 349.76                | -230.18     | 86.57       |
| g17P        | 24.55            | -518.76                  | -1062.81                 | -387.36               | 793.51                | -61.41      | -125.75     |
| g21P        | -0.00            | 796.09                   | -349.75                  | -796.70               | 349.60                | -0.04       | -0.01       |
| g29P        | -880.51          | -2933.40                 | -3828.20                 | -306.56               | -431.37               | -334.10     | -439.30     |
| g30P        | 513.71           | -1689.98                 | -602.11                  | 2640.64               | 3751.87               | 109.70      | 362.96      |
| g33P        | -340.01          | 209.68                   | 383.44                   | 967.69                | 1325.36               | 42.69       | 62.03       |
| g41P        | 30.90            | -130.17                  | -468.73                  | -202.82               | -301.57               | -19.37      | -44.79      |
| g42P        | 0.88             | -919.05                  | -515.21                  | -981.86               | -386.85               | -110.55     | -52.46      |
| g77P        | -2.62            | -180.01                  | -360.50                  | -151.89               | -266.01               | -12.57      | -23.73      |
| g78P        | -0.00            | 44.83                    | -158.83                  | -44.45                | 158.73                | 0.01        | -0.00       |

|        |         |           |           |          |           |          |          |
|--------|---------|-----------|-----------|----------|-----------|----------|----------|
| g81P   | 2.98    | 40.44     | 4.65      | 67.45    | 239.91    | 9.15     | 20.72    |
| g82P   | -1.36   | -383.72   | 412.26    | -410.55  | 587.60    | -67.31   | 84.73    |
| g85P   | 0.00    | 26.90     | -104.92   | -27.00   | 104.83    | -0.01    | -0.00    |
| g89P   | 12.85   | -15.30    | -176.29   | -2.26    | -243.61   | -0.89    | -20.94   |
| g93P   | -412.77 | -1033.21  | 3319.41   | 2694.52  | 4034.81   | 135.53   | 600.56   |
| g97P   | -761.13 | -8932.44  | 5853.80   | -3599.10 | 6907.11   | -1444.85 | 1470.70  |
| g98P   | -758.09 | 3600.05   | -6906.94  | 1062.81  | -3274.13  | 761.62   | -1662.50 |
| g105P  | -771.98 | -17328.32 | 3628.88   | -9691.41 | 10472.00  | -2647.62 | 1380.87  |
| g106P  | -754.71 | 9693.76   | -10471.07 | 8932.08  | -5855.17  | 1921.27  | -1683.30 |
| g163P  | 0.82    | 875.63    | 960.83    | -2453.73 | 7610.02   | -205.94  | 1118.50  |
| g164P  | -3.31   | 2453.73   | -7610.05  | -355.51  | -14394.26 | 273.94   | -2872.77 |
| g167P  | 13.36   | 355.50    | 14394.23  | -9630.32 | 14875.88  | -1210.85 | 3821.35  |
| g171P  | -0.02   | -20.49    | -132.21   | -531.64  | -86.08    | -72.04   | -28.48   |
| g175P  | 0.01    | 531.64    | 86.04     | -261.38  | 13.86     | 35.27    | 13.04    |
| g179P  | -0.08   | 261.38    | -13.90    | -875.63  | -960.86   | -80.18   | -127.24  |
| g261P  | -0.00   | 0.00      | 0.01      | -58.92   | 81.08     | -7.37    | 10.14    |
| g262P  | -0.01   | 58.92     | -81.05    | 20.49    | -132.18   | 9.93     | -26.67   |
| g322P  | -0.00   | -0.00     | 0.00      | -71.65   | 0.00      | -7.16    | 0.00     |
| g323P  | -0.00   | 71.65     | -0.00     | 57.98    | 0.00      | 12.96    | 0.00     |
| g1X    | -669.36 | 4912.74   | -1245.17  | 3287.09  | -789.74   | 334.17   | -82.76   |
| g1XY   | 669.42  | 4912.99   | 1245.35   | 3287.41  | 789.97    | 334.19   | 82.78    |
| g1Y    | 1316.00 | -3649.72  | 2683.66   | -2731.22 | 1714.05   | -260.35  | 179.81   |
| g13X   | 22.63   | -63.47    | 436.92    | -387.53  | 793.49    | -40.72   | 111.15   |
| g13XY  | -22.62  | -63.46    | -436.90   | -387.52  | -793.40   | -40.71   | -111.14  |
| g13Y   | -28.69  | 283.40    | -963.02   | 518.41   | -1062.72  | 72.46    | -182.96  |
| g14X   | 0.37    | 507.39    | 75.96     | 319.53   | 77.58     | 74.69    | 13.87    |
| g14XY  | -0.37   | 507.41    | -76.00    | 319.54   | -77.61    | 74.69    | -13.87   |
| g14Y   | 3.52    | -1753.00  | -608.57   | -796.69  | -349.61   | -230.30  | -86.54   |
| g17Y   | -24.54  | -518.72   | 1062.68   | -387.35  | 793.43    | -61.41   | 125.73   |
| g21X   | -0.00   | -319.53   | -77.58    | 319.54   | 77.61     | 0.00     | 0.00     |
| g29X   | -62.54  | 4192.81   | -2511.01  | 496.27   | -581.66   | 482.76   | -318.40  |
| g29XY  | 62.69   | 4192.64   | 2510.89   | 496.09   | 581.47    | 482.73   | 318.37   |
| g29Y   | 880.45  | -2940.53  | 3821.05   | -305.97  | 431.63    | -334.78  | 438.59   |
| g30X   | -88.81  | -17.23    | -2091.10  | -4614.14 | 1520.52   | -532.92  | -65.68   |
| g30XY  | 88.85   | -17.44    | 2090.89   | -4614.35 | -1520.70  | -532.97  | 65.64    |
| g30Y   | -513.69 | -1690.05  | 601.56    | 2637.67  | -3755.23  | 109.35   | -363.42  |
| g33X   | 274.29  | -348.31   | 584.04    | 153.54   | 2595.78   | -7.01    | 115.18   |
| g33XY  | -274.26 | -348.02   | -583.82   | 153.80   | -2595.58  | -6.99    | -115.17  |
| g33Y   | 339.96  | 208.73    | -383.91   | 967.44   | -1325.09  | 42.65    | -62.04   |
| g41X   | 30.40   | -305.85   | 183.40    | -202.92  | 301.55    | -29.58   | 28.21    |
| g41XY  | -30.37  | -305.82   | -183.40   | -202.91  | -301.55   | -29.58   | -28.21   |
| g41Y   | -30.87  | -130.17   | 468.72    | -202.81  | 301.57    | -19.37   | 44.79    |
| g42X   | 0.77    | 528.71    | 68.32     | 717.22   | 147.82    | 72.48    | 12.57    |
| g42XY  | -0.77   | 528.71    | -68.32    | 717.22   | -147.82   | 72.48    | -12.57   |
| g42Y   | -0.88   | -919.44   | 515.20    | -981.86  | 386.85    | -110.57  | 52.46    |
| g77Y   | 2.64    | -180.10   | 360.64    | -151.99  | 266.16    | -12.58   | 23.74    |
| g78X   | -0.00   | 54.81     | -64.30    | -54.83   | 64.26     | -0.00    | -0.00    |
| g81X   | 2.82    | 74.53     | -363.56   | 67.46    | -239.91   | 12.03    | -51.14   |
| g81XY  | -2.85   | 74.54     | 363.56    | 67.44    | 239.84    | 12.03    | 51.14    |
| g81Y   | -3.00   | 40.40     | -4.54     | 67.43    | -239.84   | 9.14     | -20.71   |
| g82X   | 0.20    | 94.01     | 441.37    | 87.40    | 505.12    | 15.37    | 80.21    |
| g82XY  | -0.21   | 94.02     | -441.39   | 87.40    | -505.12   | 15.38    | -80.21   |
| g82Y   | 1.36    | -383.48   | -412.34   | -410.55  | -587.60   | -67.29   | -84.74   |
| g85X   | -0.00   | -6.45     | -37.73    | 6.45     | 37.71     | -0.00    | -0.00    |
| g89Y   | -12.87  | -15.30    | 176.25    | -2.26    | 243.55    | -0.89    | 20.93    |
| g93X   | 16.11   | -654.63   | 425.88    | -4075.28 | 2506.56   | -385.47  | 238.99   |
| g93XY  | -15.98  | -654.37   | -425.85   | -4075.11 | -2506.41  | -385.44  | -238.98  |
| g93Y   | 412.78  | -1024.34  | -3310.25  | 2701.81  | -4027.44  | 136.85   | -599.21  |
| g97X   | -193.17 | 4800.36   | 1440.08   | 224.41   | 2166.02   | 578.11   | 414.91   |
| g97XY  | 193.24  | 4800.19   | -1440.28  | 224.26   | -2166.20  | 578.07   | -414.96  |
| g97Y   | 761.01  | -8932.32  | -5853.17  | -3597.79 | -6905.46  | -1444.68 | -1470.44 |
| g98X   | -193.89 | -224.32   | -2165.97  | 630.21   | -384.86   | 66.16    | -415.76  |
| g98XY  | 193.96  | -224.17   | 2166.15   | 629.95   | 384.85    | 66.15    | 415.79   |
| g98Y   | 757.97  | 3598.74   | 6905.29   | 1054.02  | 3265.08   | 759.97   | 1660.75  |
| g105X  | -188.22 | 10742.25  | 928.84    | 4189.51  | 6083.07   | 1460.33  | 685.86   |
| g105XY | 188.29  | 10742.14  | -929.16   | 4189.23  | -6083.31  | 1460.29  | -685.92  |
| g105Y  | 771.87  | -17329.00 | -3628.32  | -9691.72 | -10471.60 | -2647.71 | -1380.78 |
| g106X  | -196.05 | -4189.12  | -6083.09  | -4800.32 | -1439.81  | -925.41  | -774.52  |
| g106XY | 196.12  | -4188.84  | 6083.33   | -4800.16 | 1440.02   | -925.36  | 774.57   |
| g106Y  | 754.59  | 9694.07   | 10470.67  | 8931.96  | 5854.53   | 1921.29  | 1683.19  |

|        |        |         |           |          |           |          |          |
|--------|--------|---------|-----------|----------|-----------|----------|----------|
| g163X  | -0.07  | 251.62  | 14.88     | -2293.64 | -3566.01  | -266.20  | -462.93  |
| g163XY | 0.07   | 251.75  | -14.88    | -2293.08 | 3566.01   | -266.11  | 462.93   |
| g163Y  | -0.82  | 875.47  | -960.82   | -2454.48 | -7609.95  | -206.06  | -1118.49 |
| g164X  | 2.08   | 2293.64 | 3566.00   | -1677.24 | 7403.04   | 80.35    | 1429.79  |
| g164XY | -2.08  | 2293.08 | -3566.00  | -1677.76 | -7403.06  | 80.21    | -1429.79 |
| g164Y  | 3.31   | 2454.48 | 7609.98   | -354.18  | 14393.99  | 274.21   | 2872.73  |
| g167X  | -5.80  | 1677.23 | -7403.05  | -6925.02 | -8266.70  | -683.84  | -2041.95 |
| g167XY | 5.80   | 1677.76 | 7403.07   | -6924.71 | 8266.85   | -683.73  | 2041.98  |
| g167Y  | -13.36 | 354.16  | -14393.95 | -9631.21 | -14875.94 | -1211.14 | -3821.32 |
| g171X  | 0.01   | -55.77  | 66.28     | -218.91  | -198.66   | -35.82   | -17.26   |
| g171XY | -0.01  | -55.77  | -66.28    | -218.92  | 198.66    | -35.82   | 17.26    |
| g171Y  | 0.02   | -20.49  | 132.21    | -531.62  | 86.08     | -72.04   | 28.48    |
| g175X  | 0.08   | 218.91  | 198.65    | -860.65  | 407.61    | -83.67   | 79.04    |
| g175XY | -0.08  | 218.92  | -198.65   | -860.61  | -407.61   | -83.66   | -79.04   |
| g175Y  | -0.01  | 531.62  | -86.04    | -261.43  | -13.86    | 35.27    | -13.04   |
| g179X  | -0.03  | 860.65  | -407.62   | -251.62  | -14.89    | 79.38    | -55.07   |
| g179XY | 0.03   | 860.61  | 407.62    | -251.75  | 14.89     | 79.35    | 55.07    |
| g179Y  | 0.08   | 261.43  | 13.89     | -875.47  | 960.86    | -80.15   | 127.24   |
| g261X  | -0.00  | 0.00    | 0.00      | -107.03  | -53.32    | -13.37   | -6.66    |
| g261XY | 0.00   | 0.00    | -0.00     | -107.03  | 53.32     | -13.37   | 6.66     |
| g261Y  | 0.00   | 0.00    | -0.01     | -58.92   | -81.08    | -7.37    | -10.14   |
| g262X  | 0.01   | 107.03  | 53.33     | 55.77    | 66.29     | 20.34    | 14.95    |
| g262XY | -0.01  | 107.03  | -53.33    | 55.77    | -66.29    | 20.34    | -14.95   |
| g262Y  | 0.01   | 58.92   | 81.05     | 20.49    | 132.18    | 9.93     | 26.67    |
| g322X  | 0.00   | 0.00    | 0.00      | 57.98    | -0.00     | 5.80     | -0.00    |

# Summary of Clamp Capacities and Usages:

## Clamp Force Allowable Usage Label

|       | (kips) | (kips) | %     |
|-------|--------|--------|-------|
| SW1   | 13.39  | 50.00  | 26.79 |
| SW2   | 13.39  | 50.00  | 26.79 |
| 1A    | 18.64  | 50.00  | 37.28 |
| 1B    | 18.64  | 50.00  | 37.28 |
| 2A    | 18.65  | 50.00  | 37.30 |
| 2B    | 18.65  | 50.00  | 37.30 |
| 3A    | 18.64  | 50.00  | 37.27 |
| 3B    | 18.64  | 50.00  | 37.27 |
| 4     | 37.23  | 50.00  | 74.46 |
| 5     | 37.28  | 50.00  | 74.57 |
| 6     | 37.19  | 50.00  | 74.38 |
| A1T   | 0.39   | 25.00  | 1.55  |
| A1B   | 0.31   | 25.00  | 1.23  |
| A2T   | 0.39   | 25.00  | 1.55  |
| A2B   | 0.31   | 25.00  | 1.23  |
| A3T   | 0.39   | 25.00  | 1.55  |
| A3B   | 0.32   | 25.00  | 1.30  |
| COAX1 | 0.67   | 25.00  | 2.69  |
| COAX2 | 1.38   | 25.00  | 5.52  |

\*\*\* Analysis Results for Load Case No. 2 "WIND" - Number of iterations in SAPS 12

Equilibrium Joint Positions and Rotations:

| Joint Label | X-Displ (ft) | Y-Displ (ft) | Z-Displ (ft) | X-Rot (deg) | Y-Rot (deg) | Z-Rot (deg) | X-Pos (ft)  | Y-Pos (ft) | Z-Pos (ft) |
|-------------|--------------|--------------|--------------|-------------|-------------|-------------|-------------|------------|------------|
| ZP          | 0            | 0            | 0            | 0.0000      | 0.0000      | 0.0000      | 22          | 22         | 1          |
| WP          | -0.004294    | 0.268        | -0.03111     | -0.2927     | 0.0307      | -0.3908     | 4.996       | 5.268      | 116        |
| AP          | 0.0003563    | 0.7761       | -0.0545      | -0.5398     | -0.0140     | -0.3902     | 5           | 5.776      | 177.9      |
| TOPP        | 4.234e-006   | 0.8536       | -0.05593     | -0.5469     | 0.0000      | 0.0001      | 4.234e-006  | 5.854      | 185.9      |
| SWP         | -6.071e-006  | 0.8538       | -0.153       | -0.5606     | 0.0000      | 0.0001      | -6.071e-006 | 15.85      | 185.8      |
| TAP         | -1.371e-005  | 0.6297       | -0.1696      | 0.0000      | 0.0000      | 0.0000      | -1.371e-005 | 18.63      | 161.8      |
| TASQP       | 1.848e-005   | 0.6314       | 0.1828       | 0.0000      | 0.0000      | 0.0000      | 5           | -21.37     | 162.2      |
| MAP         | -2.63e-005   | 0.4298       | -0.2214      | 0.0000      | 0.0000      | 0.0000      | -2.63e-005  | 26.43      | 138.8      |
| MASQP       | -8.922e-006  | 0.4328       | 0.19         | 0.0000      | 0.0000      | 0.0000      | 5           | -25.57     | 139.2      |
| BAP         | -2.518e-005  | 0.2711       | -0.1301      | 0.0000      | 0.0000      | 0.0000      | -2.518e-005 | 21.27      | 115.9      |
| BASQP       | 0.0001396    | 0.2704       | 0.118        | 0.0000      | 0.0000      | 0.0000      | 5           | -20.73     | 116.1      |
| ZX          | 0            | 0            | 0            | 0.0000      | 0.0000      | 0.0000      | 22          | -22        | 1          |
| ZXY         | 0            | 0            | 0            | 0.0000      | 0.0000      | 0.0000      | -22         | -22        | 1          |
| ZY          | 0            | 0            | 0            | 0.0000      | 0.0000      | 0.0000      | -22         | 22         | 1          |
| WX          | 0.001558     | 0.2681       | 0.02115      | -0.3085     | -0.0119     | -0.1459     | 5.002       | -4.732     | 116        |
| WXY         | -0.001556    | 0.2681       | 0.02115      | -0.3085     | 0.0119      | 0.1460      | -5.002      | -4.732     | 116        |
| WY          | 0.004276     | 0.268        | -0.03111     | -0.2928     | -0.0307     | 0.3908      | -4.996      | 5.268      | 116        |
| AX          | -0.0002945   | 0.7766       | 0.03797      | -0.5478     | 0.0061      | -0.1462     | 5           | -4.223     | 178        |
| AXY         | 0.0003206    | 0.7766       | 0.03797      | -0.5478     | -0.0061     | 0.1463      | -5          | -4.223     | 178        |
| AY          | -0.0003509   | 0.7761       | -0.05449     | -0.5398     | 0.0140      | 0.3902      | -5          | 5.776      | 177.9      |
| TOPX        | 1.455e-005   | 0.854        | 0.03859      | -0.5448     | 0.0000      | 0.0001      | 1.455e-005  | -4.146     | 186        |
| SWX         | 2.487e-005   | 0.855        | 0.135        | -0.5564     | 0.0000      | 0.0001      | 2.487e-005  | -14.14     | 186.1      |
| TASQY       | 3.659e-005   | 0.6314       | 0.1828       | 0.0000      | 0.0000      | 0.0000      | -5          | -21.37     | 162.2      |
| MASQY       | 6.392e-005   | 0.4328       | 0.19         | 0.0000      | 0.0000      | 0.0000      | -5          | -25.57     | 139.2      |
| BASQY       | -0.0001014   | 0.2703       | 0.118        | 0.0000      | 0.0000      | 0.0000      | -5          | -20.73     | 116.1      |
| BS          | 0.001035     | 0.7013       | -0.05283     | -0.5283     | 0.0024      | -0.3904     | 5.001       | 5.701      | 169.9      |
| CS          | -8.182e-005  | 0.6283       | -0.05042     | -0.5239     | -0.0081     | -0.3903     | 5           | 5.628      | 161.9      |
| DS          | 0.0007795    | 0.5588       | -0.04878     | -0.5093     | -0.0097     | -0.3902     | 5.001       | 5.559      | 154.3      |
| ES          | 0.00145      | 0.4924       | -0.04598     | -0.4856     | -0.0081     | -0.3903     | 5.001       | 5.492      | 146.6      |
| FS          | 0.0007859    | 0.4294       | -0.04216     | -0.4503     | 0.0223      | -0.3905     | 5.001       | 5.429      | 139        |
| GS          | -0.0003374   | 0.3708       | -0.0395      | -0.4204     | -0.0382     | -0.3901     | 5           | 5.371      | 131.3      |
| HS          | 0.004999     | 0.3165       | -0.03558     | -0.3984     | 0.0200      | -0.3904     | 5.005       | 5.317      | 123.6      |
| IS          | 0.006074     | 0.219        | -0.03147     | -0.1828     | 0.0353      | -0.3698     | 6.484       | 6.697      | 106        |
| JS          | -0.0006058   | 0.1802       | -0.03249     | -0.1628     | 0.0694      | -0.3584     | 7.882       | 8.063      | 96.47      |
| KS          | 0.001576     | 0.1501       | -0.03154     | -0.1275     | 0.0362      | -0.3547     | 9.141       | 9.289      | 87.97      |
| LS          | 0.0003757    | 0.1314       | -0.03079     | -0.1249     | 0.0675      | -0.3475     | 10.03       | 10.16      | 81.97      |
| MS          | -0.002305    | 0.09429      | -0.02919     | -0.0894     | 0.0422      | -0.3675     | 11.8        | 11.89      | 69.97      |
| NS          | 0.0008689    | 0.07374      | -0.02646     | -0.0675     | 0.0210      | -0.3087     | 13.21       | 13.28      | 60.47      |
| OS          | -9.894e-005  | 0.01788      | -0.01856     | -0.0489     | 0.0400      | -0.2376     | 17.2        | 17.21      | 33.48      |
| PS          | -0.001252    | 0.007715     | -0.01514     | -0.0019     | 0.0440      | -0.2772     | 18.45       | 18.46      | 24.98      |
| L1S         | -0.1505      | 0.008669     | -0.02633     | -0.0088     | 0.0067      | -0.2188     | 18.3        | 7.39       | 24.97      |
| L3S         | -7.488e-005  | 0.1571       | 0.02213      | 0.0046      | 0.1938      | -0.7423     | 7.381       | 18.61      | 25.02      |
| O1S         | 0.06098      | 0.01696      | 0.006831     | -0.0556     | -0.0048     | 0.0899      | 17.26       | 0.01696    | 33.51      |
| O2S         | -1.093e-006  | -0.0439      | -0.01002     | -0.0488     | 0.0000      | 0.0000      | -1.093e-006 | 17.15      | 33.49      |
| M1S         | -0.02662     | 0.09407      | -0.006712    | -0.1360     | 0.0158      | 0.1319      | 11.77       | 0.09407    | 69.99      |
| M2S         | -2.341e-005  | 0.3264       | 0.002843     | -0.0737     | 0.0000      | 0.0000      | -2.341e-005 | 12.13      | 70         |
| BMS         | -5.364e-005  | 0.2693       | 0.07235      | 0.0000      | 0.0000      | 0.0000      | 5           | -12.73     | 116.1      |
| BMXS        | -0.001664    | 0.293        | 0.07231      | 0.0000      | 0.0000      | 0.0000      | 4.998       | -12.71     | 119.9      |
| MMS         | 0.001493     | 0.4313       | 0.1146       | 0.0000      | 0.0000      | 0.0000      | 5.001       | -15.07     | 139.1      |
| MMXS        | -0.0005942   | 0.4612       | 0.1145       | 0.0000      | 0.0000      | 0.0000      | 4.999       | -15.04     | 142.9      |
| TMS         | 0.0009584    | 0.6301       | 0.1123       | 0.0000      | 0.0000      | 0.0000      | 5.001       | -12.87     | 162.1      |
| TMXS        | -0.0003535   | 0.6652       | 0.1122       | 0.0000      | 0.0000      | 0.0000      | 5           | -12.83     | 166.1      |
| BPMS        | -0.001315    | 0.2698       | -0.08195     | 0.0000      | 0.0000      | 0.0000      | 2.499       | 13.27      | 115.9      |
| BPMXS       | 0.03098      | 0.3031       | -0.08221     | 0.0000      | 0.0000      | 0.0000      | 2.531       | 13.3       | 119.8      |
| BX          | -0.0008647   | 0.7011       | 0.03722      | -0.5271     | -0.0041     | -0.1461     | 4.999       | -4.299     | 170        |
| BXY         | 0.0008877    | 0.7011       | 0.03722      | -0.5271     | 0.0041      | 0.1462      | -4.999      | -4.299     | 170        |
| BY          | -0.001032    | 0.7012       | -0.05282     | -0.5283     | -0.0024     | 0.3904      | -5.001      | 5.701      | 169.9      |
| CX          | -0.0001059   | 0.6288       | 0.03592      | -0.5201     | -0.0019     | -0.1461     | 5           | -4.371     | 162        |
| CXY         | 0.0001259    | 0.6287       | 0.03592      | -0.5201     | 0.0019      | 0.1462      | -5          | -4.371     | 162        |
| CY          | 8.116e-005   | 0.6283       | -0.05041     | -0.5239     | 0.0081      | 0.3903      | -5          | 5.628      | 161.9      |
| DX          | -0.000473    | 0.5592       | 0.03508      | -0.5158     | 0.0063      | -0.1462     | 5           | -4.441     | 154.4      |

|       |             |          |            |         |         |         |             |         |       |
|-------|-------------|----------|------------|---------|---------|---------|-------------|---------|-------|
| EXY   | 0.0004902   | 0.5592   | 0.03508    | -0.5158 | -0.0063 | 0.1463  | -5          | -4.441  | 154.4 |
| DY    | -0.0007831  | 0.5588   | -0.04878   | -0.5093 | 0.0097  | 0.3903  | -5.001      | 5.559   | 154.3 |
| EX    | -0.00152    | 0.4919   | 0.03316    | -0.4834 | 0.0004  | -0.1461 | 4.998       | -4.508  | 146.7 |
| EXY   | 0.001534    | 0.4919   | 0.03316    | -0.4834 | -0.0003 | 0.1462  | -4.998      | -4.508  | 146.7 |
| EY    | -0.001457   | 0.4924   | -0.04597   | -0.4856 | 0.0081  | 0.3903  | -5.001      | 5.492   | 146.6 |
| FX    | -0.0005564  | 0.4299   | 0.03025    | -0.4495 | -0.0133 | -0.1460 | 4.999       | -4.57   | 139   |
| FKY   | 0.0005676   | 0.4299   | 0.03025    | -0.4495 | 0.0133  | -0.1461 | -4.999      | -4.57   | 139   |
| FY    | -0.0007953  | 0.4294   | -0.04216   | -0.4503 | -0.0223 | 0.3905  | -5.001      | 5.429   | 139   |
| GX    | -0.0003772  | 0.3709   | 0.02821    | -0.4258 | 0.0200  | -0.1463 | 5           | -4.629  | 131.4 |
| GXY   | 0.0003853   | 0.3709   | 0.02821    | -0.4258 | -0.0200 | 0.1464  | -5          | -4.629  | 131.4 |
| GY    | 0.0003254   | 0.3708   | -0.0395    | -0.4204 | 0.0382  | 0.3901  | -5          | 5.371   | 131.3 |
| HX    | -0.003216   | 0.3164   | 0.02505    | -0.3920 | -0.0142 | -0.1461 | 4.997       | -4.684  | 123.7 |
| HXY   | 0.003221    | 0.3164   | 0.02505    | -0.3920 | 0.0143  | 0.1462  | -4.997      | -4.684  | 123.7 |
| HY    | -0.005013   | 0.3165   | -0.03558   | -0.3985 | -0.0200 | 0.3904  | -5.005      | 5.317   | 123.6 |
| IX    | -0.004059   | 0.2191   | 0.02278    | -0.2251 | -0.0066 | -0.1348 | 6.474       | -6.259  | 106   |
| IXY   | 0.004066    | 0.2191   | 0.02278    | -0.2250 | 0.0066  | 0.1348  | -6.474      | -6.259  | 106   |
| IY    | -0.006098   | 0.2119   | -0.03147   | -0.1828 | -0.0353 | 0.3698  | -6.484      | 6.697   | 106   |
| JX    | -0.0004656  | 0.1801   | 0.02403    | -0.1939 | -0.0318 | -0.1265 | 7.882       | -7.703  | 96.52 |
| JXY   | 0.0004651   | 0.1801   | 0.02403    | -0.1939 | 0.0318  | 0.1266  | -7.882      | -7.703  | 96.52 |
| JY    | 0.000576    | 0.1802   | -0.03248   | -0.1628 | -0.0694 | 0.3584  | -7.882      | 8.063   | 96.47 |
| KX    | -0.0008665  | 0.1504   | 0.02382    | -0.1637 | -0.0083 | -0.1258 | 9.138       | -8.989  | 88.02 |
| KXY   | 0.0008652   | 0.1504   | 0.02382    | -0.1637 | 0.0083  | 0.1259  | -9.138      | -8.989  | 88.02 |
| KY    | -0.001611   | 0.1501   | -0.03154   | -0.1275 | -0.0362 | 0.3547  | -9.141      | 9.289   | 87.97 |
| LX    | -0.0008696  | 0.1311   | 0.02336    | -0.1627 | -0.0177 | -0.1244 | 10.03       | -9.895  | 82.02 |
| LXY   | 0.0008677   | 0.1311   | 0.02336    | -0.1627 | 0.0178  | 0.1244  | -10.03      | -9.895  | 82.02 |
| LY    | -0.0004136  | 0.1314   | -0.03078   | -0.1249 | -0.0675 | 0.3475  | -10.03      | 10.16   | 81.97 |
| MX    | -0.0004845  | 0.09452  | 0.02219    | -0.1150 | -0.0120 | -0.1344 | 11.8        | -11.71  | 70.02 |
| MXY   | 0.0004834   | 0.09451  | 0.02219    | -0.1149 | 0.0120  | 0.1345  | -11.8       | -11.71  | 70.02 |
| MY    | 0.002258    | 0.09427  | -0.02918   | -0.0894 | -0.0422 | 0.3675  | -11.8       | 11.89   | 69.97 |
| NX    | -0.002237   | 0.07561  | 0.02001    | -0.0877 | -0.0001 | -0.1245 | 13.2        | -13.13  | 60.52 |
| NXY   | 0.002237    | 0.0756   | 0.02001    | -0.0877 | 0.0001  | 0.1246  | -13.2       | -13.13  | 60.52 |
| NY    | -0.0009218  | 0.07372  | -0.02645   | -0.0675 | -0.0210 | 0.3087  | -13.21      | 13.28   | 60.47 |
| OX    | -0.003468   | 0.02045  | 0.01439    | -0.0585 | -0.0482 | -0.1561 | 17.19       | -17.18  | 33.51 |
| OKY   | 0.003469    | 0.02045  | 0.01439    | -0.0585 | 0.0482  | 0.1562  | -17.19      | -17.18  | 33.51 |
| OY    | 9.661e-005  | 0.01787  | -0.01856   | -0.0489 | -0.0401 | 0.2376  | -17.2       | 17.21   | 33.48 |
| FX    | 0.001198    | 0.01028  | 0.01225    | -0.0278 | -0.0405 | -0.1409 | 18.45       | -18.44  | 25.01 |
| PKY   | -0.001196   | 0.01028  | 0.01225    | -0.0278 | 0.0405  | 0.1409  | -18.45      | -18.44  | 25.01 |
| PY    | 0.001252    | 0.007711 | -0.01514   | -0.0019 | -0.0440 | 0.2772  | -18.45      | 18.46   | 24.98 |
| LIX   | 0.03036     | 0.01011  | 0.005832   | -0.0991 | 0.0232  | 0.4091  | 18.48       | -7.371  | 25.01 |
| LIXY  | -0.03036    | 0.01011  | 0.005833   | -0.0991 | 0.0232  | 0.4091  | -18.48      | -7.371  | 25.01 |
| L1Y   | 0.1505      | 0.008666 | -0.02633   | -0.0088 | -0.0067 | 0.2188  | -18.3       | 7.39    | 24.97 |
| L3X   | 0.001318    | 0.03956  | -0.0005497 | -0.0283 | -0.0573 | -0.1141 | 7.382       | -18.41  | 25    |
| L3XY  | -0.001316   | 0.03956  | -0.0005498 | -0.0283 | 0.0573  | 0.1141  | -7.382      | -18.41  | 25    |
| L3Y   | 7.433e-005  | 0.1571   | 0.02212    | 0.0046  | -0.1938 | 0.7423  | -7.381      | 18.61   | 25.02 |
| O1Y   | -0.06098    | 0.01696  | 0.006831   | -0.0556 | 0.0048  | -0.0899 | -17.26      | 0.01696 | 33.51 |
| O2X   | 8.574e-007  | 0.07848  | -0.007581  | -0.0603 | -0.0000 | 0.0000  | 8.574e-007  | -17.12  | 33.49 |
| M1Y   | 0.02659     | 0.09406  | -0.006708  | -0.1360 | -0.0158 | -0.1318 | -11.77      | 0.09406 | 69.99 |
| M2X   | -6.231e-007 | 0.1915   | 0.009809   | -0.1174 | 0.0000  | 0.0000  | -6.231e-007 | -11.61  | 70.01 |
| BMY   | 7.371e-005  | 0.2693   | 0.07235    | 0.0000  | 0.0000  | 0.0000  | -5          | -12.73  | 116.1 |
| BMXY  | 0.001686    | 0.2929   | 0.07232    | 0.0000  | 0.0000  | 0.0000  | -4.998      | -12.71  | 119.9 |
| MMY   | -0.00146    | 0.4313   | 0.1146     | 0.0000  | 0.0000  | 0.0000  | -5.001      | -15.07  | 139.1 |
| MMXY  | 0.000629    | 0.4612   | 0.1145     | 0.0000  | 0.0000  | 0.0000  | -4.999      | -15.04  | 142.9 |
| TMY   | -0.0009209  | 0.6301   | 0.1123     | 0.0000  | 0.0000  | 0.0000  | -5.001      | -12.87  | 162.1 |
| TMYX  | 0.0003928   | 0.6652   | 0.1122     | 0.0000  | 0.0000  | 0.0000  | -5          | -12.83  | 166.1 |
| BPMY  | -0.001319   | 0.2706   | -0.082     | 0.0000  | 0.0000  | 0.0000  | -2.501      | 13.27   | 115.9 |
| BPMXY | -0.03101    | 0.3031   | -0.08223   | 0.0000  | 0.0000  | 0.0000  | -2.531      | 13.3    | 119.8 |

# Joint Support Reactions:

| Joint Label | X-Force<br>(kips) | X-Y-Force<br>Usage | Y<br>(kips) | Y-Force<br>Usage | Comp.<br>(kips) | Uplift<br>Usage | X-Moment<br>(ft-k) | X-M.<br>Usage | Y-Moment<br>(ft-k) | Y-M.<br>Usage | Z-Moment<br>(ft-k) | Z-M.<br>Usage | Max. %<br>Usage |     |
|-------------|-------------------|--------------------|-------------|------------------|-----------------|-----------------|--------------------|---------------|--------------------|---------------|--------------------|---------------|-----------------|-----|
| ZP          | -43.014           | 0.0                | -49.310     | 0.0              | 288.905         | 0.0             | 0.0                | -0.511        | 0.0                | 0.317         | 0.0                | 2.762         | 0.0             | 0.0 |
| ZX          | 39.949            | 0.0                | -42.859     | 0.0              | -248.661        | 0.0             | 0.0                | 0.061         | 0.0                | -0.844        | 0.0                | 1.540         | 0.0             | 0.0 |
| ZXY         | -39.948           | 0.0                | -42.857     | 0.0              | -248.654        | 0.0             | 0.0                | 0.061         | 0.0                | 0.844         | 0.0                | -1.540        | 0.0             | 0.0 |
| ZY          | 43.014            | 0.0                | -49.308     | 0.0              | 288.896         | 0.0             | 0.0                | -0.512        | 0.0                | -0.317        | 0.0                | -2.762        | 0.0             | 0.0 |

# Joint Displacements, Loads and Member Forces on Joints:

| Joint X<br>Label | External Y<br>Load<br>(kips) | External X<br>Load<br>(kips) | External Z<br>Load<br>(kips) | Member Y<br>Force<br>(kips) | Member X<br>Force<br>(kips) | Member Z<br>Force<br>(kips) | Disp.<br>X<br>(ft) | Disp.<br>Y<br>(ft) | Disp.<br>Z<br>(ft) |
|------------------|------------------------------|------------------------------|------------------------------|-----------------------------|-----------------------------|-----------------------------|--------------------|--------------------|--------------------|
| ZP               | 0.0000                       | 0.5700                       | -0.9121                      | 43.0141                     | 48.7403                     | -287.9932                   | 0.0000             | -0.0000            | 0.0000             |
| WP               | 0.0000                       | 0.6662                       | -0.9863                      | -0.0000                     | -0.6662                     | 0.9863                      | -0.0043            | 0.2680             | -0.0311            |
| AP               | 0.0000                       | 0.3163                       | -0.2623                      | 0.0000                      | -0.3163                     | 0.2623                      | 0.0004             | 0.7761             | -0.0545            |
| TOPP             | 0.0000                       | 0.1466                       | -0.1789                      | 0.0000                      | -0.1466                     | 0.1789                      | 0.0000             | 0.8536             | -0.0559            |
| SWP              | 0.0000                       | 6.3983                       | -0.4141                      | 0.0000                      | -6.3983                     | 0.4141                      | -0.0000            | 0.8538             | -0.1530            |
| TAP              | 0.0000                       | 20.9159                      | -2.1227                      | 0.0000                      | -20.9159                    | 2.1227                      | -0.0000            | 0.6297             | -0.1696            |
| TASQP            | 0.0000                       | 10.4920                      | -1.0998                      | -0.0000                     | -10.4920                    | 1.0998                      | 0.0000             | 0.6314             | 0.1828             |
| MAP              | 0.0000                       | 20.9414                      | -2.3638                      | 0.0000                      | -20.9414                    | 2.3638                      | -0.0000            | 0.4298             | -0.2214            |
| MASQP            | 0.0000                       | 10.5013                      | -1.1436                      | -0.0000                     | -10.5013                    | 1.1436                      | -0.0000            | 0.4328             | 0.1900             |
| BAP              | 0.0000                       | 20.8532                      | -2.0456                      | 0.0000                      | -20.8532                    | 2.0456                      | -0.0000            | 0.2711             | -0.1301            |
| BASQP            | 0.0000                       | 10.4916                      | -1.0948                      | -0.0000                     | -10.4916                    | 1.0948                      | 0.0001             | 0.2704             | 0.1180             |
| ZX               | 0.0000                       | 0.5700                       | -0.9121                      | -39.9487                    | 42.2892                     | 249.5729                    | 0.0000             | 0.0000             | 0.0000             |
| ZXY              | 0.0000                       | 0.5700                       | -0.9121                      | 39.9483                     | 42.2874                     | 249.5661                    | 0.0000             | 0.0000             | 0.0000             |
| ZY               | 0.0000                       | 0.5700                       | -0.9121                      | -43.0137                    | 48.7377                     | -287.9840                   | 0.0000             | 0.0000             | 0.0000             |
| WX               | 0.0000                       | 0.6495                       | -1.0063                      | -0.0000                     | -0.6495                     | 1.0063                      | 0.0016             | 0.2681             | 0.0212             |
| WKY              | 0.0000                       | 0.6495                       | -1.0063                      | 0.0000                      | -0.6495                     | 1.0063                      | -0.0016            | 0.2681             | 0.0212             |
| WY               | 0.0000                       | 0.6344                       | -0.9639                      | 0.0000                      | -0.6344                     | 0.9639                      | 0.0043             | 0.2680             | -0.0311            |
| AX               | 0.0000                       | 0.3163                       | -0.2623                      | 0.0000                      | -0.3163                     | 0.2623                      | -0.0003            | 0.7766             | 0.0380             |
| AXY              | 0.0000                       | 0.3163                       | -0.2623                      | -0.0000                     | -0.3163                     | 0.2623                      | 0.0003             | 0.7766             | 0.0380             |
| AY               | 0.0000                       | 0.3163                       | -0.2623                      | -0.0000                     | -0.3163                     | 0.2623                      | -0.0004            | 0.7761             | -0.0545            |
| TOPX             | 0.0000                       | 0.1466                       | -0.1789                      | 0.0000                      | -0.1466                     | 0.1789                      | 0.0000             | 0.8540             | 0.0386             |
| SWX              | 0.0000                       | 6.3983                       | -0.4141                      | 0.0000                      | -6.3983                     | 0.4141                      | 0.0000             | 0.8550             | 0.1350             |
| TASQY            | 0.0000                       | 10.4920                      | -1.0998                      | -0.0000                     | -10.4920                    | 1.0998                      | 0.0000             | 0.6314             | 0.1828             |
| MASQY            | 0.0000                       | 10.5013                      | -1.1436                      | -0.0000                     | -10.5013                    | 1.1436                      | 0.0001             | 0.4328             | 0.1900             |
| BASQY            | 0.0000                       | 10.4916                      | -1.0948                      | -0.0000                     | -10.4916                    | 1.0948                      | -0.0001            | 0.2703             | 0.1180             |
| BS               | 0.0000                       | 0.2640                       | -0.2193                      | 0.0000                      | -0.2640                     | 0.2193                      | 0.0010             | 0.7013             | -0.0528            |
| CS               | 0.0000                       | 0.4182                       | -0.4715                      | 0.0000                      | -0.4182                     | 0.4715                      | -0.0001            | 0.6283             | -0.0504            |
| DS               | 0.0000                       | 0.3590                       | -0.3926                      | 0.0000                      | -0.3590                     | 0.3926                      | 0.0008             | 0.5588             | -0.0488            |
| ES               | 0.0000                       | 0.3913                       | -0.4558                      | 0.0000                      | -0.3913                     | 0.4558                      | 0.0015             | 0.4924             | -0.0460            |
| FS               | 0.0000                       | 0.5364                       | -0.8344                      | -0.0000                     | -0.5364                     | 0.8344                      | 0.0008             | 0.4294             | -0.0422            |
| GS               | 0.0000                       | 0.4595                       | -0.6690                      | -0.0000                     | -0.4595                     | 0.6690                      | -0.0003            | 0.3708             | -0.0395            |
| HS               | 0.0000                       | 0.4725                       | -0.7027                      | -0.0000                     | -0.4725                     | 0.7027                      | 0.0050             | 0.3165             | -0.0356            |
| IS               | 0.0000                       | 0.5532                       | -0.9183                      | -0.0000                     | -0.5532                     | 0.9183                      | 0.0061             | 0.2190             | -0.0315            |
| JS               | 0.0000                       | 0.5132                       | -0.8740                      | 0.0000                      | -0.5132                     | 0.8740                      | -0.0006            | 0.1802             | -0.0325            |
| KS               | 0.0000                       | 0.4694                       | -0.7688                      | 0.0000                      | -0.4694                     | 0.7688                      | 0.0016             | 0.1501             | -0.0315            |
| LS               | 0.0000                       | 0.6693                       | -0.9861                      | -0.0000                     | -0.6693                     | 0.9861                      | 0.0004             | 0.1314             | -0.0308            |
| MS               | 0.0000                       | 0.3123                       | -0.7229                      | 0.0000                      | -0.3123                     | 0.7229                      | -0.0023            | 0.0943             | -0.0292            |
| NS               | 0.0000                       | 1.1114                       | -1.7855                      | -0.0000                     | -1.1114                     | 1.7855                      | 0.0009             | 0.0737             | -0.0265            |
| OS               | 0.0000                       | 0.9306                       | -1.5949                      | -0.0000                     | -0.9306                     | 1.5949                      | -0.0001            | 0.0179             | -0.0186            |
| PS               | 0.0000                       | 0.4651                       | -1.0557                      | 0.0000                      | -0.4651                     | 1.0557                      | -0.0013            | 0.0077             | -0.0151            |
| L1S              | 0.0000                       | 0.2846                       | -0.3683                      | -0.0000                     | -0.2846                     | 0.3683                      | -0.1505            | 0.0087             | -0.0263            |
| L3S              | 0.0000                       | 0.5589                       | -0.3683                      | -0.0000                     | -0.5589                     | 0.3683                      | -0.0001            | 0.1571             | 0.0221             |
| O1S              | 0.0000                       | 0.2914                       | -0.4374                      | 0.0000                      | -0.2914                     | 0.4374                      | 0.0610             | 0.0170             | 0.0068             |
| O2S              | 0.0000                       | 0.4374                       | -0.4374                      | 0.0000                      | -0.4374                     | 0.4374                      | 0.0000             | -0.0439            | -0.0100            |
| M1S              | 0.0000                       | 0.2385                       | -0.2789                      | 0.0000                      | -0.2385                     | 0.2789                      | -0.0266            | 0.0941             | -0.0067            |
| M2S              | 0.0000                       | 0.4956                       | -0.2789                      | 0.0000                      | -0.4956                     | 0.2789                      | -0.0000            | 0.3264             | 0.0028             |
| BMS              | 0.0000                       | 0.0815                       | -0.1705                      | 0.0000                      | -0.0815                     | 0.1705                      | -0.0001            | 0.2693             | 0.0724             |
| BMSX             | 0.0000                       | 0.0460                       | -0.0490                      | -0.0000                     | -0.0460                     | 0.0490                      | -0.0017            | 0.2930             | 0.0723             |
| HMS              | 0.0000                       | 0.0956                       | -0.2547                      | 0.0000                      | -0.0956                     | 0.2547                      | 0.0015             | 0.4313             | 0.1146             |
| HMSX             | 0.0000                       | 0.0541                       | -0.0718                      | -0.0000                     | -0.0541                     | 0.0718                      | -0.0006            | 0.4612             | 0.1145             |
| TMS              | 0.0000                       | 0.0819                       | -0.1789                      | 0.0000                      | -0.0819                     | 0.1789                      | 0.0010             | 0.6301             | 0.1123             |
| TMSX             | 0.0000                       | 0.0480                       | -0.0518                      | -0.0000                     | -0.0480                     | 0.0518                      | -0.0004            | 0.6652             | 0.1122             |
| BMS              | 0.0000                       | 0.0638                       | -0.0914                      | 0.0000                      | -0.0638                     | 0.0914                      | -0.0013            | 0.2698             | -0.0820            |
| BPMXS            | 0.0000                       | 0.0528                       | -0.0508                      | 0.0000                      | -0.0528                     | 0.0508                      | 0.0310             | 0.3031             | -0.0822            |
| BX               | 0.0000                       | 0.2486                       | -0.2076                      | 0.0000                      | -0.2486                     | 0.2076                      | -0.0009            | 0.7011             | 0.0372             |
| BXY              | 0.0000                       | 0.2486                       | -0.2076                      | -0.0000                     | -0.2486                     | 0.2076                      | 0.0009             | 0.7011             | 0.0372             |
| BY               | 0.0000                       | 0.2640                       | -0.2193                      | -0.0000                     | -0.2640                     | 0.2193                      | -0.0010            | 0.7012             | -0.0528            |
| CX               | 0.0000                       | 0.4324                       | -0.5061                      | 0.0000                      | -0.4324                     | 0.5061                      | -0.0001            | 0.6288             | 0.0359             |
| CXY              | 0.0000                       | 0.4324                       | -0.5061                      | -0.0000                     | -0.4324                     | 0.5061                      | 0.0001             | 0.6287             | 0.0359             |
| CY               | 0.0000                       | 0.4182                       | -0.4715                      | -0.0000                     | -0.4182                     | 0.4715                      | 0.0001             | 0.6283             | -0.0504            |
| DX               | 0.0000                       | 0.3590                       | -0.3926                      | 0.0000                      | -0.3590                     | 0.3926                      | -0.0005            | 0.5592             | 0.0351             |
| DXY              | 0.0000                       | 0.3590                       | -0.3926                      | -0.0000                     | -0.3590                     | 0.3926                      | 0.0005             | 0.5592             | 0.0351             |
| DY               | 0.0000                       | 0.3590                       | -0.3926                      | -0.0000                     | -0.3590                     | 0.3926                      | -0.0008            | 0.5588             | -0.0488            |
| EX               | 0.0000                       | 0.3725                       | -0.4324                      | 0.0000                      | -0.3725                     | 0.4324                      | -0.0015            | 0.4919             | 0.0332             |
| EXY              | 0.0000                       | 0.3725                       | -0.4324                      | -0.0000                     | -0.3725                     | 0.4324                      | 0.0015             | 0.4919             | 0.0332             |
| EY               | 0.0000                       | 0.3913                       | -0.4558                      | 0.0000                      | -0.3913                     | 0.4558                      | -0.0015            | 0.4924             | -0.0460            |

|       |        |        |         |         |         |        |         |        |         |
|-------|--------|--------|---------|---------|---------|--------|---------|--------|---------|
| FX    | 0.0000 | 0.5526 | -0.8126 | -0.0000 | -0.5526 | 0.8126 | -0.0006 | 0.4299 | 0.0303  |
| FX    | 0.0000 | 0.5526 | -0.8126 | 0.0000  | -0.5526 | 0.8126 | 0.0006  | 0.4299 | 0.0303  |
| FY    | 0.0000 | 0.5364 | -0.8344 | 0.0000  | -0.5364 | 0.8344 | -0.0008 | 0.4294 | -0.0422 |
| GX    | 0.0000 | 0.4595 | -0.6690 | -0.0000 | -0.4595 | 0.6690 | -0.0004 | 0.3709 | 0.0282  |
| GXY   | 0.0000 | 0.4595 | -0.6690 | 0.0000  | -0.4595 | 0.6690 | 0.0004  | 0.3709 | 0.0282  |
| GY    | 0.0000 | 0.4595 | -0.6690 | 0.0000  | -0.4595 | 0.6690 | 0.0003  | 0.3708 | -0.0395 |
| HX    | 0.0000 | 0.4704 | -0.7021 | -0.0000 | -0.4704 | 0.7021 | -0.0032 | 0.3164 | 0.0250  |
| HXY   | 0.0000 | 0.4704 | -0.7021 | 0.0000  | -0.4704 | 0.7021 | 0.0032  | 0.3164 | 0.0250  |
| HY    | 0.0000 | 0.4725 | -0.7027 | 0.0000  | -0.4725 | 0.7027 | -0.0050 | 0.3165 | -0.0356 |
| IX    | 0.0000 | 0.5532 | -0.9183 | 0.0000  | -0.5532 | 0.9183 | -0.0041 | 0.2191 | 0.0228  |
| IXY   | 0.0000 | 0.5532 | -0.9183 | -0.0000 | -0.5532 | 0.9183 | 0.0041  | 0.2191 | 0.0228  |
| IY    | 0.0000 | 0.5532 | -0.9183 | 0.0000  | -0.5532 | 0.9183 | -0.0061 | 0.2190 | -0.0315 |
| JX    | 0.0000 | 0.5132 | -0.8740 | 0.0000  | -0.5132 | 0.8740 | -0.0005 | 0.1801 | 0.0240  |
| JXY   | 0.0000 | 0.5132 | -0.8740 | -0.0000 | -0.5132 | 0.8740 | 0.0005  | 0.1801 | 0.0240  |
| JY    | 0.0000 | 0.5132 | -0.8740 | 0.0000  | -0.5132 | 0.8740 | 0.0006  | 0.1802 | -0.0325 |
| KX    | 0.0000 | 0.4694 | -0.7688 | 0.0000  | -0.4694 | 0.7688 | -0.0009 | 0.1504 | 0.0238  |
| KXY   | 0.0000 | 0.4694 | -0.7688 | -0.0000 | -0.4694 | 0.7688 | 0.0009  | 0.1504 | 0.0238  |
| KY    | 0.0000 | 0.4694 | -0.7688 | -0.0000 | -0.4694 | 0.7688 | -0.0016 | 0.1501 | -0.0315 |
| LX    | 0.0000 | 0.6693 | -0.9861 | -0.0000 | -0.6693 | 0.9861 | -0.0009 | 0.1311 | 0.0234  |
| LXY   | 0.0000 | 0.6693 | -0.9861 | 0.0000  | -0.6693 | 0.9861 | 0.0009  | 0.1311 | 0.0234  |
| LY    | 0.0000 | 0.6693 | -0.9861 | 0.0000  | -0.6693 | 0.9861 | -0.0004 | 0.1314 | -0.0308 |
| MX    | 0.0000 | 0.3123 | -0.7229 | -0.0000 | -0.3123 | 0.7229 | -0.0005 | 0.0945 | 0.0222  |
| MXY   | 0.0000 | 0.3123 | -0.7229 | 0.0000  | -0.3123 | 0.7229 | 0.0005  | 0.0945 | 0.0222  |
| MY    | 0.0000 | 0.3123 | -0.7229 | -0.0000 | -0.3123 | 0.7229 | -0.0023 | 0.0943 | -0.0292 |
| NX    | 0.0000 | 1.1114 | -1.7855 | 0.0000  | -1.1114 | 1.7855 | -0.0022 | 0.0756 | 0.0200  |
| NXY   | 0.0000 | 1.1114 | -1.7855 | -0.0000 | -1.1114 | 1.7855 | 0.0022  | 0.0756 | 0.0200  |
| NY    | 0.0000 | 1.1114 | -1.7855 | 0.0000  | -1.1114 | 1.7855 | -0.0009 | 0.0737 | -0.0264 |
| OX    | 0.0000 | 0.9306 | -1.5949 | 0.0000  | -0.9306 | 1.5949 | -0.0035 | 0.0205 | 0.0144  |
| OKY   | 0.0000 | 0.9306 | -1.5949 | -0.0000 | -0.9306 | 1.5949 | 0.0035  | 0.0204 | 0.0144  |
| OY    | 0.0000 | 0.9306 | -1.5949 | 0.0000  | -0.9306 | 1.5949 | 0.0001  | 0.0179 | -0.0186 |
| FX    | 0.0000 | 0.4651 | -1.0557 | -0.0000 | -0.4651 | 1.0557 | 0.0012  | 0.0103 | 0.0122  |
| FX    | 0.0000 | 0.4651 | -1.0557 | 0.0000  | -0.4651 | 1.0557 | -0.0012 | 0.0103 | 0.0122  |
| FY    | 0.0000 | 0.4651 | -1.0557 | -0.0000 | -0.4651 | 1.0557 | 0.0013  | 0.0077 | -0.0151 |
| L1X   | 0.0000 | 0.2846 | -0.3683 | 0.0000  | -0.2846 | 0.3683 | 0.0304  | 0.0101 | 0.0058  |
| L1XY  | 0.0000 | 0.2846 | -0.3683 | -0.0000 | -0.2846 | 0.3683 | -0.0304 | 0.0101 | 0.0058  |
| L1Y   | 0.0000 | 0.2846 | -0.3683 | 0.0000  | -0.2846 | 0.3683 | 0.1505  | 0.0087 | -0.0263 |
| L3X   | 0.0000 | 0.5589 | -0.3683 | -0.0000 | -0.5589 | 0.3683 | 0.0013  | 0.0396 | -0.0005 |
| L3XY  | 0.0000 | 0.5589 | -0.3683 | 0.0000  | -0.5589 | 0.3683 | -0.0013 | 0.0396 | -0.0005 |
| L3Y   | 0.0000 | 0.5589 | -0.3683 | 0.0000  | -0.5589 | 0.3683 | 0.0001  | 0.1571 | 0.0221  |
| O1Y   | 0.0000 | 0.2914 | -0.4374 | -0.0000 | -0.2914 | 0.4374 | -0.0610 | 0.0170 | 0.0068  |
| O2X   | 0.0000 | 0.6130 | -0.4374 | 0.0000  | -0.6130 | 0.4374 | 0.0000  | 0.0785 | -0.0076 |
| M1Y   | 0.0000 | 0.2385 | -0.2789 | -0.0000 | -0.2385 | 0.2789 | 0.0266  | 0.0941 | -0.0067 |
| M2X   | 0.0000 | 0.4956 | -0.2789 | -0.0000 | -0.4956 | 0.2789 | -0.0000 | 0.1915 | 0.0098  |
| BMX   | 0.0000 | 0.0815 | -0.1705 | 0.0000  | -0.0815 | 0.1705 | 0.0001  | 0.2693 | 0.0724  |
| BMXY  | 0.0000 | 0.0460 | -0.0450 | 0.0000  | -0.0460 | 0.0490 | 0.0017  | 0.2929 | 0.0723  |
| MMY   | 0.0000 | 0.0956 | -0.2547 | -0.0000 | -0.0956 | 0.2547 | -0.0015 | 0.4313 | 0.1146  |
| MMXY  | 0.0000 | 0.0541 | -0.0718 | 0.0000  | -0.0541 | 0.0718 | 0.0006  | 0.4612 | 0.1135  |
| TTY   | 0.0000 | 0.0819 | -0.1789 | 0.0000  | -0.0819 | 0.1789 | -0.0009 | 0.6301 | 0.1123  |
| TMXY  | 0.0000 | 0.0480 | -0.0518 | 0.0000  | -0.0480 | 0.0518 | 0.0004  | 0.6652 | 0.1122  |
| BPMY  | 0.0000 | 0.0956 | -0.1138 | -0.0000 | -0.0956 | 0.1138 | -0.0013 | 0.2706 | -0.0820 |
| BPMXY | 0.0000 | 0.0528 | -0.0508 | -0.0000 | -0.0528 | 0.0508 | -0.0310 | 0.3031 | -0.0822 |

Moments for Angles Modeled as Beams:

| Angle Label | Torsion (ft-lbs) | Origin X Moment (ft-lbs) | Origin Z Moment (ft-lbs) | End X Moment (ft-lbs) | End Z Moment (ft-lbs) | X Shear (lbs) | Z Shear (lbs) |
|-------------|------------------|--------------------------|--------------------------|-----------------------|-----------------------|---------------|---------------|
| g1P         | -2732.18         | -1414.38                 | -277.96                  | -585.36               | 430.97                | -81.70        | 6.13          |
| g13P        | 51.26            | 1048.49                  | 2306.00                  | 1085.83               | 2393.43               | 192.92        | 424.40        |
| g14P        | -8.25            | -1662.46                 | 1528.90                  | -818.61               | 833.05                | -224.11       | 213.33        |
| g17P        | 30.94            | -1086.89                 | -2393.30                 | -704.49               | -1688.67              | -121.42       | -276.50       |
| g21P        | -0.00            | 818.69                   | -833.01                  | -818.56               | 832.98                | 0.01          | -0.00         |
| g29P        | -1566.90         | -3392.45                 | -845.36                  | -1233.45              | 55.85                 | -476.89       | -81.52        |
| g30P        | 1408.22          | -1369.09                 | 826.25                   | 1034.36               | 1341.02               | -38.44        | 59.22         |
| g33P        | -616.49          | 1141.92                  | -48.11                   | 1130.84               | 965.07                | 82.40         | 33.31         |
| g41P        | 40.01            | -365.37                  | -958.54                  | -339.73               | -643.10               | -41.03        | -93.12        |
| g42P        | 0.16             | -13.59                   | -1051.98                 | -159.50               | -823.13               | -10.07        | -109.05       |
| g77P        | 13.90            | -197.31                  | -652.33                  | -147.14               | -485.79               | -13.05        | -43.10        |
| g78P        | -0.01            | 52.68                    | -279.18                  | -53.03                | 279.12                | -0.01         | -0.00         |



|        |          |           |          |          |          |          |          |
|--------|----------|-----------|----------|----------|----------|----------|----------|
| g81P   | 12.98    | -21.19    | -200.88  | 56.03    | 202.75   | 2.96     | 0.16     |
| g82P   | -7.33    | -641.30   | 2134.89  | -711.38  | 2431.92  | -114.69  | 387.00   |
| g85P   | -0.00    | 29.81     | -151.70  | -29.81   | 151.63   | 0.00     | -0.00    |
| g89P   | 14.42    | 6.21      | -255.38  | 22.91    | -352.80  | 1.43     | -30.33   |
| g93P   | 415.65   | 743.13    | 713.40   | 2941.64  | 877.35   | 300.77   | 129.75   |
| g97P   | -88.64   | -4871.99  | 3016.09  | -1368.24 | 3200.14  | -719.04  | 716.24   |
| g98P   | -87.89   | 1368.29   | -3200.13 | -727.99  | -656.46  | 104.53   | -629.54  |
| g105P  | -92.91   | -10076.13 | 421.57   | -5530.12 | -5583.69 | -1528.40 | 588.08   |
| g106P  | -86.82   | 5530.29   | -5583.62 | 4871.97  | -3016.17 | 1072.43  | -886.56  |
| g163P  | 0.27     | 491.75    | 571.04   | -1443.50 | 4431.61  | -124.18  | 652.70   |
| g164P  | -1.00    | 1443.50   | -4431.61 | 60.98    | -8164.36 | 196.35   | -1643.89 |
| g167P  | 5.11     | -60.98    | 8164.36  | -6820.31 | 7429.54  | -898.02  | 2035.05  |
| g171P  | -0.01    | -18.35    | -71.98   | -284.24  | -44.42   | -39.47   | -15.18   |
| g175P  | 0.00     | 284.24    | 44.42    | -148.60  | 11.63    | 17.70    | 7.31     |
| g179P  | -0.03    | 148.60    | -11.63   | -491.75  | -571.04  | -44.78   | -76.03   |
| g261P  | -0.00    | 0.00      | 0.00     | -30.36   | 43.93    | -3.80    | 5.49     |
| g262P  | -0.00    | 30.36     | -43.93   | 18.35    | -71.98   | 6.09     | -14.49   |
| g322P  | -0.00    | 0.00      | 0.00     | -33.97   | 0.00     | -3.40    | 0.00     |
| g323P  | -0.00    | 33.97     | -0.00    | 28.86    | 0.00     | 6.28     | 0.00     |
| g1X    | -1376.09 | 1791.86   | 431.22   | 553.84   | 942.05   | 95.52    | 56.03    |
| g1XY   | 1376.29  | 1791.86   | -430.78  | 553.94   | -941.48  | 95.53    | -55.99   |
| g1Y    | 2732.28  | -1414.51  | 278.57   | -585.61  | -430.41  | -81.71   | -6.08    |
| g13X   | 23.14    | -304.85   | 865.66   | -704.90  | 1688.62  | -91.16   | 230.73   |
| g13XY  | -23.14   | -304.85   | -865.63  | -704.95  | -1688.62 | -91.17   | -230.73  |
| g13Y   | -51.26   | 1048.51   | -2305.97 | 1085.88  | -2393.42 | 192.93   | -424.40  |
| g14X   | 0.49     | 336.54    | 87.96    | 241.94   | 128.05   | 52.25    | 19.51    |
| g14XY  | -0.50    | 336.50    | -87.92   | 241.93   | -128.03  | 52.25    | -19.51   |
| g14Y   | 8.24     | -1662.36  | -1528.86 | -818.49  | -833.01  | -224.09  | -213.33  |
| g17Y   | -30.94   | -1086.94  | 2393.29  | -704.54  | 1688.66  | -121.42  | 276.50   |
| g21X   | -0.00    | -241.94   | -128.05  | 241.93   | 128.03   | -0.00    | -0.00    |
| g29X   | -203.53  | 2717.79   | -1792.06 | 750.80   | -899.27  | 357.23   | -277.16  |
| g29XY  | 203.74   | 2717.26   | 1791.73  | 750.17   | 898.74   | 357.11   | 277.07   |
| g29Y   | 1566.94  | -3392.77  | 844.40   | -1237.05 | -60.25   | -477.30  | 80.97    |
| g30X   | -353.80  | 365.01    | -1701.34 | -1785.31 | -197.65  | -163.47  | -218.62  |
| g30XY  | 354.07   | 364.46    | 1700.89  | -1785.32 | 197.22   | -163.54  | 218.52   |
| g30Y   | -1408.05 | -1371.87  | 822.31   | 1034.57  | -1341.59 | -38.74   | -59.74   |
| g33X   | 405.31   | -656.23   | 910.71   | -325.79  | 2086.66  | -35.53   | 108.62   |
| g33XY  | -404.96  | -655.56   | -910.11  | -325.19  | -2086.13 | -35.48   | -108.58  |
| g33Y   | 616.70   | 1145.75   | 52.86    | 1133.82  | -960.89  | 82.65    | -32.98   |
| g41X   | 38.19    | -350.29   | 406.09   | -340.02  | 643.05   | -40.12   | 61.04    |
| g41XY  | -38.22   | -350.21   | -406.05  | -340.01  | -643.04  | -40.12   | -61.04   |
| g41Y   | -40.03   | -365.40   | 958.54   | -339.72  | 643.08   | -41.03   | 93.12    |
| g42X   | 1.55     | 442.45    | 258.17   | 616.63   | 408.62   | 61.60    | 38.78    |
| g42XY  | -1.57    | 442.45    | -258.15  | 616.63   | -408.62  | 61.60    | -38.78   |
| g42Y   | -0.17    | -13.29    | 1051.98  | -159.50  | 823.13   | -10.05   | 109.04   |
| g77Y   | -13.91   | -197.36   | 652.14   | -147.18  | 485.63   | -13.05   | 43.08    |
| g78X   | -0.01    | 0.31      | -112.64  | -0.32    | 112.65   | -0.00    | 0.00     |
| g81X   | 12.85    | 90.68     | -417.99  | 56.09    | -202.74  | 12.43    | -52.61   |
| g81XY  | -12.84   | 90.69     | 417.92   | 56.08    | 202.72   | 12.43    | 52.60    |
| g81Y   | -12.97   | -21.21    | 200.82   | 56.03    | -202.73  | 2.96     | -0.16    |
| g82X   | 1.13     | 248.59    | 923.82   | 267.86   | 1032.48  | 43.77    | 165.79   |
| g82XY  | -1.14    | 248.60    | -923.81  | 267.86   | -1032.48 | 43.77    | -165.79  |
| g82Y   | 7.33     | -641.34   | -2134.92 | -711.38  | -2431.92 | -114.69  | -387.00  |
| g85X   | -0.00    | -7.60     | -54.34   | 7.60     | 54.32    | 0.00     | -0.00    |
| g89Y   | -14.42   | 6.22      | 255.34   | 22.91    | 352.73   | 1.43     | 30.33    |
| g93X   | 312.44   | -545.80   | 410.12   | -2485.55 | 1787.73  | -247.09  | 179.24   |
| g93XY  | -312.30  | -544.93   | -410.01  | -2484.99 | -1787.38 | -246.98  | -179.20  |
| g93Y   | -415.70  | 742.21    | -712.87  | 2941.90  | -876.39  | 300.72   | -129.62  |
| g97X   | 5.43     | 2813.86   | 804.97   | 72.57    | 1143.18  | 332.22   | 224.23   |
| g97XY  | -5.36    | 2813.60   | -805.27  | 72.38    | -1143.52 | 332.17   | -224.30  |
| g97Y   | 88.46    | -4872.44  | -3015.60 | -1368.67 | -3199.90 | -719.14  | -716.16  |
| g98X   | 5.22     | -72.57    | -1143.19 | 534.63   | -366.31  | 75.34    | -246.13  |
| g98XY  | -5.14    | -72.39    | 1143.52  | 533.78   | 366.22   | 75.23    | 246.17   |
| g98Y   | 87.71    | 1368.72   | 3199.90  | -727.08  | 655.95   | 104.74   | 629.42   |
| g105X  | 7.25     | 6394.97   | -24.50   | 2532.79  | 3436.37  | 873.47   | 333.81   |
| g105XY | -7.17    | 6394.71   | 24.14    | 2532.28  | -3436.77 | 873.40   | -333.88  |
| g105Y  | 92.73    | -10077.21 | -420.72  | -5530.72 | -5583.14 | -1528.57 | -587.94  |
| g106X  | 4.50     | -2532.80  | -3436.37 | -2813.87 | -804.97  | -550.61  | -436.78  |
| g106XY | -4.42    | -2532.29  | 3436.77  | -2813.61 | 805.27   | -550.53  | 436.85   |
| g106Y  | 86.64    | 5530.89   | 5583.07  | 4872.43  | 3015.68  | 1072.54  | 886.45   |

|        |       |         |          |          |          |         |          |
|--------|-------|---------|----------|----------|----------|---------|----------|
| g163X  | -0.03 | 143.31  | -21.93   | -1366.64 | -2156.67 | -159.51 | -284.07  |
| g163XY | 0.03  | 143.46  | 21.94    | -1365.94 | 2156.67  | -159.40 | 284.07   |
| g163Y  | -0.27 | 491.54  | -571.05  | -1444.42 | -4431.53 | -124.32 | -652.69  |
| g164X  | 0.69  | 1366.64 | 2156.67  | -802.66  | 4340.44  | 73.54   | 847.15   |
| g164XY | -0.69 | 1365.94 | -2156.67 | -803.40  | -4340.43 | 73.35   | -847.15  |
| g164Y  | 1.00  | 1444.42 | 4431.53  | 62.67    | 8164.08  | 196.69  | 1643.85  |
| g167X  | -2.08 | 802.66  | -4340.44 | -4539.61 | -4504.25 | -487.15 | -1153.00 |
| g167XY | 2.08  | 803.40  | 4340.43  | -4539.16 | 4504.32  | -486.99 | 1153.01  |
| g167Y  | -5.11 | -62.67  | -8164.08 | -6821.69 | -7429.69 | -898.42 | -2035.03 |
| g171X  | 0.00  | -36.65  | 32.63    | -116.09  | -118.25  | -19.92  | -11.17   |
| g171XY | -0.00 | -36.65  | -32.63   | -116.10  | 118.25   | -19.92  | 11.16    |
| g171Y  | 0.01  | -18.35  | 71.98    | -284.22  | 44.42    | -39.47  | 15.18    |
| g175X  | 0.03  | 116.09  | 118.25   | -474.94  | 225.90   | -46.80  | 44.88    |
| g175XY | -0.03 | 116.10  | -118.25  | -474.89  | -225.90  | -46.79  | -44.88   |
| g175Y  | -0.00 | 284.22  | -44.42   | -148.66  | -11.63   | 17.69   | -7.31    |
| g179X  | -0.01 | 474.94  | -225.90  | -143.31  | 21.93    | 43.24   | -26.59   |
| g179XY | 0.01  | 474.89  | 225.90   | -143.46  | -21.94   | 43.21   | 26.59    |
| g179Y  | 0.03  | 148.66  | 11.63    | -491.54  | 571.05   | -44.74  | 76.03    |
| g261X  | -0.00 | 0.00    | 0.00     | -55.25   | -26.88   | -6.91   | -3.36    |
| g261XY | 0.00  | 0.00    | -0.00    | -55.25   | 26.88    | -6.91   | 3.36     |
| g261Y  | 0.00  | 0.00    | -0.00    | -30.36   | -43.93   | -3.80   | -5.49    |
| g262X  | 0.00  | 55.25   | 26.88    | 36.65    | 32.64    | 11.49   | 7.44     |
| g262XY | -0.00 | 55.25   | -26.88   | 36.65    | -32.64   | 11.49   | -7.44    |
| g262Y  | 0.00  | 30.36   | 43.93    | 18.35    | 71.98    | 6.09    | 14.49    |
| g322X  | 0.00  | -0.00   | 0.00     | 28.86    | -0.00    | 2.89    | -0.00    |

# Summary of Clamp Capacities and Usages:

## Clamp Force Allowable Usage Label

|       | (kips) | (kips) | %     |
|-------|--------|--------|-------|
| SW1   | 6.41   | 50.00  | 12.82 |
| SW2   | 6.41   | 50.00  | 12.82 |
| 1A    | 10.55  | 50.00  | 21.10 |
| 1B    | 10.55  | 50.00  | 21.10 |
| 2A    | 10.56  | 50.00  | 21.13 |
| 2B    | 10.56  | 50.00  | 21.13 |
| 3A    | 10.55  | 50.00  | 21.10 |
| 3B    | 10.55  | 50.00  | 21.10 |
| 4     | 21.02  | 50.00  | 42.05 |
| 5     | 21.07  | 50.00  | 42.15 |
| 6     | 20.95  | 50.00  | 41.91 |
| A1T   | 0.41   | 25.00  | 1.64  |
| A1B   | 0.32   | 25.00  | 1.30  |
| A2T   | 0.41   | 25.00  | 1.64  |
| A2B   | 0.32   | 25.00  | 1.30  |
| A3T   | 0.41   | 25.00  | 1.64  |
| A3B   | 0.34   | 25.00  | 1.37  |
| COAX1 | 0.63   | 25.00  | 2.52  |
| COAX2 | 1.19   | 25.00  | 4.76  |

\*\*\* Analysis Results for Load Case No. 3 "ICE" - Number of iterations in SAPS 11

Equilibrium Joint Positions and Rotations:

| Joint Label | X-Displ (ft) | Y-Displ (ft) | Z-Displ (ft) | X-Rot (deg) | Y-Rot (deg) | Z-Rot (deg) | X-Pos (ft)  | Y-Pos (ft) | Z-Pos (ft) |
|-------------|--------------|--------------|--------------|-------------|-------------|-------------|-------------|------------|------------|
| ZP          | 0            | 0            | 0            | 0.0000      | 0.0000      | 0.0000      | 22          | 22         | 1          |
| WP          | -0.006843    | 0.4003       | -0.05341     | -0.5255     | 0.0250      | -0.3157     | 4.993       | 5.4        | 115.9      |
| AP          | 0.0009505    | 1.278        | -0.09915     | -0.9488     | -0.0215     | -0.3144     | 5.001       | 6.278      | 177.9      |
| TOPP        | 4.407e-006   | 1.416        | -0.1028      | -0.9792     | -0.0000     | 0.0000      | 4.407e-006  | 6.416      | 185.9      |
| SWP         | 3.624e-006   | 1.417        | -0.2781      | -1.0168     | -0.0000     | 0.0000      | 3.624e-006  | 16.42      | 185.7      |
| TAP         | 1.752e-006   | 1.019        | -0.304       | 0.0000      | 0.0000      | 0.0000      | 1.752e-006  | 19.02      | 161.7      |
| TASQP       | -1.213e-005  | 1.025        | 0.31         | 0.0000      | 0.0000      | 0.0000      | 5           | -20.97     | 162.3      |
| MSP         | -3.913e-007  | 0.6745       | -0.3935      | 0.0000      | 0.0000      | 0.0000      | -3.913e-007 | 26.67      | 138.6      |
| MASQP       | -5.683e-005  | 0.6833       | 0.3131       | 0.0000      | 0.0000      | 0.0000      | 5           | -25.32     | 139.3      |
| BAP         | -9.062e-006  | 0.4043       | -0.2317      | 0.0000      | 0.0000      | 0.0000      | -9.062e-006 | 21.4       | 115.8      |
| BASQP       | 0.0001987    | 0.4057       | 0.1943       | 0.0000      | 0.0000      | 0.0000      | 5           | -20.59     | 116.2      |
| ZX          | 0            | 0            | 0            | 0.0000      | 0.0000      | 0.0000      | 22          | -22        | 1          |
| ZXY         | 0            | 0            | 0            | 0.0000      | 0.0000      | 0.0000      | -22         | -22        | 1          |
| ZY          | 0            | 0            | 0            | 0.0000      | 0.0000      | 0.0000      | -22         | 22         | 1          |
| WX          | 0.002532     | 0.4057       | 0.03658      | -0.5336     | -0.0112     | -0.1284     | 5.003       | -4.599     | 116        |
| WXY         | -0.002531    | 0.4012       | 0.03658      | -0.5336     | -0.0112     | -0.1284     | -5.003      | -4.599     | 116        |
| WY          | 0.006842     | 0.4003       | -0.05341     | -0.5255     | -0.0250     | 0.3157      | -4.993      | 5.4        | 115.9      |
| AX          | -0.0006373   | 1.28         | 0.06379      | -0.9762     | 0.0132      | -0.1290     | 4.999       | -3.72      | 178.1      |
| AXY         | 0.0006466    | 1.28         | 0.06379      | -0.9762     | -0.0132     | 0.1290      | -4.999      | -3.72      | 178.1      |
| AY          | -0.0009427   | 1.278        | -0.09915     | -0.9488     | 0.0215      | 0.3144      | -5.001      | 6.278      | 177.9      |
| TOPX        | 5.191e-006   | 1.417        | 0.06489      | -0.9624     | -0.0000     | 0.0000      | 5.191e-006  | -3.583     | 186.1      |
| SWX         | 5.978e-006   | 1.42         | 0.2353       | -0.9833     | -0.0000     | 0.0000      | 5.978e-006  | -13.58     | 186.2      |
| TASQY       | 2.191e-005   | 1.025        | 0.31         | 0.0000      | 0.0000      | 0.0000      | -5          | -20.97     | 162.3      |
| MASQY       | 6.418e-005   | 0.6833       | 0.3131       | 0.0000      | 0.0000      | 0.0000      | -5          | -25.32     | 139.3      |
| BASQY       | -0.0001941   | 0.4057       | 0.1943       | 0.0000      | 0.0000      | 0.0000      | -5          | -20.59     | 116.2      |
| BS          | 0.00196      | 1.146        | -0.09507     | -0.9304     | 0.0059      | -0.3149     | 5.002       | 6.146      | 169.9      |
| CS          | 4.4e-005     | 1.018        | -0.08941     | -0.9101     | -0.0132     | -0.3146     | 5           | 6.018      | 161.9      |
| DS          | 0.001527     | 0.8979       | -0.08584     | -0.8757     | -0.0147     | -0.3146     | 5.002       | 5.898      | 154.2      |
| ES          | 0.002508     | 0.7841       | -0.0803      | -0.8350     | -0.0119     | -0.3146     | 5.003       | 5.784      | 146.6      |
| FS          | 0.001444     | 0.6757       | -0.07307     | -0.7707     | 0.0371      | -0.3153     | 5.001       | 5.676      | 138.9      |
| GS          | -0.0003667   | 0.5758       | -0.06814     | -0.7159     | -0.0621     | -0.3140     | 5           | 5.576      | 131.3      |
| HS          | 0.008128     | 0.4836       | -0.0612      | -0.6736     | 0.0399      | -0.3151     | 5.008       | 5.484      | 123.6      |
| IS          | 0.01004      | 0.3173       | -0.05411     | -0.3732     | 0.0035      | -0.2616     | 6.488       | 6.796      | 105.9      |
| JS          | -0.001122    | 0.2507       | -0.05611     | -0.3361     | 0.0558      | -0.2169     | 7.881       | 8.133      | 96.44      |
| KS          | 0.002953     | 0.1995       | -0.05473     | -0.2793     | 0.0106      | -0.1861     | 9.142       | 9.339      | 87.95      |
| LS          | -0.0001736   | 0.1676       | -0.05388     | -0.2750     | 0.0472      | -0.1599     | 10.03       | 10.19      | 81.95      |
| MS          | -0.0001376   | 0.1059       | -0.05078     | -0.2156     | 0.0035      | -0.1286     | 11.8        | 11.91      | 69.95      |
| NS          | 1.965e-005   | 0.069842     | -0.069842    | -0.1483     | 0.0079      | -0.0969     | 13.2        | 13.28      | 66.45      |
| OS          | -4.576e-005  | 0.003763     | -0.03228     | -0.1139     | 0.0064      | -0.0637     | 17.2        | 17.2       | 33.47      |
| PS          | -0.0001584   | -0.01202     | -0.02673     | -0.0454     | 0.0038      | -0.0482     | 18.45       | 18.44      | 24.97      |
| L1S         | -0.007901    | -0.01198     | -0.0134      | -0.0899     | -0.0073     | 0.0167      | 18.44       | 7.369      | 24.99      |
| L3S         | -7.146e-005  | -0.004183    | -0.001279    | -0.0450     | 0.1419      | -0.0266     | 7.381       | 18.45      | 25         |
| OLS         | 0.0004147    | 0.002467     | -0.0008921   | -0.0907     | -0.0174     | 0.0091      | 17.2        | 0.002467   | 33.5       |
| O2S         | -1.084e-006  | 0.002042     | -0.0003897   | -0.1138     | -0.0000     | 0.0000      | -1.084e-006 | 17.2       | 33.5       |
| M1S         | -0.01744     | 0.106        | -0.007606    | -0.2231     | 0.0068      | 0.0423      | 11.78       | 0.106      | 69.99      |
| M2S         | 5.863e-006   | 0.1186       | -0.04054     | -0.2151     | 0.0000      | 0.0000      | 5.863e-006  | 11.92      | 69.96      |
| BMS         | 0.0001459    | 0.4036       | 0.1221       | 0.0000      | 0.0000      | 0.0000      | 5           | -12.6      | 116.1      |
| BMXS        | -0.002588    | 0.4427       | 0.1219       | 0.0000      | 0.0000      | 0.0000      | 4.997       | -12.56     | 120        |
| MMS         | 0.002851     | 0.6803       | 0.1931       | 0.0000      | 0.0000      | 0.0000      | 5.003       | -14.82     | 139.2      |
| MXS         | -0.001261    | 0.7301       | 0.1928       | 0.0000      | 0.0000      | 0.0000      | 4.999       | -14.77     | 143        |
| TMS         | 0.00183      | 1.023        | 0.1923       | 0.0000      | 0.0000      | 0.0000      | 5.002       | -12.48     | 162.2      |
| TMXS        | -0.0008645   | 1.083        | 0.1919       | 0.0000      | 0.0000      | 0.0000      | 4.999       | -12.42     | 166.2      |
| BPMS        | -0.002306    | 0.4027       | -0.1425      | 0.0000      | 0.0000      | 0.0000      | 2.498       | 13.4       | 115.9      |
| BPMXS       | 0.004646     | 1.446        | -0.1427      | 0.0000      | 0.0000      | 0.0000      | 2.505       | 13.45      | 119.7      |
| BK          | -0.001792    | 1.146        | 0.06258      | -0.9268     | -0.0081     | -0.1287     | 4.998       | -3.854     | 170.1      |
| BKY         | 0.0018       | 1.146        | 0.06258      | -0.9268     | 0.0081      | 0.1287      | -4.998      | -3.854     | 170.1      |
| BY          | -0.001953    | 1.146        | -0.09507     | -0.9304     | -0.0059     | 0.3148      | -5.002      | 6.146      | 169.9      |
| CX          | -0.0002157   | 1.02         | 0.06031      | -0.8996     | -0.0025     | -0.1287     | 5           | -3.98      | 162.1      |
| CXY         | 0.0002228    | 1.02         | 0.06031      | -0.8996     | 0.0025      | 0.1287      | -5          | -3.98      | 162.1      |
| CY          | -3.846e-005  | 1.018        | -0.08941     | -0.9101     | 0.0132      | 0.3146      | -5          | 6.018      | 161.9      |
| DX          | -0.0009477   | 0.8993       | 0.05904      | -0.8938     | 0.0114      | -0.1290     | 4.999       | -4.101     | 154.4      |

|       |             |           |            |         |         |         |             |          |       |
|-------|-------------|-----------|------------|---------|---------|---------|-------------|----------|-------|
| DXY   | 0.0009537   | 0.8993    | 0.05904    | -0.8938 | -0.0114 | 0.1290  | -4.999      | -4.101   | 154.4 |
| DY    | -0.001523   | 0.8979    | -0.08584   | -0.8757 | 0.0147  | 0.3145  | -5.002      | 5.898    | 154.2 |
| EX    | -0.00266    | 0.783     | 0.05594    | -0.8296 | -0.0006 | -0.1288 | 4.997       | -4.217   | 146.7 |
| EXY   | 0.002665    | 0.783     | 0.05595    | -0.8296 | 0.0006  | 0.1288  | -4.997      | -4.217   | 146.7 |
| EY    | -0.002505   | 0.7841    | -0.0803    | -0.8350 | 0.0119  | 0.3146  | -5.003      | 5.784    | 146.6 |
| FX    | -0.0009281  | 0.6772    | 0.05119    | -0.7665 | -0.0209 | -0.1285 | 4.999       | -4.323   | 139.1 |
| FXY   | 0.0009321   | 0.6772    | 0.05119    | -0.7665 | 0.0209  | 0.1285  | -4.999      | -4.323   | 139.1 |
| FY    | -0.001442   | 0.6757    | -0.07307   | -0.7707 | -0.0371 | 0.3153  | -5.001      | 5.676    | 138.9 |
| GX    | -0.0007674  | 0.5763    | 0.04794    | -0.7301 | 0.0332  | -0.1292 | 4.999       | -4.424   | 131.4 |
| GXY   | 0.0007703   | 0.5762    | 0.04794    | -0.7301 | -0.0332 | 0.1292  | -4.999      | -4.424   | 131.4 |
| GY    | 0.000368    | 0.5758    | -0.06814   | -0.7159 | 0.0621  | 0.3140  | -5          | 5.576    | 131.3 |
| HX    | -0.005252   | 0.483     | 0.04286    | -0.6644 | -0.0259 | -0.1286 | 4.995       | -4.517   | 123.7 |
| HXY   | 0.005254    | 0.483     | 0.04286    | -0.6644 | 0.0260  | 0.1286  | -4.995      | -4.517   | 123.7 |
| HY    | -0.008128   | 0.4836    | -0.06119   | -0.6736 | -0.0399 | 0.3151  | -5.008      | 5.484    | 123.6 |
| IX    | -0.006582   | 0.3172    | 0.03992    | -0.4065 | 0.0082  | -0.1015 | 6.472       | -6.161   | 106   |
| IXY   | 0.006582    | 0.3172    | 0.03992    | -0.4065 | -0.0082 | 0.1015  | -6.472      | -6.161   | 106   |
| IY    | -0.01005    | 0.3173    | -0.05411   | -0.3732 | -0.0035 | 0.2616  | -6.488      | 6.796    | 105.9 |
| JX    | -0.0007266  | 0.2508    | 0.04251    | -0.3518 | -0.0319 | -0.0762 | 7.882       | -7.632   | 96.54 |
| JXY   | 0.0007262   | 0.2508    | 0.04251    | -0.3517 | 0.0319  | 0.0762  | -7.882      | -7.632   | 96.54 |
| JY    | 0.001118    | 0.2507    | -0.05611   | -0.3361 | -0.0558 | 0.2169  | -7.881      | 8.133    | 96.44 |
| KX    | -0.001501   | 0.1999    | 0.04266    | -0.3018 | 0.0058  | -0.0649 | 9.138       | -8.939   | 88.04 |
| KXY   | 0.0015      | 0.1999    | 0.04266    | -0.3018 | -0.0058 | 0.0649  | -9.138      | -8.939   | 88.04 |
| KY    | -0.002958   | 0.1995    | -0.05473   | -0.2793 | -0.0106 | 0.1861  | -9.142      | 9.339    | 87.95 |
| LX    | -0.001141   | 0.1674    | 0.04226    | -0.2933 | -0.0111 | -0.0542 | 10.02       | -9.859   | 82.04 |
| LXY   | 0.00114     | 0.1674    | 0.04226    | -0.2933 | 0.0111  | 0.0542  | -10.02      | -9.859   | 82.04 |
| LY    | 0.0001687   | 0.1676    | -0.05388   | -0.2750 | -0.0472 | 0.1599  | -10.03      | 10.19    | 81.95 |
| MX    | -0.0001465  | 0.1065    | 0.041      | -0.2291 | 0.0093  | -0.0410 | 11.8        | -11.69   | 70.04 |
| MXY   | 0.0001455   | 0.1065    | 0.041      | -0.2291 | -0.0093 | 0.0410  | -11.8       | -11.69   | 70.04 |
| MY    | 0.0001492   | 0.1059    | -0.05078   | -0.2156 | -0.0035 | 0.1286  | -11.8       | 11.91    | 69.95 |
| NX    | -0.003408   | 0.07323   | 0.03801    | -0.1650 | 0.0268  | -0.0318 | 13.2        | -13.13   | 60.54 |
| NXY   | 0.003407    | 0.07323   | 0.03801    | -0.1650 | -0.0268 | 0.0318  | -13.2       | -13.13   | 60.54 |
| NY    | -6.461e-006 | 0.07342   | -0.04694   | -0.1483 | -0.0079 | 0.0969  | -13.2       | 13.28    | 60.45 |
| OX    | -0.005235   | 0.003314  | 0.02651    | -0.1112 | -0.0414 | -0.0245 | 17.19       | -17.19   | 33.53 |
| OXY   | 0.005234    | 0.003313  | 0.02651    | -0.1112 | 0.0414  | 0.0245  | -17.19      | -17.19   | 33.53 |
| OY    | 4.354e-005  | 0.003763  | -0.03228   | -0.1139 | -0.0063 | 0.0637  | -17.2       | 17.2     | 33.47 |
| PX    | 0.001883    | -0.01104  | 0.02298    | -0.0444 | -0.0331 | -0.0177 | 18.45       | -18.46   | 25.02 |
| PXY   | -0.001884   | -0.01104  | 0.02298    | -0.0444 | 0.0331  | 0.0177  | -18.45      | -18.46   | 25.02 |
| PY    | 0.0001523   | -0.01202  | -0.02672   | -0.0454 | -0.0038 | 0.0482  | -18.45      | 18.44    | 24.97 |
| L1X   | 0.008215    | -0.01136  | 0.01117    | -0.0817 | -0.0221 | 0.0137  | 18.46       | -7.392   | 25.01 |
| L1XY  | -0.008216   | -0.01136  | 0.01117    | -0.0817 | 0.0221  | -0.0137 | -18.46      | -7.392   | 25.01 |
| L1Y   | 0.007893    | -0.01198  | -0.0134    | -0.0899 | 0.0073  | -0.0167 | -18.44      | 7.369    | 24.99 |
| L3X   | 0.002075    | -0.005152 | 0.009143   | -0.0445 | -0.0659 | -0.0269 | 7.383       | -18.46   | 25.01 |
| L3XY  | -0.002076   | -0.005152 | 0.009143   | -0.0445 | 0.0659  | 0.0269  | -7.383      | -18.46   | 25.01 |
| L3Y   | 6.534e-005  | -0.004185 | -0.001276  | -0.0450 | -0.1419 | 0.0266  | -7.381      | 18.45    | 25    |
| OLY   | -0.0004162  | 0.002466  | -0.0008919 | -0.0907 | 0.0175  | -0.0091 | -17.2       | 0.002466 | 33.5  |
| O2X   | -3.661e-007 | 0.002944  | 0.00609    | -0.1112 | 0.0000  | 0.0000  | -3.661e-007 | -17.19   | 33.51 |
| M1Y   | 0.01745     | 0.106     | -0.007606  | -0.2231 | -0.0068 | -0.0423 | -11.78      | 0.106    | 69.99 |
| M2X   | -4.991e-007 | 0.1265    | 0.04141    | -0.2291 | 0.0000  | 0.0000  | -4.991e-007 | -11.67   | 70.04 |
| BMX   | -0.0001432  | 0.4036    | 0.1221     | 0.0000  | 0.0000  | 0.0000  | -5          | -12.6    | 116.1 |
| BMXY  | 0.002591    | 0.4427    | 0.1219     | 0.0000  | 0.0000  | 0.0000  | -4.997      | -12.56   | 120   |
| MMY   | -0.002845   | 0.6803    | 0.1931     | 0.0000  | 0.0000  | 0.0000  | -5.003      | -14.82   | 139.2 |
| MMXY  | 0.001267    | 0.7301    | 0.1928     | 0.0000  | 0.0000  | 0.0000  | -4.999      | -14.77   | 143   |
| TMY   | -0.001822   | 1.023     | 0.1923     | 0.0000  | 0.0000  | 0.0000  | -5.002      | -12.48   | 162.2 |
| TMXY  | 0.0008735   | 1.083     | 0.1919     | 0.0000  | 0.0000  | 0.0000  | -4.999      | -12.42   | 166.2 |
| BPMY  | -0.002306   | 0.4041    | -0.1425    | 0.0000  | 0.0000  | 0.0000  | -2.502      | 13.4     | 115.9 |
| BPMXY | -0.004748   | 0.446     | -0.1427    | 0.0000  | 0.0000  | 0.0000  | -2.505      | 13.45    | 119.7 |

# Joint Support Reactions:

| Joint Label | X-Force<br>(kips) | Y-Force<br>(kips) | Z-Force<br>(kips) | Comp. Usage | Uplift Usage | X-Moment<br>(ft-k) | Y-Moment<br>(ft-k) | Z-Moment<br>(ft-k) | Max. Usage |
|-------------|-------------------|-------------------|-------------------|-------------|--------------|--------------------|--------------------|--------------------|------------|
| ZP          | -64.341           | 0.0               | -67.320           | 0.0         | 0.0          | -4.171             | 0.0                | 0.604              | 0.0        |
| ZX          | 60.064            | 0.0               | -56.912           | 0.0         | 0.0          | -3.742             | 0.0                | -1.692             | 0.0        |
| ZXY         | -60.064           | 0.0               | -56.912           | 0.0         | 0.0          | -3.742             | 0.0                | 1.692              | 0.0        |
| ZY          | 64.340            | 0.0               | -67.320           | 0.0         | 0.0          | -4.171             | 0.0                | -0.602             | 0.0        |

# Joint Displacements, Loads and Member Forces on Joints:

| Joint X<br>Label | External Y<br>Load<br>(kips) | External Z<br>Load<br>(kips) | External X<br>Load<br>(kips) | Member Y<br>Force<br>(kips) | Member Z<br>Force<br>(kips) | Member X<br>Force<br>(kips) | X<br>Disp.<br>(ft) | Y<br>Disp.<br>(ft) | Z<br>Disp.<br>(ft) |
|------------------|------------------------------|------------------------------|------------------------------|-----------------------------|-----------------------------|-----------------------------|--------------------|--------------------|--------------------|
| ZP               | 0.0000                       | 0.0592                       | -0.9950                      | 64.3407                     | 67.2612                     | -432.1341                   | 0.0000             | 0.0000             | 0.0000             |
| WP               | 0.0000                       | 0.0692                       | -1.0760                      | -0.0000                     | -0.0692                     | 1.0760                      | -0.0068            | 0.4003             | -0.0534            |
| AP               | 0.0000                       | 0.0328                       | -0.2862                      | 0.0000                      | -0.0328                     | 0.2862                      | 0.0010             | 1.2777             | -0.0992            |
| TOPP             | 0.0000                       | 0.0152                       | -0.1951                      | -0.0000                     | -0.0152                     | 0.1951                      | 0.0000             | 1.4164             | -0.1028            |
| SWP              | 0.0000                       | 14.9487                      | -3.2028                      | 0.0000                      | -14.9487                    | 3.2028                      | 0.0000             | 1.4167             | -0.2781            |
| TAP              | 0.0000                       | 35.6309                      | -6.8259                      | 0.0000                      | -35.6309                    | 6.8259                      | 0.0000             | 1.0191             | -0.3040            |
| TASQP            | 0.0000                       | 17.8190                      | -3.4549                      | -0.0000                     | -17.8190                    | 3.4549                      | -0.0000            | 1.0255             | 0.3100             |
| MAP              | 0.0000                       | 35.6335                      | -7.0889                      | 0.0000                      | -35.6335                    | 7.0889                      | -0.0000            | 0.6745             | -0.3935            |
| MASQP            | 0.0000                       | 17.8199                      | -3.5027                      | -0.0000                     | -17.8199                    | 3.5027                      | -0.0001            | 0.6833             | 0.3131             |
| BAP              | 0.0000                       | 35.6244                      | -6.7418                      | 0.0000                      | -35.6244                    | 6.7418                      | -0.0000            | 0.4043             | -0.2317            |
| BASQP            | 0.0000                       | 17.8189                      | -3.4494                      | 0.0000                      | -17.8189                    | 3.4494                      | 0.0002             | 0.4057             | 0.1943             |
| ZX               | 0.0000                       | 0.0592                       | -0.9950                      | 60.0642                     | 56.8526                     | 373.9390                    | 0.0000             | 0.0000             | 0.0000             |
| ZXY              | 0.0000                       | 0.0592                       | -0.9950                      | 60.0639                     | 56.8523                     | 373.9388                    | 0.0000             | 0.0000             | 0.0000             |
| ZY               | 0.0000                       | 0.0592                       | -0.9950                      | 64.3404                     | 67.2605                     | -432.1310                   | 0.0000             | 0.0000             | 0.0000             |
| WX               | 0.0000                       | 0.0674                       | -1.0978                      | -0.0000                     | -0.0674                     | 1.0978                      | 0.0025             | 0.4012             | 0.0366             |
| WXY              | 0.0000                       | 0.0674                       | -1.0978                      | 0.0000                      | -0.0674                     | 1.0978                      | -0.0025            | 0.4012             | 0.0366             |
| WY               | 0.0000                       | 0.0659                       | -1.0515                      | 0.0000                      | -0.0659                     | 1.0515                      | 0.0068             | 0.4003             | -0.0534            |
| AX               | 0.0000                       | 0.0328                       | -0.2862                      | 0.0000                      | -0.0328                     | 0.2862                      | -0.0006            | 1.2796             | 0.0638             |
| AXY              | 0.0000                       | 0.0328                       | -0.2862                      | -0.0000                     | -0.0328                     | 0.2862                      | 0.0006             | 1.2796             | 0.0638             |
| AY               | 0.0000                       | 0.0328                       | -0.2862                      | -0.0000                     | -0.0328                     | 0.2862                      | -0.0009            | 1.2777             | -0.0992            |
| TOPX             | 0.0000                       | 0.0152                       | -0.1951                      | 0.0000                      | -0.0152                     | 0.1951                      | 0.0000             | 1.4175             | 0.0649             |
| SNX              | 0.0000                       | 14.9487                      | -3.2028                      | 0.0000                      | -14.9487                    | 3.2028                      | 0.0000             | 1.4200             | 0.2353             |
| TASQY            | 0.0000                       | 17.8190                      | -3.4549                      | 0.0000                      | -17.8190                    | 3.4549                      | 0.0000             | 1.0255             | 0.3100             |
| MASQY            | 0.0000                       | 17.8199                      | -3.5027                      | -0.0000                     | -17.8199                    | 3.5027                      | 0.0001             | 0.6833             | 0.3131             |
| BASQY            | 0.0000                       | 17.8189                      | -3.4494                      | -0.0000                     | -17.8189                    | 3.4494                      | -0.0002            | 0.4057             | 0.1943             |
| BS               | 0.0000                       | 0.0274                       | -0.2393                      | 0.0000                      | -0.0274                     | 0.2393                      | 0.0020             | 1.1461             | -0.0951            |
| CS               | 0.0000                       | 0.0434                       | -0.5143                      | 0.0000                      | -0.0434                     | 0.5143                      | 0.0000             | 1.0181             | -0.0894            |
| DS               | 0.0000                       | 0.0373                       | -0.4283                      | -0.0000                     | -0.0373                     | 0.4283                      | 0.0015             | 0.8979             | -0.0858            |
| ES               | 0.0000                       | 0.0406                       | -0.4972                      | -0.0000                     | -0.0406                     | 0.4972                      | 0.0025             | 0.7841             | -0.0803            |
| FS               | 0.0000                       | 0.0557                       | -0.9103                      | -0.0000                     | -0.0557                     | 0.9103                      | 0.0014             | 0.6757             | -0.0731            |
| GS               | 0.0000                       | 0.0477                       | -0.7298                      | -0.0000                     | -0.0477                     | 0.7298                      | -0.0004            | 0.5758             | -0.0681            |
| HS               | 0.0000                       | 0.0491                       | -0.7666                      | -0.0000                     | -0.0491                     | 0.7666                      | 0.0081             | 0.4836             | -0.0612            |
| IS               | 0.0000                       | 0.0574                       | -1.0018                      | -0.0000                     | -0.0574                     | 1.0018                      | 0.0100             | 0.3173             | -0.0541            |
| JS               | 0.0000                       | 0.0533                       | -0.9535                      | -0.0000                     | -0.0533                     | 0.9535                      | -0.0011            | 0.2507             | -0.0561            |
| KS               | 0.0000                       | 0.0487                       | -0.8387                      | 0.0000                      | -0.0487                     | 0.8387                      | 0.0030             | 0.1995             | -0.0547            |
| LS               | 0.0000                       | 0.0695                       | -1.0757                      | -0.0000                     | -0.0695                     | 1.0757                      | -0.0002            | 0.1676             | -0.0539            |
| MS               | 0.0000                       | 0.0324                       | -0.7886                      | -0.0000                     | -0.0324                     | 0.7886                      | -0.0001            | 0.1059             | -0.0508            |
| NS               | 0.0000                       | 0.1154                       | -1.9478                      | 0.0000                      | -0.1154                     | 1.9478                      | 0.0000             | 0.0734             | -0.0469            |
| OS               | 0.0000                       | 0.0966                       | -1.7399                      | 0.0000                      | -0.0966                     | 1.7399                      | -0.0000            | 0.0038             | -0.0323            |
| PS               | 0.0000                       | 0.0483                       | -1.1517                      | -0.0000                     | -0.0483                     | 1.1517                      | -0.0002            | -0.0120            | -0.0267            |
| L1S              | 0.0000                       | 0.0295                       | -0.4018                      | 0.0000                      | -0.0295                     | 0.4018                      | -0.0079            | -0.0120            | -0.0134            |
| L3S              | 0.0000                       | 0.0580                       | -0.4018                      | 0.0000                      | -0.0580                     | 0.4018                      | -0.0001            | -0.0042            | -0.0013            |
| O1S              | 0.0000                       | 0.0300                       | -0.4772                      | 0.0000                      | -0.0300                     | 0.4772                      | -0.0004            | 0.0025             | -0.0009            |
| O2S              | 0.0000                       | 0.0636                       | -0.4772                      | 0.0000                      | -0.0636                     | 0.4772                      | -0.0000            | 0.0020             | -0.0004            |
| M1S              | 0.0000                       | 0.0248                       | -0.3043                      | 0.0000                      | -0.0248                     | 0.3043                      | -0.0174            | 0.1060             | -0.0076            |
| M2S              | 0.0000                       | 0.0515                       | -0.3043                      | 0.0000                      | -0.0515                     | 0.3043                      | 0.0000             | 0.1186             | -0.0405            |
| BMS              | 0.0000                       | 0.0085                       | -0.1860                      | -0.0000                     | -0.0085                     | 0.1860                      | 0.0001             | 0.4036             | 0.1221             |
| BMXS             | 0.0000                       | 0.0048                       | -0.0535                      | -0.0000                     | -0.0048                     | 0.0535                      | -0.0026            | 0.4427             | 0.1219             |
| MMS              | 0.0000                       | 0.0099                       | -0.2779                      | 0.0000                      | -0.0099                     | 0.2779                      | 0.0029             | 0.6803             | 0.1931             |
| MMXS             | 0.0000                       | 0.0056                       | -0.0783                      | -0.0000                     | -0.0056                     | 0.0783                      | -0.0013            | 0.7301             | 0.1928             |
| THS              | 0.0000                       | 0.0085                       | -0.1951                      | 0.0000                      | -0.0085                     | 0.1951                      | 0.0018             | 1.0227             | 0.1923             |
| THXS             | 0.0000                       | 0.0050                       | -0.0565                      | -0.0000                     | -0.0050                     | 0.0565                      | -0.0009            | 1.0829             | 0.1919             |
| BFMS             | 0.0000                       | 0.0066                       | -0.0997                      | 0.0000                      | -0.0066                     | 0.0997                      | -0.0023            | 0.4027             | -0.1425            |
| BPMXS            | 0.0000                       | 0.0055                       | -0.0554                      | 0.0000                      | -0.0055                     | 0.0554                      | 0.0046             | 0.4460             | -0.1427            |
| BX               | 0.0000                       | 0.0258                       | -0.2265                      | 0.0000                      | -0.0258                     | 0.2265                      | -0.0018            | 1.1455             | 0.0626             |
| BXY              | 0.0000                       | 0.0258                       | -0.2265                      | -0.0000                     | -0.0258                     | 0.2265                      | 0.0018             | 1.1455             | 0.0626             |
| BY               | 0.0000                       | 0.0274                       | -0.2393                      | -0.0000                     | -0.0274                     | 0.2393                      | -0.0020            | 1.1461             | -0.0951            |
| CX               | 0.0000                       | 0.0449                       | -0.5521                      | 0.0000                      | -0.0449                     | 0.5521                      | -0.0002            | 1.0196             | 0.0603             |
| CXY              | 0.0000                       | 0.0449                       | -0.5521                      | -0.0000                     | -0.0449                     | 0.5521                      | 0.0002             | 1.0196             | 0.0603             |
| CY               | 0.0000                       | 0.0434                       | -0.5143                      | -0.0000                     | -0.0434                     | 0.5143                      | -0.0000            | 1.0181             | -0.0894            |
| DX               | 0.0000                       | 0.0373                       | -0.4283                      | 0.0000                      | -0.0373                     | 0.4283                      | -0.0009            | 0.8993             | 0.0590             |
| DXY              | 0.0000                       | 0.0373                       | -0.4283                      | -0.0000                     | -0.0373                     | 0.4283                      | 0.0010             | 0.8993             | 0.0590             |
| DY               | 0.0000                       | 0.0373                       | -0.4283                      | 0.0000                      | -0.0373                     | 0.4283                      | -0.0015            | 0.8979             | -0.0858            |
| EX               | 0.0000                       | 0.0387                       | -0.4717                      | -0.0000                     | -0.0387                     | 0.4717                      | -0.0027            | 0.7830             | 0.0559             |
| EXY              | 0.0000                       | 0.0387                       | -0.4717                      | 0.0000                      | -0.0387                     | 0.4717                      | 0.0027             | 0.7830             | 0.0559             |
| EY               | 0.0000                       | 0.0406                       | -0.4972                      | 0.0000                      | -0.0406                     | 0.4972                      | -0.0025            | 0.7841             | -0.0803            |

|       |        |        |         |         |         |        |         |         |         |
|-------|--------|--------|---------|---------|---------|--------|---------|---------|---------|
| FX    | 0.0000 | 0.0574 | -0.8865 | -0.0000 | -0.0574 | 0.8865 | -0.0009 | 0.6772  | 0.0512  |
| FXY   | 0.0000 | 0.0574 | -0.8865 | 0.0000  | -0.0574 | 0.8865 | 0.0009  | 0.6772  | 0.0512  |
| FY    | 0.0000 | 0.0557 | -0.9103 | 0.0000  | -0.0557 | 0.9103 | -0.0014 | 0.6757  | -0.0731 |
| GX    | 0.0000 | 0.0477 | -0.7298 | -0.0000 | -0.0477 | 0.7298 | -0.0008 | 0.5763  | 0.0479  |
| GXV   | 0.0000 | 0.0477 | -0.7298 | 0.0000  | -0.0477 | 0.7298 | 0.0008  | 0.5762  | 0.0479  |
| GY    | 0.0000 | 0.0477 | -0.7298 | 0.0000  | -0.0477 | 0.7298 | 0.0004  | 0.5758  | -0.0681 |
| HX    | 0.0000 | 0.0488 | -0.7660 | -0.0000 | -0.0488 | 0.7660 | -0.0053 | 0.4830  | 0.0429  |
| HXV   | 0.0000 | 0.0488 | -0.7660 | 0.0000  | -0.0488 | 0.7660 | 0.0053  | 0.4830  | 0.0429  |
| HY    | 0.0000 | 0.0491 | -0.7666 | 0.0000  | -0.0491 | 0.7666 | -0.0081 | 0.4836  | -0.0612 |
| IX    | 0.0000 | 0.0574 | -1.0018 | -0.0000 | -0.0574 | 1.0018 | -0.0066 | 0.3172  | 0.0399  |
| IXV   | 0.0000 | 0.0574 | -1.0018 | 0.0000  | -0.0574 | 1.0018 | 0.0066  | 0.3172  | 0.0399  |
| IY    | 0.0000 | 0.0574 | -1.0018 | 0.0000  | -0.0574 | 1.0018 | -0.0100 | 0.3173  | -0.0541 |
| JX    | 0.0000 | 0.0533 | -0.9535 | 0.0000  | -0.0533 | 0.9535 | -0.0007 | 0.2508  | 0.0425  |
| JXV   | 0.0000 | 0.0533 | -0.9535 | -0.0000 | -0.0533 | 0.9535 | 0.0007  | 0.2508  | 0.0425  |
| JY    | 0.0000 | 0.0533 | -0.9535 | 0.0000  | -0.0533 | 0.9535 | 0.0011  | 0.2507  | -0.0561 |
| KX    | 0.0000 | 0.0487 | -0.8387 | 0.0000  | -0.0487 | 0.8387 | -0.0015 | 0.1999  | 0.0427  |
| KXV   | 0.0000 | 0.0487 | -0.8387 | -0.0000 | -0.0487 | 0.8387 | 0.0015  | 0.1999  | 0.0427  |
| KY    | 0.0000 | 0.0487 | -0.8387 | -0.0000 | -0.0487 | 0.8387 | -0.0030 | 0.1995  | -0.0547 |
| LX    | 0.0000 | 0.0695 | -1.0757 | -0.0000 | -0.0695 | 1.0757 | -0.0011 | 0.1674  | 0.0423  |
| LXV   | 0.0000 | 0.0695 | -1.0757 | 0.0000  | -0.0695 | 1.0757 | 0.0011  | 0.1674  | 0.0423  |
| LY    | 0.0000 | 0.0695 | -1.0757 | 0.0000  | -0.0695 | 1.0757 | 0.0002  | 0.1676  | -0.0539 |
| MX    | 0.0000 | 0.0324 | -0.7886 | -0.0000 | -0.0324 | 0.7886 | -0.0001 | 0.1065  | 0.0410  |
| MXV   | 0.0000 | 0.0324 | -0.7886 | 0.0000  | -0.0324 | 0.7886 | 0.0001  | 0.1065  | 0.0410  |
| MY    | 0.0000 | 0.0324 | -0.7886 | 0.0000  | -0.0324 | 0.7886 | 0.0001  | 0.1059  | -0.0508 |
| NX    | 0.0000 | 0.1154 | -1.9478 | -0.0000 | -0.1154 | 1.9478 | -0.0034 | 0.0732  | 0.0380  |
| NXV   | 0.0000 | 0.1154 | -1.9478 | 0.0000  | -0.1154 | 1.9478 | 0.0034  | 0.0732  | 0.0380  |
| NY    | 0.0000 | 0.1154 | -1.9478 | -0.0000 | -0.1154 | 1.9478 | -0.0000 | 0.0734  | -0.0469 |
| OX    | 0.0000 | 0.0966 | -1.7399 | -0.0000 | -0.0966 | 1.7399 | -0.0052 | 0.0033  | 0.0265  |
| OXV   | 0.0000 | 0.0966 | -1.7399 | 0.0000  | -0.0966 | 1.7399 | 0.0052  | 0.0033  | 0.0265  |
| OY    | 0.0000 | 0.0966 | -1.7399 | -0.0000 | -0.0966 | 1.7399 | 0.0000  | 0.0038  | -0.0323 |
| PX    | 0.0000 | 0.0483 | -1.1517 | 0.0000  | -0.0483 | 1.1517 | 0.0019  | -0.0110 | 0.0230  |
| PXV   | 0.0000 | 0.0483 | -1.1517 | -0.0000 | -0.0483 | 1.1517 | -0.0019 | -0.0110 | 0.0230  |
| PY    | 0.0000 | 0.0483 | -1.1517 | 0.0000  | -0.0483 | 1.1517 | 0.0002  | -0.0120 | -0.0267 |
| L1X   | 0.0000 | 0.0295 | -0.4018 | 0.0000  | -0.0295 | 0.4018 | 0.0082  | -0.0114 | 0.0112  |
| L1XV  | 0.0000 | 0.0295 | -0.4018 | -0.0000 | -0.0295 | 0.4018 | -0.0082 | -0.0114 | 0.0112  |
| L1Y   | 0.0000 | 0.0295 | -0.4018 | -0.0000 | -0.0295 | 0.4018 | 0.0079  | -0.0120 | -0.0134 |
| L3X   | 0.0000 | 0.0580 | -0.4018 | -0.0000 | -0.0580 | 0.4018 | 0.0021  | -0.0052 | 0.0091  |
| L3XV  | 0.0000 | 0.0580 | -0.4018 | 0.0000  | -0.0580 | 0.4018 | -0.0021 | -0.0052 | 0.0091  |
| L3Y   | 0.0000 | 0.0580 | -0.4018 | -0.0000 | -0.0580 | 0.4018 | 0.0001  | -0.0042 | -0.0013 |
| O1Y   | 0.0000 | 0.0303 | -0.4772 | -0.0000 | -0.0303 | 0.4772 | -0.0004 | 0.0025  | -0.0009 |
| O2X   | 0.0000 | 0.0636 | -0.4772 | 0.0000  | -0.0636 | 0.4772 | -0.0000 | 0.0029  | 0.0061  |
| M1Y   | 0.0000 | 0.0248 | -0.3043 | -0.0000 | -0.0248 | 0.3043 | 0.0174  | 0.1060  | -0.0076 |
| M2X   | 0.0000 | 0.0515 | -0.3043 | 0.0000  | -0.0515 | 0.3043 | -0.0000 | 0.1265  | 0.0414  |
| BMV   | 0.0000 | 0.0085 | -0.1860 | 0.0000  | -0.0085 | 0.1860 | -0.0001 | 0.4036  | 0.1221  |
| BMXV  | 0.0000 | 0.0048 | -0.0535 | 0.0000  | -0.0048 | 0.0535 | 0.0026  | 0.4427  | 0.1219  |
| BMV   | 0.0000 | 0.0090 | -0.2779 | -0.0000 | -0.0090 | 0.2779 | -0.0028 | 0.6803  | 0.1931  |
| BMXV  | 0.0000 | 0.0058 | -0.0783 | 0.0000  | -0.0058 | 0.0783 | 0.0013  | 0.7301  | 0.1928  |
| TMY   | 0.0000 | 0.0085 | -0.1951 | -0.0000 | -0.0085 | 0.1951 | -0.0018 | 1.0227  | 0.1923  |
| TMXV  | 0.0000 | 0.0050 | -0.0565 | 0.0000  | -0.0050 | 0.0565 | 0.0009  | 1.0829  | 0.1919  |
| BFMY  | 0.0000 | 0.0099 | -0.1241 | 0.0000  | -0.0099 | 0.1241 | -0.0023 | 0.4041  | -0.1425 |
| BFMXV | 0.0000 | 0.0055 | -0.0554 | -0.0000 | -0.0055 | 0.0554 | -0.0047 | 0.4460  | -0.1427 |

Moments for Angles Modeled as Beams:

| Angle Label | Torsion (ft-lbs) | Origin X Moment (ft-lbs) | Origin Z Moment (ft-lbs) | End X Moment (ft-lbs) | End Z Moment (ft-lbs) | X Shear (lbs) | Z Shear (lbs) |
|-------------|------------------|--------------------------|--------------------------|-----------------------|-----------------------|---------------|---------------|
| g1P         | -404.89          | -4265.49                 | -3482.88                 | -3376.38              | -2492.33              | -311.91       | -244.04       |
| g13P        | 15.33            | -147.72                  | 60.62                    | 103.11                | 157.68                | -4.03         | 19.72         |
| g14P        | -0.36            | -1377.63                 | -2.73                    | -599.58               | 29.72                 | -178.59       | 2.44          |
| g17P        | 15.22            | -103.14                  | -157.68                  | -137.61               | -161.09               | -16.31        | -21.59        |
| g21P        | -0.00            | 598.58                   | -29.72                   | -599.86               | 29.68                 | -0.02         | -0.00         |
| g29P        | -565.26          | -2699.07                 | -3738.30                 | 449.02                | 250.36                | -232.05       | -359.68       |
| g30P        | -172.57          | -787.73                  | 433.66                   | 3198.41               | 4311.23               | 277.81        | 546.93        |
| g33P        | -266.16          | -602.05                  | -356.73                  | 32.14                 | 381.43                | -20.69        | 0.90          |
| g41P        | 21.13            | 17.33                    | -118.29                  | -67.00                | -48.15                | -2.89         | -9.68         |
| g42P        | -0.03            | -1106.14                 | -140.43                  | -1129.71              | -79.07                | -130.02       | -12.76        |
| g77P        | -12.11           | -225.15                  | -183.59                  | -184.06               | -124.74               | -15.49        | -11.68        |
| g78P        | 0.00             | 20.23                    | -87.60                   | -20.05                | 87.57                 | 0.01          | -0.00         |

|        |         |           |           |          |           |          |          |
|--------|---------|-----------|-----------|----------|-----------|----------|----------|
| g81P   | -1.27   | 41.80     | 29.94     | 54.08    | 168.08    | 8.12     | 16.78    |
| g82P   | -0.22   | -234.62   | -59.52    | -241.15  | 44.44     | -40.32   | -1.28    |
| g85P   | 0.00    | 20.93     | -69.75    | -20.97   | 69.71     | -0.00    | -0.00    |
| g89P   | 9.88    | -16.34    | -113.32   | -8.27    | -159.50   | -1.24    | -13.61   |
| g93P   | -555.55 | -1168.60  | 3046.75   | 2562.44  | 3935.91   | 113.65   | 570.23   |
| g97P   | -784.81 | -8752.78  | 5420.01   | -3540.88 | 6463.69   | -1417.38 | 1369.56  |
| g98P   | -781.96 | 3541.81   | -6463.53  | 1196.11  | -3015.67  | 773.85   | -1547.84 |
| g105P  | -794.73 | -16989.12 | 3741.73   | -9459.53 | 10016.55  | -2591.64 | 1347.30  |
| g106P  | -778.65 | 9461.84   | -10015.63 | 8752.47  | -5421.40  | 1878.78  | -1591.56 |
| g163P  | 0.91    | 1047.25   | 945.79    | -2495.51 | 7278.62   | -189.00  | 1073.30  |
| g164P  | -3.14   | 2495.51   | -7278.62  | -175.03  | -13820.71 | 302.95   | -2754.62 |
| g167P  | 12.11   | 175.02    | 13820.70  | -9308.88 | 14717.57  | -1192.44 | 3725.79  |
| g171P  | -0.02   | 5.90      | -123.80   | -622.27  | -100.07   | -80.42   | -29.21   |
| g175P  | 0.02    | 622.27    | 100.06    | -119.98  | 44.56     | 65.56    | 18.88    |
| g179P  | -0.05   | 119.98    | -44.57    | -1047.25 | -945.80   | -121.05  | -129.28  |
| g261P  | -0.00   | 0.00      | 0.00      | -48.45   | 73.20     | -6.06    | 9.15     |
| g262P  | -0.01   | 48.45     | -73.19    | -5.90    | -123.79   | 5.32     | -24.64   |
| g322P  | -0.00   | -0.00     | 0.00      | -93.32   | 0.00      | -9.33    | 0.00     |
| g323P  | -0.00   | 93.32     | -0.00     | 51.77    | 0.00      | 14.51    | 0.00     |
| g1X    | -154.21 | 5246.63   | -1741.47  | 3842.33  | -1449.25  | 370.40   | -129.98  |
| g1XY   | 154.22  | 5246.78   | 1741.46   | 3842.52  | 1449.24   | 370.41   | 129.98   |
| g1Y    | 404.86  | -4264.41  | 3484.04   | -3375.49 | 2493.35   | -311.83  | 244.13   |
| g13X   | 15.09   | 72.50     | 114.16    | -137.63  | 161.08    | -5.88    | 24.86    |
| g13XY  | -15.08  | 72.51     | -114.15   | -137.62  | -161.05   | -5.88    | -24.86   |
| g13Y   | -15.33  | -147.73   | -60.59    | 103.10   | -157.64   | -4.03    | -19.71   |
| g14X   | 0.11    | 462.78    | 43.96     | 278.30   | 30.19     | 66.94    | 6.70     |
| g14XY  | -0.11   | 462.79    | -43.98    | 278.30   | -30.20    | 66.94    | -6.70    |
| g14Y   | 0.35    | -1377.95  | 2.76      | -599.86  | -29.68    | -178.64  | -2.43    |
| g17Y   | -15.21  | -103.12   | 157.63    | -137.60  | 161.06    | -16.31   | 21.59    |
| g21X   | -0.00   | -278.30   | -30.19    | 278.30   | 30.20     | -0.00    | 0.00     |
| g29X   | -63.13  | 3671.21   | -2066.73  | -424.42  | 357.00    | 334.28   | -176.03  |
| g29XY  | 63.18   | 3671.17   | 2066.72   | -424.42  | -356.99   | 334.28   | 176.03   |
| g29Y   | 565.21  | -2702.24  | 3735.11   | 449.42   | -249.98   | -232.33  | 359.39   |
| g30X   | 54.46   | -668.79   | -1352.31  | -4878.60 | 1968.89   | -638.33  | 70.97    |
| g30XY  | -54.47  | -668.83   | 1352.30   | -4878.75 | -1968.88  | -638.35  | -70.97   |
| g30Y   | 172.55  | -787.64   | -433.62   | 3197.09  | -4312.62  | 277.66   | -547.09  |
| g33X   | 102.64  | 610.04    | -398.60   | 864.23   | 1746.85   | 53.42    | 48.84    |
| g33XY  | -102.65 | 610.09    | 398.59    | 864.29   | -1746.85  | 53.42    | -48.84   |
| g33Y   | 266.10  | -602.61   | 356.23    | 31.91    | -381.61   | -20.71   | -0.92    |
| g41X   | 21.12   | -141.48   | 15.73     | -67.01   | 48.14     | -12.12   | 3.72     |
| g41XY  | -21.10  | -141.47   | -15.74    | -67.01   | -48.14    | -12.12   | -3.72    |
| g41Y   | -21.12  | 17.33     | 118.29    | -67.00   | 48.14     | -2.89    | 9.68     |
| g42X   | 0.02    | 439.33    | -50.19    | 589.37   | -26.48    | 59.84    | -4.46    |
| g42XY  | -0.02   | 439.33    | 50.19     | 589.37   | 26.48     | 59.84    | 4.46     |
| g42Y   | 0.03    | -1106.32  | 140.42    | -1129.71 | 79.07     | -130.03  | 12.76    |
| g77Y   | 12.13   | -225.18   | 183.65    | -184.10  | 124.82    | -15.50   | 11.68    |
| g78X   | -0.00   | 66.39     | -28.71    | -66.41   | 28.69     | -0.00    | -0.00    |
| g81X   | -1.35   | 44.14     | -235.39   | 54.08    | -168.08   | 8.32     | -34.19   |
| g81XY  | 1.34    | 44.15     | 235.40    | 54.07    | 168.06    | 8.32     | 34.19    |
| g81Y   | 1.26    | 41.78     | -29.90    | 54.07    | -168.05   | 8.12     | -16.78   |
| g82X   | 0.01    | 17.52     | 169.44    | 1.90     | 202.54    | 1.65     | 31.52    |
| g82XY  | -0.01   | 17.53     | -169.44   | 1.90     | -202.54   | 1.65     | -31.52   |
| g82Y   | 0.22    | -234.51   | 59.48     | -241.15  | -44.44    | -40.31   | 1.28     |
| g85X   | -0.00   | -4.74     | -23.68    | 4.74     | 23.68     | -0.00    | -0.00    |
| g89Y   | -9.89   | -16.34    | 113.30    | -8.27    | 159.48    | -1.24    | 13.60    |
| g93X   | -131.35 | -560.56   | 373.21    | -3626.52 | 2062.93   | -341.27  | 198.51   |
| g93XY  | 131.41  | -560.42   | -373.23   | -3626.47 | -2062.92  | -341.26  | -198.51  |
| g93Y   | 555.52  | -1164.60  | -3042.64  | 2565.69  | -3932.62  | 114.24   | -569.62  |
| g97X   | -264.38 | 4549.20   | 1596.56   | 70.90    | 2373.36   | 531.55   | 456.79   |
| g97XY  | 264.41  | 4549.14   | -1596.66  | 70.84    | -2373.40  | 531.54   | -456.80  |
| g97Y   | 784.73  | -8752.70  | -5419.73  | -3540.29 | -6462.96  | -1417.31 | -1369.44 |
| g98X   | -265.16 | -70.76    | -2373.27  | 538.72   | -343.96   | 76.29    | -442.90  |
| g98XY  | 265.19  | -70.71    | 2373.32   | 538.59   | 343.98    | 76.27    | 442.91   |
| g98Y   | 781.88  | 3541.22   | 6462.80   | 1192.15  | 3011.60   | 773.11   | 1547.05  |
| g105X  | -259.76 | 10250.45  | 1269.61   | 3877.91  | 6179.28   | 1381.75  | 728.63   |
| g105XY | 259.79  | 10250.43  | -1269.76  | 3877.79  | -6179.37  | 1381.74  | -728.66  |
| g105Y  | 794.65  | -16989.43 | -3741.33  | -9459.68 | -10016.36 | -2591.68 | -1347.24 |
| g106X  | -267.20 | -3877.37  | -6179.30  | -4549.15 | -1596.22  | -867.47  | -800.57  |
| g106XY | 267.23  | -3877.26  | 6179.39   | -4549.10 | 1596.32   | -867.46  | 800.59   |
| g106Y  | 778.57  | 9461.99   | 10015.44  | 8752.39  | 5421.12   | 1878.79  | 1591.51  |

|        |        |         |           |          |           |          |          |
|--------|--------|---------|-----------|----------|-----------|----------|----------|
| g163X  | -0.03  | 142.48  | 31.05     | -2176.98 | -3431.60  | -265.22  | -443.30  |
| g163XY | 0.03   | 142.56  | -31.05    | -2176.64 | 3431.60   | -265.17  | 443.30   |
| g163Y  | -0.91  | 1047.16 | -945.78   | -2495.98 | -7278.57  | -189.07  | -1073.29 |
| g164X  | 2.05   | 2176.98 | 3431.59   | -2038.19 | 7205.14   | 18.09    | 1386.50  |
| g164XY | -2.05  | 2176.64 | -3431.59  | -2038.46 | -7205.15  | 18.01    | -1386.50 |
| g164Y  | 3.14   | 2495.98 | 7278.57   | -174.20  | 13820.50  | 303.12   | 2754.59  |
| g167X  | -5.55  | 2038.19 | -7205.15  | -6331.15 | -8165.02  | -559.43  | -2002.96 |
| g167XY | 5.55   | 2038.46 | 7205.16   | -6331.03 | 8165.11   | -559.38  | 2002.98  |
| g167Y  | -12.11 | 174.19  | -13820.49 | -9309.39 | -14717.50 | -1192.62 | -3725.75 |
| g171X  | 0.01   | -59.24  | 71.23     | -163.69  | -182.78   | -29.07   | -14.55   |
| g171XY | -0.01  | -59.24  | -71.23    | -163.70  | 182.78    | -29.07   | 14.55    |
| g171Y  | 0.02   | 5.90    | 123.80    | -622.26  | 100.07    | -80.42   | 29.21    |
| g175X  | 0.08   | 163.69  | 182.77    | -1008.68 | 398.85    | -110.17  | 75.83    |
| g175XY | -0.08  | 163.70  | -182.77   | -1008.66 | -398.85   | -110.16  | -75.83   |
| g175Y  | -0.02  | 622.26  | -100.06   | -120.01  | -44.56    | 65.56    | -18.88   |
| g179X  | -0.02  | 1008.68 | -398.86   | -142.48  | -31.06    | 112.90   | -56.03   |
| g179XY | 0.02   | 1008.66 | 398.86    | -142.56  | 31.06     | 112.88   | 56.03    |
| g179Y  | 0.05   | 120.01  | 44.57     | -1047.16 | 945.79    | -121.03  | 129.28   |
| g261X  | -0.00  | 0.00    | 0.00      | -131.72  | -56.22    | -16.46   | -7.03    |
| g261XY | 0.00   | 0.00    | -0.00     | -131.72  | 56.22     | -16.46   | 7.03     |
| g261Y  | 0.00   | 0.00    | -0.00     | -48.45   | -73.20    | -6.06    | -9.15    |
| g262X  | 0.01   | 131.72  | 56.23     | 59.24    | 71.23     | 23.86    | 15.93    |
| g262XY | -0.01  | 131.72  | -56.23    | 59.24    | -71.23    | 23.86    | -15.93   |
| g262Y  | 0.01   | 48.45   | 73.19     | -5.90    | 123.79    | 5.32     | 24.64    |
| g322X  | 0.00   | 0.00    | 0.00      | 51.77    | -0.00     | 5.18     | -0.00    |

# Summary of Clamp Capacities and Usages:

## Clamp Force Allowable Usage Label

|       | (kips) | (kips) | %     |
|-------|--------|--------|-------|
| SW1   | 15.29  | 50.00  | 30.58 |
| SW2   | 15.29  | 50.00  | 30.58 |
| 1A    | 18.15  | 50.00  | 36.30 |
| 1B    | 18.15  | 50.00  | 36.30 |
| 2A    | 18.16  | 50.00  | 36.32 |
| 2B    | 18.16  | 50.00  | 36.32 |
| 3A    | 18.15  | 50.00  | 36.30 |
| 3B    | 18.15  | 50.00  | 36.30 |
| 4     | 36.28  | 50.00  | 72.56 |
| 5     | 36.33  | 50.00  | 72.66 |
| 6     | 36.26  | 50.00  | 72.51 |
| A1T   | 0.29   | 25.00  | 1.15  |
| A1B   | 0.23   | 25.00  | 0.91  |
| A2T   | 0.29   | 25.00  | 1.15  |
| A2B   | 0.23   | 25.00  | 0.91  |
| A3T   | 0.29   | 25.00  | 1.15  |
| A3B   | 0.24   | 25.00  | 0.96  |
| COAX1 | 0.52   | 25.00  | 2.06  |
| COAX2 | 1.08   | 25.00  | 4.31  |



\*\*\* Analysis Results for Load Case No. 4 "NESCA" - Number of iterations in SAPS 11

Equilibrium Joint Positions and Rotations:

| Joint Label | X-Displ (ft) | Y-Displ (ft) | Z-Displ (ft) | X-Rot (deg) | Y-Rot (deg) | Z-Rot (deg) | X-Pos (ft) | Y-Pos (ft) | Z-Pos (ft) |
|-------------|--------------|--------------|--------------|-------------|-------------|-------------|------------|------------|------------|
| ZP          | 0            | 0            | 0            | 0.0000      | 0.0000      | 0.0000      | 22         | 22         | 1          |
| WP          | -0.008028    | 0.4289       | -0.05588     | -0.5330     | 0.0362      | -0.4029     | 4.992      | 5.429      | 115.9      |
| AP          | 0.007937     | 1.328        | -0.1021      | -0.9708     | -0.0180     | -0.4013     | 5.008      | 6.328      | 177.9      |
| TOPP        | 0.00847      | 1.467        | -0.1046      | -0.9860     | 0.0001      | 0.0079      | 0.00847    | 6.467      | 185.9      |
| SWP         | 0.007062     | 1.467        | -0.2801      | -1.0149     | 0.0001      | 0.0082      | 0.007062   | 16.47      | 185.7      |
| TAP         | 0.00305      | 1.064        | -0.3061      | 0.0000      | 0.0000      | 0.0000      | 0.00305    | 19.06      | 161.7      |
| TASQP       | 0.007965     | 1.07         | 0.3224       | 0.0000      | 0.0000      | 0.0000      | 5.008      | -20.93     | 162.3      |
| MAP         | -0.0007131   | 0.7111       | -0.3925      | 0.0000      | 0.0000      | 0.0000      | -0.0007131 | 26.71      | 138.6      |
| MASQP       | 0.005012     | 0.7192       | 0.3311       | 0.0000      | 0.0000      | 0.0000      | 5.005      | -25.28     | 139.3      |
| BAP         | -0.002229    | 0.4334       | -0.2307      | 0.0000      | 0.0000      | 0.0000      | -0.002229  | 21.43      | 115.8      |
| BASQP       | 0.002391     | 0.4339       | 0.2049       | 0.0000      | 0.0000      | 0.0000      | 5.002      | -20.57     | 116.2      |
| ZX          | 0            | 0            | 0            | 0.0000      | 0.0000      | 0.0000      | 22         | -22        | 1          |
| ZXY         | 0            | 0            | 0            | 0.0000      | 0.0000      | 0.0000      | -22        | -22        | 1          |
| ZY          | 0            | 0            | 0            | 0.0000      | 0.0000      | 0.0000      | -22        | 22         | 1          |
| WX          | 0.003139     | 0.4295       | 0.03649      | -0.5483     | -0.0091     | -0.1464     | 5.003      | -4.57      | 116        |
| WXY         | -0.002131    | 0.4285       | 0.03728      | -0.5477     | 0.0172      | 0.1527      | -5.002     | -4.572     | 116        |
| WY          | 0.006889     | 0.4279       | -0.05493     | -0.5335     | -0.0266     | 0.4049      | -4.993     | 5.428      | 115.9      |
| AX          | 0.007879     | 1.33         | 0.06376      | -0.9866     | 0.0224      | -0.1471     | 5.008      | -3.67      | 178.1      |
| AXY         | 0.009136     | 1.328        | 0.06538      | -0.9865     | -0.0030     | 0.1533      | -4.991     | -3.672     | 178.1      |
| AY          | 0.006461     | 1.327        | -0.1004      | -0.9698     | 0.0353      | 0.4034      | -4.994     | 6.327      | 177.9      |
| TOPX        | 0.00981      | 1.469        | 0.06542      | -0.9803     | 0.0001      | 0.0076      | 0.00981    | -3.531     | 186.1      |
| SWX         | 0.01115      | 1.471        | 0.2392       | -1.0037     | 0.0001      | 0.0077      | 0.01115    | -13.53     | 186.2      |
| TASQY       | 0.008001     | 1.069        | 0.3237       | 0.0000      | 0.0000      | 0.0000      | -4.992     | -20.93     | 162.3      |
| MASQY       | 0.005139     | 0.7181       | 0.3325       | 0.0000      | 0.0000      | 0.0000      | -4.995     | -25.28     | 139.3      |
| BASQY       | 0.001982     | 0.4328       | 0.2058       | 0.0000      | 0.0000      | 0.0000      | -4.998     | -20.57     | 116.2      |
| BS          | 0.008026     | 1.194        | -0.09829     | -0.9481     | 0.0140      | -0.4019     | 5.008      | 6.194      | 169.9      |
| CS          | 0.004599     | 1.063        | -0.09309     | -0.9302     | -0.0062     | -0.4015     | 5.005      | 6.063      | 161.9      |
| DS          | 0.005052     | 0.9401       | -0.08932     | -0.9016     | -0.0095     | -0.4015     | 5.005      | 5.94       | 154.2      |
| ES          | 0.005184     | 0.8229       | -0.08356     | -0.8565     | -0.0066     | -0.4015     | 5.005      | 5.823      | 146.6      |
| FS          | 0.003062     | 0.712        | -0.07615     | -0.7907     | 0.0451      | -0.4023     | 5.003      | 5.712      | 138.9      |
| GS          | 0.0003548    | 0.6092       | -0.07107     | -0.7382     | -0.0623     | -0.4009     | 5          | 5.609      | 131.3      |
| HS          | 0.008826     | 0.5142       | -0.06389     | -0.6938     | 0.0462      | -0.4021     | 5.009      | 5.514      | 123.6      |
| IS          | 0.009336     | 0.3436       | -0.05642     | -0.3691     | 0.0187      | -0.3467     | 6.488      | 6.822      | 105.9      |
| JS          | -0.003298    | 0.2756       | -0.05837     | -0.3322     | 0.0719      | -0.3022     | 7.879      | 8.158      | 96.44      |
| KS          | 0.000676     | 0.2231       | -0.05678     | -0.2724     | 0.0275      | -0.2710     | 9.14       | 9.362      | 87.94      |
| LS          | -0.002875    | 0.1907       | -0.05576     | -0.2678     | 0.0509      | -0.2470     | 10.02      | 10.22      | 81.94      |
| MS          | 0.002949     | 0.1271       | -0.05146     | -0.2093     | -0.0031     | -0.2247     | 11.8       | 11.93      | 69.95      |
| NS          | 0.003752     | 0.0929       | -0.04732     | -0.1542     | 0.0239      | -0.1792     | 13.21      | 13.3       | 60.45      |
| OS          | -0.0009819   | 0.009015     | -0.03364     | -0.1129     | 0.0299      | -0.1347     | 17.19      | 17.2       | 33.47      |
| PS          | -0.002874    | -0.006949    | -0.0279      | -0.0326     | 0.0228      | -0.1395     | 18.45      | 18.45      | 24.97      |
| L1S         | -0.06614     | -0.006733    | -0.02187     | -0.0770     | 0.0009      | -0.0659     | 18.39      | 7.374      | 24.98      |
| L3S         | -0.002554    | 0.05651      | 0.0061       | -0.0297     | 0.1906      | -0.3018     | 7.378      | 18.51      | 25.01      |
| O1S         | 0.02276      | 0.008155     | 0.001657     | -0.0925     | -0.0108     | 0.0407      | 17.22      | 0.008155   | 33.5       |
| O2S         | -0.0008986   | -0.01544     | -0.003475    | -0.1130     | -0.0052     | 0.0009      | -0.0008986 | 17.18      | 33.5       |
| M1S         | -0.02572     | 0.1271       | -0.009105    | -0.2258     | 0.0012      | 0.0609      | 11.77      | 0.1271     | 69.99      |
| M2S         | 0.003353     | 0.1917       | -0.03383     | -0.2064     | 0.0066      | 0.0077      | 0.003353   | 11.99      | 69.97      |
| BMS         | 0.001317     | 0.4319       | 0.1259       | 0.0000      | 0.0000      | 0.0000      | 5.001      | -12.57     | 116.1      |
| BMXS        | -0.001083    | 0.473        | 0.1258       | 0.0000      | 0.0000      | 0.0000      | 4.999      | -12.53     | 120        |
| MMS         | 0.006564     | 0.7163       | 0.1996       | 0.0000      | 0.0000      | 0.0000      | 5.007      | -14.78     | 139.2      |
| MMXS        | 0.00321      | 0.7687       | 0.1993       | 0.0000      | 0.0000      | 0.0000      | 5.003      | -14.73     | 143        |
| TMS         | 0.008634     | 1.068        | 0.197        | 0.0000      | 0.0000      | 0.0000      | 5.009      | -12.43     | 162.2      |
| TMXS        | 0.006768     | 1.13         | 0.1966       | 0.0000      | 0.0000      | 0.0000      | 5.007      | -12.37     | 166.2      |
| BPMS        | -0.003668    | 0.4316       | -0.1453      | 0.0000      | 0.0000      | 0.0000      | 2.496      | 13.43      | 115.9      |
| BPMXS       | -0.01032     | 0.4769       | -0.1456      | 0.0000      | 0.0000      | 0.0000      | 2.51       | 13.48      | 119.7      |
| BX          | 0.00538      | 1.194        | 0.06267      | -0.9453     | 0.0013      | -0.1467     | 5.005      | -3.806     | 170.1      |
| BXY         | 0.008952     | 1.193        | 0.06423      | -0.9451     | 0.0177      | 0.1530      | -4.991     | -3.807     | 170.1      |
| BY          | 0.003929     | 1.192        | -0.09661     | -0.9473     | 0.0041      | 0.4039      | -4.996     | 6.192      | 169.9      |
| CX          | 0.005665     | 1.065        | 0.06049      | -0.9249     | 0.0053      | -0.1468     | 5.006      | -3.935     | 162.1      |
| CXY         | 0.006123     | 1.063        | 0.06193      | -0.9228     | 0.0119      | 0.1531      | -4.994     | -3.937     | 162.1      |
| CY          | 0.004788     | 1.062        | -0.09133     | -0.9299     | 0.0245      | 0.4036      | -4.995     | 6.062      | 161.9      |
| DX          | 0.003842     | 0.9413       | 0.05932      | -0.9136     | 0.0196      | -0.1470     | 5.004      | -4.059     | 154.4      |

|       |            |           |           |         |         |         |            |          |       |
|-------|------------|-----------|-----------|---------|---------|---------|------------|----------|-------|
| DXY   | 0.005707   | 0.9403    | 0.06068   | -0.9128 | -0.0033 | 0.1533  | -4.994     | -4.06    | 154.4 |
| DY    | 0.001971   | 0.9389    | -0.08781  | -0.9009 | 0.0260  | 0.4035  | -4.998     | 5.939    | 154.2 |
| EX    | 0.0009793  | 0.8224    | 0.05623   | -0.8515 | 0.0072  | -0.1469 | -5.001     | -4.178   | 146.7 |
| EXY   | 0.006473   | 0.8214    | 0.05748   | -0.8522 | 0.0079  | 0.1532  | -4.994     | -4.179   | 146.7 |
| EY    | -0.0001661 | 0.8218    | -0.08227  | -0.8561 | 0.0204  | 0.4036  | -5         | 5.822    | 146.6 |
| FX    | 0.001797   | 0.7133    | 0.05142   | -0.7891 | -0.0158 | -0.1465 | 5.002      | -4.287   | 139.1 |
| FXY   | 0.003753   | 0.7122    | 0.05253   | -0.7890 | 0.0289  | 0.1528  | -4.996     | -4.288   | 139.1 |
| FY    | 0.0002459  | 0.7109    | -0.07504  | -0.7909 | -0.0331 | 0.4044  | -5         | 5.711    | 138.9 |
| GX    | 0.001176   | 0.6096    | 0.04815   | -0.7480 | 0.0402  | -0.1473 | 5.001      | -4.39    | 131.4 |
| GXY   | 0.002696   | 0.6086    | 0.04916   | -0.7478 | -0.0282 | 0.1536  | -4.997     | -4.391   | 131.4 |
| GY    | 0.001385   | 0.6081    | -0.07002  | -0.7383 | 0.0737  | 0.4030  | -4.999     | 5.608    | 131.3 |
| HX    | -0.0043    | 0.514     | 0.04295   | -0.6846 | -0.0211 | -0.1466 | 4.996      | -4.486   | 123.7 |
| HXY   | 0.006648   | 0.5129    | 0.04386   | -0.6847 | 0.0323  | 0.1530  | -4.993     | -4.487   | 123.7 |
| HY    | -0.008557  | 0.5131    | -0.0629   | -0.6927 | -0.0352 | 0.4041  | -5.009     | 5.513    | 123.6 |
| IX    | -0.006806  | 0.3436    | 0.03976   | -0.4128 | 0.0082  | -0.1214 | 6.471      | -6.135   | 106   |
| IXY   | 0.006892   | 0.3425    | 0.04055   | -0.4130 | -0.0031 | 0.1275  | -6.471     | -6.136   | 106   |
| IY    | -0.01204   | 0.3423    | -0.05544  | -0.3704 | -0.0104 | 0.3482  | -6.49      | 6.821    | 105.9 |
| JX    | -0.001079  | 0.2756    | 0.04229   | -0.3563 | -0.0345 | -0.0987 | 7.882      | -7.607   | 96.54 |
| JXY   | 0.000485   | 0.2741    | 0.04311   | -0.3570 | 0.0389  | 0.1042  | -7.882     | -7.608   | 96.54 |
| JY    | -0.0006766 | 0.2742    | -0.05734  | -0.3328 | -0.0665 | 0.3028  | -7.883     | 8.157    | 96.44 |
| KX    | -0.002077  | 0.2237    | 0.04227   | -0.3048 | 0.0042  | -0.0903 | 9.137      | -8.915   | 88.04 |
| KXY   | 0.00101    | 0.2221    | 0.04309   | -0.3052 | -0.0007 | 0.0951  | -9.138     | -8.917   | 88.04 |
| KY    | -0.005655  | 0.2215    | -0.0557   | -0.2739 | -0.0155 | 0.2723  | -9.145     | 9.361    | 87.94 |
| LX    | -0.001896  | 0.1903    | 0.04177   | -0.2990 | -0.0139 | -0.0818 | 10.02      | -9.836   | 82.04 |
| LXY   | 0.0005785  | 0.1886    | 0.04258   | -0.2988 | 0.0160  | 0.0863  | -10.03     | -9.838   | 82.04 |
| LY    | -0.002422  | 0.189     | -0.0547   | -0.2690 | -0.0733 | 0.2430  | -10.03     | 10.22    | 81.95 |
| MX    | -0.0009035 | 0.1277    | 0.04027   | -0.2236 | 0.0041  | -0.0752 | 11.8       | -11.67   | 70.04 |
| MXY   | -0.0004155 | 0.1262    | 0.04097   | -0.2226 | -0.0041 | 0.0779  | -11.8      | -11.67   | 70.04 |
| MY    | 0.003623   | 0.1256    | -0.0522   | -0.2099 | -0.0344 | 0.2166  | -11.8      | 11.93    | 69.95 |
| NX    | -0.004233  | 0.09464   | 0.03691   | -0.1675 | 0.0225  | -0.0681 | 13.2       | -13.11   | 60.54 |
| NXY   | 0.002913   | 0.09311   | 0.03753   | -0.1666 | -0.0223 | 0.0692  | -13.2      | -13.11   | 60.54 |
| NY    | 0.003718   | 0.09143   | -0.04823  | -0.1535 | -0.0119 | 0.1779  | -13.2      | 13.3     | 60.45 |
| OX    | -0.006058  | 0.01078   | 0.02672   | -0.1208 | -0.0514 | -0.0789 | 17.19      | -17.18   | 33.53 |
| OXY   | 0.004982   | 0.01019   | 0.02705   | -0.1197 | 0.0518  | 0.0797  | -17.19     | -17.19   | 33.53 |
| OY    | -0.0008668 | 0.008497  | -0.03321  | -0.1118 | -0.0047 | 0.1362  | -17.2      | 17.2     | 33.47 |
| PX    | 0.001426   | -0.005249 | 0.02314   | -0.0473 | -0.0424 | -0.0676 | 18.45      | -18.46   | 25.02 |
| PXY   | -0.002508  | -0.005775 | 0.02344   | -0.0466 | 0.0416  | 0.0685  | -18.45     | -18.46   | 25.02 |
| PY    | -0.002055  | -0.007411 | -0.02706  | -0.0323 | -0.0144 | 0.1383  | -18.45     | 18.44    | 24.97 |
| L1X   | 0.01841    | -0.005588 | 0.01108   | -0.1058 | -0.0244 | 0.1692  | 18.47      | -7.386   | 25.01 |
| L1XY  | -0.02017   | -0.00612  | 0.01153   | -0.1042 | 0.0262  | -0.1553 | -18.47     | -7.387   | 25.01 |
| L1Y   | 0.05972    | -0.007206 | -0.02095  | -0.0766 | 0.0046  | 0.0683  | -18.39     | 7.374    | 24.98 |
| L3X   | 0.001631   | 0.0114    | 0.006962  | -0.0474 | -0.0753 | -0.0703 | 7.383      | -18.44   | 25.01 |
| L3XY  | -0.002723  | 0.01153   | 0.007211  | -0.0471 | 0.0767  | 0.0720  | -7.384     | -18.44   | 25.01 |
| L3Y   | -0.002378  | 0.05455   | 0.008589  | -0.0292 | -0.1883 | 0.3047  | -7.383     | 18.51    | 25.01 |
| OLY   | -0.02413   | 0.007672  | 0.00194   | -0.0928 | 0.0236  | -0.0394 | -17.22     | 0.007672 | 33.5  |
| O2X   | -0.0004688 | 0.03158   | 0.002135  | -0.1211 | 0.0007  | 0.0013  | -0.0004688 | -17.16   | 33.5  |
| M1Y   | 0.02612    | 0.1255    | -0.008802 | -0.2312 | -0.0200 | -0.0881 | -11.77     | 0.1255   | 69.99 |
| M2X   | -0.0006603 | 0.1751    | 0.0369    | -0.2236 | 0.0025  | 0.0051  | -0.0006603 | -11.62   | 70.04 |
| BMX   | 0.001373   | 0.4308    | 0.1268    | 0.0000  | 0.0000  | 0.0000  | -4.999     | -12.57   | 116.1 |
| BMXY  | 0.004459   | 0.472     | 0.1266    | 0.0000  | 0.0000  | 0.0000  | -4.996     | -12.53   | 120   |
| MMY   | 0.001287   | 0.7152    | 0.2009    | 0.0000  | 0.0000  | 0.0000  | -4.999     | -14.78   | 139.2 |
| MMXY  | 0.005619   | 0.7677    | 0.2006    | 0.0000  | 0.0000  | 0.0000  | -4.994     | -14.73   | 143   |
| TMY   | 0.005244   | 1.066     | 0.1984    | 0.0000  | 0.0000  | 0.0000  | -4.995     | -12.43   | 162.2 |
| TMXY  | 0.00841    | 1.129     | 0.198     | 0.0000  | 0.0000  | 0.0000  | -4.992     | -12.37   | 166.2 |
| BPMY  | -0.003669  | 0.4325    | -0.1448   | 0.0000  | 0.0000  | 0.0000  | -2.504     | 13.43    | 115.9 |
| BPMXY | -0.01234   | 0.4763    | -0.145    | 0.0000  | 0.0000  | 0.0000  | -2.512     | 13.48    | 119.7 |

# Joint Support Reactions:

| Joint Label | X-Force<br>(kips) | % X Y-Force<br>Usage | % Y<br>(kips) | Z-Force<br>(kips) | Comp.<br>Usage | % Uplift<br>Usage | X-Moment<br>(ft-k) | X-M.<br>Usage | Y-Moment<br>(ft-k) | Y-M.<br>Usage | Z-Moment<br>(ft-k) | Z-M.<br>Usage | Max.<br>Usage |
|-------------|-------------------|----------------------|---------------|-------------------|----------------|-------------------|--------------------|---------------|--------------------|---------------|--------------------|---------------|---------------|
| ZP          | -68.875           | 0.0                  | -74.116       | 0.0               | 463.781        | 0.0               | 0.0                | -3.470        | 0.0                | 1.109         | 0.0                | 1.010         | 0.0           |
| ZX          | 63.730            | 0.0                  | -61.913       | 0.0               | -394.935       | 0.0               | 0.0                | -3.059        | 0.0                | -1.602        | 0.0                | 0.443         | 0.0           |
| ZXY         | -63.455           | 0.0                  | -61.840       | 0.0               | -395.191       | 0.0               | 0.0                | -3.144        | 0.0                | 1.773         | 0.0                | -0.464        | 0.0           |
| ZY          | 68.601            | 0.0                  | -73.507       | 0.0               | 460.815        | 0.0               | 0.0                | -3.506        | 0.0                | -0.020        | 0.0                | -0.820        | 0.0           |

# Joint Displacements, Loads and Member Forces on Joints:

| Joint Label | X External Load (kips) | Y External Load (kips) | Z External Load (kips) | X Member Force (kips) | Y Member Force (kips) | Z Member Force (kips) | X Disp. (ft) | Y Disp. (ft) | Z Disp. (ft) |
|-------------|------------------------|------------------------|------------------------|-----------------------|-----------------------|-----------------------|--------------|--------------|--------------|
| ZP          | 0.0000                 | 0.2690                 | -1.2438                | 68.8754               | 73.8466               | -462.5374             | 0.0000       | 0.0000       | 0.0000       |
| WP          | 0.0000                 | 0.3144                 | -8.0989                | -0.0000               | -0.3144               | 8.0989                | -0.0080      | 0.4289       | -0.0559      |
| AP          | 0.0000                 | 0.7443                 | -0.3577                | 0.0000                | -0.7443               | 0.3577                | 0.0079       | 1.3281       | -0.1021      |
| TOPP        | 0.0000                 | 0.0692                 | -0.2439                | 0.0000                | -0.0692               | 0.2439                | 0.0085       | 1.4673       | -0.1046      |
| SWP         | 0.0000                 | 13.3420                | -1.1750                | -0.0000               | -13.3420              | 1.1750                | 0.0071       | 1.4672       | -0.2801      |
| TAP         | 0.0000                 | 36.9745                | -4.3716                | 0.0000                | -36.9745              | 4.3716                | 0.0031       | 1.0643       | -0.3061      |
| TASQP       | 0.0000                 | 18.5033                | -2.2382                | 0.0000                | -18.5033              | 2.2382                | 0.0080       | 1.0704       | 0.3224       |
| MAP         | 0.0000                 | 36.9865                | -4.7004                | 0.0000                | -36.9865              | 4.7004                | -0.0007      | 0.7111       | -0.3925      |
| MASQP       | 0.0000                 | 18.5077                | -2.2980                | 0.0000                | -18.5077              | 2.2980                | 0.0050       | 0.7192       | 0.3311       |
| BSAP        | 0.0000                 | 36.9449                | -4.2665                | 0.0000                | -36.9449              | 4.2665                | -0.0022      | 0.4334       | -0.2307      |
| BSASQP      | 0.0000                 | 18.5031                | -2.2314                | 0.0000                | -18.5031              | 2.2314                | 0.0024       | 0.4339       | 0.2049       |
| ZX          | 0.0000                 | 0.2690                 | -1.2438                | -63.7304              | 61.6435               | 396.1787              | 0.0000       | 0.0000       | 0.0000       |
| ZXY         | 0.0000                 | 0.2690                 | -1.2438                | 63.4555               | 61.5708               | 396.4345              | 0.0000       | 0.0000       | 0.0000       |
| ZY          | 0.0000                 | 0.2690                 | -1.2438                | -68.6005              | 73.2378               | -459.5714             | 0.0000       | 0.0000       | 0.0000       |
| WX          | 0.0000                 | 0.3065                 | -1.3722                | -0.0000               | -0.3065               | 1.3722                | 0.0031       | 0.4295       | 0.0365       |
| WKY         | 0.0000                 | 0.3065                 | -1.3722                | 0.0000                | -0.3065               | 1.3722                | -0.0021      | 0.4285       | 0.0373       |
| WY          | 0.0000                 | 0.2994                 | -1.3144                | 0.0000                | -0.2994               | 1.3144                | 0.0069       | 0.4279       | -0.0549      |
| RX          | 0.0000                 | 0.7443                 | -0.3577                | 0.0000                | -0.7443               | 0.3577                | 0.0079       | 1.3297       | 0.0638       |
| RXY         | 0.0000                 | 0.7443                 | -0.3577                | -0.0000               | -0.7443               | 0.3577                | 0.0091       | 1.3284       | 0.0654       |
| AY          | 0.0000                 | 0.1493                 | -0.3577                | -0.0000               | -0.1493               | 0.3577                | 0.0065       | 1.3267       | -0.1004      |
| TOPX        | 0.0000                 | 0.0692                 | -0.2439                | -0.0000               | -0.0692               | 0.2439                | 0.0098       | 1.4686       | 0.0654       |
| SWX         | 0.0000                 | 13.3420                | -1.1750                | 0.0000                | -13.3420              | 1.1750                | 0.0112       | 1.4713       | 0.2392       |
| TASQY       | 0.0000                 | 18.5033                | -2.2382                | 0.0000                | -18.5033              | 2.2382                | 0.0080       | 1.0692       | 0.3237       |
| MASQY       | 0.0000                 | 18.5077                | -2.2980                | 0.0000                | -18.5077              | 2.2980                | 0.0051       | 0.7181       | 0.3325       |
| BSQY        | 0.0000                 | 18.5031                | -2.2314                | 0.0000                | -18.5031              | 2.2314                | 0.0020       | 0.4328       | 0.2058       |
| BS          | 0.0000                 | -0.0994                | -0.6741                | 0.0000                | 0.0994                | 0.6741                | 0.0080       | 1.1937       | -0.0983      |
| CS          | 0.0000                 | 0.1974                 | -7.3969                | 0.0000                | -0.1974               | 7.3969                | 0.0046       | 1.0633       | -0.0931      |
| DS          | 0.0000                 | 0.1694                 | -0.5354                | 0.0000                | -0.1694               | 0.5354                | 0.0051       | 0.9401       | -0.0893      |
| ES          | 0.0000                 | 0.1847                 | -0.6215                | -0.0000               | -0.1847               | 0.6215                | 0.0052       | 0.8229       | -0.0836      |
| FS          | 0.0000                 | 0.2532                 | -1.1379                | -0.0000               | -0.2532               | 1.1379                | 0.0031       | 0.7120       | -0.0762      |
| GS          | 0.0000                 | 0.2169                 | -0.9123                | -0.0000               | -0.2169               | 0.9123                | 0.0004       | 0.6092       | -0.0711      |
| HS          | 0.0000                 | 0.2230                 | -0.9583                | -0.0000               | -0.2230               | 0.9583                | 0.0088       | 0.5142       | -0.0639      |
| IS          | 0.0000                 | 0.2611                 | -1.2523                | -0.0000               | -0.2611               | 1.2523                | 0.0093       | 0.3436       | -0.0584      |
| JS          | 0.0000                 | 0.2422                 | -1.1919                | 0.0000                | -0.2422               | 1.1919                | -0.0033      | 0.2756       | -0.0584      |
| KS          | 0.0000                 | 0.2215                 | -1.0484                | 0.0000                | -0.2215               | 1.0484                | 0.0007       | 0.2231       | -0.0568      |
| LS          | 0.0000                 | 0.3159                 | -1.3446                | -0.0000               | -0.3159               | 1.3446                | -0.0029      | 0.1907       | -0.0558      |
| MS          | 0.0000                 | 0.1474                 | -0.9858                | 0.0000                | -0.1474               | 0.9858                | 0.0029       | 0.1271       | -0.0515      |
| NS          | 0.0000                 | 0.5246                 | -2.4347                | -0.0000               | -0.5246               | 2.4347                | 0.0038       | 0.0929       | -0.0473      |
| OS          | 0.0000                 | 0.4392                 | -2.1749                | 0.0000                | -0.4392               | 2.1749                | -0.0010      | 0.0090       | -0.0336      |
| PS          | 0.0000                 | 0.2195                 | -1.4396                | -0.0000               | -0.2195               | 1.4396                | -0.0029      | -0.0069      | -0.0279      |
| L1S         | 0.0000                 | 0.1343                 | -0.5022                | -0.0000               | -0.1343               | 0.5022                | -0.0061      | -0.0067      | -0.0018      |
| L3S         | 0.0000                 | 0.2638                 | -0.5022                | -0.0000               | -0.2638               | 0.5022                | 0.0026       | 0.0065       | -0.0061      |
| OL1S        | 0.0000                 | 0.1375                 | -0.5964                | 0.0000                | -0.1375               | 0.5964                | 0.0228       | 0.0082       | 0.0017       |
| O2S         | 0.0000                 | 0.2893                 | -0.5964                | 0.0000                | -0.2893               | 0.5964                | -0.0009      | -0.0154      | -0.0035      |
| M1S         | 0.0000                 | 0.1125                 | -0.3803                | -0.0000               | -0.1125               | 0.3803                | -0.0257      | 0.1271       | -0.0091      |
| M2S         | 0.0000                 | 0.2339                 | -0.3803                | -0.0000               | -0.2339               | 0.3803                | 0.0034       | 0.1917       | -0.0338      |
| BMS         | 0.0000                 | 0.0384                 | -0.2325                | 0.0000                | -0.0384               | 0.2325                | 0.0013       | 0.4319       | 0.1259       |
| BMKS        | 0.0000                 | 0.0217                 | -0.0668                | 0.0000                | -0.0217               | 0.0668                | -0.0011      | 0.4730       | 0.1258       |
| BMHS        | 0.0000                 | 0.0451                 | -0.3473                | 0.0000                | -0.0451               | 0.3473                | 0.0066       | 0.7163       | 0.1396       |
| MXKS        | 0.0000                 | 0.0256                 | -0.0979                | 0.0000                | -0.0256               | 0.0979                | 0.0032       | 0.7687       | 0.1393       |
| TMS         | 0.0000                 | 0.0387                 | -0.2439                | 0.0000                | -0.0387               | 0.2439                | 0.0086       | 1.0676       | 0.1970       |
| TMKS        | 0.0000                 | 0.0227                 | -0.0707                | 0.0000                | -0.0227               | 0.0707                | 0.0068       | 1.1302       | 0.1966       |
| BPMS        | 0.0000                 | 0.0301                 | -0.1246                | 0.0000                | -0.0301               | 0.1246                | -0.0037      | 0.4316       | -0.1453      |
| BPMKS       | 0.0000                 | 0.0249                 | -0.0692                | 0.0000                | -0.0249               | 0.0692                | 0.0103       | 0.4769       | -0.1456      |
| BX          | 0.0000                 | -0.1066                | -0.6581                | 0.0000                | 0.1066                | 0.6581                | 0.0054       | 1.1939       | 0.0627       |
| BXY         | 0.0000                 | -0.1066                | -0.6581                | -0.0000               | 0.1066                | 0.6581                | 0.0090       | 1.1925       | 0.0642       |
| BY          | 0.0000                 | 0.1246                 | -0.2991                | -0.0000               | -0.1246               | 0.2991                | 0.0039       | 1.1924       | -0.0966      |
| CX          | 0.0000                 | 0.2041                 | -0.6902                | 0.0000                | -0.2041               | 0.6902                | 0.0057       | 1.0647       | 0.0605       |
| CKY         | 0.0000                 | 0.2041                 | -0.6902                | -0.0000               | -0.2041               | 0.6902                | 0.0061       | 1.0635       | 0.0619       |
| CY          | 0.0000                 | 0.1974                 | -0.6429                | -0.0000               | -0.1974               | 0.6429                | 0.0048       | 1.0621       | -0.0913      |
| DX          | 0.0000                 | 0.1694                 | -0.5354                | 0.0000                | -0.1694               | 0.5354                | 0.0038       | 0.9413       | 0.0593       |
| DKY         | 0.0000                 | 0.1694                 | -0.5354                | -0.0000               | -0.1694               | 0.5354                | 0.0057       | 0.9403       | 0.0607       |
| DY          | 0.0000                 | 0.1694                 | -0.5354                | -0.0000               | -0.1694               | 0.5354                | 0.0020       | 0.9389       | -0.0878      |
| EX          | 0.0000                 | 0.1758                 | -0.5896                | -0.0000               | -0.1758               | 0.5896                | 0.0010       | 0.8224       | 0.0562       |
| EKY         | 0.0000                 | 0.1758                 | -0.5896                | 0.0000                | -0.1758               | 0.5896                | 0.0065       | 0.8214       | 0.0575       |
| EY          | 0.0000                 | 0.1847                 | -0.6215                | 0.0000                | -0.1847               | 0.6215                | -0.0002      | 0.8218       | -0.0823      |

|       |        |        |         |         |         |        |         |         |         |
|-------|--------|--------|---------|---------|---------|--------|---------|---------|---------|
| FX    | 0.0000 | 0.2608 | -1.1081 | -0.0000 | -0.2608 | 1.1081 | 0.0018  | 0.7133  | 0.0514  |
| PKY   | 0.0000 | 0.2608 | -1.1081 | 0.0000  | -0.2608 | 1.1081 | 0.0038  | 0.7122  | 0.0525  |
| FY    | 0.0000 | 0.2532 | -1.1379 | 0.0000  | -0.2532 | 1.1379 | 0.0002  | 0.7109  | -0.0750 |
| GX    | 0.0000 | 0.2169 | -0.9123 | -0.0000 | -0.2169 | 0.9123 | 0.0012  | 0.6096  | 0.0481  |
| GXY   | 0.0000 | 0.2169 | -0.9123 | 0.0000  | -0.2169 | 0.9123 | 0.0027  | 0.6086  | 0.0492  |
| GY    | 0.0000 | 0.2169 | -0.9123 | 0.0000  | -0.2169 | 0.9123 | 0.0014  | 0.6081  | -0.0700 |
| HX    | 0.0000 | 0.2220 | -0.9575 | -0.0000 | -0.2220 | 0.9575 | -0.0043 | 0.5140  | 0.0430  |
| HXY   | 0.0000 | 0.2220 | -0.9575 | 0.0000  | -0.2220 | 0.9575 | 0.0066  | 0.5129  | 0.0439  |
| HY    | 0.0000 | 0.2230 | -0.9583 | 0.0000  | -0.2230 | 0.9583 | -0.0086 | 0.5131  | -0.0629 |
| IX    | 0.0000 | 0.2611 | -1.2523 | -0.0000 | -0.2611 | 1.2523 | -0.0068 | 0.3436  | 0.0398  |
| IXY   | 0.0000 | 0.2611 | -1.2523 | 0.0000  | -0.2611 | 1.2523 | 0.0069  | 0.3425  | 0.0406  |
| IY    | 0.0000 | 0.2611 | -1.2523 | 0.0000  | -0.2611 | 1.2523 | -0.0120 | 0.3423  | -0.0554 |
| JX    | 0.0000 | 0.2422 | -1.1919 | 0.0000  | -0.2422 | 1.1919 | -0.0011 | 0.2756  | 0.0423  |
| JXY   | 0.0000 | 0.2422 | -1.1919 | -0.0000 | -0.2422 | 1.1919 | 0.0005  | 0.2741  | 0.0431  |
| JY    | 0.0000 | 0.2422 | -1.1919 | -0.0000 | -0.2422 | 1.1919 | -0.0007 | 0.2742  | -0.0573 |
| KX    | 0.0000 | 0.2215 | -1.0484 | 0.0000  | -0.2215 | 1.0484 | -0.0021 | 0.2237  | 0.0423  |
| KKY   | 0.0000 | 0.2215 | -1.0484 | -0.0000 | -0.2215 | 1.0484 | 0.0010  | 0.2221  | 0.0431  |
| KY    | 0.0000 | 0.2215 | -1.0484 | -0.0000 | -0.2215 | 1.0484 | -0.0057 | 0.2215  | -0.0557 |
| LX    | 0.0000 | 0.3159 | -1.3446 | -0.0000 | -0.3159 | 1.3446 | -0.0019 | 0.1903  | 0.0418  |
| LXY   | 0.0000 | 0.3159 | -1.3446 | 0.0000  | -0.3159 | 1.3446 | 0.0006  | 0.1886  | 0.0426  |
| LY    | 0.0000 | 0.3159 | -1.3446 | 0.0000  | -0.3159 | 1.3446 | -0.0024 | 0.1890  | -0.0547 |
| MX    | 0.0000 | 0.1474 | -0.9858 | -0.0000 | -0.1474 | 0.9858 | -0.0009 | 0.1277  | 0.0403  |
| MXY   | 0.0000 | 0.1474 | -0.9858 | 0.0000  | -0.1474 | 0.9858 | -0.0004 | 0.1262  | 0.0410  |
| MY    | 0.0000 | 0.1474 | -0.9858 | -0.0000 | -0.1474 | 0.9858 | 0.0036  | 0.1256  | -0.0522 |
| NX    | 0.0000 | 0.5246 | -2.4347 | 0.0000  | -0.5246 | 2.4347 | -0.0042 | 0.0946  | 0.0369  |
| NXY   | 0.0000 | 0.5246 | -2.4347 | -0.0000 | -0.5246 | 2.4347 | 0.0029  | 0.0931  | 0.0375  |
| NY    | 0.0000 | 0.5246 | -2.4347 | 0.0000  | -0.5246 | 2.4347 | 0.0037  | 0.0914  | -0.0482 |
| OX    | 0.0000 | 0.4392 | -2.1749 | -0.0000 | -0.4392 | 2.1749 | -0.0061 | 0.0108  | 0.0267  |
| OKY   | 0.0000 | 0.4392 | -2.1749 | 0.0000  | -0.4392 | 2.1749 | 0.0050  | 0.0102  | 0.0271  |
| OY    | 0.0000 | 0.4392 | -2.1749 | -0.0000 | -0.4392 | 2.1749 | -0.0009 | 0.0085  | -0.0332 |
| PX    | 0.0000 | 0.2195 | -1.4396 | 0.0000  | -0.2195 | 1.4396 | 0.0014  | -0.0052 | 0.0231  |
| PXY   | 0.0000 | 0.2195 | -1.4396 | -0.0000 | -0.2195 | 1.4396 | -0.0025 | -0.0058 | 0.0234  |
| PY    | 0.0000 | 0.2195 | -1.4396 | 0.0000  | -0.2195 | 1.4396 | -0.0021 | -0.0074 | -0.0271 |
| L1X   | 0.0000 | 0.1343 | -0.5022 | -0.0000 | -0.1343 | 0.5022 | 0.0184  | -0.0056 | 0.0111  |
| L1XY  | 0.0000 | 0.1343 | -0.5022 | 0.0000  | -0.1343 | 0.5022 | -0.0202 | -0.0061 | 0.0115  |
| L1Y   | 0.0000 | 0.1343 | -0.5022 | 0.0000  | -0.1343 | 0.5022 | 0.0597  | -0.0072 | -0.0209 |
| L3X   | 0.0000 | 0.2638 | -0.5022 | -0.0000 | -0.2638 | 0.5022 | 0.0016  | 0.0114  | 0.0070  |
| L3XY  | 0.0000 | 0.2638 | -0.5022 | 0.0000  | -0.2638 | 0.5022 | -0.0027 | 0.0115  | 0.0072  |
| L3Y   | 0.0000 | 0.2638 | -0.5022 | 0.0000  | -0.2638 | 0.5022 | -0.0024 | 0.0546  | 0.0086  |
| O1Y   | 0.0000 | 0.1375 | -0.5964 | -0.0000 | -0.1375 | 0.5964 | -0.0241 | 0.0077  | 0.0019  |
| O2X   | 0.0000 | 0.2893 | -0.5964 | 0.0000  | -0.2893 | 0.5964 | -0.0005 | 0.0316  | 0.0021  |
| M1Y   | 0.0000 | 0.1125 | -0.3803 | 0.0000  | -0.1125 | 0.3803 | 0.0261  | 0.1255  | -0.0088 |
| M2X   | 0.0000 | 0.2339 | -0.3803 | 0.0000  | -0.2339 | 0.3803 | -0.0007 | 0.1751  | 0.0369  |
| BMX   | 0.0000 | 0.0384 | -0.2325 | 0.0000  | -0.0384 | 0.2325 | 0.0014  | 0.4308  | 0.1268  |
| BMXY  | 0.0000 | 0.0217 | -0.0668 | 0.0000  | -0.0217 | 0.0668 | 0.0045  | 0.4720  | 0.1266  |
| MMY   | 0.0000 | 0.0451 | -0.3473 | 0.0000  | -0.0451 | 0.3473 | 0.0013  | 0.7152  | 0.2009  |
| MMXY  | 0.0000 | 0.0256 | -0.0979 | 0.0000  | -0.0256 | 0.0979 | 0.0056  | 0.7677  | 0.2006  |
| TMY   | 0.0000 | 0.0387 | -0.2439 | 0.0000  | -0.0387 | 0.2439 | 0.0052  | 1.0664  | 0.1984  |
| TMXY  | 0.0000 | 0.0227 | -0.0707 | 0.0000  | -0.0227 | 0.0707 | 0.0084  | 1.1290  | 0.1980  |
| BPMY  | 0.0000 | 0.0451 | -0.1551 | 0.0000  | -0.0451 | 0.1551 | -0.0037 | 0.4325  | -0.1448 |
| BPMXY | 0.0000 | 0.0249 | -0.0692 | -0.0000 | -0.0249 | 0.0692 | -0.0123 | 0.4763  | -0.1450 |

Moments for Angles Modeled as Beams:

| Angle Label | Torsion (ft-lbs) | Origin X Moment (ft-lbs) | Origin Z Moment (ft-lbs) | End X Moment (ft-lbs) | End Z Moment (ft-lbs) | X Shear (lbs) | Z Shear (lbs) |
|-------------|------------------|--------------------------|--------------------------|-----------------------|-----------------------|---------------|---------------|
| g1P         | -1330.24         | -4238.23                 | -2334.51                 | -3238.21              | -1426.71              | -305.11       | -153.87       |
| g13P        | 30.49            | 271.40                   | 952.20                   | 521.19                | 1062.19               | 71.63         | 181.93        |
| g14P        | -3.33            | -1639.40                 | 603.62                   | -693.54               | 360.86                | -210.72       | 87.11         |
| g17P        | 26.32            | -521.52                  | -1062.14                 | -399.50               | -798.29               | -62.42        | -126.03       |
| g21P        | -0.31            | 693.55                   | -360.85                  | -909.09               | 319.48                | -14.60        | -2.80         |
| g29P        | -893.44          | -1732.93                 | -5078.35                 | -332.78               | -377.84               | -213.01       | -562.71       |
| g30P        | 465.70           | -1595.29                 | -635.87                  | 3298.77               | 3320.52               | 196.46        | 309.35        |
| g33P        | -352.89          | 282.10                   | 285.15                   | 902.72                | 1329.55               | 42.96         | 58.61         |
| g41P        | 36.24            | -125.23                  | -448.55                  | -198.81               | -279.61               | -18.86        | -42.33        |
| g42P        | 0.34             | -887.99                  | -494.90                  | -1016.34              | -364.32               | -110.75       | -49.97        |
| g77P        | 1.17             | -179.08                  | -338.28                  | -146.06               | -237.78               | -12.31        | -21.81        |
| g78P        | -0.45            | 104.69                   | -171.78                  | 13.78                 | 151.04                | 4.49          | -0.79         |

|        |         |           |           |           |           |          |          |
|--------|---------|-----------|-----------|-----------|-----------|----------|----------|
| g81P   | -1.50   | 45.26     | 23.36     | 72.45     | 254.15    | 9.97     | 23.52    |
| g82P   | -1.19   | -430.23   | 401.22    | -415.60   | 589.06    | -71.68   | 83.92    |
| g85P   | 0.20    | 9.00      | -116.08   | -46.23    | 97.58     | -1.86    | -0.92    |
| g89P   | 11.02   | -12.95    | -182.69   | 0.78      | -254.79   | -0.62    | -21.82   |
| g93P   | -410.96 | -2609.39  | 4912.38   | 1461.45   | 5322.03   | -93.89   | 835.71   |
| g97P   | -778.20 | -9318.63  | 6071.47   | -3995.94  | 7326.73   | -1535.17 | 1544.18  |
| g98P   | -774.65 | 3996.92   | -7326.57  | 2622.50   | -4851.36  | 1081.24  | -1988.54 |
| g105P  | -789.56 | -17929.69 | 3709.60   | -10085.17 | 10691.57  | -2745.22 | 1410.30  |
| g106P  | -771.31 | 10087.62  | -10690.58 | 9318.25   | -6072.91  | 2001.80  | -1728.41 |
| g163P  | 0.87    | 907.05    | 974.77    | -2497.24  | 7827.90   | -207.53  | 1148.78  |
| g164P  | -3.42   | 2497.23   | -7827.93  | -298.65   | -14791.86 | 287.05   | -2953.20 |
| g167P  | 14.16   | 298.64    | 14791.83  | -9997.17  | 15359.50  | -1266.19 | 3936.48  |
| g171P  | -0.02   | -12.24    | -138.97   | -534.67   | -81.17    | -71.36   | -28.72   |
| g175P  | 0.02    | 534.67    | 81.14     | -287.26   | 22.53     | 32.29    | 13.53    |
| g179P  | -0.09   | 287.26    | -22.56    | -907.05   | -974.80   | -80.91   | -130.20  |
| g261P  | -0.00   | 0.00      | 0.01      | -59.56    | 83.49     | -7.45    | 10.44    |
| g262P  | -0.02   | 59.56     | -83.47    | 13.00     | -137.43   | 9.08     | -27.63   |
| g322P  | -0.00   | -0.00     | -0.00     | -71.80    | -1.98     | -7.18    | -0.20    |
| g323P  | 0.00    | 71.80     | 1.98      | 57.83     | 0.49      | 12.96    | 0.25     |
| g1X    | -644.44 | 4921.73   | -1356.42  | 3295.72   | -918.40   | 334.89   | -92.54   |
| g1XY   | 652.89  | 5072.99   | 1298.15   | 3476.44   | 854.00    | 348.42   | 87.53    |
| g1Y    | 1307.29 | -3335.45  | 3289.32   | -2493.79  | 2244.92   | -237.78  | 226.19   |
| g13X   | 24.32   | -70.90    | 443.96    | -399.68   | 798.26    | -42.48   | 112.22   |
| g13XY  | -20.68  | -66.47    | -436.38   | -390.75   | -771.22   | -41.28   | -109.09  |
| g13Y   | -26.44  | 257.68    | -917.50   | 507.12    | -1022.20  | 69.11    | -175.19  |
| g14X   | 0.06    | 508.98    | 79.52     | 324.09    | 75.36     | 75.25    | 13.99    |
| g14XY  | -0.69   | 515.13    | -89.77    | 317.48    | -84.47    | 75.21    | -15.74   |
| g14Y   | 3.57    | -1889.70  | -568.32   | -909.08   | -319.50   | -252.80  | -80.19   |
| g17Y   | -22.55  | -507.39   | 1022.15   | -390.60   | 771.24    | -60.86   | 121.49   |
| g21X   | -0.31   | -324.09   | 317.48    | 84.47     | 0.45      | 0.45     | 0.62     |
| g29X   | -43.49  | 4222.49   | -2512.18  | 484.74    | -555.38   | 484.63   | -315.82  |
| g29XY  | 84.32   | 4149.39   | 2496.81   | 424.51    | 519.06    | 470.90   | 310.49   |
| g29Y   | 899.01  | -4153.92  | 2660.83   | -203.86   | 420.94    | -449.39  | 317.83   |
| g30X   | -52.34  | -1.10     | -2081.03  | -4628.67  | 1634.81   | -532.73  | -51.36   |
| g30XY  | 57.58   | -86.04    | 2053.41   | -4769.42  | -1579.30  | -558.70  | 54.57    |
| g30Y   | -454.64 | -1697.26  | 419.72    | 2207.21   | -4457.08  | 58.91    | -465.30  |
| g33X   | 271.56  | -349.82   | 549.09    | 128.42    | 2579.16   | -7.97    | 113.32   |
| g33XY  | -268.72 | -248.64   | -516.70   | 230.36    | -2555.02  | -0.62    | -111.27  |
| g33Y   | 343.32  | 41.17     | -399.64   | 903.82    | -1208.93  | 34.28    | -58.39   |
| g41X   | 35.80   | -301.43   | 164.43    | -198.92   | 279.59    | -29.09   | 25.83    |
| g41XY  | -24.84  | -293.08   | -164.34   | -195.14   | -279.07   | -28.39   | -25.80   |
| g41Y   | -25.27  | -126.15   | 448.26    | -195.07   | 279.08    | -18.69   | 42.29    |
| g42X   | 0.23    | 517.57    | 50.26     | 706.20    | 127.60    | 71.19    | 10.35    |
| g42XY  | -1.14   | 521.37    | -51.91    | 706.20    | -127.60   | 71.41    | -10.44   |
| g42Y   | -1.26   | -1017.44  | 494.70    | -1016.34  | 364.33    | -118.27  | 49.95    |
| g77Y   | 6.50    | -209.19   | 388.78    | -176.71   | 290.54    | -14.61   | 25.73    |
| g78X   | -0.55   | 46.56     | -69.43    | -65.02    | 54.63     | -0.70    | -0.56    |
| g81X   | -1.67   | 76.17     | -364.12   | 72.44     | -254.15   | 12.59    | 52.40    |
| g81XY  | -7.21   | 80.31     | 366.65    | 66.19     | 232.44    | 12.41    | 50.77    |
| g81Y   | -7.35   | 30.80     | 13.87     | 66.16     | -232.44   | 8.22     | -18.52   |
| g82X   | -0.02   | 90.55     | 440.32    | 87.32     | 505.17    | 15.07    | 80.13    |
| g82XY  | -0.44   | 98.64     | -446.32   | 87.32     | -505.17   | 15.76    | -80.64   |
| g82Y   | 1.59    | -346.66   | -420.33   | -415.59   | -589.06   | -64.60   | -85.54   |
| g85X   | -0.05   | -7.96     | -40.22    | 4.75      | 33.26     | -0.16    | -0.35    |
| g89Y   | -15.14  | -14.13    | 169.93    | -0.99     | 238.33    | -0.77    | 20.36    |
| g93X   | 33.53   | -715.40   | 407.93    | -4103.29  | 2507.82   | -392.71  | 237.64   |
| g93XY  | 4.66    | -539.77   | -416.26   | -4027.40  | -2498.02  | -372.21  | -236.69  |
| g93Y   | 448.14  | 390.88    | -1830.18  | 3937.56   | -2834.17  | 353.33   | -380.98  |
| g97X   | -184.69 | 4815.54   | 1476.19   | 204.93    | 2238.42   | 577.61   | 427.40   |
| g97XY  | 203.59  | 4894.94   | -1461.65  | 225.45    | -2203.87  | 589.10   | -421.75  |
| g97Y   | 788.30  | -9122.54  | -5973.27  | -3504.31  | -6847.06  | -1455.86 | -1477.58 |
| g98X   | -185.43 | -204.84   | -2238.37  | 692.84    | -366.46   | 79.55    | -424.57  |
| g98XY  | 204.36  | -225.35   | 2203.81   | 515.80    | 378.69    | 47.35    | 420.92   |
| g98Y   | 785.42  | 3505.34   | 6846.86   | -346.50   | 1802.96   | 515.94   | 1412.55  |
| g105X  | -179.56 | 10827.01  | 888.40    | 4180.06   | 6219.56   | 1467.70  | 695.25   |
| g105XY | 198.48  | 10990.90  | -978.91   | 4248.23   | -6154.43  | 1490.37  | -697.73  |
| g105Y  | 799.77  | -17740.74 | -3758.79  | -9989.66  | -10765.07 | -2717.32 | -1422.30 |
| g106X  | -187.66 | -4179.67  | -6219.58  | -4815.51  | -1475.93  | -926.00  | -792.28  |
| g106XY | 206.58  | -4247.82  | 6154.45   | -4894.90  | 1461.37   | -941.17  | 784.08   |
| g106Y  | 781.66  | 9992.16   | 10764.07  | 9122.15   | 5974.72   | 1971.70  | 1725.85  |

|        |        |         |           |          |           |          |          |
|--------|--------|---------|-----------|----------|-----------|----------|----------|
| g163X  | -0.08  | 268.09  | 1.20      | -2354.19 | -3590.06  | -271.95  | -467.85  |
| g163XY | 0.08   | 279.65  | -27.86    | -2348.17 | 3635.99   | -269.65  | 470.36   |
| g163Y  | -0.87  | 906.58  | -986.15   | -2506.09 | -7793.01  | -208.74  | -1145.70 |
| g164X  | 2.16   | 2354.19 | 3590.05   | -1709.11 | 7505.29   | 84.09    | 1446.25  |
| g164XY | -2.16  | 2348.16 | -3635.99  | -1698.84 | -7494.75  | 84.64    | -1450.84 |
| g164Y  | 3.47   | 2506.08 | 7793.05   | -365.75  | 14782.13  | 279.44   | 2947.35  |
| g167X  | -5.95  | 1709.11 | -7505.30  | -7014.16 | -8297.43  | -691.30  | -2059.28 |
| g167XY | 6.00   | 1698.83 | 7494.76   | -7064.68 | 8478.67   | -699.21  | 2081.49  |
| g167Y  | -14.02 | 365.74  | -14782.10 | -9828.05 | -15261.41 | -1235.35 | -3922.39 |
| g171X  | 0.01   | -55.77  | 66.41     | -262.48  | -195.47   | -41.50   | -16.83   |
| g171XY | -0.01  | -51.38  | -70.53    | -233.37  | 206.19    | -37.13   | 17.69    |
| g171Y  | 0.02   | -13.00  | 137.47    | -542.76  | 112.66    | -72.51   | 32.64    |
| g175X  | 0.09   | 262.48  | 195.46    | -870.92  | 418.44    | -79.33   | 80.04    |
| g175XY | -0.09  | 233.37  | -206.18   | -873.82  | -407.60   | -83.50   | -80.02   |
| g175Y  | -0.02  | 542.76  | -112.63   | -274.43  | -3.23     | 35.02    | -15.12   |
| g179X  | -0.03  | 870.92  | -418.45   | -268.09  | -1.20     | 78.57    | -54.69   |
| g179XY | 0.04   | 873.82  | 407.61    | -279.65  | 27.86     | 77.44    | 56.76    |
| g179Y  | 0.08   | 274.43  | 3.26      | -906.58  | 986.18    | -82.52   | 129.16   |
| g261X  | -0.00  | 0.00    | 0.00      | -110.58  | -54.82    | -13.82   | -6.85    |
| g261XY | 0.00   | -0.00   | -0.00     | -110.06  | 55.80     | -13.75   | 6.97     |
| g261Y  | 0.00   | 0.00    | -0.01     | -60.09   | -85.67    | -7.51    | -10.71   |
| g262X  | 0.01   | 110.58  | 54.82     | 51.38    | 70.54     | 20.24    | 15.66    |
| g262XY | -0.01  | 110.06  | -55.80    | 55.77    | -66.42    | 20.72    | -15.27   |
| g262Y  | 0.02   | 60.09   | 85.65     | 12.24    | 138.94    | 9.05     | 28.09    |
| g322X  | 0.00   | 0.00    | -0.00     | 57.83    | -0.49     | 5.78     | -0.05    |

# Summary of Clamp Capacities and Usages:

| Clamp Label | Force (kips) | Allowable (kips) | Usage (%) |
|-------------|--------------|------------------|-----------|
| SW1         | 13.39        | 50.00            | 26.79     |
| SW2         | 13.39        | 50.00            | 26.79     |
| 1A          | 18.64        | 50.00            | 37.28     |
| 1B          | 18.64        | 50.00            | 37.28     |
| 2A          | 18.65        | 50.00            | 37.30     |
| 2B          | 18.65        | 50.00            | 37.30     |
| 3A          | 18.64        | 50.00            | 37.27     |
| 3B          | 18.64        | 50.00            | 37.27     |
| 4           | 37.23        | 50.00            | 74.46     |
| 5           | 37.28        | 50.00            | 74.57     |
| 6           | 37.19        | 50.00            | 74.38     |
| A1T         | 0.83         | 25.00            | 3.30      |
| A1B         | 0.67         | 25.00            | 2.67      |
| A2T         | 0.83         | 25.00            | 3.30      |
| A2B         | 0.67         | 25.00            | 2.67      |
| A3T         | 0.83         | 25.00            | 3.30      |
| A3B         | 0.68         | 25.00            | 2.73      |
| COAX1       | 7.40         | 25.00            | 29.60     |
| COAX2       | 8.11         | 25.00            | 32.42     |

\*\*\* Analysis Results for Load Case No. 5 "WINDA" - Number of iterations in SAPS 12

Equilibrium Joint Positions and Rotations:

| Joint Label | X-Displ (ft) | Y-Displ (ft) | Z-Displ (ft) | X-Rot (deg) | Y-Rot (deg) | Z-Rot (deg) | X-Pos (ft)  | Y-Pos (ft) | Z-Pos (ft) |
|-------------|--------------|--------------|--------------|-------------|-------------|-------------|-------------|------------|------------|
| ZP          | 0            | 0            | 0            | 0.0000      | 0.0000      | 0.0000      | 22          | 22         | 1          |
| WP          | -0.005164    | 0.2743       | -0.03284     | -0.3037     | 0.0328      | -0.3997     | 4.995       | 5.274      | 116        |
| AP          | 0.001061     | 0.8061       | -0.05789     | -0.5674     | -0.0141     | -0.3990     | 5.001       | 5.806      | 177.9      |
| TOPP        | 0.0009542    | 0.8865       | -0.0592      | -0.5732     | 0.0000      | 0.0081      | 0.0009542   | 5.887      | 185.9      |
| SWP         | -0.0004852   | 0.8867       | -0.1609      | -0.5870     | 0.0000      | 0.0083      | -0.0004852  | 15.89      | 185.8      |
| TAP         | -0.001321    | 0.6511       | -0.1791      | 0.0000      | 0.0000      | 0.0000      | -0.001321   | 18.65      | 161.8      |
| TASQP       | 0.003472     | 0.6536       | 0.1924       | 0.0000      | 0.0000      | 0.0000      | 5.003       | -21.35     | 162.2      |
| MAP         | -0.002305    | 0.4421       | -0.2316      | 0.0000      | 0.0000      | 0.0000      | -0.002305   | 26.44      | 138.8      |
| MASQP       | 0.002699     | 0.4457       | 0.1983       | 0.0000      | 0.0000      | 0.0000      | 5.003       | -25.55     | 139.2      |
| BAP         | -0.002029    | 0.277        | -0.1357      | 0.0000      | 0.0000      | 0.0000      | -0.002029   | 21.28      | 115.9      |
| BASQP       | 0.001574     | 0.2767       | 0.1224       | 0.0000      | 0.0000      | 0.0000      | 5.002       | -20.72     | 116.1      |
| ZX          | 0            | 0            | 0            | 0.0000      | 0.0000      | 0.0000      | 22          | -22        | 1          |
| ZXY         | 0            | 0            | 0            | 0.0000      | 0.0000      | 0.0000      | -22         | -22        | 1          |
| ZY          | 0            | 0            | 0            | 0.0000      | 0.0000      | 0.0000      | 22          | 22         | 1          |
| WX          | 0.001737     | 0.2744       | 0.02152      | -0.3206     | -0.0106     | -0.1411     | 5.002       | -4.726     | 116        |
| WXY         | -0.001498    | 0.2736       | 0.02172      | -0.3202     | 0.0131      | 0.1478      | -5.001      | -4.726     | 116        |
| WY          | 0.003788     | 0.2734       | -0.03261     | -0.3035     | -0.0306     | 0.4056      | -4.996      | 5.273      | 116        |
| AX          | 0.001766     | 0.8066       | 0.03915      | -0.5754     | 0.0093      | -0.1414     | 5.002       | -4.193     | 178        |
| AXY         | 0.002363     | 0.8052       | 0.0395       | -0.5754     | -0.0047     | 0.1480      | -4.998      | -4.195     | 178        |
| AY          | 0.0003624    | 0.8046       | -0.05757     | -0.5672     | 0.0168      | 0.4049      | -5          | 5.805      | 177.9      |
| TOPX        | 0.002349     | 0.8869       | 0.03991      | -0.5710     | 0.0000      | 0.0079      | 0.002349    | -4.113     | 186        |
| SWX         | 0.00373      | 0.888        | 0.1409       | -0.5825     | 0.0000      | 0.0079      | 0.00373     | -14.11     | 186.1      |
| TASQY       | 0.003492     | 0.6524       | 0.1923       | 0.0000      | 0.0000      | 0.0000      | -4.997      | -21.35     | 162.2      |
| MASQY       | 0.002776     | 0.4447       | 0.1984       | 0.0000      | 0.0000      | 0.0000      | -4.997      | -25.56     | 139.2      |
| BASQY       | 0.001324     | 0.2759       | 0.1225       | 0.0000      | 0.0000      | 0.0000      | -4.999      | -20.72     | 116.1      |
| BS          | 0.001643     | 0.7273       | -0.05613     | -0.5575     | 0.0039      | -0.3992     | 5.002       | 5.727      | 169.9      |
| CS          | 0.0002256    | 0.6503       | -0.05349     | -0.5496     | -0.0070     | -0.3991     | 5           | 5.65       | 161.9      |
| DS          | 0.0009331    | 0.5775       | -0.05167     | -0.5334     | -0.0090     | -0.3990     | 5.001       | 5.578      | 154.3      |
| ES          | 0.001481     | 0.508        | -0.04861     | -0.5080     | -0.0072     | -0.3990     | 5.001       | 5.508      | 146.6      |
| FS          | 0.000596     | 0.4422       | -0.0445      | -0.4692     | 0.0245      | -0.3993     | 5.001       | 5.442      | 139        |
| GS          | -0.0007288   | 0.3812       | -0.04167     | -0.4376     | -0.0389     | -0.3988     | 4.999       | 5.381      | 131.3      |
| HS          | 0.004699     | 0.3248       | -0.03753     | -0.4145     | 0.0221      | -0.3992     | 5.005       | 5.325      | 123.6      |
| IS          | 0.005409     | 0.2238       | -0.03315     | -0.1889     | 0.0370      | -0.3776     | 6.484       | 6.702      | 106        |
| JS          | -0.001823    | 0.1838       | -0.03419     | -0.1684     | 0.0726      | -0.3657     | 7.881       | 8.066      | 96.47      |
| KS          | 0.0002747    | 0.1528       | -0.03319     | -0.1314     | 0.0378      | -0.3617     | 9.139       | 9.292      | 87.97      |
| LS          | -0.001119    | 0.1335       | -0.03241     | -0.1287     | 0.0706      | -0.3541     | 10.02       | 10.16      | 81.97      |
| MS          | -0.000426    | 0.09539      | -0.03077     | -0.0923     | 0.0450      | -0.3743     | 11.8        | 11.9       | 69.97      |
| NS          | -0.001221    | 0.07121      | -0.02721     | -0.0592     | 0.0205      | -0.3142     | 13.2        | 13.28      | 60.47      |
| OS          | -0.0001967   | 0.0174       | -0.01937     | -0.0506     | 0.0385      | -0.2412     | 17.2        | 17.21      | 33.48      |
| PS          | -0.00127     | 0.006949     | -0.0158      | -0.0021     | 0.0442      | -0.2785     | 18.45       | 18.46      | 24.98      |
| L1S         | -0.1493      | 0.007889     | -0.02659     | -0.0116     | 0.0070      | -0.2151     | 18.3        | 7.389      | 24.97      |
| L3S         | -0.0001078   | 0.1552       | 0.02183      | 0.0045      | 0.1955      | -0.7350     | 7.381       | 18.61      | 25.02      |
| O1S         | 0.05858      | 0.01647      | 0.00643      | -0.0575     | -0.0054     | 0.0898      | 17.25       | 0.01647    | 33.51      |
| O2S         | -9.444e-005  | -0.04212     | -0.009717    | -0.0503     | 0.0012      | 0.0003      | -9.444e-005 | 17.15      | 33.49      |
| M1S         | -0.03006     | 0.09518      | -0.007643    | -0.1415     | 0.0177      | 0.1387      | 11.77       | 0.09518    | 69.99      |
| M2S         | -0.00189     | 0.3313       | 0.002075     | -0.0753     | 0.0009      | 0.0028      | -0.00189    | 12.13      | 70         |
| BMS         | 0.0006896    | 0.2757       | 0.07473      | 0.0000      | 0.0000      | 0.0000      | 5.001       | -12.72     | 116.1      |
| BMXS        | -0.000873    | 0.3003       | 0.07469      | 0.0000      | 0.0000      | 0.0000      | 4.999       | -12.7      | 119.9      |
| MMS         | 0.003224     | 0.4442       | 0.1191       | 0.0000      | 0.0000      | 0.0000      | 5.003       | -15.06     | 139.1      |
| MMXS        | 0.001215     | 0.4755       | 0.119        | 0.0000      | 0.0000      | 0.0000      | 5.001       | -15.02     | 143        |
| TMS         | 0.003416     | 0.6523       | 0.1177       | 0.0000      | 0.0000      | 0.0000      | 5.003       | -12.85     | 162.1      |
| TMXS        | 0.002226     | 0.6894       | 0.1175       | 0.0000      | 0.0000      | 0.0000      | 5.002       | -12.81     | 166.1      |
| BPMS        | -0.002744    | 0.2759       | -0.08561     | 0.0000      | 0.0000      | 0.0000      | 2.497       | 13.28      | 115.9      |
| BPXMS       | 0.02995      | 0.00003      | -0.08569     | 0.0000      | 0.0000      | 0.0000      | 2.53        | 13.31      | 119.7      |
| BX          | 0.0007946    | 0.7272       | 0.0384       | -0.5562     | -0.0020     | -0.1413     | 5.001       | -4.273     | 170        |
| BXY         | 0.0027       | 0.7258       | 0.03873      | -0.5554     | 0.0065      | 0.1479      | -4.997      | -4.274     | 170        |
| BY          | -0.0006106   | 0.7259       | -0.05579     | -0.5564     | -0.0008     | 0.4051      | -5.001      | 5.726      | 169.9      |
| CX          | 0.001322     | 0.6509       | 0.03701      | -0.5460     | -0.0000     | -0.1413     | 5.001       | -4.349     | 162        |
| CXY         | 0.001581     | 0.6497       | 0.0373       | -0.5451     | 0.0040      | 0.1479      | -4.998      | -4.35      | 162        |
| CY          | 0.000352     | 0.6491       | -0.05315     | -0.5489     | 0.0102      | 0.4050      | -5          | 5.649      | 161.9      |
| DX          | 0.000674     | 0.578        | 0.03611      | -0.5401     | 0.0087      | -0.1414     | 5.001       | -4.422     | 154.4      |

|       |             |          |            |         |         |         |            |         |       |
|-------|-------------|----------|------------|---------|---------|---------|------------|---------|-------|
| DKY   | 0.001718    | 0.5769   | 0.03639    | -0.5394 | -0.0049 | 0.1480  | -4.998     | -4.423  | 154.4 |
| DY    | -0.0007598  | 0.5764   | -0.05136   | -0.5328 | 0.0119  | 0.4050  | -5.001     | 5.576   | 154.3 |
| EX    | -0.0006754  | 0.5076   | 0.03407    | -0.5055 | 0.0021  | -0.1413 | 4.999      | -4.492  | 146.7 |
| EKY   | 0.002574    | 0.5066   | 0.03433    | -0.5050 | 0.0016  | 0.1480  | -4.997     | -4.493  | 146.7 |
| EY    | -0.001659   | 0.507    | -0.04834   | -0.5074 | 0.0097  | 0.4050  | -5.002     | -5.507  | 146.6 |
| FX    | 0.0001224   | 0.4428   | 0.03099    | -0.4685 | -0.0122 | -0.1412 | 5          | -4.557  | 139   |
| FKY   | 0.001307    | 0.4418   | 0.03124    | -0.4681 | 0.0155  | 0.1478  | -4.999     | -4.558  | 139   |
| FY    | -0.001086   | 0.4412   | -0.04425   | -0.4689 | -0.0222 | 0.4053  | -5.001     | 5.441   | 139   |
| GK    | 9.225e-005  | 0.3813   | 0.02885    | -0.4432 | 0.0223  | -0.1415 | 5          | -4.619  | 131.4 |
| GKY   | 0.0009156   | 0.3804   | 0.02909    | -0.4429 | -0.0192 | 0.1481  | -4.999     | -4.62   | 131.4 |
| GY    | -6.575e-005 | 0.3803   | -0.04143   | -0.4372 | 0.0412  | 0.4048  | -5         | 5.38    | 131.3 |
| HX    | -0.003043   | 0.3246   | 0.02556    | -0.4076 | -0.0135 | -0.1413 | 4.997      | -4.675  | 123.7 |
| HKY   | 0.003652    | 0.3237   | 0.02578    | -0.4072 | 0.0165  | 0.1479  | -4.996     | -4.676  | 123.7 |
| HY    | -0.005786   | 0.3239   | -0.0373    | -0.4141 | -0.0199 | 0.4052  | -5.006     | 5.324   | 123.6 |
| IX    | -0.004177   | 0.2238   | 0.02319    | -0.2335 | -0.0048 | -0.1294 | 6.474      | -6.254  | 106   |
| IXY   | 0.00423     | 0.2228   | 0.02341    | -0.2334 | 0.0067  | 0.1359  | -6.474     | -6.255  | 106   |
| IY    | -0.007308   | 0.2228   | -0.03288   | -0.1890 | -0.0349 | 0.3834  | -6.486     | 6.701   | 106   |
| JX    | -0.0005126  | 0.1836   | 0.02449    | -0.2011 | -0.0310 | -0.1206 | 7.882      | -7.699  | 96.52 |
| JKY   | 0.0004258   | 0.1825   | 0.02472    | -0.2010 | 0.0327  | 0.1269  | -7.882     | -7.7    | 96.52 |
| JY    | -0.0005533  | 0.1827   | -0.03388   | -0.1681 | -0.0706 | 0.3713  | -7.883     | 8.065   | 96.47 |
| KX    | -0.0009936  | 0.153    | 0.02428    | -0.1697 | -0.0067 | -0.1198 | 9.138      | -8.986  | 88.02 |
| KKY   | 0.0007964   | 0.1518   | 0.02452    | -0.1694 | 0.0084  | 0.1258  | -9.138     | -8.987  | 88.02 |
| KY    | -0.003051   | 0.1516   | -0.03283   | -0.1313 | -0.0360 | 0.3671  | -9.142     | 9.291   | 87.97 |
| LX    | -0.00102    | 0.1332   | 0.02382    | -0.1684 | -0.0168 | -0.1181 | 10.03      | -9.893  | 82.02 |
| LKY   | 0.0007533   | 0.132    | 0.02406    | -0.1674 | 0.0180  | 0.1239  | -10.03     | -9.894  | 82.02 |
| LY    | -0.001923   | 0.1323   | -0.03202   | -0.1280 | -0.0687 | 0.3594  | -10.03     | 10.16   | 81.97 |
| MX    | -0.000595   | 0.0965   | 0.02266    | -0.1200 | -0.0110 | -0.1279 | 11.8       | -11.7   | 70.02 |
| MKY   | 0.0003855   | 0.09453  | 0.02286    | -0.1188 | 0.0114  | 0.1333  | -11.8      | -11.71  | 70.02 |
| MY    | 0.0004861   | 0.09428  | -0.03025   | -0.0908 | -0.0411 | 0.3793  | -11.8      | 11.89   | 69.97 |
| NX    | -0.002365   | 0.07615  | 0.02048    | -0.0916 | 0.0011  | -0.1185 | 13.2       | -13.13  | 60.52 |
| NKY   | 0.002205    | 0.07506  | 0.02065    | -0.0903 | -0.0007 | 0.1233  | -13.2      | -13.13  | 60.52 |
| NY    | -0.003066   | 0.0733   | -0.02735   | -0.0677 | -0.0220 | 0.3180  | -13.21     | 13.28   | 60.47 |
| OX    | -0.003522   | 0.0199   | 0.01477    | -0.0609 | -0.0480 | 0.1516  | 17.19      | -17.18  | 33.51 |
| OKY   | 0.003543    | 0.01958  | 0.01479    | -0.0598 | 0.0481  | 0.1536  | -17.19     | -17.18  | 33.51 |
| OY    | -3.405e-006 | 0.01716  | -0.01931   | -0.0500 | -0.0429 | 0.2423  | -17.2      | 17.21   | 33.48 |
| PK    | 0.001233    | 0.009539 | 0.01259    | -0.0283 | -0.0404 | -0.1375 | 18.45      | -18.44  | 25.01 |
| PKY   | -0.001191   | 0.009291 | 0.01261    | -0.0277 | 0.0406  | 0.1390  | -18.45     | -18.44  | 25.01 |
| PY    | 0.001225    | 0.006714 | -0.01579   | -0.0019 | -0.0440 | 0.2798  | -18.45     | 18.46   | 24.98 |
| LIX   | 0.003039    | 0.009353 | 0.006065   | -0.1001 | -0.0229 | 0.4046  | 18.48      | -7.372  | 25.01 |
| LIXY  | -0.003041   | 0.009104 | 0.006148   | -0.1002 | 0.0232  | -0.4049 | -18.48     | -7.372  | 25.01 |
| LIY   | 0.1494      | 0.006655 | -0.02662   | -0.0117 | -0.0067 | 0.2151  | -18.3      | 7.389   | 24.97 |
| LIX   | 0.00136     | 0.0388   | -0.0003767 | -0.0286 | -0.0583 | -0.1147 | 7.382      | -18.41  | 25    |
| LIXY  | -0.001317   | 0.03861  | -0.0003551 | -0.0283 | 0.0583  | 0.1154  | -7.382     | -18.41  | 25    |
| L3Y   | 5.264e-005  | 0.1551   | 0.02174    | 0.0046  | -0.1955 | 0.7356  | -7.381     | 18.61   | 25.02 |
| O1Y   | -0.05865    | 0.01625  | 0.006463   | -0.0579 | 0.0032  | -0.0900 | -17.25     | 0.01625 | 33.51 |
| O2X   | 2.13e-005   | 0.0755   | -0.0071    | -0.0621 | 0.0000  | 0.0003  | 2.13e-005  | -17.12  | 33.49 |
| M1Y   | 0.02794     | 0.09408  | -0.007294  | -0.1410 | -0.0156 | -0.1283 | -11.77     | 0.09408 | 69.99 |
| M2X   | -0.0001084  | 0.1922   | 0.0104     | -0.1219 | 0.0006  | 0.0027  | -0.0001084 | -11.61  | 70.01 |
| BMY   | 0.0008785   | 0.2748   | 0.0749     | 0.0000  | 0.0000  | 0.0000  | -4.999     | -12.73  | 116.1 |
| BKXY  | 0.002644    | 0.2984   | 0.07486    | 0.0000  | 0.0000  | 0.0000  | -4.997     | -12.7   | 119.9 |
| BMY   | 0.000228    | 0.4433   | 0.1193     | 0.0000  | 0.0000  | 0.0000  | -5         | -15.06  | 139.1 |
| BKXY  | 0.002496    | 0.4745   | 0.1192     | 0.0000  | 0.0000  | 0.0000  | -4.998     | -15.03  | 143   |
| THY   | 0.001518    | 0.6511   | 0.1178     | 0.0000  | 0.0000  | 0.0000  | -4.998     | -12.85  | 162.1 |
| TKXY  | 0.003032    | 0.6881   | 0.1177     | 0.0000  | 0.0000  | 0.0000  | -4.997     | -12.81  | 166.1 |
| BPMY  | -0.002749   | 0.2764   | -0.08552   | 0.0000  | 0.0000  | 0.0000  | -2.503     | 13.28   | 115.9 |
| BPMXY | -0.03173    | 0.3096   | -0.08574   | 0.0000  | 0.0000  | 0.0000  | -2.532     | 13.31   | 119.7 |

# Joint Support Reactions:

| Joint Label | X-Force<br>(kips) | Usage | X-Y-Force<br>(kips) | Usage | Y<br>(kips) | Usage | Z-Force Comp.<br>(kips) | Usage  | Uplift<br>(ft-k) | X-Moment<br>(ft-k) | Usage | X-M. Y-Moment<br>(ft-k) | Usage | Y-M. Z-Moment<br>(ft-k) | Usage | Z-M. Max.<br>Usage |
|-------------|-------------------|-------|---------------------|-------|-------------|-------|-------------------------|--------|------------------|--------------------|-------|-------------------------|-------|-------------------------|-------|--------------------|
| ZP          | -44.394           | 0.0   | -50.655             | 0.0   | 298.356     | 0.0   | 0.0                     | -0.676 | 0.0              | 0.335              | 0.0   | 2.753                   | 0.0   | 0.0                     | 0.0   | 0.0                |
| ZK          | 40.505            | 0.0   | -43.214             | 0.0   | -252.161    | 0.0   | 0.0                     | -0.073 | 0.0              | -0.874             | 0.0   | 1.491                   | 0.0   | 0.0                     | 0.0   | 0.0                |
| ZXY         | -40.461           | 0.0   | -43.100             | 0.0   | -251.764    | 0.0   | 0.0                     | -0.108 | 0.0              | 0.864              | 0.0   | -1.499                  | 0.0   | 0.0                     | 0.0   | 0.0                |
| ZY          | 44.350            | 0.0   | -50.444             | 0.0   | 297.530     | 0.0   | 0.0                     | -0.716 | 0.0              | -0.315             | 0.0   | -2.757                  | 0.0   | 0.0                     | 0.0   | 0.0                |

# Joint Displacements, Loads and Member Forces on Joints:



| Joint X<br>Label | External X<br>Load<br>(kips) | External Y<br>Load<br>(kips) | External Z<br>Load<br>(kips) | Member X<br>Force<br>(kips) | Member Y<br>Force<br>(kips) | Member Z<br>Force<br>(kips) | X<br>Disp.<br>(ft) | Y<br>Disp.<br>(ft) | Z<br>Disp.<br>(ft) |
|------------------|------------------------------|------------------------------|------------------------------|-----------------------------|-----------------------------|-----------------------------|--------------------|--------------------|--------------------|
| ZP               | 0.0000                       | 0.5700                       | -1.0365                      | 44.3938                     | 50.0849                     | -297.3197                   | 0.0000             | 0.0000             | 0.0000             |
| WP               | 0.0000                       | 0.6662                       | -1.9828                      | -0.0000                     | -0.6662                     | 1.9828                      | -0.0052            | 0.2743             | -0.0328            |
| AP               | 0.0000                       | 0.8953                       | -0.2981                      | 0.0000                      | -0.8953                     | 0.2981                      | 0.0011             | 0.8061             | -0.0579            |
| TOPP             | 0.0000                       | 0.1466                       | -0.2032                      | 0.0000                      | -0.1466                     | 0.2032                      | 0.0010             | 0.8865             | -0.0592            |
| SWP              | 0.0000                       | 6.3983                       | -0.4287                      | -0.0000                     | -6.3983                     | 0.4287                      | -0.0005            | 0.8867             | -0.1609            |
| TAP              | 0.0000                       | 20.9159                      | -2.1485                      | 0.0000                      | -20.9159                    | 2.1485                      | -0.0013            | 0.6511             | -0.1791            |
| TASQP            | 0.0000                       | 10.4920                      | -1.1180                      | 0.0000                      | -10.4920                    | 1.1180                      | 0.0035             | 0.6536             | 0.1924             |
| MAP              | 0.0000                       | 20.9414                      | -2.4225                      | 0.0000                      | -20.9414                    | 2.4225                      | -0.0023            | 0.4421             | -0.2316            |
| MASQP            | 0.0000                       | 10.5013                      | -1.1677                      | 0.0000                      | -10.5013                    | 1.1677                      | 0.0027             | 0.4457             | 0.1983             |
| BAP              | 0.0000                       | 20.8532                      | -2.0609                      | 0.0000                      | -20.8532                    | 2.0609                      | -0.0020            | 0.2770             | -0.1357            |
| BASQP            | 0.0000                       | 10.4916                      | -1.1123                      | 0.0000                      | -10.4916                    | 1.1123                      | 0.0016             | 0.2767             | 0.1224             |
| EK               | 0.0000                       | 0.5700                       | -1.0365                      | -40.5048                    | 42.5297                     | 253.1978                    | 0.0000             | 0.0000             | 0.0000             |
| ZXY              | 0.0000                       | 0.5700                       | -1.0365                      | 40.4614                     | 42.5297                     | 252.8000                    | 0.0000             | 0.0000             | 0.0000             |
| ZY               | 0.0000                       | 0.5700                       | -1.0365                      | -44.3504                    | 49.8737                     | -296.4940                   | 0.0000             | 0.0000             | 0.0000             |
| WK               | 0.0000                       | 0.6495                       | -1.1435                      | -0.0000                     | -0.6495                     | 1.1435                      | 0.0017             | 0.2744             | 0.0215             |
| WKY              | 0.0000                       | 0.6495                       | -1.1435                      | 0.0000                      | -0.6495                     | 1.1435                      | -0.0015            | 0.2736             | 0.0217             |
| WY               | 0.0000                       | 0.6344                       | -1.0954                      | 0.0000                      | -0.6344                     | 1.0954                      | 0.0038             | 0.2734             | -0.0326            |
| AX               | 0.0000                       | 0.8953                       | -0.2981                      | 0.0000                      | -0.8953                     | 0.2981                      | 0.0018             | 0.8066             | 0.0392             |
| AXY              | 0.0000                       | 0.8953                       | -0.2981                      | -0.0000                     | -0.8953                     | 0.2981                      | 0.0024             | 0.8052             | 0.0395             |
| AY               | 0.0000                       | 0.1663                       | -0.2981                      | 0.0000                      | -0.1663                     | 0.2981                      | 0.0004             | 0.8046             | -0.0576            |
| TOPX             | 0.0000                       | 0.1466                       | -0.2032                      | -0.0000                     | -0.1466                     | 0.2032                      | 0.0023             | 0.8869             | 0.0399             |
| SWX              | 0.0000                       | 6.3983                       | -0.4287                      | 0.0000                      | -6.3983                     | 0.4287                      | 0.0037             | 0.8880             | 0.1409             |
| TASQY            | 0.0000                       | 10.4920                      | -1.1180                      | 0.0000                      | -10.4920                    | 1.1180                      | 0.0035             | 0.6524             | 0.1923             |
| MASQY            | 0.0000                       | 10.5013                      | -1.1677                      | 0.0000                      | -10.5013                    | 1.1677                      | 0.0028             | 0.4447             | 0.1984             |
| BASQY            | 0.0000                       | 10.4916                      | -1.1123                      | 0.0000                      | -10.4916                    | 1.1123                      | 0.0013             | 0.2759             | 0.1225             |
| BS               | 0.0000                       | 0.7110                       | -0.3962                      | 0.0000                      | -0.7110                     | 0.3962                      | 0.0016             | 0.7273             | -0.0561            |
| CS               | 0.0000                       | 0.4182                       | -1.3978                      | 0.0000                      | -0.4182                     | 1.3978                      | 0.0002             | 0.6503             | -0.0535            |
| DS               | 0.0000                       | 0.3590                       | -0.4461                      | 0.0000                      | -0.3590                     | 0.4461                      | 0.0009             | 0.5775             | -0.0517            |
| ES               | 0.0000                       | 0.3913                       | -0.5179                      | -0.0000                     | -0.3913                     | 0.5179                      | 0.0015             | 0.5080             | -0.0486            |
| FS               | 0.0000                       | 0.5364                       | -0.9482                      | -0.0000                     | -0.5364                     | 0.9482                      | 0.0006             | 0.4422             | -0.0445            |
| GS               | 0.0000                       | 0.4595                       | -0.7603                      | -0.0000                     | -0.4595                     | 0.7603                      | -0.0007            | 0.3812             | -0.0417            |
| HS               | 0.0000                       | 0.4725                       | -0.7986                      | -0.0000                     | -0.4725                     | 0.7986                      | 0.0047             | 0.3248             | -0.0375            |
| IS               | 0.0000                       | 0.5532                       | -1.0436                      | -0.0000                     | -0.5532                     | 1.0436                      | 0.0054             | 0.2238             | -0.0332            |
| JS               | 0.0000                       | 0.5132                       | -0.9932                      | 0.0000                      | -0.5132                     | 0.9932                      | -0.0018            | 0.1838             | -0.0342            |
| KS               | 0.0000                       | 0.4694                       | -0.8737                      | 0.0000                      | -0.4694                     | 0.8737                      | 0.0003             | 0.1528             | -0.0332            |
| LS               | 0.0000                       | 0.6693                       | -1.1205                      | -0.0000                     | -0.6693                     | 1.1205                      | -0.0011            | 0.1335             | -0.0324            |
| MS               | 0.0000                       | 0.3123                       | -0.8215                      | 0.0000                      | -0.3123                     | 0.8215                      | -0.0043            | 0.0954             | -0.0308            |
| NS               | 0.0000                       | 1.1114                       | -2.0289                      | -0.0000                     | -1.1114                     | 2.0289                      | -0.0012            | 0.0743             | -0.0279            |
| OS               | 0.0000                       | 0.9306                       | -1.8124                      | -0.0000                     | -0.9306                     | 1.8124                      | -0.0002            | 0.0174             | -0.0194            |
| PS               | 0.0000                       | 0.4651                       | -1.1997                      | 0.0000                      | -0.4651                     | 1.1997                      | -0.0013            | 0.0069             | -0.0158            |
| L1S              | 0.0000                       | 0.2846                       | -0.4185                      | -0.0000                     | -0.2846                     | 0.4185                      | -0.1493            | 0.0079             | -0.0266            |
| L3S              | 0.0000                       | 0.5589                       | -0.4185                      | -0.0000                     | -0.5589                     | 0.4185                      | -0.0001            | 0.1552             | 0.0218             |
| O1S4             | 0.0000                       | 0.2814                       | -0.4970                      | 0.0000                      | -0.2814                     | 0.4970                      | 0.0586             | 0.0165             | -0.0214            |
| O2S              | 0.0000                       | 0.6130                       | -0.4970                      | 0.0000                      | -0.6130                     | 0.4970                      | -0.0001            | -0.0421            | -0.0097            |
| M1S              | 0.0000                       | 0.2385                       | -0.3169                      | 0.0000                      | -0.2385                     | 0.3169                      | -0.0301            | 0.0952             | -0.0076            |
| M2S              | 0.0000                       | 0.4956                       | -0.3169                      | 0.0000                      | -0.4956                     | 0.3169                      | -0.0019            | 0.3313             | 0.0021             |
| BMS              | 0.0000                       | 0.0815                       | -0.1937                      | 0.0000                      | -0.0815                     | 0.1937                      | 0.0007             | 0.2757             | 0.0747             |
| BKXS             | 0.0000                       | 0.0460                       | -0.0557                      | -0.0000                     | -0.0460                     | 0.0557                      | -0.0009            | 0.3003             | 0.0747             |
| MXS              | 0.0000                       | 0.0956                       | -0.2895                      | 0.0000                      | -0.0956                     | 0.2895                      | 0.0032             | 0.4442             | 0.1191             |
| MMXS             | 0.0000                       | 0.0541                       | -0.0816                      | 0.0000                      | -0.0541                     | 0.0816                      | 0.0012             | 0.4755             | 0.1190             |
| THS              | 0.0000                       | 0.0819                       | -0.2033                      | 0.0000                      | -0.0819                     | 0.2033                      | 0.0034             | 0.6523             | 0.1177             |
| THXS             | 0.0000                       | 0.0480                       | -0.0589                      | 0.0000                      | -0.0480                     | 0.0589                      | 0.0022             | 0.6894             | 0.1175             |
| BFMS             | 0.0000                       | 0.0638                       | -0.1039                      | 0.0000                      | -0.0638                     | 0.1039                      | -0.0027            | 0.2759             | -0.0856            |
| BPMXS            | 0.0000                       | 0.0528                       | -0.0577                      | 0.0000                      | -0.0577                     | 0.0577                      | 0.0300             | 0.3103             | -0.0859            |
| BX               | 0.0000                       | 0.6956                       | -0.3829                      | 0.0000                      | -0.6956                     | 0.3829                      | 0.0008             | 0.7272             | 0.0384             |
| BXY              | 0.0000                       | 0.6956                       | -0.3829                      | -0.0000                     | -0.6956                     | 0.3829                      | 0.0027             | 0.7258             | 0.0387             |
| BY               | 0.0000                       | 0.2640                       | -0.2492                      | -0.0000                     | -0.2640                     | 0.2492                      | -0.0006            | 0.7259             | -0.0558            |
| CX               | 0.0000                       | 0.4324                       | -0.5751                      | 0.0000                      | -0.4324                     | 0.5751                      | 0.0013             | 0.6509             | 0.0370             |
| CXY              | 0.0000                       | 0.4324                       | -0.5751                      | 0.0000                      | -0.4324                     | 0.5751                      | 0.0016             | 0.6497             | 0.0373             |
| CY               | 0.0000                       | 0.4182                       | -0.5358                      | -0.0000                     | -0.4182                     | 0.5358                      | 0.0004             | 0.6491             | -0.0531            |
| DX               | 0.0000                       | 0.3590                       | -0.4461                      | 0.0000                      | -0.3590                     | 0.4461                      | 0.0007             | 0.5780             | 0.0361             |
| DXY              | 0.0000                       | 0.3590                       | -0.4461                      | -0.0000                     | -0.3590                     | 0.4461                      | 0.0017             | 0.5769             | 0.0364             |
| DY               | 0.0000                       | 0.3590                       | -0.4461                      | -0.0000                     | -0.3590                     | 0.4461                      | -0.0008            | 0.5764             | -0.0514            |
| EX               | 0.0000                       | 0.3725                       | -0.4914                      | 0.0000                      | -0.3725                     | 0.4914                      | -0.0007            | 0.5076             | 0.0341             |
| EXY              | 0.0000                       | 0.3725                       | -0.4914                      | -0.0000                     | -0.3725                     | 0.4914                      | 0.0026             | 0.5066             | 0.0343             |
| EY               | 0.0000                       | 0.3913                       | -0.5179                      | 0.0000                      | -0.3913                     | 0.5179                      | -0.0017            | 0.5070             | -0.0483            |

|       |        |        |         |         |         |        |         |        |         |
|-------|--------|--------|---------|---------|---------|--------|---------|--------|---------|
| FX    | 0.0000 | 0.5526 | -0.9234 | -0.0000 | -0.5526 | 0.9234 | 0.0001  | 0.4428 | 0.0310  |
| FXY   | 0.0000 | 0.5526 | -0.9234 | 0.0000  | -0.5526 | 0.9234 | 0.0013  | 0.4418 | 0.0312  |
| FY    | 0.0000 | 0.5364 | -0.9482 | 0.0000  | -0.5364 | 0.9482 | -0.0011 | 0.4412 | -0.0443 |
| GX    | 0.0000 | 0.4595 | -0.7603 | -0.0000 | -0.4595 | 0.7603 | 0.0001  | 0.3813 | 0.0289  |
| GXY   | 0.0000 | 0.4595 | -0.7603 | 0.0000  | -0.4595 | 0.7603 | -0.0001 | 0.3804 | 0.0291  |
| GY    | 0.0000 | 0.4595 | -0.7603 | 0.0000  | -0.4595 | 0.7603 | 0.0001  | 0.3803 | -0.0414 |
| HX    | 0.0000 | 0.4704 | -0.7979 | -0.0000 | -0.4704 | 0.7979 | -0.0030 | 0.3246 | 0.0256  |
| HXY   | 0.0000 | 0.4704 | -0.7979 | 0.0000  | -0.4704 | 0.7979 | 0.0037  | 0.3237 | 0.0258  |
| HY    | 0.0000 | 0.4725 | -0.7986 | 0.0000  | -0.4725 | 0.7986 | -0.0058 | 0.3239 | -0.0373 |
| IX    | 0.0000 | 0.5532 | -1.0436 | 0.0000  | -0.5532 | 1.0436 | -0.0042 | 0.2238 | 0.0232  |
| IXY   | 0.0000 | 0.5532 | -1.0436 | -0.0000 | -0.5532 | 1.0436 | 0.0042  | 0.2228 | 0.0234  |
| IY    | 0.0000 | 0.5532 | -1.0436 | 0.0000  | -0.5532 | 1.0436 | -0.0073 | 0.2228 | -0.0329 |
| JX    | 0.0000 | 0.5132 | -0.9932 | 0.0000  | -0.5132 | 0.9932 | -0.0005 | 0.1836 | 0.0245  |
| JXY   | 0.0000 | 0.5132 | -0.9932 | -0.0000 | -0.5132 | 0.9932 | 0.0004  | 0.1825 | -0.0247 |
| JY    | 0.0000 | 0.5132 | -0.9932 | 0.0000  | -0.5132 | 0.9932 | -0.0006 | 0.1827 | -0.0339 |
| KX    | 0.0000 | 0.4694 | -0.8737 | 0.0000  | -0.4694 | 0.8737 | -0.0010 | 0.1530 | 0.0243  |
| KXY   | 0.0000 | 0.4694 | -0.8737 | -0.0000 | -0.4694 | 0.8737 | 0.0008  | 0.1518 | 0.0245  |
| KY    | 0.0000 | 0.4694 | -0.8737 | -0.0000 | -0.4694 | 0.8737 | -0.0031 | 0.1516 | -0.0328 |
| LX    | 0.0000 | 0.6693 | -1.1205 | -0.0000 | -0.6693 | 1.1205 | -0.0010 | 0.1332 | 0.0238  |
| LXY   | 0.0000 | 0.6693 | -1.1205 | 0.0000  | -0.6693 | 1.1205 | 0.0008  | 0.1320 | 0.0241  |
| LY    | 0.0000 | 0.6693 | -1.1205 | 0.0000  | -0.6693 | 1.1205 | -0.0019 | 0.1323 | -0.0320 |
| MX    | 0.0000 | 0.3123 | -0.8215 | -0.0000 | -0.3123 | 0.8215 | -0.0006 | 0.0956 | 0.0227  |
| MXY   | 0.0000 | 0.3123 | -0.8215 | 0.0000  | -0.3123 | 0.8215 | 0.0004  | 0.0945 | 0.0229  |
| MY    | 0.0000 | 0.3123 | -0.8215 | -0.0000 | -0.3123 | 0.8215 | -0.0005 | 0.0943 | -0.0303 |
| NX    | 0.0000 | 1.1114 | -2.0289 | 0.0000  | -1.1114 | 2.0289 | -0.0024 | 0.0761 | 0.0205  |
| MXY   | 0.0000 | 1.1114 | -2.0289 | -0.0000 | -1.1114 | 2.0289 | 0.0022  | 0.0751 | 0.0207  |
| NY    | 0.0000 | 1.1114 | -2.0289 | 0.0000  | -1.1114 | 2.0289 | -0.0031 | 0.0733 | -0.0273 |
| OX    | 0.0000 | 0.9306 | -1.8124 | 0.0000  | -0.9306 | 1.8124 | -0.0035 | 0.0199 | 0.0148  |
| OKY   | 0.0000 | 0.9306 | -1.8124 | -0.0000 | -0.9306 | 1.8124 | 0.0035  | 0.0196 | 0.0148  |
| OY    | 0.0000 | 0.9306 | -1.8124 | 0.0000  | -0.9306 | 1.8124 | -0.0000 | 0.0172 | -0.0193 |
| PX    | 0.0000 | 0.4651 | -1.1997 | -0.0000 | -0.4651 | 1.1997 | 0.0012  | 0.0095 | 0.0126  |
| PXY   | 0.0000 | 0.4651 | -1.1997 | 0.0000  | -0.4651 | 1.1997 | -0.0012 | 0.0093 | 0.0126  |
| PY    | 0.0000 | 0.4651 | -1.1997 | -0.0000 | -0.4651 | 1.1997 | 0.0012  | 0.0067 | -0.0158 |
| L1X   | 0.0000 | 0.2846 | -0.4185 | 0.0000  | -0.2846 | 0.4185 | 0.0304  | 0.0094 | 0.0061  |
| L1XY  | 0.0000 | 0.2846 | -0.4185 | -0.0000 | -0.2846 | 0.4185 | -0.0304 | 0.0091 | 0.0061  |
| L1Y   | 0.0000 | 0.2846 | -0.4185 | 0.0000  | -0.2846 | 0.4185 | 0.1494  | 0.0077 | -0.0266 |
| L3X   | 0.0000 | 0.5589 | -0.4185 | -0.0000 | -0.5589 | 0.4185 | 0.0014  | 0.0388 | -0.0004 |
| L3XY  | 0.0000 | 0.5589 | -0.4185 | 0.0000  | -0.5589 | 0.4185 | -0.0013 | 0.0386 | -0.0004 |
| L3Y   | 0.0000 | 0.5589 | -0.4185 | 0.0000  | -0.5589 | 0.4185 | 0.0001  | 0.1551 | 0.0217  |
| O1Y   | 0.0000 | 0.2914 | -0.4970 | -0.0000 | -0.2914 | 0.4970 | -0.0587 | 0.0163 | 0.0065  |
| O2X   | 0.0000 | 0.6130 | -0.4970 | -0.0000 | -0.6130 | 0.4970 | 0.0000  | 0.0755 | -0.0071 |
| M1Y   | 0.0000 | 0.2385 | -0.3169 | -0.0000 | -0.2385 | 0.3169 | 0.0279  | 0.0941 | -0.0073 |
| M2X   | 0.0000 | 0.4956 | -0.3169 | 0.0000  | -0.4956 | 0.3169 | -0.0001 | 0.1922 | 0.0104  |
| BMY   | 0.0000 | 0.0815 | -0.1937 | 0.0000  | -0.0815 | 0.1937 | 0.0009  | 0.2748 | 0.0749  |
| BPMXY | 0.0000 | 0.0460 | -0.0557 | 0.0000  | -0.0460 | 0.0557 | 0.0026  | 0.2994 | 0.0749  |
| MMY   | 0.0000 | 0.0956 | -0.2895 | 0.0000  | -0.0956 | 0.2895 | 0.0002  | 0.4433 | 0.1193  |
| MMXY  | 0.0000 | 0.0541 | -0.0816 | 0.0000  | -0.0541 | 0.0816 | 0.0025  | 0.4745 | 0.1192  |
| TMX   | 0.0000 | 0.0819 | -0.2033 | 0.0000  | -0.0819 | 0.2033 | 0.0015  | 0.6511 | 0.1178  |
| TMXY  | 0.0000 | 0.0480 | -0.0589 | 0.0000  | -0.0480 | 0.0589 | 0.0030  | 0.6881 | 0.1177  |
| BPMY  | 0.0000 | 0.0956 | -0.1293 | -0.0000 | -0.0956 | 0.1293 | -0.0027 | 0.2764 | -0.0855 |
| BPMXY | 0.0000 | 0.0528 | -0.0577 | -0.0000 | -0.0528 | 0.0577 | -0.0317 | 0.3096 | -0.0857 |

Moments for Angles Modeled as Beams:

| Angle Label | Torsion  | Origin X Moment (ft-lbs) | Origin Z Moment (ft-lbs) | End X Moment (ft-lbs) | End Z Moment (ft-lbs) | X Shear (lbs) | Z Shear (lbs) |
|-------------|----------|--------------------------|--------------------------|-----------------------|-----------------------|---------------|---------------|
| q1P         | -2744.19 | -1551.45                 | -389.61                  | -714.54               | 327.46                | -92.54        | -2.68         |
| q13P        | 51.15    | 1030.96                  | 2280.34                  | 1082.43               | 2375.24               | 191.03        | 420.44        |
| q14P        | -8.40    | -1682.97                 | 1508.53                  | -830.36               | 825.50                | -227.02       | 210.81        |
| q17P        | 31.06    | -1083.48                 | -2375.11                 | -708.56               | -1679.79              | -121.46       | -274.67       |
| g21P        | -0.09    | 830.44                   | -825.47                  | -821.58               | 824.76                | 0.60          | -0.05         |
| g29P        | -1609.12 | -3466.48                 | -888.80                  | -1083.32              | -65.78                | -469.04       | -58.52        |
| g30P        | 1351.66  | -1245.63                 | -915.52                  | 1144.48               | 146.33                | -11.53        | 63.13         |
| g33P        | -636.05  | 971.95                   | 80.04                    | 977.10                | 1084.41               | 70.66         | 42.28         |
| g41P        | 39.23    | -360.54                  | -943.47                  | -334.27               | -624.65               | -40.43        | -91.17        |
| g42P        | -0.04    | -60.35                   | -1036.94                 | -196.38               | -804.30               | -14.93        | -107.08       |
| g77P        | 12.85    | -210.93                  | -668.41                  | -155.15               | -491.39               | -13.87        | -43.92        |
| g78P        | -0.97    | 38.37                    | -286.71                  | -68.55                | 284.98                | -1.14         | -0.07         |

|        |          |           |          |          |          |          |          |
|--------|----------|-----------|----------|----------|----------|----------|----------|
| g81P   | 13.42    | -18.18    | -188.99  | 63.41    | 225.65   | 3.84     | 3.10     |
| g82P   | -7.96    | -650.77   | 2170.83  | -723.88  | 2475.62  | -116.56  | 393.75   |
| g85P   | -0.12    | 30.59     | -156.93  | -30.95   | 154.44   | -0.02    | -0.12    |
| g89P   | 14.79    | 7.37      | -257.79  | 24.89    | -360.82  | 1.58     | -30.85   |
| g93P   | 422.05   | 765.23    | 736.96   | 3011.95  | 919.81   | 308.32   | 135.13   |
| g97P   | -95.72   | -5118.23  | 3155.73  | -1449.35 | 3344.28  | -756.77  | 748.95   |
| g98P   | -94.90   | 1449.41   | -3344.28 | -750.59  | -679.38  | 114.08   | -656.82  |
| g105P  | -100.40  | -10586.01 | 455.30   | -5820.12 | 5823.26  | -1606.78 | 614.85   |
| g106P  | -93.74   | 5820.31   | -5823.18 | 5118.21  | -3155.82 | 1127.75  | -925.67  |
| g163P  | 0.31     | 540.41    | 588.36   | -1511.38 | 4633.08  | -126.68  | 681.26   |
| g164P  | -1.09    | 1511.37   | -4633.08 | 65.49    | -8546.94 | 205.80   | -1720.16 |
| g167P  | 5.61     | -65.49    | 8546.93  | -7156.48 | 7814.46  | -942.51  | 2135.27  |
| g171P  | -0.01    | -4.82     | -76.91   | -299.95  | -41.17   | -39.76   | -15.40   |
| g175P  | 0.00     | 299.95    | 41.17    | -163.87  | 4.61     | 17.76    | 5.97     |
| g179P  | -0.03    | 163.87    | -4.61    | -540.41  | -588.37  | -49.14   | -77.38   |
| g261P  | -0.00    | 0.00      | 0.00     | -28.39   | 46.94    | -3.55    | 5.87     |
| g262P  | -0.00    | 28.39     | -46.94   | 8.21     | -75.89   | 4.58     | -15.36   |
| g322P  | -0.00    | -0.00     | -0.00    | -34.16   | -1.22    | -3.42    | -0.12    |
| g323P  | 0.00     | 34.16     | 1.22     | 28.67    | -0.06    | 6.28     | 0.12     |
| g1X    | -1343.18 | 1915.09   | 356.07   | 670.07   | 859.93   | 105.29   | 49.63    |
| g1XY   | 1357.93  | 1923.84   | -333.95  | 687.39   | -830.57  | 106.36   | -47.54   |
| g1Y    | 2756.88  | -1557.69  | 436.03   | -728.98  | -286.52  | -93.38   | 6.25     |
| g13X   | 23.28    | -306.07   | 868.57   | -708.97  | 1679.74  | -91.64   | 230.19   |
| g13XY  | -23.22   | -305.70   | -866.38  | -712.94  | -1680.19 | -91.96   | -230.04  |
| g13Y   | -51.23   | 1032.87   | -2279.22 | 1086.45  | -2376.09 | 191.56   | -420.42  |
| g14X   | 0.23     | 347.43    | 96.35    | 246.92   | 130.46   | 53.68    | 20.49    |
| g14XY  | -0.77    | 344.56    | -92.64   | 244.98   | -127.87  | 53.25    | -19.92   |
| g14Y   | 8.13     | -1675.23  | -1506.77 | -821.51  | -824.79  | -225.53  | -210.59  |
| g17Y   | -31.04   | -1087.50  | 2375.95  | -712.53  | 1680.24  | -122.00  | 274.76   |
| g21X   | -0.27    | -246.92   | -130.45  | 244.98   | 127.87   | -0.13    | -0.18    |
| g29X   | -188.83  | 2771.10   | -1814.97 | 739.50   | -879.71  | 361.55   | -277.50  |
| g29XY  | 204.31   | 2724.58   | 1790.09  | 688.35   | 840.48   | 351.49   | 270.90   |
| g29Y   | 1621.88  | -3492.41  | 814.92   | -1376.75 | -289.02  | -502.00  | 54.36    |
| g30X   | -308.07  | 356.52    | -1710.74 | -1901.93 | -116.34  | -177.87  | -210.34  |
| g30XY  | 329.11   | 309.85    | 1678.28  | -1912.01 | 95.56    | -184.41  | 204.21   |
| g30Y   | -1335.18 | -1472.68  | 600.29   | 1157.41  | -1507.04 | -36.19   | -104.38  |
| g33X   | 422.82   | -638.35   | 888.11   | -316.44  | 2098.63  | -34.54   | 108.23   |
| g33XY  | -396.23  | -582.96   | -843.89  | -265.67  | -2060.43 | -30.70   | -105.25  |
| g33Y   | 657.86   | 1283.85   | 303.25   | 1221.17  | -748.73  | 90.84    | -16.21   |
| g41X   | 37.51    | -346.78   | 392.16   | -334.54  | 624.61   | -39.60   | 59.16    |
| g41XY  | -39.48   | -340.14   | -389.31  | -333.50  | -623.98  | -39.15   | -58.95   |
| g41Y   | -41.19   | -363.05   | 944.16   | -333.21  | 624.02   | -40.52   | 91.17    |
| g42X   | 0.98     | 440.11    | 243.94   | 613.87   | 390.27   | 61.31    | 36.89    |
| g42XY  | -2.02    | 440.19    | -242.51  | 613.87   | -390.27  | 61.31    | -36.80   |
| g42Y   | -0.51    | -35.37    | 1037.42  | -196.38  | 804.30   | -13.48   | 107.10   |
| g77Y   | -14.09   | -214.67   | 655.24   | -158.32  | 479.19   | -14.13   | 42.96    |
| g78X   | -0.83    | 1.41      | -109.17  | -3.81    | 109.46   | -0.09    | 0.01     |
| g81X   | 13.26    | 98.80     | -441.17  | 63.47    | -225.65  | 13.74    | -56.51   |
| g81XY  | -12.45   | 99.84     | 435.87   | 63.39    | 224.36   | 13.82    | 55.96    |
| g81Y   | -12.61   | -19.81    | 185.94   | 63.33    | -224.36  | 3.70     | -3.25    |
| g82X   | 0.86     | 249.67    | 931.30   | 268.33   | 1036.91  | 43.90    | 166.80   |
| g82XY  | -1.42    | 251.04    | -931.32  | 268.33   | -1036.91 | 44.02    | -166.80  |
| g82Y   | 7.25     | -654.11   | -2171.33 | -723.90  | -2475.62 | -116.84  | -393.79  |
| g85X   | -0.16    | -7.53     | -53.68   | 7.32     | 52.03    | -0.01    | -0.08    |
| g89Y   | -14.67   | 7.93      | 254.84   | 25.35    | 357.62   | 1.63     | 30.54    |
| g93X   | 310.75   | -570.51   | 406.52   | -2532.80 | 1808.88  | -252.96  | 180.67   |
| g93XY  | -300.56  | -483.01   | -396.01  | -2483.62 | -1783.33 | -241.82  | -177.73  |
| g93Y   | -413.14  | 689.92    | -701.41  | 3033.32  | -846.49  | 303.92   | -126.25  |
| g97X   | 1.88     | 2920.98   | 847.14   | 70.15    | 1210.30  | 344.27   | 236.80   |
| g97XY  | 3.89     | 2933.91   | -844.69  | 76.22    | -1215.40 | 346.45   | -237.11  |
| g97Y   | 99.20    | -5115.80  | -3151.01 | -1467.31 | -3347.34 | -758.56  | -748.76  |
| g98X   | 1.64     | -70.15    | -1210.31 | 559.86   | -363.26  | 79.85    | -256.57  |
| g98XY  | 4.14     | -76.22    | 1215.40  | 473.19   | 354.07   | 64.73    | 255.90   |
| g98Y   | 98.37    | 1467.37   | 3347.34  | -675.61  | 645.63   | 129.25   | 651.81   |
| g105X  | 3.85     | 6673.95   | -7.36    | 2633.48  | 3586.39  | 910.61   | 350.16   |
| g105XY | 1.93     | 6695.46   | -20.28   | 2637.11  | -3582.23 | 913.06   | -352.46  |
| g105Y  | 103.88   | -10564.89 | -472.00  | -5810.60 | -5837.34 | -1603.78 | -617.86  |
| g106X  | 0.86     | -2633.48  | -3586.39 | -2920.98 | -847.14  | -572.00  | -456.57  |
| g106XY | 4.92     | -2637.10  | 3582.23  | -2933.91 | 844.68   | -573.71  | 455.89   |
| g106Y  | 97.22    | 5810.80   | 5837.26  | 5115.78  | 3151.10  | 1126.51  | 926.63   |

|        |       |         |          |          |          |         |          |
|--------|-------|---------|----------|----------|----------|---------|----------|
| g163X  | -0.04 | 176.97  | -16.40   | -1439.85 | -2230.08 | -164.66 | -292.92  |
| g163XY | 0.03  | 174.59  | 9.56     | -1438.10 | 2236.67  | -164.75 | 292.88   |
| g163Y  | -0.31 | 538.54  | -587.90  | -1515.22 | -4627.80 | -127.43 | -680.51  |
| g164X  | 0.76  | 1439.85 | 2230.08  | -843.99  | 4517.67  | 77.69   | 879.82   |
| g164XY | -0.76 | 1438.10 | -2236.67 | -847.48  | -4517.10 | 77.01   | -880.60  |
| g164Y  | 1.10  | 1515.22 | 4627.80  | 59.50    | 8546.14  | 205.52  | 1719.37  |
| g167X  | -2.26 | 843.99  | -4517.67 | -4724.50 | -4713.90 | -505.85 | -1203.41 |
| g167XY | 2.26  | 847.48  | 4517.10  | -4719.74 | 4749.07  | -504.78 | 1207.91  |
| g167Y  | -5.60 | -59.50  | -8546.14 | -7129.48 | -7811.59 | -938.20 | -2134.79 |
| g171X  | 0.00  | -24.25  | 35.18    | -132.87  | -124.09  | -20.49  | -11.59   |
| g171XY | -0.00 | -26.14  | -36.40   | -128.77  | 125.46   | -20.20  | 11.61    |
| g171Y  | 0.01  | -8.21   | 75.89    | -302.28  | 45.67    | -40.50  | 15.86    |
| g175X  | 0.03  | 132.87  | 124.09   | -498.04  | 242.60   | -47.62  | 47.82    |
| g175XY | -0.03 | 128.77  | -125.45  | -498.99  | -242.07  | -48.28  | -47.93   |
| g175Y  | -0.00 | 302.28  | -45.67   | -160.07  | -1.60    | 18.56   | -6.17    |
| g179X  | -0.01 | 498.04  | -242.60  | -176.97  | 16.40    | 41.86   | -29.49   |
| g179XY | 0.01  | 498.99  | 242.07   | -174.59  | -9.56    | 42.29   | 30.31    |
| g179Y  | 0.03  | 160.07  | 1.60     | -538.54  | 587.90   | -49.39  | 76.93    |
| g261X  | -0.00 | 0.00    | 0.00     | -53.47   | -29.61   | -6.68   | -3.70    |
| g261XY | 0.00  | 0.00    | 0.00     | -51.30   | 29.94    | -6.41   | 3.74     |
| g261Y  | 0.00  | 0.00    | -0.00    | -25.98   | -48.08   | -3.25   | -6.01    |
| g262X  | 0.00  | 53.47   | 29.61    | 26.14    | 36.40    | 9.95    | 8.25     |
| g262XY | -0.00 | 51.30   | -29.94   | 24.25    | -35.18   | 9.44    | -8.14    |
| g262Y  | 0.00  | 25.98   | 48.08    | 4.82     | 76.90    | 3.85    | 15.63    |
| g322X  | 0.00  | 0.00    | -0.00    | 28.67    | 0.06     | 2.87    | 0.01     |

#### Summary of Clamp Capacities and Usages:

| Clamp Force Allowable Usage |        |        |       |
|-----------------------------|--------|--------|-------|
| Label                       | (kips) | (kips) | %     |
| SW1                         | 6.41   | 50.00  | 12.83 |
| SW2                         | 6.41   | 50.00  | 12.83 |
| 1A                          | 10.55  | 50.00  | 21.10 |
| 1B                          | 10.55  | 50.00  | 21.10 |
| 2A                          | 10.57  | 50.00  | 21.13 |
| 2B                          | 10.57  | 50.00  | 21.13 |
| 3A                          | 10.55  | 50.00  | 21.10 |
| 3B                          | 10.55  | 50.00  | 21.10 |
| 4                           | 21.03  | 50.00  | 42.05 |
| 5                           | 21.08  | 50.00  | 42.16 |
| 6                           | 20.95  | 50.00  | 41.91 |
| A1T                         | 0.94   | 25.00  | 3.77  |
| A1B                         | 0.79   | 25.00  | 3.18  |
| A2T                         | 0.94   | 25.00  | 3.77  |
| A2B                         | 0.79   | 25.00  | 3.18  |
| A3T                         | 0.94   | 25.00  | 3.77  |
| A3B                         | 0.81   | 25.00  | 3.26  |
| COAX1                       | 1.46   | 25.00  | 5.84  |
| COAX2                       | 2.09   | 25.00  | 8.37  |

\*\*\* Analysis Results for Load Case No. 6 "ICEA" - Number of iterations in SAPS 11

Equilibrium Joint Positions and Rotations:

| Joint<br>Label | X-Displ<br>(ft) | Y-Displ<br>(ft) | Z-Displ<br>(ft) | X-Rot<br>(deg) | Y-Rot<br>(deg) | Z-Rot<br>(deg) | X-Pos<br>(ft) | Y-Pos<br>(ft) | Z-Pos<br>(ft) |
|----------------|-----------------|-----------------|-----------------|----------------|----------------|----------------|---------------|---------------|---------------|
| ZP             | 0               | 0               | 0               | 0.0000         | 0.0000         | 0.0000         | 22            | 22            | 1             |
| WP             | -0.008417       | 0.4036          | -0.0572         | -0.5318        | 0.0354         | -0.3296        | 4.992         | 5.404         | 115.9         |
| AP             | 0.01501         | 1.299           | -0.1057         | -0.9727        | -0.0058        | -0.3282        | 5.015         | 6.299         | 177.9         |
| TOPP           | 0.01653         | 1.44            | -0.1079         | -1.0010        | 0.0002         | 0.0116         | 0.01653       | 6.44          | 185.9         |
| SWP            | 0.01446         | 1.44            | -0.287          | -1.0387        | 0.0002         | 0.0120         | 0.01446       | 16.44         | 185.7         |
| TAP            | 0.006573        | 1.033           | -0.3136         | 0.0000         | 0.0000         | 0.0000         | 0.006573      | 19.03         | 161.7         |
| TASQP          | 0.01429         | 1.04            | 0.3136          | 0.0000         | 0.0000         | 0.0000         | 5.014         | -20.96        | 162.3         |
| MAP            | -0.0007743      | 0.6815          | -0.4028         | 0.0000         | 0.0000         | 0.0000         | -0.0007743    | 26.68         | 138.6         |
| MASQP          | 0.008733        | 0.6913          | 0.3158          | 0.0000         | 0.0000         | 0.0000         | 5.009         | -25.31        | 139.3         |
| BAP            | -0.004123       | 0.4067          | -0.2374         | 0.0000         | 0.0000         | 0.0000         | -0.004123     | 21.41         | 115.8         |
| BASQP          | 0.003668        | 0.4091          | 0.195           | 0.0000         | 0.0000         | 0.0000         | 5.004         | -20.59        | 116.2         |
| ZX             | 0               | 0               | 0               | 0.0000         | 0.0000         | 0.0000         | 22            | -22           | 1             |
| ZXY            | 0               | 0               | 0               | 0.0000         | 0.0000         | 0.0000         | -22           | -22           | 1             |
| ZY             | 0               | 0               | 0               | 0.0000         | 0.0000         | 0.0000         | -22           | 22            | 1             |
| WX             | 0.00313         | 0.4045          | 0.03463         | -0.5427        | -0.0037        | -0.1256        | 5.003         | -4.596        | 116           |
| WKY            | -0.001996       | 0.4027          | 0.03616         | -0.5422        | 0.0189         | 0.1284         | -5.002        | -4.597        | 116           |
| WY             | 0.005858        | 0.4019          | -0.05532        | -0.5333        | -0.0159        | 0.3252         | -4.994        | 5.402         | 115.9         |
| AX             | 0.01538         | 1.301           | 0.06104         | -1.0006        | 0.0320         | -0.1262        | 5.015         | -3.699        | 178.1         |
| AXY            | 0.01666         | 1.299           | 0.06417         | -1.0009        | 0.0049         | 0.1290         | -4.983        | -3.701        | 178.1         |
| AY             | 0.01312         | 1.297           | -0.1026         | -0.9718        | 0.0397         | 0.3238         | -4.987        | 6.297         | 177.9         |
| TOPX           | 0.01853         | 1.441           | 0.06365         | -0.9841        | 0.0002         | 0.0114         | 0.01853       | -3.559        | 186.1         |
| SWX            | 0.02054         | 1.443           | 0.2378          | -1.0049        | 0.0002         | 0.0116         | 0.02054       | -13.56        | 186.2         |
| TASQY          | 0.01433         | 1.039           | 0.3164          | 0.0000         | 0.0000         | 0.0000         | -4.986        | -20.96        | 162.3         |
| MASQY          | 0.008857        | 0.6895          | 0.3186          | 0.0000         | 0.0000         | 0.0000         | -4.991        | -25.31        | 139.3         |
| BASQY          | 0.00327         | 0.4073          | 0.1968          | 0.0000         | 0.0000         | 0.0000         | -4.997        | -20.59        | 116.2         |
| BS             | 0.01369         | 1.164           | -0.1016         | -0.9534        | 0.0237         | -0.3287        | 5.014         | 6.164         | 169.9         |
| CS             | 0.009206        | 1.033           | -0.09581        | -0.9292        | 0.0031         | -0.3284        | 5.009         | 6.033         | 161.9         |
| DS             | 0.008529        | 0.9102          | -0.0916         | -0.8944        | 0.0007         | -0.3284        | 5.009         | 5.91          | 154.2         |
| ES             | 0.007505        | 0.7941          | -0.08544        | -0.8519        | 0.0018         | -0.3284        | 5.008         | 5.794         | 146.6         |
| FS             | 0.004649        | 0.6836          | -0.07766        | -0.7836        | 0.0505         | -0.3291        | 5.005         | 5.684         | 138.9         |
| GS             | 0.001209        | 0.5821          | -0.07245        | -0.7277        | -0.0533        | -0.3278        | 5.001         | 5.582         | 131.3         |
| HS             | 0.008543        | 0.4884          | -0.06522        | -0.6867        | 0.0524         | -0.3289        | 5.009         | 5.488         | 123.6         |
| IS             | 0.007619        | 0.3199          | -0.05763        | -0.3744        | 0.0129         | -0.2742        | 6.486         | 6.798         | 105.9         |
| JS             | -0.00531        | 0.2524          | -0.05957        | -0.3381        | 0.0632         | -0.2293        | 7.877         | 8.135         | 96.44         |
| KS             | -0.002119       | 0.2009          | -0.05805        | -0.2789        | 0.0285         | -0.1961        | 9.137         | 9.34          | 87.94         |
| LS             | -0.005436       | 0.1688          | -0.05704        | -0.2742        | 0.0047         | -0.1781        | 10.02         | 10.19         | 81.94         |
| MS             | 0.01712         | 0.1065          | -0.05029        | -0.2142        | -0.0700        | -0.1525        | 11.82         | 11.91         | 69.95         |
| NS             | 0.01965         | 0.07374         | -0.04585        | -0.1476        | 0.0322         | -0.1058        | 13.22         | 13.28         | 60.45         |
| OS             | -0.002261       | 0.003434        | -0.03371        | -0.1166        | 0.0496         | -0.0637        | 17.19         | 17.2          | 33.47         |
| PS             | -0.006874       | -0.01271        | -0.02862        | -0.0457        | 0.0144         | -0.0515        | 18.45         | 18.44         | 24.97         |
| L1S            | -0.01597        | -0.01267        | -0.01506        | -0.0937        | -0.0001        | 0.0231         | 18.44         | 7.368         | 24.98         |
| L3S            | -0.006779       | -0.003504       | -0.005177       | -0.0451        | 0.1484         | -0.0223        | 7.374         | 18.45         | 24.99         |
| O1S            | -0.001811       | 0.002051        | -0.001413       | -0.0923        | 0.0044         | 0.0117         | 17.19         | 0.002051      | 33.5          |
| O2S            | -0.00215        | 0.001671        | -0.0004734      | -0.1153        | -0.0192        | 0.0021         | -0.00215      | 17.2          | 33.5          |
| M1S            | -0.01352        | 0.1066          | -0.008627       | -0.2168        | -0.0308        | -0.0199        | 11.79         | 0.1066        | 69.99         |
| M2S            | 0.0175          | 0.1182          | -0.04238        | -0.2153        | 0.0202         | 0.0182         | 0.0175        | 11.92         | 69.96         |
| BMS            | 0.002146        | 0.407           | 0.1215          | 0.0000         | 0.0000         | 0.0000         | 5.002         | -12.59        | 116.1         |
| BMXS           | 6.735e-005      | 0.4467          | 0.1213          | 0.0000         | 0.0000         | 0.0000         | 5             | -12.55        | 120           |
| MMS            | 0.009752        | 0.6883          | 0.1933          | 0.0000         | 0.0000         | 0.0000         | 5.01          | -14.81        | 139.2         |
| MMXS           | 0.006561        | 0.739           | 0.193           | 0.0000         | 0.0000         | 0.0000         | 5.007         | -14.76        | 143           |
| TMS            | 0.0145          | 1.038           | 0.1928          | 0.0000         | 0.0000         | 0.0000         | 5.014         | -12.46        | 162.2         |
| TMXS           | 0.01301         | 1.099           | 0.1924          | 0.0000         | 0.0000         | 0.0000         | 5.013         | -12.4         | 166.2         |
| BPMS           | -0.005121       | 0.4055          | -0.1473         | 0.0000         | 0.0000         | 0.0000         | 2.495         | 13.41         | 115.9         |
| BPMXS          | 0.00283         | 0.4496          | -0.1475         | 0.0000         | 0.0000         | 0.0000         | 2.503         | 13.45         | 119.7         |
| BX             | 0.01163         | 1.163           | 0.05988         | -0.9488        | 0.0100         | -0.1259        | 5.012         | -3.837        | 170.1         |
| BXY            | 0.01529         | 1.161           | 0.06292         | -0.9490        | 0.0263         | 0.1286         | -4.985        | -3.839        | 170.1         |
| BY             | 0.009637        | 1.162           | -0.09833        | -0.9527        | 0.0117         | 0.3243         | -4.99         | 6.162         | 169.9         |
| CX             | 0.0108          | 1.035           | 0.05773         | -0.9222        | 0.0139         | -0.1259        | 5.011         | -3.965        | 162.1         |
| CXY            | 0.01125         | 1.033           | 0.06054         | -0.9185        | 0.0190         | 0.1287         | -4.989        | -3.967        | 162.1         |
| CY             | 0.009077        | 1.031           | -0.09239        | -0.9290        | 0.0328         | 0.3240         | -4.991        | 6.031         | 161.9         |
| DX             | 0.007901        | 0.9113          | 0.05656         | -0.9129        | 0.0272         | -0.1261        | 5.008         | -4.089        | 154.4         |

|       |             |           |            |         |         |         |           |           |       |
|-------|-------------|-----------|------------|---------|---------|---------|-----------|-----------|-------|
| DKY   | 0.009819    | 0.9098    | 0.05922    | -0.9118 | 0.0043  | 0.1289  | -4.99     | -4.09     | 154.4 |
| DY    | 0.005108    | 0.9084    | -0.08867   | -0.8935 | 0.0318  | 0.3240  | -4.995    | 5.908     | 154.2 |
| EX    | 0.004155    | 0.7928    | 0.05358    | -0.8441 | 0.0141  | -0.1260 | 5.004     | -4.207    | 146.7 |
| EXY   | 0.009511    | 0.7911    | 0.05602    | -0.8457 | 0.0151  | 0.1288  | -4.99     | -4.209    | 146.7 |
| EY    | 0.002173    | 0.7923    | -0.08293   | -0.8513 | 0.0253  | 0.3241  | -4.998    | 5.792     | 146.6 |
| FX    | 0.004047    | 0.6851    | 0.04894    | -0.7802 | -0.0084 | -0.1257 | 5.004     | -4.315    | 139   |
| FXY   | 0.005937    | 0.6833    | 0.05111    | -0.7803 | 0.0139  | 0.1285  | -4.994    | -4.317    | 139.1 |
| FY    | 0.001616    | 0.6818    | -0.07547   | -0.7844 | -0.0267 | 0.3248  | -4.998    | 5.682     | 138.9 |
| GX    | 0.002594    | 0.5824    | 0.04578    | -0.7426 | 0.0450  | -0.1264 | 5.003     | -4.418    | 131.4 |
| GXY   | 0.004121    | 0.5807    | 0.04777    | -0.7425 | -0.0218 | 0.1292  | -4.996    | -4.419    | 131.4 |
| GY    | 0.001969    | 0.5801    | -0.0704    | -0.7282 | 0.0757  | 0.3235  | -4.998    | 5.58      | 131.3 |
| HX    | -0.003417   | 0.4876    | 0.0408     | -0.6751 | -0.0153 | -0.1258 | 4.997     | -4.512    | 123.7 |
| HXY   | 0.007161    | 0.4858    | 0.04258    | -0.6753 | 0.0370  | 0.1286  | -4.993    | -4.514    | 123.7 |
| HY    | -0.00829    | 0.4864    | -0.06327   | -0.6847 | -0.0308 | 0.3246  | -5.008    | 5.486     | 123.6 |
| IX    | -0.006956   | 0.3194    | 0.03813    | -0.4113 | 0.0130  | -0.0988 | 6.471     | -6.159    | 106   |
| IXY   | 0.006247    | 0.3175    | 0.03969    | -0.4129 | -0.0043 | 0.1007  | -6.472    | -6.161    | 106   |
| IY    | -0.0133     | 0.3176    | -0.05567   | -0.3781 | 0.0057  | 0.2686  | -6.492    | 6.796     | 105.9 |
| JX    | -0.001739   | 0.2525    | 0.04084    | -0.3546 | -0.0282 | -0.0742 | 7.881     | -7.63     | 96.54 |
| JXY   | -0.0003326  | 0.2501    | 0.04244    | -0.3571 | 0.0353  | 0.0743  | -7.883    | -7.633    | 96.54 |
| JY    | -0.002914   | 0.25      | -0.05747   | -0.3404 | -0.0534 | 0.2208  | -7.886    | 8.133     | 96.44 |
| KX    | -0.003004   | 0.2012    | 0.04112    | -0.3040 | 0.0089  | -0.0637 | 9.136     | -8.938    | 88.04 |
| KXY   | -9.682e-006 | 0.1985    | 0.0427     | -0.3062 | -0.0035 | 0.0622  | -9.139    | -8.941    | 88.04 |
| KY    | -0.008218   | 0.1981    | -0.05582   | -0.2828 | 0.0074  | 0.1903  | -9.147    | 9.337     | 87.94 |
| LX    | -0.00289    | 0.1686    | 0.0408     | -0.2952 | -0.0099 | -0.0534 | 10.02     | -9.858    | 82.04 |
| LXY   | -0.006138   | 0.1687    | 0.04236    | -0.2960 | 0.0119  | 0.0508  | -10.03    | -9.86     | 82.04 |
| LY    | -0.005146   | 0.1658    | -0.05488   | -0.2782 | -0.0930 | 0.1538  | -10.03    | 10.19     | 81.95 |
| MX    | -0.00182    | 0.1071    | 0.03982    | -0.2319 | 0.0081  | -0.0431 | 11.8      | -11.69    | 70.04 |
| MXY   | -0.001526   | 0.1046    | 0.0411     | -0.2302 | -0.0108 | 0.0349  | -11.8     | -11.7     | 70.04 |
| MY    | 0.01741     | 0.1041    | -0.05486   | -0.2176 | -0.0774 | 0.1144  | -11.78    | 11.9      | 69.95 |
| NX    | -0.005005   | 0.07337   | 0.03704    | -0.1667 | 0.0258  | -0.0357 | 13.2      | -13.13    | 60.54 |
| NXY   | 0.001745    | 0.07129   | 0.03813    | -0.1668 | -0.0277 | 0.0244  | -13.2     | -13.13    | 60.54 |
| NY    | 0.01957     | 0.07155   | -0.05118   | -0.1484 | 0.0157  | 0.0954  | -13.18    | 13.28     | 60.45 |
| OX    | -0.006468   | 0.002736  | 0.02603    | -0.1116 | -0.0409 | -0.0254 | 17.19     | -17.19    | 33.53 |
| OKY   | 0.003893    | 0.001537  | 0.02671    | -0.1117 | 0.0409  | 0.0219  | -17.19    | -17.19    | 33.53 |
| OY    | -0.002055   | 0.002137  | -0.03278   | -0.1144 | 0.0367  | 0.0685  | -17.2     | 17.2      | 33.47 |
| PX    | 0.0005794   | -0.0116   | 0.02258    | -0.0437 | -0.0341 | -0.0178 | 18.45     | -18.46    | 25.02 |
| PKY   | -0.003141   | -0.01275  | 0.02321    | -0.0427 | 0.0314  | 0.0163  | -18.46    | -18.46    | 25.02 |
| PY    | -0.006546   | -0.0138   | -0.02643   | -0.0445 | 0.0072  | 0.0479  | -18.46    | 18.44     | 24.97 |
| L1X   | 0.00621     | -0.01193  | 0.01086    | -0.0841 | -0.0196 | 0.0306  | 18.46     | -7.393    | 25.01 |
| L1XY  | -0.01054    | -0.0139   | 0.01181    | -0.0800 | 0.0242  | 0.0053  | -18.46    | -7.394    | 25.01 |
| L1Y   | -0.0003247  | -0.01377  | -0.01276   | -0.0920 | 0.0144  | -0.0127 | -18.45    | 7.367     | 24.99 |
| L3X   | 0.0007591   | -0.006398 | 0.008908   | -0.0435 | -0.0638 | 0.0259  | 7.382     | -18.46    | 25.01 |
| L3XY  | -0.003343   | -0.005823 | 0.009431   | -0.0431 | 0.0670  | 0.0302  | -7.384    | -18.46    | 25.01 |
| L3Y   | -0.006634   | -0.007498 | 0.00218    | -0.0445 | -0.1420 | 0.0289  | -7.388    | 18.44     | 25    |
| O1Y   | -0.001464   | 0.0009667 | -0.0008521 | -0.0922 | 0.0387  | -0.0078 | -17.2     | 0.0009667 | 33.5  |
| O2X   | -0.001129   | 0.001399  | 0.006223   | -0.1117 | 0.0017  | 0.0039  | -0.001129 | -17.19    | 33.51 |
| M1Y   | 0.02395     | 0.1041    | -0.009446  | -0.2376 | -0.0448 | -0.1059 | -11.78    | 0.1041    | 69.99 |
| M2X   | -0.00167    | 0.1261    | 0.04081    | -0.2311 | 0.0053  | 0.0108  | -0.00167  | -11.67    | 70.04 |
| EMY   | 0.001891    | 0.4052    | 0.1231     | 0.0000  | 0.0000  | 0.0000  | -4.998    | -12.59    | 116.1 |
| BMXY  | 0.005287    | 0.445     | 0.123      | 0.0000  | 0.0000  | 0.0000  | -4.995    | -12.56    | 120   |
| MMY   | 0.004039    | 0.6865    | 0.1958     | 0.0000  | 0.0000  | 0.0000  | -4.996    | -14.81    | 139.2 |
| MMXY  | 0.009095    | 0.7374    | 0.1955     | 0.0000  | 0.0000  | 0.0000  | -4.991    | -14.76    | 143   |
| TTY   | 0.01084     | 1.036     | 0.1956     | 0.0000  | 0.0000  | 0.0000  | -4.989    | -12.46    | 162.2 |
| TMXY  | 0.01478     | 1.097     | 0.1952     | 0.0000  | 0.0000  | 0.0000  | -4.985    | -12.4     | 166.2 |
| BPMY  | -0.005121   | 0.4061    | -0.1462    | 0.0000  | 0.0000  | 0.0000  | -2.505    | 13.41     | 115.9 |
| BPMXY | -0.006859   | 0.4487    | -0.1464    | 0.0000  | 0.0000  | 0.0000  | -2.507    | 13.45     | 119.7 |

# Joint Support Reactions:

| Joint Label | X-Force<br>(kips) | % X Y-Force<br>Usage | % Y<br>Usage | Z-Force<br>(kips) | Comp.<br>Usage | % Uplift<br>Usage | X-Moment<br>(ft-k) | % X-M.<br>Usage | Y-Moment<br>(ft-k) | % Y-M.<br>Usage | Z-Moment<br>(ft-k) | % Z-M.<br>Usage | Max.<br>Usage |
|-------------|-------------------|----------------------|--------------|-------------------|----------------|-------------------|--------------------|-----------------|--------------------|-----------------|--------------------|-----------------|---------------|
| ZP          | -66.270           | 0.0                  | -69.352      | 0.0               | 446.659        | 0.0               | 0.0                | -4.377          | 0.0                | 2.078           | 0.0                | 0.121           | 0.0           |
| ZX          | 59.643            | 0.0                  | -55.919      | 0.0               | -367.956       | 0.0               | 0.0                | -3.813          | 0.0                | -1.475          | 0.0                | -0.185          | 0.0           |
| ZXY         | -58.808           | 0.0                  | -55.524      | 0.0               | -367.415       | 0.0               | 0.0                | -3.997          | 0.0                | 1.880           | 0.0                | 0.170           | 0.0           |
| ZY          | 65.435            | 0.0                  | -67.962      | 0.0               | 439.865        | 0.0               | 0.0                | -4.444          | 0.0                | 0.853           | 0.0                | 0.387           | 0.0           |

# Joint Displacements, Loads and Member Forces on Joints:

| Joint X | External Y | External Z | External X | Member Y | Member Z | Member X  | Y       | Z       |
|---------|------------|------------|------------|----------|----------|-----------|---------|---------|
| Label   | Load       | Load       | Load       | Force    | Force    | Force     | Disp.   | Disp.   |
|         | (kips)     | (kips)     | (kips)     | (kips)   | (kips)   | (kips)    | (ft)    | (ft)    |
| ZP      | 0.0000     | 0.0592     | -1.0365    | 66.2702  | 69.2932  | -445.6228 | 0.0000  | 0.0000  |
| WP      | 0.0000     | 0.0692     | -14.2558   | 0.0000   | -0.0692  | 14.2558   | -0.0084 | 0.4036  |
| AP      | 0.0000     | 0.6368     | -0.2981    | -0.0000  | -0.6368  | 0.2981    | 0.0150  | 1.2988  |
| TOPP    | 0.0000     | 0.0152     | -0.2032    | 0.0000   | -0.0152  | 0.2032    | 0.0165  | 1.4395  |
| SWP     | 0.0000     | 14.9487    | -3.2077    | -0.0000  | -14.9487 | 3.2077    | 0.0145  | 1.4398  |
| TAP     | 0.0000     | 35.6309    | -6.8345    | 0.0000   | -35.6309 | 6.8345    | -0.0066 | 1.0329  |
| TASQP   | 0.0000     | 17.8190    | -3.4610    | 0.0000   | -17.8190 | 3.4610    | 0.0143  | 1.0405  |
| MAP     | 0.0000     | 35.6335    | -7.1085    | 0.0000   | -35.6335 | 7.1085    | -0.0008 | 0.6815  |
| MASQP   | 0.0000     | 17.8199    | -3.5107    | 0.0000   | -17.8199 | 3.5107    | 0.0087  | 0.6913  |
| BAP     | 0.0000     | 35.6244    | -6.7469    | -0.0000  | -35.6244 | 6.7469    | -0.0041 | 0.4067  |
| BASQP   | 0.0000     | 17.8189    | -3.4553    | 0.0000   | -17.8189 | 3.4553    | 0.0037  | 0.4091  |
| ZX      | 0.0000     | 0.0592     | -1.0365    | -59.6429 | 55.8600  | 368.9921  | 0.0000  | 0.0000  |
| ZXY     | 0.0000     | 0.0592     | -1.0365    | 58.8078  | 55.4647  | 368.4511  | 0.0000  | 0.0000  |
| ZY      | 0.0000     | 0.0592     | -1.0365    | -65.4351 | 67.9028  | -438.8283 | 0.0000  | 0.0000  |
| WX      | 0.0000     | 0.0674     | -1.1435    | -0.0000  | -0.0674  | 1.1435    | 0.0031  | 0.4045  |
| WXY     | 0.0000     | 0.0674     | -1.1435    | 0.0000   | -0.0674  | 1.1435    | -0.0020 | 0.4027  |
| WY      | 0.0000     | 0.0659     | -1.0954    | -0.0000  | -0.0659  | 1.0954    | 0.0059  | 0.4019  |
| AX      | 0.0000     | 0.6368     | -0.2981    | 0.0000   | -0.6368  | 0.2981    | 0.0154  | 1.3007  |
| AXY     | 0.0000     | 0.6368     | -0.2981    | -0.0000  | -0.6368  | 0.2981    | 0.0167  | 1.2987  |
| AY      | 0.0000     | 0.0328     | -0.2981    | 0.0000   | -0.0328  | 0.2981    | 0.0131  | 1.2967  |
| TOPX    | 0.0000     | 0.0152     | -0.2032    | -0.0000  | -0.0152  | 0.2032    | 0.0185  | 1.4406  |
| SWX     | 0.0000     | 14.9487    | -3.2077    | 0.0000   | -14.9487 | 3.2077    | 0.0205  | 1.4433  |
| TASQY   | 0.0000     | 17.8190    | -3.4610    | 0.0000   | -17.8190 | 3.4610    | 0.0143  | 1.0386  |
| MASQY   | 0.0000     | 17.8199    | -3.5107    | 0.0000   | -17.8199 | 3.5107    | 0.0089  | 0.6895  |
| BASQY   | 0.0000     | 17.8189    | -3.4553    | 0.0000   | -17.8189 | 3.4553    | 0.0033  | 0.4073  |
| BS      | 0.0000     | -0.4786    | -0.7202    | -0.0000  | 0.4786   | 0.7202    | 0.0137  | 1.1639  |
| CS      | 0.0000     | 0.0434     | -13.6708   | -0.0000  | -0.0434  | 13.6708   | 0.0092  | 1.0329  |
| DS      | 0.0000     | 0.0373     | -0.4461    | -0.0000  | -0.0373  | 0.4461    | 0.0085  | 0.9102  |
| ES      | 0.0000     | 0.0406     | -0.5179    | -0.0000  | -0.0406  | 0.5179    | 0.0075  | 0.7941  |
| FS      | 0.0000     | 0.0557     | -0.9482    | -0.0000  | -0.0557  | 0.9482    | 0.0046  | 0.6836  |
| GS      | 0.0000     | 0.0477     | -0.7603    | 0.0000   | -0.0477  | 0.7603    | 0.0012  | 0.5821  |
| HS      | 0.0000     | 0.0491     | -0.7986    | 0.0000   | -0.0491  | 0.7986    | 0.0085  | 0.4884  |
| IS      | 0.0000     | 0.0574     | -1.0436    | -0.0000  | -0.0574  | 1.0436    | 0.0076  | 0.3199  |
| JS      | 0.0000     | 0.0533     | -0.9932    | -0.0000  | -0.0533  | 0.9932    | -0.0053 | 0.2524  |
| KS      | 0.0000     | 0.0487     | -0.8737    | -0.0000  | -0.0487  | 0.8737    | -0.0021 | 0.2009  |
| LS      | 0.0000     | 0.0695     | -1.1205    | 0.0000   | -0.0695  | 1.1205    | -0.0054 | 0.1688  |
| MS      | 0.0000     | 0.0324     | -0.8215    | -0.0000  | -0.0324  | 0.8215    | 0.0171  | 0.1065  |
| NS      | 0.0000     | 0.1154     | -2.0289    | 0.0000   | -0.1154  | 2.0289    | 0.0196  | 0.0737  |
| OS      | 0.0000     | 0.0966     | -1.8124    | 0.0000   | -0.0966  | 1.8124    | -0.0023 | 0.0034  |
| PS      | 0.0000     | 0.0483     | -1.1997    | -0.0000  | -0.0483  | 1.1997    | -0.0069 | -0.0127 |
| LIS     | 0.0000     | 0.0295     | -0.4185    | 0.0000   | -0.0295  | 0.4185    | -0.0160 | -0.0127 |
| L3S     | 0.0000     | 0.0580     | -0.4185    | 0.0000   | -0.0580  | 0.4185    | -0.0068 | -0.0035 |
| OIS     | 0.0000     | 0.0303     | -0.4970    | 0.0000   | -0.0303  | 0.4970    | -0.0018 | 0.0021  |
| O2S     | 0.0000     | 0.0636     | -0.4970    | -0.0000  | -0.0636  | 0.4970    | -0.0022 | 0.0017  |
| MIS     | 0.0000     | 0.0248     | -0.3169    | 0.0000   | -0.0248  | 0.3169    | -0.0135 | 0.1066  |
| M2S     | 0.0000     | 0.0515     | -0.3169    | -0.0000  | -0.0515  | 0.3169    | 0.0175  | 0.1182  |
| BMS     | 0.0000     | 0.0085     | -0.1937    | 0.0000   | -0.0085  | 0.1937    | 0.0021  | 0.4070  |
| BMXS    | 0.0000     | 0.0048     | -0.0557    | 0.0000   | -0.0048  | 0.0557    | 0.0001  | 0.4467  |
| MMS     | 0.0000     | 0.0099     | -0.2895    | 0.0000   | -0.0099  | 0.2895    | 0.0098  | 0.6883  |
| MMXS    | 0.0000     | 0.0056     | -0.0816    | 0.0000   | -0.0056  | 0.0816    | 0.0066  | 0.7390  |
| TMS     | 0.0000     | 0.0085     | -0.2033    | 0.0000   | -0.0085  | 0.2033    | 0.0145  | 1.0376  |
| TMXS    | 0.0000     | 0.0050     | -0.0589    | 0.0000   | -0.0050  | 0.0589    | 0.0130  | 1.0993  |
| BPMS    | 0.0000     | 0.0066     | -0.1039    | 0.0000   | -0.0066  | 0.1039    | -0.0051 | 0.4055  |
| BPMXS   | 0.0000     | 0.0055     | -0.0577    | 0.0000   | -0.0055  | 0.0577    | 0.0028  | 0.4496  |
| BX      | 0.0000     | -0.4802    | -0.7069    | 0.0000   | 0.4802   | 0.7069    | 0.0116  | 1.1634  |
| BXY     | 0.0000     | -0.4802    | -0.7069    | -0.0000  | 0.4802   | 0.7069    | 0.0153  | 1.1613  |
| BY      | 0.0000     | 0.0274     | -0.2492    | 0.0000   | -0.0274  | 0.2492    | 0.0096  | 1.1620  |
| CX      | 0.0000     | 0.0449     | -0.5751    | 0.0000   | -0.0449  | 0.5751    | 0.0108  | 1.0345  |
| CKY     | 0.0000     | 0.0449     | -0.5751    | -0.0000  | -0.0449  | 0.5751    | 0.0112  | 1.0326  |
| CY      | 0.0000     | 0.0434     | -0.5358    | 0.0000   | -0.0434  | 0.5358    | 0.0091  | 1.0310  |
| DX      | 0.0000     | 0.0373     | -0.4461    | 0.0000   | -0.0373  | 0.4461    | 0.0079  | 0.9113  |
| DXY     | 0.0000     | 0.0373     | -0.4461    | -0.0000  | -0.0373  | 0.4461    | 0.0098  | 0.9098  |
| DY      | 0.0000     | 0.0373     | -0.4461    | 0.0000   | -0.0373  | 0.4461    | 0.0051  | 0.9084  |
| EX      | 0.0000     | 0.0387     | -0.4914    | 0.0000   | -0.0387  | 0.4914    | 0.0042  | 0.7928  |
| EXY     | 0.0000     | 0.0387     | -0.4914    | 0.0000   | -0.0387  | 0.4914    | 0.0095  | 0.7911  |
| EY      | 0.0000     | 0.0406     | -0.5179    | 0.0000   | -0.0406  | 0.5179    | 0.0022  | 0.7923  |

|       |        |        |         |         |         |        |         |         |         |
|-------|--------|--------|---------|---------|---------|--------|---------|---------|---------|
| FX    | 0.0000 | 0.0574 | -0.9234 | -0.0000 | -0.0574 | 0.9234 | 0.0040  | 0.6851  | 0.0489  |
| FXY   | 0.0000 | 0.0574 | -0.9234 | 0.0000  | -0.0574 | 0.9234 | 0.0059  | 0.6833  | 0.0511  |
| FY    | 0.0000 | 0.0557 | -0.9482 | 0.0000  | -0.0557 | 0.9482 | 0.0016  | 0.6818  | -0.0755 |
| GX    | 0.0000 | 0.0477 | -0.7603 | -0.0000 | -0.0477 | 0.7603 | 0.0026  | 0.5824  | 0.0458  |
| GXY   | 0.0000 | 0.0477 | -0.7603 | 0.0000  | -0.0477 | 0.7603 | 0.0041  | 0.5807  | 0.0478  |
| GY    | 0.0000 | 0.0477 | -0.7603 | 0.0000  | -0.0477 | 0.7603 | 0.0020  | 0.5801  | -0.0704 |
| HX    | 0.0000 | 0.0488 | -0.7979 | -0.0000 | -0.0488 | 0.7979 | -0.0034 | 0.4876  | 0.0408  |
| HXY   | 0.0000 | 0.0488 | -0.7979 | 0.0000  | -0.0488 | 0.7979 | 0.0072  | 0.4858  | 0.0426  |
| HY    | 0.0000 | 0.0491 | -0.7986 | -0.0000 | -0.0491 | 0.7986 | -0.0083 | 0.4864  | -0.0633 |
| IX    | 0.0000 | 0.0574 | -1.0436 | 0.0000  | -0.0574 | 1.0436 | 0.0070  | 0.3194  | 0.0381  |
| IXY   | 0.0000 | 0.0574 | -1.0436 | 0.0000  | -0.0574 | 1.0436 | 0.0062  | 0.3175  | 0.0397  |
| IY    | 0.0000 | 0.0574 | -1.0436 | 0.0000  | -0.0574 | 1.0436 | -0.0133 | 0.3176  | -0.0557 |
| JX    | 0.0000 | 0.0533 | -0.9932 | 0.0000  | -0.0533 | 0.9932 | -0.0017 | 0.2525  | 0.0408  |
| JXY   | 0.0000 | 0.0533 | -0.9932 | -0.0000 | -0.0533 | 0.9932 | -0.0003 | 0.2501  | 0.0424  |
| JY    | 0.0000 | 0.0533 | -0.9932 | 0.0000  | -0.0533 | 0.9932 | -0.0029 | 0.2500  | -0.0575 |
| KX    | 0.0000 | 0.0487 | -0.8737 | 0.0000  | -0.0487 | 0.8737 | -0.0030 | 0.2012  | 0.0411  |
| KXY   | 0.0000 | 0.0487 | -0.8737 | -0.0000 | -0.0487 | 0.8737 | -0.0000 | 0.1985  | 0.0427  |
| KY    | 0.0000 | 0.0487 | -0.8737 | 0.0000  | -0.0487 | 0.8737 | -0.0082 | 0.1981  | -0.0558 |
| LX    | 0.0000 | 0.0695 | -1.1205 | -0.0000 | -0.0695 | 1.1205 | -0.0029 | 0.1686  | 0.0408  |
| LXY   | 0.0000 | 0.0695 | -1.1205 | 0.0000  | -0.0695 | 1.1205 | -0.0006 | 0.1657  | 0.0424  |
| LY    | 0.0000 | 0.0695 | -1.1205 | -0.0000 | -0.0695 | 1.1205 | -0.0051 | 0.1658  | -0.0549 |
| MX    | 0.0000 | 0.0324 | -0.8215 | 0.0000  | -0.0324 | 0.8215 | -0.0018 | 0.1071  | 0.0398  |
| MXY   | 0.0000 | 0.0324 | -0.8215 | -0.0000 | -0.0324 | 0.8215 | -0.0015 | 0.1046  | 0.0411  |
| MY    | 0.0000 | 0.0324 | -0.8215 | 0.0000  | -0.0324 | 0.8215 | 0.0174  | 0.1041  | -0.0549 |
| NX    | 0.0000 | 0.1154 | -2.0289 | -0.0000 | -0.1154 | 2.0289 | -0.0050 | 0.0734  | 0.0370  |
| NXY   | 0.0000 | 0.1154 | -2.0289 | 0.0000  | -0.1154 | 2.0289 | 0.0017  | 0.0713  | 0.0381  |
| NY    | 0.0000 | 0.1154 | -2.0289 | -0.0000 | -0.1154 | 2.0289 | 0.0196  | 0.0715  | -0.0512 |
| OX    | 0.0000 | 0.0966 | -1.8124 | -0.0000 | -0.0966 | 1.8124 | -0.0065 | 0.0027  | 0.0260  |
| OKY   | 0.0000 | 0.0966 | -1.8124 | 0.0000  | -0.0966 | 1.8124 | 0.0039  | 0.0015  | 0.0267  |
| OY    | 0.0000 | 0.0966 | -1.8124 | -0.0000 | -0.0966 | 1.8124 | -0.0021 | 0.0021  | -0.0328 |
| PX    | 0.0000 | 0.0483 | -1.1997 | 0.0000  | -0.0483 | 1.1997 | 0.0006  | -0.0116 | 0.0226  |
| PXY   | 0.0000 | 0.0483 | -1.1997 | -0.0000 | -0.0483 | 1.1997 | -0.0031 | -0.0128 | 0.0232  |
| PY    | 0.0000 | 0.0483 | -1.1997 | 0.0000  | -0.0483 | 1.1997 | -0.0065 | -0.0138 | -0.0264 |
| L1X   | 0.0000 | 0.0295 | -0.4185 | -0.0000 | -0.0295 | 0.4185 | -0.0062 | -0.0119 | 0.0109  |
| L1XY  | 0.0000 | 0.0295 | -0.4185 | -0.0000 | -0.0295 | 0.4185 | -0.0105 | -0.0131 | 0.0118  |
| L1Y   | 0.0000 | 0.0295 | -0.4185 | -0.0000 | -0.0295 | 0.4185 | -0.0003 | -0.0138 | -0.0128 |
| L3X   | 0.0000 | 0.0580 | -0.4185 | -0.0000 | -0.0580 | 0.4185 | 0.0008  | -0.0064 | 0.0089  |
| L3XY  | 0.0000 | 0.0580 | -0.4185 | 0.0000  | -0.0580 | 0.4185 | -0.0033 | -0.0058 | 0.0094  |
| L3Y   | 0.0000 | 0.0580 | -0.4185 | -0.0000 | -0.0580 | 0.4185 | -0.0066 | -0.0075 | 0.0022  |
| O1Y   | 0.0000 | 0.0303 | -0.4970 | -0.0000 | -0.0303 | 0.4970 | -0.0015 | 0.0010  | -0.0009 |
| O2X   | 0.0000 | 0.0636 | -0.4970 | 0.0000  | -0.0636 | 0.4970 | -0.0011 | 0.0014  | 0.0062  |
| M1Y   | 0.0000 | 0.0248 | -0.3169 | -0.0000 | -0.0248 | 0.3169 | 0.0240  | 0.1041  | -0.0094 |
| M2X   | 0.0000 | 0.0515 | -0.3169 | 0.0000  | -0.0515 | 0.3169 | -0.0017 | 0.1261  | 0.0408  |
| BMX   | 0.0000 | 0.0085 | -0.1937 | 0.0000  | -0.0085 | 0.1937 | 0.0019  | 0.4052  | 0.1231  |
| BMKY  | 0.0000 | 0.0048 | -0.0557 | 0.0000  | -0.0048 | 0.0557 | 0.0053  | 0.4450  | 0.1230  |
| MMY   | 0.0000 | 0.0099 | -0.2895 | 0.0000  | -0.0099 | 0.2895 | 0.0040  | 0.6865  | 0.1958  |
| MMXY  | 0.0000 | 0.0056 | -0.0816 | 0.0000  | -0.0056 | 0.0816 | 0.0091  | 0.7374  | 0.1955  |
| TTY   | 0.0000 | 0.0085 | -0.2033 | 0.0000  | -0.0085 | 0.2033 | 0.0108  | 1.0357  | 0.1956  |
| THXY  | 0.0000 | 0.0050 | -0.0589 | 0.0000  | -0.0050 | 0.0589 | 0.0148  | 1.0974  | 0.1952  |
| BPMY  | 0.0000 | 0.0099 | -0.1293 | 0.0000  | -0.0099 | 0.1293 | -0.0051 | 0.4061  | -0.1462 |
| BPMXY | 0.0000 | 0.0055 | -0.0577 | -0.0000 | -0.0055 | 0.0577 | -0.0069 | 0.4487  | -0.1464 |

Moments for Angles Modeled as Beams:

| Angle Label | Torsion (ft-lbs) | Origin X Moment (ft-lbs) | Origin Z Moment (ft-lbs) | End X Moment (ft-lbs) | End Z Moment (ft-lbs) | X Shear (lbs) | Z Shear (lbs) |
|-------------|------------------|--------------------------|--------------------------|-----------------------|-----------------------|---------------|---------------|
| g1P         | -451.37          | -5653.76                 | -2392.52                 | -4565.05              | -1566.25              | -417.15       | -161.77       |
| g13P        | 20.18            | -143.01                  | 91.91                    | 127.33                | 203.53                | -1.41         | 26.68         |
| g14P        | -0.71            | -1048.22                 | 25.76                    | -293.56               | 69.63                 | -121.20       | 8.62          |
| g17P        | 19.99            | -127.38                  | -203.52                  | -168.04               | -195.18               | -20.02        | -27.01        |
| g21P        | -0.50            | 293.56                   | -69.63                   | -933.94               | -12.43                | -43.38        | -5.56         |
| g29P        | -590.54          | 1606.56                  | -8046.91                 | -195.49               | 916.59                | 145.48        | -735.34       |
| g30P        | -208.12          | -1113.85                 | 817.64                   | 4826.56               | 2980.53               | 427.90        | 437.86        |
| g33P        | -329.11          | 264.69                   | -1208.57                 | 504.22                | -156.44               | 27.90         | -49.52        |
| g41P        | 39.98            | 8.94                     | -115.53                  | -78.85                | -42.82                | -4.07         | -9.20         |
| g42P        | -0.99            | -911.28                  | 138.88                   | -1161.29              | -75.63                | -120.53       | -12.48        |
| g77P        | 4.31             | -191.48                  | -78.31                   | -144.19               | -14.92                | -12.71        | -3.53         |
| g78P        | 0.48             | 284.00                   | -117.67                  | 241.99                | 64.30                 | 19.92         | -2.02         |



|        |         |           |           |           |           |          |          |
|--------|---------|-----------|-----------|-----------|-----------|----------|----------|
| g81P   | -18.30  | 62.00     | 97.23     | 66.17     | 204.44    | 10.85    | 25.57    |
| g82P   | 0.65    | -387.26   | -94.96    | -239.64   | 43.33     | -53.13   | -4.37    |
| g85P   | 0.68    | -44.11    | -99.74    | -87.44    | 45.00     | -6.56    | -2.73    |
| g89P   | 2.54    | -11.35    | -133.86   | -2.16     | -188.32   | -0.68    | -16.07   |
| g93P   | -525.44 | -6727.77  | 8607.15   | -1848.99  | 8369.29   | -700.62  | 1386.07  |
| g97P   | -800.23 | -9426.65  | 5810.73   | -4630.72  | 7543.57   | -1620.80 | 1539.06  |
| g98P   | -796.05 | 4631.64   | -7543.46  | 6698.40   | -8519.53  | 1850.69  | -2622.71 |
| g105P  | -810.62 | -17867.13 | 3813.34   | -10078.25 | 10281.54  | -2738.42 | 1380.29  |
| g106P  | -793.37 | 10080.65  | -10280.53 | 9426.32   | -5812.21  | 2012.21  | -1659.21 |
| g163P  | 0.97    | 1083.41   | 963.12    | -2537.45  | 7580.60   | -189.76  | 1115.01  |
| g164P  | -3.22   | 2537.44   | -7580.59  | -43.01    | -14358.37 | 325.68   | -2864.34 |
| g167P  | 13.16   | 43.00     | 14358.38  | -9877.91  | 15390.25  | -1284.00 | 3883.92  |
| g171P  | -0.03   | 13.99     | -133.42   | -619.79   | -92.77    | -79.05   | -29.51   |
| g175P  | 0.02    | 619.79    | 92.78     | -156.28   | 67.94     | 60.51    | 20.98    |
| g179P  | -0.07   | 156.28    | -67.93    | -1083.41  | -963.11   | -121.03  | -134.60  |
| g261P  | 0.00    | -0.00     | -0.00     | -50.39    | 74.97     | -6.30    | 9.37     |
| g262P  | -0.02   | 50.39     | -74.97    | -12.99    | -130.71   | 4.68     | -25.73   |
| g322P  | -0.00   | -0.00     | -0.00     | -93.51    | -2.62     | -9.35    | -0.26    |
| g323P  | 0.00    | 93.51     | 2.62      | 51.60     | 1.09      | 14.51    | 0.37     |
| g1X    | -157.67 | 5146.10   | -1919.26  | 3738.77   | -1656.27  | 362.09   | -145.66  |
| g1XY   | 140.47  | 5496.71   | 1784.63   | 4155.63   | 1499.50   | 393.36   | 133.79   |
| g1Y    | 387.83  | -3212.09  | 4912.84   | -2539.17  | 3745.06   | -234.70  | 353.54   |
| g13X   | 19.79   | 59.56     | 122.78    | -168.08   | 195.17    | -9.80    | 28.72    |
| g13XY  | -9.86   | 66.81     | -114.76   | -143.30   | -131.12   | -6.91    | -22.21   |
| g13Y   | -10.03  | -175.58   | -20.16    | 92.38     | -110.86   | -7.51    | -11.83   |
| g14X   | -0.29   | 449.49    | 29.10     | 281.87    | 16.86     | 66.06    | 4.15     |
| g14XY  | -0.52   | 471.43    | -67.26    | 270.74    | -46.30    | 67.04    | -10.26   |
| g14Y   | -0.18   | -1774.83  | 40.95     | -933.94   | 12.43     | -244.67  | 4.82     |
| g17Y   | -9.97   | -92.39    | 110.85    | -143.29   | 131.13    | -15.97   | 16.39    |
| g21X   | -0.39   | -281.87   | -16.86    | 270.74    | 46.30     | -0.75    | 1.99     |
| g29X   | -10.42  | 3718.92   | -2055.95  | -443.47   | 385.07    | 337.24   | -172.03  |
| g29XY  | 97.98   | 3589.77   | 2070.63   | -435.99   | -366.08   | 324.70   | 175.50   |
| g29Y   | 592.59  | -7040.09  | -524.51   | 1107.70   | 359.09    | -611.77  | -17.10   |
| g30X   | 44.34   | -607.15   | -1331.40  | -4800.23  | 2144.76   | -622.23  | 93.61    |
| g30XY  | -94.32  | -721.95   | 1336.78   | -5122.61  | -2020.34  | -672.53  | -78.69   |
| g30Y   | 178.45  | -425.65   | -218.65   | 1840.38   | -6016.24  | 162.99   | -718.67  |
| g33X   | 73.49   | 572.07    | -444.61   | 775.46    | 1712.80   | 48.82    | 45.94    |
| g33XY  | -150.25 | 692.78    | -405.18   | 928.77    | -1745.96  | 58.76    | -48.56   |
| g33Y   | 233.97  | -1503.53  | -418.70   | -533.60   | -780.30   | -73.93   | -43.50   |
| g41X   | 39.96   | -148.85   | 7.08      | -78.86    | 42.81     | -13.24   | 2.90     |
| g41XY  | -1.87   | -144.62   | -16.72    | -73.79    | -45.38    | -12.70   | -3.61    |
| g41Y   | -1.87   | 7.23      | 118.97    | -73.79    | 45.39     | -3.87    | 9.56     |
| g42X   | 0.04    | 427.14    | -57.42    | 581.35    | -29.17    | 58.67    | -5.04    |
| g42XY  | 0.01    | 439.41    | 46.65     | 581.35    | 29.17     | 59.38    | 4.41     |
| g42Y   | -0.87   | -1363.69  | 139.80    | -1161.29  | 75.64     | -146.84  | 12.53    |
| g77Y   | 28.01   | -290.19   | 299.44    | -244.73   | 235.18    | -20.25   | 20.25    |
| g78X   | 0.09    | 42.01     | -54.78    | -90.51    | -0.55     | -1.84    | -2.10    |
| g81X   | -18.42  | 41.17     | -223.16   | 66.11     | -204.45   | 9.10     | -36.24   |
| g81XY  | -15.75  | 63.70     | 270.26    | 51.55     | 156.46    | 9.76     | 36.17    |
| g81Y   | -15.83  | 18.26     | 21.58     | 51.50     | -156.47   | 5.92     | -11.43   |
| g82X   | -0.39   | 8.55      | 162.61    | 3.60      | 206.16    | 1.03     | 31.25    |
| g82XY  | -0.42   | 30.37     | -186.80   | 3.59      | -206.16   | 2.88     | -33.30   |
| g82Y   | 1.09    | -78.13    | 34.09     | -239.63   | -43.33    | -26.93   | -0.78    |
| g85X   | 0.12    | -9.00     | -35.43    | 0.26      | 10.12     | -0.44    | -1.26    |
| g89Y   | -17.70  | -15.94    | 94.21     | -8.10     | 139.20    | -1.21    | 11.64    |
| g93X   | -71.75  | -729.52   | 343.10    | -3670.95  | 2058.93   | -358.66  | 195.75   |
| g93XY  | 186.79  | -329.31   | -362.24   | -3533.87  | -2053.70  | -314.88  | -196.85  |
| g93Y   | 633.74  | 4254.12   | 2470.92   | 7009.70   | 458.02    | 919.71   | 238.83   |
| g97X   | -236.59 | 4489.70   | 1640.86   | 8.42      | 2473.53   | 517.53   | 473.42   |
| g97XY  | 288.37  | 4651.34   | -1616.85  | 64.98     | -2398.22  | 542.61   | -461.98  |
| g97Y   | 832.57  | -8846.95  | -5432.96  | -2790.12  | -5744.24  | -1341.71 | -1288.19 |
| g98X   | -237.37 | -8.30     | -2473.46  | 713.47    | -308.66   | 114.95   | -453.48  |
| g98XY  | 289.21  | -64.83    | 2398.13   | 305.32    | 342.15    | 39.21    | 446.66   |
| g98Y   | 830.65  | 2791.20   | 5744.00   | -4172.62  | -2442.70  | -225.73  | 539.35   |
| g105X  | -231.80 | 10209.86  | 1136.78   | 3775.44   | 6347.09   | 1367.79  | 732.06   |
| g105XY | 283.60  | 10533.26  | -1384.56  | 3907.95   | -6238.97  | 1412.32  | -745.71  |
| g105Y  | 843.41  | -17495.34 | -3971.06  | -9838.85  | -10396.85 | -2678.49 | -1406.99 |
| g106X  | -239.47 | -3774.94  | -6347.10  | -4489.66  | -1640.56  | -850.82  | -822.41  |
| g106XY | 291.29  | -3907.37  | 6238.99   | -4651.29  | 1616.47   | -881.07  | 808.80   |
| g106Y  | 826.37  | 9841.40   | 10395.80  | 8846.60   | 5434.49   | 1927.70  | 1632.12  |

|        |        |         |           |          |           |          |          |
|--------|--------|---------|-----------|----------|-----------|----------|----------|
| g163X  | -0.04  | 145.36  | -0.46     | -2250.40 | -3425.97  | -274.42  | -446.68  |
| g163XY | 0.04   | 168.95  | -46.69    | -2238.87 | 3518.79   | -269.84  | 452.62   |
| g163Y  | -0.97  | 1082.99 | -987.58   | -2549.44 | -7518.90  | -191.38  | -1110.13 |
| g164X  | 2.13   | 2250.40 | 3425.96   | -2077.61 | 7276.71   | 22.52    | 1395.11  |
| g164XY | -2.13  | 2238.87 | -3518.77  | -2070.12 | -7269.78  | 22.00    | -1406.26 |
| g164Y  | 3.33   | 2549.43 | 7518.90   | -193.72  | 14346.59  | 307.56   | 2854.71  |
| g167X  | -5.64  | 2077.60 | -7276.72  | -6398.38 | -8040.40  | -563.06  | -1996.08 |
| g167XY | 5.74   | 2070.12 | 7269.79   | -6448.11 | 8448.01   | -570.50  | 2048.23  |
| g167Y  | -12.86 | 193.71  | -14346.59 | -9501.08 | -15241.29 | -1215.12 | -3862.90 |
| g171X  | 0.01   | -67.26  | 69.20     | -235.85  | -172.64   | -39.52   | -13.49   |
| g171XY | -0.01  | -57.31  | -76.05    | -179.67  | 193.02    | -30.90   | 15.25    |
| g171Y  | 0.03   | 12.99   | 130.71    | -635.08  | 152.96    | -81.17   | 37.01    |
| g175X  | 0.09   | 235.85  | 172.63    | -1020.28 | 408.41    | -102.27  | 75.76    |
| g175XY | -0.09  | 179.67  | -193.00   | -1025.76 | -386.94   | -110.31  | -75.61   |
| g175Y  | -0.02  | 635.08  | -152.97   | -133.07  | -31.46    | 65.53    | -24.07   |
| g179X  | -0.01  | 1020.28 | -408.42   | -145.36  | 0.45      | 114.04   | -53.17   |
| g179XY | 0.03   | 1025.76 | 386.96    | -168.95  | 46.71     | 111.67   | 56.52    |
| g179Y  | 0.05   | 133.07  | 31.46     | -1082.99 | 987.57    | -124.00  | 133.03   |
| g261X  | -0.00  | 0.00    | 0.00      | -138.34  | -56.57    | -17.29   | -7.07    |
| g261XY | 0.00   | -0.00   | -0.00     | -138.21  | 58.47     | -17.27   | 7.31     |
| g261Y  | -0.00  | 0.00    | 0.00      | -50.96   | -78.94    | -6.37    | -9.87    |
| g262X  | 0.01   | 138.34  | 56.58     | 57.31    | 76.06     | 24.45    | 16.57    |
| g262XY | -0.01  | 138.21  | -58.48    | 67.26    | -69.21    | 25.67    | -15.96   |
| g262Y  | 0.02   | 50.96   | 78.95     | -13.99   | 133.43    | 4.62     | 26.56    |
| g322X  | 0.00   | 0.00    | -0.00     | 51.60    | -1.09     | 5.16     | -0.11    |

# Summary of Clamp Capacities and Usages:

| Clamp Force Allowable Usage Label | (kips) | (kips) | t     |
|-----------------------------------|--------|--------|-------|
| SW1                               | 15.29  | 50.00  | 30.58 |
| SW2                               | 15.29  | 50.00  | 30.58 |
| 1A                                | 18.15  | 50.00  | 36.30 |
| 1B                                | 18.15  | 50.00  | 36.30 |
| 2A                                | 18.16  | 50.00  | 36.32 |
| 2B                                | 18.16  | 50.00  | 36.32 |
| 3A                                | 18.15  | 50.00  | 36.30 |
| 3B                                | 18.15  | 50.00  | 36.30 |
| 4                                 | 36.28  | 50.00  | 72.56 |
| 5                                 | 36.34  | 50.00  | 72.67 |
| 6                                 | 36.26  | 50.00  | 72.52 |
| A1T                               | 0.70   | 25.00  | 2.81  |
| A1B                               | 0.85   | 25.00  | 3.42  |
| A2T                               | 0.70   | 25.00  | 2.81  |
| A2B                               | 0.85   | 25.00  | 3.42  |
| A3T                               | 0.70   | 25.00  | 2.81  |
| A3B                               | 0.86   | 25.00  | 3.46  |
| COAX1                             | 13.67  | 25.00  | 54.68 |
| COAX2                             | 14.26  | 25.00  | 57.02 |

\*\*\* Overall summary for all load cases - Usage = Maximum Stress / Allowable Stress  
 Printed capacities are unfactored and do not include the strength factor entered for each loadcase.

Group Summary (Compression Portion):

| Group Label | Group Desc. | Angle Type | Angle Size     | Steel Strength (ksi) | Max Usage % | Max Use In Comp. % | Comp. Control Member | Comp. Force (kips) | Comp. Control Load Case | L/R Comp. Capacity (kips) | Conn. Shear Capacity (kips) | Comp. Bearing Capacity (kips) | RLX   | RLY   | RLZ   | L/R Length Comp. Member (ft) | Curve No. | No. Of Bolts Comp. |   |
|-------------|-------------|------------|----------------|----------------------|-------------|--------------------|----------------------|--------------------|-------------------------|---------------------------|-----------------------------|-------------------------------|-------|-------|-------|------------------------------|-----------|--------------------|---|
| 102         | TOWER       | SAE        | 8X8X1          | 50.0                 | 75.17       | 75.17              | g106P                | -426.537           | NESCA                   | 567.437                   | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 74.66                        | 9.705     | 1                  | 0 |
| 114         | TOWER       | SAE        | 8X8X1          | 50.0                 | 69.82       | 69.82              | g97P                 | -421.583           | NESCA                   | 603.848                   | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 66.80                        | 8.684     | 1                  | 0 |
| 117         | TOWER       | SAU        | 3X2.5X0.25     | 36.0                 | 81.49       | 81.49              | g113X                | -9.553             | NESC                    | 11.724                    | 0.000                       | 0.000                         | 0.500 | 0.500 | 0.500 | 178.84                       | 15.738    | 4                  | 0 |
| 123         | TOWER       | SAU        | 3X3X0.25       | 36.0                 | 41.82       | 41.82              | g85X                 | -5.153             | NESCA                   | 12.320                    | 0.000                       | 0.000                         | 0.450 | 0.450 | 0.450 | 182.91                       | 20.052    | 4                  | 0 |
| 124         | TOWER       | SAU        | 4X3X0.25       | 36.0                 | 12.92       | 12.92              | g81X                 | -2.064             | NESCA                   | 15.975                    | 0.000                       | 0.000                         | 0.800 | 0.800 | 0.800 | 174.01                       | 11.800    | 4                  | 0 |
| 135         | TOWER       | SAE        | 4X4X0.3125     | 36.0                 | 28.66       | 28.66              | g137P                | -9.411             | ICEA                    | 32.838                    | 0.000                       | 0.000                         | 0.500 | 0.500 | 0.500 | 144.63                       | 19.067    | 4                  | 0 |
| 137         | TOWER       | SAE        | 4X4X0.3125     | 36.0                 | 24.16       | 24.16              | g129X                | -7.138             | NESC                    | 29.545                    | 0.000                       | 0.000                         | 0.500 | 0.500 | 0.500 | 152.48                       | 20.102    | 4                  | 0 |
| 300         | TOWER       | SAE        | 8X8X1.125      | 50.0                 | 69.75       | 69.75              | g29P                 | -441.453           | NESCA                   | 632.882                   | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 74.66                        | 9.705     | 1                  | 0 |
| 317         | TOWER       | SAE        | 8X8X1.125      | 50.0                 | 67.97       | 67.97              | g30P                 | -457.767           | NESCA                   | 673.492                   | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 66.80                        | 8.684     | 1                  | 0 |
| 302         | TOWER       | SAU        | 4X3X0.3125     | 36.0                 | 66.83       | 66.83              | g5P                  | -16.094            | WIND                    | 24.083                    | 0.000                       | 0.000                         | 0.300 | 0.300 | 0.300 | 157.60                       | 28.325    | 4                  | 0 |
| 320         | TOWER       | SAU        | 6X3.5X0.25     | 36.0                 | 23.76       | 10.31              | g17P                 | -3.931             | NESCA                   | 38.115                    | 0.000                       | 0.000                         | 0.500 | 0.500 | 0.500 | 113.99                       | 14.762    | 1                  | 0 |
| 321         | TOWER       | SAU        | 3X2X0.25       | 36.0                 | 48.33       | 48.33              | g57P                 | -5.085             | NESCA                   | 10.521                    | 0.000                       | 0.000                         | 0.500 | 0.500 | 0.500 | 179.92                       | 13.044    | 4                  | 0 |
| 327         | TOWER       | SAE        | 4X4X0.375      | 36.0                 | 51.95       | 51.95              | g49P                 | -14.292            | WIND                    | 27.511                    | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 172.50                       | 11.327    | 4                  | 0 |
| 350         | TOWER       | SAE        | 8X8X1          | 50.0                 | 71.17       | 71.17              | g1P                  | -459.164           | NESCA                   | 645.135                   | 0.000                       | 0.000                         | 0.300 | 0.300 | 0.300 | 56.58                        | 24.519    | 1                  | 0 |
| 395         | TOWER       | SAU        | 5X3.5X0.25     | 36.0                 | 28.98       | 28.98              | g121P                | -10.246            | NESC                    | 35.354                    | 0.000                       | 0.000                         | 0.500 | 0.500 | 0.500 | 127.22                       | 16.327    | 4                  | 0 |
| 1031        | TOWER       | SAE        | 5X5X0.3125     | 36.0                 | 39.00       | 39.00              | g153P                | -31.069            | NESCA                   | 79.672                    | 0.000                       | 0.000                         | 0.500 | 0.500 | 0.500 | 92.32                        | 15.295    | 1                  | 0 |
| 1033        | TOWER       | SAE        | 4X4X0.375      | 36.0                 | 21.45       | 21.45              | g145X                | -10.148            | NESCA                   | 47.308                    | 0.000                       | 0.000                         | 0.500 | 0.500 | 0.500 | 131.54                       | 17.276    | 4                  | 0 |
| 1036        | TOWER       | SAE        | 4X4X0.25       | 36.0                 | 13.41       | 13.41              | g161P                | -2.006             | ICEA                    | 14.966                    | 0.000                       | 0.000                         | 0.450 | 0.450 | 0.450 | 192.62                       | 28.358    | 4                  | 0 |
| 2100        | TOWER       | SAE        | 8X8X0.75       | 50.0                 | 66.91       | 66.91              | g167P                | -326.072           | ICEA                    | 487.295                   | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 58.23                        | 7.667     | 1                  | 0 |
| 2103        | TOWER       | SAE        | 5X5X0.375      | 36.0                 | 55.03       | 55.03              | g205X                | -58.405            | NESCA                   | 106.126                   | 0.000                       | 0.000                         | 0.500 | 0.500 | 0.500 | 76.37                        | 12.601    | 1                  | 0 |
| 2111        | TOWER       | SAU        | 2.5X1.5X0.25   | 36.0                 | 10.68       | 0.00               | g278Y                | 0.000              |                         | 1.961                     | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 370.37                       | 10.000    | 4                  | 0 |
| 2112        | TOWER       | SAE        | 6X6X0.5        | 50.0                 | 71.90       | 71.90              | g179P                | -151.840           | ICEA                    | 211.169                   | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 77.97                        | 7.667     | 1                  | 0 |
| 2115        | TOWER       | SAE        | 4X4X0.3125     | 36.0                 | 56.80       | 56.80              | g229X                | -34.980            | ICEA                    | 61.579                    | 0.000                       | 0.000                         | 0.500 | 0.500 | 0.500 | 95.58                        | 12.601    | 1                  | 0 |
| 2119        | TOWER       | SAU        | 2.5X1.5X0.25   | 36.0                 | 18.31       | 0.00               | g299Y                | 0.000              |                         | 1.961                     | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 370.37                       | 10.000    | 4                  | 0 |
| 2129        | TOWER       | SAE        | 4X4X0.25       | 50.0                 | 86.24       | 86.24              | g262P                | -34.193            | ICEA                    | 39.650                    | 0.000                       | 0.000                         | 0.980 | 0.980 | 0.980 | 118.34                       | 8.000     | 1                  | 0 |
| 2131        | TOWER       | SAE        | 2.5X2.5X0.25   | 36.0                 | 87.82       | 87.82              | g257XY               | -10.598            | ICEA                    | 12.068                    | 0.000                       | 0.000                         | 0.500 | 0.500 | 0.500 | 168.00                       | 13.748    | 4                  | 0 |
| 2134        | TOWER       | SAU        | 2.5X1.5X0.25   | 36.0                 | 0.00        | 0.00               |                      | 0.000              |                         | 0.000                     | 0.000                       | 0.000                         | 0.000 | 0.000 | 0.00  | 0.000                        | 0         | 0                  |   |
| 2140        | TOWER       | SAE        | 3X3X0.25       | 36.0                 | 48.24       | 48.24              | g319X                | -5.362             | ICE                     | 11.115                    | 0.000                       | 0.000                         | 0.950 | 0.950 | 0.950 | 192.57                       | 10.000    | 4                  | 0 |
| 2142        | TOWER       | SAU        | 2.5X2X0.25     | 36.0                 | 6.99        | 6.99               | g329P                | -0.551             | ICEA                    | 7.888                     | 0.000                       | 0.000                         | 0.490 | 0.490 | 0.490 | 196.12                       | 14.142    | 4                  | 0 |
| 2145        | TOWER       | ST         | 4WF23          | 36.0                 | 18.29       | 18.29              | g322X                | -12.175            | NESCA                   | 66.573                    | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 120.00                       | 10.000    | 1                  | 0 |
| 2148        | TOWER       | SAE        | 3X3X0.25       | 36.0                 | 63.58       | 63.58              | g269P                | -7.166             | ICEA                    | 11.271                    | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 191.23                       | 9.434     | 4                  | 0 |
| 2157        | TOWER       | SAU        | 3.5X2.5X0.25   | 36.0                 | 14.17       | 14.17              | g325XY               | -2.541             | ICEA                    | 17.926                    | 0.000                       | 0.000                         | 0.500 | 0.500 | 0.500 | 151.63                       | 13.748    | 4                  | 0 |
| 2162        | TOWER       | SAU        | 5X3.5X0.3125   | 36.0                 | 16.53       | 0.00               | X273Y                | 0.000              |                         | 42.500                    | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 131.30                       | 8.382     | 4                  | 0 |
| 2163        | TOWER       | SAE        | 5X5X0.3125     | 36.0                 | 7.25        | 7.25               | g187P                | -4.279             | ICEA                    | 59.059                    | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 120.72                       | 10.000    | 4                  | 0 |
| 2165        | TOWER       | SAE        | 3X3X0.25       | 36.0                 | 42.46       | 0.00               | g188X                | 0.000              |                         | 11.115                    | 0.000                       | 0.000                         | 0.950 | 0.950 | 0.950 | 192.57                       | 10.000    | 4                  | 0 |
| 2166        | TOWER       | SAE        | 3X3X0.1875     | 36.0                 | 0.24        | 0.24               | g373P                | -0.015             | ICEA                    | 6.400                     | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 220.79                       | 10.966    | 4                  | 0 |
| 2167        | TOWER       | SAU        | 2.5X1.5X0.1875 | 36.0                 | 0.07        | 0.02               | g374P                | -0.001             | ICEA                    | 6.036                     | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 183.49                       | 5.000     | 4                  | 0 |
| 2168        | TOWER       | SAE        | 2.5X2.5X0.25   | 36.0                 | 77.23       | 77.23              | g189P                | -8.808             | ICEA                    | 11.404                    | 0.000                       | 0.000                         | 0.500 | 0.500 | 0.500 | 172.82                       | 14.142    | 4                  | 0 |
| 2169        | TOWER       | SAE        | 2.5X2.5X0.25   | 36.0                 | 17.06       | 17.06              | g335P                | -2.373             | NESCA                   | 13.908                    | 0.000                       | 0.000                         | 0.500 | 0.500 | 0.500 | 156.49                       | 12.806    | 4                  | 0 |
| 2170        | TOWER       | SAE        | 5X5X0.375      | 36.0                 | 28.60       | 28.60              | X275Y                | -26.174            | ICEA                    | 91.534                    | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 96.97                        | 8.000     | 1                  | 0 |
| 2177        | TOWER       | SAU        | 3.5X3X0.25     | 36.0                 | 3.29        | 1.29               | g311P                | -0.160             | NESCA                   | 12.346                    | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 190.17                       | 10.000    | 4                  | 0 |
| 2179        | TOWER       | SAE        | 2X2X0.25       | 36.0                 | 23.57       | 0.00               | g281Y                | 0.000              |                         | 3.630                     | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 272.26                       | 8.871     | 4                  | 0 |
| 2181        | TOWER       | SAU        | 2X1.5X0.1875   | 36.0                 | 0.96        | 0.00               | g369Y                | 0.000              |                         | 8.695                     | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 142.86                       | 3.833     | 4                  | 0 |
| 2183        | TOWER       | SAU        | 2.5X2X0.1875   | 36.0                 | 7.23        | 7.23               | g367P                | -0.250             | NESCA                   | 3.456                     | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 259.01                       | 9.217     | 4                  | 0 |
| 2189        | TOWER       | SAU        | 2.5X2X0.1875   | 36.0                 | 10.58       | 10.58              | g363P                | -0.352             | NESCA                   | 3.326                     | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 264.00                       | 9.394     | 4                  | 0 |
| 2192        | TOWER       | SAU        | 6X4X0.4375     | 36.0                 | 8.79        | 0.00               | g286Y                | 0.000              |                         | 54.352                    | 0.000                       | 0.000                         | 0.500 | 0.500 | 0.500 | 148.36                       | 21.587    | 4                  | 0 |
| 2194        | TOWER       | SAE        | 6X6X0.3125     | 36.0                 | 9.71        | 9.71               | g288Y                | -7.854             | ICEA                    | 80.857                    | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 100.00                       | 10.000    | 1                  | 0 |
| 2195        | TOWER       | SAE        | 3X3X0.25       | 36.0                 | 73.49       | 73.49              | g290X                | -8.168             | NESCA                   | 11.115                    | 0.000                       | 0.000                         | 0.950 | 0.950 | 0.950 | 192.57                       | 10.000    | 4                  | 0 |
| 2199        | TOWER       | SAE        | 6X6X0.375      | 36.0                 | 27.26       | 27.26              | g284Y                | -27.487            | ICEA                    | 100.820                   | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 105.88                       | 10.500    | 1                  | 0 |
| 2401        | TOWER       | SAE        | 3X3X0.25       | 36.0                 | 4.22        | 4.22               | g352P                | -0.804             | NESCA                   | 19.084                    | 0.000                       | 0.000                         | 0.500 | 0.500 | 0.500 | 146.96                       | 14.500    | 4                  | 0 |
| 2403        | TOWER       | SAU        | 3.5X3X0.25     | 36.0                 | 4.65        | 4.65               | g294P                | -0.574             | NESCA                   | 12.346                    | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 190.17                       | 10.000    | 4                  | 0 |
| 2407        | TOWER       | SAU        | 2.5X2X0.25     | 36.0                 | 26.48       | 0.00               | g296Y                | 0.000              |                         | 3.031                     | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 316.36                       | 11.178    | 4                  | 0 |
| 2417        | TOWER       | SAE        | 3X3X0.1875     | 36.0                 | 10.00       | 10.00              | g357Y                | -0.616             | NESC                    | 6.159                     | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 225.06                       | 11.178    | 4                  | 0 |
| 2419        | TOWER       | SAU        | 2X1.5X0.1875   | 36.0                 | 1.38        | 0.00               | g355Y                | 0.000              |                         | 8.695                     | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 142.86                       | 3.834     | 4                  | 0 |
| 2422        | TOWER       | SAU        | 5X3.5X0.3125   | 36.0                 | 18.01       | 0.00               | g301Y                | 0.000              |                         | 57.588                    | 0.000                       | 0.000                         | 0.500 | 0.500 | 0.500 | 109.10                       | 13.928    | 1                  | 0 |
| 2426        | TOWER       | SAE        | 3X3X0.25       | 36.0                 | 17.19       | 17.19              | g307X                | -1.911             | NESCA                   | 11.115                    | 0.000                       | 0.000                         | 0.950 | 0.950 | 0.950 | 192.57                       | 10.000    | 4                  | 0 |
| 2427        | TOWER       | SAE        | 5X5X0.3125     | 36.0                 | 6.12        | 6.12               | g305P                | -3.615             | ICEA                    | 59.059                    | 0.000                       | 0.000                         | 1.000 | 1.000 | 1.000 | 120.72                       | 10.000    | 4                  | 0 |

|      |       |     |              |      |       |       |       |         |       |        |       |       |       |       |        |        |   |   |
|------|-------|-----|--------------|------|-------|-------|-------|---------|-------|--------|-------|-------|-------|-------|--------|--------|---|---|
| 2428 | TOWER | SAE | 2.5X2.5X0.25 | 36.0 | 0.00  | 0.00  |       | 0.000   |       | 0.000  | 0.000 | 0.000 | 0.000 | 0.00  | 0.000  | 0      | 0 |   |
| 2430 | TOWER | SAE | 5X5X0.375    | 36.0 | 28.66 | 28.66 | X303P | -24.816 | ICEA  | 86.581 | 0.000 | 0.000 | 1.000 | 1.000 | 103.03 | 8.500  | 1 | 0 |
| 2437 | TOWER | SAE | 2X2X0.25     | 36.0 | 23.04 | 0.00  | g316Y | 0.000   |       | 2.856  | 0.000 | 0.000 | 1.000 | 1.000 | 306.91 | 10.000 | 4 | 0 |
| 2443 | TOWER | SAE | 3X3X0.25     | 36.0 | 2.29  | 2.29  | g292X | -0.460  | ICE   | 20.062 | 0.000 | 0.000 | 0.500 | 0.500 | 143.33 | 14.142 | 4 | 0 |
| 3108 | TOWER | SAU | 3X2.5X0.3125 | 36.0 | 95.26 | 95.26 | g69XY | -5.628  | ICEA  | 5.908  | 0.000 | 0.000 | 0.300 | 0.300 | 280.15 | 40.855 | 4 | 0 |
| 3109 | TOWER | SAU | 6X3.5X0.25   | 36.0 | 64.47 | 64.47 | g42X  | -21.655 | NESCA | 33.591 | 0.000 | 0.000 | 0.500 | 0.500 | 132.78 | 17.196 | 4 | 0 |
| 3114 | TOWER | SAU | 4X3.5X0.25   | 36.0 | 4.34  | 4.34  | g65X  | -0.569  | WINDA | 13.110 | 0.000 | 0.000 | 0.500 | 0.500 | 198.79 | 24.318 | 4 | 0 |
| 3154 | TOWER | SAU | 6X4X0.25     | 36.0 | 87.49 | 87.49 | g78X  | -19.147 | NESCA | 21.885 | 0.000 | 0.000 | 0.500 | 0.500 | 178.64 | 26.409 | 4 | 0 |

Group Summary (Tension Portion):

| Group Label | Group Desc. | Angle Type | Angle Size     | Steel Strength (ksi) | Max Usage % | Max Tension Tens. (kips) | Tension Force (kips) | Tension Control Load Case | Net Tens. Section Capacity (kips) | Conn. Shear Capacity (kips) | Tens. Bearing Capacity (kips) | Conn. Rupture Capacity (kips) | Tens. Member (ft) | No. Of Tens. | No. Of Bolts | No. Of Holes |
|-------------|-------------|------------|----------------|----------------------|-------------|--------------------------|----------------------|---------------------------|-----------------------------------|-----------------------------|-------------------------------|-------------------------------|-------------------|--------------|--------------|--------------|
| 102         | TOWER       | SAE        | 8X8X1          | 50.0                 | 75.17       | 51.13                    | g106XY 383.503       | NESCA                     | 749.999                           | 0.000                       | 0.000                         | 0.000                         | 9.705             | 0            | 0            | 0.000        |
| 114         | TOWER       | SAE        | 8X8X1          | 50.0                 | 69.82       | 52.00                    | g98XY 389.980        | NESCA                     | 749.999                           | 0.000                       | 0.000                         | 0.000                         | 6.130             | 0            | 0            | 0.000        |
| 117         | TOWER       | SAU        | 3X2.5X0.25     | 36.0                 | 81.49       | 25.92                    | g114XY 12.222        | NESCA                     | 47.160                            | 0.000                       | 0.000                         | 0.000                         | 15.738            | 0            | 0            | 0.000        |
| 123         | TOWER       | SAE        | 3X3X0.25       | 36.0                 | 41.82       | 3.23                     | g85P 1.674           | WINDA                     | 51.840                            | 0.000                       | 0.000                         | 0.000                         | 20.052            | 0            | 0            | 0.000        |
| 124         | TOWER       | SAU        | 4X3X0.25       | 36.0                 | 12.92       | 1.78                     | g81P 1.082           | WIND                      | 60.840                            | 0.000                       | 0.000                         | 0.000                         | 11.800            | 0            | 0            | 0.000        |
| 135         | TOWER       | SAE        | 4X4X0.3125     | 36.0                 | 28.66       | 8.84                     | g133P 7.641          | NESCA                     | 86.400                            | 0.000                       | 0.000                         | 0.000                         | 19.067            | 0            | 0            | 0.000        |
| 137         | TOWER       | SAE        | 4X4X0.3125     | 36.0                 | 24.16       | 8.66                     | g129P 7.486          | NESCA                     | 86.400                            | 0.000                       | 0.000                         | 0.000                         | 20.102            | 0            | 0            | 0.000        |
| 300         | TOWER       | SAE        | 8X8X1.125      | 50.0                 | 69.75       | 46.11                    | g29XY 385.697        | NESCA                     | 836.499                           | 0.000                       | 0.000                         | 0.000                         | 9.705             | 0            | 0            | 0.000        |
| 317         | TOWER       | SAE        | 8X8X1.125      | 50.0                 | 67.97       | 46.42                    | g33XY 388.322        | NESCA                     | 836.499                           | 0.000                       | 0.000                         | 0.000                         | 27.584            | 0            | 0            | 0.000        |
| 302         | TOWER       | SAU        | 4X3X0.3125     | 36.0                 | 66.83       | 18.45                    | g6X 13.882           | NESCA                     | 75.240                            | 0.000                       | 0.000                         | 0.000                         | 28.325            | 0            | 0            | 0.000        |
| 320         | TOWER       | SAU        | 6X3.5X0.25     | 36.0                 | 23.76       | 23.76                    | g21X 19.758          | NESCA                     | 83.160                            | 0.000                       | 0.000                         | 0.000                         | 14.762            | 0            | 0            | 0.000        |
| 321         | TOWER       | SAU        | 3X2X0.25       | 36.0                 | 48.33       | 43.52                    | g58X 18.645          | NESCA                     | 42.840                            | 0.000                       | 0.000                         | 0.000                         | 13.044            | 0            | 0            | 0.000        |
| 327         | TOWER       | SAE        | 4X4X0.375      | 36.0                 | 51.95       | 13.25                    | g49X 13.644          | WIND                      | 102.960                           | 0.000                       | 0.000                         | 0.000                         | 11.327            | 0            | 0            | 0.000        |
| 350         | TOWER       | SAE        | 8X8X1          | 50.0                 | 71.17       | 51.46                    | g1XY 385.915         | NESCA                     | 749.999                           | 0.000                       | 0.000                         | 0.000                         | 24.519            | 0            | 0            | 0.000        |
| 395         | TOWER       | SAU        | 5X3.5X0.25     | 36.0                 | 28.98       | 20.86                    | g122X 15.469         | NESCA                     | 74.160                            | 0.000                       | 0.000                         | 0.000                         | 16.327            | 0            | 0            | 0.000        |
| 1031        | TOWER       | SAE        | 5X5X0.3125     | 36.0                 | 39.00       | 17.40                    | g153XY 18.985        | NESCA                     | 109.080                           | 0.000                       | 0.000                         | 0.000                         | 15.295            | 0            | 0            | 0.000        |
| 1033        | TOWER       | SAE        | 4X4X0.375      | 36.0                 | 21.45       | 16.85                    | g145Y 17.354         | ICEA                      | 102.960                           | 0.000                       | 0.000                         | 0.000                         | 17.276            | 0            | 0            | 0.000        |
| 1036        | TOWER       | SAE        | 4X4X0.25       | 36.0                 | 13.41       | 0.00                     | g161X 0.000          |                           | 69.840                            | 0.000                       | 0.000                         | 0.000                         | 28.358            | 0            | 0            | 0.000        |
| 2100        | TOWER       | SAE        | 8X8X0.75       | 50.0                 | 66.91       | 53.34                    | g167XY 305.114       | NESCA                     | 571.999                           | 0.000                       | 0.000                         | 0.000                         | 7.667             | 0            | 0            | 0.000        |
| 2103        | TOWER       | SAE        | 5X5X0.375      | 36.0                 | 55.03       | 45.42                    | g201P 59.031         | NESCA                     | 129.960                           | 0.000                       | 0.000                         | 0.000                         | 12.600            | 0            | 0            | 0.000        |
| 2111        | TOWER       | SAU        | 2.5X1.5X0.25   | 36.0                 | 10.68       | 10.68                    | g278Y 3.613          | ICEA                      | 33.840                            | 0.000                       | 0.000                         | 0.000                         | 10.000            | 0            | 0            | 0.000        |
| 2112        | TOWER       | SAE        | 6X6X0.5        | 50.0                 | 71.90       | 43.36                    | g179XY 124.674       | NESCA                     | 287.500                           | 0.000                       | 0.000                         | 0.000                         | 7.667             | 0            | 0            | 0.000        |
| 2115        | TOWER       | SAE        | 4X4X0.3125     | 36.0                 | 56.80       | 40.69                    | g221P 35.156         | ICEA                      | 86.400                            | 0.000                       | 0.000                         | 0.000                         | 12.600            | 0            | 0            | 0.000        |
| 2119        | TOWER       | SAU        | 2.5X1.5X0.25   | 36.0                 | 18.31       | 18.31                    | g299Y 6.196          | ICEA                      | 33.840                            | 0.000                       | 0.000                         | 0.000                         | 10.000            | 0            | 0            | 0.000        |
| 2129        | TOWER       | SAE        | 4X4X0.25       | 50.0                 | 86.24       | 24.78                    | g262X 24.035         | ICEA                      | 97.000                            | 0.000                       | 0.000                         | 0.000                         | 8.000             | 0            | 0            | 0.000        |
| 2131        | TOWER       | SAE        | 2.5X2.5X0.25   | 36.0                 | 87.82       | 26.04                    | g249P 11.157         | ICEA                      | 42.840                            | 0.000                       | 0.000                         | 0.000                         | 12.806            | 0            | 0            | 0.000        |
| 2134        | TOWER       | SAU        | 2.5X1.5X0.25   | 36.0                 | 0.00        | 0.00                     |                      |                           | 0.000                             | 0.000                       | 0.000                         | 0.000                         | 0.000             | 0            | 0            | 0.000        |
| 2140        | TOWER       | SAE        | 3X3X0.25       | 36.0                 | 48.24       | 15.25                    | g319P 7.906          | ICE                       | 51.840                            | 0.000                       | 0.000                         | 0.000                         | 10.000            | 0            | 0            | 0.000        |
| 2142        | TOWER       | SAU        | 2.5X2X0.25     | 36.0                 | 6.99        | 0.01                     | g329X 0.003          | WINDA                     | 38.160                            | 0.000                       | 0.000                         | 0.000                         | 14.142            | 0            | 0            | 0.000        |
| 2145        | TOWER       | ST         | 4WF23          | 36.0                 | 18.29       | 14.69                    | g322P 18.668         | ICEA                      | 127.080                           | 0.000                       | 0.000                         | 0.000                         | 10.000            | 0            | 0            | 0.000        |
| 2148        | TOWER       | SAE        | 3X3X0.25       | 36.0                 | 63.58       | 13.82                    | g269X 7.163          | ICEA                      | 51.840                            | 0.000                       | 0.000                         | 0.000                         | 9.434             | 0            | 0            | 0.000        |
| 2157        | TOWER       | SAU        | 3.5X2.5X0.25   | 36.0                 | 14.17       | 0.00                     | g325Y 0.000          |                           | 51.840                            | 0.000                       | 0.000                         | 0.000                         | 13.748            | 0            | 0            | 0.000        |
| 2162        | TOWER       | SAU        | 5X3.5X0.3125   | 36.0                 | 16.53       | 16.53                    | g273Y 15.238         | NESCA                     | 92.160                            | 0.000                       | 0.000                         | 0.000                         | 8.382             | 0            | 0            | 0.000        |
| 2163        | TOWER       | SAE        | 5X5X0.3125     | 36.0                 | 7.25        | 0.00                     | g187Y 0.000          |                           | 109.080                           | 0.000                       | 0.000                         | 0.000                         | 10.000            | 0            | 0            | 0.000        |
| 2165        | TOWER       | SAE        | 3X3X0.25       | 36.0                 | 42.46       | 42.46                    | g188X 22.009         | NESCA                     | 51.840                            | 0.000                       | 0.000                         | 0.000                         | 10.000            | 0            | 0            | 0.000        |
| 2166        | TOWER       | SAE        | 3X3X0.1875     | 36.0                 | 0.24        | 0.01                     | g373P 0.004          | WIND                      | 39.240                            | 0.000                       | 0.000                         | 0.000                         | 10.966            | 0            | 0            | 0.000        |
| 2167        | TOWER       | SAU        | 2.5X1.5X0.1875 | 36.0                 | 0.07        | 0.07                     | g374P 0.019          | WINDA                     | 25.560                            | 0.000                       | 0.000                         | 0.000                         | 5.000             | 0            | 0            | 0.000        |
| 2168        | TOWER       | SAE        | 2.5X2.5X0.25   | 36.0                 | 77.23       | 0.00                     | g189X 0.000          |                           | 42.840                            | 0.000                       | 0.000                         | 0.000                         | 14.142            | 0            | 0            | 0.000        |
| 2169        | TOWER       | SAE        | 2.5X2.5X0.25   | 36.0                 | 17.06       | 5.51                     | g336P 2.362          | NESCA                     | 42.840                            | 0.000                       | 0.000                         | 0.000                         | 12.806            | 0            | 0            | 0.000        |
| 2170        | TOWER       | SAE        | 5X5X0.375      | 36.0                 | 28.60       | 0.00                     | X275Y 0.000          |                           | 129.960                           | 0.000                       | 0.000                         | 0.000                         | 8.000             | 0            | 0            | 0.000        |
| 2177        | TOWER       | SAU        | 3.5X3X0.25     | 36.0                 | 3.29        | 3.29                     | g277P 1.850          | NESCA                     | 56.160                            | 0.000                       | 0.000                         | 0.000                         | 10.000            | 0            | 0            | 0.000        |
| 2179        | TOWER       | SAE        | 2X2X0.25       | 36.0                 | 23.57       | 23.57                    | X280P 7.976          | ICEA                      | 33.840                            | 0.000                       | 0.000                         | 0.000                         | 9.217             | 0            | 0            | 0.000        |
| 2181        | TOWER       | SAU        | 2X1.5X0.1875   | 36.0                 | 0.96        | 0.96                     | g361Y 0.213          | NESCA                     | 22.320                            | 0.000                       | 0.000                         | 0.000                         | 4.000             | 0            | 0            | 0.000        |
| 2183        | TOWER       | SAU        | 2.5X2X0.1875   | 36.0                 | 7.23        | 0.00                     | g367Y 0.000          |                           | 29.160                            | 0.000                       | 0.000                         | 0.000                         | 9.217             | 0            | 0            | 0.000        |
| 2189        | TOWER       | SAU        | 2.5X2X0.1875   | 36.0                 | 10.58       | 0.00                     | g363Y 0.000          |                           | 29.160                            | 0.000                       | 0.000                         | 0.000                         | 9.394             | 0            | 0            | 0.000        |
| 2192        | TOWER       | SAU        | 6X4X0.4375     | 36.0                 | 8.79        | 8.79                     | g286Y 13.221         | NESCA                     | 150.480                           | 0.000                       | 0.000                         | 0.000                         | 21.587            | 0            | 0            | 0.000        |
| 2194        | TOWER       | SAE        | 6X6X0.3125     | 36.0                 | 9.71        | 0.00                     | g288Y 0.000          |                           | 131.400                           | 0.000                       | 0.000                         | 0.000                         | 10.000            | 0            | 0            | 0.000        |
| 2195        | TOWER       | SAE        | 3X3X0.25       | 36.0                 | 73.49       | 24.27                    | g290P 12.584         | ICEA                      | 51.840                            | 0.000                       | 0.000                         | 0.000                         | 10.000            | 0            | 0            | 0.000        |
| 2199        | TOWER       | SAE        | 6X6X0.375      | 36.0                 | 27.46       | 0.00                     | X284Y 0.000          |                           | 156.960                           | 0.000                       | 0.000                         | 0.000                         | 10.500            | 0            | 0            | 0.000        |
| 2401        | TOWER       | SAE        | 3X3X0.25       | 36.0                 | 4.22        | 1.59                     | g351Y 0.825          | NESCA                     | 51.840                            | 0.000                       | 0.000                         | 0.000                         | 14.500            | 0            | 0            | 0.000        |
| 2403        | TOWER       | SAU        | 3.5X3X0.25     | 36.0                 | 4.65        | 0.00                     | g294P 0.000          |                           | 56.160                            | 0.000                       | 0.000                         | 0.000                         | 10.000            | 0            | 0            | 0.000        |
| 2407        | TOWER       | SAU        | 2.5X2X0.25     | 36.0                 | 26.48       | 26.48                    | X296Y 10.106         | ICEA                      | 38.160                            | 0.000                       | 0.000                         | 0.000                         | 11.178            | 0            | 0            | 0.000        |
| 2417        | TOWER       | SAE        | 3X3X0.1875     | 36.0                 | 10.00       | 0.00                     | g357Y 0.000          |                           | 39.240                            | 0.000                       | 0.000                         | 0.000                         | 11.178            | 0            | 0            | 0.000        |

|      |       |     |              |      |       |       |       |        |       |         |       |       |       |        |   |       |
|------|-------|-----|--------------|------|-------|-------|-------|--------|-------|---------|-------|-------|-------|--------|---|-------|
| 2419 | TOWER | SAU | 2X1.5X0.1875 | 36.0 | 1.38  | 1.38  | g355Y | 0.308  | NESCA | 22.320  | 0.000 | 0.000 | 0.000 | 3.834  | 0 | 0.000 |
| 2422 | TOWER | SAU | 5X3.5X0.3125 | 36.0 | 18.01 | 18.01 | g301Y | 16.603 | NESCA | 92.160  | 0.000 | 0.000 | 0.000 | 13.928 | 0 | 0.000 |
| 2426 | TOWER | SAE | 3X3X0.25     | 36.0 | 17.19 | 1.05  | g307P | 0.543  | ICEA  | 51.840  | 0.000 | 0.000 | 0.000 | 10.000 | 0 | 0.000 |
| 2427 | TOWER | SAE | 5X5X0.3125   | 36.0 | 6.12  | 0.00  | g305Y | 0.000  |       | 109.080 | 0.000 | 0.000 | 0.000 | 10.000 | 0 | 0.000 |
| 2428 | TOWER | SAE | 2.5X2.5X0.25 | 36.0 | 0.00  | 0.00  |       | 0.000  |       | 0.000   | 0.000 | 0.000 | 0.000 | 0.000  | 0 | 0.000 |
| 2430 | TOWER | SAE | 5X5X0.375    | 36.0 | 28.66 | 0.00  | g303Y | 0.000  |       | 129.960 | 0.000 | 0.000 | 0.000 | 8.500  | 0 | 0.000 |
| 2437 | TOWER | SAE | 2X2X0.25     | 36.0 | 23.04 | 23.04 | X313P | 7.798  | ICEA  | 33.840  | 0.000 | 0.000 | 0.000 | 9.394  | 0 | 0.000 |
| 2443 | TOWER | SAE | 3X3X0.25     | 36.0 | 2.29  | 0.00  | g292X | 0.000  |       | 51.840  | 0.000 | 0.000 | 0.000 | 14.142 | 0 | 0.000 |
| 3108 | TOWER | SAU | 3X2.5X0.3125 | 36.0 | 95.26 | 24.23 | g69Y  | 14.130 | WIND  | 58.320  | 0.000 | 0.000 | 0.000 | 40.855 | 0 | 0.000 |
| 3109 | TOWER | SAU | 6X3.5X0.25   | 36.0 | 64.47 | 6.62  | g41P  | 5.509  | ICEA  | 83.160  | 0.000 | 0.000 | 0.000 | 17.196 | 0 | 0.000 |
| 3114 | TOWER | SAU | 4X3.5X0.25   | 36.0 | 4.34  | 0.92  | g65P  | 0.601  | WINDA | 65.160  | 0.000 | 0.000 | 0.000 | 24.318 | 0 | 0.000 |
| 3154 | TOWER | SAU | 6X4X0.25     | 36.0 | 87.49 | 5.63  | g78P  | 4.944  | WINDA | 87.840  | 0.000 | 0.000 | 0.000 | 26.409 | 0 | 0.000 |

\*\*\* Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

| Load Case | Maximum Usage % | Element Label | Element Type |
|-----------|-----------------|---------------|--------------|
| NESC      | 87.36           | g78X          | Angle        |
| WIND      | 71.81           | g113X         | Angle        |
| ICE       | 93.25           | g69XY         | Angle        |
| NESCA     | 87.49           | g78X          | Angle        |
| WINDA     | 70.63           | g113X         | Angle        |
| ICEA      | 95.26           | g69XY         | Angle        |

Summary of Insulator Usages:

| Insulator Label | Insulator Type | Maximum Usage % | Load case | Weight (lbs) |
|-----------------|----------------|-----------------|-----------|--------------|
| SW1             | Clamp          | 30.58           | ICEA      | 0.0          |
| SW2             | Clamp          | 30.58           | ICEA      | 0.0          |
| 1A              | Clamp          | 37.28           | NESC      | 0.0          |
| 1B              | Clamp          | 37.28           | NESC      | 0.0          |
| 2A              | Clamp          | 37.30           | NESC      | 0.0          |
| 2B              | Clamp          | 37.30           | NESC      | 0.0          |
| 3A              | Clamp          | 37.27           | NESC      | 0.0          |
| 3B              | Clamp          | 37.27           | NESC      | 0.0          |
| 4               | Clamp          | 74.46           | NESC      | 0.0          |
| 5               | Clamp          | 74.57           | NESC      | 0.0          |
| 6               | Clamp          | 74.38           | NESC      | 0.0          |
| A1T             | Clamp          | 3.77            | WINDA     | 0.0          |
| A1B             | Clamp          | 3.42            | ICEA      | 0.0          |
| A2T             | Clamp          | 3.77            | WINDA     | 0.0          |
| A2B             | Clamp          | 3.42            | ICEA      | 0.0          |
| A3T             | Clamp          | 3.77            | WINDA     | 0.0          |
| A3B             | Clamp          | 3.46            | ICEA      | 0.0          |
| COAX1           | Clamp          | 54.68           | ICEA      | 0.0          |
| COAX2           | Clamp          | 57.02           | ICEA      | 0.0          |

\*\*\* Weight of structure (lbs):  
 Weight of Angles\*Section DLF: 62067.8  
 Total: 62067.8

\*\*\* End of Report

Project Name : GRIDCOM Niagara Mohawk Tower 98 Clay Dewitt 345 kV Transmission Tower  
 Project Notes: 185 foot Type G tower Bethlehem  
 Project File : c:\pls\tower\projects\national grid\twr 98.tow  
 Date run : 1:58:36 PM Tuesday, April 27, 2004  
 by : Tower Version 6.32  
 Licensed to : R.C.P. Engineering

Successfully performed nonlinear analysis

The model has 0 warnings.

Loads from file: c:\pls\tower\projects\national grid\twr 98.lca

### \*\*\* Analysis Results:

Maximum element utilization is 95.26% for Angle "g69XY" in load case "ICEA"  
 Maximum insulator utilization is 74.57% for Clamp "5" in load case "NESC"

### Summary of Joint Support Reactions For All Load Cases:

| Load Case | Joint Label | Long. Force (kips) | Tran. Force (kips) | Vert. Force (kips) | Shear Force (kips) | Tran. Moment (ft-k) | Long. Moment (ft-k) | Vert. Moment (ft-k) | Bending Moment (ft-k) |
|-----------|-------------|--------------------|--------------------|--------------------|--------------------|---------------------|---------------------|---------------------|-----------------------|
| NESC      | ZP          | -67.72             | -72.94             | 455.46             | 99.53              | -3.31               | 0.56                | 0.94                | 3.35                  |
| NESC      | ZX          | 63.66              | -62.20             | -395.54            | 89.00              | -2.97               | -1.68               | 0.49                | 3.41                  |
| NESC      | ZXY         | -63.66             | -62.19             | -395.53            | 89.00              | -2.97               | 1.68                | -0.49               | 3.41                  |
| NESC      | ZY          | 67.72              | -72.93             | 455.45             | 99.53              | -3.31               | -0.55               | -0.94               | 3.35                  |
| WIND      | ZP          | -43.01             | -49.31             | 288.91             | 65.43              | -0.51               | 0.32                | 2.76                | 0.60                  |
| WIND      | ZX          | 39.95              | -42.86             | -248.66            | 58.59              | 0.06                | -0.84               | 1.54                | 0.85                  |
| WIND      | ZXY         | -39.95             | -42.86             | -248.65            | 58.59              | 0.06                | 0.84                | -1.54               | 0.85                  |
| WIND      | ZY          | 43.01              | -49.31             | 288.90             | 65.43              | -0.51               | -0.32               | -2.76               | 0.60                  |
| ICE       | ZP          | -64.34             | -67.32             | 433.13             | 93.12              | -4.17               | 0.60                | -0.11               | 4.21                  |
| ICE       | ZX          | 60.06              | -56.91             | -372.94            | 82.74              | -3.74               | -1.69               | -0.15               | 4.11                  |
| ICE       | ZXY         | -60.06             | -56.91             | -372.94            | 82.74              | -3.74               | 1.69                | 0.15                | 4.11                  |
| ICE       | ZY          | 64.34              | -67.32             | 433.13             | 93.12              | -4.17               | -0.60               | 0.11                | 4.21                  |
| NESCA     | ZP          | -68.88             | -74.12             | 463.78             | 101.18             | -3.47               | 1.11                | 1.01                | 3.64                  |
| NESCA     | ZX          | 63.73              | -61.91             | -394.93            | 88.85              | -3.06               | -1.60               | 0.44                | 3.45                  |
| NESCA     | ZXY         | -63.46             | -61.84             | -395.19            | 88.60              | -3.14               | 1.77                | -0.46               | 3.61                  |
| NESCA     | ZY          | 68.60              | -73.51             | 460.82             | 100.54             | -3.51               | -0.02               | -0.82               | 3.51                  |
| WINDA     | ZP          | -44.39             | -50.65             | 298.36             | 67.36              | -0.68               | 0.34                | 2.75                | 0.75                  |
| WINDA     | ZX          | 40.50              | -43.21             | -252.16            | 59.23              | -0.07               | -0.87               | 1.49                | 0.88                  |
| WINDA     | ZXY         | -40.46             | -43.10             | -251.76            | 59.12              | -0.11               | 0.86                | -1.50               | 0.87                  |
| WINDA     | ZY          | 44.35              | -50.44             | 297.53             | 67.17              | -0.72               | -0.32               | -2.76               | 0.78                  |
| ICEA      | ZP          | -66.27             | -69.35             | 446.66             | 95.92              | -4.38               | 2.08                | 0.12                | 4.85                  |
| ICEA      | ZX          | 59.64              | -55.92             | -367.96            | 81.76              | -3.81               | -1.47               | -0.18               | 4.09                  |
| ICEA      | ZXY         | -58.81             | -55.52             | -367.41            | 80.88              | -4.00               | 1.88                | 0.17                | 4.42                  |
| ICEA      | ZY          | 65.44              | -67.96             | 439.86             | 94.34              | -4.44               | 0.85                | 0.39                | 4.52                  |

### Summary of Joint Support Reactions For All Load Cases in Direction of Leg:

| Load Case | Support Joint | Origin Joint | Leg Member | Force In Leg Dir. (kips) | Force Perpendicular To Leg (kips) |
|-----------|---------------|--------------|------------|--------------------------|-----------------------------------|
| NESC      | ZP            | PS           | g1P        | 466.172                  | 5.554                             |
| NESC      | ZX            | PX           | g1X        | -405.378                 | 6.259                             |
| NESC      | ZXY           | PXY          | g1XY       | -405.376                 | 6.258                             |
| NESC      | ZY            | PY           | g1Y        | 466.167                  | 5.554                             |
| WIND      | ZP            | PS           | g1P        | 296.151                  | 6.534                             |
| WIND      | ZX            | PX           | g1X        | -255.381                 | 6.752                             |
| WIND      | ZXY           | PXY          | g1XY       | -255.374                 | 6.751                             |
| WIND      | ZY            | PY           | g1Y        | 296.141                  | 6.532                             |
| ICE       | ZP            | PS           | g1P        | 443.015                  | 3.266                             |
| ICE       | ZX            | PX           | g1X        | -381.978                 | 5.154                             |

|       |     |     |      |          |       |
|-------|-----|-----|------|----------|-------|
| ICE   | ZXY | PXY | g1XY | -381.978 | 5.154 |
| ICE   | ZY  | PY  | g1Y  | 443.011  | 3.266 |
| NESCA | ZP  | PS  | g1P  | 474.657  | 5.500 |
| NESCA | ZX  | PX  | g1X  | -404.758 | 6.279 |
| NESCA | ZXY | PXY | g1XY | -404.958 | 5.963 |
| NESCA | ZY  | PY  | g1Y  | 471.626  | 5.341 |
| WINDA | ZP  | PS  | g1P  | 305.796  | 6.481 |
| WINDA | ZX  | PX  | g1X  | -258.939 | 6.628 |
| WINDA | ZXY | PXY | g1XY | -258.527 | 6.587 |
| WINDA | ZY  | PY  | g1Y  | 304.951  | 6.395 |
| ICEA  | ZP  | PS  | g1P  | 456.832  | 3.293 |
| ICEA  | ZX  | PX  | g1X  | -376.891 | 5.378 |
| ICEA  | ZXY | PXY | g1XY | -376.183 | 4.581 |
| ICEA  | ZY  | PY  | g1Y  | 449.859  | 2.927 |

# Overturning Moment Summary For All Load Cases:

| Load Case Transverse Longitudinal Resultant |                  |                   |
|---------------------------------------------|------------------|-------------------|
|                                             | Moment<br>(ft-k) | Moment<br>(ft-k)  |
| NESC                                        | 37443.560        | 0.079 37443.560   |
| WIND                                        | 23652.557        | 0.055 23652.557   |
| ICE                                         | 35467.143        | 0.062 35467.143   |
| NESCA                                       | 37723.884        | 70.880 37723.951  |
| WINDA                                       | 24195.853        | 9.415 24195.855   |
| ICEA                                        | 35681.677        | 137.577 35681.942 |

\*\*\* Overall summary for all load cases - Usage = Maximum Stress / Allowable Stress  
Printed capacities are unfactored and do not include the strength factor entered for each loadcase.

# Group Summary (Compression Portion):

| Group Label | Group Desc. | Angle Type | Angle Size   | Steel Strength (ksi) | Max Usage % | Max Use In Comp. % | Comp. Control Member | Comp. Force (kips) | Comp. Control Load Case | L/R Comp. Capacity (kips) | Comp. Conn. Shear Capacity (kips) | Comp. Conn. Bearing Capacity (kips) | RLX   | RLY   | RLZ   | L/R Length (ft) | Curve No. | No. Of Bolts |
|-------------|-------------|------------|--------------|----------------------|-------------|--------------------|----------------------|--------------------|-------------------------|---------------------------|-----------------------------------|-------------------------------------|-------|-------|-------|-----------------|-----------|--------------|
| 102         | TOWER       | SAE        | 8X8X1        | 50.0                 | 75.17       | 75.17              | g106P                | -426.537           | NESCA                   | 567.437                   | 0.000                             | 0.000                               | 1.000 | 1.000 | 1.000 | 74.66           | 9.705     | 1            |
| 114         | TOWER       | SAE        | 8X8X1        | 50.0                 | 69.82       | 69.82              | g97P                 | -421.583           | NESCA                   | 603.848                   | 0.000                             | 0.000                               | 1.000 | 1.000 | 1.000 | 66.80           | 8.684     | 1            |
| 117         | TOWER       | SAU        | 3X2.5X0.25   | 36.0                 | 81.49       | 81.49              | g113X                | -9.553             | NESC                    | 11.724                    | 0.000                             | 0.000                               | 0.500 | 0.500 | 0.500 | 178.84          | 15.738    | 4            |
| 123         | TOWER       | SAE        | 3X3X0.25     | 36.0                 | 41.82       | 41.82              | g85X                 | -5.153             | NESCA                   | 12.320                    | 0.000                             | 0.000                               | 0.450 | 0.450 | 0.450 | 182.91          | 20.052    | 4            |
| 124         | TOWER       | SAU        | 4X3X0.25     | 36.0                 | 12.92       | 12.92              | g81X                 | -2.064             | NESCA                   | 15.975                    | 0.000                             | 0.000                               | 0.800 | 0.800 | 0.800 | 174.01          | 11.800    | 4            |
| 135         | TOWER       | SAE        | 4X4X0.3125   | 36.0                 | 28.66       | 28.66              | g137P                | -9.411             | ICEA                    | 32.838                    | 0.000                             | 0.000                               | 0.500 | 0.500 | 0.500 | 144.63          | 19.067    | 4            |
| 137         | TOWER       | SAE        | 4X4X0.3125   | 36.0                 | 24.16       | 24.16              | g129X                | -7.138             | NESC                    | 29.545                    | 0.000                             | 0.000                               | 0.500 | 0.500 | 0.500 | 152.48          | 20.102    | 4            |
| 300         | TOWER       | SAE        | 8X8X1.125    | 50.0                 | 69.75       | 69.75              | g29P                 | -441.453           | NESCA                   | 632.882                   | 0.000                             | 0.000                               | 1.000 | 1.000 | 1.000 | 74.66           | 9.705     | 1            |
| 317         | TOWER       | SAE        | 8X8X1.125    | 50.0                 | 67.97       | 67.97              | g30P                 | -457.767           | NESCA                   | 673.492                   | 0.000                             | 0.000                               | 1.000 | 1.000 | 1.000 | 66.80           | 8.684     | 1            |
| 302         | TOWER       | SAU        | 4X3X0.3125   | 36.0                 | 66.83       | 66.83              | g5P                  | -16.094            | WIND                    | 24.083                    | 0.000                             | 0.000                               | 0.300 | 0.300 | 0.300 | 157.60          | 28.325    | 4            |
| 320         | TOWER       | SAU        | 6X3.5X0.25   | 36.0                 | 23.76       | 10.31              | g17P                 | -3.931             | NESCA                   | 38.115                    | 0.000                             | 0.000                               | 0.500 | 0.500 | 0.500 | 113.99          | 14.762    | 1            |
| 321         | TOWER       | SAU        | 3X2X0.25     | 36.0                 | 48.33       | 48.33              | g57P                 | -5.085             | NESCA                   | 10.521                    | 0.000                             | 0.000                               | 0.500 | 0.500 | 0.500 | 179.92          | 13.044    | 4            |
| 327         | TOWER       | SAE        | 4X4X0.375    | 36.0                 | 51.95       | 51.95              | g49P                 | -14.292            | WIND                    | 27.511                    | 0.000                             | 0.000                               | 1.000 | 1.000 | 1.000 | 172.50          | 11.327    | 4            |
| 350         | TOWER       | SAE        | 8X8X1        | 50.0                 | 71.17       | 71.17              | g1P                  | -459.164           | NESCA                   | 645.135                   | 0.000                             | 0.000                               | 0.300 | 0.300 | 0.300 | 56.58           | 24.519    | 1            |
| 395         | TOWER       | SAU        | 5X3.5X0.25   | 36.0                 | 28.98       | 28.98              | g121P                | -10.246            | NESC                    | 35.354                    | 0.000                             | 0.000                               | 0.500 | 0.500 | 0.500 | 127.22          | 16.327    | 4            |
| 1031        | TOWER       | SAE        | 5X5X0.3125   | 36.0                 | 39.00       | 39.00              | g153P                | -31.069            | NESCA                   | 79.672                    | 0.000                             | 0.000                               | 0.500 | 0.500 | 0.500 | 92.32           | 15.295    | 1            |
| 1033        | TOWER       | SAE        | 4X4X0.375    | 36.0                 | 21.45       | 21.45              | g145X                | -10.148            | NESCA                   | 47.308                    | 0.000                             | 0.000                               | 0.500 | 0.500 | 0.500 | 131.54          | 17.276    | 4            |
| 1036        | TOWER       | SAE        | 4X4X0.25     | 36.0                 | 13.41       | 13.41              | g161P                | -2.006             | ICEA                    | 14.966                    | 0.000                             | 0.000                               | 0.450 | 0.450 | 0.450 | 192.62          | 28.358    | 4            |
| 2100        | TOWER       | SAE        | 8X8X0.75     | 50.0                 | 66.91       | 66.91              | g167P                | -326.072           | ICEA                    | 487.295                   | 0.000                             | 0.000                               | 1.000 | 1.000 | 1.000 | 58.23           | 7.667     | 1            |
| 2103        | TOWER       | SAE        | 5X5X0.375    | 36.0                 | 55.03       | 55.03              | g205X                | -58.405            | NESCA                   | 106.126                   | 0.000                             | 0.000                               | 0.500 | 0.500 | 0.500 | 76.37           | 12.601    | 1            |
| 2111        | TOWER       | SAU        | 2.5X1.5X0.25 | 36.0                 | 10.68       | 0.00               | g278Y                | 0.000              | ICEA                    | 1.961                     | 0.000                             | 0.000                               | 1.000 | 1.000 | 1.000 | 370.37          | 10.000    | 4            |
| 2112        | TOWER       | SAE        | 6X6X0.5      | 50.0                 | 71.90       | 71.90              | g179P                | -151.840           | ICEA                    | 211.169                   | 0.000                             | 0.000                               | 1.000 | 1.000 | 1.000 | 77.97           | 7.667     | 1            |
| 2115        | TOWER       | SAE        | 4X4X0.3125   | 36.0                 | 56.80       | 56.80              | g229X                | -34.980            | ICEA                    | 61.579                    | 0.000                             | 0.000                               | 0.500 | 0.500 | 0.500 | 95.58           | 12.601    | 1            |
| 2119        | TOWER       | SAU        | 2.5X1.5X0.25 | 36.0                 | 18.31       | 0.00               | g299Y                | 0.000              | ICEA                    | 1.961                     | 0.000                             | 0.000                               | 1.000 | 1.000 | 1.000 | 370.37          | 10.000    | 4            |
| 2129        | TOWER       | SAE        | 4X4X0.25     | 50.0                 | 86.24       | 86.24              | g262P                | -34.193            | ICEA                    | 39.650                    | 0.000                             | 0.000                               | 0.980 | 0.980 | 0.980 | 118.34          | 8.000     | 1            |
| 2131        | TOWER       | SAE        | 2.5X2.5X0.25 | 36.0                 | 87.82       | 87.82              | g257XY               | -10.598            | ICEA                    | 12.068                    | 0.000                             | 0.000                               | 0.500 | 0.500 | 0.500 | 168.00          | 13.748    | 4            |
| 2134        | TOWER       | SAU        | 2.5X1.5X0.25 | 36.0                 | 0.00        | 0.00               |                      | 0.000              |                         | 0.000                     | 0.000                             | 0.000                               | 0.000 | 0.000 | 0.000 | 0.00            | 0.000     | 0            |

|      |       |     |                |      |       |       |        |         |       |         |       |       |       |       |       |        |        |   |   |
|------|-------|-----|----------------|------|-------|-------|--------|---------|-------|---------|-------|-------|-------|-------|-------|--------|--------|---|---|
| 2140 | TOWER | SAE | 3X3X0.25       | 36.0 | 48.24 | 48.24 | g319X  | -5.362  | ICE   | 11.115  | 0.000 | 0.000 | 0.950 | 0.950 | 0.950 | 192.57 | 10.000 | 4 | 0 |
| 2142 | TOWER | SAU | 2.5X2X0.25     | 36.0 | 6.99  | 6.99  | g329P  | -0.551  | ICEA  | 7.888   | 0.000 | 0.000 | 0.490 | 0.490 | 0.490 | 196.12 | 14.142 | 4 | 0 |
| 2145 | TOWER | ST  | 4WF23          | 36.0 | 18.29 | 18.29 | g322X  | -12.175 | NESCA | 66.573  | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 120.00 | 10.000 | 1 | 0 |
| 2148 | TOWER | SAE | 3X3X0.25       | 36.0 | 63.58 | 63.58 | g269P  | -7.166  | ICEA  | 11.271  | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 191.23 | 9.434  | 4 | 0 |
| 2157 | TOWER | SAU | 3.5X2.5X0.25   | 36.0 | 14.17 | 14.17 | g325XY | -2.541  | ICEA  | 17.926  | 0.000 | 0.000 | 0.500 | 0.500 | 0.500 | 151.63 | 13.748 | 4 | 0 |
| 2162 | TOWER | SAU | 5X3.5X0.3125   | 36.0 | 16.53 | 0.00  | X273Y  | 0.000   |       | 42.500  | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 131.30 | 8.382  | 4 | 0 |
| 2163 | TOWER | SAE | 5X5X0.3125     | 36.0 | 7.25  | 7.25  | g187P  | -4.279  | ICEA  | 59.059  | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 120.72 | 10.000 | 4 | 0 |
| 2165 | TOWER | SAE | 3X3X0.25       | 36.0 | 42.46 | 0.00  | g188X  | 0.000   |       | 11.115  | 0.000 | 0.000 | 0.950 | 0.950 | 0.950 | 192.57 | 10.000 | 4 | 0 |
| 2166 | TOWER | SAE | 3X3X0.1875     | 36.0 | 0.24  | 0.24  | g373P  | -0.015  | ICEA  | 6.400   | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 220.79 | 10.966 | 4 | 0 |
| 2167 | TOWER | SAU | 2.5X1.5X0.1875 | 36.0 | 0.07  | 0.02  | g374P  | -0.001  | ICEA  | 6.036   | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 183.49 | 5.000  | 4 | 0 |
| 2168 | TOWER | SAE | 2.5X2.5X0.25   | 36.0 | 77.23 | 77.23 | g189P  | -8.808  | ICEA  | 11.404  | 0.000 | 0.000 | 0.500 | 0.500 | 0.500 | 172.82 | 14.142 | 4 | 0 |
| 2169 | TOWER | SAE | 2.5X2.5X0.25   | 36.0 | 17.06 | 17.06 | g335P  | -2.373  | NESCA | 13.908  | 0.000 | 0.000 | 0.500 | 0.500 | 0.500 | 156.49 | 12.806 | 4 | 0 |
| 2170 | TOWER | SAE | 5X5X0.375      | 36.0 | 28.60 | 28.60 | X275Y  | -26.174 | ICEA  | 91.534  | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 96.97  | 8.000  | 1 | 0 |
| 2177 | TOWER | SAU | 3.5X3X0.25     | 36.0 | 3.29  | 1.29  | g311P  | -0.160  | NESCA | 12.346  | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 190.17 | 10.000 | 4 | 0 |
| 2179 | TOWER | SAE | 2X2X0.25       | 36.0 | 23.57 | 0.00  | g281Y  | 0.000   |       | 3.630   | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 272.26 | 8.871  | 4 | 0 |
| 2181 | TOWER | SAU | 2X1.5X0.1875   | 36.0 | 0.96  | 0.00  | g369Y  | 0.000   |       | 8.695   | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 142.86 | 3.833  | 4 | 0 |
| 2183 | TOWER | SAU | 2.5X2X0.1875   | 36.0 | 7.23  | 7.23  | g367P  | -0.250  | NESCA | 3.456   | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 259.01 | 9.217  | 4 | 0 |
| 2189 | TOWER | SAU | 2.5X2X0.1875   | 36.0 | 10.58 | 10.58 | g363P  | -0.352  | NESCA | 3.326   | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 264.00 | 9.394  | 4 | 0 |
| 2192 | TOWER | SAU | 6X4X0.4375     | 36.0 | 8.79  | 0.00  | g286Y  | 0.000   |       | 54.352  | 0.000 | 0.000 | 0.500 | 0.500 | 0.500 | 148.36 | 21.587 | 4 | 0 |
| 2194 | TOWER | SAE | 6X6X0.3125     | 36.0 | 9.71  | 9.71  | g288Y  | -7.854  | ICEA  | 80.857  | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 100.00 | 10.000 | 1 | 0 |
| 2195 | TOWER | SAE | 3X3X0.25       | 36.0 | 73.49 | 73.49 | g290X  | -8.168  | NESCA | 11.115  | 0.000 | 0.000 | 0.950 | 0.950 | 0.950 | 192.57 | 10.000 | 4 | 0 |
| 2199 | TOWER | SAE | 6X6X0.375      | 36.0 | 27.26 | 27.26 | g284Y  | -27.487 | ICEA  | 100.820 | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 105.88 | 10.500 | 1 | 0 |
| 2401 | TOWER | SAE | 3X3X0.25       | 36.0 | 4.22  | 4.22  | g352P  | -0.804  | NESCA | 19.084  | 0.000 | 0.000 | 0.500 | 0.500 | 0.500 | 146.96 | 14.500 | 4 | 0 |
| 2403 | TOWER | SAU | 3.5X3X0.25     | 36.0 | 4.65  | 4.65  | g294P  | -0.574  | NESCA | 12.346  | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 190.17 | 10.000 | 4 | 0 |
| 2407 | TOWER | SAU | 2.5X2X0.25     | 36.0 | 26.48 | 0.00  | g296Y  | 0.000   |       | 3.031   | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 316.36 | 11.178 | 4 | 0 |
| 2417 | TOWER | SAE | 3X3X0.1875     | 36.0 | 10.00 | 10.00 | g357Y  | -0.616  | NESC  | 6.159   | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 225.06 | 11.178 | 4 | 0 |
| 2419 | TOWER | SAU | 2X1.5X0.1875   | 36.0 | 1.38  | 0.00  | g355Y  | 0.000   |       | 8.695   | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 142.86 | 3.834  | 4 | 0 |
| 2422 | TOWER | SAU | 5X3.5X0.3125   | 36.0 | 18.01 | 0.00  | g301Y  | 0.000   |       | 57.588  | 0.000 | 0.000 | 0.500 | 0.500 | 0.500 | 109.10 | 13.928 | 1 | 0 |
| 2426 | TOWER | SAE | 3X3X0.25       | 36.0 | 17.19 | 17.19 | g307X  | -1.911  | NESCA | 11.115  | 0.000 | 0.000 | 0.950 | 0.950 | 0.950 | 192.57 | 10.000 | 4 | 0 |
| 2427 | TOWER | SAE | 5X5X0.3125     | 36.0 | 6.12  | 6.12  | g305P  | -3.615  | ICEA  | 59.059  | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 120.72 | 10.000 | 4 | 0 |
| 2428 | TOWER | SAE | 2.5X2.5X0.25   | 36.0 | 0.00  | 0.00  |        | 0.000   |       | 0.000   | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.00   | 0.000  | 0 | 0 |
| 2430 | TOWER | SAE | 5X5X0.375      | 36.0 | 28.66 | 28.66 | X303P  | -24.816 | ICEA  | 86.581  | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 103.03 | 8.500  | 1 | 0 |
| 2437 | TOWER | SAE | 2X2X0.25       | 36.0 | 23.04 | 0.00  | g316Y  | 0.000   |       | 2.856   | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 306.91 | 10.000 | 4 | 0 |
| 2443 | TOWER | SAE | 3X3X0.25       | 36.0 | 2.29  | 2.29  | g292X  | -0.460  | ICE   | 20.062  | 0.000 | 0.000 | 0.500 | 0.500 | 0.500 | 143.33 | 14.142 | 4 | 0 |
| 3108 | TOWER | SAU | 3X2.5X0.3125   | 36.0 | 95.26 | 95.26 | g69XY  | -5.628  | ICEA  | 5.908   | 0.000 | 0.000 | 0.300 | 0.300 | 0.300 | 280.15 | 40.855 | 4 | 0 |
| 3109 | TOWER | SAU | 6X3.5X0.25     | 36.0 | 64.47 | 64.47 | g42X   | -21.655 | NESCA | 33.591  | 0.000 | 0.000 | 0.500 | 0.500 | 0.500 | 132.78 | 17.196 | 4 | 0 |
| 3114 | TOWER | SAU | 4X3.5X0.25     | 36.0 | 4.34  | 4.34  | g65X   | -0.569  | WINDA | 13.110  | 0.000 | 0.000 | 0.500 | 0.500 | 0.500 | 198.79 | 24.318 | 4 | 0 |
| 3154 | TOWER | SAU | 6X4X0.25       | 36.0 | 87.49 | 87.49 | g78X   | -19.147 | NESCA | 21.885  | 0.000 | 0.000 | 0.500 | 0.500 | 0.500 | 178.64 | 26.409 | 4 | 0 |

Group Summary (Tension Portion):

| Group Label | Group Desc. | Angle Type | Angle Size | Steel Strength (ksi) | Max Usage % | Max Tension Use In Tens. % | Tension Control Member | Tension Force (kips) | Tension Control Load Case | Net Tens. Section Capacity (kips) | Conn. Shear Capacity (kips) | Tens. Bearing Capacity (kips) | Tens. Rupture Capacity (kips) | Length Tens. Member (ft) | No. Of Bolts Tens. | No. Of Holes |
|-------------|-------------|------------|------------|----------------------|-------------|----------------------------|------------------------|----------------------|---------------------------|-----------------------------------|-----------------------------|-------------------------------|-------------------------------|--------------------------|--------------------|--------------|
| 102         | TOWER       | SAE        | 8X8X1      | 50.0                 | 75.17       | 51.13                      | g106XY                 | 383.503              | NESCA                     | 749.999                           | 0.000                       | 0.000                         | 0.000                         | 9.705                    | 0                  | 0.000        |
| 114         | TOWER       | SAE        | 8X8X1      | 50.0                 | 69.82       | 52.00                      | g98XY                  | 389.980              | NESCA                     | 749.999                           | 0.000                       | 0.000                         | 0.000                         | 6.130                    | 0                  | 0.000        |
| 117         | TOWER       | SAU        | 3X2.5X0.25 | 36.0                 | 81.49       | 25.92                      | g114XY                 | 12.222               | NESCA                     | 47.160                            | 0.000                       | 0.000                         | 0.000                         | 15.738                   | 0                  | 0.000        |
| 123         | TOWER       | SAE        | 3X3X0.25   | 36.0                 | 41.82       | 3.23                       | g85P                   | 1.674                | WINDA                     | 51.840                            | 0.000                       | 0.000                         | 0.000                         | 20.052                   | 0                  | 0.000        |
| 124         | TOWER       | SAU        | 4X3X0.25   | 36.0                 | 12.92       | 1.78                       | g81P                   | 1.082                | WIND                      | 60.840                            | 0.000                       | 0.000                         | 0.000                         | 11.800                   | 0                  | 0.000        |
| 135         | TOWER       | SAE        | 4X4X0.3125 | 36.0                 | 28.66       | 8.84                       | g133P                  | 7.641                | NESC                      | 86.400                            | 0.000                       | 0.000                         | 0.000                         | 19.067                   | 0                  | 0.000        |
| 137         | TOWER       | SAE        | 4X4X0.3125 | 36.0                 | 24.16       | 8.66                       | g129P                  | 7.486                | NESC                      | 86.400                            | 0.000                       | 0.000                         | 0.000                         | 20.102                   | 0                  | 0.000        |
| 300         | TOWER       | SAE        | 8X8X1.125  | 50.0                 | 69.75       | 46.11                      | g29XY                  | 385.697              | NESCA                     | 836.499                           | 0.000                       | 0.000                         | 0.000                         | 9.705                    | 0                  | 0.000        |
| 317         | TOWER       | SAE        | 8X8X1.125  | 50.0                 | 67.97       | 46.42                      | g33XY                  | 388.322              | NESCA                     | 836.499                           | 0.000                       | 0.000                         | 0.000                         | 27.584                   | 0                  | 0.000        |
| 302         | TOWER       | SAU        | 4X3X0.3125 | 36.0                 | 66.83       | 18.45                      | g6X                    | 13.882               | NESCA                     | 75.240                            | 0.000                       | 0.000                         | 0.000                         | 28.325                   | 0                  | 0.000        |
| 320         | TOWER       | SAU        | 6X3.5X0.25 | 36.0                 | 23.76       | 23.76                      | g21X                   | 19.758               | NESCA                     | 83.160                            | 0.000                       | 0.000                         | 0.000                         | 14.762                   | 0                  | 0.000        |
| 321         | TOWER       | SAU        | 3X2X0.25   | 36.0                 | 48.33       | 43.52                      | g58X                   | 18.645               | NESCA                     | 42.840                            | 0.000                       | 0.000                         | 0.000                         | 13.044                   | 0                  | 0.000        |
| 327         | TOWER       | SAE        | 4X4X0.375  | 36.0                 | 51.95       | 13.25                      | g49X                   | 13.644               | WIND                      | 102.960                           | 0.000                       | 0.000                         | 0.000                         | 11.327                   | 0                  | 0.000        |
| 350         | TOWER       | SAE        | 8X8X1      | 50.0                 | 71.17       | 51.46                      | g1XY                   | 385.915              | NESCA                     | 749.999                           | 0.000                       | 0.000                         | 0.000                         | 24.519                   | 0                  | 0.000        |
| 395         | TOWER       | SAU        | 5X3.5X0.25 | 36.0                 | 28.98       | 20.86                      | g122X                  | 15.469               | NESCA                     | 74.160                            | 0.000                       | 0.000                         | 0.000                         | 16.327                   | 0                  | 0.000        |
| 1031        | TOWER       | SAE        | 5X5X0.3125 | 36.0                 | 39.00       | 17.40                      | g153XY                 | 18.985               | NESCA                     | 109.080                           | 0.000                       | 0.000                         | 0.000                         | 15.295                   | 0                  | 0.000        |
| 1033        | TOWER       | SAE        | 4X4X0.375  | 36.0                 | 21.45       | 16.85                      | g145Y                  | 17.354               | ICEA                      | 102.960                           | 0.000                       | 0.000                         | 0.000                         | 17.276                   | 0                  | 0.000        |
| 1036        | TOWER       | SAE        | 4X4X0.25   | 36.0                 | 13.41       | 0.00                       | g161X                  | 0.000                |                           | 69.840                            | 0.000                       | 0.000                         | 0.000                         | 28.358                   | 0                  | 0.000        |
| 2100        | TOWER       | SAE        | 8X8X0.75   | 50.0                 | 66.91       | 53.34                      | g167XY                 | 305.114              | NESCA                     | 571.999                           | 0.000                       | 0.000                         | 0.000                         | 7.667                    | 0                  | 0.000        |



|      |       |     |                |      |       |       |        |         |       |         |       |       |       |        |   |       |
|------|-------|-----|----------------|------|-------|-------|--------|---------|-------|---------|-------|-------|-------|--------|---|-------|
| 2103 | TOWER | SAE | 5X5X0.375      | 36.0 | 55.03 | 45.42 | g201P  | 59.031  | NESCA | 129.960 | 0.000 | 0.000 | 0.000 | 12.600 | 0 | 0.000 |
| 2111 | TOWER | SAU | 2.5X1.5X0.25   | 36.0 | 10.68 | 10.68 | g278Y  | 3.613   | ICEA  | 33.840  | 0.000 | 0.000 | 0.000 | 10.000 | 0 | 0.000 |
| 2112 | TOWER | SAE | 6X6X0.5        | 50.0 | 71.90 | 43.36 | g179XY | 124.674 | NESCA | 287.500 | 0.000 | 0.000 | 0.000 | 7.667  | 0 | 0.000 |
| 2115 | TOWER | SAE | 4X4X0.3125     | 36.0 | 56.80 | 40.69 | g221P  | 35.156  | ICEA  | 86.400  | 0.000 | 0.000 | 0.000 | 12.600 | 0 | 0.000 |
| 2119 | TOWER | SAU | 2.5X1.5X0.25   | 36.0 | 18.31 | 18.31 | g299Y  | 6.196   | ICEA  | 33.840  | 0.000 | 0.000 | 0.000 | 10.000 | 0 | 0.000 |
| 2129 | TOWER | SAE | 4X4X0.25       | 50.0 | 86.24 | 24.78 | g262X  | 24.035  | ICEA  | 97.000  | 0.000 | 0.000 | 0.000 | 8.000  | 0 | 0.000 |
| 2131 | TOWER | SAE | 2.5X2.5X0.25   | 36.0 | 87.82 | 26.04 | g249P  | 11.157  | ICEA  | 42.840  | 0.000 | 0.000 | 0.000 | 12.806 | 0 | 0.000 |
| 2134 | TOWER | SAU | 2.5X1.5X0.25   | 36.0 | 0.00  | 0.00  |        | 0.000   |       | 0.000   | 0.000 | 0.000 | 0.000 | 0.000  | 0 | 0.000 |
| 2140 | TOWER | SAE | 3X3X0.25       | 36.0 | 48.24 | 15.25 | g319P  | 7.906   | ICE   | 51.840  | 0.000 | 0.000 | 0.000 | 10.000 | 0 | 0.000 |
| 2142 | TOWER | SAU | 2.5X2X0.25     | 36.0 | 6.99  | 0.01  | g329X  | 0.003   | WINDA | 38.160  | 0.000 | 0.000 | 0.000 | 14.142 | 0 | 0.000 |
| 2145 | TOWER | ST  | 4WF23          | 36.0 | 18.29 | 14.69 | g322P  | 18.668  | ICEA  | 127.080 | 0.000 | 0.000 | 0.000 | 10.000 | 0 | 0.000 |
| 2148 | TOWER | SAE | 3X3X0.25       | 36.0 | 63.58 | 13.82 | g269X  | 7.163   | ICEA  | 51.840  | 0.000 | 0.000 | 0.000 | 9.434  | 0 | 0.000 |
| 2157 | TOWER | SAU | 3.5X2.5X0.25   | 36.0 | 14.17 | 0.00  | g325Y  | 0.000   |       | 51.840  | 0.000 | 0.000 | 0.000 | 13.748 | 0 | 0.000 |
| 2162 | TOWER | SAU | 5X3.5X0.3125   | 36.0 | 16.53 | 16.53 | g273Y  | 15.238  | NESCA | 92.160  | 0.000 | 0.000 | 0.000 | 8.382  | 0 | 0.000 |
| 2163 | TOWER | SAE | 5X5X0.3125     | 36.0 | 7.25  | 0.00  | g187Y  | 0.000   |       | 109.080 | 0.000 | 0.000 | 0.000 | 10.000 | 0 | 0.000 |
| 2165 | TOWER | SAE | 3X3X0.25       | 36.0 | 42.46 | 42.46 | g188X  | 22.009  | NESCA | 51.840  | 0.000 | 0.000 | 0.000 | 10.000 | 0 | 0.000 |
| 2166 | TOWER | SAE | 3X3X0.1875     | 36.0 | 0.24  | 0.01  | g373P  | 0.004   | WIND  | 39.240  | 0.000 | 0.000 | 0.000 | 10.966 | 0 | 0.000 |
| 2167 | TOWER | SAU | 2.5X1.5X0.1875 | 36.0 | 0.07  | 0.07  | g374P  | 0.019   | WINDA | 25.560  | 0.000 | 0.000 | 0.000 | 5.000  | 0 | 0.000 |
| 2168 | TOWER | SAE | 2.5X2.5X0.25   | 36.0 | 77.23 | 0.00  | g189X  | 0.000   |       | 42.840  | 0.000 | 0.000 | 0.000 | 14.142 | 0 | 0.000 |
| 2169 | TOWER | SAE | 2.5X2.5X0.25   | 36.0 | 17.06 | 5.51  | g336P  | 2.362   | NESCA | 42.840  | 0.000 | 0.000 | 0.000 | 12.806 | 0 | 0.000 |
| 2170 | TOWER | SAE | 5X5X0.375      | 36.0 | 28.60 | 0.00  | X275Y  | 0.000   |       | 129.960 | 0.000 | 0.000 | 0.000 | 8.000  | 0 | 0.000 |
| 2177 | TOWER | SAU | 3.5X3X0.25     | 36.0 | 3.29  | 3.29  | g277P  | 1.850   | NESCA | 56.160  | 0.000 | 0.000 | 0.000 | 10.000 | 0 | 0.000 |
| 2179 | TOWER | SAE | 2X2X0.25       | 36.0 | 23.57 | 23.57 | X280P  | 7.976   | ICEA  | 33.840  | 0.000 | 0.000 | 0.000 | 9.217  | 0 | 0.000 |
| 2181 | TOWER | SAU | 2X1.5X0.1875   | 36.0 | 0.96  | 0.96  | g361Y  | 0.213   | NESCA | 22.320  | 0.000 | 0.000 | 0.000 | 4.000  | 0 | 0.000 |
| 2183 | TOWER | SAU | 2.5X2X0.1875   | 36.0 | 7.23  | 0.00  | g367Y  | 0.000   |       | 29.160  | 0.000 | 0.000 | 0.000 | 9.217  | 0 | 0.000 |
| 2189 | TOWER | SAU | 2.5X2X0.1875   | 36.0 | 10.58 | 0.00  | g363Y  | 0.000   |       | 29.160  | 0.000 | 0.000 | 0.000 | 9.394  | 0 | 0.000 |
| 2192 | TOWER | SAU | 6X4X0.4375     | 36.0 | 8.79  | 8.79  | g286Y  | 13.221  | NESCA | 150.480 | 0.000 | 0.000 | 0.000 | 21.587 | 0 | 0.000 |
| 2194 | TOWER | SAE | 6X6X0.3125     | 36.0 | 9.71  | 0.00  | g288Y  | 0.000   |       | 131.400 | 0.000 | 0.000 | 0.000 | 10.000 | 0 | 0.000 |
| 2195 | TOWER | SAE | 3X3X0.25       | 36.0 | 73.49 | 24.27 | g290P  | 12.584  | ICEA  | 51.840  | 0.000 | 0.000 | 0.000 | 10.000 | 0 | 0.000 |
| 2199 | TOWER | SAE | 6X6X0.375      | 36.0 | 27.26 | 0.00  | X284Y  | 0.000   |       | 156.960 | 0.000 | 0.000 | 0.000 | 10.500 | 0 | 0.000 |
| 2401 | TOWER | SAE | 3X3X0.25       | 36.0 | 4.22  | 1.59  | g351Y  | 0.825   | NESCA | 51.840  | 0.000 | 0.000 | 0.000 | 14.500 | 0 | 0.000 |
| 2403 | TOWER | SAU | 3.5X3X0.25     | 36.0 | 4.65  | 0.00  | g294P  | 0.000   |       | 56.160  | 0.000 | 0.000 | 0.000 | 10.000 | 0 | 0.000 |
| 2407 | TOWER | SAU | 2.5X2X0.25     | 36.0 | 26.48 | 26.48 | X296Y  | 10.106  | ICEA  | 38.160  | 0.000 | 0.000 | 0.000 | 11.178 | 0 | 0.000 |
| 2417 | TOWER | SAE | 3X3X0.1875     | 36.0 | 10.00 | 0.00  | g357Y  | 0.000   |       | 39.240  | 0.000 | 0.000 | 0.000 | 11.178 | 0 | 0.000 |
| 2419 | TOWER | SAU | 2X1.5X0.1875   | 36.0 | 1.38  | 1.38  | g355Y  | 0.308   | NESCA | 22.320  | 0.000 | 0.000 | 0.000 | 3.834  | 0 | 0.000 |
| 2422 | TOWER | SAU | 5X3.5X0.3125   | 36.0 | 18.01 | 18.01 | g301Y  | 16.603  | NESCA | 92.160  | 0.000 | 0.000 | 0.000 | 13.928 | 0 | 0.000 |
| 2426 | TOWER | SAE | 3X3X0.25       | 36.0 | 17.19 | 1.05  | g307P  | 0.543   | ICEA  | 51.840  | 0.000 | 0.000 | 0.000 | 10.000 | 0 | 0.000 |
| 2427 | TOWER | SAE | 5X5X0.3125     | 36.0 | 6.12  | 0.00  | g305Y  | 0.000   |       | 109.080 | 0.000 | 0.000 | 0.000 | 10.000 | 0 | 0.000 |
| 2428 | TOWER | SAE | 2.5X2.5X0.25   | 36.0 | 0.00  | 0.00  |        | 0.000   |       | 0.000   | 0.000 | 0.000 | 0.000 | 0.000  | 0 | 0.000 |
| 2430 | TOWER | SAE | 5X5X0.375      | 36.0 | 28.66 | 0.00  | g303Y  | 0.000   |       | 129.960 | 0.000 | 0.000 | 0.000 | 8.500  | 0 | 0.000 |
| 2437 | TOWER | SAE | 2X2X0.25       | 36.0 | 23.04 | 23.04 | X313P  | 7.798   | ICEA  | 33.840  | 0.000 | 0.000 | 0.000 | 9.394  | 0 | 0.000 |
| 2443 | TOWER | SAE | 3X3X0.25       | 36.0 | 2.29  | 0.00  | g292X  | 0.000   |       | 51.840  | 0.000 | 0.000 | 0.000 | 14.142 | 0 | 0.000 |
| 3108 | TOWER | SAU | 3X2.5X0.3125   | 36.0 | 95.26 | 24.23 | g69Y   | 14.130  | WIND  | 58.320  | 0.000 | 0.000 | 0.000 | 40.855 | 0 | 0.000 |
| 3109 | TOWER | SAU | 6X3.5X0.25     | 36.0 | 64.47 | 6.62  | g41P   | 5.509   | ICEA  | 83.160  | 0.000 | 0.000 | 0.000 | 17.196 | 0 | 0.000 |
| 3114 | TOWER | SAU | 4X3.5X0.25     | 36.0 | 4.34  | 0.92  | g65P   | 0.601   | WINDA | 65.160  | 0.000 | 0.000 | 0.000 | 24.318 | 0 | 0.000 |
| 3154 | TOWER | SAU | 6X4X0.25       | 36.0 | 87.49 | 5.63  | g78P   | 4.944   | WINDA | 87.840  | 0.000 | 0.000 | 0.000 | 26.409 | 0 | 0.000 |

\*\*\* Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

| Load Case | Maximum Usage % | Element Label | Element Type |
|-----------|-----------------|---------------|--------------|
| NESCA     | 87.36           | g78X          | Angle        |
| WIND      | 71.81           | g113X         | Angle        |
| ICE       | 93.25           | g69XY         | Angle        |
| NESCA     | 87.49           | g78X          | Angle        |
| WINDA     | 70.63           | g113X         | Angle        |
| ICEA      | 95.26           | g69XY         | Angle        |

Summary of Insulator Usages:

| Insulator<br>Label | Insulator<br>Type | Maximum<br>Usage % | Load case<br>Weight<br>(lbs) |
|--------------------|-------------------|--------------------|------------------------------|
| SW1                | Clamp             | 30.58              | ICEA 0.0                     |
| SW2                | Clamp             | 30.58              | ICEA 0.0                     |
| 1A                 | Clamp             | 37.28              | NESC 0.0                     |
| 1B                 | Clamp             | 37.28              | NESC 0.0                     |
| 2A                 | Clamp             | 37.30              | NESC 0.0                     |
| 2B                 | Clamp             | 37.30              | NESC 0.0                     |
| 3A                 | Clamp             | 37.27              | NESC 0.0                     |
| 3B                 | Clamp             | 37.27              | NESC 0.0                     |
| 4                  | Clamp             | 74.46              | NESC 0.0                     |
| 5                  | Clamp             | 74.57              | NESC 0.0                     |
| 6                  | Clamp             | 74.38              | NESC 0.0                     |
| A1T                | Clamp             | 3.77               | WINDA 0.0                    |
| A1B                | Clamp             | 3.42               | ICEA 0.0                     |
| A2T                | Clamp             | 3.77               | WINDA 0.0                    |
| A2B                | Clamp             | 3.42               | ICEA 0.0                     |
| A3T                | Clamp             | 3.77               | WINDA 0.0                    |
| A3B                | Clamp             | 3.46               | ICEA 0.0                     |
| COAX1              | Clamp             | 54.68              | ICEA 0.0                     |
| COAX2              | Clamp             | 57.02              | ICEA 0.0                     |

\*\*\* Weight of structure (lbs):  
 Weight of Angles\*Section DLF: 62067.8  
 Total: 62067.8

\*\*\* End of Report



Manufactured by  
JULIUS BLUMBERG, INC.  
NYC 10013



ENGINEERS  
DESIGN BUILD  
TECHNICAL RESOURCES  
OPERATIONS

C&S Engineers, Inc.  
499 Col. Eileen Collins Boulevard  
Syracuse, NY 13212  
phone 315-455-2000  
fax 315-455-9667  
www.cscos.com

June 29, 2004

Keith Tornifoglio  
Manager of Towers  
GRIDCOM  
25 Research Drive  
Westborough, MA 01582

Re: Cingular Site No. S-02-01  
Fremont-SEQR

Dear Mr. Tornifoglio:

The following is a summary of my understanding of how the SEQR process was followed for this project:

1. The Town of Manlius reviewed the proposed application from Cingular wireless and issued a building permit for the proposed action. The Town did not adopt any formal SEQR resolution or decision for this project as it was considered a minor alteration to an existing structure. This type of action at times is classified by the municipal jurisdiction as a "Type II" Action under SEQR which requires no formal action or documentation by the Lead Agency/Municipality. Based on the action of the Town, there is no Negative Declaration available or environmental assessment form for this project.

2. The NYSDEC issued a permit for construction within the 100 foot buffer of a NYSDEC registered wetland. As part of this process, the NYSDEC conducted an environmental review of the proposed action and concluded that the action would have no adverse impact on the environment (see NYSDEC permit). Mr. Kevin Bliss of NYSDEC Region 7 was contacted on June 28<sup>th</sup>, 2004 to ascertain if a formal Negative Declaration was performed by the NYSDEC. Mr. Bliss indicated that the NYSDEC classified the action as Type II under SEQR, and for similar reasons stated above, no formal Negative Declaration or environmental assessment form is available as it was not required under SEQR.

If you have any questions, please give me a call.

Very truly yours,  
C&S ENGINEERS, INC.

A handwritten signature in black ink, appearing to read 'Robert N. Duclos', written over a horizontal line.

Robert N. Duclos, P.E.  
Managing Engineer

New York State Department of Environmental Conservation  
Division of Environmental Permits, Region 7  
615 Erie Boulevard West, Syracuse, New York 13204-2400  
Phone: (315) 426-7438 FAX: (315) 426-7425



### INSTRUCTIONS TO ALL PERMITTEES

Enclosed is your permit under New York State's Environmental Conservation Law. Please take some time to review it and note:

1. The permit is valid for only that activity specifically represented in your permit application and authorized in writing in the permit itself. Any deviation from the activity authorized in the permit may require additional approval(s) or corrective action;
2. Review the General and Special Conditions carefully. If you are unsure of your obligations under the permit, please bring your questions to our attention;
3. If, for any reason, you believe you will be unable to comply or remain in compliance with the terms of your permit, please contact us;
4. Please check the effective and expiration date and any requirements for renewal or modification of your permit;
5. Please keep the permit in a safe place for reference and a copy at the work site;
6. The permit identification numbers help us communicate with you. Please reference them in any subsequent communications.
7. Your project may be subject to jurisdiction of the US Army Corps of Engineers. Your application has been forwarded to the Corps for their consideration. Questions on this matter should be referred to the Corps Regulatory Branch in Buffalo, NY at (716) 879-4330.

If you have any questions on the enclosed permit, please contact me at 315-426-7438. Thank you.

Additional Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Sincerely,

*Kevin R. Bliss*

Kevin R. Bliss  
Sr. Environmental Analyst

enc.  
cc:



**PERMIT**  
**Under the Environmental Conservation Law (ECL)**

**Permittee and Facility Information**

|                                                                                                                             |                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| <b>Permit Issued To:</b><br>SOUTHWESTERN BELL MOBILE SYSTEMS<br>LLC<br>17330 PRESTON RD - STE 100A<br>SAN ANTONIO, TX 78213 | <b>Facility:</b><br>FREMONT UTILITY TOWER<br><br>7025 PENCEE LANE<br>MANLIUS, NY 13057 |
|-----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|

**Facility Location:** in MANLIUS in ONONDAGA COUNTY  
**Facility Principal Reference Point:** NYTM-E: 415.529 NYTM-N: 4768.978

**Authorized Activity:** Attachment of cellular antennas to existing utility transmission tower, construction of one 12 foot x 20 foot equipment shelter at base of tower, and installation of conduits under existing access road, which is to be resurfaced with crushed stone.

**Permit Authorizations**

**Freshwater Wetlands - Under Article 24**

Permit ID 7-3138-00186/00001

New Permit

Effective Date: 5/5/2004

Expiration Date: 6/1/2006

**Water Quality Certification - Under Section 401 - Clean Water Act**

Permit ID 7-3138-00186/00002

New Permit

Effective Date: 5/5/2004

Expiration Date: 6/1/2006

**NYSDEC Approval**

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: JOANNE L MARCH, Deputy Regional Permit Administrator  
Address: NYSDEC REGION 7 HEADQUARTERS  
615 ERIE BOULEVARD WEST  
SYRACUSE, NY 13204 -2400

Authorized Signature: \_\_\_\_\_

Date 5/6/04



## Permit Components

### NATURAL RESOURCE PERMIT CONDITIONS

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

### NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

#### **NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: FRESHWATER WETLANDS; WATER QUALITY CERTIFICATION**

**1. Water Quality Certification** The NYS Department of Environmental Conservation hereby certifies that the subject project will not contravene effluent limitations or other limitations or standards under Sections 301, 302, 303, 306 and 307 of the Clean Water Act of 1977 (PL 95-217) provided that all of the conditions listed herein are met.

**2. Install, Maintain Erosion Controls** Necessary erosion control measures, i.e., haybales, silt fencing, etc., are to be placed on the downslope edge of any disturbed area. This sediment barrier is to be put in place before any disturbance of the ground occurs and is to be maintained in good condition until thick vegetative cover is established.

**3. Fence Wetland Boundary** A snow fence or other temporary, project-limiting fence shall be erected prior to the commencement of any permitted activities along the wetland boundary in order to prevent the inadvertent intrusion of equipment into the protected area. The fence shall be maintained until project completion whereupon it shall be removed.

**4. Work Within Project Site or Upland Areas** The storage of construction equipment and materials shall be confined to within the project work site and/or upland areas greater than 100 linear feet distant from the wetland boundary.

**5. No Equipment in Wetland** Heavy equipment, including bulldozers, backhoes, payloaders, etc., shall not be operated in the wetland.

**6. No Construction Debris in Wetland or Adjacent Area** Any debris or excess material from construction of this project shall be completely removed from the adjacent area (upland) and removed to an approved upland area for disposal. No debris is permitted in wetlands and/or protected buffer areas.

**7. State May Order Removal or Alteration of Work** If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.





**8. Conformance With Plans** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or his agent as part of the permit application. Such approved plans were prepared by C & S Engineers, Inc. & received 2/10/2004.

**9. State Not Liable for Damage** The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

**10. Permittee Responsible For Other Approvals** Granting of this permit does not relieve the applicant of the responsibility of obtaining any other permission, consent or approval from the U.S. Army Corps of Engineers, U.S. Coast Guard, New York State Office of General Services or local government which may be required.

**11. Precautions Against Contamination of Waters** All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

**12. No Interference With Navigation** There shall be no unreasonable interference with navigation by the work herein authorized.

**13. State May Require Site Restoration** If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.

**GENERAL CONDITIONS - Apply to ALL Authorized Permits:**

**1. Facility Inspection by The Department** The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

**2. Relationship of this Permit to Other Department Orders and Determinations** Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.



**3. Applications For Permit Renewals, Modifications or Transfers** The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator  
NYSDEC REGION 7 HEADQUARTERS  
615 ERIE BOULEVARD WEST  
SYRACUSE, NY 13204 -2400

**4. Submission of Renewal Application** The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Freshwater Wetlands, Water Quality Certification.

**5. Permit Modifications, Suspensions and Revocations by the Department** The Department reserves the right to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

- a. materially false or inaccurate statements in the permit application or supporting papers;
- b. failure by the permittee to comply with any terms or conditions of the permit;
- c. exceeding the scope of the project as described in the permit application;
- d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;
- e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

**6. Permit Transfer** Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

### NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

**Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification**

The permittee expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state



laws.

**Item B: Permittee's Contractors to Comply with Permit**

The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittees agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

**Item C: Permittee Responsible for Obtaining Other Required Permits**

The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

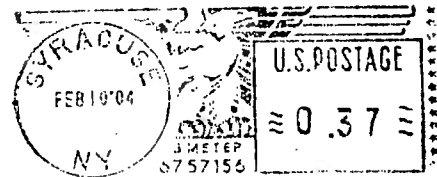
**Item D: No Right to Trespass or Interfere with Riparian Rights**

This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

(fold #2)



NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
DIVISION OF ENVIRONMENTAL PERMITS  
NYSDEC REGION 7 HEADQUARTERS  
615 ERIE BOULEVARD WEST  
SYRACUSE NY 13204



ERIC N KENNA  
499 COLONEL EILEEN COLLINS BLVD  
SYRACUSE NY 13212

13212X3930 C014



(fold #1) -- staple here

#### NOTICE OF RECEIPT OF APPLICATION

The Division of Environmental Permits has received the application referenced below. The material submitted is being reviewed by staff, and you will be advised in writing regarding the department's findings. In all future communications, please refer to the Application ID number.

*Application ID:* 7-3138-00186/00001

*Date Received:* February 10, 2004

*Applicant:* S WESTERN BELL MOBILE SYSTEMS, LLC DBA

*Facility:* FREMONT UTILITY TOWER

*Description:* Attachment of antennas to existing utility transmission tower

*DEC Contact:* KEVIN R BLISS



ENGINEERS  
DESIGN BUILD  
TECHNICAL RESOURCES  
OPERATIONS

Telephone 315-455-2000  
Fax 315-455-9667  
[www.cscos.com](http://www.cscos.com)

499 Col. Eileen Collins Blvd.  
Syracuse, New York 13212  
*"Exceeding your expectations"*

# Transmittal

To: Mr. Joseph Dlugolenski  
NYSDEC - 7  
615 Erie Boulevard  
Syracuse, NY 13204

Date: February 6, 2004

Re: Cingular Wireless  
Fremont Cellular Co-Location

File: 405.996.009

Enclosed please find the following:

- 5 Copies - Joint Application for Permit

Remarks:

The enclosed is for your review and use. If you have any questions or need additional information, please do not hesitate to call.

Very truly yours,

**C&S ENGINEERS, INC.**

Eric N. Kenna  
Project Engineer

enc.

cc: Gary Weiss, Cingular Wireless

# JOINT APPLICATION FOR PERMIT



New York State  
United States Army Corps of Engineers

95-19-3 (8/00) pfp

Applicable to agencies and permit categories listed in Item 1. Please read all instructions on back. Attach additional information as needed. Please print legibly or type.

## 1. Check permits applied for:

### NYS Dept. of Environmental Conservation

- ☐ Stream Disturbance (Bed and Banks)  
☐ Navigable Waters (Excavation and Fill)  
☐ Docks, Moorings or Platforms (Construct or Place)  
☐ Dams and Impoundment Structures (Construct, Reconstruct or Repair)  
☒ Freshwater Wetlands  
☐ Tidal Wetlands  
☐ Coastal Erosion Control  
☐ Wild, Scenic and Recreational Rivers  
☐ 401 Water Quality Certification  
☐ Potable Water Supply  
☐ Long Island Wells  
☐ Aquatic Vegetation Control  
☐ Aquatic Insect Control  
☐ Fish Control

### NYS Office of General Services (State Owned Lands Under Water)

- ☐ Lease, License, Easement or other Real Property Interest  
Utility Easement (pipelines, conduits, cables, etc.)  
☐ Docks, Moorings or Platforms (Construct or Place)

### Adirondack Park Agency

- ☐ Freshwater Wetlands Permit  
☐ Wild, Scenic and Recreational Rivers

### Lake George Park Commission

- ☐ Docks (Construct or Place)  
☐ Moorings (Establish)

### US Army Corps of Engineers

- ☐ Section 404 (Waters of the United States)  
☐ Section 10 (Rivers and Harbors Act)  
☐ Nationwide Permit (a)  
Identify Number(s)

For Agency Use Only:  
DEC APPLICATION NUMBER

US ARMY CORPS OF ENGINEERS

## 2. Name of Applicant (Use full name)

S. Western Bell Mobile Systems, LLC dba Cingular Wireless

## Telephone Number (daytime)

(315) 439-5644

## Mailing Address

5841 Bridge Street

## Post Office

East Syracuse

## State

NY

## Zip Code

13057

## 3. Taxpayer ID (If applicant is not an individual)

75-2983652

## 4. Applicant is a/an: (check as many as apply)

- ☐ Owner ☐ Operator ☒ Lessee ☐ Municipality / Governmental Agency

## 5. If applicant is not the owner, identify owner here - otherwise, you may provide Agent/Contact Person information.

Owner or Agent/Contact Person ☐ Owner ☒ Agent/Contact Person

Eric N. Kenna

## Telephone Number (daytime)

(315) 455-2000

## Mailing Address

499 Colonel Eileen Collins Boulevard

## Post Office

Syracuse

## State

NY

## Zip Code

13212

## 6. Project / Facility Location (mark location on map, see instruction 1a.)

County:

Onondaga

Town/City/Village:

Town of Manlius

Tax Map Section/Block/Lot Number:

61.00-2-34.1

## Location (including Street or Road)

(See attached Project Description)

## Telephone Number (daytime)

(N/A)

## Post Office

## State

## Zip Code

## 7. Name of Stream or Waterbody (on or near project site)

## 8. Name of USGS Quad Map:

Syracuse East

## Location Coordinates:

NYTME

NYTM-N 4

## 9. Project Description and Purpose: (Category of Activity e.g. new construction/installation, maintenance or replacement; Type of Structure or Activity e.g. bulkhead, dredging, filling, dam, dock, taking of water; Type of Materials and Quantities; Structure and Work Area Dimensions; Need or Purpose Served)

(See attached Project Description)

## 10. Proposed Use:

- ☐ Private ☒ Public ☐ Commercial

## 11. Will Project Occupy

- State Land? ☐ Yes ☒ No

## 12. Proposed Start

Date: 6/1/04

## 13. Estimated Completion

Date: 8/31/04

## 14. Has Work Begun on Project? (If yes, attach explanation of why work was started without permit.)

- ☐ Yes ☒ No

## 15. List Previous Permit / Application Numbers and Dates: (If Any)

(N/A)

## 16. Will this Project Require Additional Federal, State, or Local Permits?

- ☐ Yes ☒ No

If Yes, Please List:

## 17. If applicant is not the owner, both must sign the application

I hereby affirm that information provided on this form and all attachments submitted herewith is true to the best of my knowledge and belief. False statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law. Further, the applicant accepts full responsibility for all damage, direct or indirect, of whatever nature, and by whomsoever suffered, arising out of the project described herein and agrees to indemnify and save harmless the State from suits, actions, damages and costs of every name and description resulting from said project. In addition, Federal Law, 18 U.S.C., Section 1001 provides for a fine of not more than \$10,000 or imprisonment for not more than 5 years, or both where an applicant knowingly and willingly falsifies, conceals, or covers up a material fact; or knowingly makes or uses a false, fictitious or fraudulent statement.

Date: 2/6/04 Signature of Applicant: *William C. Pason*

Title: *PROJECT MANAGER*

Date: 2/6/04 Signature of owner Agent: *Eric N. Kenna*

Title: *Project Engineer*

RESET

**CINGULAR WIRELESS  
FREMONT CELLULAR INSTALLATION  
TOWN OF MANLIUS, ONONDAGA COUNTY, NEW YORK**

---

**TABLE OF CONTENTS**

|             |                                             |
|-------------|---------------------------------------------|
| <b>1.0</b>  | <b>PROJECT DESCRIPTION</b>                  |
| <b>2.0</b>  | <b>SEQR</b>                                 |
| <b>3.0</b>  | <b>SURFACE WATERS (EXCLUDING WETLANDS)</b>  |
| <b>4.0</b>  | <b>WETLANDS</b>                             |
| <b>5.0</b>  | <b>NAVIGABLE WATERS</b>                     |
| <b>6.0</b>  | <b>WILD, SCENIC, OR RECREATIONAL RIVERS</b> |
| <b>7.0</b>  | <b>GENERAL ECOLOGY AND WILDLIFE</b>         |
| <b>8.0</b>  | <b>CULTURAL RESOURCES</b>                   |
| <b>9.0</b>  | <b>FLOODPLAINS</b>                          |
| <b>10.0</b> | <b>SOIL EROSION AND SEDIMENT CONTROL</b>    |

**FIGURES**

**FIGURE 1 – LOCATION MAP**

**APPENDICES**

**APPENDIX A – PROJECT DRAWINGS**

**APPENDIX B – PHOTOS**

**APPENDIX C – ENVIRONMENTAL ASSESSMENT**

**APPENDIX D – SHORT FORM EAF**

**CINGULAR WIRELESS  
FREMONT CELLULAR INSTALLATION  
TOWN OF MANLIUS, ONONDAGA COUNTY, NEW YORK**

---

**1.0 PROJECT DESCRIPTION**

The proposed project generally involves the attachment of nine (9) cellular antennas to an existing utility transmission tower in the Town of Manlius. A 12 ft x 20 ft equipment shelter will be installed on a concrete foundation at the base of the existing transmission tower. In addition, power and telephone conduits will be run underground to the equipment shelter and the existing dirt access road will be resurfaced with crushed stone.

The project location is depicted by Figure 1 (see attached).

The proposed project will require work within the adjacent area to New York State Freshwater Wetland SYE-17. The approximate limits of the wetland areas are shown on the site plan in the drawings found in Appendix A. Project activities will require approval from the New York State Department on Environmental Conservation. In addition, photographs of the project area have been included as Appendix B.

**2.0 SEQ/NEPA**

The project is consistent with those characteristics of Type II actions as defined in 6 NYCRR 617 or the State Environmental Quality Review Act (SEQ). The project involves modifications to an existing structure that does not involve significant expansion of the structure. The Town of Manlius (lead agency) has determined the project is a Type II Action and that no further SEQ review is required. However, a Short Environmental Assessment Form has been prepared and is included in Appendix D, as requested by the New York State Department of Environmental Conservation.

A National Environmental Policy Act Review has been completed for the project, by the owner. The Environmental Assessment is included in Appendix C.

**3.0 SURFACE WATERS (EXCLUDING WETLANDS)**

There are no surface waters within or adjacent to the project area.

**4.0 WETLANDS**

C&S conducted a field review in an effort to determine whether or not wetlands were present within the anticipated work area. C&S reviewed the area and determined that wetland areas are present within the project vicinity. The wetland areas are located to the north, east and south of the project area. This wetland meets the criteria set forth in the *1987 Corps of Engineers Wetland Delineation Manual* as well as the *NYSDEC 1995 Freshwater Wetlands Delineation Manual*. In general, the wetland is regulated by the

---

**February 2004**

**PAGE 2**



**CINGULAR WIRELESS  
FREMONT CELLULAR INSTALLATION  
TOWN OF MANLIUS, ONONDAGA COUNTY, NEW YORK**

---

United States Army Corp of Engineers and the New York State Department of Environmental Conservation. Upon review of the NYSDEC Freshwater Wetlands Map, the wetland is a portion of NYSDEC Wetland SYE-17.

In general, the wetland area present within the project vicinity could provide flood storage, nutrient removal, wildlife habitat, sediment toxicant retention, and/or transformation functions. The proposed fill of wetland areas is not proposed as part of this project. In general the functions of the wetland should not be affected.

The discharge of fill material into waters (i.e. wetlands) of the United States requires a Section 404 USACOE Permit. It was determined within the site walkover that the wetlands adjacent to the project site should not be directly impacted as a result of project activities. In general, the proposed project will not require the need to place fill within wetlands. Since the proposed project does not involve the direct placement of fill within wetlands, and should not involve the loss of waters of the United States, it is our opinion that a USACOE Section 404 Permit will not be required.

The discharge of fill material into NYSDEC regulated wetlands and their respective adjacent area requires an Article 24 Freshwater Wetlands Permit. Adjacent area, per 6 NYCRR 663, is generally defined as those areas of land or water that are outside a wetland and within 100 feet, measured horizontally, of the boundary of the wetland. The proposed project will involve work within the NYSDEC regulated adjacent area of NYSDEC Wetland SYE-17. Accordingly, an Article 24 Freshwater Wetlands Permit will be required. It is our opinion that the work proposed should not significantly alter the wetland adjacent area. Additionally, the functions of the adjacent area should not be impacted or lost after construction efforts for the project are complete.

Potential impacts to the wetland include sedimentation from silt laden stormwater runoff. Appropriate use of soil erosion and sediment control devices shall be utilized during construction to minimize these potential impacts. No other impacts to wetland resources are anticipated.

The Environmental Assessment contained in Appendix C indicates that a proposed access road and utility trench would be constructed through a Federal Wetland. Since the writing of this Environmental Assessment the project has been revised to make use of the existing roadway for access and utility routing. As such, there will be no construction within the existing wetland areas.

**CINGULAR WIRELESS  
FREMONT CELLULAR INSTALLATION  
TOWN OF MANLIUS, ONONDAGA COUNTY, NEW YORK**

---

**5.0 NAVIGABLE WATERS**

There are no federally or state recognized navigable waterways within or adjacent to the project area.

**6.0 WILD, SCENIC, OR RECREATIONAL RIVERS**

There are no wild, scenic or recreational rivers located within the project area.

**7.0 GENERAL ECOLOGY AND WILDLIFE**

The potential impact to general ecology and wildlife was assessed for the proposed project. Based on information contained within a National Environmental Policy Act Review performed by the owner, there will be No Effect on threatened or endangered species.

A wetland area, designated by NYSDEC as SYE-17, is located within the project vicinity. However, as previously discussed fill of wetland areas is not proposed as part of this project. In general the functions of the wetland as wildlife habitat and an ecological community should not be affected.

Generally, the proposed project should not significantly impact threatened or endangered plant or animal species, wildlife, significant ecological communities, and/or aquatic resources.

**8.0 HISTORICAL AND CULTURAL RESOURCES**

Based on information contained within a National Environmental Policy Act Review performed by the owner, there will be No Effect on historical or cultural resources.

**9.0 FLOODPLAINS**

The project is located within a 100-year floodplain. In accordance with the requirements of NYSDEC *Floodplain Management Criteria* 6NYCRR 502 the Project should not encroach in a manner that would impact the base flood elevation. The applicant has received a Building Permit from the Town of Manlius to proceed with construction on this project. The permit indicates that site construction is consistent with the community's floodplain construction standards.

**CINGULAR WIRELESS  
FREMONT CELLULAR INSTALLATION  
TOWN OF MANLIUS, ONONDAGA COUNTY, NEW YORK**

---

**10.0 SOIL EROSION AND SEDIMENT CONTROL**

New York State under the Environmental Conservation Law created the State Pollutant Discharge Elimination System (SPDES) program to maintain New York's water quality standards. In New York State a SPDES Permit for Stormwater Discharges from general construction activities is required if a proposed Project involves the disturbance of 1.0 or more acres. The proposed Project will not involve the disturbance of more than 1.0 acres. These requirements are followed in order that the quantity and quality of storm water runoff during and after construction are not significantly altered from the pre-construction conditions.

---

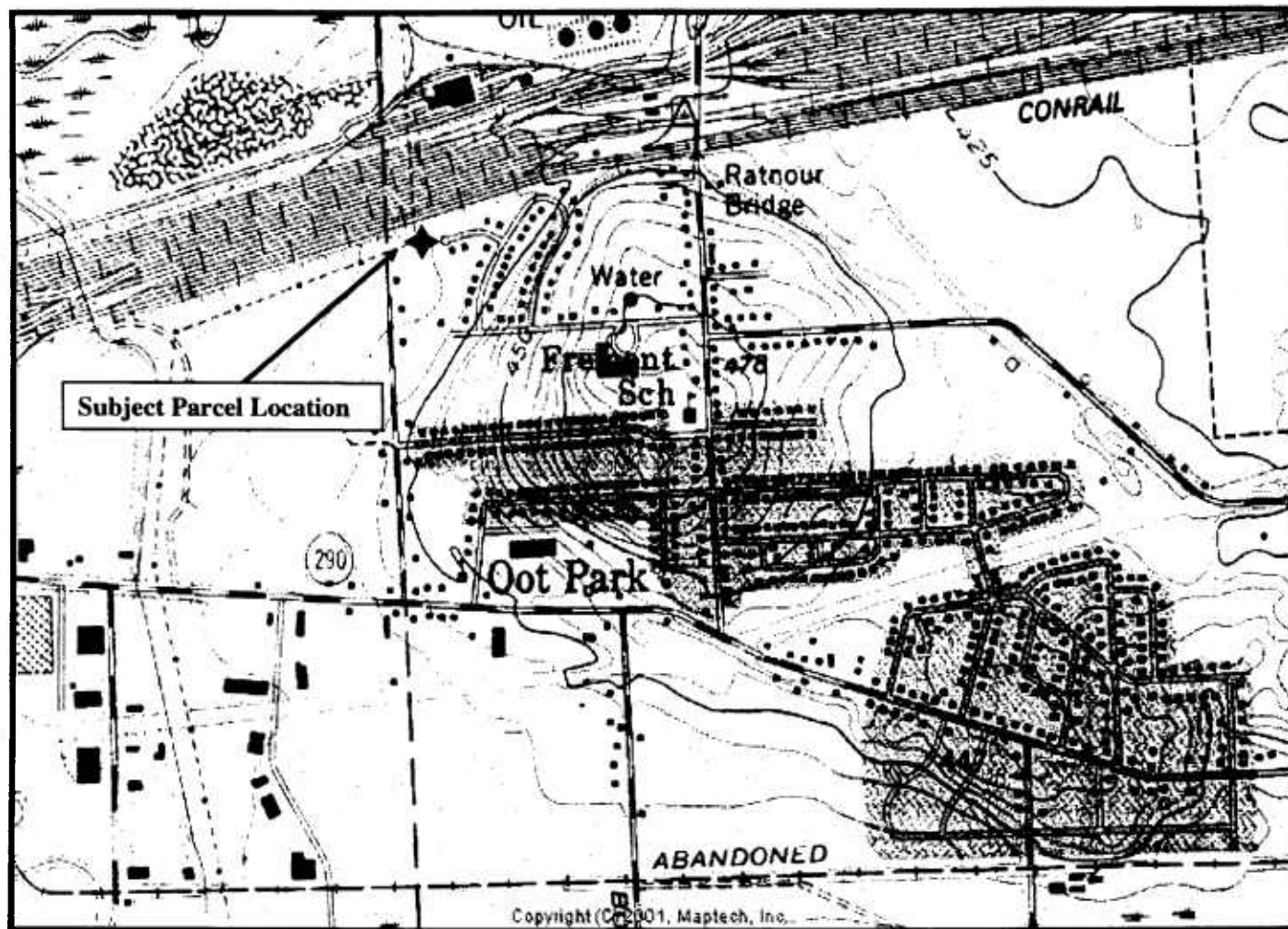
**February 2004**

**PAGE 5**

**CINGULAR WIRELESS  
FREMONT CELLULAR INSTALLATION  
TOWN OF MANLIUS, ONONDAGA COUNTY, NEW YORK**

---

**Figure 1-  
Location Map**



Source: USGS Topographic Maps



ENGINEERS  
DESIGN BUILD  
TECHNICAL RESOURCES  
OPERATIONS

**Cingular Wireless Fremont Cellular Site**  
**Subject Parcel Location**

**CINGULAR WIRELESS  
FREMONT CELLULAR INSTALLATION  
TOWN OF MANLIUS, ONONDAGA COUNTY, NEW YORK**

---

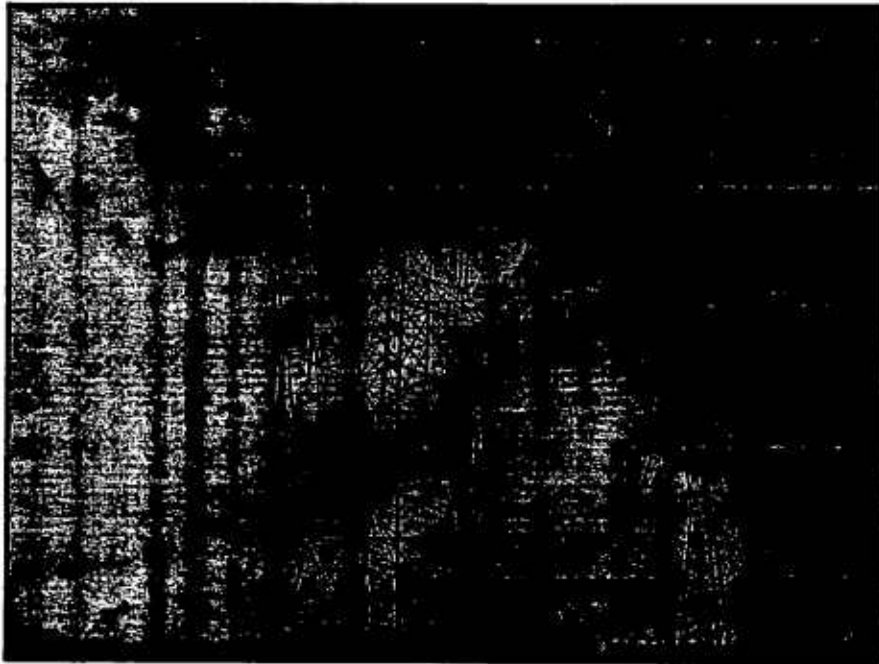
**Appendix A-  
Project Drawings**

**CINGULAR WIRELESS  
FREMONT CELLULAR INSTALLATION  
TOWN OF MANLIUS, ONONDAGA COUNTY, NEW YORK**

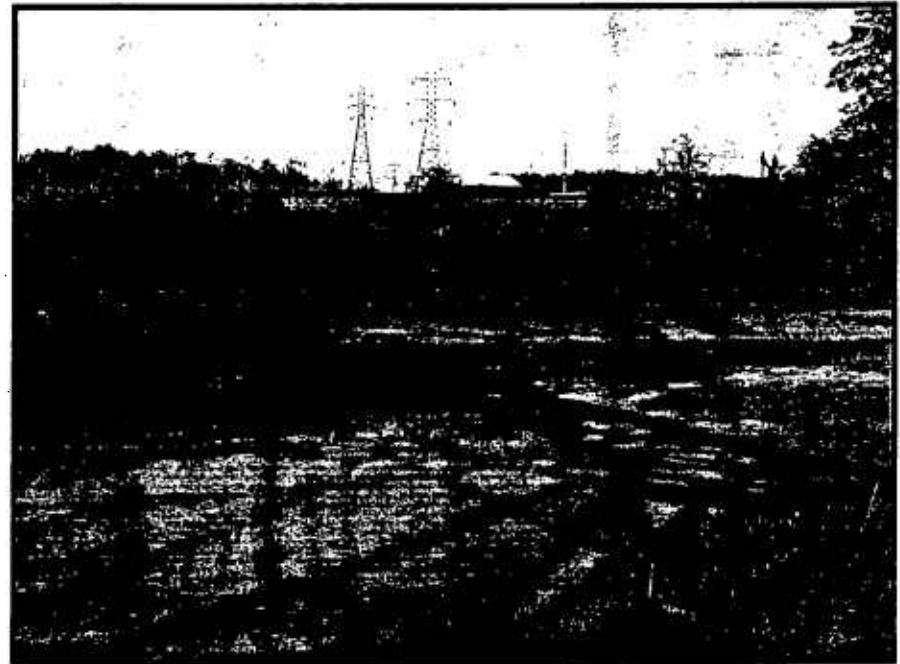
---

**Appendix B-  
Photos**

# **Cingular Wireless Fremont Cellular Antenna Site Project Photographs**



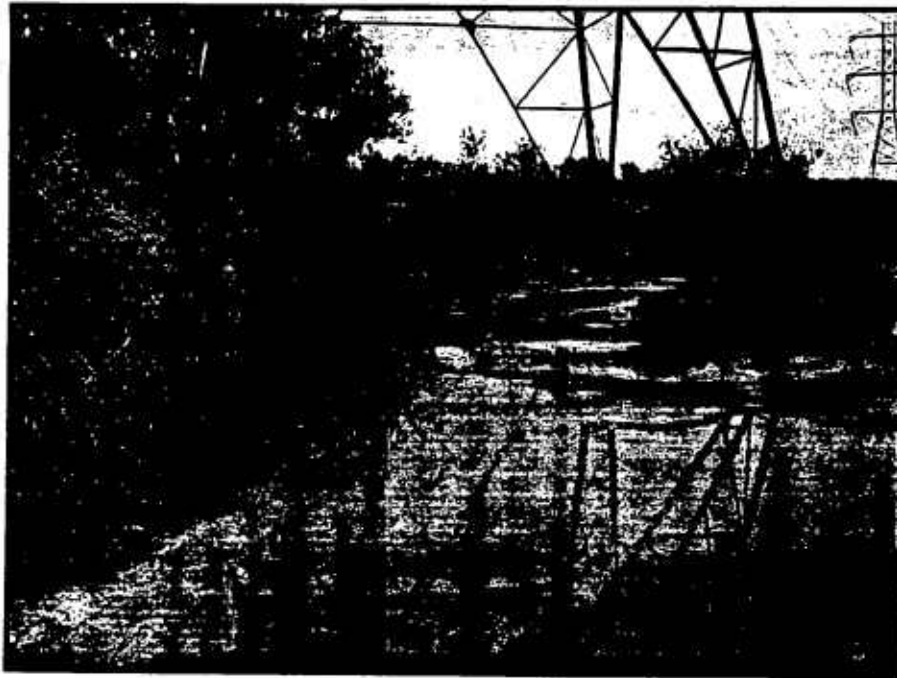
**Existing Utility Tower, Location of  
Proposed Cellular Antenna Installation**



**Existing Dirt Access Road to be Re-  
surfaced with Crushed Stone**



# **Cingular Wireless Fremont Cellular Antenna Site Project Photographs**



**Proposed Location of Equipment  
Shelter, at Base of Tower**



**Proposed Location of Equipment  
Shelter, at Base of Tower**



ENGINEERS  
DESIGN BUILD  
TECHNICAL RESOURCES  
OPERATIONS

**CINGULAR WIRELESS  
FREMONT CELLULAR INSTALLATION  
TOWN OF MANLIUS, ONONDAGA COUNTY, NEW YORK**

---

**Appendix C-  
Environmental Assessment**

# **ENVIRONMENTAL ASSESSMENT**

**for the**

**Fremont Site  
Telecommunications Facility  
Town of Manlius, New York**

**Prepared for:**

**Ms. Debbie Fleming  
Cingular Wireless  
5841 Bridge Street  
East Syracuse, New York 13057**

**Prepared By:**

**URS Corporation – New York  
640 Ellicott Street  
Buffalo, New York 14203**

**December 19, 2003**

**SIGNATURE PAGE**

Prepared by: URS Corporation – New York

\_\_\_\_\_  
*Signature*

\_\_\_\_\_  
**P. Leigh Whyte, AICP**

*Name*

\_\_\_\_\_  
*Date*

Prepared for: Cingular Wireless Corporation

\_\_\_\_\_  
*Signature*

\_\_\_\_\_  
*Name*

\_\_\_\_\_  
*Date*

## TABLE OF CONTENTS

|                                                                              | <u>Page No.</u> |
|------------------------------------------------------------------------------|-----------------|
| 1.0 FORWARD .....                                                            | 1               |
| 1.1 Description of the NEPA Process .....                                    | 1               |
| 1.2 Criteria for Filing .....                                                | 2               |
| 2.0 DESCRIPTION OF THE PROPOSED PROJECT AND PROJECT SITE .....               | 3               |
| 2.1 Site Description .....                                                   | 3               |
| 2.2 Zoning Classification and Communications with Planning Authorities ..... | 3               |
| 2.3 Public Controversy .....                                                 | 3               |
| 2.4 Site Selection .....                                                     | 3               |
| 3.0 CONSEQUENCES OF PROPOSED PROJECT .....                                   | 5               |

## LIST OF EXHIBITS

- Exhibit A: Site Location Map  
Exhibit B: Site Plan  
Exhibit C: Building Permit

## **1.0 FORWARD**

### **1.1 Description of the NEPA Process**

URS Corporation – New York (URS) has been retained by Cingular Wireless to complete this Environmental Assessment (EA). The Federal Communications Commission (FCC) requires an EA by the applicant for:

- (1) Facilities that are to be located in an official designated wilderness area.
- (2) Facilities that are to be located in an officially designated wildlife preserve.
- (3) Facilities that:
  - (i) may affect listed threatened or endangered species or designated critical habitats; or
  - (ii) are likely to jeopardize the continued existence of any proposed endangered or threatened species or likely to result in the destruction or adverse modification of proposed critical habitats, as determined by the Secretary of the Interior pursuant to the Endangered Species Act of 1973.
- (4) Facilities that may affect districts, sites, buildings, structures or objects, significant in American history, architecture, archeology, engineering or culture, that are listed, or are eligible for listing, in the National Register of Historic Places.
- (5) Facilities that may affect Indian religious sites.
- (6) Facilities to be located in a flood plain.
- (7) Facilities whose construction will involve significant change in surface features (e.g., wetland fill, deforestation or water diversion).
- (8) Antenna towers and/or supporting structures that are to be equipped with high intensity white lights that are to be located in residential neighborhoods, as defined by the applicable zoning law.
- (9) Facilities that would cause human exposure to levels of radio frequency radiation in excess of the Maximum Permissible Exposure Limits as defined in Title 47 of the Code of Federal Regulations – Telecommunications, Chapter 1 – Federal Communications Commission (47 CFR Chapter 1) §1.1310 - Radio frequency radiation exposure limits.

## **1.2 Criteria for Filing**

An EA for the existing facility is necessary because the proposed access drive and utility trench would be constructed through a Federal wetland and a floodplain, and the proposed fenced-in equipment shelter area would be located in a floodplain. The site involves no other environmental condition, based on the criteria requiring the preparation of an EA, as defined in 47 CFR Chapter 1 §1.1307 – “Actions that may have a significant environmental effect, for which Environmental Assessments must be prepared.”

## **2.0 DESCRIPTION OF THE PROPOSED PROJECT AND PROJECT SITE**

### **2.1 Site Description**

The Fremont Site is located just south of the DeWitt railroad yards and west of Pencee Lane in the Town of Manlius, Onondaga County, New York (Appendix A). The proposed project involves the installation of three sector macro-cells with a total of nine panel antennas at the 174' level of an existing 186-foot transmission tower in a Niagara Mohawk Power Corporation right-of-way (Appendix B). An 11' foot by 20 foot equipment shelter would be constructed in a 40 foot by 30 foot fenced-in area adjacent to the northeast corner of the tower. A proposed 200± foot drive would access the tower from Pencee Lane to the east. The 30 foot wide access drive would consist of a 20-foot right-of-way for an access road and a 10-foot utility easement. The existing dirt access drive on land owned by Linda Myers and Niagara Mohawk Power Corporation would be improved by adding a gravel over fabric driving surface .

### **2.2 Zoning Classification and Communications With Planning Authorities**

The zoning of the site is Industrial. The Building Permit issued for the project by the Town of Manlius Code Enforcement Office is included in Exhibit C.

### **2.3 Public Controversy**

Cingular Wireless is unaware of any public controversy regarding the proposed project. The likelihood of public controversy is low because the proposed project is a co-location on an existing transmission tower in a power line right-of-way next to the Dewitt railroad yards.

### **2.4 Site Selection**

Prior to selection of the proposed site, consideration was given to alternative sites within the required search radius that would provide adequate cellular telephone coverage. These sites included other existing transmission towers in the right-of-way, existing telecommunication towers in the area, and a water tower in the railroad yard to the north. The transmission towers were dismissed because of apparent State-regulated wetlands issues. There



are no telecommunication towers in the prescribed area. The water tower was dismissed because of potential contamination issues associated with the rail yard. Because the proposed site is an existing transmission tower in a disturbed industrial area, the proposed site was believed to minimize potential environmental effects to the maximum extent practicable.

### 3.0 CONSEQUENCES OF PROPOSED PROJECT

The following table summarizes the criteria, defined in 47 CFR Chapter 1 §1.1307 that would be affected by the proposed project.

| Criteria                             | No Effect | Potential Adverse Effect |
|--------------------------------------|-----------|--------------------------|
| Wilderness Area                      | X         | ---                      |
| Wilderness Preserve                  | X         | ---                      |
| Threatened or Endangered Species     | X         | ---                      |
| National Register of Historic Places | X         | ---                      |
| Indian Religious Sites               | X         | ---                      |
| Federal Wetland                      | ---       | X                        |
| Flood Plain                          | ---       | X                        |
| Change Surface Features              | X         | ---                      |
| High Intensity White Lights          | X         | ---                      |
| Radio Frequency Radiation            | X         | ---                      |

As indicated, two issues of environmental concern are associated with the proposed project. First, the existing tower, the proposed equipment shelter and an approximately 120 foot segment of the proposed 30 foot wide access drive are located in a regulated 100-year floodplain (Flood Insurance Rate Map Community Panel Number 360584 0010 D, available at Town of Manlius Clerk's office). Second, a portion of the proposed access drive would cross a Federal wetland.

These issues have been resolved as follows:

#### Floodplain

The Town of Manlius is a municipality that participates in the Federal Emergency Management Agency (FEMA) Flood Insurance Program. The Town of Manlius Building Inspector, the designated official for the flood program, has reviewed the project and Cingular Wireless has received a Building Permit from the Town of Manlius allowing them to proceed with construction on this project. The permit assures that site construction is consistent with the community's floodplain construction standards.

### Wetlands

Federal wetlands are regulated by the U.S. Army Corps of Engineers (Corps) under the Clean Water Act Section 404 Program. As part of the Program, Nationwide Permit (NWP) No. 39 authorizes the filling of up to 0.1 acre of Federal wetland. Fill activities in excess of 0.1 acre require an Individual Permit. Based on a review of field information obtained during a site walkover by a URS representative on April 2, 2002, a URS Professional Wetland Scientist has determined that, conservatively, less than 100 feet (0.07 acre) of the proposed access drive would cross Federal wetland. This amount of wetland impact would fall below the 0.1-acre threshold of NWP No. 39. Although under NWP No. 39 no written authorization is required from the Corps, a Post-Construction Form (PCN) must be filed with the Corps within 30 days of project completion. The PCN may be a letter outlining the name, location and description of the project and the estimated amount of Federal wetland that was filled.

**EXHIBIT A**  
**SITE LOCATION MAP**

**EXHIBIT B**  
**SITE PLAN**

**EXHIBIT C**  
**BUILDING PERMIT**

**CINGULAR WIRELESS  
FREMONT CELLULAR INSTALLATION  
TOWN OF MANLIUS, ONONDAGA COUNTY, NEW YORK**

---

**Appendix D-  
Short Form EAF**

617.20  
Appendix C  
State Environmental Quality Review  
**SHORT ENVIRONMENTAL ASSESSMENT FORM**  
For UNLISTED ACTIONS Only

**Part 1 - PROJECT INFORMATION** To be completed by Applicant or Project sponsor)

|                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| <b>1. APPLICANT/SPONSOR:</b><br>Cingular Wireless                                                                                                                                                                                                                                                                                                                                                                             | <b>2. PROJECT NAME:</b><br>Fremont Cellular Antenna Installation |
| <b>3. PROJECT LOCATION:</b><br>Municipality: Town of Manlius County: Onondaga                                                                                                                                                                                                                                                                                                                                                 |                                                                  |
| <b>4. PRECISE LOCATION:</b> (Street address and road intersections, prominent landmarks, etc., or provide map)<br><br>7025 Pencee Lane, Manlius, New York 13057                                                                                                                                                                                                                                                               |                                                                  |
| <b>5. PROPOSED ACTION IS:</b><br><input type="checkbox"/> New <input type="checkbox"/> Expansion <input checked="" type="checkbox"/> Modification/alteration                                                                                                                                                                                                                                                                  |                                                                  |
| <b>6. DESCRIBE PROJECT BRIEFLY:</b><br>The project generally includes the attachment of 9 cellular antennas to an existing utility transmission tower. Also included is the installation of a cellular equipment shelter which will be located at the base of the existing transmission tower.                                                                                                                                |                                                                  |
| <b>7. AMOUNT OF LAND AFFECTED:</b><br>Initial <u>0.07</u> acres Ultimately <u>0.07</u> acres (Installation of a 12' x 20' equipment shelter at the base of the existing transmission tower.)                                                                                                                                                                                                                                  |                                                                  |
| <b>8. WILL PROPOSED ACTION COMPLY WITH EXISTING ZONING OR OTHER EXISTING LAND USE RESTRICTIONS?</b><br><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If No, describe briefly                                                                                                                                                                                                                            |                                                                  |
| <b>9. WHAT IS PRESENT LAND USE IN VICINITY OF PROJECT?</b><br><input checked="" type="checkbox"/> Residential <input type="checkbox"/> Industrial <input checked="" type="checkbox"/> Commercial <input type="checkbox"/> Agricultural <input type="checkbox"/> Park/Forest/Open space <input type="checkbox"/> Other<br><br>Describe: The proposed site is an existing utility transmission easement in the Town of Manlius. |                                                                  |
| <b>10. DOES ACTION INVOLVE A PERMIT APPROVAL, OR FUNDING, NOW OR ULTIMATELY FROM ANY OTHER GOVERNMENTAL AGENCY (FEDERAL, STATE OR LOCAL)?</b><br><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, list agency(s) name and permit/approvals                                                                                                                                                         |                                                                  |
| <b>11. DOES ANY ASPECT OF THE ACTION HAVE A CURRENTLY VALID PERMIT OR APPROVAL?</b><br><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, list agency(s) name and permit/approval                                                                                                                                                                                                                    |                                                                  |
| <b>12. AS A RESULT OF PROPOSED ACTION WILL EXISTING PERMIT/APPROVAL REQUIRE MODIFICATION?</b><br><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                                                                                                                                                                                                                                                          |                                                                  |
| I CERTIFY THAT THE INFORMATION PROVIDED ABOVE IS TRUE TO THE BEST OF MY KNOWLEDGE                                                                                                                                                                                                                                                                                                                                             |                                                                  |
| Applicant/Sponsor name: <u>Eric N. Kenna, C&amp;S Engineers, Inc.</u> Date: <u>February 4, 2004</u>                                                                                                                                                                                                                                                                                                                           |                                                                  |
| Signature: <u>Eric N. Kenna 2/4/04</u>                                                                                                                                                                                                                                                                                                                                                                                        |                                                                  |

If the action is in a Coastal Area, and you are a state agency, complete a  
Coastal Assessment Form before proceeding with this assessment



**PART II-ENVIRONMENTAL ASSESSMENT (To be completed by Agency)**

**A. DOES ACTION EXCEED ANY TYPE 1 THRESHOLD IN 6 NYCRR, PART 617.4? If yes, coordinate the review process and use the FULL EAF. ☐Yes ☐No**

**B. WILL ACTION RECEIVE COORDINATED REVIEW AS PROVIDED FOR UNLISTED ACTIONS IN 6 NYCRR, PART 617.6? If No, a negative declaration may be superseded by another involved agency. ☐Yes ☐No**

**C. COULD ACTION RESULT IN ANY ADVERSE EFFECTS ASSOCIATED WITH THE FOLLOWING: (Answers may be Handwritten, if legible.)**

- C1. Existing air quality, surface or groundwater quality or quantity, noise levels, existing traffic patterns, solid waste production or disposal, potential for erosion, drainage or flooding problems? Explain briefly:**
- C2. Aesthetic, agricultural, archaeological, historic, or other natural or cultural resources; or community or neighborhood character? Explain briefly:**
- C3. Vegetation or fauna, fish, shellfish or wildlife species, significant habitats, or threatened or endangered species? Explain briefly:**
- C4. A community's existing plans or goals as officially adopted, or a change in use or intensity of use of land or other natural resources? Explain briefly:**
- C5. Growth, subsequent development, or related activities likely to be induced by the proposed action? Explain briefly:**
- C6. Long term, short term, cumulative, or other effects not identified in C1-C5? Explain briefly:**
- C7. Other impacts (including changes in use of either quantity or type of energy)? Explain briefly:**

**D. WILL THE PROJECT HAVE AN IMPACT ON THE ENVIRONMENTAL CHARACTERISTICS THAT CAUSED THE ESTABLISHMENT OF A CRITICAL ENVIRONMENTAL AREA (CEA)? ☐Yes ☐No If Yes, explain briefly:**

**E. IS THERE, OR IS THERE LIKELY TO BE, CONTROVERSY RELATED TO POTENTIAL ADVERSE ENVIRONMENTAL IMPACTS? ☐Yes ☐No If Yes, explain briefly:**

**Part III - DETERMINATION OF SIGNIFICANCE (To be completed by Agency)**

**INSTRUCTIONS:** For each adverse effect identified above, determine whether it is substantial, large, important or otherwise significant. Each effect should be assessed in connection with its (a) setting (i.e. urban or rural); (b) probability of occurring; (c) duration; (d) irreversibility; (e) geographic scope; and (f) magnitude. If necessary, add attachments or reference supporting materials. Ensure that explanations contain sufficient detail to show that all relevant adverse impacts have been identified and adequately addressed. If question D of Part II was checked yes, the determination of significance must evaluate the potential impact of the proposed action on the environmental characteristics of the CEA.

- ☐ Check this box if you have identified one or more potentially large or significant adverse impacts which **MAY** occur. Then proceed directly to the FULL EAF and/or prepare a positive declaration.
- ☒ Check this box if you have determined, based on the information and analysis above and any supporting documentation, that the proposed action **WILL NOT** result in any significant adverse environmental impacts **AND** provide on attachments as necessary, the reasons supporting this determination:

\_\_\_\_\_  
Name of Lead Agency

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print or Type Name of Responsible Officer in Lead Agency

\_\_\_\_\_  
Title of Responsible Officer

\_\_\_\_\_  
Signature of Responsible Officer in Lead Agency

\_\_\_\_\_  
Signature of Preparer (If different from responsible officer)



Reorder No. 5105  
JULIUS BLUMBERG, INC.  
NYC 10013  
© 1976 P.C.W.

THIS PERMIT MUST BE POSTED IN A CONSPICUOUS PLACE

**THIS IS TO CERTIFY THAT**

**CINGULAR WIRELESS**

HAS BEEN GRANTED A

**PERMIT**

**2003516**

**MANLIUS**

\* A 24 hour notice is required for each inspection

Type: **OTHER** - *ANTENNAS & 20' Equip. SHELTER*

Location: **TOWN LINE RD** - *#061-02-37.0*

INSPECTION REQUIREMENTS: (The inspections checked below ARE REQUIRED. Do not proceed beyond these points until countersigned below by the Inspector.)

Footing before pouring concrete.....

Foundation before backfill.....

Framing before insulating.....

Electrical before enclosing **REQUIRED**

Fireplace core inspection.....

Heating, Ventilation,  
Air Conditioning before closing...

Plumbing before enclosing.....

Insulation Inspection.....

Final Inspection..... **REQUIRED**

Other Conditions as Listed

Notice must be given to the code enforcement office when work is ready for inspection.

315-637-8619

Office Hours :8:30 am to 4:30 pm

**MUST POST SO AS TO BE VISIBLE FROM STREET**

Issue Date

11/12/2003

SIGNED X

*[Signature]*

Expiration Date

11/11/2004