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### ANALISIS KEKUATAN DAN STABILITAS PONDASI MOG-PU PLATFORM DI PERAIRAN NATUNA



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FAKULTAS TEKNOLOGI KELAUTAN  
INSTITUT TEKNOLOGI SEPULUH NOPEMBER  
SURABAYA

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**LEMBAR PENGESAHAN**

**JUDUL TUGAS AKHIR**

**ANALISIS KEKUATAN DAN STABILITAS  
PONDASI MOgPU PLATFORM DI  
PERAIRAN NATUNA**

**diajukan guna memenuhi sebagian persyaratan  
untuk memperoleh gelar sarjana**

**pada**

**Jurusan Teknik Kelautan**

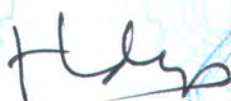
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# ANALISIS KEKUATAN DAN STABILITAS PONDASI MOgPU PLATFORM DI PERAIRAN NATUNA

## ABSTRAK

Tugas akhir ini bertujuan untuk mengetahui seberapa besar kekuatan dan stabilitas pondasi MogPU Platform untuk menanggung beban operasinya dari keruntuhan yaitu dengan mendapatkan besar daya dukung tanah (bearing capacity), momen guling (overturning moment), penurunan tanah (settlement) dan distribusi stress pada sambungan kaki-mat. Metoda yang dipakai dalam analisis ini adalah pemodelan dengan Finite Element Method (FEM) dengan tumpuan spring support menggunakan software GT-StrudL ver. 2.7. Berdasarkan hasil analisis kekuatan, menunjukkan bahwa secara umum tegangan (stress) yang dialami member-member pada pondasi masih berada dalam range yang ditoleransi dengan rasio stress maksimumnya sebesar 0.79 (operasional) dan 0.80 (ekstrem) dari skala 0 – 1. Tegangan maksimum pada sambungan kaki-mat sebesar  $25136.60 \text{ KN/m}^2$  adalah relatif aman karena masih berada di bawah tegangan luluhnya sebesar  $250000.00 \text{ KN/m}^2$ . Kemampuan tanah dibawah pondasi masih cukup baik memberikan daya dukungnya pada di kedalaman 2.5 m dibawah tanah dengan safety factor sebesar 2.63, lebih besar dari 2 (API RP-2A WSD). Penurunan yang terjadi adalah penurunan seragam (uniform) dengan penurunan maksimum sebesar 0.9 m selama umur operasinya. Ratio perbandingan antara momen pengembalinya dengan momen gulingnya masih diatas batas stabil, yaitu 40.11 dengan syarat minimalnya yaitu 1.3. Hal ini menunjukkan bahwa struktur pondasi secara umum sangat stabil terhadap keruntuhan guling.

kata kunci: MOgPU, Pondasi, Kekuatan dan Stabilitas

# Kata Pengantar

*Assalamu 'alaikum Wr, Wb*

Terpanjat Puji Syukur Kehadirat Allah SWT, Tuhan Yang Maha Pemurah, Maha Perkasa, Pemilik langit dan bumi, Penggenggam setiap urusan mahluk-Nya. Teriring shalawat dan salam, semoga senantiasa terlimpah kepada qudwah kita, pembawa cahaya kebenaran, panglima para mujahidin, Rasul Allah Muhammad SAW, juga kepada keluarga, sahabat, serta orang-orang yang istiqomah menegakkan risalah dalam manhajnya, hingga hari kemudian.

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Tugas Akhir ini mengambil judul “**Analisis Kekuatan dan Stabilitas Pondasi MOGPU Platform di Perairan Natuna**” yang disusun guna memenuhi persyaratan dalam mendapatkan gelar sarjana strata 1 (S1) di Jurusan Teknik Kelautan, Fakultas Teknologi Kelautan, Institut Teknologi Sepuluh Nopember (ITS) Surabaya. Fokus penelitian ini adalah analisa terhadap parameter kekuatan dan stabilitas pondasi MOGPU Platform – sebuah anjungan Jack Up 4 kaki tipe 3 chord K-brace dengan pondasi tipe mat yang beroperasi di perairan Natuna pada kedalaman 83.1 m – dengan mendapatkan besar daya dukung tanah, momen guling, *settlement* dan stress yang terjadi pada struktur pondasi.

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# Mars Pembebasan

(lagu kenangan bersama para demonstran)

buruh, tani, mahasiswa, kaum miskin kota

bersatu padu rebut demokrasi

gegap gempita dalam satu suara

demi tugas suci nan mulia

hari-hari esok adalah milik kita

terbebasnya massa rakyat pekerja

terciptanya tatanan

masyarakat

adil sejahtera

sepenuhnya

marilah kawan, mari

kita kepalkan

di tangan kita terenggam arah bangsa

marilah kawan, mari kita pekikkan

sebuah lagu tentang pembebasan

dibawah topi jerami

terus kutapaki jalan revolusi

berjuta kali turun aksi

demi satu langkah pasti



# Totalitas Perjuangan

(mengenang aksi berdarah BEM-ITS , menolak kenaikan harga, 17 Januari 2003, Gd. Grahadi Surabaya, puluhan luka, 2 aktivis ditahan)

Kepada para mahasiswa

Yang merindukan kejayaan

Kepada rakyat yang kebingungan

Di persimpangan jalan

Kepada pewaris

peradaban

Yang telah

menggoreskan

Sebuah catatan

kebanggaan

Di lembar

sejarah manusia



Wahai kalian yang rindu kemenangan

Wahai kalian yang turun ke jalan

Demi mempersembahkan jiwa dan raga

Untuk negeri tercinta

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# **BAB I**

## **PENDAHULUAN**

Kami sudah coba apa yang kami bisa, tapi kerja belum selesai, belum apa-apa, kami sudah beri kami punya jiwa, kerja belum selesai, belum bisa memperhitungkan arti 4-5 ribu nyawa, kami cuma tulang-tulang berserakan, tapi adalah kepunyaan-Mu, Kaulah yang tentukan nilai tulang-tulang berserakan  
(Chairil Anwar)



# BAB I

## PENDAHULUAN

### 1.1. Latar Belakang Masalah

**J**ack-up platform adalah salah satu jenis anjungan lepas pantai yang digunakan untuk operasi pengeboran minyak dan gas maupun sebagai pendukung operasi. Dibandingkan dengan anjungan terapung lain seperti *semisubmersible* ataupun *drilling ship*, *jack-up platform* memiliki kelebihan tersendiri karena pada waktu operasi kaki-kakinya akan terpancang secara stabil pada dasar laut sedangkan geladaknya akan terangkat hingga ketinggian tertentu dari permukaan air laut supaya tidak dijangkau oleh gelombang.

Cara operasi jack-up ini menjamin sistem operasi yang lebih efisien. Kelebihan lainnya adalah struktur ini dapat dipindahkan (*movable*) dari satu lokasi ke lokasi yang lain. Serta dapat menjangkau perairan yang lebih dalam sehingga sangat kompetitif.

MOg-PU (*Movable Offshore Gas Production Unit*), seperti dalam **Gambar. 1.1** adalah jack-up platform yang dioperasikan pada kedalaman laut 83.1 m di ladang gas natuna barat, perairan Natuna di laut Cina Selatan. Struktur MOgPU ini merupakan Jack-Up 4 kaki dengan bentuk 3 chord tipe K-brace, dapat dilihat pada **Gambar 1.2**.



Yang unik pada struktur ini adalah struktur pondasinya. Berbeda dengan struktur jack-up kebanyakan yang pondasinya menggunakan *spudcan* yang dipancang. Pondasi MOgPU menggunakan pondasi sistem *mat* yang tidak dipancang, melainkan hanya diletakkan diatas dasar laut (*sea-bed*).



Gambar 1.1 Struktur Jack-up MOgPU Platform dengan Pondasi tipe *mat* yang beroperasi di Perairan Natuna (CONOCO, 1999)

Peletakkan kaki-kaki MOg-PU yang tidak di pancang ini berpengaruh besar terhadap stabilitas struktur terhadap daya dukung tanah (*bearing capacity*), beban lateral (*momen overturning*), dan penurunan (*settlement*).



Selain itu pada sambungan antara kaki (*leg*) – *mat* akan mengalami defleksi akibat stress yang terjadi. Dengan menganalisa kondisi tanah, lingkungan, kondisi struktur serta beban-beban yang terjadi, maka bisa diketahui besar daya dukung tanah (*bearing capacity*), momen guling (*overturning moment*) akibat beban lateral, dan penurunan (*settlement*) yang terjadi.

## 1.2. Perumusan Masalah

- 1) Berapa besar daya dukung (*bearing capacity*) tanah terhadap pondasi.
- 2) Berapa besar momen guling (*overturning moment*) yang terjadi pada pondasi akibat beban lateral
- 3) Berapa besar penurunan tanah (*settlement*) yang terjadi selama umur operasi
- 4) Bagaimana distribusi stress yang terjadi pada sambungan kaki dengan pondasi (*mat*)

## 1.3. Tujuan

- 1) Untuk mendapatkan besar daya dukung tanah (*bearing capacity*) pada pondasi jack-up MOgPU platform.
- 2) Untuk mendapatkan besar momen guling (*overturning moment*) akibat beban-beban lateral
- 3) Untuk mendapatkan besar penurunan tanah (*settlement*) pada pondasi selama umur operasi
- 4) Untuk mengetahui distribusi stress pada sambungan kaki-*mat*.



## 1.4. Manfaat

Manfaat dari penelitian ini adalah mengetahui kekuatan dan stabilitas pondasi struktur MOgPU, baik stabilitas dalam arah vertikal (daya dukung tanah) maupun kestabilan dalam arah lateral (momen overturning) akibat beban-beban yang terjadi. Selain itu akan diketahui pula besar distribusi stress pada sambungan kaki-*mat* serta besar penurunan tanah yang terjadi dalam kurun waktu operasi untuk melihat porsi dek terhadap water level hingga akhir operasi.

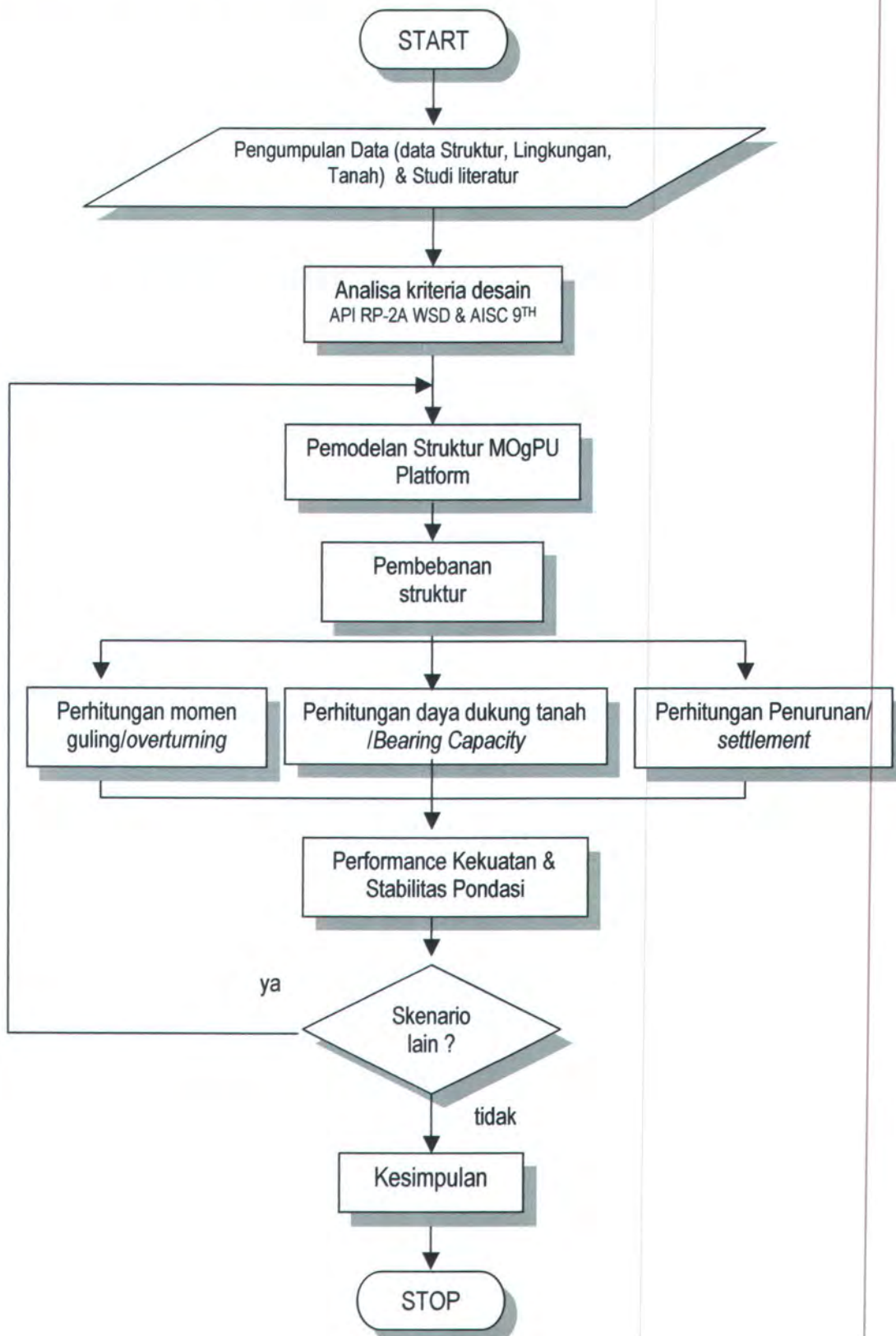
## 1.5. Batasan Masalah

Batasan masalah dalam perhitungan analisis kali ini adalah sebagai berikut:

- 1) Lapisan tanah dianggap homogen pada tiap-tiap kedalaman
- 2) *Scouring* pada pondasi diabaikan
- 3) Analisa yang dilakukan merupakan analisa statis *in place*



## 1.6. Metodologi Penelitian



Gambar 1.2 Flow Chart Metodologi Penelitian



## 1.7. Sistematika Penulisan

Sistematika penulisan yang digunakan dalam penyusunan laporan tugas akhir ini adalah sebagai berikut :

**BAB I PENDAHULUAN.** Pada bab ini akan diterangkan mengenai latar belakang studi yang dilakukan, permasalahan, tujuan yang hendak dicapai, manfaat yang dihasilkan, batasan-batasan permasalahan, metodologi penelitian serta sistematika penulisan laporan tugas akhir.

**BAB II TINJAUAN PUSTAKA DAN LANDASAN TEORI.** Dalam penyelesaian masalah pada tugas akhir ini penulis berpedoman pada beberapa penelitian tentang struktur bangunan lepas pantai yang pernah dilakukan dan beberapa dasar teori. Dasar teori yang digunakan antara lain dasar-dasar perancangan *jack-up*, teori pondasi dan teori gelombang.

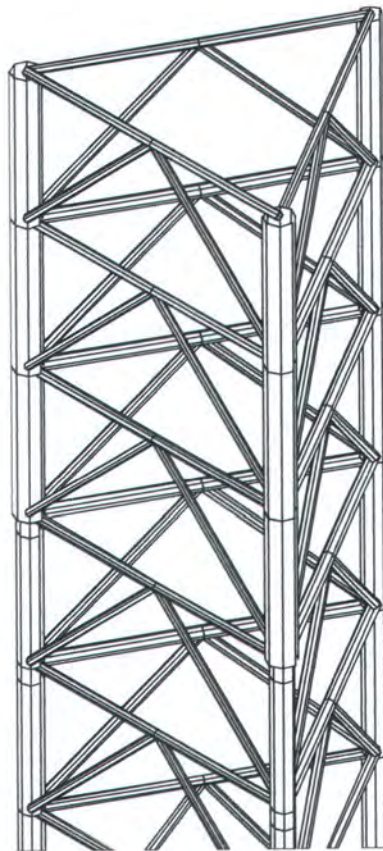
**BAB III PEMODELAN STRUKTUR DAN PEMBEBANAN.** Bab ini menerangkan langkah-langkah yang dilakukan, diawali dengan pengumpulan data struktur dan lingkungan, pemodelan struktur pondasi, penentuan pembebanan baik beban lingkungan maupun *payload*, langkah-langkah dalam pemodelan komputer dan analisa struktur.

**BAB IV ANALISA DAN PEMBAHASAN.** Bab ini akan membahas respon pondasi yang didapat dengan bantuan software GT-STRUDL, yaitu besar daya dukung (*bearing capacity*), penurunan tanah (*settlement*), serta momen guling (*overturning*). Pemeriksaan respon

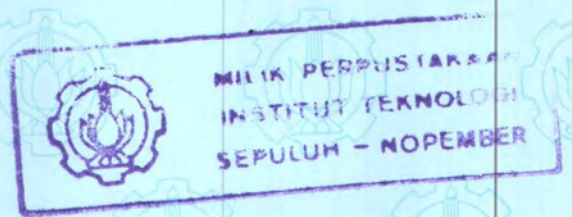


struktur disesuaikan dengan kriteria kekuatan yang direkomendasikan API RP 2A-WSD dan AISC 9<sup>th</sup> 1989

**BAB V KESIMPULAN DAN SARAN.** Bab ini berisi kesimpulan dan saran penyelesaian permasalahan mengenai penelitian lebih lanjut pada struktur pondasi *jack-up* dengan sistem *mat*.



Gambar 1.3 Bentuk penampang kaki pada salah satu kaki MOgPU platform, jenis truss 3-chord, dengan bracing tipe K-brace



## **BAB II**

# **TINJAUAN PUSTAKA DAN LANDASAN TEORI**

Kepada kalian yang terkatung dalam keraguan, apakah dunia begitu mudah melenakan, kepada kalian yang hatinya gundah gelisah, tidakkah panggilan Allah melantun indah, bangkit, dan songsonglah surga, pintunya kini berhiaskan pedang dan panas timah, dari fana sesaat menuju keabadian.

(Assyahid Eemad Aqeel)



## BAB II

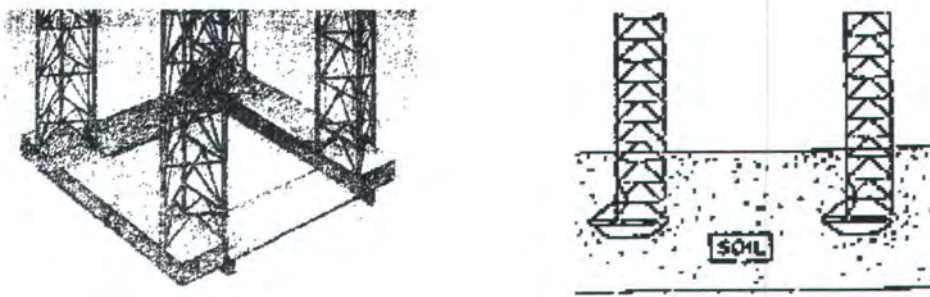
# TINJAUAN PUSTAKA DAN LANDASAN TEORI

### 2.1. Tinjauan Pustaka

**P**ondasi adalah bagian terendah dari bangunan (*substructure*) yang berfungsi meneruskan beban bangunan ke tanah atau batuan yang berada dibawahnya. Terdapat dua klasifikasi pondasi, yaitu pondasi dangkal dan pondasi dalam. *Pondasi dangkal* didefinisikan sebagai pondasi yang mendukung bebannya secara langsung, seperti pondasi telapak, pondasi memanjang dan pondasi rakit (*mat*). *Pondasi dalam* didefinisikan sebagai pondasi yang meneruskan beban bangunan ke tanah keras atau batu yang terletak relatif jauh dari permukaan, contoh : pondasi sumuran dan pondasi tiang.[Bowles, 1982]

Jack-up platform adalah struktur lepas pantai yang merupakan kombinasi antara *fixed structure (jacket steel structure)* dan *floating structure (semi submersible)*. Dimana pada waktu operasi kaki-kakinya akan terpancang secara stabil pada dasar laut sedangkan geladaknya akan terangkat (*jacking*) hingga ketinggian tertentu dari permukaan air laut supaya tidak dijangkau oleh gelombang. [Murdjito, 1997]

Pondasi Jack-Up platform ada dua jenis, yaitu tipe *mat* dan *spud-can* (**Gambar 2.1**). Konstruksi *mat* merupakan struktur pondasi yang saling menghubungkan ujung kaki-kaki jack-up. Dengan konstruksi *mat* ini maka kaki-kaki jack-up tidak saling berdiri bebas tetapi saling terkait. Konstruksi *mat* cocok untuk kondisi tanah yang berlumpur atau berpasir dan permukaan tanah tersebut rata. Oleh karena dimensi *mat* tersebut cukup besar, maka penancapan kaki (*penetration*) tidak lagi perlu terlalu dalam untuk mendapatkan daya dukung pondasi yang cukup. [Murdjito, 1997]



Gambar 2.1. pondasi jack-up dengan (a)*mat* dan (b)*spud can*

Pada perancangan pondasi MOgPU Platform, kriteria disain yang digunakan antara lain adalah: pada saat operasi, pondasi harus mampu berada pada posisi stabil dengan besar penurunan (*settlement*) dan momen guling (*overturning moment*) sesuai dengan yang diijinkan. Instalasi pondasi dapat dilakukan dengan mudah (*self installation*) tanpa membutuhkan banyak persiapan pada lokasi. Mudah untuk dibongkar, dipindahkan dan di-*install* kembali pada daerah lain tanpa memerlukan banyak modifikasi. Struktur pondasi mampu meneruskan Beban-beban diatasnya dengan baik ke tanah. Faktor keselamatan untuk daya dukung



tanah (*bearing capacity*) dan gaya lateral (*horizontal sliding resistance*) sesuai dengan rules API-RP 2A WSD. [MOgPU Weight Control Report-CONOCO, 2003]

## 2.2. Dasar Teori

### 2.2.1. Dasar Perancangan Jack-Up

Salah satu penyebab kegagalan struktur *jack-up* adalah stabilitas struktur yang terlalu rendah. Stabilitas struktur yang rendah ini diakibatkan oleh beban eksternal yang terlalu besar dan momen pengembali struktur yang tidak mampu mengimbangi momen guling (*overturning moment*) dari luar.

Secara umum fase pengoperasian sebuah *jack-up* dibedakan atas tiga bagian penting, yaitu [Liu,1989] : *Fase transportasi, fase instalasi dan fase operasional*.

*Fase Transportasi (Gambar2.2)* adalah fase pemindahan suatu anjungan *jack-up* dari satu lokasi ke lokasi lain. Dimana pada waktu transportasi, kaki-kaki *jack-up* akan berdiri tegak di atas geladak (dek) dengan ujung kaki yang satu terikat pada geladak. Transportasi ini dilakukan dengan kapal penarik (*wet transport*) atau dengan kapal pengangkut (*dry transport*).



Gambar 2.2. transportasi MOgPU Platform ke lokasi (CONOCO, 1999)

*Fase Instalasi* meliputi kegiatan penurunan kaki *jack-up* hingga menyentuh dasar laut, pemancangan pondasi, pembebanan awal (*preloading*) dan mengangkat geladak hingga ketinggian tertentu dari permukaan air tenang agar tidak terjangkau gelombang dan terakhir adalah pengikatan kaki dengan geladak.

*Fase Operasi* yaitu fase dimana *jack-up* melakukan fungsinya. Kriteria terpenting pada fase operasi ialah besarnya momen pengembali yang dimiliki oleh *jack-up* harus lebih besar dari momen guling akibat pengaruh kondisi lingkungan dengan besar perbandingan tidak boleh kurang dari 1,3. Besarnya momen guling yang timbul selain ditentukan oleh beban lingkungan juga ditentukan oleh konstruksi *jack-up*.



### 2.2.1.1. Konstruksi Kaki Jack-Up

Pada umumnya jumlah kaki *jack-up* bervariasi antara 3 buah hingga 8 buah. Perancangan *jack-up* modern cenderung mengurangi jumlah kaki menjadi tiga atau empat buah. Hal ini berarti pengurangan berat total struktur dan menurunkan beban hidrodinamis. Akan tetapi secara umum orang lebih cenderung memilih *jack-up* 3 kaki daripada *jack-up* 4 kaki.

Selain jumlah kaki, bentuk kaki juga sangat diperhatikan dalam perancangan struktur *jack-up platform*. Ada dua jenis bentuk kaki *jack-up*, yaitu konstruksi kaki tertutup (*closed type*) dan konstruksi kaki cangkang (*truss type*). *Jack-up* dengan konstruksi kaki tertutup banyak dijumpai pada *jack-up* sebelum tahun 70-an.

*Jack-up* dengan kaki cangkang mulai populer semenjak pertengahan tahun 70-an. Ada dua tipe konstruksi kaki cangkang, yaitu tipe *3-chord* dan tipe *4-chord*. Konstruksi kaki cangkang akan menjadikan beban hidrodinamis yang bekerja pada struktur akan lebih rendah dibanding dengan konstruksi tertutup. Disamping itu dengan konstruksi kaki cangkang menjadikan berat konstruksi dapat diturunkan. Kriteria Perancangan Bentuk Kaki Jack-Up antara lain adalah :

- 1) Jarak antar kaki. Dimana akan menentukan stabilitas struktur dalam menahan beban momen
- 2) Jarak antar *Chords*. Selain menentukan kekakuan kaki juga akan menentukan berat kaki. Jarak antar *chord* akan menentukan



momen inersia yang berarti juga akan menentukan kemampuan struktur dalam menahan beban momen dan gaya geser.

3) Tipe chords. Bentuk dan ukuran *chord* ditentukan oleh :

- Kekakuan dan kekuatan kaki secara global.
- Posisi dan konstruksi dari *rack* dan *pinion* dari sistem *jacking*.
- Hubungan antara kaki dengan struktur pondasi. Tegangan antara kaki-pondasi, *chord*-penegar.

4) Bentuk penampang kaki. Ada dua tipe yang dikenal yaitu tipe 3-*chord* (3-*chordsbay type*) dan tipe 4-*chord* (4-*chordsbay type*). Untuk tipe 3-*chord* penampang kaki akan membentuk segitiga dengan *chord* diujung-ujungnya yang dihubungkan oleh penegar (*bracing*). Sedangkan untuk 4-*chord* penampang kaki akan berbentuk segiempat.

5) Tipe Bracing. Tipe Penegar *K-bracing* dan *X-bracing* paling banyak digunakan untuk konstruksi konstruksi cangkang kaki *jack-up* di perairan dalam.

### 2.2.1.2. Konstruksi Pondasi

Ada dua jenis konstruksi pondasi pada *jack-up* yaitu jenis *mat* dan jenis *spuds-can*. Pemilihan jenis pondasi tergantung pada kondisi tanah dan kemampuan pembebanan serta sistem *jacking*.

Jenis pondasi *mat* berbentuk struktur pondasi yang menghubungkan ujung kaki *jack-up* satu sama lain. Konstruksi *mat* biasanya digunakan



pada tanah berlumpur (clay), berpasir, permukaan tanah yang rata dan berdaya dukung rendah.

Pada tanah berpasir, area pondasi yang sangat luas memperbesar faktor aman terhadap daya dukungnya. Dengan bertambahnya lebar *mat*, maka bertambah besar pula daya dukungnya. Oleh karena itu kemungkinan terjadinya keruntuhan terhadap daya dukung makin kecil. Pada tanah lempung yang lunak, untuk mengurangi tekanan tanah yang besar pada tanah dasar pondasi, maka pondasi harus diperdalam.

Jenis kedua yaitu *spud-can* dimana setiap kaki *jack-up* berdiri bebas dan tidak terhubung satu sama lain. Keuntungan jenis konstruksi *spud cans* adalah sistem instalasi *jack-up* menjadi lebih sederhana, sebab masing-masing *jack-up* berdiri bebas.

### 2.2.1.3. Sistem Jacking dan Pengikat

Sistem jacking merupakan konstruksi vital pada struktur *jack-up*. Sistem *jacking* berfungsi untuk menaikkan dan menurunkan kaki, melakukan pembebanan awal dan untuk menaikkan serta menurunkan geladak. Untuk *jack-up* modern sistem jackingnya menggunakan *rack* dan *pinion*. Sistem *jacking* ini lebih efektif dalam mentransformasikan beban dari kaki ke geladak serta memudahkan dan mempercepat pelaksanaan kegiatan.

Sistem *jacking*, secara umum melibatkan empat elemen penting yaitu :

- Pelindung tekanan bagian atas (*upper guide*)



- Sistem jacking (*jacking system*)
- Sistem pengikat (*fixation system*)
- Pelindung tekanan bagian bawah (*lower guide*)

Dilihat dari konstruksinya, sistem *rack-pinions* dapat dikelompokkan dalam dua cara, yaitu :

- *Rack-pinions* sistem ganda (*Opposed rack-pinions elevating system*). Sistem *pinions* ini diletakkan pada dua sisi elemen utama (*chord*) dari kaki *jack-up*.
- *Rack-pinions* sistem tunggal (*Unopposed rack-pinions elevating system*). *Pinions* hanya dipasang pada satu sisi setiap elemen utama kaki.

Di dalam pemodelan struktur sambungan antara kaki dan geladak akan sangat ditentukan oleh pemilihan tipe sistem *jacking* diatas. Hal ini karena pemilihan ini akan menentukan karakteristik respon pada sambungan diatas, yang berarti karakteristik dari seluruh sistem.

Dilihat dari sistem penggerak yang mendukung sistem *jacking*, maka ada beberapa jenis sistem yang ada di lapangan, yakni : sistem hidrolis, sistem listrik, sistem *jacking* kecepatan tinggi, *positive engagement jacking system* dan lain-lain. Dari beberapa sistem diatas, sistem hidrolis dan listrik yang paling populer pada konstruksi *jack-up* terutama untuk ukuran besar. Jumlah *pinions* untuk satu unit *jack-up* sangat bervariasi dari 12 buah hingga 72 buah *pinions*.

Sistem pengikat dipasang pada tengah-tengah sambungan antara geladak dan kaki *jack-up*. Fungsi dari pengikat adalah menggantikan fungsi *jacking* pada waktu transportasi dan operasi. Disamping itu sistem pengikat juga berperan mengurangi gerakan *jack-up* terutama pada daerah sambungan tersebut. Terhadap beban yang ada secara umum fungsi pengikat adalah sebagai berikut :

- Menciptakan suatu kondisi sambungan yang mati antara kaki dengan geladak pada waktu transportasi dan operasi.
- Mentransfer beban momen lentur dari kaki ke geladak dalam bentuk tegangan vertikal dan gaya tekan pada elemen utama.

#### 2.2.1.4. Pemodelan Jack-Up

Pemilihan bentuk struktur yang akan digunakan, dipengaruhi oleh beberapa faktor yang merupakan parameter dasar dalam penetapan kriteria perancangan, diantaranya :

- 1) Kondisi lingkungan
- 2) Karakter sistem anjungan (meliputi : kondisi tanah, pondasi, dan bagaimana bangunan di atasnya)
- 3) Pembebanan dari lingkungan dan gaya yang bekerja pada anjungan
- 4) Bagaimana gaya dan respon struktur serta perilaku struktur dalam kondisi yang paling ekstrem akibat *overload*
- 5) Studi keandalan struktur dan studi biaya



Untuk memperkirakan ukuran awal struktur dapat dilakukan dengan memakai harga perbandingan sebagai berikut :

- Rasio kerampingan (*slenderness ratio*),  $kL/r$ , Dimana,

$k$  = faktor panjang efektif

$L$  = panjang elemen

$r$  = jari-jari girasi

Besarnya harga  $k$  berkisar antara 0.5 – 2.0. Jari-jari girasi,  $r$  untuk silinder berdinding tipis adalah  $0.35D$ . [API, 1993]

- Perbandingan diameter dengan ketebalan

Besarnya harga perbandingan  $D/t$  berkisar antara 19 – 90. bila harga  $D/t$  mendekati 70, maka harus dilakukan pemeriksaan *local buckling*.

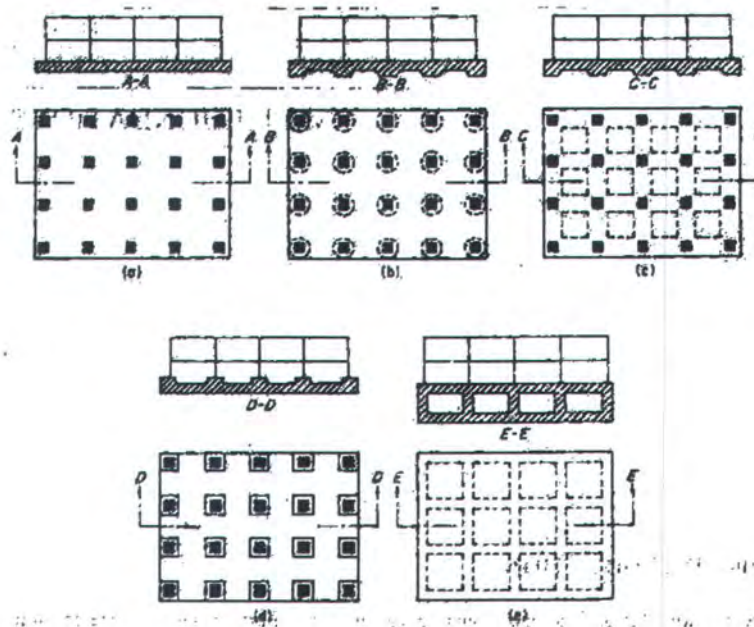
Dalam melakukan proses perancangan hal yang menjadi pertimbangan utama adalah kekuatan rancangan. Suatu rancangan dikatakan memenuhi kriteria kekuatan apabila tegangan pada setiap titiknya lebih kecil atau sama dengan tegangan ijin titik tersebut.

## 2.2.2. Pondasi Sistem Mat

Pondasi mat (seperti pada **Gambar 2.3**) didefinisikan sebagai bagian bawah dari struktur (*substructure*) yang berbentuk rakit melebar ke seluruh

bagian dasar bangunan. Bagian ini berfungsi meneruskan beban bangunan ke tanah di bawahnya.

Pondasi ini digunakan bila lapisan tanah fondasi berdaya dukung rendah, sehingga jika digunakan pondasi telapak akan memerlukan luas area yang hampir memenuhi bagian bawah bangunannya. Terzaghi dan Peck (1948), menyarankan bahwa bila 50% luas bagian bawah bangunan terpenuhi oleh luasan fondasi, lebih ekonomis jika digunakan fondasi raki karena dapat menghemat biaya penggalian dan penulangan beton.



Gambar. 2.3 beberapa tipe pondasi mat, (a)flat plate, (b)plate thickened under columns, (c)beam-and-slab, (d)plate with pedestals, (e)basement walls as part of mat.

### 2.2.2.1. Tanah Pendukung dan Mekanisme Pendukung

Alas pondasi harus terletak pada lapisan tanah pendukung yang mempunyai kualitas cukup baik. Biasanya, selain lapisan batuan dasar

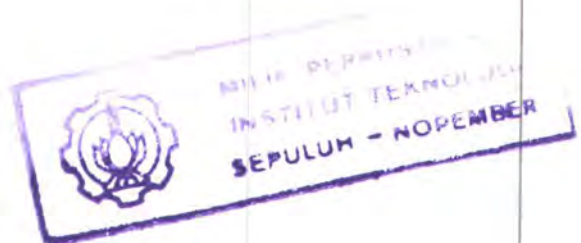


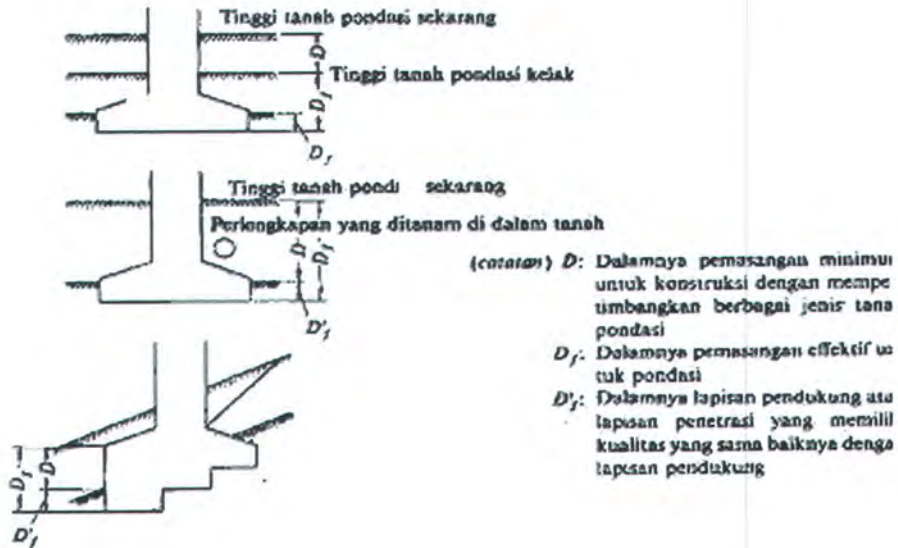
atau kerikil, lapisan tanah berpasir (*sandy soil*) yang memiliki nilai  $N$  lebih besar dari 30 atau tanah kohesif yang memiliki nilai  $N$  lebih besar dari 20. ketiga macam tanah ini seyogyanya memiliki ketebalan lapisan yang cukup (lebih dari 1.5 kali lebar pondasi).

Mekanisme pendukung pondasi adalah beban vertikal dan momen yang bekerja pada pondasi sebagian ditahan langsung oleh daya dukung (*bearing capacity*) tanah, sedang beban mendatar sebagian besar ditahan oleh hambatan geser (*sliding resistance*) dari dasar pondasi. Jika pondasi tertanam dibawah tanah, geseran atau tekanan tanah di muka pondasi juga ikut menahan beban, tetapi bila pondasi ini tertanam dangkal, gaya penahan ini umumnya kecil dan tanah dimuka pondasi kadang-kadang akan mengalami pengikisan dan pengaruh cuaca, sehingga dalam perencanaan, gaya penahan ini diabaikan.

#### 2.2.2.2. Dalamnya Pondasi

Dalamnya pondasi (**Gambar 2.4**) ditetapkan dengan mempertimbangkan hal-hal sebagai berikut antara lain, dalamnya tanah yang menimbulkan perubahan volume, muka air tanah dan besarnya ketebalan lapisan pendukung.





Gambar. 2.4. Dalamnya pemasangan pondasi

### 2.2.2.3. Syarat Perencanaan

Pondasi harus direncanakan sedemikian rupa sehingga keadaan-keadaan berikut ini dapat dipenuhi :

- 1) struktur secara keseluruhan adalah stabil dalam arah vertikal, arah mendatar, dan terhadap guling.
- 2) Pergeseran struktur pondasi (besarnya penurunan, sudut kemiringan dan pergeseran mendatar) harus lebih kecil dari nilai yang ditentukan bagi bangunan bagian atas.

### 2.2.2.4. Daya Dukung (*Bearing Capacity*)

Analisis daya dukung mempelajari kemampuan tanah dalam mendukung beban struktur yang terletak di atasnya. Daya dukung menyatakan tahanan geser tanah untuk melawan penurunan akibat



pembebanan, yaitu tahanan geser yang dapat dikerahkan oleh tanah sepanjang bidang gesernya.

Perancangan fondasi harus mempertimbangkan keruntuhan geser dan penurunan yang berlebihan. Untuk itu perlu dipenuhi dua kriteria, yaitu : *kriteria stabilitas* dan *kriteria penurunan*.

Persyaratan-persyaratan yang harus dipenuhi dalam perancangan fondasi adalah :

1. faktor aman terhadap keruntuhan akibat terlampauinya daya dukung harus dipenuhi. Dalam hitungan daya dukung umumnya digunakan faktor aman 3 (Bowles) sedang untuk perancangan struktur lepas pantai digunakan faktor aman 2 (API RP-2A WSD).
2. penurunan pondasi harus masih dalam batas-batas nilai yang diotoleransikan. Khususnya penurunan tak seragam (*differential settlement*) yang mengakibatkan kerusakan pada struktur.

Daya dukung tanah pondasi yang diijinkan dihitung dengan persamaan berikut ini:

$$Q_a = \frac{Q_u}{n} \quad (2.1)$$

Dimana,

$Q_a$  = daya dukung yang diijinkan



$Q_u$  = daya dukung ultimate tanah pondasi

$n$  = faktor keamanan

Daya dukung batas (*ultimate*) tanah pondasi diterapkan dari eksentrisitas dan kemiringan pembebanan, selain dari ukuran bangunan. Untuk pondasi mat menggunakan persamaan sebagai berikut (Skempton, 1951) :

$$Q_u = 5 \cdot s_u (1 + 0.2 D/B)(1 + 0.2 B/L) + \gamma D \quad (2.2)$$

dimana,

$s_u$  = kuat geser tanah rata-rata

$D$  = kedalaman pondasi

$B$  = lebar pondasi

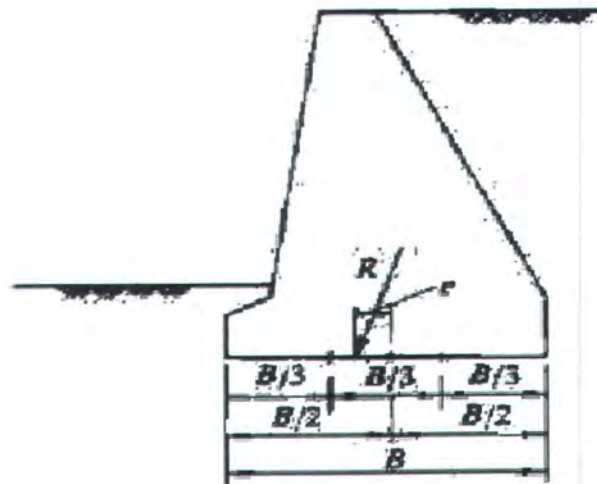
$L$  = Panjang pondasi

$\gamma$  = berat volume tanah

#### 2.2.2.5. Kestabilan Guling (*Overtuning Moment*)

Kestabilan terhadap guling diperiksa berdasarkan besarnya kedudukan kerja (eksentrisitas) gaya yang ditimbulkan oleh beban yang bekerja. Dengan istilah lain, kedudukan kerja gaya resultante pada dasar pondasi, seperti yang ditunjukkan dalam **Gambar 2.5** harus selalu

diusahakan agar terletak di dalam batas  $1/3$  lebar dasar pondasi tersebut, diukur dari kedua sisinya. Jika keadaan ini tidak terpenuhi, perlu dilakukan perencanaan kembali dengan mengubah lebar pondasi, sehingga keadaan tersebut dapat dipenuhi.

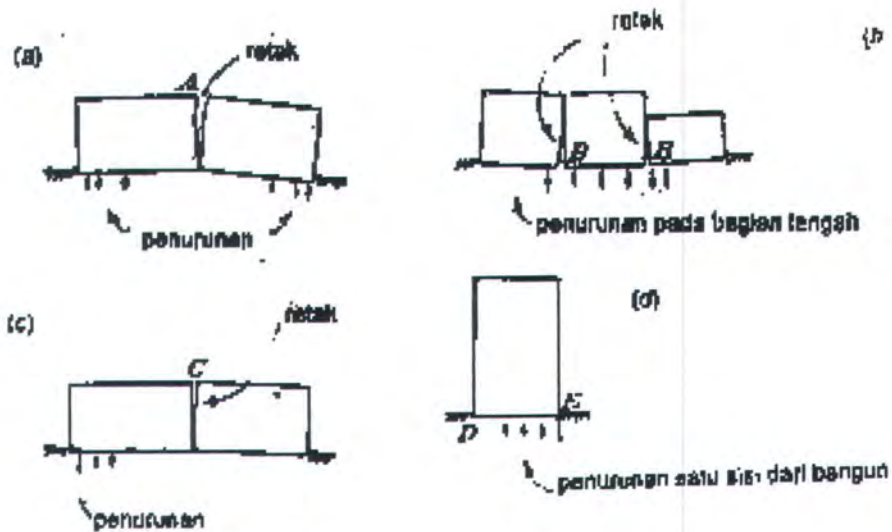


Gambar. 2.5. Kedudukan kerja dari gaya resultan yang terjadi pada pondasi

#### 2.2.2.6. Penurunan (*settlement*) Pondasi

Penurunan didefinisikan sebagai gerakan titik tertentu pada bangunan terhadap titik referensi yang tetap. Umumnya, penurunan tak seragam lebih membahayakan bangunan daripada penurunan totalnya. Pada **Gambar 2.6**, diperlihatkan contoh-contoh kerusakan bangunan akibat

penurunan.



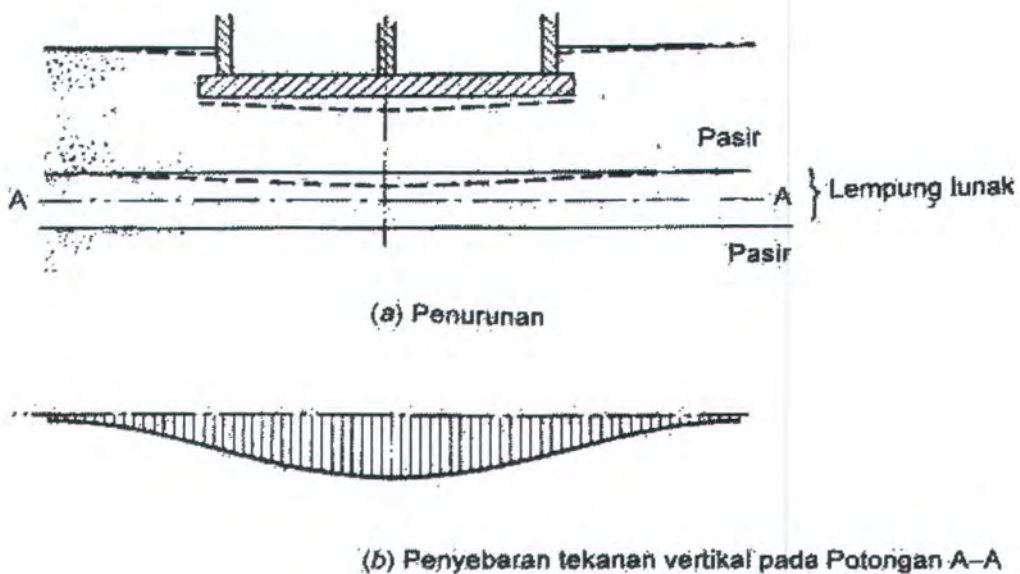
gambar 2.6 Contoh kerusakan bangunan akibat penurunan

Tujuan dari analisis penurunan adalah menentukan besar penurunan akhir dari struktur dan juga untuk mencari selang waktu terjadinya penurunan itu. Oleh sebab itu, yang perlu diketahui sebelumnya adalah besar gaya-gaya luar yang bekerja pada tanah pondasi, tegangan di dalam tanah pondasi, juga struktur lapisan tanah pondasi dan sifat-sifat ketahanan terhadap tekanan dari setiap lapisan.

Ada tiga jenis penurunan yang terjadi, yaitu : (1)Penurunan Langsung (*immediate-settlement*), (2)Penurunan Primer atau Penurunan Konsolidasi (*consolidated-settlement*), (3)Penurunan Sekunder atau penurunan sangat perlahan (*over consolidated settlement*)

Penurunan langsung adalah penurunan yang langsung terjadi sewaktu gaya-gaya luar bekerja, termasuk perubahan elastis pondasi dan juga penurunan yang terjadi pada hampir seluruh tanah berpasir.

Penurunan primer atau penurunan konsolidasi adalah penurunan yang terjadi pada tanah kohesif berupa pengurangan volume tanah akibat aliran air yang meninggalkan zona tertekan yang diikuti oleh pengurangan kelebihan tekanan air pori (*excess pore water pressure*) dan berlangsung setelah terjadinya penurunan langsung. Sedangkan penurunan sekunder adalah penurunan konsolidasi yang sangat perlahan sehubungan dengan panjangnya waktu yang dibutuhkan dan terjadi setelah penurunan primer. Pada pondasi mat pola penurunan yang terjadi adalah seperti ditunjukkan dalam **Gambar 2.7**.



Gambar 2.7 Penurunan yang terjadi pada pondasi mat



Penurunan total adalah jumlah dari ketiga komponen penurunan tersebut, dinyatakan dalam persamaan sebagai berikut :

$$S = S_i + S_c + S_s \quad (2.3)$$

dimana,

$S$  = Penurunan Primer

$S_i$  = Penurunan Sekunder

$S_c$  = Penurunan konsolidasi primer

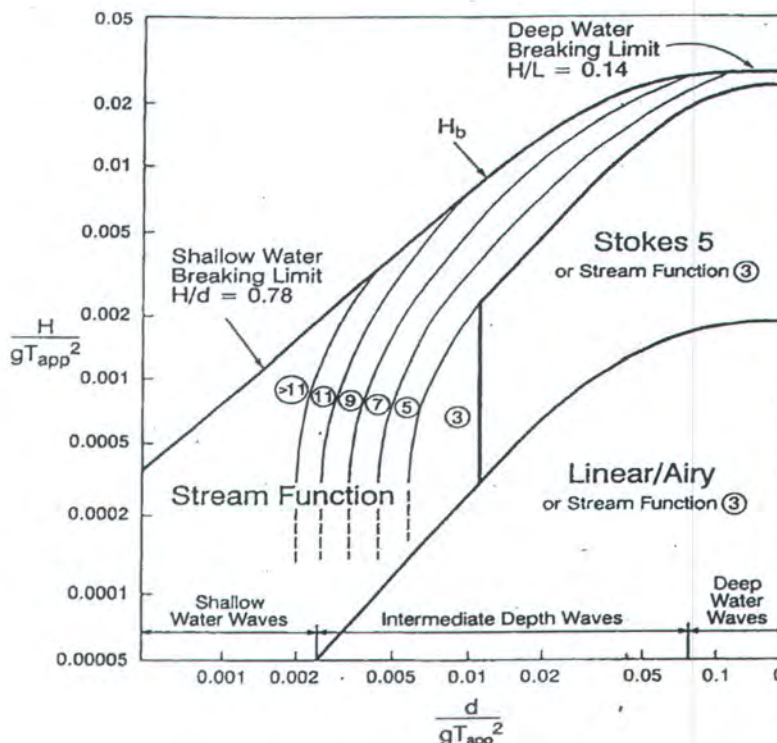
$S_s$  = Penurunan konsolidasi sekunder

### 2.2.3. Gelombang

Dalam perhitungan beban gelombang, ada beberapa teori gelombang yang dapat digunakan misalnya teori gelombang Airy atau Stokes 5<sup>th</sup> orde. Dari ketentuan yang berlaku pada teori gelombang tersebut, kemudian dilakukan analisa terhadap kondisi perairan dari struktur yang akan dibangun untuk memperoleh kecepatan dan percepatan secara vertikal maupun horisontal partikel fluida untuk setiap kedalaman. Kecepatan dan percepatan merupakan fungsi dari tinggi gelombang ( $H$ ), periode gelombang ( $T$ ), kedalaman perairan ( $d$ ), jarak partikel dari dasar laut ( $z$ ), dan waktu ( $t$ ). Penentuan teori gelombang

disesuaikan dengan grafik validitas teori gelombang dengan berdasarkan parameter  $H/gT^2$  dan  $d/gT^2$  (Chakrabarti, 1987).

Dalam perhitungan beban gelombang, maka teori gelombang yang digunakan disesuaikan dengan grafik *validitas* teori gelombang. *Validitas* teori gelombang ini dikembangkan oleh R. G. Dean (1968) dan B. Le Mehaute (1970) (Chakrabarti, 1987) seperti terlihat pada **Gambar 2.8** sebagai berikut,



Gambar 2.8. Grafik Region of Validity (API RP 2A WSD, 1993)

Diagram ini membagi daerah yang berlaku bagi masing-masing teori gelombang berdasarkan perbandingan  $H/gT^2$  sebagai ordinat dan  $d/gT^2$  sebagai absis. Penentuan teori gelombang ini berdasarkan pada

data lingkungan struktur, seperti tinggi gelombang  $H$  (ft, m), kedalaman  $d$  (ft, m) dan periode gelombang  $T$  (detik). Teori gelombang yang sering dipakai dalam analisa struktur *jack-up* ialah teori gelombang linier airy dan teori gelombang non-linier stokes orde 5.

Perhitungan panjang gelombang pada perairan tertentu secara teoritis dapat dihitung dengan rumusan berikut :

$$L_o = gT^2/2\pi \quad (2.4)$$

Untuk mamperkecil kesalahan yang mungkin terjadi, maka dilakukan beberapa kali iterasi sampai errornya 0.0001.

$$k = 2\pi/L \quad (2.5)$$

$$L = gT^2/2\pi \tanh(kd) \quad (2.6)$$

### 2.2.3.1. Perhitungan Beban Gelombang (Morison)

Beban gelombang yang bekerja merupakan penjumlahan dari gaya-gaya yang timbul, yaitu drag force, inertia force dan Froude-Krylov force. Dengan menggunakan pendekatan, maka suku linier (Drag force) dapat dijumlahkan secara langsung dengan suku non linier (Inertia Force dan Froude-Krylov Force). Maka untuk analisa gelombang selanjutnya digunakan persamaan sebagai berikut (Morison, 1950) yang berlaku apabila  $D/\lambda < 0.2$  :



$$F_d = \frac{1}{2} C_d \rho D / u / \dot{u} \quad (2.7)$$

$$F_i = C_m \rho A u \quad (2.8)$$

$$F = F_i + F_d \quad (2.9)$$

Dimana :

- $C_d$  adalah koefisien drag
- $C_m$  adalah koefisien inersia
- $\rho$  adalah massa jenis air laut ( $\text{Kg/m}^3$ )
- $D$  adalah diameter silinder (m)
- $A$  adalah luasan penampang ( $\text{m}^2$ )
- $u$  adalah kecepatan horizontal fluida (m/dt)
- $\dot{u}$  adalah percepatan horizontal partikel fluida ( $\text{m/dt}^2$ )

### 2.2.3.2. Teori Gelombang Stoke Orde 5

Teori stokes orde 5 ini ditemukan oleh Skjelbreia (1959) dan Wiegel (1964) yang digunakan dalam analisis keakuratan pada kecuraman gelombang  $H/\lambda$ . Teori ini kemudian dikembangkan oleh Skjelbreia dan Hendrickson (1961). Persamaan kecepatan partikel air berawal dari persamaan berikut :

$$u = \frac{\partial \phi}{\partial x} \quad (2.10)$$



$$w = \frac{\partial \phi}{\partial z} = \frac{\partial \phi}{\partial s} \quad (2.11)$$

Dari persamaan di atas, didapat persamaan kecepatan partikel air seperti di bawah ini:

$$u = C \sum_{n=1}^5 n F_n \cos n\theta \cosh nks \quad (2.12)$$

$$w = C \sum_{n=1}^5 n F_n \sin n\theta \sinh nks \quad (2.13)$$

Dari persamaan kecepatan di atas didapat diferensial berupa percepatan partikel air laut sebagai berikut :

$$\frac{\partial u}{\partial t} = kc^2 \sum_{n=1}^5 n^2 F_n \sin n\theta \cosh nks \quad (2.14)$$

$$\frac{\partial w}{\partial t} = kc^2 \sum_{n=1}^5 n^2 F_n \cos n\theta \sinh nks \quad (2.15)$$

Persamaan profil gelombang ( $\eta$ ) pada *Still Water Level* (SWL) adalah :

$$\eta = \frac{1}{k} \sum_{n=1}^5 n F_n \cos(kx - \omega t) \quad (2.16)$$

Untuk mendapatkan harga  $F_n$  diperlukan perhitungan sebagai berikut :

$$S = \sinh kd$$

$$\theta = kx - \omega t$$

$$C = \cosh kd$$

$$k = 2\pi / L$$



$$C = \frac{gT}{2\pi} \tanh kd = \text{kecepatan gelombang (celerity)} \quad (2.17)$$

dimana:

$$A_{11} = \frac{1}{s}$$

$$A_{13} = \frac{-c^2(5c^2 + 1)}{8s^5}$$

$$ac = 18 - 249c^2$$

$$A_{15} = \frac{-(1.184c^{10} - 1.440c^8 - 1.992c^6 + 2.641c^4 + ac)}{1.536s^{11}}$$

$$A_{22} = \frac{3}{8s^4}$$

$$A_{24} = \frac{192c^8 - 424c^6 - 312c^4 + 480c^2 - 17}{768s^{10}}$$

$$A_{33} = \frac{13 - 4c^2}{64s^7}$$

$$ac = 512c^{12} = 4.224c^{10}$$

$$A_{35} = \frac{ac - 6.800c^8 - 12.808c^6 + 16.704c^4 - 3.154c^2 + 107}{4.096s^{13}(6c^2 - 1)}$$

$$A_{44} = \frac{80c^6 - 816c^4 + 1.338c^2 - 197}{1.536s^{10}(6c^2 - 1)}$$

$$ac5 = 163.470c^2 - 16.245$$

$$A_{55} = \frac{-(2.880c^{10} - 72.480c^8 + 324.000c^6 - 432.000c^4 + ac5)}{61.440s^{11}(6c^2 - 1)(8c^4 - 11c^2 + 3)}$$

$$B_{22} = \frac{(2c^2 + 1)c}{4s^3}$$



$$B_{24} = \frac{c(272c^8 - 504c^6 - 192c^4 + 322c^2 + 21)}{384s^9}$$

$$B_{33} = \frac{3(8c^6 + 1)}{64s^6}$$

$$bc = 88.128c^{14} - 208.224c^{12} + 70.84c^{10}$$

$$B_{35} = \frac{bc + 54.000c^8 - 21.816c^6 + 6.264c^4 - 54c^2 - 81}{12.288s^{12}(6c^2 - 1)}$$

$$B_{44} = \frac{c(768c^{10} - 448c^8 - 48c^6 + 48c^4 + 106c^2 - 21)}{384s^9(6c^2 - 1)}$$

$$bc5 = 192.000c^{16} - 262.720c^{14} + 83.680c^{12} + 20.160c^{10}$$

$$B_{55} = \frac{bc5 - 7.280c^8 + 7.160c^6 - 1.800c^4 - 1.050c^2 + 225}{12.288s^{10}(6c^2 - 1)(8c^4 - 11c^2 + 3)}$$

$$C_1 = \frac{8c^4 - 8c^2 + 9}{8s^4}$$

$$cc = 3.840c^{12} - 4.096c^{10}$$

$$C_2 = \frac{cc + 2.592c^8 - 1.008c^6 + 5.944c^4 - 1.830c^2 + 147}{512s^{10}(6c^2 - 1)}$$

$$C_3 = \frac{-1}{4sc}$$

$$C_4 = \frac{12c^8 + 36c^6 - 162c^4 + 141c^2 - 27}{192cs^9}$$

Dari perhitungan di atas didapat harga  $\lambda$  dengan menggunakan iterasi, yaitu :

$$KC^2 = g \tanh kd (1 + \lambda^2 C_1 + \lambda^4 C_2) \quad (2.18)$$

$$KH = 2 [\lambda + \lambda^3 B_{33} + \lambda^5 (B_{35} + B_{55})] \quad (2.19)$$



Setelah nilai  $\lambda$  didapat, maka dapat dihiutng nilai  $F_n$ , yaitu :

$$F_1 = \lambda A_{11} + \lambda^3 A_{13} + \lambda^5 A_{15}$$

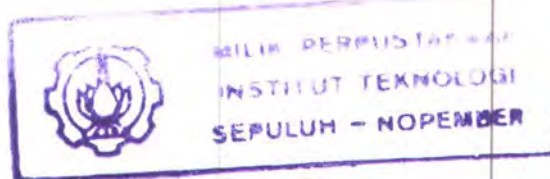
$$F_2 = \lambda^2 A_{22} + \lambda^4 A_{24}$$

$$F_3 = \lambda^3 A_{33} + \lambda^5 A_{35}$$

$$F_4 = \lambda^4 A_{44}$$

$$F_5 = \lambda^5 A_{55} \quad (2.20)$$

Setelah nilai dari  $F_n$  didapat, maka perhitungan kecepatan dan percepatan air laut dapat dilakukan.



### 2.2.3.3. Beban Gelombang Pada Silinder Tegak

Untuk menghitung gaya gelombang pada struktur dibutuhkan model dari kondisi gelombang yang didapat dari pencatatan data gelombang, arus dan angin dari lokasi yang direncanakan (Sarpkaya, 1981).

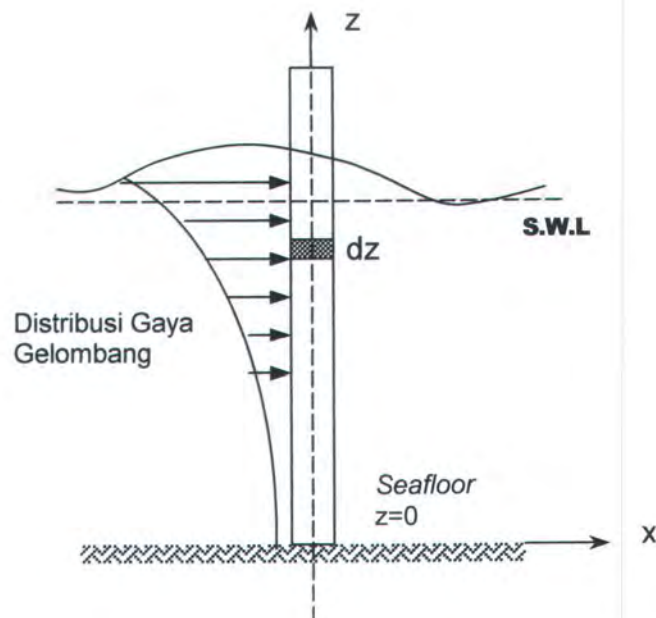
Gaya gelombang yang bekerja pada silinder tegak (seperti ditunjukkan dalam **Gambar 2.9**) merupakan penjumlahan langsung dari gaya inersia dan gaya drag. Sedangkan gaya inersia merupakan penjumlahan antara gaya froude-krylov dengan gaya yang disebabkan oleh massa tambah. Dalam perhitungan gaya gelombang bangunan lepas pantai maka persamaan Morrison sering dipakai (Chakrabarti, 1987). Untuk dapat memakai rumusan Morrison ini maka perlu lebih dahulu mengetahui batasan-batasan yang digunakan oleh Morrison dalam menghitung gaya

yang ditimbulkan oleh gelombang. Secara lengkap syarat-syarat yang dimaksud adalah sebagai berikut:

$D/\lambda > 1$  ; pada kondisi ini gelombang mendekati pemantulan murni

$D/\lambda > 0.2$  ; pertambahan gaya gelombang oleh difraksi gelombang perlu diperhatikan

$D/\lambda < 0.2$  ; penggunaan rumus Morrison adalah valid



Gambar 2.9 Gaya gelombang pada Silinder Tegak (Dawson, 1976)

Persamaan yang diberikan oleh Morrison untuk perhitungan beban gelombang, yaitu:

$$F_w = \int_0^z (F_d + F_i) dz \quad (2.21)$$

$$F_w = \int_0^z \left( \frac{1}{2} \cdot \rho \cdot C_d \cdot D \cdot u |u| + \frac{1}{4} \cdot \pi \cdot D^2 \cdot \rho \cdot C_m \cdot a_x \right) dz$$

dimana :

$F_w$  = gaya gelombang per unit panjang

$F_d$  = gaya drag per unit panjang

$F_i$  = gaya inersia per unit panjang

$D$  = diameter luar member Chord

$C_d$  = koefisien drag untuk Chord

$C_m$  = koefisien inersia untuk Chord

$\rho$  = massa jenis air laut

$u$  = kecepatan horisontal partikel air laut

$a_x$  = percepatan horisontal partikel air laut

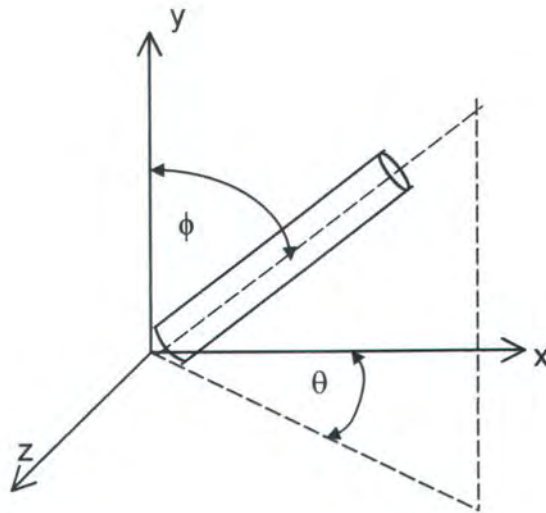
Untuk melinierkan suku  $u|u|$  pada persamaan Gaya drag memakai formulasi sebagai berikut :

$$u|u| = \frac{8}{3 \cdot \pi} \cdot u^2 \quad (2.22)$$

#### 2.2.3.4. Beban Gelombang Pada Silinder Miring

Untuk perhitungan beban gelombang pada *brace* baik horizontal maupun diagonal digunakan rumus *Morrison* yang telah dimodifikasi (Chakrabarty, 1975) untuk menghitung gaya gelombang pada silinder miring (seperti ditunjukkan dalam **Gambar 2.10**) dengan arah sembarang. Dalam rumusan ini kecepatan dan percepatan diuraikan menjadi dua komponen, yaitu normal dan tangensial terhadap sumbu aksis lokal

silinder, tetapi dalam aplikasinya hanya komponen normal saja yang digunakan untuk menghitung besarnya gaya gelombang.



Gambar 2.10 Orientasi Arah Gaya Gelombang pada Silinder Miring (Dawson, 1976)

Silinder akan dilalui oleh partikel air yang mempunyai kecepatan horizontal  $u$  dan kecepatan vertikal  $v$ , percepatan horizontal  $a_x$ , dan percepatan vertikal  $a_y$ . Dengan menggunakan transformasi sumbu koordinat dapat ditentukan arah silinder terhadap masing-masing sumbu koordinat. Harga dari komponen-komponen normal ( $\nabla$ ) terhadap silinder aksis adalah :

$$\nabla = [u^2 + v^2 - (c_x u + c_y v)^2]^{1/2} \quad (2.23)$$

dimana,



$u$  = kecepatan partikel arah x (horizontal)

$v$  = kecepatan partikel arah y (vertikal)

$a_x$  = percepatan arah x (horizontal)

$a_y$  = percepatan arah y (vertikal)

Komponen kecepatan normal yang searah dengan sumbu x, t, dan z berturut – turut adalah :

$$\begin{aligned}u_n &= u - c_x(c_x u + c_y v) \\v_n &= v - c_y(c_x u + c_y v) \\w_n &= -c_z(c_x u + c_y v)\end{aligned}\tag{2.24}$$

dimana :

$$\begin{aligned}c_x &= \sin \phi \cdot \cos \theta \\c_y &= \cos \theta \\c_z &= \sin \phi \cdot \sin \theta\end{aligned}\tag{2.25}$$

Komponen percepatan normal dalam arah x, y, dan z diberikan sebagai berikut :

$$\begin{aligned}a_{nx} &= a_x - c_x(c_x a_x + c_y a_y) \\a_{ny} &= a_y - c_y(c_x a_x + c_y a_y) \\a_{nz} &= -c_z(c_x a_x + c_y a_y)\end{aligned}\tag{2.26}$$

Dengan demikian rumusan Morrison untuk gaya per satuan panjang untuk masing – masing sumbu menjadi :

$$\begin{aligned}\partial F_x &= \frac{1}{2} \cdot \rho \cdot Cd \cdot D \cdot \nabla \cdot u_n + \frac{1}{4} \cdot \rho \cdot \pi \cdot D^2 \cdot Cm \cdot a_{nx} \\ \partial F_y &= \frac{1}{2} \cdot \rho \cdot Cd \cdot D \cdot \nabla \cdot v_n + \frac{1}{4} \cdot \rho \cdot \pi \cdot D^2 \cdot Cm \cdot a_{ny} \\ \partial F_z &= \frac{1}{2} \cdot \rho \cdot Cd \cdot D \cdot \nabla \cdot w_n + \frac{1}{4} \cdot \rho \cdot \pi \cdot D^2 \cdot Cm \cdot a_{nz}\end{aligned}\quad (2.27)$$

Gaya yang bekerja sepanjang pipa diperoleh dengan jalan mengintegrasikan gaya per satuan panjang pada persamaan di atas sepanjang pipa silinder, menjadi :

$$\begin{aligned}F_x &= \int \partial F_x ds \\ F_y &= \int \partial F_y ds \\ F_z &= \int \partial F_z ds\end{aligned}\quad (2.28)$$

Pada akhirnya didapatkan bahwa gaya total yang bekerja pada silinder adalah:

$$F = \left( F_x^2 + F_y^2 + F_z^2 \right)^{\frac{1}{2}} \quad (2.29)$$

### 2.2.3.5. Koefisien Hidrodinamis

Banyak penelitian telah dilakukan untuk mendapatkan harga koefisien hidrodinamis, baik dilakukan di laboratoruim maupun langsung dilakukan di lapangan. Hasil penelitian sangat beragam. Ketidakseragaman hasil penelitian tersebut disebabkan oleh banyak faktor, antara lain jumlah dan arah gelombang, perbedaan teori gelombang yang digunakan, efek *free-surface*, kekasaran akibat *marine growth*, arus, formasi *vortex* dan lain



sebagainya. Perintis dalam penelitian nilai koefisien hidrodinamis tersebut adalah *Keulegan dan Carpenter*.

Penelitian di laboratorium yang dilakukan untuk mendapatkan hubungan antara  $cd$ ,  $cm$  dan  $cl$  dengan *Reynold Number* ( $Re$ ) dan *Keulegan-Carpenter Number*. Percobaan dilakukan dengan meletakkan silinder pada bagian horisontal dari *U-Tube* dan air di dalam kolom *U-Tube* digerakkan secara teratur melewati silinder. Hasil percobaan itu menunjukkan  $cd$  dan  $cm$  pada silinder halus adalah fungsi  $Re$  dan  $KC$  (Sarpkaya, 1976).

$$Re = \frac{uD}{\nu} \quad (2.30)$$

$$KC = \frac{uT}{D} \quad (2.31)$$

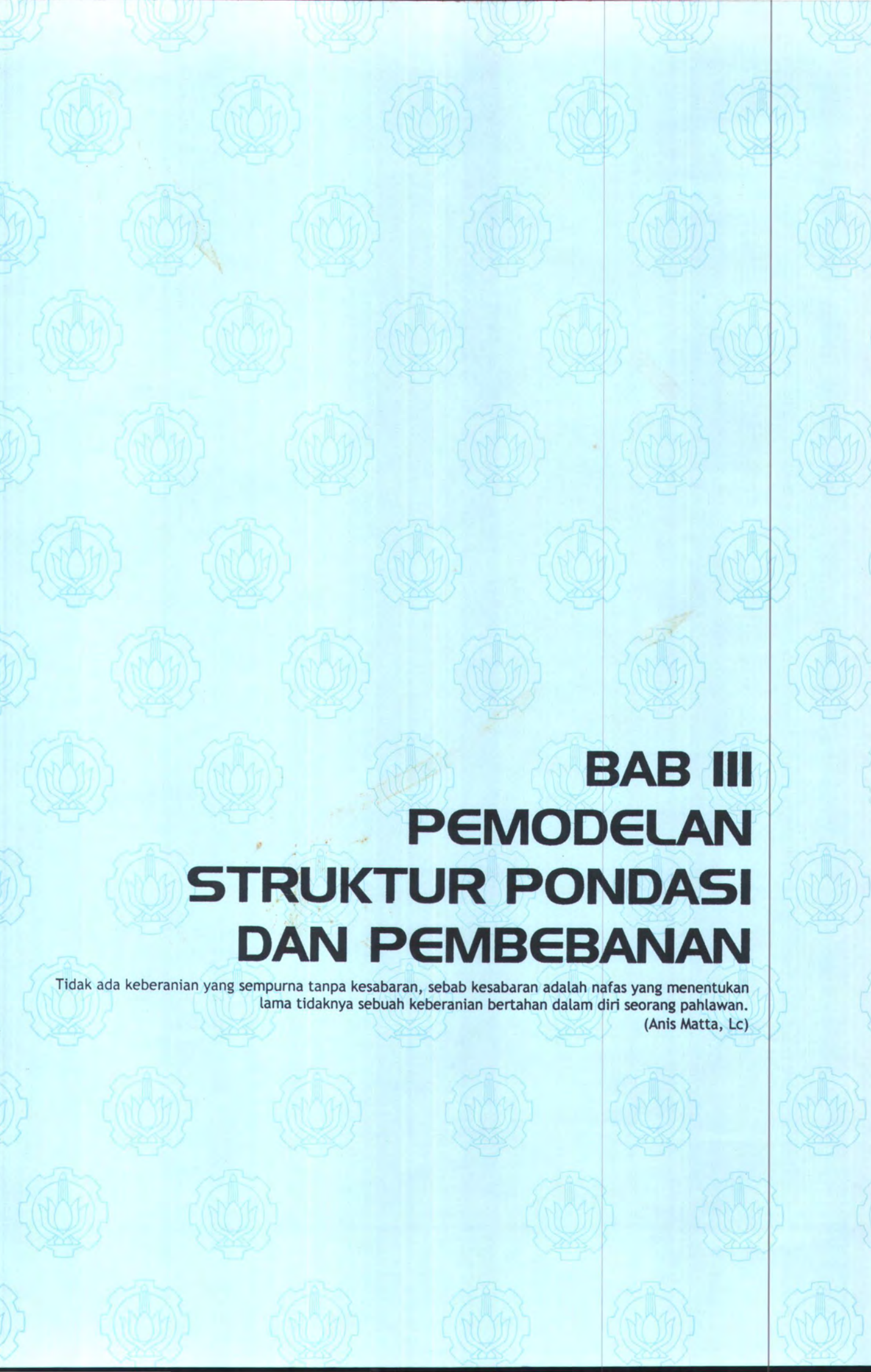
dimana:

- $Re$  = Reynold number
- $KC$  = Keulegan-Carpenter number
- $u$  = kecepatan partikel gelombang (m/s)
- $D$  = diameter silinder (m)
- $T$  = Periode gelombang (s)
- $\nu$  = viskositas kinematis fluida (m<sup>2</sup>/s)

Disainer harus dapat menerapkan nilai koefisien hidrodinamis sesuai dengan keadaan sebenarnya di lapangan. Beberapa perusahaan



mempunyai cara tersendiri dalam menentukan koefisien hidrodinamis. Salah satunya adalah yang direkomendasikan oleh Agerschou dan Edens untuk stokes orde 5 yaitu untuk besar nilai koefisien drag ( $c_d$ ) adalah antara 0.8 – 1.0, sedangkan nilai koefisien inertia ( $c_m$ ) adalah sebesar 2.0.



# **BAB III**

# **PEMODELAN**

# **STRUKTUR PONDASI**

# **DAN PEMBEBANAN**

Tidak ada keberanian yang sempurna tanpa kesabaran, sebab kesabaran adalah nafas yang menentukan lama tidaknya sebuah keberanian bertahan dalam diri seorang pahlawan.  
(Anis Matta, Lc)



## BAB III

# PEMODELAN STRUKTUR PONDASI DAN PEMBEBANAN

### 3.1. Umum

Pemodelan struktur adalah hal yang mutlak dilakukan sebelum melaksanakan analisa struktur. Ketepatan dalam melakukan pemodelan menentukan pula ketepatan dalam hasil analisa.

Secara umum ada dua tipe pemodelan struktur yang biasa digunakan dalam analisa, *stick model* dan *detailed model*. *Stick model* adalah pemodelan sederhana dimana struktur dimodelkan dengan batang-batang linier dalam *Single Degree Of Freedom (SDOF)*. Pemodelan menggunakan *stick-model* sangat sederhana, sehingga kurang tepat dengan kondisi sebenarnya. Untuk pemodelan yang lebih tepat, digunakan *detailed model* atau *Finite Element Method (FEM)* dengan bantuan software komputer.

*Finite Element Method (FEM)* atau *metode elemen hingga* merupakan suatu metode pemodelan dan analisis struktur yang lebih kompleks dan detail. Metode ini menjadikan bentuk fisik model struktur sebagai suatu sistem linier yang berkesinambungan dengan jalan membagi bentuk fisik struktur menjadi kelompok elemen yang lebih kecil. Elemen–elemen ini



dihubungkan dengan simpul–simpul (*joint*) sehingga menjadi suatu sistem yang kontinyu.

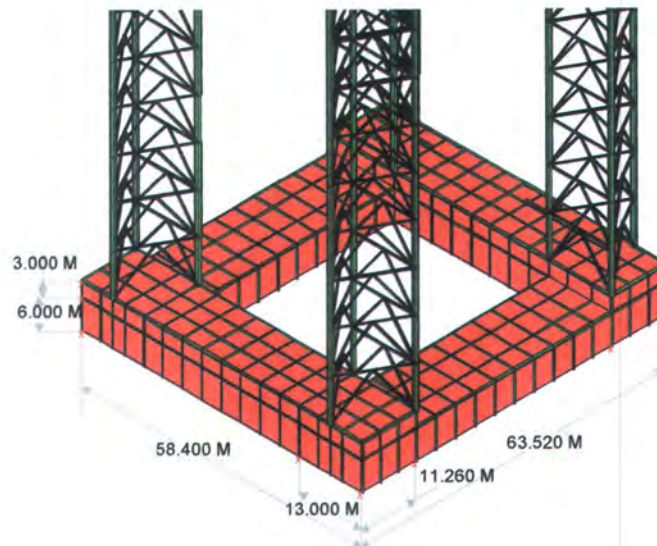
Karena topik kajian adalah analisis terhadap pondasi, maka fokus analisis pada struktur pondasi yang dalam hal ini menggunakan bentuk rangka baja (*space frame*) dan pelat (*element*).

## 3.2. Pengumpulan Data

### 3.2.1. Data Struktur

Struktur Hang Tuah merupakan bangunan lepas pantai MOgPU (*Movable Offshore Gas Production Unit*) yang termasuk dalam struktur jenis *jack-up* dengan pondasi tipe mat (**Gambar 3.1**). Spesifikasi dari struktur Hang Tuah ini adalah sebagai berikut :

- Jenis struktur : ***Jack-up 4 kaki, 3 CHORD, K brace***
- Jumlah bay : ***15 bay***
- Panjang kaki : ***110,5 m***
- Ukuran geladak : ***80 m x 38 m***
- Tipe pondasi : ***Mat with skirt***
- Panjang (L) : ***63.52 m***
- Lebar (B) : ***58.40 m***
- Tebal (t) : ***9 m (base - skirt tip)***
- Tebal Skirt : ***6 m***

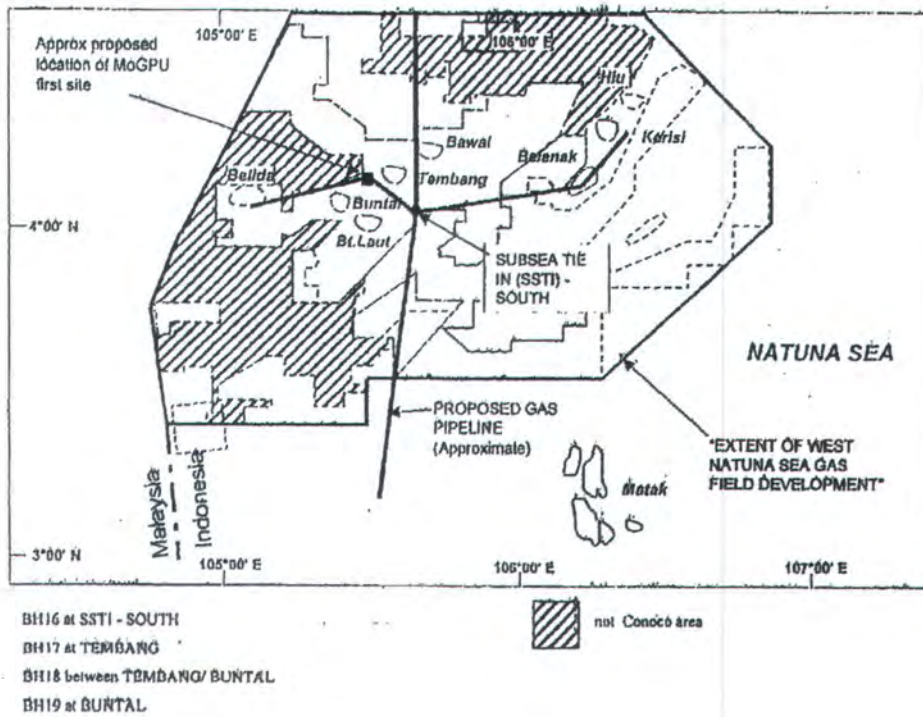


Gambar 3.1 Dimensi struktur pondasi mat dengan skirt.CONOCO

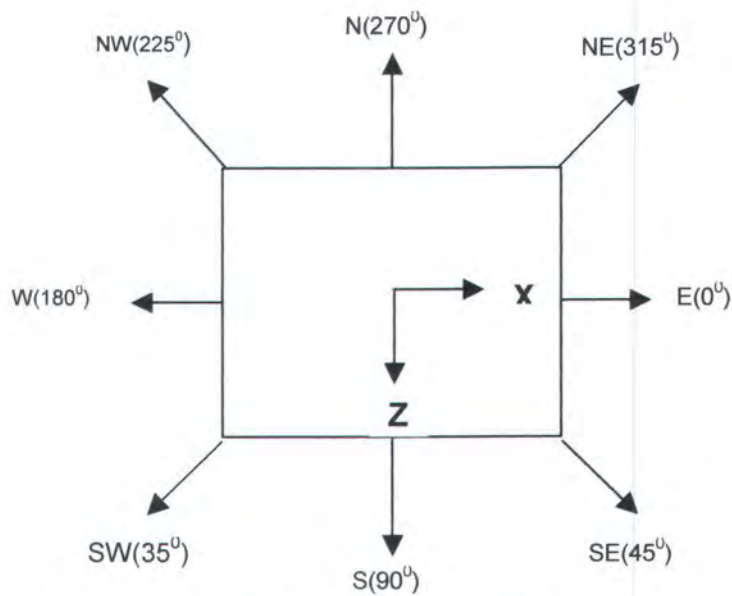
### 3.2.2. Data Lingkungan

Untuk men-*generate* beban lingkungan, dibutuhkan data akurat kondisi lingkungan tempat beroperasinya struktur. Data ini nantinya akan di-input ke dalam software. Struktur MOgPU beroperasi di perairan Natuna, Laut Cina Selatan (**Gambar 3.2**) dengan data-data sebagai berikut :

|                    |                                                      |
|--------------------|------------------------------------------------------|
| Lokasi             | : Laut Cina Selatan Perairan Natuna Blok B)          |
| Koordinat          | : E 5 <sup>0</sup> 44',225; N 4 <sup>0</sup> 58',673 |
| Kedalaman laut     | : 83,10 m                                            |
| Densitas air laut  | : 1025 kg/m <sup>3</sup>                             |
| Marine Growth      | : Lihat Tabel 3.1                                    |
| Data Lingkungan    | : Lihat Tabel 3.2                                    |
| Koef. Hidrodinamis | : Lihat Tabel 3.3                                    |
| Data tanah         | : Lihat tabel 3.4                                    |



Gambar 3.2 Lokasi Struktur Hang Tuah (MOGPU) di Perairan Natuna



Gambar 3.3 Arah Gelombang untuk struktur MOGPU



Tabel 3.1 Data Marine Growth

| ELEVASI (m)  | RADIAL GROWTH (m) |
|--------------|-------------------|
| 0 to +2      | 0.05              |
| 0 to -4.6    | 0.089             |
| -4.6 to -9.1 | 0.102             |
| 9.1 to 18.3  | 0.076             |
| 18.3 to 30.5 | 0.064             |
| 30.5 to 92   | 0.051             |

Sumber: Hang Tuah Platform – Weight Control Report, CONOCO (September 2002)

Tabel 3.2 Data Gelombang, Arus dan Angin

| Kondisi Lingkungan                                         | Arah dari Utara Platform                                      | Kondisi Operasional (1 year events) | Kondisi ekstrim (100 year events) |
|------------------------------------------------------------|---------------------------------------------------------------|-------------------------------------|-----------------------------------|
| Gelombang tinggi(m); periode(s)                            | Utara (270 <sup>0</sup> ) & Selatan (90 <sup>0</sup> )        | 4.9 m; 7.8 sec                      | 9.2 m; 9.8sec                     |
|                                                            | Barat (180 <sup>0</sup> ) & Timur (0 <sup>0</sup> )           | 2.0 m; 5.1 sec                      | 3.8 m; 7.1 sec                    |
|                                                            | Barat Laut (225 <sup>0</sup> ) & Tenggara (45 <sup>0</sup> )  | 3.2 m; 6.5 sec                      | 6.0 m; 8.5 sec                    |
|                                                            | Barat Daya (135 <sup>0</sup> ) &Timur Laut(315 <sup>0</sup> ) | 4.9 m; 7.8 sec                      | 9.2 m, 9.8 sec                    |
| Arus (m/s <sup>2</sup> ) pada permukaan; mid-depth; seabed | Utara (270 <sup>0</sup> ) & Selatan (90 <sup>0</sup> )        | 0.8; 0.6; 0.6                       | 0.9; 0.6; 0.6                     |
|                                                            | Barat (180 <sup>0</sup> ) & Timur (0 <sup>0</sup> )           | 0.7; 0.5; 0.5                       | 0.8; 0.6; 0.6                     |
|                                                            | Barat Laut (225 <sup>0</sup> ) & Tenggara (45 <sup>0</sup> )  | 0.5; 0.4; 0.4                       | 0.6; 0.5; 0.5                     |
|                                                            | Barat Daya (135 <sup>0</sup> ) &Timur Laut(315 <sup>0</sup> ) | 0.8; 0.6; 0.6                       | 0.9; 0.6; 0.6                     |
| Wind                                                       | Seluruh arah; (m/s pada 10m elevasi diatas MSL, 1min)         | 16.8                                | 21.6                              |

Sumber: Hang Tuah Platform – Weight Control Report, CONOCO (September 2002)



Tabel 3.3 Koefisien Hidrodinamis

| ELEVASI (m)     | VERTICAL MEMBER |     | OTHER MEMBER |     |
|-----------------|-----------------|-----|--------------|-----|
|                 | CD              | CM  | CD           | CM  |
| +5.9 to +11.650 | 0.65            | 1.6 | 0.65         | 2.0 |
| +5.9 to -83.1   | 1.05            | 1.2 | 1.05         | 2.0 |

Sumber: Hang Tuah Platform – Weight Control Report CONOCO (September 2002)

Tabel 3.4 Lapisan Tanah & Parameter Tanah

| Material Properties | Depth (m) | $\gamma$ (kN/m <sup>3</sup> ) | Su (kN/m <sup>2</sup> ) | Su x Rc (kN/m <sup>2</sup> ) | Su x Rc/Fm (kN/m <sup>2</sup> ) | $\phi$ (°) | $\nu$ | E (kN/m <sup>2</sup> ) |
|---------------------|-----------|-------------------------------|-------------------------|------------------------------|---------------------------------|------------|-------|------------------------|
| <b>A. SOIL</b>      |           |                               |                         |                              |                                 |            |       |                        |
| Very soft clay      | 0 – 2     | 15                            | 5                       | 4.25                         | 3.27                            | 1          | 0.45  | 150 Su                 |
| Soft clay           | 2 – 4     | 16                            | 20                      | 17                           | 13.08                           | 1          | 0.45  | 150 Su                 |
| Firm silty clay     | > 4       | 16.5                          | 35                      | 29.75                        | 22.88                           | 1          | 0.40  | 250-300 Su             |
| <b>B. BASE</b>      |           |                               |                         |                              |                                 |            |       |                        |
| Skirt               |           | 24                            |                         |                              |                                 |            | 0.10  | 2.10 <sup>7</sup>      |
| Base plate          |           | 24                            |                         |                              |                                 |            | 0.10  | 2.10 <sup>7</sup>      |

Sumber: Hang Tuah Platform – Weight Control Report, CONOCO(September 2002)

### 3.3. Pemodelan Struktur MOgPU

Pemodelan struktur MOgPU menggunakan bantuan *software* GT-StrudL dan GT-Selos (**Gambar 3.4**). *Software* ini merupakan salah satu *software* analisa struktur yang berbasis *finite element method* (FEM). Data yang dipergunakan berasal dari data gambar struktur MOgPU (Ove Arup & Partners International Ltd Report). Pemodelan ini terdiri atas pemodelan bangunan atas (*super structures*) yaitu struktur kaki dan dek serta *substructure element* yakni struktur pondasi.



### 3.3.1. Pemodelan Struktur Kaki dan Dek

Bangunan atas (*Superstructure*) terdiri atas struktur kaki dan deck. Struktur kaki dimodelkan secara detail sesuai dengan data gambar yang ada. Pemodelan struktur kaki menggunakan bantuan *software* GTStrudL dengan input data berupa :

#### 1. Dimensi kaki (Lihat Tabel 3.5), yang terdiri dari :

- a. Panjang kaki
- b. Diameter luar (OD) *chord* dan *brace* (horizontal dan diagonal)
- d. Tebal *chord* dan *brace* (horizontal dan diagonal)
- f. Jarak tiap *bay*

#### 2. Material

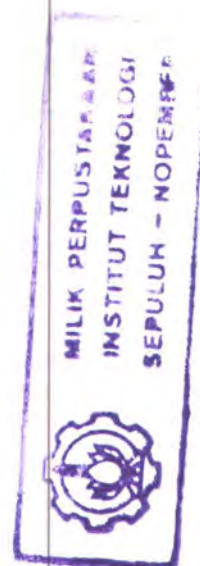
|                   |                                      |
|-------------------|--------------------------------------|
| Jenis             | : baja type A36                      |
| E (modulus Young) | : $2.0389 \times 10^7 \text{ T/m}^2$ |
| G                 | : $7.7337 \times 10^6 \text{ T/m}^2$ |
| Densitas          | : $7.84173 \text{ T/m}^3$            |
| Yield stress      | : 250 MPa                            |
| Ultimate stress   | : 80 KT/m <sup>2</sup>               |



**Tabel 3.5 Ukuran Chord Struktur Hang Tuah MOgPU**

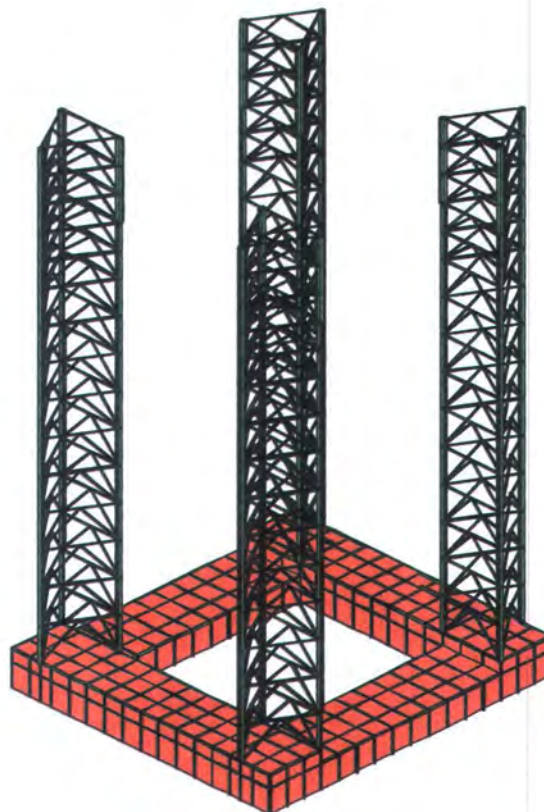
| NO | ELEVASI (m)            | DIAMETER LUAR OD (m) | THICKNESS (m) |
|----|------------------------|----------------------|---------------|
| 1  | <b>-83.1 s/d -71.5</b> |                      |               |
|    | Chord 1                | 1.000                | 0.044         |
|    | Chord 2 & 3            | 1.000                | 0.05          |
| 2  | <b>-71.5 s/d -62.9</b> |                      |               |
|    | Chord 1                | 1.000                | 0.03          |
|    | Chord 2 & 3            | 1.000                | 0.035         |
| 3  | <b>-62.9 s/d -54.3</b> |                      |               |
|    | Chord 1                | 1.000                | 0.03          |
|    | Chord 2 & 3            | 1.000                | 0.03          |
| 4  | <b>-54.3 s/d -45.7</b> |                      |               |
|    | Chord 1                | 1.000                | 0.03          |
|    | Chord 2 & 3            | 1.000                | 0.03          |
| 5  | <b>-45.7 s/d -37.1</b> |                      |               |
|    | Chord 1                | 1.000                | 0.03          |
|    | Chord 2 & 3            | 1.000                | 0.03          |
| 6  | <b>-37.1 s/d -28.5</b> |                      |               |
|    | Chord 1                | 1.000                | 0.03          |
|    | Chord 2 & 3            | 1.000                | 0.03          |
| 7  | <b>-28.5 s/d -19.9</b> |                      |               |
|    | Chord 1                | 1.000                | 0.03          |
|    | Chord 2 & 3            | 1.000                | 0.03          |
| 8  | <b>-19.9 s/d -11.3</b> |                      |               |
|    | Chord 1                | 1.000                | 0.03          |
|    | Chord 2 & 3            | 1.000                | 0.03          |
| 9  | <b>-11.3 s/d -2.7</b>  |                      |               |
|    | Chord 1                | 1.000                | 0.03          |
|    | Chord 2 & 3            | 1.000                | 0.035         |
| 10 | <b>-2.7 s/d +5.9</b>   |                      |               |
|    | Chord 1                | 1.000                | 0.03          |
|    | Chord 2 & 3            | 1.000                | 0.044         |
| 11 | <b>+5.9 s/d +12.4</b>  |                      |               |
|    | Chord 1                | 1.000                | 0.03          |
|    | Chord 2 & 3            | 1.000                | 0.06          |
| 12 | <b>+12.4 s/d +18.9</b> |                      |               |
|    | Chord 1                | 1.000                | 0.03          |
|    | Chord 2 & 3            | 1.000                | 0.06          |
| 13 | <b>+18.9 s/d +25.4</b> |                      |               |
|    | Chord 1                | 1.000                | 0.03          |
|    | Chord 2 & 3            | 1.300                | 0.06          |
| 14 | <b>+25.4 s/d +31.9</b> |                      |               |
|    | Chord 1                | 1.000                | 0.03          |
|    | Chord 2 & 3            | 1.300                | 0.06          |
| 15 | <b>+31.9 s/d +38.4</b> |                      |               |
|    | Chord 1                | 1.000                | 0.03          |
|    | Chord 2 & 3            | 1.300                | 0,06          |

(Sumber: Hang Tuah Platform – Drawings Doc., CONOCO, 1999)



Sedangkan Struktur geladak dimodelkan sebagai *rigid body element*, hal ini dilakukan karena pada *analisis pondasi* ini tidak dilakukan analisis respon yang terjadi pada geladak akibat pembebanan yang terjadi. Pemodelan *rigid body element* dilakukan pada *software* GTStrudl dengan perintah *master joint* dan *slave joint*. *Master joint* merupakan titik berat benda *rigid*, sedangkan *slave joint* adalah *joint-joint* pembentuk benda *rigid*, input data yang dipakai adalah sebagai berikut :

1. *Rigid body*
2. *Slave Joint*
3. *Master Joint*

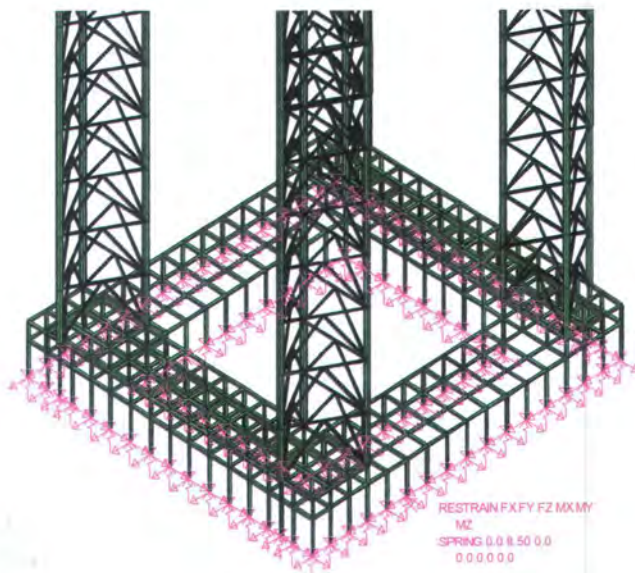


Gambar 3.4. Model struktur Hangtuh MOgPU dengan GTStrudl.

### 3.3.2. Pemodelan Struktur Pondasi

Struktur Hang Tuah MOgPU menggunakan pondasi mat, berupa struktur yang mengikat kaki (*chord*) satu sama lain menjadi satu kesatuan. Seperti terlihat pada **Gambar 3.5**. Pondasi ini terdiri dari rangka (*space frame*) main beam dan stiffner, serta elemen pelat. Pemodelan struktur pondasi juga menggunakan *finite element* oleh GT-StrudL. Elemen tanah dimodelkan dalam tumpuan spring pada kondisi operating dan extrem. Input yang diberikan adalah :

- |                                        |                                                              |
|----------------------------------------|--------------------------------------------------------------|
| 1. Beam Utama ( <i>main beam</i> )     | : T 460X267                                                  |
| 2. <i>Stiffner</i>                     | : L 350X100                                                  |
| 3. Pelat ( <i>element</i> )            | : 30 mm thickness                                            |
| 4. Tumpuan ( <i>support</i> )          | : Spring Stiffnes                                            |
| 5. Tanah/ <i>soil stiffness</i> (kN/m) | : $8.5 \times 10^3$ (Operating)<br>$25 \times 10^3$ (Extrem) |



Gambar 3.5. Struktur Pondasi dengan spring support



### 3.4. Pemodelan Beban

#### 3.4.1. Pemodelan Beban pada Dek dan Kaki

Beban vertikal yang dipakai pada pemodelan struktur Hang Tuah MOgPU adalah berat dek, beban peralatan dan beban *live load* seperti ditunjukkan dalam **tabel 3.6**. Beban vertikal ini dimodelkan sebagai beban terpusat pada *master joint* yang terletak pada titik tengah *rigid body*. Beban vertikal ini oleh *master joint* akan didistribusikan secara merata pada tiap kaki struktur, sehingga besar beban yang diterima oleh masing-masing kaki adalah sama.

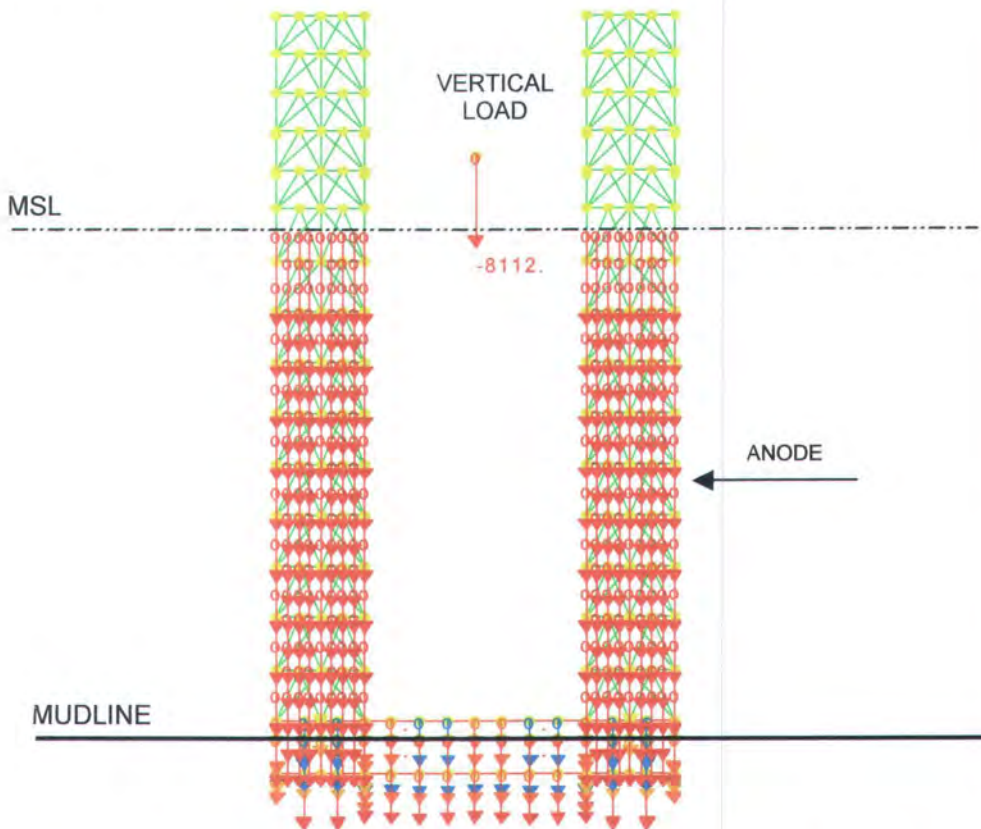
Besar beban vertikal yang digunakan pada pemodelan menggunakan dua kondisi pembebanan yaitu operasional dan ekstrem (*storm condition*). Pemodelan beban vertikal untuk kondisi operasional dan ekstrem dapat dilihat pada **tabel 3.6**.

**Tabel 3.6 Beban Vertikal pada Kondisi Operasional dan Ekstrem (CONOCO)**

| NO | JENIS BEBAN            | Beban Vertikal (Ton) |              |
|----|------------------------|----------------------|--------------|
|    |                        | Operasional          | Ekstrem      |
| 1  | Deck (self weight)     | 3062                 | 3062         |
| 2  | Topside weight         | 4750                 | 3400         |
| 3  | Live Load              | 300                  | 300          |
|    | <b>Total deck load</b> | <b>8112</b>          | <b>6762</b>  |
|    |                        |                      |              |
| 4  | Kaki                   | 2949                 | 2949         |
| 5  | Pondasi                | 2253                 | 2253         |
| 6  | Anode                  | 2830                 | 2830         |
|    | <b>Total load</b>      | <b>16144</b>         | <b>14794</b> |

Pada kaki dan brasing, beban yang terjadi adalah beban akibat berat struktur(*self weight*) dan anode. Berat struktur pada pemodelan dapat di-*generate* langsung oleh komputer, sedang anode dimodelkan sebagai

beban vertikal yang bekerja pada kaki-kaki struktur MOgPU yang tercelup (**Gambar 3.6**). Beban anoda dimodelkan sebesar 148 kg yang dibebankan pada member-member yang dipasang anoda. Jumlah anoda pada struktur MOgPU ini ada sebanyak 576 anoda.



Gambar 3.6. Pemodelan beban-beban anode dan vertikal load pada kondisi operating (GT-StrudL)

### 3.4.2. Pemodelan Beban pada Pondasi

Pada pondasi, beban-beban yang terjadi adalah beban akibat berat struktur pondasi itu sendiri (*selfweight*) rangka-pelat dan beban vertikal akibat struktur diatasnya (beban operasi). Sedang pada ujung-ujung pondasi ditumpu oleh tumpuan spring.



### 3.4.3. Pemodelan Beban Lingkungan

Beban lingkungan yang digunakan adalah beban gelombang dalam 8 (delapan) arah mata angin.. Pemodelan untuk beban gelombang ini menggunakan software GT-Selos. Parameter gelombang yang dimasukkan sebagai input data adalah sebagai berikut :

1. Teori gelombang
2. Tinggi gelombang
3. Periode gelombang
4. Arah gelombang
5.  $C_D$  dan  $C_m$

Output yang didapatkan pada GT Selos di-inputke *software* GT Strudl untuk keperluan analisis lebih lanjut dengan orientasi arah gelombang dapat dilihat pada **Gambar 3.2** diatas.

#### 3.4.3.1. Penentuan Teori Gelombang

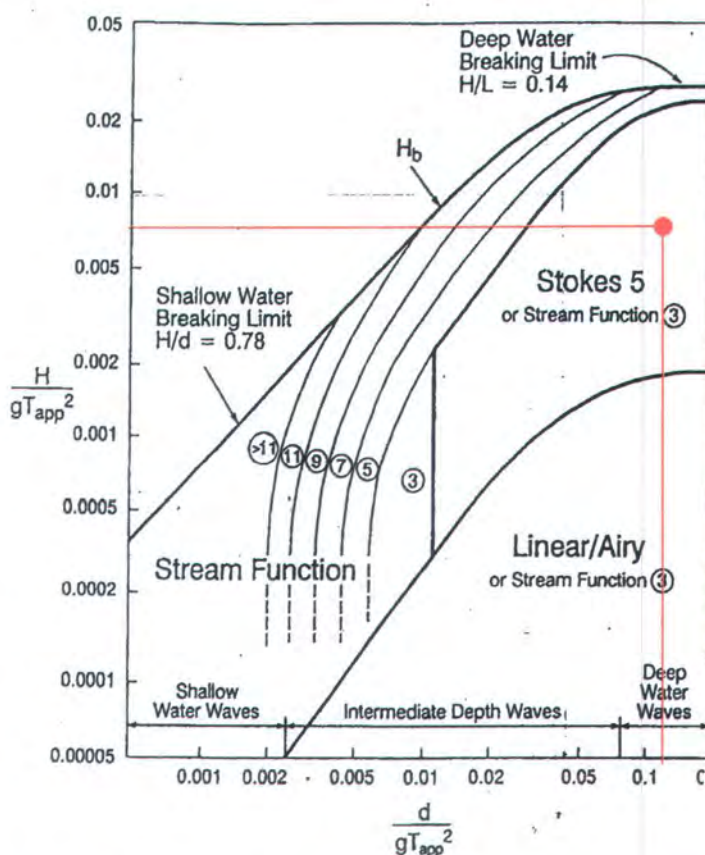
Langkah awal perhitungan beban gelombang adalah menentukan terlebih dahulu teori gelombang yang sesuai dengan kondisi lingkungan perairan Natuna, Laut Cina Selatan. Kemudian di-check berdasarkan perhitungan dengan menggunakann grafik *region of validity* (**Gambar 3.7**), dengan persamaan sebagai berikut .

Berdasarkan data lingkungan yang ada didapatkan nilai :

$$\frac{d}{gT^2} = \frac{83,1}{9,81(7,8)^2} = 0,139$$

$$\frac{H}{gT^2} = \frac{4,9}{9,81(7,8)^2} = 0,0082$$

berdasarkan nilai diatas maka teori gelombang yang digunakan adalah teori gelombang Stokes orde 5.



Gambar 3.7. Penentuan teori gelombang yang digunakan (Stokes 5)

### 3.4.3.2. Perhitungan Beban Gelombang

beban gelombang di-generate melalui *GT-Selos*. Perhitungan beban gelombang pada silinder tegak menggunakan rumus pada persamaan berikut (Morison),



$$F_w = \int_0^z (F_d + F_i) dz$$

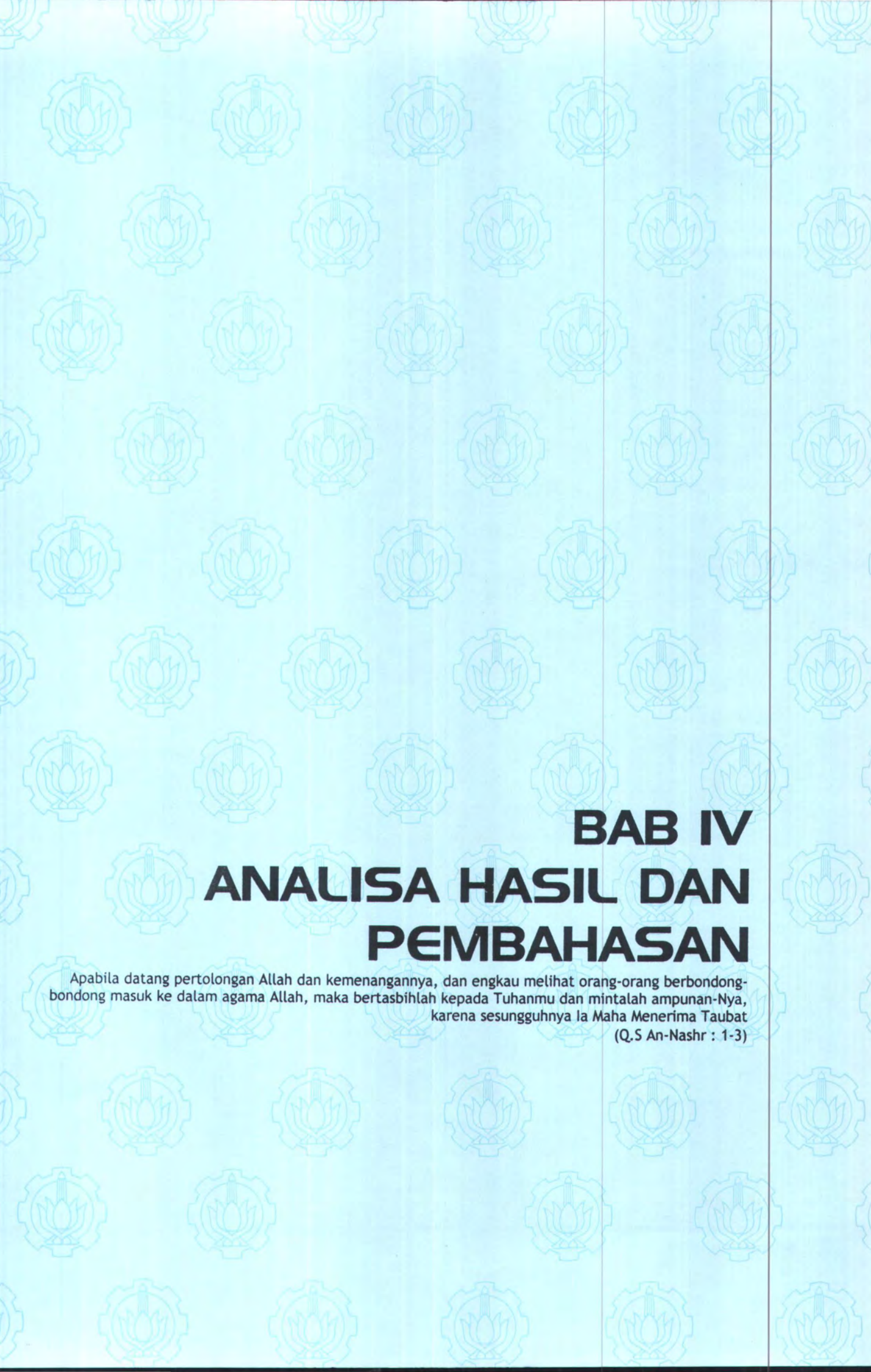
$$F_w = \int_0^z \left( \frac{1}{2} \cdot \rho \cdot C_d \cdot D \cdot u |u| + \frac{1}{4} \cdot \pi \cdot D^2 \cdot \rho \cdot C_m \cdot a_x \right) dz$$

perhitungan beban gelombang pada silinder miring menggunakan rumus pada persamaan berikut :

$$F = \left( F_x^2 + F_y^2 + F_z^2 \right)^{\frac{1}{2}}$$

### 3.4.3.3. Perhitungan Beban Angin

Perhitungan beban angin menggunakan bantuan software GT-Selos. Dengan berdasarkan pada data lingkungan (*Hang Tuah Platform-Weight Control Report, CONOCO, September 2002*), maka beban angin dikenakan pada seluruh arah pada 10m elevasi diatas MSL dengan kecepatan 16.8 m/s untuk kondisi operasional dan 21.6 m/s untuk kondisi ekstrem dengan variasi nilai berdasarkan ABS (American Bureau of Shipping).



# **BAB IV**

## **ANALISA HASIL DAN PEMBAHASAN**

Apabila datang pertolongan Allah dan kemenangannya, dan engkau melihat orang-orang berbondong-bondong masuk ke dalam agama Allah, maka bertasbihlah kepada Tuhanmu dan mintalah ampunan-Nya, karena sesungguhnya Ia Maha Menerima Taubat (Q.S An-Nashr : 1-3)



## BAB IV

# ANALISA HASIL DAN PEMBAHASAN

### 4.1 Prosedur Analisis

Dalam analisis pondasi struktur MOgPU tahapan-tahapan yang perlu dilakukan dalam analisis adalah:

1. Pemodelan struktur pondasi MOgPU, pemodelan beban vertikal (*self weight, topside weight, live load*, dan beban anode) sebagai input beban konstan pada analisa statis dengan GT-StrudL
2. Pemodelan beban lingkungan (gelombang, arus, angin) untuk kondisi operasional dan ekstrem dengan GT-Selos
3. Analisa statis; mengetahui respon struktur akibat kombinasi beban vertikal dan beban gelombang
4. Analisa kekuatan pondasi
  - a. Memeriksa rasio tegangan (*unity check*) pada setiap member pondasi untuk memastikan masih berada pada range yang diijinkan (*allowable stress*).
  - b. Memeriksa distribusi *stress* yang terjadi pada sambungan kaki-mat (*element stress check*)
5. Analisa stabilitas pondasi :
  - a. Memeriksa *joint reaction* pada tumpuan (*skirt tip*) untuk mengetahui besar reaksi tumpuan (*force y*)



- b. Menghitung besar daya dukung (*bearing capacity*), dan memastikan bahwa daya dukung tanah masih mampu untuk menanggung beban struktur
  - c. Memeriksa displasmen arah vertikal (sumbu y) pada seluruh joint tumpuan (*skirt tip*) untuk mengetahui besar penurunan yang terjadi
  - d. Menghitung besar momen guling (*overturning moment*) yang terjadi dan memastikan bahwa besar momen pengembali lebih besar dari momen guling
6. Memberikan kesimpulan atas parameter kekuatan dan stabilitas pondasi.

## 4.2 Analisa Hasil

### 4.2.1. Analisa Kekuatan

#### 4.2.1.1. Analisis Tegangan pada Member

Analisis tegangan pada member (*member stress ratio*) adalah perbandingan antara tegangan yang terjadi (*actual stress*) dengan tegangan ijinnya (AISC 9<sup>th</sup>, 1989). Dengan ketentuan sesuai persamaan berikut,

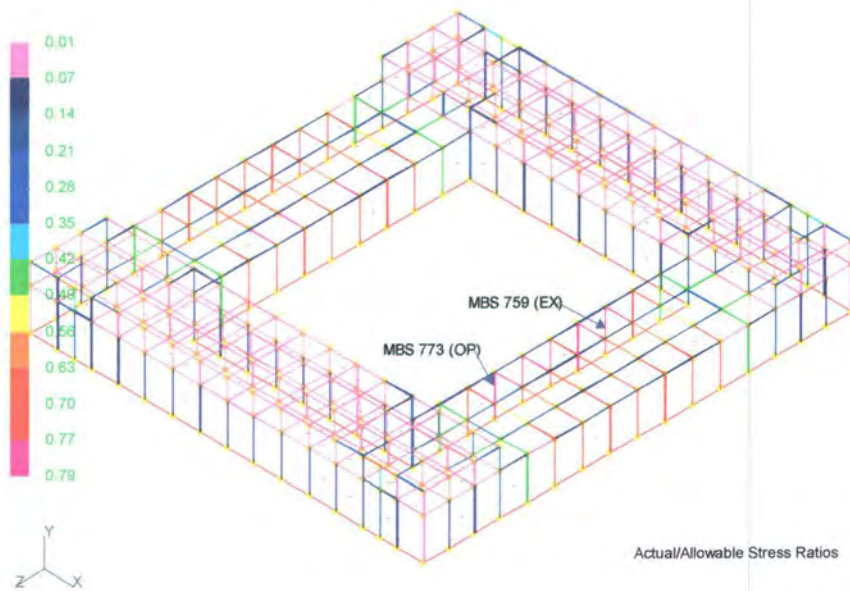
$$\frac{\sigma}{\sigma_{all}} < 1 \quad (4.1)$$

dimana,

$\sigma$  = tegangan yang terjadi

$\sigma_{all}$  = tegangan ijin

Dari hasil output GT-StrudL sebagaimana terdapat pada **tabel 4.1** dan **tabel 4.2**, tampak bahwa struktur masih dalam kondisi yang aman atau memenuhi kualifikasi tegangan ijinnya ( $<1.0$ ). Tapi jika diperhatikan dari sepuluh nilai yang terbesar, range nilai maksimumnya sebesar  $0.77 - 0.80$ . Hal ini menunjukkan bahwa stress yang terjadi cukup besar.



Gambar 4.1 Member kritis pada kondisi Operasional (OP) dan Extrem (EX)

Pada kondisi operasional tampak bahwa beban operasi dengan arah gelombang  $0^\circ$  dan  $45^\circ$  (**tabel 4.1**) yang paling besar menyebabkan tegangan pada member. Pada kondisi ini stress maksimum terjadi pada member MBS773 (**gambar 4.1**) dengan stress rasio sebesar 0.79.

Sedang pada kondisi ekstrem (storm), gelombang arah  $90^\circ$  adalah yang paling besar memberikan dampak stress yakni terjadi pada member MBS759



dengan stress rasio sebesar 0.80. Untuk hasil keluaran (*output*)-nya adalah sebagai berikut :

**Tabel 4.1 Stress Check maksimum kondisi Operasional**

| No | Member | Load  | Stress Ratio | Pass / Fail |
|----|--------|-------|--------------|-------------|
| 1  | MBS773 | OP-0  | 0.79         | Pass        |
| 2  | MBS759 | OP-45 | 0.79         | Pass        |
| 3  | MBS667 | OP-0  | 0.78         | Pass        |
| 4  | MBS669 | OP-0  | 0.78         | Pass        |
| 5  | MBS691 | OP-45 | 0.78         | Pass        |
| 6  | MBS769 | OP-0  | 0.78         | Pass        |
| 7  | MBS693 | OP-45 | 0.78         | Pass        |
| 8  | MBS763 | OP-45 | 0.78         | Pass        |
| 9  | MBS318 | OP-0  | 0.77         | Pass        |
| 10 | MBS673 | OP-0  | 0.77         | Pass        |

**Tabel 4.2 Stress Check kondisi extrem**

| No | Member | Load   | Stress Ratio | Pass / Fail |
|----|--------|--------|--------------|-------------|
| 1  | MBS759 | EX-90  | 0.80         | Pass        |
| 2  | MBS773 | EX-90  | 0.80         | Pass        |
| 3  | MBS763 | EX-90  | 0.79         | Pass        |
| 4  | MBS769 | EX-90  | 0.79         | Pass        |
| 5  | MBS790 | EX-90  | 0.79         | Pass        |
| 6  | MBS804 | EX-90  | 0.79         | Pass        |
| 7  | MBS318 | EX-90  | 0.79         | Pass        |
| 8  | MBS794 | EX-90  | 0.78         | Pass        |
| 9  | MBS693 | EX-135 | 0.78         | Pass        |
| 10 | MBS800 | EX-90  | 0.78         | Pass        |

#### 4.2.1.2. Distribusi Tegangan pada Sambungan kaki-mat

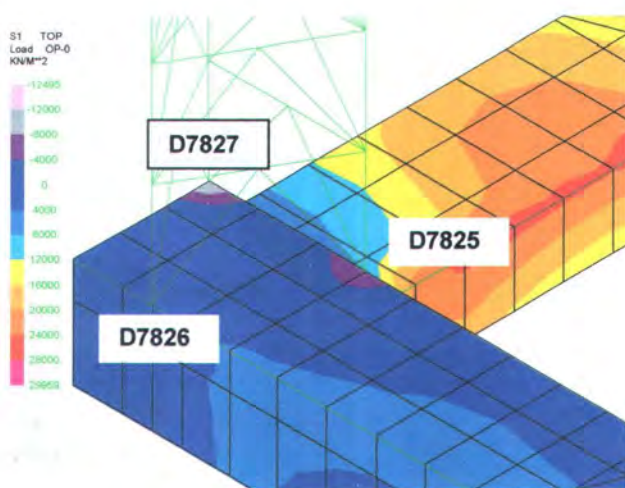
Sambungan antara kaki-mat menjadi perhatian khusus dalam hal ini karena saat operasi, sambungan inilah yang paling rentan mengalami tegangan akibat pembebanan berulang (*cyclic*) beban gelombang dan



sambungan ini jugalah yang langsung meneruskan beban-beban operasi pada bangunan atas (*superstructure*) ke pondasi.

Struktur pondasi MOgPU terdiri atas rangkaian frame (*beam*) dan pelat. Pelat disini berfungsi sebagai penambah kekakuan (*stiffner*). Terjadinya pembebanan pada struktur tidak hanya mengakibatkan tegangan (*stress*) pada member-member, tetapi juga pada elemen pelat. Oleh sebab itu analisa tegangan juga dilakukan pada elemen pelat.

Analisa dilakukan dengan melihat distribusi stress yang terjadi pada elemen sambungan kaki-mat (**Gambar 4.2**) secara khusus dan keseluruhan pondasi secara umum.



Gambar 4.2 Distribusi Stress pada sambungan kaki-mat

Pada diagram diatas, tampak bahwa tegangan maksimum yang terjadi yaitu sebesar **25136.60** KN/m<sup>2</sup> pada **D7826** masih dalam batas aman yaitu lebih kecil dari syarat yield strength baja A36 sebesar **250** MPa atau

250000.00 KN/m<sup>2</sup> (API RP-2A WSD). Nilai tegangan pada sambungan kaki-mat ditunjukkan pada **Tabel 4.3** sebagai berikut,

**Tabel 4.3 Distribusi Stress yang terjadi pada sambungan kaki-mat**

| JOINT | Normal (kN/m <sup>2</sup> ) | Bending (kN/m <sup>2</sup> ) | Torsi (kN/m <sup>2</sup> ) |
|-------|-----------------------------|------------------------------|----------------------------|
| D7825 | -8129.83                    | -13087.00                    | 2478.56                    |
| D7826 | 12.85                       | -25136.60                    | 12574.70                   |
| D7827 | -12494.50                   | -13171.00                    | 338.24                     |

## 4.2.2. Analisa Stabilitas

### 4.2.2.1. Daya Dukung (*bearing capacity*)

Analisis daya dukung mempelajari kemampuan tanah dalam mendukung beban struktur yang terletak diatasnya. Daya dukung menyatakan tahanan geser tanah untuk melawan penurunan akibat pembebanan, yaitu tahanan geser yang dapat dikerahkan oleh tanah sepanjang bidang gesernya dengan persamaan sebagai berikut,

$$Q = \frac{Pu}{A} \pm \frac{Mn}{W} \quad (4.2)$$

dimana,

Q = tekanan dasar pada pondasi (KN/m<sup>2</sup>)

Pu = beban ultimate (KN)

A = Luas area pondasi (m<sup>2</sup>)

Mn = Momen akibat beban gelombang/horizontal (KN.m)

W = Modulus Tampang Pondasi mat

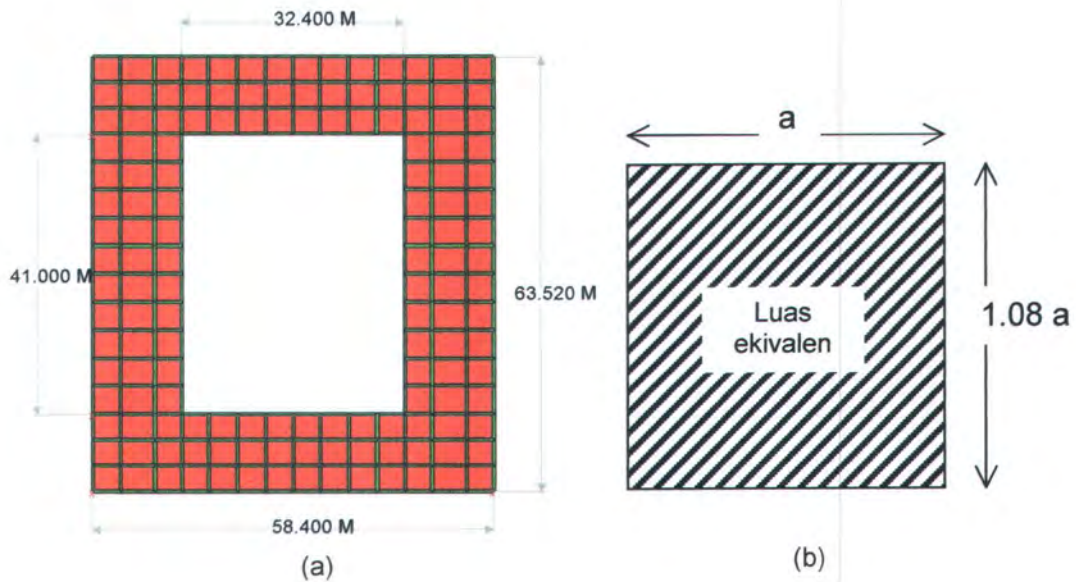


Dari hasil output GT-StrudL sebagaimana diperlihatkan pada **Tabel 4.4**, diketahui bahwa Beban ultimate ( $P_u$ ) adalah sebesar 16145.48 TON (=143637.38 KN), didapatkan dari reaksi total maksimum vertikal ( $F_y$ ) pada tumpuan dan terjadi pada kondisi operasional dalam arah gelombang  $0^\circ$  dan  $45^\circ$ .

**Tabel 4.4 Besar total reaksi joint tumpuan (sum joint reaction)**

| LOADING | FORCE (TON) |          |         | MOMEN (TON.m) |          |           |
|---------|-------------|----------|---------|---------------|----------|-----------|
|         | X           | Y        | Z       | X             | Y        | Z         |
| OP-0    | -36.21      | 16145.48 | 0.07    | -420850.30    | -947.26  | 365199.80 |
| OP-45   | -15.56      | 16145.35 | -15.39  | -420352.40    | -35.24   | 365794.90 |
| OP-90   | 0.21        | 14716.78 | -105.53 | -380398.90    | 2415.86  | 333754.10 |
| OP-135  | 82.99       | 14716.89 | -82.79  | -381089.00    | 4069.94  | 336167.00 |
| EX-0    | -53.39      | 14795.50 | 0.07    | -385577.70    | -1396.41 | 334152.10 |
| EX-45   | -39.47      | 14795.32 | -39.35  | -384532.60    | -130.22  | 334636.10 |
| EX-90   | 0.57        | 13364.83 | -263.44 | -341799.00    | 6009.50  | 303069.70 |
| EX-135  | 98.23       | 14794.66 | -97.92  | -383240.30    | 4783.12  | 337882.30 |

Untuk mendapatkan besar tekanan pada dasar pondasi ( $Q$ ), maka beban ultimate ( $P_u$ ) dibagi dengan luas area pondasi ( $A$ ), dalam hal ini adalah luasan ekivalen dari bentuk sesungguhnya *rectangle doughnut* (**Gambar 4.3a**) ekivalen dengan luasan *rigid rectangle* (**Gambar 4.3b**) dengan rasio panjang ( $L$ ) dan lebar ( $B$ ) yang sama.



Gambar 4.3 Dimensi pondasi sesungguhnya (a) dan luasan penampang ekuivalen (b)

Pada **Gambar 4.3a**, luas penampang pondasi (arsir) dihitung dengan persamaan :

$$\begin{aligned} A &= A_1 \text{ (dimensi luar)} - A_2 \text{ (lubang ditengah)} \\ &= (63.52 \times 58.40) - (32.40 \times 41.00) \\ &= 2381.17 \text{ m}^2 \end{aligned}$$

$$\begin{aligned} A_{\text{ekv}} &= L \times B \\ &= (1.08a) \times a \end{aligned}$$

$$2381.17 = 1.08 a^2$$

$$a = 46.95$$

$$\begin{aligned} L &= 1.08 a \\ &= 50.71 \text{ m} \end{aligned}$$

$$\begin{aligned} B &= a \\ &= 46.95 \text{ m} \end{aligned}$$

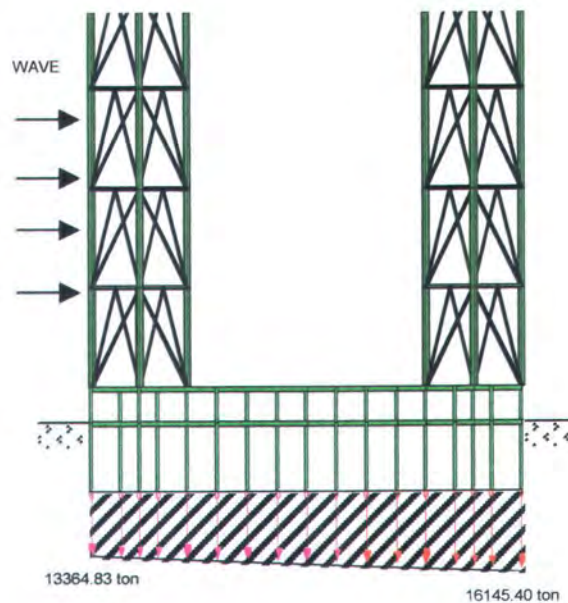
Dari perhitungan diatas diketahui (**Gambar 4.3b**) dimensi pondasi ekivalen adalah sebesar 50.71 m (panjang) dan 46.95m (lebar) dengan luasan ekivalen sebesar 2381.17 m<sup>2</sup>

Diketahui  $P_u$  sebesar 143637.38 KN dan didapatkan tekanan pada dasar pondasi ( $Q$ ) adalah sebesar 60.33 KN/m<sup>2</sup>. dengan perhitungan sebagai berikut,

$$Q = \frac{P_u}{A} \quad (4.3)$$

$$= 143637.38 / (50.71 \times 46.95)$$

$$= 60.33 \text{ KN/m}^2$$



Gambar 4.4 Distribusi tegangan pada elemen tanah (yang diarsir) akibat beban gelombang dengan besar tekanan ( $P_u$ ) maksimum dan minimum (by GT-StrudL)



Sedangkan daya dukung ultimate ( $Q_u$ ) dihitung dengan menggunakan persamaan sebagai berikut (Skempton, 1951) :

$$Q_u = 5 \cdot s_u (1 + 0.2 D/B)(1 + 0.2 B/L) + \gamma D \quad (4.4)$$

dimana,

$s_u$  = kuat geser tanah rata-rata

D = kedalaman pondasi

B = lebar pondasi

L = Panjang pondasi

$\gamma$  = berat volume tanah

Dengan persamaan daya dukung pondasi mat (Skempton), dapat diketahui besar daya dukung ultimate ( $Q_u$ ) untuk pondasi MOgPU pada setiap kedalaman seperti yang tercantum pada **Tabel 4.5** yaitu,

**Tabel 4.5 Besar daya dukung ultimat ( $Q_u$ ) tanah pada setiap kedalaman**

| Soil            | Depth (m) | $S_u$ (KN/m <sup>2</sup> ) | $\gamma$ (KN/m <sup>3</sup> ) | $Q_u$ (KN/m <sup>2</sup> ) |
|-----------------|-----------|----------------------------|-------------------------------|----------------------------|
| Very soft clay  | 0 – 2     | 5                          | 15                            | 59.80                      |
| Soft clay       | 2 – 2.5   | 20                         | 16                            | 159.18                     |
| Soft clay       | 2.5 – 4   | 20                         | 16                            | 184.02                     |
| Firm silty clay | 4 – 6     | 35                         | 16.5                          | 310.46                     |

Dengan memasukkan pada persamaan (4.4), didapatkan

$$\begin{aligned} Q_u &= 5 \times 20 (1 + 0.2 \times 2.5/46.95) (1 + 0.2 \times 46.95/50.71) + (16 \times 2.5) \\ &= 100 \times (1.01) \times (1.18) + 40 \\ &= 159.18 \text{ KN/m}^2 \end{aligned}$$



Untuk mengetahui apakah tanah masih mampu untuk memberikan daya dukung terhadap struktur, maka dilakukan cek keamanan dengan menggunakan *safety factor*, jika *safety factor* lebih dari 2 (API RP-2A WSD) maka struktur disebut aman dari keruntuhan terhadap daya dukungnya.

$$SF = \frac{Q_u}{Q} , \text{ jika } SF > 2 \text{ maka struktur aman (API RP-2A WSD)} \quad (4.5)$$

dimana,

$Q_u$  = daya dukung ultimate tanah

$Q$  = besar tekanan pada pondasi

**Tabel 4.6 Perbandingan  $Q_u$  dengan  $Q$**

| depth (m) | Q (KN/m <sup>2</sup> ) | $Q_u$ (KN/m <sup>2</sup> ) | SF   |
|-----------|------------------------|----------------------------|------|
| 0 - 2     | 60.33                  | 59.80                      | 0.99 |
| 2 - 2.5   |                        | 159.18                     | 2.63 |
| 2.5 - 4   |                        | 184.02                     | 3.05 |
| > 4       |                        | 310.46                     | 5.15 |

Dari perhitungan tampak bahwa pondasi mendapat daya dukung dengan baik ketika berada pada kedalaman lebih dari 2 m dengan  $SF > 2$  (**Tabel 4.6**).

#### 4.2.2.2. Penurunan (*settlement*)

Penurunan total adalah penjumlahan antara penurunan segera (*immediate settlement*) dan penurunan konsolidasi (*consolidated settlement*). Perhitungan penurunan menggunakan persamaan sebagai berikut :



$$S = S_i + S_c \quad (4,6)$$

dimana,

S = Penurunan total

Si = Penurunan segera

Sc= Penurunan konsolidasi

Besar penurunan segera dihitung dengan meninjau berapa besar displasmen vertikal (sumbu -y) pada joint-joint tumpuan. Dari output GT-StrudL didapatkan penurunan terbesar pada kondisi operasi adalah 175.12 mm akibat beban gelombang arah 0° (**Tabel 4.7**), dengan range variasi penurunan yang kecil, maka penurunan yang terjadi adalah penurunan seragam (*uniform settlement*).

**Tabel 4.7 Besar penurunan segera pada kondisi operasional**

| NO | OP-0 (0°) |         | OP-45 (45°) |         | OP-90 (90°) |         | OP135 (135°) |         |
|----|-----------|---------|-------------|---------|-------------|---------|--------------|---------|
|    | JOINT     | (mm)    | JOINT       | (mm)    | JOINT       | (mm)    | JOINT        | (mm)    |
| 1  | 8105      | -175.12 | 8105        | -173.67 | 7945        | -161.10 | 7945         | -163.63 |
| 2  | 8158      | -174.69 | 8107        | -173.57 | 8108        | -161.08 | 8108         | -163.08 |
| 3  | 8103      | -174.33 | 8158        | -173.35 | 8107        | -161.03 | 8109         | -162.63 |
| 4  | 8157      | -173.92 | 8115        | -173.25 | 8115        | -161.02 | 8110         | -162.13 |
| 5  | 8107      | -173.84 | 8103        | -173.05 | 8109        | -160.95 | 8111         | -161.09 |
| 6  | 8115      | -173.38 | 8114        | -172.95 | 8114        | -160.89 | 8101         | -160.29 |
| 7  | 8156      | -173.01 | 8157        | -172.71 | 8110        | -160.75 | 8116         | -160.11 |
| 8  | 8114      | -172.99 | 8113        | -172.60 | 8113        | -160.71 | 8117         | -159.23 |
| 9  | 8099      | -172.66 | 8104        | -172.28 | 8111        | -160.19 | 8118         | -158.51 |
| 10 | 8113      | -172.56 | 7945        | -172.19 | 8112        | -160.17 | 8104         | -158.35 |

Pada kondisi ekstrem (storm), tipe penurunan yang terjadi juga penurunan seragam (*uniform settlement*), dimana range variasi penurunan



tidak terlalu besar, dengan penurunan maksimal sebesar 328.75 mm terjadi akibat beban gelombang arah 135° sebagaimana tercantum pada **Tabel 4.8**.

**Tabel 4.8 Besar penurunan segera pada kondisi extrem**

| NO | EX-0° |         | EX-45° |         | EX-90° |         | EX-135° |                |
|----|-------|---------|--------|---------|--------|---------|---------|----------------|
|    | JOINT | Y DISP. | JOINT  | Y DISP. | JOINT  | Y DISP. | JOINT   | Y DISP.        |
| 1  | 8105  | -319.00 | 8107   | -318.57 | 8109   | -303.76 | 7945    | <b>-328.75</b> |
| 2  | 8158  | -318.22 | 8115   | -317.96 | 8108   | -303.74 | 8108    | -327.50        |
| 3  | 8103  | -317.66 | 8114   | -317.49 | 8110   | -303.70 | 8109    | -326.61        |
| 4  | 8157  | -317.06 | 8113   | -316.98 | 8114   | -303.54 | 8110    | -325.66        |
| 5  | 8099  | -316.46 | 8112   | -315.94 | 8113   | -303.51 | 8111    | -323.91        |
| 6  | 8107  | -316.45 | 8102   | -315.65 | 8115   | -303.49 | 8101    | -323.90        |
| 7  | 8156  | -315.89 | 8122   | -314.91 | 7945   | -303.44 | 8116    | -322.23        |
| 8  | 8115  | -315.64 | 8105   | -314.82 | 8111   | -303.29 | 8117    | -320.61        |
| 9  | 8114  | -315.05 | 8158   | -314.12 | 8107   | -303.15 | 8118    | -319.16        |
| 10 | 8102  | -314.87 | 8121   | -314.01 | 8112   | -303.14 | 8126    | -318.89        |

Untuk penurunan konsolidasi, dihitung dengan persamaan Skempton (1957) sebagai berikut,

$$S = \frac{C_c \cdot H_c}{1 + e_0} \log \left( \frac{P_0 + \Delta P_w}{P_0} \right) \quad (4.7)$$

dimana,

- S = penurunan konsolidasi (m)
- $C_c$  = koefisien konsolidasi
- $H_c$  = tebal lapisan tanah yang ditinjau (m)
- $e_0$  = angka pori awal, ( $\approx 0.9$ , untuk clay)
- $P_0'$  = tegangan efektif rata-rata ( $= \gamma \cdot h$ ) ( $\text{KN/m}^2$ )
- $\Delta P_w$  = tekanan pada permukaan pondasi ( $\text{KN/m}^2$ )

Dalam keterbatasan data, dilakukan asumsi-asumsi nilai-nilai yang berlaku umum pada tipe tanah yang sama. Nilai koefisien konsolidasi  $C_c$  dihitung dengan persamaan Nishida (1956) untuk tipe tanah *clays* sebagai berikut,

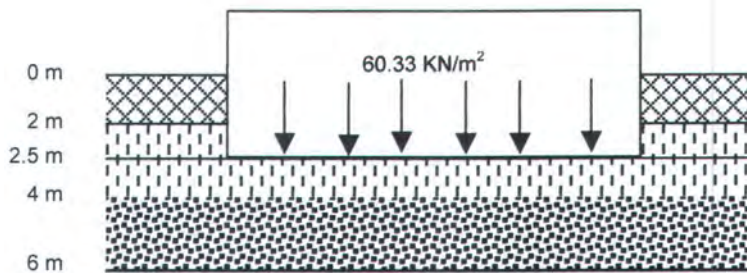
$$C_c = 1.15(e_0 - 0.35) \quad (4.8)$$

$$C_c = 1.15 (0.9 - 0.35)$$

$$= 0.63$$

$$H_c = 6 \text{ m (tebal lapisan tanah yang ditinjau)}$$

Dengan memodelkan lapisan tanah **Gambar 4.4** dan data tanah pada **tabel 4.5**, maka besar tegangan efektif rata-rata ( $P_0'$ ) dan tekanan pada permukaan pondasi ( $\Delta P_w$ ) dapat dihitung sebagai berikut,



Gambar 4.5 Lapisan tanah dan diagram pembebanan pada penurunan konsolidasi

$$P_0' = \gamma_1 h_1 + \gamma_2 h_2 + \gamma_3 h_3$$

$$= (15-1).2 + (16-1).0.5 + (16-1).0.5$$

$$= 43 \text{ kN/m}^2$$

sedangkan besar tekanan pada permukaan pondasi ( $\Delta P_w$ ) adalah besar beban total struktur yang dikenakan pada pondasi, yaitu

$$\Delta P_w = 60.33 \text{ KN/m}^2$$

Selanjutnya dengan memasukkan seluruh variabel pada persamaan (4.7) didapatkan besar penurunan konsolidasi ( $S$ ) sebagai berikut,

$$S = \frac{C_c \cdot H_c}{1 + e_0} \log \left( \frac{P_0 + \Delta P_w}{P_0} \right)$$

$$S = \frac{0.63 \times 6}{1 + 0.9} \log \left( \frac{43 + 60.33}{43} \right)$$

$$S = 0.756 \text{ m}$$

$$= 756 \text{ mm}$$

Penurunan totalnya di hitung dengan persamaan sebagai berikut,

$$S_{\text{total}} = S_{\text{segera}} + S_{\text{consolidation}}$$

Untuk penurunan total dihitung pada kondisi operating, karena berlangsung selama umur operasi (25 tahun), adalah sebagai berikut,

$$S_{\text{op}} = 175.12 \text{ mm} + 756 \text{ mm}$$

$$= 931.12 \text{ mm}$$

$$= 0.9 \text{ m}$$



#### 4.2.2.3. Momen Guling (*overturning moment*)

Analisis momen guling dilakukan untuk mengetahui stabilitas struktur terhadap beban lateral. Kriteria terpenting pada analisis ini ialah besarnya momen pengembali yang dimiliki jack-up. Jack-up dituntut mempunyai momen pengembali yang lebih besar dari momen guling akibat pengaruh kondisi lingkungan.

Besarnya momen guling ditentukan oleh beban lingkungan (gelombang, arus dan angin), konstruksi jack-up terutama diameter kaki, koefisien drag (cd) dan koefisien inersia (cm), serta letak titik overturningnya yang akan menentukan besarnya lengan gulingnya.

Sedangkan besarnya momen pengembali akan sangat tergantung pada besar *payload* (beban vertikalnya) dan posisi titik berat struktur (CoG) terhadap sumbu putarnya serta lebar pondasi (B) yang akan menentukan besarnya lengan momen pengembali jack-up.

Perbandingan (*ratio*) antara momen pengembali dengan momen guling maksimal tidak boleh kurang dari 1,3. sesuai dengan persamaan 4.1 berikut ini,

$$\frac{M_s}{M_{OT}} \geq 1.3 \quad (4.9)$$

dimana,

$M_s$  = Momen Pengembali (Ton.m)

$M_{OT}$  = Momen Guling (Ton.m)



Sedangkan,

$$M_{OT} = Fx \cdot a \quad (4.10)$$

$$M_S = Fy \cdot b \quad (4.11)$$

dimana,

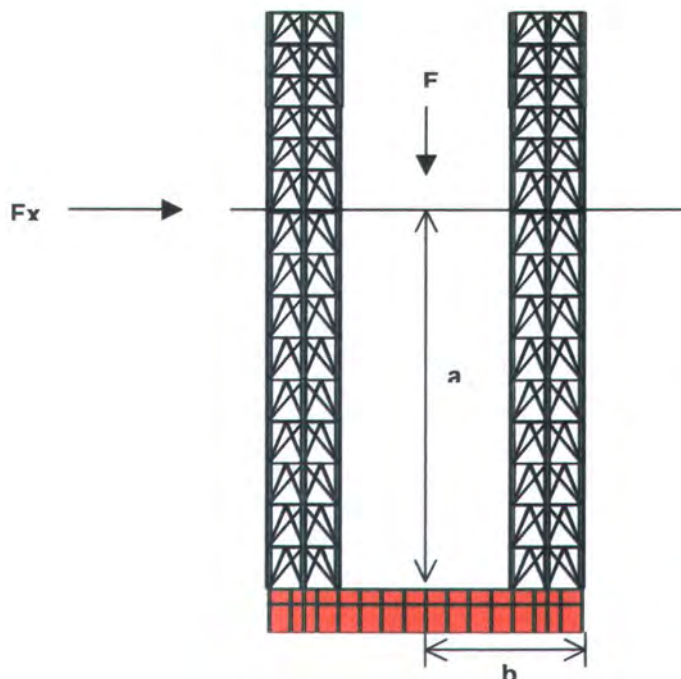
Fx = Gaya Lateral Maximum (Ton)

a = lengan momen guling (m)

Fy = Gaya vertikal total (Ton)

b = lengan momen pengembali (m)

Gaya lateral maksimum (Fx) didapatkan dari output GT-Strudl (**tabel 4.9**)., Sedangkan gaya vertikal total (Fy) didapat dari total beban payload (**tabel 3.6**), besar lengan momen guling (a) didapatkan dari output GT-Selos dan besar lengan momen pengembali (b) didapat dari kedudukan titik berat struktur CoG (center of bouyancy) atau sama dengan  $\frac{1}{2} B$ .



Gambar 4.6 Diagram Momen Overturning dan Momen Pengembali

Tabel 4.9 Force Maximum dan minimum

| Direction | Value (TON) | Member ID | Load Case | Location on member |
|-----------|-------------|-----------|-----------|--------------------|
| FX max :  | 146.71      | TD7391    | OP130002  | 0                  |
| Min :     | -33.43      | TD7733    | OP130001  | 0.25               |
| FY Max :  | 5.35        | TD7791    | OP900002  | 1                  |
| Min :     | -5.32       | TD7784    | OP900002  | 1                  |
| FZ Max :  | 10.79       | TD7787    | OP900002  | 1                  |
| Min :     | -9.32       | TD7791    | OP900002  | 1                  |
| MX Max :  | 2.88        | TD7514    | OP130002  | 1                  |
| Min :     | -2.89       | TD7064    | OP130001  | 1                  |
| MY Max :  | 16.91       | TD7733    | OP900001  | 1                  |
| Min :     | -20.32      | TD7793    | OP900002  | 0                  |
| MZ Max:   | 2.97        | TD7793    | OP900002  | 0                  |
| Min :     | -4.1        | TD7733    | OP130001  | 1                  |

Dari output GT-StrudL pada **tabel 4.9**, tampak bahwa besar gaya lateral maksimum pada pondasi akibat beban-beban lingkungan terjadi pada member TD7391 dengan arah sumbu X positif, arah gelombang 135° sebesar 146.71 Ton



Perhitungan momen guling (*overturning*) didapatkan dengan mengalikan besar gaya lateral maksimal ( $F_x$ ) sebesar 146.71 ton dengan lengannya ( $a$ ) yang diukur dari dasar pondasi (*skirt tip*) hingga pada titik momen overturningnya (GT-Selos) yaitu sebesar 80.1 m sehingga didapatkan momen gulingnya ( $M_{ot}$ ) sebesar 11751.47 Ton.m.

$$M_{OT} = F_x \cdot a$$

$$\begin{aligned} M_{OT} &= 146.71 \text{ ton} \times 80.1 \text{ m} \\ &= 11751.47 \text{ Ton m} \end{aligned}$$

Sedangkan besar momen pengembali dihitung dengan mengalikan beban payload total ( $F_y$ ) yang tercantum pada **tabel 3.6** yaitu sebesar 16144 ton dengan lengan pengembalinya ( $b$ ) sebesar 29.2 m sehingga didapatkan momen pengembalinya ( $M_s$ ) sebesar 471404.8 Ton.m

$$M_s = F_y \cdot b$$

$$\begin{aligned} b &= \frac{1}{2} B \\ &= \frac{1}{2} \times 58.40 \text{ m} \\ &= 29.2 \text{ m} \end{aligned}$$

$$\begin{aligned} M_s &= 16144 \text{ ton} \times 29.2 \\ &= 471404.8 \text{ ton.m} \end{aligned}$$

Dengan memasukkan ke persamaan 4.8



$$\frac{M_s}{M_{OT}} \geq 1.3$$

didapatkan ratio momen gulingnya sebesar

$$\frac{471404.8}{11751.47} = 40.11 \rightarrow \text{maka struktur aman,}$$

karena ratio momen gulingnya lebih besar dari 1.3

### 4.3. Pembahasan

Kita ketahui bahwa pondasi adalah struktur yang sangat penting untuk menjaga stabilitas dan kemampuan operasi sebuah struktur, terlebih struktur yang dirancang untuk bekerja dalam beban lingkungan yang ganas dengan beban operasi yang besar, maka struktur tersebut harus memiliki pondasi yang handal dalam menanggung semua beban-bebannya, baik beban struktur di atasnya, beban operasi maupun beban lingkungan.

Begitu juga struktur Hangtuh MOgPU platform ini, sebuah bangunan lepas pantai yang dirancang untuk beroperasi dalam perairan Natuna dengan umur desain 25 tahun, maka selama umur operasinya, bangunan tersebut tidak boleh terjadi keruntuhan akibat kecilnya kekuatan dan stabilitas pondasinya baik dalam kondisi operasional maupun ekstrem (gelombang 100 tahunan).

Berdasarkan hasil analisis kekuatan, menunjukkan bahwa secara umum tegangan (*stress*) yang dialami member-member pada pondasi masih berada



dalam range yang ditoleransi yaitu dengan rasio stress maksimumnya sebesar 0.79 (operasional) dan 0.80 (ekstrem) dari skala 0 – 1 (**Tabel 4.1 & 4.2**),.

Parameter kekuatan yang lain adalah distribusi tegangan antara sambungan kaki-mat, karena pada bagian ini yang rentan mengalami tegangan karena defleksi akibat beban berulang (*cyclic*). Dari hasil analisis, menunjukkan bahwa tegangan maksimum pada bagian sambungan kaki-mat adalah relatif aman ( $25136.60 \text{ KN/m}^2$ ) karena lebih kecil dari syarat yield strength baja A36 sebesar 250 MPa atau  $250000.00 \text{ KN/m}^2$  (API RP-2A WSD).

Selain analisis terhadap kekuatan, yang tak kalah pentingnya adalah analisis terhadap stabilitas, dalam hal ini adalah bahwa struktur pondasi harus mampu mengatasi keruntuhan *axial* (penurunan) dan lateral (momen guling). Dari hasil analisis daya dukung tanah pada setiap kedalaman (tabel 4.5), tampak bahwa kemampuan tanah dibawah pondasi pada kedalaman 2.5 m (penetrasi pondasi saat ini) masih mampu memberikan daya dukungnya dengan faktor keamanan lebih dari 2 (API RP-2A WSD).

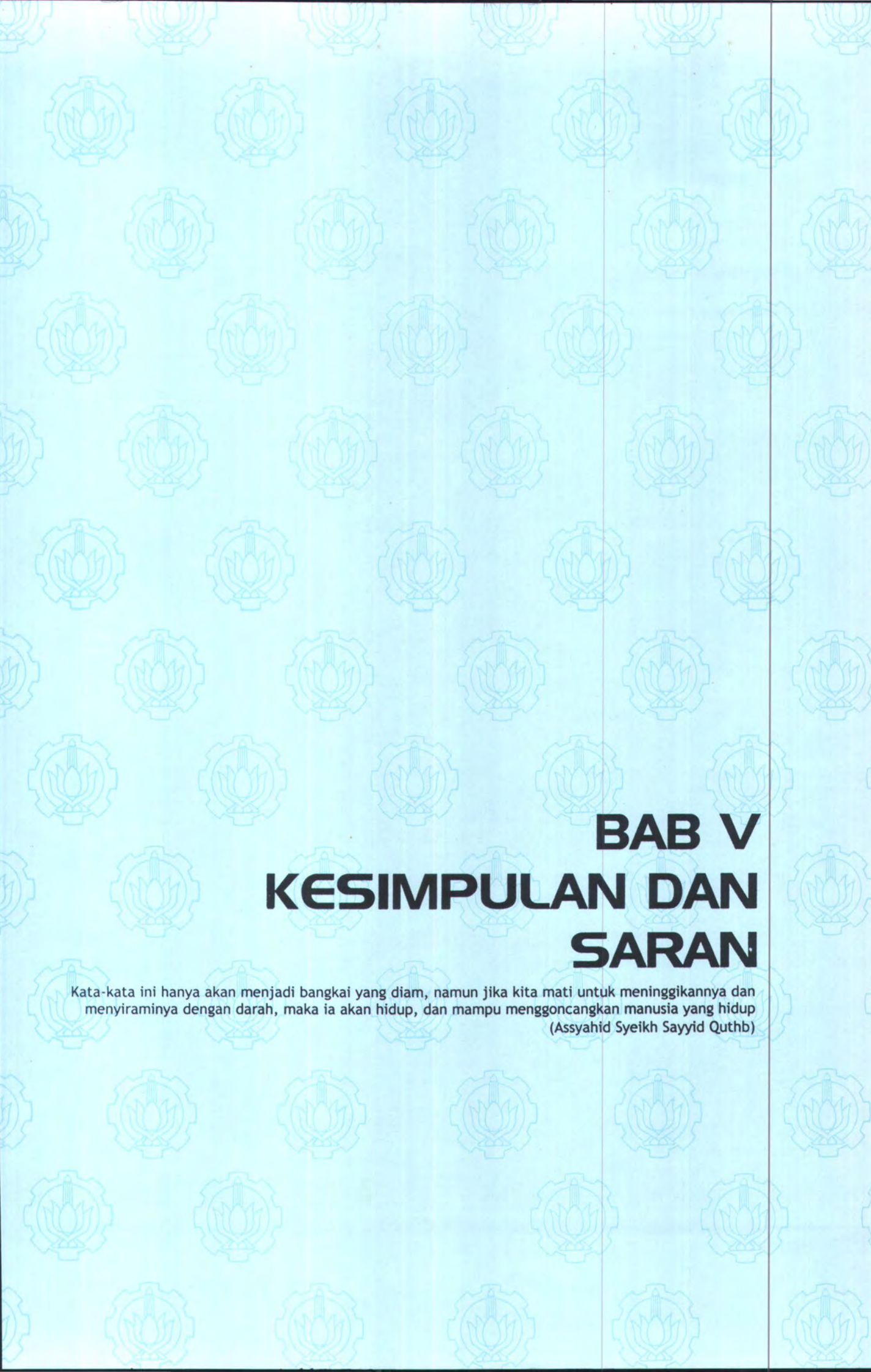
Sedang dari analisis penurunan, tampak bahwa struktur mengalami penurunan seragam (*uniform*) dengan variasi besar penurunan yang kecil. Penurunan total selama umur operasi sebesar 0.931m.

Pada analisa stabilitas terhadap beban lateral, tampak bahwa ratio perbandingan antara momen pengembalnya dengan momen gulingnya masih



diatas batas stabil, yaitu 40.11 dari syarat minimalnya yaitu 1.3, hal ini menunjukkan bahwa struktur pondasi secara umum sangat stabil terhadap keruntuhan guling.





# **BAB V**

# **KESIMPULAN DAN**

# **SARAN**

Kata-kata ini hanya akan menjadi bangkai yang diam, namun jika kita mati untuk meninggikannya dan menyiraminya dengan darah, maka ia akan hidup, dan mampu mengguncangkan manusia yang hidup  
(Assyahid Syeikh Sayyid Quthb)



# BAB V

## KESIMPULAN DAN SARAN

### 5.1 Kesimpulan

Dari hasil analisis dan pembahasan, diperoleh kesimpulan sebagai berikut,

- ❖ Berdasarkan hasil analisis kekuatan, menunjukkan bahwa secara umum tegangan (*stress*) yang dialami member-member pada pondasi masih berada dalam range yang aman ( $UC < 1$ ) dengan Unity Check maksimumnya sebesar 0.79 (operasional) dan 0.80 (ekstrem). Dengan untiy check sebesar itu struktur
- ❖ Tegangan pada sambungan *kaki-mat* cukup aman karena tegangan maksimum yang terjadi ( $25136.60 \text{ KN/m}^2$ ) masih berada di bawah *yield stress*-nya yaitu sebesar  $250000 \text{ KN/m}^2$  (250 Mpa). Stress yang besar justru dialami pada bagian tengah pondasi, menunjukkan bahwa pondasi mengalami bending yang cukup besar.
- ❖ Pada kedalaman 2.5 m (penetrasi pondasi saat ini) daya dukung tanah cukup baik dengan faktor keamanan lebih dari 2 (API RP-2A WSD). Sedang besar penurunan total selama umur operasi diperkirakan sebesar 0.931 m dengan tipe penurunan seragam (*uniform*).



- ❖ Ratio momen pengembali dengan momen guling diatas batas stabil, yaitu 40.11 dari syarat minimalnya yaitu 1.3, hal ini menunjukkan bahwa struktur pondasi sangat stabil terhadap keruntuhan guling.

## 5.2 Saran

Berdasarkan penelitian yang telah dilakukan maka dapat disarankan hal-hal sebagai berikut :

Inspeksi secara khusus hendaknya ditujukan pada member-member dan join-join yang mengalami tegangan berlebih atau nilai unity check yang besar. Analisis pondasi hendaknya mengkaji lebih lanjut perihal *scouring* yang terjadi pada tanah, sehingga penurunan struktur dapat dianalisis lebih akurat.

Kajian lanjutan juga diperlukan untuk skenario pemindahan atau pembongkaran struktur terhadap pondasinya, agar ada rekomendasi bagi owner dalam merencanakan pemindahan struktur, karena dalam desain dikatakan bahwa dalam kurun waktu 5 – 10 tahun struktur mengalami perpindahan lokasi operasi.

Melakukan eksplorasi lebih lanjut pada software GT-StrudL terhadap analisis tanah sehingga dapat memodelkan dan menganalisis kondisi tanah dengan lebih akurat.

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**LAMPIRAN**

# LAMPIRAN

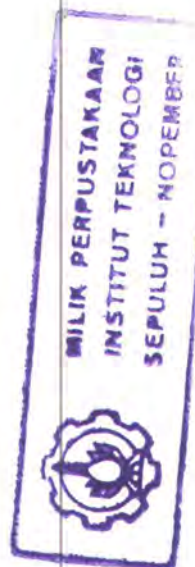
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| 125 | 'D7585' | 5.1900398E+01 | -5.4299896E+01 | 5.6300001E+00  | 248 | 'D7708' | 4.2150299E+01  | -1.9899599E+01 | 5.2260300E+01 |
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| 171 | 'D7631' | 3.8900002E+01 | -8.0099998E+01 | 5.6300001E+00  | 294 | 'D7754' | 3.8900299E+01  | 3.1901199E+01  | 4.6630299E+01 |
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| 174 | 'D7634' | 3.8900002E+01 | 1.2400000E+01  | 5.6300001E+00  | 297 | 'D7757' | 4.5400299E+01  | 3.8401199E+01  | 4.6630299E+01 |
| 175 | 'D7635' | 4.5400101E+01 | 1.2400200E+01  | 5.6300001E+00  | 298 | 'D7758' | 4.8650398E+01  | 3.8401199E+01  | 5.2260300E+01 |
| 176 | 'D7636' | 4.2150101E+01 | 1.2400200E+01  | 0.0000000E+00  | 299 | 'D7759' | 3.8900299E+01  | 3.8401199E+01  | 4.6630299E+01 |
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| 189 | 'D7649' | 4.5400299E+01 | 2.5401199E+01  | -5.6300001E+00 | 312 | 'D7772' | 0.0000000E+00  | -6.2899998E+01 | 4.6630100E+01 |
| 190 | 'D7650' | 5.1900398E+01 | 2.5401199E+01  | 5.6300001E+00  | 313 | 'D7773' | -6.5000000E+00 | -6.2899998E+01 | 4.6630199E+01 |
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| 195 | 'D7655' | 4.5400299E+01 | 3.1901199E+01  | -5.6300001E+00 | 318 | 'D7778' | 0.0000000E+00  | -5.4299896E+01 | 4.6630402E+01 |
| 196 | 'D7656' | 5.1900398E+01 | 3.1901199E+01  | 5.6300001E+00  | 319 | 'D7779' | -6.5000000E+00 | -5.4299995E+01 | 4.6630001E+01 |
| 197 | 'D7657' | 4.8650398E+01 | 3.1901199E+01  | 0.0000000E+00  | 320 | 'D7780' | -3.2500000E+00 | -5.4299896E+01 | 5.2260399E+01 |
| 198 | 'D7658' | 3.8900299E+01 | 3.8401199E+01  | 5.6300001E+00  | 321 | 'D7781' | 0.0000000E+00  | -5.4299896E+01 | 5.7890400E+01 |
| 199 | 'D7659' | 4.5400299E+01 | 3.8401199E+01  | 5.6300001E+00  | 322 | 'D7782' | 3.2500000E+00  | -5.4299896E+01 | 5.2260399E+01 |
| 200 | 'D7660' | 4.2150299E+01 | 3.8401199E+01  | 0.0000000E+00  | 323 | 'D7783' | 6.5000000E+00  | -4.5699799E+01 | 4.6630299E+01 |
| 201 | 'D7661' | 4.5400299E+01 | 3.8401199E+01  | -5.6300001E+00 | 324 | 'D7784' | 0.0000000E+00  | -4.5700001E+01 | 4.6630100E+01 |
| 202 | 'D7662' | 5.1900398E+01 | 3.8401199E+01  | 5.6300001E+00  | 325 | 'D7785' | -6.5000000E+00 | -4.5699902E+01 | 4.6630199E+01 |
| 203 | 'D7663' | 4.8650398E+01 | 3.8401199E+01  | 0.0000000E+00  | 326 | 'D7786' | -3.2500000E+00 | -4.5700001E+01 | 5.2260101E+01 |
| 204 | 'D7664' | 3.8900002E+01 | 1.1650000E+01  | 5.6300001E+00  | 327 | 'D7787' | 0.0000000E+00  | -4.5700001E+01 | 5.7890099E+01 |
| 205 | 'D7665' | 3.8900002E+01 | 1.8150000E+01  | 5.6300001E+00  | 328 | 'D7788' | 3.2500000E+00  | -4.5700001E+01 | 5.2260101E+01 |
| 206 | 'D7666' | 5.1900002E+01 | 1.1650100E+01  | 5.6300001E+00  | 329 | 'D7789' | 6.5000000E+00  | -3.7099701E+01 | 4.6630402E+01 |
| 207 | 'D7667' | 5.1900200E+01 | 1.8150101E+01  | 5.6300001E+00  |     |         |                |                |               |

|     |                                                          |                |                |               |     |                                                                |         |         |
|-----|----------------------------------------------------------|----------------|----------------|---------------|-----|----------------------------------------------------------------|---------|---------|
| 370 | 'D7830'                                                  | 3.2500000E+00  | 1.2400000E+01  | 5.2259998E+01 | 493 | 'TD7161'                                                       | 'D7629' | 'D7630' |
| 371 | 'D7831'                                                  | 0.0000000E+00  | 1.2400100E+01  | 5.7890099E+01 | 494 | 'TD7162'                                                       | 'D7630' | 'D7625' |
| 372 | 'D7832'                                                  | -6.5000000E+00 | 1.2400000E+01  | 4.6630001E+01 | 495 | 'TD7387'                                                       | 'D7725' | 'D7726' |
| 373 | 'D7833'                                                  | -3.2500000E+00 | 1.2400000E+01  | 5.2259998E+01 | 496 | 'TD7388'                                                       | 'D7726' | 'D7727' |
| 374 | 'D7834'                                                  | 6.5000000E+00  | 1.8900299E+01  | 4.6630199E+01 | 497 | 'TD7389'                                                       | 'D7727' | 'D7728' |
| 375 | 'D7835'                                                  | 0.0000000E+00  | 1.8900299E+01  | 4.6630199E+01 | 498 | 'TD7390'                                                       | 'D7728' | 'D7729' |
| 376 | 'D7836'                                                  | 3.2500000E+00  | 1.8900299E+01  | 5.2260201E+01 | 499 | 'TD7609'                                                       | 'D7821' | 'D7822' |
| 377 | 'D7837'                                                  | 0.0000000E+00  | 1.8900101E+01  | 5.7890099E+01 | 500 | 'TD7610'                                                       | 'D7822' | 'D7823' |
| 378 | 'D7838'                                                  | -6.5000000E+00 | 1.8900000E+01  | 4.6630100E+01 | 501 | 'TD7611'                                                       | 'D7823' | 'D7824' |
| 379 | 'D7839'                                                  | -3.2500000E+00 | 1.8900000E+01  | 5.2260101E+01 | 502 | 'TD7612'                                                       | 'D7824' | 'D7819' |
| 380 | 'D7840'                                                  | 6.5000000E+00  | 2.5401199E+01  | 4.6630402E+01 | 503 | \$ END MEMBER INCIDENTS                                        |         |         |
| 381 | 'D7841'                                                  | 0.0000000E+00  | 2.5401199E+01  | 4.6630402E+01 | 504 | UNITS M                                                        |         |         |
| 382 | 'D7842'                                                  | 3.2500000E+00  | 2.5401199E+01  | 5.2260399E+01 | 505 | TYPE SPACE FRAME                                               |         |         |
| 383 | 'D7843'                                                  | 0.0000000E+00  | 2.5401199E+01  | 5.7890400E+01 | 506 | MEMBER INCIDENTS AND PROPERTIES PIPE OD 0.4064 THI 0.0254 \$ - |         |         |
| 384 | 'D7844'                                                  | -6.5001001E+00 | 2.5401199E+01  | 4.6630402E+01 | 507 | \$ WATER MASS NONFLOODED BUOYANT STRUCTURAL -                  |         |         |
| 385 | 'D7845'                                                  | -3.2500000E+00 | 2.5401199E+01  | 5.2260399E+01 | 508 | \$ DIVISION 1 THICK 0.0254 -                                   |         |         |
| 386 | 'D7846'                                                  | 6.5000000E+00  | 3.1901199E+01  | 4.6630402E+01 | 509 | \$ DIAOUT 0.4064 CDWATER 0.65 CDWATER 2.0 WT/V 0.000283        |         |         |
| 387 | 'D7847'                                                  | 0.0000000E+00  | 3.1901199E+01  | 4.6630402E+01 | 510 | 'TD7083'                                                       | 'D7529' | 'D7540' |
| 388 | 'D7848'                                                  | 3.2500000E+00  | 3.1901199E+01  | 5.2260399E+01 | 511 | 'TD7084'                                                       | 'D7540' | 'D7533' |
| 389 | 'D7849'                                                  | 0.0000000E+00  | 3.1901199E+01  | 5.7890400E+01 | 512 | 'TD7093'                                                       | 'D7531' | 'D7543' |
| 390 | 'D7850'                                                  | -6.5001001E+00 | 3.1901199E+01  | 4.6630402E+01 | 513 | 'TD7094'                                                       | 'D7543' | 'D7533' |
| 391 | 'D7851'                                                  | -3.2500000E+00 | 3.1901199E+01  | 5.2260399E+01 | 514 | 'TD7308'                                                       | 'D7625' | 'D7636' |
| 392 | 'D7852'                                                  | 6.5000000E+00  | 3.8401199E+01  | 4.6630402E+01 | 515 | 'TD7309'                                                       | 'D7636' | 'D7629' |
| 393 | 'D7853'                                                  | 0.0000000E+00  | 3.8401199E+01  | 4.6630402E+01 | 516 | 'TD7318'                                                       | 'D7627' | 'D7639' |
| 394 | 'D7854'                                                  | 3.2500000E+00  | 3.8401199E+01  | 5.2260399E+01 | 517 | 'TD7319'                                                       | 'D7639' | 'D7629' |
| 395 | 'D7855'                                                  | 0.0000000E+00  | 3.8401199E+01  | 5.7890400E+01 | 518 | 'TD7533'                                                       | 'D7723' | 'D7734' |
| 396 | 'D7856'                                                  | -6.5001001E+00 | 3.8401199E+01  | 4.6630402E+01 | 519 | 'TD7534'                                                       | 'D7734' | 'D7727' |
| 397 | 'D7857'                                                  | -3.2500000E+00 | 3.8401199E+01  | 5.2260399E+01 | 520 | 'TD7543'                                                       | 'D7725' | 'D7737' |
| 398 | 'D7858'                                                  | 6.5000000E+00  | 1.1650300E+01  | 4.6630199E+01 | 521 | 'TD7544'                                                       | 'D7737' | 'D7730' |
| 399 | 'D7859'                                                  | 6.5000000E+00  | 1.8150299E+01  | 4.6630199E+01 | 522 | 'TD7758'                                                       | 'D7819' | 'D7830' |
| 400 | 'D7860'                                                  | -6.5000000E+00 | 1.1650000E+01  | 4.6630001E+01 | 523 | 'TD7759'                                                       | 'D7830' | 'D7833' |
| 401 | 'D7861'                                                  | -6.5000000E+00 | 1.8150000E+01  | 4.6630100E+01 | 524 | 'TD7768'                                                       | 'D7821' | 'D7833' |
| 402 | 'D7862'                                                  | 4.5400299E+01  | 3.8401199E+01  | 5.7890301E+01 | 525 | 'TD7769'                                                       | 'D7833' | 'D7823' |
| 403 | 'MD'                                                     | 2.2700199E+01  | 1.4900300E+01  | 2.6130100E+01 | 526 | \$ END MEMBER INCIDENTS                                        |         |         |
| 404 | \$ 'MUD'                                                 | -6.5000000E+00 | -8.0099998E+01 | 5.6300001E+00 | 527 | UNITS M                                                        |         |         |
| 405 | \$ END JOINT COORDINATES                                 |                |                |               | 528 | TYPE SPACE FRAME                                               |         |         |
| 406 | TYPE RIGID SOLID                                         |                |                |               | 529 | MEMBER INCIDENTS AND PROPERTIES PIPE OD 1. THI 0.05 \$ -       |         |         |
| 407 | RIGID BODY INCIDENTS                                     |                |                |               | 530 | \$ WATER MASS NONFLOODED BUOYANT STRUCTURAL -                  |         |         |
| 408 | 'RSD' -                                                  |                |                |               | 531 | \$ DIVISION 1 THICK 0.05 -                                     |         |         |
| 409 | 'MD'                                                     | 'D7859'        | 'D7858'        | 'D7861'       | 532 | \$ DIAOUT 1. CDWATER 1.05 CDWATER 1.2 WT/V 0.000283            |         |         |
| 410 | 'D7762'                                                  | 'D7761'        | 'D7764'        | 'D7763'       | 533 | 'TD7163'                                                       | 'D7631' | 'D7571' |
| 411 | 'D7567'                                                  | 'D7570'        | 'D7569'        | 'D7665'       | 534 | 'TD7183'                                                       | 'D7633' | 'D7573' |
| 412 | 'D7667'                                                  | 'D7666'        |                |               | 535 | 'TD7391'                                                       | 'D7729' | 'D7669' |
| 413 |                                                          |                |                |               | 536 | 'TD7411'                                                       | 'D7731' | 'D7671' |
| 414 |                                                          |                |                |               | 537 | 'TD7613'                                                       | 'D7825' | 'D7765' |
| 415 |                                                          |                |                |               | 538 | 'TD7633'                                                       | 'D7827' | 'D7767' |
| 416 |                                                          |                |                |               | 539 | \$ END MEMBER INCIDENTS                                        |         |         |
| 417 | UNITS M MTON DEG                                         |                |                |               | 540 | UNITS M                                                        |         |         |
| 418 |                                                          |                |                |               | 541 | TYPE SPACE FRAME                                               |         |         |
| 419 |                                                          |                |                |               | 542 | MEMBER INCIDENTS AND PROPERTIES PIPE OD 1. THI 0.06 \$ -       |         |         |
| 420 |                                                          |                |                |               | 543 | \$ WATER MASS NONFLOODED BUOYANT STRUCTURAL -                  |         |         |
| 421 | UNITS M                                                  |                |                |               | 544 | \$ DIVISION 1 THICK 0.06 -                                     |         |         |
| 422 | TYPE SPACE FRAME                                         |                |                |               | 545 | \$ DIAOUT 1. CDWATER 0.65 CDWATER 1.6 WT/V 0.000283            |         |         |
| 423 | MEMBER INCIDENTS AND PROPERTIES PIPE OD 1. THI 0.06 \$ - |                |                |               | 546 | 'TD7059'                                                       | 'D7529' | 'D7567' |
| 424 | \$ WATER MASS NONFLOODED BUOYANT STRUCTURAL -            |                |                |               | 547 | 'TD7064'                                                       | 'D7531' | 'D7569' |
| 425 | \$ DIVISION 1 THICK 0.06 -                               |                |                |               | 548 | 'TD7283'                                                       | 'D7625' | 'D7664' |
| 426 | \$ DIAOUT 1. CDWATER 0.65 CDWATER 1.6 WT/V 0.000283      |                |                |               | 549 | 'TD7288'                                                       | 'D7627' | 'D7666' |
| 427 |                                                          |                |                |               | 550 | 'TD7509'                                                       | 'D7723' | 'D7761' |
| 428 |                                                          |                |                |               | 551 | 'TD7514'                                                       | 'D7725' | 'D7763' |
| 429 |                                                          |                |                |               | 552 | 'TD7733'                                                       | 'D7819' | 'D7858' |
| 430 |                                                          |                |                |               | 553 | 'TD7738'                                                       | 'D7821' | 'D7860' |
| 431 |                                                          |                |                |               | 554 | \$ END MEMBER INCIDENTS                                        |         |         |
| 432 |                                                          |                |                |               | 555 | UNITS M                                                        |         |         |
| 433 |                                                          |                |                |               | 556 | TYPE SPACE FRAME                                               |         |         |
| 434 |                                                          |                |                |               | 557 | MEMBER INCIDENTS AND PROPERTIES PIPE OD 1. THI 0.03 \$ -       |         |         |
| 435 |                                                          |                |                |               | 558 | \$ WATER MASS NONFLOODED BUOYANT STRUCTURAL -                  |         |         |
| 436 |                                                          |                |                |               | 559 | \$ DIVISION 1 THICK 0.03 -                                     |         |         |
| 437 |                                                          |                |                |               | 560 | \$ DIAOUT 1. CDWATER 0.65 CDWATER 1.6 WT/V 0.000283            |         |         |
| 438 |                                                          |                |                |               | 561 | 'TD7079'                                                       | 'D7533' | 'D7541' |
| 439 |                                                          |                |                |               | 562 | 'TD7303'                                                       | 'D7629' | 'D7637' |
| 440 |                                                          |                |                |               | 563 | 'TD7529'                                                       | 'D7727' | 'D7735' |
| 441 |                                                          |                |                |               | 564 | 'TD7753'                                                       | 'D7823' | 'D7831' |
| 442 |                                                          |                |                |               | 565 | \$ END MEMBER INCIDENTS                                        |         |         |
| 443 |                                                          |                |                |               | 566 | UNITS M                                                        |         |         |
| 444 |                                                          |                |                |               | 567 | TYPE SPACE FRAME                                               |         |         |
| 445 |                                                          |                |                |               | 568 | MEMBER INCIDENTS AND PROPERTIES PIPE OD 0.3239 THI 0.0127 \$ - |         |         |
| 446 |                                                          |                |                |               | 569 | \$ WATER MASS NONFLOODED BUOYANT STRUCTURAL -                  |         |         |
| 447 |                                                          |                |                |               | 570 | \$ DIVISION 1 THICK 0.0127 -                                   |         |         |
| 448 |                                                          |                |                |               | 571 | \$ DIAOUT 0.3239 CDWATER 0.65 CDWATER 2.0 WT/V 0.000283        |         |         |
| 449 |                                                          |                |                |               | 572 | 'TD7069'                                                       | 'D7529' | 'D7539' |
| 450 |                                                          |                |                |               | 573 | 'TD7070'                                                       | 'D7539' | 'D7531' |
| 451 |                                                          |                |                |               | 574 | 'TD7293'                                                       | 'D7625' | 'D7635' |
| 452 |                                                          |                |                |               | 575 | 'TD7294'                                                       | 'D7635' | 'D7627' |
| 453 |                                                          |                |                |               | 576 | 'TD7519'                                                       | 'D7723' | 'D7733' |
| 454 |                                                          |                |                |               | 577 | 'TD7520'                                                       | 'D7733' | 'D7725' |
| 455 |                                                          |                |                |               | 578 | 'TD7743'                                                       | 'D7819' | 'D7829' |
| 456 |                                                          |                |                |               | 579 | 'TD7744'                                                       | 'D7829' | 'D7821' |
| 457 |                                                          |                |                |               | 580 | \$ END MEMBER INCIDENTS                                        |         |         |
| 458 |                                                          |                |                |               | 581 | UNITS M                                                        |         |         |
| 459 |                                                          |                |                |               | 582 | TYPE SPACE FRAME                                               |         |         |
| 460 |                                                          |                |                |               | 583 | MEMBER INCIDENTS AND PROPERTIES PIPE OD 0.3556 THI 0.0318 \$ - |         |         |
| 461 |                                                          |                |                |               | 584 | \$ WATER MASS NONFLOODED BUOYANT STRUCTURAL -                  |         |         |
| 462 |                                                          |                |                |               | 585 | \$ DIVISION 1 THICK 0.0318 -                                   |         |         |
| 463 |                                                          |                |                |               | 586 | \$ DIAOUT 0.3556 CDWATER 0.65 CDWATER 2.0 WT/V 0.000283        |         |         |
| 464 |                                                          |                |                |               | 587 | 'TD6935'                                                       | 'D7529' | 'D7530' |
| 465 |                                                          |                |                |               | 588 | 'TD6936'                                                       | 'D7530' | 'D7531' |
| 466 |                                                          |                |                |               | 589 | 'TD7157'                                                       | 'D7625' | 'D7626' |
| 467 |                                                          |                |                |               | 590 | 'TD7158'                                                       | 'D7626' | 'D7627' |
| 468 |                                                          |                |                |               | 591 | 'TD7385'                                                       | 'D7723' | 'D7724' |
| 469 |                                                          |                |                |               | 592 | 'TD7386'                                                       | 'D7724' | 'D7725' |
| 470 |                                                          |                |                |               | 593 | 'TD7607'                                                       | 'D7819' | 'D7820' |
| 471 |                                                          |                |                |               | 594 | 'TD7608'                                                       | 'D7820' | 'D7821' |
| 472 |                                                          |                |                |               | 595 | \$ END MEMBER INCIDENTS                                        |         |         |
| 473 |                                                          |                |                |               | 596 | UNITS M                                                        |         |         |
| 474 |                                                          |                |                |               | 597 | TYPE SPACE FRAME                                               |         |         |
| 475 |                                                          |                |                |               | 598 | MEMBER INCIDENTS AND PROPERTIES PIPE OD 0.4061 THI 0.0381 \$ - |         |         |
| 476 |                                                          |                |                |               | 599 | \$ WATER MASS NONFLOODED BUOYANT STRUCTURAL -                  |         |         |
| 477 |                                                          |                |                |               | 600 | \$ DIVISION 1 THICK 0.0381 -                                   |         |         |
| 478 |                                                          |                |                |               | 601 | \$ DIAOUT 0.4061 CDWATER 0.65 CDWATER 2.0 WT/V 0.000283        |         |         |
| 479 |                                                          |                |                |               | 602 | 'TD6937'                                                       | 'D7531' | 'D7532' |
| 480 |                                                          |                |                |               | 603 | 'TD6938'                                                       | 'D7532' | 'D7533' |
| 481 |                                                          |                |                |               | 604 | 'TD6939'                                                       | 'D7533' | 'D7534' |
| 482 |                                                          |                |                |               | 605 | 'TD6940'                                                       | 'D7534' | 'D7529' |
| 483 |                                                          |                |                |               | 606 | 'TD7159'                                                       | 'D7627' | 'D7628' |
| 484 |                                                          |                |                |               | 607 | 'TD7160'                                                       | 'D7628' | 'D7629' |
| 485 |                                                          |                |                |               | 608 | \$ END MEMBER INCIDENTS                                        |         |         |
| 486 |                                                          |                |                |               | 609 | UNITS M                                                        |         |         |
| 487 |                                                          |                |                |               | 610 | TYPE SPACE FRAME                                               |         |         |
| 488 |                                                          |                |                |               | 611 | MEMBER INCIDENTS AND PROPERTIES PIPE OD 1. THI 0.03 \$ -       |         |         |
| 489 |                                                          |                |                |               |     | \$ WATER MASS NONFLOODED BUOYANT STRUCTURAL -                  |         |         |

|     |                                                                 |         |         |     |                                                                 |         |         |
|-----|-----------------------------------------------------------------|---------|---------|-----|-----------------------------------------------------------------|---------|---------|
| 612 | 'TD7396'                                                        | 'D7693' | 'D7699' | 735 | 'TD7129'                                                        | 'D7597' | 'D7598' |
| 613 | 'TD7397'                                                        | 'D7699' | 'D7705' | 736 | 'TD7130'                                                        | 'D7598' | 'D7599' |
| 614 | 'TD7398'                                                        | 'D7705' | 'D7711' | 737 | 'TD7131'                                                        | 'D7599' | 'D7600' |
| 615 | 'TD7402'                                                        | 'D7673' | 'D7679' | 738 | 'TD7132'                                                        | 'D7600' | 'D7595' |
| 616 | 'TD7403'                                                        | 'D7679' | 'D7685' | 739 | 'TD7133'                                                        | 'D7601' | 'D7602' |
| 617 | 'TD7404'                                                        | 'D7685' | 'D7691' | 740 | 'TD7134'                                                        | 'D7602' | 'D7603' |
| 618 | 'TD7405'                                                        | 'D7691' | 'D7697' | 741 | 'TD7135'                                                        | 'D7603' | 'D7604' |
| 619 | 'TD7406'                                                        | 'D7697' | 'D7703' | 742 | 'TD7136'                                                        | 'D7604' | 'D7605' |
| 620 | 'TD7407'                                                        | 'D7703' | 'D7709' | 743 | 'TD7137'                                                        | 'D7605' | 'D7606' |
| 621 | 'TD7408'                                                        | 'D7709' | 'D7715' | 744 | 'TD7138'                                                        | 'D7606' | 'D7607' |
| 622 | 'TD7409'                                                        | 'D7715' | 'D7721' | 745 | 'TD7139'                                                        | 'D7607' | 'D7608' |
| 623 | 'TD7410'                                                        | 'D7721' | 'D7727' | 746 | 'TD7140'                                                        | 'D7608' | 'D7609' |
| 624 | 'TD7413'                                                        | 'D7677' | 'D7683' | 747 | 'TD7141'                                                        | 'D7609' | 'D7610' |
| 625 | 'TD7414'                                                        | 'D7683' | 'D7689' | 748 | 'TD7142'                                                        | 'D7610' | 'D7611' |
| 626 | 'TD7415'                                                        | 'D7689' | 'D7695' | 749 | 'TD7143'                                                        | 'D7611' | 'D7612' |
| 627 | 'TD7416'                                                        | 'D7695' | 'D7701' | 750 | 'TD7144'                                                        | 'D7612' | 'D7607' |
| 628 | 'TD7417'                                                        | 'D7701' | 'D7707' | 751 | 'TD7345'                                                        | 'D7683' | 'D7684' |
| 629 | 'TD7418'                                                        | 'D7707' | 'D7713' | 752 | 'TD7346'                                                        | 'D7684' | 'D7685' |
| 630 | 'TD7615'                                                        | 'D7771' | 'D7777' | 753 | 'TD7351'                                                        | 'D7689' | 'D7690' |
| 631 | 'TD7616'                                                        | 'D7777' | 'D7783' | 754 | 'TD7352'                                                        | 'D7690' | 'D7691' |
| 632 | 'TD7617'                                                        | 'D7783' | 'D7789' | 755 | 'TD7353'                                                        | 'D7691' | 'D7692' |
| 633 | 'TD7618'                                                        | 'D7789' | 'D7795' | 756 | 'TD7354'                                                        | 'D7692' | 'D7687' |
| 634 | 'TD7619'                                                        | 'D7795' | 'D7801' | 757 | 'TD7357'                                                        | 'D7695' | 'D7696' |
| 635 | 'TD7620'                                                        | 'D7801' | 'D7807' | 758 | 'TD7358'                                                        | 'D7696' | 'D7697' |
| 636 | 'TD7624'                                                        | 'D7769' | 'D7775' | 759 | 'TD7359'                                                        | 'D7697' | 'D7698' |
| 637 | 'TD7625'                                                        | 'D7775' | 'D7781' | 760 | 'TD7360'                                                        | 'D7698' | 'D7693' |
| 638 | 'TD7626'                                                        | 'D7781' | 'D7787' | 761 | 'TD7361'                                                        | 'D7699' | 'D7700' |
| 639 | 'TD7627'                                                        | 'D7787' | 'D7793' | 762 | 'TD7362'                                                        | 'D7700' | 'D7701' |
| 640 | 'TD7628'                                                        | 'D7793' | 'D7799' | 763 | 'TD7363'                                                        | 'D7701' | 'D7702' |
| 641 | 'TD7629'                                                        | 'D7799' | 'D7805' | 764 | 'TD7364'                                                        | 'D7702' | 'D7703' |
| 642 | 'TD7630'                                                        | 'D7805' | 'D7811' | 765 | 'TD7365'                                                        | 'D7703' | 'D7704' |
| 643 | 'TD7631'                                                        | 'D7811' | 'D7817' | 766 | 'TD7366'                                                        | 'D7704' | 'D7699' |
| 644 | 'TD7632'                                                        | 'D7817' | 'D7823' | 767 | 'TD7367'                                                        | 'D7705' | 'D7706' |
| 645 | 'TD7635'                                                        | 'D7773' | 'D7779' | 768 | 'TD7368'                                                        | 'D7706' | 'D7707' |
| 646 | 'TD7636'                                                        | 'D7779' | 'D7785' | 769 | 'TD7369'                                                        | 'D7707' | 'D7708' |
| 647 | 'TD7637'                                                        | 'D7785' | 'D7791' | 770 | 'TD7370'                                                        | 'D7708' | 'D7709' |
| 648 | 'TD7638'                                                        | 'D7791' | 'D7797' | 771 | 'TD7371'                                                        | 'D7709' | 'D7710' |
| 649 | 'TD7639'                                                        | 'D7797' | 'D7803' | 772 | 'TD7372'                                                        | 'D7710' | 'D7705' |
| 650 | 'TD7640'                                                        | 'D7803' | 'D7809' | 773 | 'TD7567'                                                        | 'D7779' | 'D7780' |
| 651 | \$ END MEMBER INCIDENCES                                        |         |         | 774 | 'TD7568'                                                        | 'D7780' | 'D7781' |
| 652 |                                                                 |         |         | 775 | 'TD7569'                                                        | 'D7781' | 'D7782' |
| 653 | UNITS M                                                         |         |         | 776 | 'TD7570'                                                        | 'D7782' | 'D7777' |
| 654 | TYPE SPACE FRAME                                                |         |         | 777 | 'TD7573'                                                        | 'D7785' | 'D7786' |
| 655 | MEMBER INCIDENCES AND PROPERTIES PIPE OD 1. THI 0.05 \$ -       |         |         | 778 | 'TD7574'                                                        | 'D7786' | 'D7787' |
| 656 | \$ WATER MASS NONFLOODED BUOYANT STRUCTURAL -                   |         |         | 779 | 'TD7575'                                                        | 'D7787' | 'D7788' |
| 657 | \$ DIVISION 1 THICK 0.05 -                                      |         |         | 780 | 'TD7576'                                                        | 'D7788' | 'D7783' |
| 658 | \$ DIAOUT 1. CDWATER 1.05 CMWATER 1.2 WT/V 0.000283             |         |         | 781 | 'TD7579'                                                        | 'D7791' | 'D7792' |
| 659 | 'TD6941'                                                        | 'D7535' | 'D7475' | 782 | 'TD7580'                                                        | 'D7792' | 'D7793' |
| 660 | 'TD6961'                                                        | 'D7537' | 'D7477' | 783 | 'TD7581'                                                        | 'D7793' | 'D7794' |
| 661 | \$ END MEMBER INCIDENCES                                        |         |         | 784 | 'TD7582'                                                        | 'D7794' | 'D7789' |
| 662 |                                                                 |         |         | 785 | 'TD7583'                                                        | 'D7795' | 'D7796' |
| 663 | UNITS M                                                         |         |         | 786 | 'TD7584'                                                        | 'D7796' | 'D7797' |
| 664 | TYPE SPACE FRAME                                                |         |         | 787 | 'TD7587'                                                        | 'D7799' | 'D7800' |
| 665 | MEMBER INCIDENCES AND PROPERTIES PIPE OD 1. THI 0.035 \$ -      |         |         | 788 | 'TD7588'                                                        | 'D7800' | 'D7795' |
| 666 | \$ WATER MASS NONFLOODED BUOYANT STRUCTURAL -                   |         |         | 789 | 'TD7589'                                                        | 'D7801' | 'D7802' |
| 667 | \$ DIVISION 1 THICK 0.035 -                                     |         |         | 790 | 'TD7590'                                                        | 'D7802' | 'D7803' |
| 668 | \$ DIAOUT 1. CDWATER 1.05 CMWATER 1.2 WT/V 0.000283             |         |         | 791 | 'TD7591'                                                        | 'D7803' | 'D7804' |
| 669 | 'TD6942'                                                        | 'D7475' | 'D7481' | 792 | 'TD7592'                                                        | 'D7804' | 'D7805' |
| 670 | 'TD6949'                                                        | 'D7517' | 'D7523' | 793 | 'TD7593'                                                        | 'D7805' | 'D7806' |
| 671 | 'TD6962'                                                        | 'D7477' | 'D7483' | 794 | 'TD7594'                                                        | 'D7806' | 'D7801' |
| 672 | 'TD6969'                                                        | 'D7519' | 'D7525' | 795 | \$ END MEMBER INCIDENCES                                        |         |         |
| 673 | 'TD7164'                                                        | 'D7571' | 'D7577' | 796 |                                                                 |         |         |
| 674 | 'TD7171'                                                        | 'D7613' | 'D7619' | 797 | UNITS M                                                         |         |         |
| 675 | 'TD7184'                                                        | 'D7573' | 'D7579' | 798 | TYPE SPACE FRAME                                                |         |         |
| 676 | 'TD7191'                                                        | 'D7615' | 'D7621' | 798 | MEMBER INCIDENCES AND PROPERTIES PIPE OD 0.3556 THI 0.0254 \$ - |         |         |
| 677 | 'TD7392'                                                        | 'D7669' | 'D7675' | 799 | \$ WATER MASS NONFLOODED BUOYANT STRUCTURAL -                   |         |         |
| 678 | 'TD7399'                                                        | 'D7711' | 'D7717' | 800 | \$ DIVISION 1 THICK 0.0254 -                                    |         |         |
| 679 | 'TD7412'                                                        | 'D7671' | 'D7677' | 801 | \$ DIAOUT 0.3556 CDWATER 1.05 CMWATER 2.0 WT/V 0.000283         |         |         |
| 680 | 'TD7419'                                                        | 'D7713' | 'D7719' | 802 | 'TD6971'                                                        | 'D7535' | 'D7476' |
| 681 | 'TD7614'                                                        | 'D7765' | 'D7771' | 803 | 'TD6972'                                                        | 'D7476' | 'D7537' |
| 682 | 'TD7621'                                                        | 'D7807' | 'D7813' | 804 | 'TD6973'                                                        | 'D7537' | 'D7478' |
| 683 | 'TD7634'                                                        | 'D7767' | 'D7773' | 805 | 'TD6974'                                                        | 'D7478' | 'D7536' |
| 684 | 'TD7641'                                                        | 'D7809' | 'D7815' | 806 | 'TD6975'                                                        | 'D7536' | 'D7480' |
| 685 | \$ END MEMBER INCIDENCES                                        |         |         | 807 | 'TD6976'                                                        | 'D7480' | 'D7535' |
| 686 |                                                                 |         |         | 808 | 'TD6977'                                                        | 'D7475' | 'D7482' |
| 687 | UNITS M                                                         |         |         | 809 | 'TD6978'                                                        | 'D7477' | 'D7477' |
| 688 | TYPE SPACE FRAME                                                |         |         | 810 | 'TD6979'                                                        | 'D7477' | 'D7484' |
| 689 | MEMBER INCIDENCES AND PROPERTIES PIPE OD 1. THI 0.044 \$ -      |         |         | 811 | 'TD6980'                                                        | 'D7479' | 'D7485' |
| 690 | \$ WATER MASS NONFLOODED BUOYANT STRUCTURAL -                   |         |         | 812 | 'TD6981'                                                        | 'D7479' | 'D7486' |
| 691 | \$ DIVISION 1 THICK 0.044 -                                     |         |         | 813 | 'TD6982'                                                        | 'D7486' | 'D7475' |
| 692 | \$ DIAOUT 1. CDWATER 1.05 CMWATER 1.2 WT/V 0.000283             |         |         | 814 | 'TD7193'                                                        | 'D7631' | 'D7572' |
| 693 | 'TD6950'                                                        | 'D7523' | 'D7529' | 815 | 'TD7194'                                                        | 'D7572' | 'D7633' |
| 694 | 'TD6970'                                                        | 'D7525' | 'D7531' | 816 | 'TD7195'                                                        | 'D7633' | 'D7574' |
| 695 | \$ END MEMBER INCIDENCES                                        |         |         | 817 | 'TD7196'                                                        | 'D7574' | 'D7632' |
| 696 |                                                                 |         |         | 818 | 'TD7197'                                                        | 'D7632' | 'D7576' |
| 697 | UNITS M                                                         |         |         | 819 | 'TD7198'                                                        | 'D7576' | 'D7631' |
| 698 | TYPE SPACE FRAME                                                |         |         | 820 | 'TD7199'                                                        | 'D7571' | 'D7578' |
| 699 | MEMBER INCIDENCES AND PROPERTIES PIPE OD 0.3239 THI 0.0127 \$ - |         |         | 821 | 'TD7200'                                                        | 'D7578' | 'D7573' |
| 700 | \$ WATER MASS NONFLOODED BUOYANT STRUCTURAL -                   |         |         | 822 | 'TD7201'                                                        | 'D7573' | 'D7580' |
| 701 | \$ DIVISION 1 THICK 0.0127 -                                    |         |         | 823 | 'TD7202'                                                        | 'D7580' | 'D7575' |
| 702 | \$ DIAOUT 0.3239 CDWATER 1.05 CMWATER 2.0 WT/V 0.000283         |         |         | 824 | 'TD7203'                                                        | 'D7575' | 'D7582' |
| 703 | 'TD6881'                                                        | 'D7475' | 'D7476' | 825 | 'TD7204'                                                        | 'D7582' | 'D7571' |
| 704 | 'TD6882'                                                        | 'D7476' | 'D7477' | 826 | 'TD7423'                                                        | 'D7731' | 'D7672' |
| 705 | 'TD6895'                                                        | 'D7489' | 'D7490' | 827 | 'TD7424'                                                        | 'D7672' | 'D7730' |
| 706 | 'TD6896'                                                        | 'D7490' | 'D7491' | 828 | 'TD7425'                                                        | 'D7730' | 'D7674' |
| 707 | 'TD6901'                                                        | 'D7495' | 'D7496' | 829 | 'TD7426'                                                        | 'D7674' | 'D7729' |
| 708 | 'TD6902'                                                        | 'D7496' | 'D7497' | 830 | 'TD7427'                                                        | 'D7669' | 'D7676' |
| 709 | 'TD6903'                                                        | 'D7497' | 'D7498' | 831 | 'TD7428'                                                        | 'D7676' | 'D7671' |
| 710 | 'TD6904'                                                        | 'D7498' | 'D7499' | 832 | 'TD7429'                                                        | 'D7671' | 'D7678' |
| 711 | 'TD6907'                                                        | 'D7501' | 'D7502' | 833 | 'TD7430'                                                        | 'D7678' | 'D7673' |
| 712 | 'TD6908'                                                        | 'D7502' | 'D7503' | 834 | 'TD7431'                                                        | 'D7673' | 'D7680' |
| 713 | 'TD6909'                                                        | 'D7503' | 'D7504' | 835 | 'TD7432'                                                        | 'D7680' | 'D7669' |
| 714 | 'TD6910'                                                        | 'D7504' | 'D7499' | 836 | 'TD7645'                                                        | 'D7827' | 'D7768' |
| 715 | 'TD6911'                                                        | 'D7505' | 'D7506' | 837 | 'TD7646'                                                        | 'D7768' | 'D7826' |
| 716 | 'TD6912'                                                        | 'D7506' | 'D7507' | 838 | 'TD7647'                                                        | 'D7826' | 'D7770' |
| 717 | 'TD6913'                                                        | 'D7507' | 'D7508' | 839 | 'TD7648'                                                        | 'D7770' | 'D7825' |
| 718 | 'TD6914'                                                        | 'D7508' | 'D7509' | 840 | 'TD7649'                                                        | 'D7765' | 'D7772' |
| 719 | 'TD6915'                                                        | 'D7509' | 'D7510' | 841 | 'TD7650'                                                        | 'D7772' | 'D7767' |
| 720 | 'TD6916'                                                        | 'D7510' | 'D7505' | 842 | 'TD7651'                                                        | 'D7767' | 'D7774' |
| 721 | 'TD6917'                                                        | 'D7511' | 'D7512' | 843 | 'TD7652'                                                        | 'D7774' | 'D7769' |
| 722 | 'TD6918'                                                        | 'D7512' | 'D7513' | 844 | 'TD7653'                                                        | 'D7769' | 'D7776' |
| 723 | 'TD6919'                                                        | 'D7513' | 'D7514' | 845 | 'TD7654'                                                        | 'D7776' | 'D7765' |
| 724 | 'TD6920'                                                        | 'D7514' | 'D7515' | 846 | \$ END MEMBER INCIDENCES                                        |         |         |
| 725 | 'TD6921'                                                        | 'D7515' | 'D7516' | 847 |                                                                 |         |         |
| 726 | 'TD6922'                                                        | 'D7516' | 'D7511' | 848 | UNITS M                                                         |         |         |
| 727 | 'TD7117'                                                        | 'D7585' | 'D7586' | 849 | TYPE SPACE FRAME                                                |         |         |
| 728 | 'TD7118'                                                        | 'D7586' | 'D7587' | 850 | MEMBER INCIDENCES AND PROPERTIES PIPE OD 0.3556 THI 0.0191 \$ - |         |         |
| 729 | 'TD7119'                                                        | 'D7587' | 'D7588' | 851 | \$ WATER MASS NONFLOODED BUOYANT STRUCTURAL -                   |         |         |
| 730 | 'TD7120'                                                        | 'D7588' | 'D7583' | 852 | \$ DIVISION 1 THICK 0.0191 -                                    |         |         |
| 731 | 'TD7123'                                                        | 'D7591' | 'D7592' | 853 | \$ DIAOUT 0.3556 CDWATER 1.05 CMWATER 2.0 WT/V 0.000283         |         |         |
| 732 | 'TD7124'                                                        | 'D7592' | 'D7593' | 854 | 'TD7015'                                                        | 'D7513' | 'D7520' |
| 733 | 'TD7125'                                                        | 'D7593' | 'D7594' | 855 | 'TD7016'                                                        | 'D7520' | 'D7515' |
| 734 | 'TD7126'                                                        | 'D7594' | 'D7589' | 856 |                                                                 |         |         |



|     |                                                                 |         |         |      |                                                                 |         |         |
|-----|-----------------------------------------------------------------|---------|---------|------|-----------------------------------------------------------------|---------|---------|
| 857 | 'TD7017'                                                        | 'D7515' | 'D7522' | 979  | 'TD7006'                                                        | 'D7510' | 'D7499' |
| 858 | 'TD7018'                                                        | 'D7522' | 'D7511' | 980  | 'TD7007'                                                        | 'D7505' | 'D7512' |
| 859 | 'TD7021'                                                        | 'D7519' | 'D7526' | 981  | 'TD7008'                                                        | 'D7512' | 'D7507' |
| 860 | 'TD7022'                                                        | 'D7526' | 'D7521' | 982  | 'TD7009'                                                        | 'D7507' | 'D7514' |
| 861 | 'TD7023'                                                        | 'D7521' | 'D7528' | 983  | 'TD7010'                                                        | 'D7514' | 'D7509' |
| 862 | 'TD7024'                                                        | 'D7528' | 'D7517' | 984  | 'TD7011'                                                        | 'D7509' | 'D7516' |
| 863 | 'TD7027'                                                        | 'D7525' | 'D7532' | 985  | 'TD7012'                                                        | 'D7516' | 'D7505' |
| 864 | 'TD7028'                                                        | 'D7532' | 'D7527' | 986  | 'TD7013'                                                        | 'D7511' | 'D7518' |
| 865 | 'TD7029'                                                        | 'D7527' | 'D7534' | 987  | 'TD7014'                                                        | 'D7518' | 'D7513' |
| 866 | 'TD7030'                                                        | 'D7534' | 'D7523' | 988  | 'TD7019'                                                        | 'D7517' | 'D7524' |
| 867 | 'TD7103'                                                        | 'D7571' | 'D7572' | 989  | 'TD7020'                                                        | 'D7524' | 'D7519' |
| 868 | 'TD7104'                                                        | 'D7572' | 'D7573' | 990  | 'TD7025'                                                        | 'D7523' | 'D7530' |
| 869 | 'TD7109'                                                        | 'D7577' | 'D7578' | 991  | 'TD7026'                                                        | 'D7530' | 'D7525' |
| 870 | 'TD7110'                                                        | 'D7578' | 'D7579' | 992  | 'TD7207'                                                        | 'D7579' | 'D7586' |
| 871 | 'TD7237'                                                        | 'D7609' | 'D7616' | 993  | 'TD7208'                                                        | 'D7586' | 'D7581' |
| 872 | 'TD7238'                                                        | 'D7616' | 'D7611' | 994  | 'TD7209'                                                        | 'D7581' | 'D7588' |
| 873 | 'TD7239'                                                        | 'D7611' | 'D7618' | 995  | 'TD7210'                                                        | 'D7588' | 'D7577' |
| 874 | 'TD7240'                                                        | 'D7618' | 'D7607' | 996  | 'TD7213'                                                        | 'D7585' | 'D7592' |
| 875 | 'TD7243'                                                        | 'D7615' | 'D7622' | 997  | 'TD7214'                                                        | 'D7592' | 'D7587' |
| 876 | 'TD7244'                                                        | 'D7622' | 'D7617' | 998  | 'TD7215'                                                        | 'D7587' | 'D7594' |
| 877 | 'TD7245'                                                        | 'D7617' | 'D7624' | 999  | 'TD7216'                                                        | 'D7594' | 'D7583' |
| 878 | 'TD7246'                                                        | 'D7624' | 'D7613' | 1000 | 'TD7219'                                                        | 'D7591' | 'D7598' |
| 879 | 'TD7249'                                                        | 'D7621' | 'D7628' | 1001 | 'TD7220'                                                        | 'D7598' | 'D7593' |
| 880 | 'TD7250'                                                        | 'D7628' | 'D7623' | 1002 | 'TD7221'                                                        | 'D7593' | 'D7600' |
| 881 | 'TD7251'                                                        | 'D7623' | 'D7630' | 1003 | 'TD7222'                                                        | 'D7600' | 'D7589' |
| 882 | 'TD7331'                                                        | 'D7669' | 'D7670' | 1004 | 'TD7225'                                                        | 'D7597' | 'D7604' |
| 883 | 'TD7332'                                                        | 'D7670' | 'D7671' | 1005 | 'TD7226'                                                        | 'D7604' | 'D7599' |
| 884 | 'TD7337'                                                        | 'D7675' | 'D7676' | 1006 | 'TD7227'                                                        | 'D7599' | 'D7606' |
| 885 | 'TD7338'                                                        | 'D7676' | 'D7677' | 1007 | 'TD7228'                                                        | 'D7606' | 'D7595' |
| 886 | 'TD7421'                                                        | 'D7729' | 'D7670' | 1008 | 'TD7229'                                                        | 'D7601' | 'D7608' |
| 887 | 'TD7422'                                                        | 'D7670' | 'D7731' | 1009 | 'TD7230'                                                        | 'D7608' | 'D7603' |
| 888 | 'TD7465'                                                        | 'D7707' | 'D7714' | 1010 | 'TD7231'                                                        | 'D7603' | 'D7610' |
| 889 | 'TD7466'                                                        | 'D7714' | 'D7709' | 1011 | 'TD7232'                                                        | 'D7610' | 'D7605' |
| 890 | 'TD7467'                                                        | 'D7709' | 'D7716' | 1012 | 'TD7233'                                                        | 'D7605' | 'D7612' |
| 891 | 'TD7468'                                                        | 'D7716' | 'D7705' | 1013 | 'TD7234'                                                        | 'D7612' | 'D7601' |
| 892 | 'TD7471'                                                        | 'D7713' | 'D7720' | 1014 | 'TD7235'                                                        | 'D7607' | 'D7614' |
| 893 | 'TD7472'                                                        | 'D7720' | 'D7715' | 1015 | 'TD7236'                                                        | 'D7614' | 'D7609' |
| 894 | 'TD7473'                                                        | 'D7715' | 'D7722' | 1016 | 'TD7241'                                                        | 'D7613' | 'D7620' |
| 895 | 'TD7474'                                                        | 'D7722' | 'D7711' | 1017 | 'TD7242'                                                        | 'D7620' | 'D7615' |
| 896 | 'TD7477'                                                        | 'D7719' | 'D7726' | 1018 | 'TD7247'                                                        | 'D7619' | 'D7626' |
| 897 | 'TD7478'                                                        | 'D7726' | 'D7721' | 1019 | 'TD7248'                                                        | 'D7626' | 'D7621' |
| 898 | 'TD7479'                                                        | 'D7721' | 'D7728' | 1020 | 'TD7435'                                                        | 'D7677' | 'D7684' |
| 899 | 'TD7480'                                                        | 'D7728' | 'D7717' | 1021 | 'TD7436'                                                        | 'D7684' | 'D7679' |
| 900 | 'TD7553'                                                        | 'D7765' | 'D7766' | 1022 | 'TD7437'                                                        | 'D7679' | 'D7686' |
| 901 | 'TD7554'                                                        | 'D7766' | 'D7767' | 1023 | 'TD7438'                                                        | 'D7686' | 'D7675' |
| 902 | 'TD7559'                                                        | 'D7771' | 'D7772' | 1024 | 'TD7441'                                                        | 'D7683' | 'D7690' |
| 903 | 'TD7560'                                                        | 'D7772' | 'D7773' | 1025 | 'TD7442'                                                        | 'D7690' | 'D7685' |
| 904 | 'TD7687'                                                        | 'D7803' | 'D7810' | 1026 | 'TD7443'                                                        | 'D7685' | 'D7692' |
| 905 | 'TD7688'                                                        | 'D7810' | 'D7805' | 1027 | 'TD7444'                                                        | 'D7692' | 'D7681' |
| 906 | 'TD7689'                                                        | 'D7805' | 'D7812' | 1028 | 'TD7447'                                                        | 'D7689' | 'D7696' |
| 907 | 'TD7690'                                                        | 'D7812' | 'D7801' | 1029 | 'TD7448'                                                        | 'D7696' | 'D7691' |
| 908 | 'TD7693'                                                        | 'D7809' | 'D7816' | 1030 | 'TD7449'                                                        | 'D7691' | 'D7698' |
| 909 | 'TD7694'                                                        | 'D7816' | 'D7811' | 1031 | 'TD7450'                                                        | 'D7698' | 'D7687' |
| 910 | 'TD7695'                                                        | 'D7811' | 'D7818' | 1032 | 'TD7453'                                                        | 'D7695' | 'D7702' |
| 911 | 'TD7696'                                                        | 'D7818' | 'D7807' | 1033 | 'TD7454'                                                        | 'D7702' | 'D7697' |
| 912 | 'TD7699'                                                        | 'D7815' | 'D7822' | 1034 | 'TD7455'                                                        | 'D7697' | 'D7704' |
| 913 | 'TD7700'                                                        | 'D7822' | 'D7817' | 1035 | 'TD7456'                                                        | 'D7704' | 'D7693' |
| 914 | 'TD7701'                                                        | 'D7817' | 'D7824' | 1036 | 'TD7457'                                                        | 'D7699' | 'D7706' |
| 915 | 'TD7702'                                                        | 'D7824' | 'D7813' | 1037 | 'TD7458'                                                        | 'D7706' | 'D7701' |
| 916 | \$ END MEMBER INCIDENCES                                        |         |         | 1038 | 'TD7459'                                                        | 'D7701' | 'D7708' |
| 917 |                                                                 |         |         | 1039 | 'TD7460'                                                        | 'D7708' | 'D7703' |
| 918 | UNITS M                                                         |         |         | 1040 | 'TD7461'                                                        | 'D7703' | 'D7710' |
| 919 | TYPE SPACE FRAME                                                |         |         | 1041 | 'TD7462'                                                        | 'D7710' | 'D7699' |
| 920 | MEMBER INCIDENCES AND PROPERTIES PIPE OD 0.3556 THI 0.0127 \$ - |         |         | 1042 | 'TD7463'                                                        | 'D7705' | 'D7712' |
| 921 | \$ WATER MASS NONFLOODED BUOYANT STRUCTURAL -                   |         |         | 1043 | 'TD7464'                                                        | 'D7712' | 'D7707' |
| 922 | \$ DIVISION 1 THICK 0.0127 -                                    |         |         | 1044 | 'TD7469'                                                        | 'D7711' | 'D7718' |
| 923 | \$ DIAOUT 0.3556 CDWATER 1.05 CMWATER 2.0 WT/V 0.000283         |         |         | 1045 | 'TD7470'                                                        | 'D7718' | 'D7713' |
| 924 | 'TD6883'                                                        | 'D7477' | 'D7478' | 1046 | 'TD7475'                                                        | 'D7717' | 'D7724' |
| 925 | 'TD6884'                                                        | 'D7478' | 'D7479' | 1047 | 'TD7476'                                                        | 'D7724' | 'D7719' |
| 926 | 'TD6885'                                                        | 'D7479' | 'D7480' | 1048 | 'TD7585'                                                        | 'D7797' | 'D7798' |
| 927 | 'TD6886'                                                        | 'D7480' | 'D7475' | 1049 | 'TD7586'                                                        | 'D7798' | 'D7799' |
| 928 | 'TD6889'                                                        | 'D7483' | 'D7484' | 1050 | 'TD7657'                                                        | 'D7773' | 'D7780' |
| 929 | 'TD6890'                                                        | 'D7484' | 'D7485' | 1051 | 'TD7658'                                                        | 'D7780' | 'D7775' |
| 930 | 'TD6891'                                                        | 'D7485' | 'D7486' | 1052 | 'TD7659'                                                        | 'D7775' | 'D7782' |
| 931 | 'TD6892'                                                        | 'D7486' | 'D7481' | 1053 | 'TD7660'                                                        | 'D7782' | 'D7771' |
| 932 | 'TD7105'                                                        | 'D7573' | 'D7574' | 1054 | 'TD7663'                                                        | 'D7779' | 'D7786' |
| 933 | 'TD7106'                                                        | 'D7574' | 'D7575' | 1055 | 'TD7664'                                                        | 'D7786' | 'D7781' |
| 934 | 'TD7107'                                                        | 'D7575' | 'D7576' | 1056 | 'TD7665'                                                        | 'D7781' | 'D7788' |
| 935 | 'TD7108'                                                        | 'D7576' | 'D7571' | 1057 | 'TD7666'                                                        | 'D7788' | 'D7777' |
| 936 | 'TD7111'                                                        | 'D7579' | 'D7580' | 1058 | 'TD7669'                                                        | 'D7785' | 'D7792' |
| 937 | 'TD7112'                                                        | 'D7580' | 'D7581' | 1059 | 'TD7670'                                                        | 'D7792' | 'D7787' |
| 938 | 'TD7113'                                                        | 'D7581' | 'D7582' | 1060 | 'TD7671'                                                        | 'D7787' | 'D7794' |
| 939 | 'TD7114'                                                        | 'D7582' | 'D7577' | 1061 | 'TD7672'                                                        | 'D7794' | 'D7783' |
| 940 | 'TD7333'                                                        | 'D7671' | 'D7672' | 1062 | 'TD7675'                                                        | 'D7791' | 'D7798' |
| 941 | 'TD7334'                                                        | 'D7672' | 'D7673' | 1063 | 'TD7676'                                                        | 'D7798' | 'D7793' |
| 942 | 'TD7335'                                                        | 'D7673' | 'D7674' | 1064 | 'TD7677'                                                        | 'D7793' | 'D7800' |
| 943 | 'TD7336'                                                        | 'D7674' | 'D7669' | 1065 | 'TD7678'                                                        | 'D7800' | 'D7789' |
| 944 | 'TD7339'                                                        | 'D7677' | 'D7678' | 1066 | 'TD7679'                                                        | 'D7795' | 'D7802' |
| 945 | 'TD7340'                                                        | 'D7678' | 'D7679' | 1067 | 'TD7680'                                                        | 'D7802' | 'D7797' |
| 946 | 'TD7341'                                                        | 'D7679' | 'D7680' | 1068 | 'TD7681'                                                        | 'D7797' | 'D7804' |
| 947 | 'TD7342'                                                        | 'D7680' | 'D7675' | 1069 | 'TD7682'                                                        | 'D7804' | 'D7799' |
| 948 | 'TD7555'                                                        | 'D7767' | 'D7768' | 1070 | 'TD7683'                                                        | 'D7799' | 'D7806' |
| 949 | 'TD7556'                                                        | 'D7768' | 'D7769' | 1071 | 'TD7684'                                                        | 'D7806' | 'D7795' |
| 950 | 'TD7557'                                                        | 'D7769' | 'D7770' | 1072 | 'TD7691'                                                        | 'D7807' | 'D7814' |
| 951 | 'TD7558'                                                        | 'D7770' | 'D7765' | 1073 | 'TD7692'                                                        | 'D7814' | 'D7809' |
| 952 | 'TD7561'                                                        | 'D7773' | 'D7774' | 1074 | 'TD7697'                                                        | 'D7813' | 'D7820' |
| 953 | 'TD7562'                                                        | 'D7774' | 'D7775' | 1075 | 'TD7698'                                                        | 'D7820' | 'D7815' |
| 954 | 'TD7563'                                                        | 'D7775' | 'D7776' | 1076 | \$ END MEMBER INCIDENCES                                        |         |         |
| 955 | 'TD7564'                                                        | 'D7776' | 'D7771' | 1077 |                                                                 |         |         |
| 956 | \$ END MEMBER INCIDENCES                                        |         |         | 1078 | UNITS M                                                         |         |         |
| 957 |                                                                 |         |         | 1079 | TYPE SPACE FRAME                                                |         |         |
| 958 | UNITS M                                                         |         |         | 1080 | MEMBER INCIDENCES AND PROPERTIES PIPE OD 0.3556 THI 0.0159 \$ - |         |         |
| 959 | TYPE SPACE FRAME                                                |         |         | 1081 | \$ WATER MASS NONFLOODED BUOYANT STRUCTURAL -                   |         |         |
| 959 | TYPE                                                            |         |         | 1082 | \$ DIVISION 1 THICK 0.0159 -                                    |         |         |
| 960 | MEMBER INCIDENCES AND PROPERTIES PIPE OD 0.3239 THI 0.0254 \$ - |         |         | 1083 | \$ DIAOUT 0.3556 CDWATER 1.05 CMWATER 2.0 WT/V 0.000283         |         |         |
| 961 | \$ WATER MASS NONFLOODED BUOYANT STRUCTURAL -                   |         |         | 1084 | 'TD6925'                                                        | 'D7519' | 'D7520' |
| 962 | \$ DIVISION 1 THICK 0.0254 -                                    |         |         | 1085 | 'TD6926'                                                        | 'D7520' | 'D7521' |
| 963 | \$ DIAOUT 0.3239 CDWATER 1.05 CMWATER 2.0 WT/V 0.000283         |         |         | 1086 | 'TD6927'                                                        | 'D7521' | 'D7522' |
| 964 | 'TD6985'                                                        | 'D7483' | 'D7490' | 1087 | 'TD6928'                                                        | 'D7522' | 'D7517' |
| 965 | 'TD6986'                                                        | 'D7490' | 'D7485' | 1088 | 'TD6931'                                                        | 'D7525' | 'D7526' |
| 966 | 'TD6987'                                                        | 'D7485' | 'D7492' | 1089 | 'TD6932'                                                        | 'D7526' | 'D7527' |
| 967 | 'TD6988'                                                        | 'D7492' | 'D7481' | 1090 | 'TD6933'                                                        | 'D7527' | 'D7528' |
| 968 | 'TD6991'                                                        | 'D7489' | 'D7496' | 1091 | 'TD6934'                                                        | 'D7528' | 'D7523' |
| 969 | 'TD6992'                                                        | 'D7496' | 'D7491' | 1092 | 'TD7147'                                                        | 'D7615' | 'D7616' |
| 970 | 'TD6993'                                                        | 'D7491' | 'D7498' | 1093 | 'TD7148'                                                        | 'D7616' | 'D7617' |
| 971 | 'TD6994'                                                        | 'D7498' | 'D7487' | 1094 | 'TD7149'                                                        | 'D7617' | 'D7618' |
| 972 | 'TD6997'                                                        | 'D7495' | 'D7502' | 1095 | 'TD7150'                                                        | 'D7618' | 'D7613' |
| 973 | 'TD6998'                                                        | 'D7502' | 'D7497' | 1096 | 'TD7153'                                                        | 'D7621' | 'D7622' |
| 974 | 'TD6999'                                                        | 'D7497' | 'D7504' | 1097 | 'TD7154'                                                        | 'D7622' | 'D7623' |
| 975 | 'TD7000'                                                        | 'D7504' | 'D7493' | 1098 | 'TD7155'                                                        | 'D7623' | 'D7624' |
| 976 | 'TD7003'                                                        | 'D7501' | 'D7508' | 1099 | 'TD7156'                                                        | 'D7624' | 'D7619' |
| 977 | 'TD7004'                                                        | 'D7508' | 'D7503' | 1100 | 'TD7375'                                                        | 'D7713' | 'D7714' |
| 978 | 'TD7005'                                                        | 'D7503' | 'D7510' | 1101 | 'TD7376'                                                        | 'D7714' | 'D7715' |

|      |                                                                 |         |         |      |          |         |         |
|------|-----------------------------------------------------------------|---------|---------|------|----------|---------|---------|
| 1102 | 'TD7377'                                                        | 'D7715' | 'D7716' | 1224 | 'TD7040' | 'D7545' | 'D7548' |
| 1103 | 'TD7378'                                                        | 'D7716' | 'D7711' | 1225 | 'TD7041' | 'D7549' | 'D7547' |
| 1104 | 'TD7381'                                                        | 'D7719' | 'D7720' | 1226 | 'TD7042' | 'D7548' | 'D7549' |
| 1105 | 'TD7382'                                                        | 'D7720' | 'D7721' | 1227 | 'TD7043' | 'D7550' | 'D7551' |
| 1106 | 'TD7383'                                                        | 'D7721' | 'D7722' | 1228 | 'TD7044' | 'D7552' | 'D7550' |
| 1107 | 'TD7384'                                                        | 'D7722' | 'D7717' | 1229 | 'TD7045' | 'D7553' | 'D7552' |
| 1108 | 'TD7597'                                                        | 'D7809' | 'D7810' | 1230 | 'TD7046' | 'D7551' | 'D7554' |
| 1109 | 'TD7598'                                                        | 'D7810' | 'D7811' | 1231 | 'TD7047' | 'D7555' | 'D7553' |
| 1110 | 'TD7599'                                                        | 'D7811' | 'D7812' | 1232 | 'TD7048' | 'D7554' | 'D7555' |
| 1111 | 'TD7600'                                                        | 'D7812' | 'D7807' | 1233 | 'TD7049' | 'D7556' | 'D7557' |
| 1112 | 'TD7603'                                                        | 'D7815' | 'D7816' | 1234 | 'TD7050' | 'D7558' | 'D7556' |
| 1113 | 'TD7604'                                                        | 'D7816' | 'D7817' | 1235 | 'TD7051' | 'D7559' | 'D7558' |
| 1114 | 'TD7605'                                                        | 'D7817' | 'D7818' | 1236 | 'TD7052' | 'D7557' | 'D7560' |
| 1115 | 'TD7606'                                                        | 'D7818' | 'D7813' | 1237 | 'TD7053' | 'D7561' | 'D7559' |
| 1116 | \$ END MEMBER INCIDENCES                                        |         |         | 1238 | 'TD7054' | 'D7560' | 'D7561' |
| 1117 |                                                                 |         |         | 1239 | 'TD7055' | 'D7562' | 'D7563' |
| 1118 | UNITS M                                                         |         |         | 1240 | 'TD7056' | 'D7564' | 'D7562' |
| 1119 | TYPE SPACE FRAME                                                |         |         | 1241 | 'TD7057' | 'D7563' | 'D7565' |
| 1120 | MEMBER INCIDENCES AND PROPERTIES PIPE OD 0.3239 THI 0.0286 \$ - |         |         | 1242 | 'TD7058' | 'D7565' | 'D7566' |
| 1121 | \$ WATER MASS NONFLOODED BUOYANT STRUCTURAL -                   |         |         | 1243 | 'TD7060' | 'D7538' | 'D7568' |
| 1122 | \$ DIVISION 1 THICK 0.0286 -                                    |         |         | 1244 | 'TD7061' | 'D7544' | 'D7550' |
| 1123 | \$ DIAOUT 0.3239 CDWATER 1.05 CMWATER 2.0 WT/V 0.000283         |         |         | 1245 | 'TD7062' | 'D7550' | 'D7556' |
| 1124 | 'TD6983'                                                        | 'D7481' | 'D7488' | 1246 | 'TD7063' | 'D7556' | 'D7562' |
| 1125 | 'TD6984'                                                        | 'D7488' | 'D7483' | 1247 | 'TD7065' | 'D7542' | 'D7570' |
| 1126 | 'TD6989'                                                        | 'D7487' | 'D7494' | 1248 | 'TD7066' | 'D7548' | 'D7554' |
| 1127 | 'TD6990'                                                        | 'D7494' | 'D7489' | 1249 | 'TD7067' | 'D7554' | 'D7560' |
| 1128 | 'TD6995'                                                        | 'D7493' | 'D7500' | 1250 | 'TD7068' | 'D7560' | 'D7565' |
| 1129 | 'TD6996'                                                        | 'D7500' | 'D7495' | 1251 | 'TD7071' | 'D7538' | 'D7545' |
| 1130 | 'TD7001'                                                        | 'D7499' | 'D7506' | 1252 | 'TD7072' | 'D7545' | 'D7542' |
| 1131 | 'TD7002'                                                        | 'D7506' | 'D7501' | 1253 | 'TD7073' | 'D7544' | 'D7551' |
| 1132 | 'TD7205'                                                        | 'D7577' | 'D7584' | 1254 | 'TD7074' | 'D7551' | 'D7548' |
| 1133 | 'TD7206'                                                        | 'D7584' | 'D7579' | 1255 | 'TD7075' | 'D7550' | 'D7557' |
| 1134 | 'TD7211'                                                        | 'D7583' | 'D7590' | 1256 | 'TD7076' | 'D7557' | 'D7554' |
| 1135 | 'TD7212'                                                        | 'D7590' | 'D7585' | 1257 | 'TD7077' | 'D7556' | 'D7563' |
| 1136 | 'TD7217'                                                        | 'D7589' | 'D7596' | 1258 | 'TD7078' | 'D7563' | 'D7560' |
| 1137 | 'TD7218'                                                        | 'D7596' | 'D7591' | 1259 | 'TD7080' | 'D7541' | 'D7547' |
| 1138 | 'TD7223'                                                        | 'D7595' | 'D7602' | 1260 | 'TD7081' | 'D7547' | 'D7553' |
| 1139 | 'TD7224'                                                        | 'D7602' | 'D7597' | 1261 | 'TD7082' | 'D7553' | 'D7559' |
| 1140 | 'TD7433'                                                        | 'D7675' | 'D7682' | 1262 | 'TD7085' | 'D7538' | 'D7546' |
| 1141 | 'TD7434'                                                        | 'D7682' | 'D7677' | 1263 | 'TD7086' | 'D7546' | 'D7541' |
| 1142 | 'TD7439'                                                        | 'D7681' | 'D7688' | 1264 | 'TD7087' | 'D7544' | 'D7552' |
| 1143 | 'TD7440'                                                        | 'D7688' | 'D7683' | 1265 | 'TD7088' | 'D7552' | 'D7547' |
| 1144 | 'TD7445'                                                        | 'D7687' | 'D7694' | 1266 | 'TD7089' | 'D7550' | 'D7558' |
| 1145 | 'TD7446'                                                        | 'D7694' | 'D7689' | 1267 | 'TD7090' | 'D7558' | 'D7553' |
| 1146 | 'TD7451'                                                        | 'D7693' | 'D7700' | 1268 | 'TD7091' | 'D7556' | 'D7564' |
| 1147 | 'TD7452'                                                        | 'D7700' | 'D7695' | 1269 | 'TD7092' | 'D7564' | 'D7559' |
| 1148 | 'TD7655'                                                        | 'D7771' | 'D7778' | 1270 | 'TD7095' | 'D7542' | 'D7549' |
| 1149 | 'TD7656'                                                        | 'D7778' | 'D7773' | 1271 | 'TD7096' | 'D7549' | 'D7541' |
| 1150 | 'TD7661'                                                        | 'D7777' | 'D7784' | 1272 | 'TD7097' | 'D7548' | 'D7555' |
| 1151 | 'TD7662'                                                        | 'D7784' | 'D7779' | 1273 | 'TD7098' | 'D7555' | 'D7547' |
| 1152 | 'TD7667'                                                        | 'D7783' | 'D7790' | 1274 | 'TD7099' | 'D7554' | 'D7561' |
| 1153 | 'TD7668'                                                        | 'D7790' | 'D7785' | 1275 | 'TD7100' | 'D7561' | 'D7553' |
| 1154 | 'TD7673'                                                        | 'D7789' | 'D7796' | 1276 | 'TD7101' | 'D7560' | 'D7566' |
| 1155 | 'TD7674'                                                        | 'D7796' | 'D7791' | 1277 | 'TD7102' | 'D7566' | 'D7559' |
| 1156 | \$ END MEMBER INCIDENCES                                        |         |         | 1278 | 'TD7252' | 'D7630' | 'D7619' |
| 1157 |                                                                 |         |         | 1279 | 'TD7253' | 'D7634' | 'D7635' |
| 1158 | UNITS M                                                         |         |         | 1280 | 'TD7254' | 'D7636' | 'D7634' |
| 1159 | TYPE SPACE FRAME                                                |         |         | 1281 | 'TD7255' | 'D7637' | 'D7636' |
| 1160 | MEMBER INCIDENCES AND PROPERTIES PIPE OD 0.3239 THI 0.0159 \$ - |         |         | 1282 | 'TD7256' | 'D7635' | 'D7638' |
| 1161 | \$ WATER MASS NONFLOODED BUOYANT STRUCTURAL -                   |         |         | 1283 | 'TD7257' | 'D7639' | 'D7637' |
| 1162 | \$ DIVISION 1 THICK 0.0159 -                                    |         |         | 1284 | 'TD7258' | 'D7638' | 'D7639' |
| 1163 | \$ DIAOUT 0.3239 CDWATER 1.05 CMWATER 2.0 WT/V 0.000283         |         |         | 1285 | 'TD7259' | 'D7640' | 'D7641' |
| 1164 | 'TD6893'                                                        | 'D7487' | 'D7488' | 1286 | 'TD7260' | 'D7642' | 'D7640' |
| 1165 | 'TD6894'                                                        | 'D7488' | 'D7489' | 1287 | 'TD7261' | 'D7643' | 'D7642' |
| 1166 | 'TD6899'                                                        | 'D7493' | 'D7494' | 1288 | 'TD7262' | 'D7641' | 'D7644' |
| 1167 | 'TD6900'                                                        | 'D7494' | 'D7495' | 1289 | 'TD7263' | 'D7645' | 'D7643' |
| 1168 | 'TD6905'                                                        | 'D7499' | 'D7500' | 1290 | 'TD7264' | 'D7644' | 'D7645' |
| 1169 | 'TD6906'                                                        | 'D7500' | 'D7501' | 1291 | 'TD7265' | 'D7646' | 'D7647' |
| 1170 | 'TD6923'                                                        | 'D7517' | 'D7518' | 1292 | 'TD7266' | 'D7648' | 'D7646' |
| 1171 | 'TD6924'                                                        | 'D7518' | 'D7519' | 1293 | 'TD7267' | 'D7649' | 'D7648' |
| 1172 | 'TD6929'                                                        | 'D7523' | 'D7524' | 1294 | 'TD7268' | 'D7647' | 'D7650' |
| 1173 | 'TD6930'                                                        | 'D7524' | 'D7525' | 1295 | 'TD7269' | 'D7651' | 'D7649' |
| 1174 | 'TD7115'                                                        | 'D7583' | 'D7584' | 1296 | 'TD7270' | 'D7650' | 'D7651' |
| 1175 | 'TD7116'                                                        | 'D7584' | 'D7585' | 1297 | 'TD7271' | 'D7652' | 'D7653' |
| 1176 | 'TD7121'                                                        | 'D7589' | 'D7590' | 1298 | 'TD7272' | 'D7654' | 'D7652' |
| 1177 | 'TD7122'                                                        | 'D7590' | 'D7591' | 1299 | 'TD7273' | 'D7655' | 'D7654' |
| 1178 | 'TD7127'                                                        | 'D7595' | 'D7596' | 1300 | 'TD7274' | 'D7653' | 'D7656' |
| 1179 | 'TD7128'                                                        | 'D7596' | 'D7597' | 1301 | 'TD7275' | 'D7657' | 'D7655' |
| 1180 | 'TD7145'                                                        | 'D7613' | 'D7614' | 1302 | 'TD7276' | 'D7656' | 'D7657' |
| 1181 | 'TD7146'                                                        | 'D7614' | 'D7615' | 1303 | 'TD7277' | 'D7658' | 'D7659' |
| 1182 | 'TD7151'                                                        | 'D7619' | 'D7620' | 1304 | 'TD7278' | 'D7660' | 'D7658' |
| 1183 | 'TD7152'                                                        | 'D7620' | 'D7621' | 1305 | 'TD7279' | 'D7661' | 'D7660' |
| 1184 | 'TD7343'                                                        | 'D7681' | 'D7682' | 1306 | 'TD7280' | 'D7659' | 'D7662' |
| 1185 | 'TD7344'                                                        | 'D7682' | 'D7683' | 1307 | 'TD7281' | 'D7663' | 'D7661' |
| 1186 | 'TD7349'                                                        | 'D7687' | 'D7688' | 1308 | 'TD7282' | 'D7662' | 'D7663' |
| 1187 | 'TD7350'                                                        | 'D7688' | 'D7689' | 1309 | 'TD7284' | 'D7634' | 'D7665' |
| 1188 | 'TD7355'                                                        | 'D7693' | 'D7694' | 1310 | 'TD7285' | 'D7640' | 'D7646' |
| 1189 | 'TD7356'                                                        | 'D7694' | 'D7695' | 1311 | 'TD7286' | 'D7646' | 'D7652' |
| 1190 | 'TD7373'                                                        | 'D7711' | 'D7712' | 1312 | 'TD7287' | 'D7652' | 'D7658' |
| 1191 | 'TD7374'                                                        | 'D7712' | 'D7713' | 1313 | 'TD7289' | 'D7638' | 'D7667' |
| 1192 | 'TD7379'                                                        | 'D7717' | 'D7718' | 1314 | 'TD7290' | 'D7644' | 'D7650' |
| 1193 | 'TD7380'                                                        | 'D7718' | 'D7719' | 1315 | 'TD7291' | 'D7650' | 'D7656' |
| 1194 | 'TD7565'                                                        | 'D7777' | 'D7778' | 1316 | 'TD7292' | 'D7656' | 'D7662' |
| 1195 | 'TD7566'                                                        | 'D7778' | 'D7779' | 1317 | 'TD7295' | 'D7634' | 'D7641' |
| 1196 | 'TD7571'                                                        | 'D7783' | 'D7784' | 1318 | 'TD7296' | 'D7641' | 'D7638' |
| 1197 | 'TD7572'                                                        | 'D7784' | 'D7785' | 1319 | 'TD7297' | 'D7640' | 'D7647' |
| 1198 | 'TD7577'                                                        | 'D7789' | 'D7790' | 1320 | 'TD7298' | 'D7647' | 'D7644' |
| 1199 | 'TD7578'                                                        | 'D7790' | 'D7791' | 1321 | 'TD7299' | 'D7646' | 'D7653' |
| 1200 | 'TD7595'                                                        | 'D7807' | 'D7808' | 1322 | 'TD7300' | 'D7653' | 'D7650' |
| 1201 | 'TD7596'                                                        | 'D7808' | 'D7809' | 1323 | 'TD7301' | 'D7652' | 'D7659' |
| 1202 | 'TD7601'                                                        | 'D7813' | 'D7814' | 1324 | 'TD7302' | 'D7659' | 'D7655' |
| 1203 | 'TD7602'                                                        | 'D7814' | 'D7815' | 1325 | 'TD7304' | 'D7637' | 'D7643' |
| 1204 | \$ END MEMBER INCIDENCES                                        |         |         | 1326 | 'TD7305' | 'D7643' | 'D7649' |
| 1205 |                                                                 |         |         | 1327 | 'TD7306' | 'D7649' | 'D7655' |
| 1206 | UNITS M MTON DEG FAH                                            |         |         | 1328 | 'TD7307' | 'D7655' | 'D7661' |
| 1207 | \$ \$                                                           |         |         | 1329 | 'TD7310' | 'D7634' | 'D7642' |
| 1208 | \$ \$                                                           |         |         | 1330 | 'TD7311' | 'D7642' | 'D7637' |
| 1209 | TYPE SPACE FRAME                                                |         |         | 1331 | 'TD7312' | 'D7640' | 'D7648' |
| 1209 | TYPE                                                            |         |         | 1332 | 'TD7313' | 'D7648' | 'D7643' |
| 1210 | MEMBER INCIDENCES                                               |         |         | 1333 | 'TD7314' | 'D7646' | 'D7654' |
| 1211 | 'TD6887'                                                        | 'D7481' | 'D7482' | 1334 | 'TD7315' | 'D7654' | 'D7649' |
| 1212 | 'TD6888'                                                        | 'D7482' | 'D7483' | 1335 | 'TD7316' | 'D7652' | 'D7660' |
| 1213 | 'TD6897'                                                        | 'D7491' | 'D7492' | 1336 | 'TD7317' | 'D7660' | 'D7655' |
| 1214 | 'TD6898'                                                        | 'D7492' | 'D7487' | 1337 | 'TD7320' | 'D7638' | 'D7645' |
| 1215 | 'TD7031'                                                        | 'D7538' | 'D7539' | 1338 | 'TD7321' | 'D7645' | 'D7637' |
| 1216 | 'TD7032'                                                        | 'D7540' | 'D7538' | 1339 | 'TD7322' | 'D7644' | 'D7651' |
| 1217 | 'TD7033'                                                        | 'D7541' | 'D7540' | 1340 | 'TD7323' | 'D7651' | 'D7643' |
| 1218 | 'TD7034'                                                        | 'D7539' | 'D7542' | 1341 | 'TD7324' | 'D7650' | 'D7657' |
| 1219 | 'TD7035'                                                        | 'D7543' | 'D7541' | 1342 | 'TD7325' | 'D7657' | 'D7649' |
| 1220 | 'TD7036'                                                        | 'D7542' | 'D7543' | 1343 | 'TD7326' | 'D7656' | 'D7663' |
| 1221 | 'TD7037'                                                        | 'D7544' | 'D7545' | 1344 | 'TD7327' | 'D7663' | 'D7655' |
| 1222 | 'TD7038'                                                        | 'D7546' | 'D7544' | 1345 | 'TD7328' | 'D7668' | 'D7564' |
| 1223 | 'TD7039'                                                        | 'D7547' | 'D7546' | 1346 | 'TD7329' | 'D7666' | 'D7668' |

|      |          |         |         |      |                    |                   |                                  |
|------|----------|---------|---------|------|--------------------|-------------------|----------------------------------|
| 1347 | 'TD7330' | 'D7559' | 'D7668' | 1470 | 'TD7763'           | 'D7842'           | 'D7837'                          |
| 1348 | 'TD7347' | 'D7685' | 'D7686' | 1471 | 'TD7764'           | 'D7840'           | 'D7848'                          |
| 1349 | 'TD7348' | 'D7686' | 'D7681' | 1472 | 'TD7765'           | 'D7848'           | 'D7843'                          |
| 1350 | 'TD7481' | 'D7732' | 'D7733' | 1473 | 'TD7766'           | 'D7846'           | 'D7854'                          |
| 1351 | 'TD7482' | 'D7734' | 'D7732' | 1474 | 'TD7767'           | 'D7854'           | 'D7849'                          |
| 1352 | 'TD7483' | 'D7735' | 'D7734' | 1475 | 'TD7770'           | 'D7832'           | 'D7839'                          |
| 1353 | 'TD7484' | 'D7733' | 'D7736' | 1476 | 'TD7771'           | 'D7839'           | 'D7831'                          |
| 1354 | 'TD7485' | 'D7737' | 'D7735' | 1477 | 'TD7772'           | 'D7838'           | 'D7845'                          |
| 1355 | 'TD7486' | 'D7736' | 'D7737' | 1478 | 'TD7773'           | 'D7845'           | 'D7837'                          |
| 1356 | 'TD7487' | 'D7738' | 'D7739' | 1479 | 'TD7774'           | 'D7844'           | 'D7851'                          |
| 1357 | 'TD7488' | 'D7740' | 'D7738' | 1480 | 'TD7775'           | 'D7851'           | 'D7843'                          |
| 1358 | 'TD7489' | 'D7741' | 'D7740' | 1481 | 'TD7776'           | 'D7850'           | 'D7857'                          |
| 1359 | 'TD7490' | 'D7739' | 'D7742' | 1482 | 'TD7777'           | 'D7857'           | 'D7849'                          |
| 1360 | 'TD7491' | 'D7743' | 'D7741' | 1483 | 'TD7778'           | 'D7862'           | 'D7758'                          |
| 1361 | 'TD7492' | 'D7742' | 'D7743' | 1484 | 'TD7779'           | 'D7760'           | 'D7862'                          |
| 1362 | 'TD7493' | 'D7744' | 'D7745' | 1485 | 'TD7780'           | 'D7753'           | 'D7862'                          |
| 1363 | 'TD7494' | 'D7746' | 'D7744' | 1486 | 'TD7781'           | 'D7861'           | 'D7838'                          |
| 1364 | 'TD7495' | 'D7747' | 'D7746' | 1487 | 'TD7782'           | 'D7568'           | 'D7544'                          |
| 1365 | 'TD7496' | 'D7745' | 'D7748' | 1488 | 'TD7783'           | 'D7860'           | 'D7832'                          |
| 1366 | 'TD7497' | 'D7749' | 'D7747' | 1489 | 'TD7784'           | 'D7567'           | 'D7538'                          |
| 1367 | 'TD7498' | 'D7748' | 'D7749' | 1490 | 'TD7785'           | 'D7859'           | 'D7834'                          |
| 1368 | 'TD7499' | 'D7750' | 'D7751' | 1491 | 'TD7786'           | 'D7858'           | 'D7828'                          |
| 1369 | 'TD7500' | 'D7752' | 'D7750' | 1492 | 'TD7787'           | 'D7570'           | 'D7548'                          |
| 1370 | 'TD7501' | 'D7753' | 'D7752' | 1493 | 'TD7788'           | 'D7569'           | 'D7542'                          |
| 1371 | 'TD7502' | 'D7751' | 'D7754' | 1494 | 'TD7789'           | 'D7762'           | 'D7738'                          |
| 1372 | 'TD7503' | 'D7755' | 'D7753' | 1495 | 'TD7790'           | 'D7761'           | 'D7732'                          |
| 1373 | 'TD7504' | 'D7754' | 'D7755' | 1496 | 'TD7791'           | 'D7666'           | 'D7638'                          |
| 1374 | 'TD7505' | 'D7756' | 'D7757' | 1497 | 'TD7792'           | 'D7667'           | 'D7644'                          |
| 1375 | 'TD7506' | 'D7758' | 'D7756' | 1498 | 'TD7793'           | 'D7665'           | 'D7640'                          |
| 1376 | 'TD7507' | 'D7757' | 'D7759' | 1499 | 'TD7794'           | 'D7664'           | 'D7634'                          |
| 1377 | 'TD7508' | 'D7759' | 'D7760' | 1500 | 'TD7795'           | 'D7763'           | 'D7736'                          |
| 1378 | 'TD7510' | 'D7732' | 'D7762' | 1501 | 'TD7796'           | 'D7764'           | 'D7742'                          |
| 1379 | 'TD7511' | 'D7738' | 'D7744' | 1502 | \$ \$              |                   |                                  |
| 1380 | 'TD7512' | 'D7744' | 'D7750' | 1503 | \$ \$              |                   |                                  |
| 1381 | 'TD7513' | 'D7750' | 'D7756' | 1504 | \$ \$              |                   |                                  |
| 1382 | 'TD7515' | 'D7736' | 'D7764' | 1505 | \$ \$              |                   |                                  |
| 1383 | 'TD7516' | 'D7742' | 'D7748' | 1506 | UNITS M            | MTON DEG FAH      |                                  |
| 1384 | 'TD7517' | 'D7748' | 'D7754' | 1507 | STATUS SUPPORT     | -                 |                                  |
| 1385 | 'TD7518' | 'D7754' | 'D7759' | 4257 | 'D7535'            | 'D7536'           | 'D7537'                          |
| 1386 | 'TD7521' | 'D7732' | 'D7739' | 4258 | 'D7633'            | 'D7729'           | 'D7730'                          |
| 1387 | 'TD7522' | 'D7739' | 'D7736' | 4259 | 'D7826'            | 'D7827'           | 'D7731'                          |
| 1388 | 'TD7523' | 'D7738' | 'D7745' | 4260 | \$ \$              |                   |                                  |
| 1389 | 'TD7524' | 'D7745' | 'D7742' | 4261 | \$ \$              |                   |                                  |
| 1390 | 'TD7525' | 'D7744' | 'D7751' | 4262 | UNITS M            | MTON DEG FAH      |                                  |
| 1391 | 'TD7526' | 'D7751' | 'D7748' | 4263 | \$ \$              |                   |                                  |
| 1392 | 'TD7527' | 'D7750' | 'D7757' | 4264 | CONSTANTS          |                   |                                  |
| 1393 | 'TD7528' | 'D7757' | 'D7754' | 4265 | BETA 0.0000000E+00 | ALL               |                                  |
| 1394 | 'TD7530' | 'D7735' | 'D7741' | 4270 | E 2.0389062E+07    | ALL               |                                  |
| 1395 | 'TD7531' | 'D7741' | 'D7747' | 4271 | G 7.7337830E+06    | ALL               |                                  |
| 1396 | 'TD7532' | 'D7747' | 'D7753' | 4272 | POI 3.0000001E-01  | ALL               |                                  |
| 1397 | 'TD7535' | 'D7732' | 'D7740' | 4273 | DEN 7.8417387E+00  | ALL               |                                  |
| 1398 | 'TD7536' | 'D7740' | 'D7735' | 4274 | CTE 6.4999999E-06  | ALL               |                                  |
| 1399 | 'TD7537' | 'D7738' | 'D7746' | 4275 | E 2.0399996E+07    | -                 |                                  |
| 1400 | 'TD7538' | 'D7746' | 'D7741' | 4276 | 'TD7513'           |                   |                                  |
| 1401 | 'TD7539' | 'D7744' | 'D7752' | 4277 | G 7.7299980E+06    | -                 |                                  |
| 1402 | 'TD7540' | 'D7752' | 'D7747' | 4278 | 'TD7513'           |                   |                                  |
| 1403 | 'TD7541' | 'D7750' | 'D7747' | 4279 | POI 3.0000001E-01  | -                 |                                  |
| 1404 | 'TD7542' | 'D7758' | 'D7753' | 4280 | 'TD7513'           |                   |                                  |
| 1405 | 'TD7545' | 'D7736' | 'D7743' | 4281 | DEN 1.4012873E-39  | -                 |                                  |
| 1406 | 'TD7546' | 'D7743' | 'D7735' | 4282 | 'TD7513'           |                   |                                  |
| 1407 | 'TD7547' | 'D7742' | 'D7749' | 4283 | CTE 6.4999999E-06  | -                 |                                  |
| 1408 | 'TD7548' | 'D7749' | 'D7741' | 4284 | 'TD7513'           |                   |                                  |
| 1409 | 'TD7549' | 'D7748' | 'D7755' | 4285 | \$ \$              |                   |                                  |
| 1410 | 'TD7550' | 'D7755' | 'D7747' | 4286 | \$ \$              |                   |                                  |
| 1411 | 'TD7551' | 'D7754' | 'D7760' | 4287 | \$ \$              |                   |                                  |
| 1412 | 'TD7552' | 'D7760' | 'D7753' | 4288 | UNITS M            | MTON DEG          |                                  |
| 1413 | 'TD7643' | 'D7825' | 'D7766' | 4289 | \$ \$              |                   |                                  |
| 1414 | 'TD7644' | 'D7766' | 'D7827' | 4290 | LOADING            | 'Anode-1'         | 'Anode typel W=148kg             |
| 1415 | 'TD7685' | 'D7801' | 'D7808' | 4291 | \$ \$              |                   |                                  |
| 1416 | 'TD7686' | 'D7808' | 'D7803' | 4292 | MEMB LOADS         | FOR Y GLO CON FRA | P -1.4800000E-01 L 5.0000000E-01 |
| 1417 | 'TD7703' | 'D7828' | 'D7829' | 4293 | 'TD6881'           | 'TD6882'          | 'TD6885'                         |
| 1418 | 'TD7704' | 'D7830' | 'D7828' | 4294 | 'TD6887'           | 'TD6888'          | 'TD6889'                         |
| 1419 | 'TD7705' | 'D7831' | 'D7830' | 4295 | 'TD6892'           | 'TD6893'          | 'TD6895'                         |
| 1420 | 'TD7706' | 'D7829' | 'D7832' | 4296 | 'TD6897'           | 'TD6898'          | 'TD6899'                         |
| 1421 | 'TD7707' | 'D7833' | 'D7831' | 4297 | 'TD6902'           | 'TD6903'          | 'TD6905'                         |
| 1422 | 'TD7708' | 'D7832' | 'D7833' | 4298 | 'TD6907'           | 'TD6908'          | 'TD6909'                         |
| 1423 | 'TD7709' | 'D7834' | 'D7835' | 4299 | 'TD6912'           | 'TD6913'          | 'TD6914'                         |
| 1424 | 'TD7710' | 'D7836' | 'D7834' | 4300 | 'TD6917'           | 'TD6918'          | 'TD6919'                         |
| 1425 | 'TD7711' | 'D7837' | 'D7836' | 4301 | 'TD6922'           | 'TD6923'          | 'TD6924'                         |
| 1426 | 'TD7712' | 'D7835' | 'D7838' | 4302 | 'TD6927'           | 'TD6928'          | 'TD6929'                         |
| 1427 | 'TD7713' | 'D7839' | 'D7837' | 4303 | 'TD6932'           | 'TD6933'          | 'TD6934'                         |
| 1428 | 'TD7714' | 'D7838' | 'D7839' | 4304 | 'TD6943'           | 'TD6944'          | 'TD6945'                         |
| 1429 | 'TD7715' | 'D7840' | 'D7841' | 4305 | 'TD6948'           | 'TD6949'          | 'TD6950'                         |
| 1430 | 'TD7716' | 'D7842' | 'D7840' | 4306 | 'TD6953'           | 'TD6954'          | 'TD6955'                         |
| 1431 | 'TD7717' | 'D7843' | 'D7842' | 4307 | 'TD6958'           | 'TD6959'          | 'TD6960'                         |
| 1432 | 'TD7718' | 'D7841' | 'D7844' | 4308 | 'TD6963'           | 'TD6964'          | 'TD6965'                         |
| 1433 | 'TD7719' | 'D7845' | 'D7843' | 4309 | 'TD6968'           | 'TD6969'          | 'TD6970'                         |
| 1434 | 'TD7720' | 'D7844' | 'D7845' | 4310 | 'TD6973'           | 'TD6974'          | 'TD6975'                         |
| 1435 | 'TD7721' | 'D7846' | 'D7847' | 4311 | 'TD6978'           | 'TD6979'          | 'TD6980'                         |
| 1436 | 'TD7722' | 'D7848' | 'D7846' | 4312 | 'TD6984'           | 'TD6985'          | 'TD6986'                         |
| 1437 | 'TD7723' | 'D7849' | 'D7848' | 4313 | 'TD6988'           | 'TD6989'          | 'TD6990'                         |
| 1438 | 'TD7724' | 'D7847' | 'D7850' | 4314 | 'TD6993'           | 'TD6994'          | 'TD6995'                         |
| 1439 | 'TD7725' | 'D7851' | 'D7849' | 4315 | 'TD6998'           | 'TD6999'          | 'TD7000'                         |
| 1440 | 'TD7726' | 'D7850' | 'D7851' | 4316 | 'TD7003'           | 'TD7004'          | 'TD7005'                         |
| 1441 | 'TD7727' | 'D7852' | 'D7853' | 4317 | 'TD7008'           | 'TD7009'          | 'TD7010'                         |
| 1442 | 'TD7728' | 'D7854' | 'D7852' | 4318 | 'TD7013'           | 'TD7014'          | 'TD7015'                         |
| 1443 | 'TD7729' | 'D7855' | 'D7854' | 4319 | 'TD7018'           | 'TD7019'          | 'TD7020'                         |
| 1444 | 'TD7730' | 'D7853' | 'D7856' | 4320 | 'TD7023'           | 'TD7024'          | 'TD7025'                         |
| 1445 | 'TD7731' | 'D7857' | 'D7855' | 4321 | 'TD7028'           | 'TD7029'          | 'TD7030'                         |
| 1446 | 'TD7732' | 'D7856' | 'D7857' | 4322 | 'TD7105'           | 'TD7106'          | 'TD7107'                         |
| 1447 | 'TD7734' | 'D7828' | 'D7859' | 4323 | 'TD7110'           | 'TD7111'          | 'TD7109'                         |
| 1448 | 'TD7735' | 'D7834' | 'D7840' | 4324 | 'TD7115'           | 'TD7116'          | 'TD7113'                         |
| 1449 | 'TD7736' | 'D7840' | 'D7846' | 4325 | 'TD7120'           | 'TD7121'          | 'TD7118'                         |
| 1450 | 'TD7737' | 'D7846' | 'D7852' | 4326 | 'TD7125'           | 'TD7126'          | 'TD7122'                         |
| 1451 | 'TD7739' | 'D7832' | 'D7861' | 4327 | 'TD7130'           | 'TD7131'          | 'TD7128'                         |
| 1452 | 'TD7740' | 'D7838' | 'D7844' | 4328 | 'TD7135'           | 'TD7136'          | 'TD7132'                         |
| 1453 | 'TD7741' | 'D7844' | 'D7850' | 4329 | 'TD7140'           | 'TD7141'          | 'TD7137'                         |
| 1454 | 'TD7742' | 'D7850' | 'D7856' | 4330 | 'TD7145'           | 'TD7146'          | 'TD7142'                         |
| 1455 | 'TD7745' | 'D7828' | 'D7835' | 4331 | 'TD7150'           | 'TD7151'          | 'TD7147'                         |
| 1456 | 'TD7746' | 'D7835' | 'D7832' | 4332 | 'TD7155'           | 'TD7156'          | 'TD7153'                         |
| 1457 | 'TD7747' | 'D7834' | 'D7841' | 4333 | 'TD7160'           | 'TD7161'          | 'TD7157'                         |
| 1458 | 'TD7748' | 'D7841' | 'D7838' | 4334 | 'TD7171'           | 'TD7172'          | 'TD7163'                         |
| 1459 | 'TD7749' | 'D7840' | 'D7847' | 4335 | 'TD7176'           | 'TD7177'          | 'TD7168'                         |
| 1460 | 'TD7750' | 'D7847' | 'D7844' | 4336 | 'TD7181'           | 'TD7182'          | 'TD7173'                         |
| 1461 | 'TD7751' | 'D7846' | 'D7853' | 4337 | 'TD7187'           | 'TD7188'          | 'TD7177'                         |
| 1462 | 'TD7752' | 'D7853' | 'D7850' | 4338 | 'TD7191'           | 'TD7192'          | 'TD7183'                         |
| 1463 | 'TD7754' | 'D7831' | 'D7837' | 4339 | 'TD7196'           | 'TD7197'          | 'TD7188'                         |
| 1464 | 'TD7755' | 'D7837' | 'D7843' | 4340 | 'TD7201'           | 'TD7202'          | 'TD7193'                         |
| 1465 | 'TD7756' | 'D7843' | 'D7849' | 4341 | 'TD7206'           | 'TD7207'          | 'TD7198'                         |
| 1466 | 'TD7757' | 'D7849' | 'D7855' | 4342 | 'TD7211'           | 'TD7212'          | 'TD7203'                         |
| 1467 | 'TD7760' | 'D7828' | 'D7836' | 4343 | 'TD7216'           | 'TD7217'          | 'TD7207'                         |
| 1468 | 'TD7761' | 'D7836' | 'D7831' | 4344 | 'TD7221'           | 'TD7222'          | 'TD7213'                         |
| 1469 | 'TD7762' | 'D7834' | 'D7842' | 4345 | 'TD7226'           | 'TD7227'          | 'TD7218'                         |

|      |                                                               |                |          |               |          |      |                                                             |
|------|---------------------------------------------------------------|----------------|----------|---------------|----------|------|-------------------------------------------------------------|
| 4346 | 'TD7231'                                                      | 'TD7232'       | 'TD7233' | 'TD7234'      | 'TD7235' | 4426 | PARAMETERS                                                  |
| 4347 | 'TD7236'                                                      | 'TD7237'       | 'TD7238' | 'TD7239'      | 'TD7240' | 4427 | \$\$                                                        |
| 4348 | 'TD7241'                                                      | 'TD7242'       | 'TD7243' | 'TD7244'      | 'TD7245' | 4428 | \$\$ Steel Design Parameters with Standard Values           |
| 4349 | 'TD7246'                                                      | 'TD7247'       | 'TD7248' | 'TD7249'      | 'TD7250' | 4429 | \$\$                                                        |
| 4350 | 'TD7251'                                                      | 'TD7252'       | 'TD7331' | 'TD7332'      | 'TD7333' | 4430 | CODE                                                        |
| 4351 | 'TD7334'                                                      | 'TD7335'       | 'TD7336' | 'TD7337'      | 'TD7338' | 4431 | CHECK                                                       |
| 4352 | 'TD7339'                                                      | 'TD7340'       | 'TD7341' | 'TD7342'      | 'TD7343' | 4432 | APIWSD20 ALL                                                |
| 4353 | 'TD7344'                                                      | 'TD7345'       | 'TD7346' | 'TD7347'      | 'TD7348' | 4433 | 1.00000 ALL                                                 |
| 4354 | 'TD7349'                                                      | 'TD7350'       | 'TD7351' | 'TD7352'      | 'TD7353' | 4434 | \$ UNITS M                                                  |
| 4355 | 'TD7354'                                                      | 'TD7355'       | 'TD7356' | 'TD7357'      | 'TD7358' | 4435 | \$ INITIAL CONDITIONS                                       |
| 4356 | 'TD7359'                                                      | 'TD7360'       | 'TD7361' | 'TD7362'      | 'TD7363' | 4436 | \$ JNT2 1.0 0.0 0.0 JNT3 0.0 0.0 -1.0 -                     |
| 4357 | 'TD7364'                                                      | 'TD7365'       | 'TD7366' | 'TD7367'      | 'TD7368' | 4437 | \$ LINEAR DISPLACEMENT ORIGIN X 22.7 Y -80.1 Z 26.13        |
| 4358 | 'TD7369'                                                      | 'TD7370'       | 'TD7371' | 'TD7372'      | 'TD7373' | 4438 | \$ UNITS M SECONDS DEGREES                                  |
| 4359 | 'TD7374'                                                      | 'TD7375'       | 'TD7376' | 'TD7377'      | 'TD7378' | 4439 | \$ WAVE STOKES FIFTH                                        |
| 4360 | 'TD7379'                                                      | 'TD7380'       | 'TD7381' | 'TD7382'      | 'TD7383' | 4440 | \$ CURRENT DATA STRETCH                                     |
| 4361 | 'TD7384'                                                      | 'TD7391'       | 'TD7392' | 'TD7393'      | 'TD7394' | 4441 | \$ DEPTH 0.0 40.05 80.1                                     |
| 4362 | 'TD7395'                                                      | 'TD7396'       | 'TD7397' | 'TD7398'      | 'TD7399' | 4442 | \$ VELOCITY 0.6 0.5 0.5                                     |
| 4363 | 'TD7400'                                                      | 'TD7401'       | 'TD7402' | 'TD7403'      | 'TD7404' | 4443 | \$ DIRECTION 45.0                                           |
| 4364 | 'TD7405'                                                      | 'TD7406'       | 'TD7407' | 'TD7408'      | 'TD7409' | 4444 | \$ UNITS M SEC                                              |
| 4365 | 'TD7410'                                                      | 'TD7411'       | 'TD7412' | 'TD7413'      | 'TD7414' | 4445 | \$ EXECUTE STEP WAVE LOADINGS TYPE STRUCTURE FIXED -        |
| 4366 | 'TD7415'                                                      | 'TD7416'       | 'TD7417' | 'TD7418'      | 'TD7419' | 4446 | \$ DEAD LOAD COMPUTE CONSISTENT WITH ORIENTATION -          |
| 4367 | 'TD7420'                                                      | 'TD7421'       | 'TD7422' | 'TD7423'      | 'TD7424' | 4447 | \$ COMPUTE LOADING WITH MAXIMUM BASE SHEAR -                |
| 4368 | 'TD7425'                                                      | 'TD7426'       | 'TD7427' | 'TD7428'      | 'TD7429' | 4448 | \$ MAXIMUM OVERTURNING MOMENT AT 22.7 -80.1 26.13           |
| 4369 | 'TD7430'                                                      | 'TD7431'       | 'TD7432' | 'TD7433'      | 'TD7434' | 4449 | \$ WAVE WIND LIST                                           |
| 4370 | 'TD7435'                                                      | 'TD7436'       | 'TD7437' | 'TD7438'      | 'TD7439' | 4450 | \$ 'EX45' HEIGHT 6.0 PERIOD 8.5 DEPTH 80.1 DIRECTION 45.0 - |
| 4371 | 'TD7440'                                                      | 'TD7441'       | 'TD7442' | 'TD7443'      | 'TD7444' | 4451 | \$ FROM -5.25 TO 5.25 INCREMENT 0.25                        |
| 4372 | 'TD7445'                                                      | 'TD7446'       | 'TD7447' | 'TD7448'      | 'TD7449' | 4452 | \$ END WAVE WIND LIST                                       |
| 4373 | 'TD7450'                                                      | 'TD7451'       | 'TD7452' | 'TD7453'      | 'TD7454' | 4453 | \$ SELOS PLOTS                                              |
| 4374 | 'TD7455'                                                      | 'TD7456'       | 'TD7457' | 'TD7458'      | 'TD7459' | 4454 | \$ PLOT 3D RIGID POSITIONS AT TIMES -4.0 -2.0 0.0 2.0 4.0 - |
| 4375 | 'TD7460'                                                      | 'TD7461'       | 'TD7462' | 'TD7463'      | 'TD7464' | 4455 | \$ VIEWER POSITION 0 -5.0 5.0                               |
| 4376 | 'TD7465'                                                      | 'TD7466'       | 'TD7467' | 'TD7468'      | 'TD7469' | 4456 | \$ OVERLAY WAVE SURFACE FULL WAVE LENGTH                    |
| 4377 | 'TD7470'                                                      | 'TD7471'       | 'TD7472' | 'TD7473'      | 'TD7474' | 4457 | \$ TITLE                                                    |
| 4378 | 'TD7475'                                                      | 'TD7476'       | 'TD7477' | 'TD7478'      | 'TD7479' | 4458 | \$ 'MOGPU WAVE LOAD'                                        |
| 4379 | 'TD7480'                                                      | 'TD7553'       | 'TD7554' | 'TD7555'      | 'TD7556' | 4459 | \$ FINISH                                                   |
| 4380 | 'TD7557'                                                      | 'TD7558'       | 'TD7559' | 'TD7560'      | 'TD7561' | 4460 | **** GTSSELOS NEUTRAL PLOT FILE INITIALIZATION.             |
| 4381 | 'TD7562'                                                      | 'TD7563'       | 'TD7564' | 'TD7565'      | 'TD7566' |      | NORMAL TERMINATION FROM GTSSELOS                            |
| 4382 | 'TD7567'                                                      | 'TD7568'       | 'TD7569' | 'TD7570'      | 'TD7571' |      |                                                             |
| 4383 | 'TD7572'                                                      | 'TD7573'       | 'TD7574' | 'TD7575'      | 'TD7576' |      |                                                             |
| 4384 | 'TD7577'                                                      | 'TD7578'       | 'TD7579' | 'TD7580'      | 'TD7581' |      |                                                             |
| 4385 | 'TD7582'                                                      | 'TD7583'       | 'TD7584' | 'TD7585'      | 'TD7586' | 4424 | EXTREM CONDITION AT 90 DEGREE                               |
| 4386 | 'TD7587'                                                      | 'TD7588'       | 'TD7589' | 'TD7590'      | 'TD7591' | 4425 | UNITS M                                                     |
| 4387 | 'TD7592'                                                      | 'TD7593'       | 'TD7594' | 'TD7595'      | 'TD7596' | 4426 | MTON DEG FAH                                                |
| 4388 | 'TD7597'                                                      | 'TD7598'       | 'TD7599' | 'TD7600'      | 'TD7601' | 4427 | PARAMETERS                                                  |
| 4389 | 'TD7602'                                                      | 'TD7603'       | 'TD7604' | 'TD7605'      | 'TD7606' | 4428 | \$\$                                                        |
| 4390 | 'TD7613'                                                      | 'TD7614'       | 'TD7615' | 'TD7616'      | 'TD7617' | 4429 | \$\$ Steel Design Parameters with Standard Values           |
| 4391 | 'TD7618'                                                      | 'TD7619'       | 'TD7620' | 'TD7621'      | 'TD7622' | 4430 | CODE                                                        |
| 4392 | 'TD7623'                                                      | 'TD7624'       | 'TD7625' | 'TD7626'      | 'TD7627' | 4431 | CHECK                                                       |
| 4393 | 'TD7628'                                                      | 'TD7629'       | 'TD7630' | 'TD7631'      | 'TD7632' | 4432 | APIWSD20 ALL                                                |
| 4394 | 'TD7633'                                                      | 'TD7634'       | 'TD7635' | 'TD7636'      | 'TD7637' | 4433 | 1.00000 ALL                                                 |
| 4395 | 'TD7638'                                                      | 'TD7639'       | 'TD7640' | 'TD7641'      | 'TD7642' | 4434 | \$ UNITS M                                                  |
| 4396 | 'TD7643'                                                      | 'TD7644'       | 'TD7645' | 'TD7646'      | 'TD7647' | 4435 | \$ INITIAL CONDITIONS                                       |
| 4397 | 'TD7648'                                                      | 'TD7649'       | 'TD7650' | 'TD7651'      | 'TD7652' | 4436 | \$ JNT2 1.0 0.0 0.0 JNT3 0.0 0.0 -1.0 -                     |
| 4398 | 'TD7653'                                                      | 'TD7654'       | 'TD7655' | 'TD7656'      | 'TD7657' | 4437 | \$ LINEAR DISPLACEMENT ORIGIN X 22.7 Y -80.1 Z 26.13        |
| 4399 | 'TD7658'                                                      | 'TD7659'       | 'TD7660' | 'TD7661'      | 'TD7662' | 4438 | \$ UNITS M SECONDS DEGREES                                  |
| 4400 | 'TD7663'                                                      | 'TD7664'       | 'TD7665' | 'TD7666'      | 'TD7667' | 4439 | \$ WAVE STOKES FIFTH                                        |
| 4401 | 'TD7668'                                                      | 'TD7669'       | 'TD7670' | 'TD7671'      | 'TD7672' | 4440 | \$ CURRENT DATA STRETCH                                     |
| 4402 | 'TD7673'                                                      | 'TD7674'       | 'TD7675' | 'TD7676'      | 'TD7677' | 4441 | \$ DEPTH 0.0 40.05 80.1                                     |
| 4403 | 'TD7678'                                                      | 'TD7679'       | 'TD7680' | 'TD7681'      | 'TD7682' | 4442 | \$ VELOCITY 0.9 0.6 0.6                                     |
| 4404 | 'TD7683'                                                      | 'TD7684'       | 'TD7685' | 'TD7686'      | 'TD7687' | 4443 | \$ DIRECTION 90.0                                           |
| 4405 | 'TD7688'                                                      | 'TD7689'       | 'TD7690' | 'TD7691'      | 'TD7692' | 4444 | \$ UNITS M SEC                                              |
| 4406 | 'TD7693'                                                      | 'TD7694'       | 'TD7695' | 'TD7696'      | 'TD7697' | 4445 | \$ EXECUTE STEP WAVE LOADINGS TYPE STRUCTURE FIXED -        |
| 4407 | 'TD7698'                                                      | 'TD7699'       | 'TD7700' | 'TD7701'      | 'TD7702' | 4446 | \$ DEAD LOAD COMPUTE CONSISTENT WITH ORIENTATION -          |
| 4408 | MEMB LOADS FOR Y GLO CON FRA P -1.4800000E-01 L 5.0000000E-01 |                |          |               |          | 4447 | \$ COMPUTE LOADING WITH MAXIMUM BASE SHEAR -                |
| 4409 | 'TD6883'                                                      |                |          |               |          | 4448 | \$ MAXIMUM OVERTURNING MOMENT AT 22.7 -80.1 26.13           |
| 4410 | UNITS M                                                       | MTON           | DEG      | FAH           |          | 4449 | \$ WAVE WIND LIST                                           |
| 4411 | SELF WEIGHT                                                   | 'SW'           |          | 'Self Weight' | -        | 4450 | \$ 'EX90' HEIGHT 9.2 PERIOD 9.8 DEPTH 80.1 DIRECTION 90.0 - |
| 4412 | DIRECTION -Y                                                  | FACTOR         | 1.000    | ALL MEMBERS   |          | 4451 | \$ FROM -5.25 TO 5.25 INCREMENT 0.25                        |
| 4413 | UNITS M                                                       | MTON           | DEG      | FAH           |          | 4452 | \$ END WAVE WIND LIST                                       |
| 4414 | LOADING                                                       | 'DL'           |          | 'Deck Load'   |          | 4453 | \$ SELOS PLOTS                                              |
| 4415 | JOINT LOADS FOR Y                                             | -5.2040000E+03 |          |               |          | 4454 | \$ PLOT 3D RIGID POSITIONS AT TIMES -4.0 -2.0 0.0 2.0 4.0 - |
| 4416 | 'MD'                                                          |                |          |               |          | 4455 | \$ VIEWER POSITION 0 -5.0 5.0                               |
| 4417 | MEMB LOADS FOR Y GLO CON FRA P -1.4800000E-01 L 5.0000000E-01 |                |          |               |          | 4456 | \$ OVERLAY WAVE SURFACE FULL WAVE LENGTH                    |
| 4418 | UNITS M                                                       | MTON           | DEG      | FAH           |          | 4457 | \$ TITLE                                                    |
| 4419 | LOADING                                                       | 'DL'           |          | 'Deck Load'   |          | 4458 | \$ 'MOGPU WAVE LOAD'                                        |
| 4420 | JOINT LOADS FOR Y                                             | -5.2040000E+03 |          |               |          | 4459 | \$ FINISH                                                   |
| 4421 | 'MD'                                                          |                |          |               |          | 4460 | **** GTSSELOS NEUTRAL PLOT FILE INITIALIZATION.             |
| 4422 | MEMB LOADS FOR Y GLO CON FRA P -1.4800000E-01 L 5.0000000E-01 |                |          |               |          |      | NORMAL TERMINATION FROM GTSSELOS                            |
| 4423 | UNITS M                                                       | MTON           | DEG      | FAH           |          |      |                                                             |

|      |                                                          |          |     |     |
|------|----------------------------------------------------------|----------|-----|-----|
| 4424 | UNITS M                                                  | MTON     | DEG | FAH |
| 4425 | PARAMETERS                                               |          |     |     |
| 4426 | Steel Design Parameters with Standard Values             |          |     |     |
| 4427 | CODE                                                     | APIWSD20 | ALL |     |
| 4428 | CHECK                                                    | 1.00000  | ALL |     |
| 4429 | UNITS M                                                  |          |     |     |
| 4430 | INITIAL CONDITIONS                                       |          |     |     |
| 4431 | JNT2 1.0 0.0 0.0 JNT3 0.0 0.0 -1.0 -                     |          |     |     |
| 4432 | LINEAR DISPLACEMENT ORIGIN X 22.7 Y -80.1 Z 26.13        |          |     |     |
| 4433 | UNITS M SECONDS DEGREES                                  |          |     |     |
| 4434 | WAVE STOKES FIFTH                                        |          |     |     |
| 4435 | CURRENT DATA STRETCH                                     |          |     |     |
| 4436 | DEPTH 0.0 40.05 80.1                                     |          |     |     |
| 4437 | VELOCITY 0.8 0.6 0.6                                     |          |     |     |
| 4438 | DIRECTION 0.0                                            |          |     |     |
| 4439 | UNITS M SEC                                              |          |     |     |
| 4440 | EXECUTE STEP WAVE LOADINGS TYPE STRUCTURE FIXED -        |          |     |     |
| 4441 | DEAD LOAD COMPUTE CONSISTENT WITH ORIENTATION -          |          |     |     |
| 4442 | COMPUTE LOADING WITH MAXIMUM BASE SHEAR -                |          |     |     |
| 4443 | MAXIMUM OVERTURNING MOMENT AT 22.7 -80.1 26.13           |          |     |     |
| 4444 | WAVE WIND LIST                                           |          |     |     |
| 4445 | 'EX0' HEIGHT 3.8 PERIOD 7.1 DEPTH 80.1 DIRECTION 0.0 -   |          |     |     |
| 4446 | FROM -5.25 TO 5.25 INCREMENT 0.25                        |          |     |     |
| 4447 | END WAVE WIND LIST                                       |          |     |     |
| 4448 | SELOS PLOTS                                              |          |     |     |
| 4449 | PLOT 3D RIGID POSITIONS AT TIMES -4.0 -2.0 0.0 2.0 4.0 - |          |     |     |
| 4450 | VIEWER POSITION 0 -5.0 5.0                               |          |     |     |
| 4451 | OVERLAY WAVE SURFACE FULL WAVE LENGTH                    |          |     |     |
| 4452 | TITLE                                                    |          |     |     |
| 4453 | 'MOGPU WAVE LOAD'                                        |          |     |     |
| 4454 | FINISH                                                   |          |     |     |

|      |                                                            |          |     |     |
|------|------------------------------------------------------------|----------|-----|-----|
| 4424 | UNITS M                                                    | MTON     | DEG | FAH |
| 4425 | PARAMETERS                                                 |          |     |     |
| 4426 | Steel Design Parameters with Standard Values               |          |     |     |
| 4427 | CODE                                                       | APIWSD20 | ALL |     |
| 4428 | CHECK                                                      | 1.00000  | ALL |     |
| 4429 | UNITS M                                                    |          |     |     |
| 4430 | INITIAL CONDITIONS                                         |          |     |     |
| 4431 | JNT2 1.0 0.0 0.0 JNT3 0.0 0.0 -1.0 -                       |          |     |     |
| 4432 | LINEAR DISPLACEMENT ORIGIN X 22.7 Y -80.1 Z 26.13          |          |     |     |
| 4433 | UNITS M SECONDS DEGREES                                    |          |     |     |
| 4434 | WAVE STOKES FIFTH                                          |          |     |     |
| 4435 | CURRENT DATA STRETCH                                       |          |     |     |
| 4436 | DEPTH 0.0 40.05 80.1                                       |          |     |     |
| 4437 | VELOCITY 0.9 0.6 0.6                                       |          |     |     |
| 4438 | DIRECTION 135.0                                            |          |     |     |
| 4439 | UNITS M SEC                                                |          |     |     |
| 4440 | EXECUTE STEP WAVE LOADINGS TYPE STRUCTURE FIXED -          |          |     |     |
| 4441 | DEAD LOAD COMPUTE CONSISTENT WITH ORIENTATION -            |          |     |     |
| 4442 | COMPUTE LOADING WITH MAXIMUM BASE SHEAR -                  |          |     |     |
| 4443 | MAXIMUM OVERTURNING MOMENT AT 22.7 -80.1 26.13             |          |     |     |
| 4444 | WAVE WIND LIST                                             |          |     |     |
| 4445 | 'EX135' HEIGHT 9.2 PERIOD 9.8 DEPTH 80.1 DIRECTION 135.0 - |          |     |     |
| 4446 | FROM -5.25 TO 5.25 INCREMENT 0.25                          |          |     |     |
| 4447 | END WAVE WIND LIST                                         |          |     |     |
| 4448 | SELOS PLOTS                                                |          |     |     |
| 4449 | PLOT 3D RIGID POSITIONS AT TIMES -4.0 -2.0 0.0 2.0 4.0 -   |          |     |     |
| 4450 | VIEWER POSITION 0 -5.0 5.0                                 |          |     |     |
| 4451 | OVERLAY WAVE SURFACE FULL WAVE LENGTH                      |          |     |     |
| 4452 | TITLE                                                      |          |     |     |
| 4453 | 'MOGPU WAVE LOAD'                                          |          |     |     |
| 4454 | FINISH                                                     |          |     |     |

|      |            |      |     |     |
|------|------------|------|-----|-----|
| 4424 | UNITS M    | MTON | DEG | FAH |
| 4425 | PARAMETERS |      |     |     |

|      |            |      |     |     |
|------|------------|------|-----|-----|
| 4424 | UNITS M    | MTON | DEG | FAH |
| 4425 | PARAMETERS |      |     |     |

```

4426 PARAMETERS
4427 $$
4428 $$ Steel Design Parameters with Standard Values
4429 $$
4430 CODE APIWSD20 ALL
4431 CHECK 1.00000 ALL
4432 $ UNITS M
4433 $ INITIAL CONDITIONS
4434 $ JNT2 1.0 0.0 0.0 JNT3 0.0 0.0 -1.0 -
4435 $ LINEAR DISPLACEMENT ORIGIN X 22.7 Y -80.1 Z 26.13
4436 $ UNITS M SECONDS DEGREES
4437 $ WAVE STOKES FIFTH
4438
4439 $ CURRENT DATA STRETCH
4440 $ DEPTH 0.0 40.05 80.1
4441 $ VELOCITY 0.7 0.5 0.5
4442 $ DIRECTION 0.0
4443
4444 $ UNITS M SEC
4445 $ EXECUTE STEP WAVE LOADINGS TYPE STRUCTURE FIXED -
4446 $ DEAD LOAD COMPUTE CONSISTENT WITH ORIENTATION -
4447 $ COMPUTE LOADING WITH MAXIMUM BASE SHEAR -
4448 $ MAXIMUM OVERTUNING MOMENT AT 22.7 -80.1 26.13
4449 $ WAVE WIND LIST
4450 $ 'OP0' HEIGHT 2.0 PERIOD 5.1 DEPTH 80.1 DIRECTION 0.0 -
4451 $ FROM -5.25 TO 5.25 INCREMENT 0.25
4452 $ END WAVE WIND LIST
4453
4454 $ SELOS PLOTS
4455 $ PLOT 3D RIGID POSITIONS AT TIMES -4.0 -2.0 0.0 2.0 4.0 -
4456 $ VIEWER POSITION 0 -5.0 5.0
4457 $ OVERLAY WAVE SURFACE FULL WAVE LENGTH
4458 $ TITLE
4459 $ 'MOGPU WAVE LOAD'
4460 $ FINISH

```

\*\*\*\* GTSSELOS NEUTRAL PLOT FILE INITIALIZATION.  
NORMAL TERMINATION FROM GTSSELOS

OPERATING CONDITION AT 45 DEGREE

```

4424 UNITS M MTON DEG FAH
4425 $$
4426 PARAMETERS
4427 $$
4428 $$ Steel Design Parameters with Standard Values
4429 $$
4430 CODE APIWSD20 ALL
4431 CHECK 1.00000 ALL
4432 $ UNITS M
4433 $ INITIAL CONDITIONS
4434 $ JNT2 1.0 0.0 0.0 JNT3 0.0 0.0 -1.0 -
4435 $ LINEAR DISPLACEMENT ORIGIN X 22.7 Y -80.1 Z 26.13
4436 $ UNITS M SECONDS DEGREES
4437 $ WAVE STOKES FIFTH
4438
4439 $ CURRENT DATA STRETCH
4440 $ DEPTH 0.0 40.05 80.1
4441 $ VELOCITY 0.5 0.4 0.4
4442 $ DIRECTION 45.0
4443
4444 $ UNITS M SEC
4445 $ EXECUTE STEP WAVE LOADINGS TYPE STRUCTURE FIXED -
4446 $ DEAD LOAD COMPUTE CONSISTENT WITH ORIENTATION -
4447 $ COMPUTE LOADING WITH MAXIMUM BASE SHEAR -
4448 $ MAXIMUM OVERTUNING MOMENT AT 22.7 -80.1 26.13
4449 $ WAVE WIND LIST
4450 $ 'OP45' HEIGHT 3.2 PERIOD 6.5 DEPTH 80.1 DIRECTION 45.0 -
4451 $ FROM -5.25 TO 5.25 INCREMENT 0.25
4452 $ END WAVE WIND LIST
4453
4454 $ SELOS PLOTS
4455 $ PLOT 3D RIGID POSITIONS AT TIMES -4.0 -2.0 0.0 2.0 4.0 -
4456 $ VIEWER POSITION 0 -5.0 5.0
4457 $ OVERLAY WAVE SURFACE FULL WAVE LENGTH
4458 $ TITLE
4459 $ 'MOGPU WAVE LOAD'
4460 $ FINISH

```

\*\*\*\* GTSSELOS NEUTRAL PLOT FILE INITIALIZATION.  
NORMAL TERMINATION FROM GTSSELOS

OPERATING CONDITION AT 90 DEGREE

```

4424 UNITS M MTON DEG FAH
4425 $$
4426 PARAMETERS
4427 $$
4428 $$ Steel Design Parameters with Standard Values
4429 $$
4430 CODE APIWSD20 ALL
4432 $ UNITS M
4433 $ INITIAL CONDITIONS
4434 $ JNT2 1.0 0.0 0.0 JNT3 0.0 0.0 -1.0 -
4435 $ LINEAR DISPLACEMENT ORIGIN X 22.7 Y -80.1 Z 26.13
4436 $ UNITS M SECONDS DEGREES
4437 $ WAVE STOKES FIFTH
4438
4439 $ CURRENT DATA STRETCH
4440 $ DEPTH 0.0 40.05 80.1
4441 $ VELOCITY 0.8 0.6 0.6
4442 $ DIRECTION 90.0
4443
4444 $ UNITS M SEC
4445 $ EXECUTE STEP WAVE LOADINGS TYPE STRUCTURE FIXED -
4446 $ DEAD LOAD COMPUTE CONSISTENT WITH ORIENTATION -
4447 $ COMPUTE LOADING WITH MAXIMUM BASE SHEAR -
4448 $ MAXIMUM OVERTUNING MOMENT AT 22.7 -80.1 26.13
4449 $ WAVE WIND LIST
4450 $ 'OP90' HEIGHT 4.9 PERIOD 7.8 DEPTH 80.1 DIRECTION 90.0 -
4451 $ FROM -5.25 TO 5.25 INCREMENT 0.25
4452 $ END WAVE WIND LIST
4453
4454 $ SELOS PLOTS
4455 $ PLOT 3D RIGID POSITIONS AT TIMES -4.0 -2.0 0.0 2.0 4.0 -
4456 $ VIEWER POSITION 0 -5.0 5.0
4457 $ OVERLAY WAVE SURFACE FULL WAVE LENGTH
4458 $ TITLE
4459 $ 'MOGPU WAVE LOAD'
4460 $ FINISH

```

\*\*\*\* GTSSELOS NEUTRAL PLOT FILE INITIALIZATION.  
NORMAL TERMINATION FROM GTSSELOS

OPERATING CONDITION AT 135 DEGREE

```

4424 UNITS M MTON DEG FAH
4425 $$
4426 PARAMETERS

```

```

4427 $$
4428 $$ Steel Design Parameters with Standard Values
4429 $$
4430 CODE APIWSD20 ALL
4431 CHECK 1.00000 ALL
4432 $ UNITS M
4433 $ INITIAL CONDITIONS
4434 $ JNT2 1.0 0.0 0.0 JNT3 0.0 0.0 -1.0 -
4435 $ LINEAR DISPLACEMENT ORIGIN X 22.7 Y -80.1 Z 26.13
4436 $ UNITS M SECONDS DEGREES
4437 $ WAVE STOKES FIFTH
4438
4439 $ CURRENT DATA STRETCH
4440 $ DEPTH 0.0 40.05 80.1
4441 $ VELOCITY 0.8 0.6 0.6
4442 $ DIRECTION 135.0
4443
4444 $ UNITS M SEC
4445 $ EXECUTE STEP WAVE LOADINGS TYPE STRUCTURE FIXED -
4446 $ DEAD LOAD COMPUTE CONSISTENT WITH ORIENTATION -
4447 $ COMPUTE LOADING WITH MAXIMUM BASE SHEAR -
4448 $ MAXIMUM OVERTUNING MOMENT AT 22.7 -80.1 26.13
4449 $ WAVE WIND LIST
4450 $ 'OP135' HEIGHT 4.9 PERIOD 7.8 DEPTH 80.1 DIRECTION 135.0 -
4451 $ FROM -5.25 TO 5.25 INCREMENT 0.25
4452 $ END WAVE WIND LIST
4453
4454 $ SELOS PLOTS
4455 $ PLOT 3D RIGID POSITIONS AT TIMES -4.0 -2.0 0.0 2.0 4.0 -
4456 $ VIEWER POSITION 0 -5.0 5.0
4457 $ OVERLAY WAVE SURFACE FULL WAVE LENGTH
4458 $ TITLE
4459 $ 'MOGPU WAVE LOAD'
4460 $ FINISH

```

\*\*\*\* GTSSELOS NEUTRAL PLOT FILE INITIALIZATION.  
NORMAL TERMINATION FROM GTSSELOS

**LAMPIRAN**  
Output file

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Georgia Tech Research Corporation  
Georgia Institute of Technology  
Atlanta, Georgia 30332 U.S.A.

# Mon Jul 26 11:03:27 2004

\*\*\* G T S T R U D L \*\*\*

\*\*\* G T S T R U D L \*\*\*

\*\*\*\* CURRENT GTSTRU DL PROBLEM STATISTICS \*\*\*\*

TIME FOR CONSISTENCY CHECKS FOR 2229 MEMBERS 0.12 SECONDS

TIME FOR BANDWIDTH REDUCTION 0.13 SECONDS  
TIME TO GENERATE 2228 ELEMENT STIF. MATRICES 4.95 SECONDS  
TIME TO PROCESS 33196 MEMBER LOADS 0.59 SECONDS  
TIME TO ASSEMBLE THE STIFFNESS MATRIX 0.23 SECONDS  
TIME TO PROCESS 797 JOINTS 0.33 SECONDS  
TIME TO SOLVE WITH 131 PARTITIONS 1.87 SECONDS  
TIME TO PROCESS 797 JOINT DISPLACEMENTS 0.01 SECONDS  
TIME TO PROCESS 534 ELEMENT STRESSES 0.14 SECONDS  
TIME TO PROCESS 534 ELEMENT REACTIONS 0.07 SECONDS  
TIME TO PROCESS 2229 ELEMENT DISTORTIONS 0.13 SECONDS  
TIME FOR STATICS CHECK 0.08 SECONDS  
{ 8) > CHECK MEMBER EXISTING GROUP LIST 'BASEMEM' MEMBERS AS BEAM 1

\*\*\*\*\*  
\* DESIGN TRACE OUTPUT \*  
\*\*\*\*\*

UNITY CHECK AT OPERATING CONDITION - OP

\*\* MEMBERS WHICH FAIL ARE MARKED BY TWO ASTERISKS (\*\*) \*\*

| MEMBER<br>CODE | TABLE<br>PROFILE | LOADING<br>NAME | SECTION<br>LOCATION | PROVISION<br>NAME | ACTUAL/<br>ALLOWABLE | SECTION FORCES |         |            | UNITS<br>STATUS |
|----------------|------------------|-----------------|---------------------|-------------------|----------------------|----------------|---------|------------|-----------------|
|                |                  |                 |                     |                   |                      | FX/MT          | FY/MY   | FZ/MZ      |                 |
| MBS1           | TEESM            | OP-0            | 22.700              | AXT CBEN          | 0.239                | 161.926        | 30.221  | 0.271 M    | KN              |
| ASD9           | T460x267         |                 |                     | B7 TEN            | 0.772                | 0.040          | 2.695   | -118.120   | PASSED          |
| MBS2           | TEESM            | OP-45           | 0.000               | AXT CBEN          | 0.237                | 174.163        | -30.165 | -0.218 M   | KN              |
| ASD9           | T460x267         |                 |                     | B7 TEN            | 0.772                | -0.035         | 2.256   | -117.770   | PASSED          |
| MBS3           | TEESM            | OP-0            | 0.000               | H1-3 COM          | 0.100                | -89.243        | -11.373 | -7.045 M   | KN              |
| ASD9           | T460x267         |                 |                     | B7 COMP           | 0.331                | -0.599         | 23.740  | -18.417    | PASSED          |
| MBS4           | TEESM            | OP-0            | 6.500               | H1-3 COM          | 0.105                | -84.026        | 12.262  | 7.650 M    | KN              |
| ASD9           | T460x267         |                 |                     | B7 COMP           | 0.331                | 0.653          | 24.980  | -20.110    | PASSED          |
| MBS5           | TEESM            | OP-0            | 1.877               | H2-1 TEN          | 0.010                | 21.889         | 0.885   | 0.115 M    | KN              |
| ASD9           | T460x267         |                 |                     | B7 TEN            | 0.128                | 0.009          | 0.141   | 4.008      | PASSED          |
| MBS6           | TEESM            | OP-135          | 0.000               | H2-1 TEN          | 0.178                | 128.283        | 26.624  | -2.097 M   | KN              |
| ASD9           | T460x267         |                 |                     | B7 TEN            | 0.128                | -0.258         | 5.775   | 77.689     | PASSED          |
| MBS7           | TEESM            | OP-90           | 0.000               | H2-1 TEN          | 0.179                | 110.475        | 26.107  | 2.289 M    | KN              |
| ASD9           | T460x267         |                 |                     | B7 TEN            | 0.128                | 0.252          | -6.938  | 77.544     | PASSED          |
| MBS8           | TEESM            | OP-0            | 1.877               | H2-1 TEN          | 0.010                | 21.589         | 0.687   | -0.494 M   | KN              |
| ASD9           | T460x267         |                 |                     | B7 TEN            | 0.128                | -0.046         | -0.108  | 4.031      | PASSED          |
| MBS9           | TEESM            | OP-90           | 4.000               | H1-3 COM          | 0.182                | -58.417        | 10.116  | -20.123 M  | KN              |
| ASD9           | T460x267         |                 |                     | B7 COMP           | 0.204                | -1.680         | -63.336 | -19.119    | PASSED          |
| MBS10          | TEESM            | OP-90           | 2.500               | AXC TBEN          | 0.563                | -256.013       | -45.293 | 131.027 M  | KN              |
| ASD9           | T460x267         |                 |                     | B7 COMP           | 0.127                | 11.080         | 193.155 | 71.856     | PASSED          |
| MBS11          | TEESM            | OP-90           | 0.000               | AXC TBEN          | 0.583                | -195.799       | 49.860  | -133.294 M | KN              |
| ASD9           | T460x267         |                 |                     | B7 COMP           | 0.127                | -11.283        | 196.212 | 78.939     | PASSED          |
| MBS12          | TEESM            | OP-90           | 0.000               | H1-3 COM          | 0.173                | -11.017        | -8.394  | 21.350 M   | KN              |
| ASD9           | T460x267         |                 |                     | B7 COMP           | 0.204                | 1.735          | -64.187 | -16.395    | PASSED          |
| MBS13          | TEESM            | OP-90           | 4.000               | H1-3 COM          | 0.173                | -14.128        | 8.360   | -21.203 M  | KN              |
| ASD9           | T460x267         |                 |                     | B7 COMP           | 0.204                | -1.737         | -63.753 | -16.345    | PASSED          |
| MBS14          | TEESM            | OP-135          | 2.500               | AXC TBEN          | 0.590                | -211.604       | -54.636 | 128.382 M  | KN              |
| ASD9           | T460x267         |                 |                     | B7 COMP           | 0.127                | 10.896         | 189.755 | 89.386     | PASSED          |
| MBS15          | TEESM            | OP-90           | 0.000               | AXC TBEN          | 0.567                | -257.928       | 45.222  | -131.961 M | KN              |
| ASD9           | T460x267         |                 |                     | B7 COMP           | 0.127                | -11.140        | 195.259 | 71.736     | PASSED          |
| MBS16          | TEESM            | OP-90           | 0.000               | H1-3 COM          | 0.183                | -58.991        | -10.088 | 20.226 M   | KN              |
| ASD9           | T460x267         |                 |                     | B7 COMP           | 0.204                | 1.674          | -63.695 | -19.053    | PASSED          |
| MBS17          | TEESM            | OP-45           | 0.000               | H2-1 TEN          | 0.041                | 180.935        | -2.360  | -3.150 M   | KN              |
| ASD9           | T460x267         |                 |                     | B7 TEN            | 0.133                | -0.267         | 8.987   | 1.785      | PASSED          |
| MBS18          | TEESM            | OP-45           | 4.120               | H2-1 TEN          | 0.031                | 263.070        | 6.533   | 0.195 M    | KN              |
| ASD9           | T460x267         |                 |                     | B7 TEN            | 0.140                | 0.012          | 0.110   | -7.297     | PASSED          |
| MBS19          | TEESM            | OP-45           | 4.120               | H2-1 TEN          | 0.036                | 317.526        | 6.106   | -0.218 M   | KN              |
| ASD9           | T460x267         |                 |                     | B7 TEN            | 0.140                | -0.019         | -0.222  | -6.470     | PASSED          |
| MBS20          | TEESM            | OP-0            | 4.060               | H2-1 TEN          | 0.037                | 345.195        | 5.466   | -0.008 M   | KN              |
| ASD9           | T460x267         |                 |                     | B7 TEN            | 0.138                | -1.808E-04     | 0.123   | -5.283     | PASSED          |
| MBS21          | TEESM            | OP-0            | 0.000               | H2-1 TEN          | 0.038                | 349.516        | -5.402  | 0.081 M    | KN              |
| ASD9           | T460x267         |                 |                     | B7 TEN            | 0.133                | 0.009          | -0.019  | -5.376     | PASSED          |
| MBS22          | TEESM            | OP-0            | 0.000               | H2-1 TEN          | 0.037                | 327.087        | -6.152  | 0.253 M    | KN              |
| ASD9           | T460x267         |                 |                     | B7 TEN            | 0.140                | 0.024          | -0.300  | -6.557     | PASSED          |

|               |                   |        |                              |                |                    |                     |                             |    |
|---------------|-------------------|--------|------------------------------|----------------|--------------------|---------------------|-----------------------------|----|
| MBS23<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000<br>H2-1 TEN<br>B7 TEN  | 0.032<br>0.140 | 277.849<br>-0.005  | -6.589<br>0.005     | -0.119 M<br>-7.473 PASSED   | KN |
| MBS24<br>ASD9 | TEESM<br>T460x267 | OP-45  | 4.060<br>H2-1 TEN<br>B7 TEN  | 0.040<br>0.138 | 187.657<br>0.251   | 2.715<br>8.718      | 2.944 M<br>1.427 PASSED     | KN |
| MBS25<br>ASD9 | TEESM<br>T460x267 | OP-90  | 4.000<br>H1-3 COM<br>B7 COMP | 0.018<br>0.204 | -18.801<br>-0.225  | 6.589<br>-1.860     | -1.503 M<br>-5.909 PASSED   | KN |
| MBS26<br>ASD9 | TEESM<br>T460x267 | OP-90  | 4.000<br>H1-3 COM<br>B7 COMP | 0.032<br>0.204 | -116.082<br>0.244  | 5.554<br>5.540      | 1.808 M<br>-3.383 PASSED    | KN |
| MBS27<br>ASD9 | TEESM<br>T460x267 | OP-135 | 0.000<br>H1-3 COM<br>B7 COMP | 0.054<br>0.204 | -166.283<br>-0.302 | -7.774<br>6.517     | -2.502 M<br>-10.491 PASSED  | KN |
| MBS28<br>ASD9 | TEESM<br>T460x267 | OP-90  | 4.000<br>H1-3 COM<br>B7 COMP | 0.017<br>0.204 | -22.271<br>0.229   | 4.151<br>5.570      | 1.556 M<br>-1.301 PASSED    | KN |
| MBS29<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000<br>H2-1 TEN<br>B7 TEN  | 0.081<br>0.133 | 7.903<br>-0.033    | 12.616<br>-2.688    | 1.210 M<br>37.635 PASSED    | KN |
| MBS30<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000<br>AXT CBEN<br>B7 TEN  | 0.029<br>0.140 | 108.991<br>0.006   | -8.390<br>-0.018    | 0.131 M<br>-14.689 PASSED   | KN |
| MBS31<br>ASD9 | TEESM<br>T460x267 | OP-45  | 4.120<br>H2-1 TEN<br>B7 TEN  | 0.019<br>0.140 | 147.126<br>0.013   | 6.436<br>0.484      | 0.187 M<br>-6.388 PASSED    | KN |
| MBS32<br>ASD9 | TEESM<br>T460x267 | OP-45  | 4.060<br>H2-1 TEN<br>B7 TEN  | 0.020<br>0.138 | 169.442<br>0.011   | 5.394<br>0.376      | 0.132 M<br>-4.953 PASSED    | KN |
| MBS33<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.900<br>H2-1 TEN<br>B7 TEN  | 0.020<br>0.133 | 170.361<br>0.013   | 5.120<br>0.367      | 0.133 M<br>-4.625 PASSED    | KN |
| MBS34<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000<br>H2-1 TEN<br>B7 TEN  | 0.019<br>0.140 | 152.494<br>0.012   | -6.238<br>-0.063    | 0.093 M<br>-6.016 PASSED    | KN |
| MBS35<br>ASD9 | TEESM<br>T460x267 | OP-45  | 4.120<br>AXT CBEN<br>B7 TEN  | 0.028<br>0.140 | 126.765<br>0.012   | 8.184<br>0.248      | 0.045 M<br>-13.885 PASSED   | KN |
| MBS36<br>ASD9 | TEESM<br>T460x267 | OP-135 | 4.060<br>AXC TBEN<br>B7 COMP | 0.087<br>0.207 | -5.830<br>0.014    | -11.219<br>-5.484   | -1.942 M<br>37.879 PASSED   | KN |
| MBS37<br>ASD9 | TEESM<br>T460x267 | OP-90  | 0.000<br>H1-3 COM<br>B7 COMP | 0.020<br>0.204 | -9.096<br>-0.194   | -4.695<br>6.231     | -1.947 M<br>-2.854 PASSED   | KN |
| MBS38<br>ASD9 | TEESM<br>T460x267 | OP-90  | 4.000<br>H1-3 COM<br>B7 COMP | 0.031<br>0.204 | -159.394<br>0.115  | 5.522<br>2.991      | 1.033 M<br>-3.399 PASSED    | KN |
| MBS39<br>ASD9 | TEESM<br>T460x267 | OP-135 | 0.000<br>H1-3 COM<br>B7 COMP | 0.039<br>0.204 | -197.641<br>0.004  | -6.836<br>0.548     | 0.136 M<br>-7.729 PASSED    | KN |
| MBS40<br>ASD9 | TEESM<br>T460x267 | OP-90  | 4.000<br>H1-3 COM<br>B7 COMP | 0.020<br>0.204 | -9.172<br>0.231    | 4.702<br>6.291      | 2.361 M<br>-2.834 PASSED    | KN |
| MBS41<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000<br>H2-1 TEN<br>B7 TEN  | 0.083<br>0.133 | 8.455<br>0.018     | 12.932<br>2.983     | -1.316 M<br>38.524 PASSED   | KN |
| MBS42<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000<br>AXT CBEN<br>B7 TEN  | 0.029<br>0.140 | 109.219<br>-0.006  | -8.410<br>0.003     | -0.126 M<br>-14.778 PASSED  | KN |
| MBS43<br>ASD9 | TEESM<br>T460x267 | OP-0   | 4.120<br>H2-1 TEN<br>B7 TEN  | 0.019<br>0.140 | 142.599<br>-0.017  | 6.533<br>-0.549     | -0.225 M<br>-6.544 PASSED   | KN |
| MBS44<br>ASD9 | TEESM<br>T460x267 | OP-0   | 4.060<br>H2-1 TEN<br>B7 TEN  | 0.020<br>0.138 | 166.621<br>-0.014  | 5.445<br>-0.427     | -0.162 M<br>-5.054 PASSED   | KN |
| MBS45<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.900<br>H2-1 TEN<br>B7 TEN  | 0.020<br>0.133 | 170.224<br>-0.013  | 5.109<br>-0.342     | -0.126 M<br>-4.604 PASSED   | KN |
| MBS46<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000<br>H2-1 TEN<br>B7 TEN  | 0.019<br>0.140 | 152.225<br>-0.010  | -6.262<br>0.049     | -0.078 M<br>-6.063 PASSED   | KN |
| MBS47<br>ASD9 | TEESM<br>T460x267 | OP-45  | 4.120<br>AXT CBEN<br>B7 TEN  | 0.028<br>0.140 | 121.593<br>-0.007  | 8.183<br>-0.105     | 0.003 M<br>-13.899 PASSED   | KN |
| MBS48<br>ASD9 | TEESM<br>T460x267 | OP-135 | 4.060<br>AXC TBEN<br>B7 COMP | 0.077<br>0.207 | -40.782<br>-0.075  | -11.503<br>-0.458   | 0.055 M<br>38.498 PASSED    | KN |
| MBS49<br>ASD9 | TEESM<br>T460x267 | OP-0   | 4.000<br>H1-3 COM<br>B7 COMP | 0.147<br>0.204 | -21.459<br>1.469   | 12.996<br>46.164    | 17.387 M<br>-22.328 PASSED  | KN |
| MBS50<br>ASD9 | TEESM<br>T460x267 | OP-0   | 2.500<br>AXC TBEN<br>B7 COMP | 0.376<br>0.127 | -197.893<br>-7.212 | -37.429<br>-122.609 | -85.266 M<br>55.147 PASSED  | KN |
| MBS51<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000<br>AXC TBEN<br>B7 COMP | 0.510<br>0.127 | -217.186<br>8.050  | 62.531<br>-141.409  | 94.759 M<br>102.373 PASSED  | KN |
| MBS52<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000<br>AXT CBEN<br>B7 TEN  | 0.131<br>0.136 | 10.882<br>-1.164   | -8.775<br>43.912    | -14.536 M<br>-18.144 PASSED | KN |

|       |          |        |        |          |       |          |          |                 |    |
|-------|----------|--------|--------|----------|-------|----------|----------|-----------------|----|
| MBS53 | TEESM    | OP-0   | 4.000  | AXT CBEN | 0.128 | 31.883   | 8.450    | 14.297 M        | KN |
| ASD9  | T460x267 |        |        | B7 TEN   | 0.136 | 1.156    | 43.129   | -17.352 PASSED  |    |
| MBS54 | TEESM    | OP-0   | 2.500  | AXC TBEN | 0.481 | -200.434 | -58.438  | -91.929 M       | KN |
| ASD9  | T460x267 |        |        | B7 COMP  | 0.127 | -7.821   | -135.754 | 93.918 PASSED   |    |
| MBS55 | TEESM    | OP-0   | 0.000  | AXC TBEN | 0.407 | -187.993 | 42.143   | 88.419 M        | KN |
| ASD9  | T460x267 |        |        | B7 COMP  | 0.127 | 7.467    | -128.738 | 64.343 PASSED   |    |
| MBS56 | TEESM    | OP-0   | 0.000  | H1-3 COM | 0.152 | -18.924  | -13.650  | -17.805 M       | KN |
| ASD9  | T460x267 |        |        | B7 COMP  | 0.204 | -1.493   | 47.184   | -23.752 PASSED  |    |
| MBS57 | TEESM    | OP-0   | 0.000  | H2-1 TEN | 0.037 | 159.042  | -2.396   | 2.901 M         | KN |
| ASD9  | T460x267 |        |        | B7 TEN   | 0.133 | 0.246    | -8.277   | 1.778 PASSED    |    |
| MBS58 | TEESM    | OP-45  | 4.120  | H2-1 TEN | 0.029 | 250.731  | 6.483    | -0.149 M        | KN |
| ASD9  | T460x267 |        |        | B7 TEN   | 0.140 | -0.009   | -0.074   | -7.165 PASSED   |    |
| MBS59 | TEESM    | OP-45  | 4.120  | H2-1 TEN | 0.034 | 303.511  | 6.085    | 0.198 M         | KN |
| ASD9  | T460x267 |        |        | B7 TEN   | 0.140 | 0.017    | 0.204    | -6.431 PASSED   |    |
| MBS60 | TEESM    | OP-45  | 4.060  | H2-1 TEN | 0.035 | 326.396  | 5.283    | -0.013 M        | KN |
| ASD9  | T460x267 |        |        | B7 TEN   | 0.138 | -0.002   | -0.181   | -4.784 PASSED   |    |
| MBS61 | TEESM    | OP-45  | 3.900  | H2-1 TEN | 0.036 | 327.745  | 5.021    | -0.064 M        | KN |
| ASD9  | T460x267 |        |        | B7 TEN   | 0.133 | -0.005   | -0.236   | -4.534 PASSED   |    |
| MBS62 | TEESM    | OP-0   | 0.000  | H2-1 TEN | 0.035 | 307.907  | -6.123   | -0.233 M        | KN |
| ASD9  | T460x267 |        |        | B7 TEN   | 0.140 | -0.022   | 0.269    | -6.498 PASSED   |    |
| MBS63 | TEESM    | OP-0   | 0.000  | H2-1 TEN | 0.030 | 259.768  | -6.544   | 0.129 M         | KN |
| ASD9  | T460x267 |        |        | B7 TEN   | 0.140 | 0.007    | -0.021   | -7.357 PASSED   |    |
| MBS64 | TEESM    | OP-0   | 4.060  | H2-1 TEN | 0.038 | 179.075  | 2.741    | -2.704 M        | KN |
| ASD9  | T460x267 |        |        | B7 TEN   | 0.138 | -0.231   | -8.004   | 1.360 PASSED    |    |
| MBS65 | TEESM    | OP-0   | 22.700 | AXT CBEN | 0.232 | 116.051  | 30.166   | 0.038 M         | KN |
| ASD9  | T460x267 |        |        | B7 TEN   | 0.772 | 0.074    | 0.261    | -117.408 PASSED |    |
| MBS66 | TEESM    | OP-45  | 0.000  | AXC TBEN | 0.108 | -84.815  | 13.795   | -3.630 M        | KN |
| ASD9  | T460x267 |        |        | B7 COMP  | 0.209 | -1.355   | 6.604    | 47.744 PASSED   |    |
| MBS67 | TEESM    | OP-45  | 0.000  | AXC TBEN | 0.114 | -94.155  | 14.147   | 4.135 M         | KN |
| ASD9  | T460x267 |        |        | B7 COMP  | 0.209 | 1.396    | -8.218   | 48.752 PASSED   |    |
| MBS68 | TEESM    | OP-45  | 0.000  | H2-1 TEN | 0.092 | 872.169  | -5.580   | 0.218 M         | KN |
| ASD9  | T460x267 |        |        | B7 TEN   | 0.139 | -0.004   | -0.434   | -8.869 PASSED   |    |
| MBS69 | TEESM    | OP-0   | 0.000  | H2-1 TEN | 0.093 | 875.145  | -5.672   | -0.221 M        | KN |
| ASD9  | T460x267 |        |        | B7 TEN   | 0.139 | 0.004    | 0.433    | -9.099 PASSED   |    |
| MBS70 | TEESM    | OP-0   | 0.000  | AXT CBEN | 0.232 | 119.238  | -30.158  | -0.052 M        | KN |
| ASD9  | T460x267 |        |        | B7 TEN   | 0.772 | -0.075   | 0.336    | -117.319 PASSED |    |
| MBS71 | TEESM    | OP-135 | 6.500  | AXT CBEN | 0.036 | 81.017   | 9.824    | -0.750 M        | KN |
| ASD9  | T460x267 |        |        | B7 TEN   | 0.221 | -0.186   | -2.389   | -15.481 PASSED  |    |
| MBS72 | TEESM    | OP-135 | 0.000  | AXT CBEN | 0.035 | 74.403   | -10.058  | 0.700 M         | KN |
| ASD9  | T460x267 |        |        | B7 TEN   | 0.221 | 0.185    | -1.919   | -15.714 PASSED  |    |
| MBS73 | TEESM    | OP-90  | 3.753  | H1-3 COM | 0.015 | -35.818  | 5.336    | 0.689 M         | KN |
| ASD9  | T460x267 |        |        | B7 COMP  | 0.191 | 0.042    | 1.098    | -4.182 PASSED   |    |
| MBS74 | TEESM    | OP-45  | 3.753  | H1-3 COM | 0.048 | -166.755 | 12.884   | -0.074 M        | KN |
| ASD9  | T460x267 |        |        | B7 COMP  | 0.191 | 0.014    | 0.559    | -13.926 PASSED  |    |
| MBS75 | TEESM    | OP-0   | 3.753  | H1-3 COM | 0.052 | -190.418 | 13.344   | -0.595 M        | KN |
| ASD9  | T460x267 |        |        | B7 COMP  | 0.191 | -0.072   | -1.064   | -14.464 PASSED  |    |
| MBS76 | TEESM    | OP-90  | 3.753  | H1-3 COM | 0.014 | -35.533  | 5.316    | -0.514 M        | KN |
| ASD9  | T460x267 |        |        | B7 COMP  | 0.191 | -0.028   | -0.693   | -4.137 PASSED   |    |
| MBS77 | TEESM    | OP-90  | 4.000  | AXC TBEN | 0.035 | -2.936   | 2.471    | -4.345 M        | KN |
| ASD9  | T460x267 |        |        | B7 COMP  | 0.204 | -0.375   | -13.635  | 2.482 PASSED    |    |
| MBS78 | TEESM    | OP-90  | 2.500  | H2-1 TEN | 0.144 | 182.010  | -11.708  | 26.034 M        | KN |
| ASD9  | T460x267 |        |        | B7 TEN   | 0.085 | 3.022    | 39.187   | 20.749 PASSED   |    |
| MBS79 | TEESM    | OP-90  | 0.000  | H2-1 TEN | 0.137 | 171.176  | 13.252   | -24.065 M       | KN |
| ASD9  | T460x267 |        |        | B7 TEN   | 0.085 | -2.859   | 35.024   | 22.385 PASSED   |    |
| MBS80 | TEESM    | OP-90  | 0.000  | AXC TBEN | 0.039 | -6.418   | -0.792   | 4.392 M         | KN |
| ASD9  | T460x267 |        |        | B7 COMP  | 0.204 | 0.344    | -13.007  | 5.522 PASSED    |    |
| MBS81 | TEESM    | OP-135 | 4.000  | AXC TBEN | 0.043 | -8.608   | 0.132    | -4.600 M        | KN |
| ASD9  | T460x267 |        |        | B7 COMP  | 0.204 | -0.370   | -13.420  | 7.006 PASSED    |    |
| MBS82 | TEESM    | OP-90  | 2.500  | H2-1 TEN | 0.146 | 169.814  | -13.218  | 25.991 M        | KN |
| ASD9  | T460x267 |        |        | B7 TEN   | 0.085 | 3.036    | 39.116   | 22.348 PASSED   |    |
| MBS83 | TEESM    | OP-90  | 0.000  | H2-1 TEN | 0.135 | 181.269  | 11.699   | -24.043 M       | KN |

|        |          |        |                |       |         |         |          |        |  |
|--------|----------|--------|----------------|-------|---------|---------|----------|--------|--|
| ASD9   | T460x267 |        | B7 TEN         | 0.085 | -2.837  | 34.997  | 20.747   | PASSED |  |
| MBS84  | TEESM    | OP-90  | 0.000 AXC TBEN | 0.032 | -3.228  | -2.473  | 3.965 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.204 | 0.331   | -12.605 | 2.478    | PASSED |  |
| MBS85  | TEESM    | OP-0   | 3.900 AXT CBEN | 0.022 | 91.483  | 7.929   | -0.949 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.133 | -0.086  | -1.124  | -10.123  | PASSED |  |
| MBS86  | TEESM    | OP-0   | 4.120 H2-1 TEN | 0.020 | 135.140 | 7.613   | -0.386 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.140 | -0.033  | -0.673  | -9.266   | PASSED |  |
| MBS87  | TEESM    | OP-0   | 4.120 H2-1 TEN | 0.021 | 158.637 | 6.764   | -0.373 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.140 | -0.031  | -0.555  | -7.746   | PASSED |  |
| MBS88  | TEESM    | OP-0   | 4.060 H2-1 TEN | 0.021 | 171.604 | 5.944   | -0.212 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.138 | -0.017  | -0.220  | -6.157   | PASSED |  |
| MBS89  | TEESM    | OP-0   | 0.000 H2-1 TEN | 0.021 | 173.249 | -5.197  | -0.058 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.133 | -0.004  | 0.326   | -4.864   | PASSED |  |
| MBS90  | TEESM    | OP-0   | 0.000 H2-1 TEN | 0.020 | 162.210 | -6.197  | 0.123 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.140 | 0.011   | -0.029  | -6.592   | PASSED |  |
| MBS91  | TEESM    | OP-0   | 0.000 H2-1 TEN | 0.019 | 139.307 | -7.066  | 0.166 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.140 | 0.015   | -0.220  | -8.207   | PASSED |  |
| MBS92  | TEESM    | OP-135 | 0.000 AXT CBEN | 0.022 | 40.488  | -7.974  | 0.904 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.138 | 0.082   | -0.960  | -9.923   | PASSED |  |
| MBS93  | TEESM    | OP-0   | 0.000 AXT CBEN | 0.052 | 82.774  | -12.320 | -3.653 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.136 | -0.878  | 7.887   | -17.743  | PASSED |  |
| MBS94  | TEESM    | OP-135 | 4.000 H1-3 COM | 0.053 | -9.606  | 11.929  | 3.919 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.204 | 0.911   | 7.681   | -17.934  | PASSED |  |
| MBS95  | TEESM    | OP-0   | 0.000 AXT CBEN | 0.052 | 16.076  | -11.249 | -4.503 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.136 | -0.973  | 9.767   | -15.680  | PASSED |  |
| MBS96  | TEESM    | OP-45  | 4.000 AXT CBEN | 0.048 | 80.421  | 11.847  | 3.656 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.136 | 0.874   | 6.935   | -16.563  | PASSED |  |
| MBS97  | TEESM    | OP-0   | 3.900 AXT CBEN | 0.029 | 77.422  | 9.065   | -1.081 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.133 | -0.147  | -1.764  | -12.894  | PASSED |  |
| MBS98  | TEESM    | OP-0   | 4.120 H1-3 COM | 0.029 | -69.817 | 8.089   | 0.452 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.210 | 0.039   | 0.815   | -9.759   | PASSED |  |
| MBS99  | TEESM    | OP-0   | 4.120 H1-3 COM | 0.016 | -3.387  | 6.781   | 0.096 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.210 | 0.008   | 0.326   | -7.644   | PASSED |  |
| MBS100 | TEESM    | OP-0   | 4.060 AXT CBEN | 0.012 | 23.700  | 6.192   | -0.049 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.138 | -0.004  | -0.026  | -6.303   | PASSED |  |
| MBS101 | TEESM    | OP-135 | 0.000 AXT CBEN | 0.015 | 27.494  | -6.544  | -0.309 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.133 | -0.027  | 0.631   | -6.960   | PASSED |  |
| MBS102 | TEESM    | OP-135 | 0.000 AXT CBEN | 0.018 | 7.050   | -7.094  | -0.412 M | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.210 | -0.035  | 0.898   | -8.085   | PASSED |  |
| MBS103 | TEESM    | OP-45  | 0.000 H1-3 COM | 0.028 | -71.219 | -7.336  | -0.743 M | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.210 | -0.062  | 1.469   | -8.330   | PASSED |  |
| MBS104 | TEESM    | OP-135 | 0.000 AXT CBEN | 0.025 | 86.923  | -8.757  | 0.022 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.138 | 0.024   | -0.204  | -12.300  | PASSED |  |
| MBS105 | TEESM    | OP-0   | 0.000 AXT CBEN | 0.052 | 80.045  | -12.196 | 3.690 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.136 | 0.881   | -7.958  | -17.472  | PASSED |  |
| MBS106 | TEESM    | OP-135 | 4.000 AXT CBEN | 0.051 | 8.288   | 11.431  | -4.355 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.136 | -0.968  | -8.683  | -16.425  | PASSED |  |
| MBS107 | TEESM    | OP-0   | 0.000 AXT CBEN | 0.052 | 14.579  | -11.278 | 4.494 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.136 | 0.973   | -9.756  | -15.723  | PASSED |  |
| MBS108 | TEESM    | OP-135 | 4.000 AXT CBEN | 0.051 | 86.178  | 12.963  | -3.206 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.136 | -0.850  | -6.040  | -19.388  | PASSED |  |
| MBS109 | TEESM    | OP-0   | 3.900 AXT CBEN | 0.030 | 75.857  | 9.050   | 1.156 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.133 | 0.150   | 1.903   | -12.926  | PASSED |  |
| MBS110 | TEESM    | OP-0   | 4.120 H1-3 COM | 0.029 | -69.850 | 8.120   | -0.449 M | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.210 | -0.039  | -0.783  | -9.817   | PASSED |  |
| MBS111 | TEESM    | OP-0   | 4.120 H1-3 COM | 0.016 | -2.615  | 6.793   | -0.085 M | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.210 | -0.007  | -0.290  | -7.674   | PASSED |  |
| MBS112 | TEESM    | OP-0   | 4.060 AXT CBEN | 0.013 | 24.863  | 6.197   | 0.052 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.138 | 0.004   | 0.050   | -6.314   | PASSED |  |
| MBS113 | TEESM    | OP-135 | 0.000 AXT CBEN | 0.015 | 16.661  | -6.542  | 0.320 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.133 | 0.029   | -0.675  | -6.894   | PASSED |  |

|                |                   |        |       |                     |                |                    |                    |                            |    |
|----------------|-------------------|--------|-------|---------------------|----------------|--------------------|--------------------|----------------------------|----|
| MBS114<br>ASD9 | TEESM<br>T460x267 | OP-135 | 0.000 | H1-3 COM<br>B7 COMP | 0.018<br>0.210 | -3.486<br>0.034    | -7.083<br>-0.908   | 0.396 M<br>-8.002 PASSED   | KN |
| MBS115<br>ASD9 | TEESM<br>T460x267 | OP-135 | 0.000 | H1-3 COM<br>B7 COMP | 0.029<br>0.210 | -54.265<br>0.058   | -8.280<br>-1.276   | 0.651 M<br>-9.905 PASSED   | KN |
| MBS116<br>ASD9 | TEESM<br>T460x267 | OP-135 | 0.000 | AXT CBEN<br>B7 TEN  | 0.026<br>0.138 | 95.443<br>-0.082   | -9.026<br>0.659    | -0.311 M<br>-12.541 PASSED | KN |
| MBS117<br>ASD9 | TEESM<br>T460x267 | OP-0   | 4.000 | AXC TBEN<br>B7 COMP | 0.022<br>0.204 | -3.318<br>0.269    | 3.298<br>8.282     | 3.011 M<br>1.797 PASSED    | KN |
| MBS118<br>ASD9 | TEESM<br>T460x267 | OP-0   | 2.500 | H2-1 TEN<br>B7 TEN  | 0.071<br>0.085 | 214.421<br>-1.821  | 1.793<br>-21.599   | -14.774 M<br>-5.161 PASSED | KN |
| MBS119<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H2-1 TEN<br>B7 TEN  | 0.168<br>0.085 | 198.377<br>1.863   | 28.340<br>-22.522  | 15.037 M<br>50.377 PASSED  | KN |
| MBS120<br>ASD9 | TEESM<br>T460x267 | OP-0   | 4.000 | AXT CBEN<br>B7 TEN  | 0.033<br>0.136 | 22.498<br>-0.214   | 9.835<br>-3.195    | -2.872 M<br>-13.310 PASSED | KN |
| MBS121<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 | AXT CBEN<br>B7 TEN  | 0.032<br>0.136 | 29.409<br>0.229    | -9.365<br>-3.403   | 2.939 M<br>-12.493 PASSED  | KN |
| MBS122<br>ASD9 | TEESM<br>T460x267 | OP-0   | 2.500 | H2-1 TEN<br>B7 TEN  | 0.173<br>0.085 | 207.884<br>-1.964  | -27.813<br>-24.825 | -16.140 M<br>50.153 PASSED | KN |
| MBS123<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H2-1 TEN<br>B7 TEN  | 0.067<br>0.085 | 216.397<br>1.744   | -1.179<br>-19.786  | 13.942 M<br>-4.901 PASSED  | KN |
| MBS124<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | AXC TBEN<br>B7 COMP | 0.023<br>0.204 | -0.380<br>-0.240   | -2.641<br>7.694    | -2.772 M<br>3.057 PASSED   | KN |
| MBS125<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.900 | AXT CBEN<br>B7 TEN  | 0.023<br>0.133 | 78.123<br>0.083    | 8.019<br>1.119     | 0.927 M<br>-10.193 PASSED  | KN |
| MBS126<br>ASD9 | TEESM<br>T460x267 | OP-0   | 4.120 | AXT CBEN<br>B7 TEN  | 0.020<br>0.140 | 121.990<br>0.033   | 7.585<br>0.704     | 0.397 M<br>-9.191 PASSED   | KN |
| MBS127<br>ASD9 | TEESM<br>T460x267 | OP-45  | 4.120 | H2-1 TEN<br>B7 TEN  | 0.020<br>0.140 | 147.593<br>0.031   | 6.569<br>0.561     | 0.370 M<br>-7.331 PASSED   | KN |
| MBS128<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 | H2-1 TEN<br>B7 TEN  | 0.020<br>0.138 | 160.778<br>0.018   | -4.988<br>-0.639   | 0.224 M<br>-4.131 PASSED   | KN |
| MBS129<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 | H2-1 TEN<br>B7 TEN  | 0.019<br>0.133 | 161.707<br>0.004   | -5.176<br>-0.293   | 0.047 M<br>-4.725 PASSED   | KN |
| MBS130<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 | H2-1 TEN<br>B7 TEN  | 0.019<br>0.140 | 149.415<br>-0.011  | -6.292<br>0.057    | -0.129 M<br>-6.757 PASSED  | KN |
| MBS131<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 | H2-1 TEN<br>B7 TEN  | 0.018<br>0.140 | 127.427<br>-0.015  | -7.159<br>0.243    | -0.178 M<br>-8.365 PASSED  | KN |
| MBS132<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 | AXT CBEN<br>B7 TEN  | 0.020<br>0.138 | 84.303<br>-0.065   | -7.620<br>0.730    | -0.700 M<br>-9.448 PASSED  | KN |
| MBS133<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 | H2-1 TEN<br>B7 TEN  | 0.125<br>0.139 | 120.908<br>1.332   | 14.461<br>-6.973   | 3.628 M<br>49.650 PASSED   | KN |
| MBS134<br>ASD9 | TEESM<br>T460x267 | OP-0   | 4.100 | H2-1 TEN<br>B7 TEN  | 0.111<br>0.139 | 1058.355<br>0.004  | 5.108<br>-0.762    | -0.230 M<br>-8.477 PASSED  | KN |
| MBS135<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 | H2-1 TEN<br>B7 TEN  | 0.120<br>0.139 | 114.690<br>-1.299  | 14.209<br>5.551    | -3.169 M<br>48.904 PASSED  | KN |
| MBS136<br>ASD9 | TEESM<br>T460x267 | OP-45  | 4.100 | H2-1 TEN<br>B7 TEN  | 0.111<br>0.139 | 1056.952<br>-0.007 | 5.190<br>0.695     | 0.202 M<br>-8.661 PASSED   | KN |
| MBS137<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 | AXT CBEN<br>B7 TEN  | 0.038<br>0.128 | 10.032<br>-0.006   | -11.213<br>0.930   | -0.176 M<br>-18.315 PASSED | KN |
| MBS138<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | AXC TBEN<br>B7 COMP | 0.026<br>0.191 | -79.603<br>0.059   | -1.414<br>-0.662   | 0.609 M<br>12.535 PASSED   | KN |
| MBS139<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | AXT CBEN<br>B7 TEN  | 0.039<br>0.128 | 10.321<br>0.021    | -11.127<br>-1.294  | 0.326 M<br>-18.125 PASSED  | KN |
| MBS140<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | AXC TBEN<br>B7 COMP | 0.033<br>0.191 | -74.306<br>-0.109  | -0.648<br>2.296    | -1.195 M<br>14.206 PASSED  | KN |
| MBS141<br>ASD9 | TEESM<br>T460x267 | OP-135 | 0.000 | H2-1 TEN<br>B7 TEN  | 0.056<br>0.128 | 22.723<br>-0.132   | 4.376<br>1.496     | -1.044 M<br>25.443 PASSED  | KN |
| MBS142<br>ASD9 | TEESM<br>T460x267 | OP-90  | 0.000 | H2-1 TEN<br>B7 TEN  | 0.055<br>0.128 | 7.895<br>-0.061    | 3.355<br>3.006     | -0.886 M<br>24.108 PASSED  | KN |
| MBS143<br>ASD9 | TEESM<br>T460x267 | OP-90  | 0.000 | AXC TBEN<br>B7 COMP | 0.119<br>0.191 | -13.640<br>0.065   | 16.471<br>-2.590   | 0.496 M<br>57.606 PASSED   | KN |



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|----------------|-------------------|--------|---------------------------|----------------|-------------------|-------------------|-----------------------------|----|
| MBS144<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 H1-3 COM<br>B7 COMP | 0.031<br>0.191 | -75.144<br>-0.102 | -9.019<br>1.436   | -0.688 M<br>-9.574 PASSED   | KN |
| MBS145<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 H1-3 COM<br>B7 COMP | 0.026<br>0.191 | -76.761<br>-0.002 | -8.196<br>0.291   | -0.188 M<br>-8.205 PASSED   | KN |
| MBS146<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 H1-3 COM<br>B7 COMP | 0.025<br>0.191 | -80.037<br>-0.009 | -7.948<br>0.204   | -0.120 M<br>-7.796 PASSED   | KN |
| MBS147<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 H1-3 COM<br>B7 COMP | 0.024<br>0.191 | -81.405<br>-0.003 | -7.852<br>0.039   | -0.031 M<br>-7.625 PASSED   | KN |
| MBS148<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 H1-3 COM<br>B7 COMP | 0.025<br>0.191 | -81.076<br>0.007  | -7.885<br>-0.234  | 0.114 M<br>-7.648 PASSED    | KN |
| MBS149<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 H1-3 COM<br>B7 COMP | 0.026<br>0.191 | -78.629<br>0.003  | -8.132<br>-0.392  | 0.208 M<br>-8.056 PASSED    | KN |
| MBS150<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 H1-3 COM<br>B7 COMP | 0.030<br>0.191 | -79.712<br>0.085  | -9.029<br>-1.189  | 0.595 M<br>-9.480 PASSED    | KN |
| MBS151<br>ASD9 | TEESM<br>T460x267 | OP-135 | 0.000 H2-1 TEN<br>B7 COMP | 0.129<br>0.191 | 6.555<br>-0.153   | 17.960<br>3.629   | -0.972 M<br>60.956 PASSED   | KN |
| MBS152<br>ASD9 | TEESM<br>T460x267 | OP-90  | 0.000 H2-1 TEN<br>B7 TEN  | 0.051<br>0.128 | 8.264<br>0.008    | 3.321<br>-1.133   | 0.249 M<br>24.135 PASSED    | KN |
| MBS153<br>ASD9 | TEESM<br>T460x267 | OP-135 | 0.000 H2-1 TEN<br>B7 TEN  | 0.057<br>0.128 | 29.099<br>0.006   | 4.439<br>1.768    | -0.287 M<br>25.612 PASSED   | KN |
| MBS154<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 AXT CBEN<br>B7 TEN  | 0.103<br>0.128 | 49.776<br>1.391   | -5.353<br>-43.735 | 15.679 M<br>-4.025 PASSED   | KN |
| MBS155<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 AXT CBEN<br>B7 TEN  | 0.127<br>0.128 | 23.904<br>-1.721  | -7.148<br>51.290  | -18.872 M<br>-7.815 PASSED  | KN |
| MBS156<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 H1-3 COM<br>B7 COMP | 0.026<br>0.191 | -54.123<br>0.143  | -6.919<br>-5.940  | 1.704 M<br>-3.267 PASSED    | KN |
| MBS157<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 H1-3 COM<br>B7 COMP | 0.022<br>0.191 | -78.877<br>-0.081 | -6.654<br>2.304   | -0.949 M<br>-4.002 PASSED   | KN |
| MBS158<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 H1-3 COM<br>B7 COMP | 0.019<br>0.191 | -92.037<br>-0.024 | -6.589<br>0.516   | -0.307 M<br>-3.563 PASSED   | KN |
| MBS159<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 H1-3 COM<br>B7 COMP | 0.018<br>0.191 | -96.889<br>-0.012 | -6.474<br>0.325   | -0.159 M<br>-3.338 PASSED   | KN |
| MBS160<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 H1-3 COM<br>B7 COMP | 0.017<br>0.191 | -97.017<br>0.004  | -6.354<br>-0.037  | 0.040 M<br>-3.161 PASSED    | KN |
| MBS161<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 H1-3 COM<br>B7 COMP | 0.019<br>0.191 | -97.256<br>0.023  | -6.456<br>-0.561  | 0.286 M<br>-3.320 PASSED    | KN |
| MBS162<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 H1-3 COM<br>B7 COMP | 0.019<br>0.191 | -93.236<br>0.034  | -6.584<br>-0.701  | 0.414 M<br>-3.570 PASSED    | KN |
| MBS163<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 H1-3 COM<br>B7 COMP | 0.023<br>0.191 | -82.482<br>0.091  | -6.636<br>-2.489  | 1.068 M<br>-3.908 PASSED    | KN |
| MBS164<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 H1-3 COM<br>B7 COMP | 0.027<br>0.191 | -59.997<br>-0.141 | -6.983<br>5.851   | -1.678 M<br>-3.530 PASSED   | KN |
| MBS165<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 AXT CBEN<br>B7 TEN  | 0.120<br>0.128 | 19.911<br>1.685   | -6.404<br>-50.270 | 18.514 M<br>-5.502 PASSED   | KN |
| MBS166<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 AXT CBEN<br>B7 TEN  | 0.110<br>0.128 | 49.785<br>-1.436  | -5.964<br>44.938  | -16.115 M<br>-5.986 PASSED  | KN |
| MBS167<br>ASD9 | TEESM<br>T460x267 | OP-90  | 0.000 AXT CBEN<br>B7 TEN  | 0.257<br>0.128 | 87.349<br>0.077   | -47.475<br>-1.798 | 0.807 M<br>-128.712 PASSED  | KN |
| MBS168<br>ASD9 | TEESM<br>T460x267 | OP-135 | 0.000 AXT CBEN<br>B7 TEN  | 0.256<br>0.128 | 122.468<br>-0.048 | -48.543<br>-0.146 | -0.096 M<br>-129.961 PASSED | KN |
| MBS169<br>ASD9 | TEESM<br>T460x267 | OP-0   | 1.877 H2-1 TEN<br>B7 TEN  | 0.018<br>0.128 | 62.433<br>-0.001  | -0.356<br>-0.162  | -0.276 M<br>6.063 PASSED    | KN |
| MBS170<br>ASD9 | TEESM<br>T460x267 | OP-0   | 1.877 H2-1 TEN<br>B7 TEN  | 0.019<br>0.128 | 65.177<br>-0.072  | 0.249<br>0.098    | -0.976 M<br>6.278 PASSED    | KN |
| MBS171<br>ASD9 | TEESM<br>T460x267 | OP-0   | 1.877 H2-1 TEN<br>B7 TEN  | 0.019<br>0.128 | 62.681<br>-0.043  | 0.687<br>0.060    | -0.604 M<br>6.385 PASSED    | KN |
| MBS172<br>ASD9 | TEESM<br>T460x267 | OP-0   | 1.877 H2-1 TEN<br>B7 TEN  | 0.019<br>0.128 | 62.477<br>-0.012  | 0.795<br>0.065    | -0.156 M<br>6.411 PASSED    | KN |
| MBS173<br>ASD9 | TEESM<br>T460x267 | OP-0   | 1.877 H2-1 TEN<br>B7 TEN  | 0.019<br>0.128 | 63.312<br>0.019   | 0.683<br>0.070    | 0.288 M<br>6.341 PASSED     | KN |
| MBS174         | TEESM             | OP-0   | 1.877 H2-1 TEN            | 0.019          | 66.010            | 0.202             | 0.678 M                     | KN |

|        |          |        |                |       |           |         |          |        |  |
|--------|----------|--------|----------------|-------|-----------|---------|----------|--------|--|
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 0.049     | 0.041   | 6.185    | PASSED |  |
| MBS175 | TEESM    | OP-0   | 1.877 H2-1 TEN | 0.019 | 67.189    | -0.564  | 0.056 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -0.016    | 0.223   | 5.936    | PASSED |  |
| MBS176 | TEESM    | OP-90  | 0.000 AXT CBEN | 0.260 | 126.215   | -48.529 | 0.728 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 0.094     | -1.678  | -129.975 | PASSED |  |
| MBS177 | TEESM    | OP-135 | 0.000 AXT CBEN | 0.255 | 89.710    | -47.484 | 0.037 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -0.015    | -0.504  | -128.745 | PASSED |  |
| MBS178 | TEESM    | OP-0   | 0.000 H1-3 COM | 0.033 | -24.939   | -5.073  | 2.868 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | 0.214     | -8.153  | -6.480   | PASSED |  |
| MBS179 | TEESM    | OP-0   | 0.000 H1-3 COM | 0.041 | -3.914    | -7.834  | -2.302 M | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.228    | 6.761   | -13.066  | PASSED |  |
| MBS180 | TEESM    | OP-45  | 0.000 AXT CBEN | 0.043 | 40.107    | -12.427 | -0.842 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -0.066    | 1.531   | -20.140  | PASSED |  |
| MBS181 | TEESM    | OP-45  | 0.000 AXT CBEN | 0.043 | 45.214    | -12.615 | -0.628 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -0.048    | 1.080   | -20.610  | PASSED |  |
| MBS182 | TEESM    | OP-45  | 0.000 AXT CBEN | 0.042 | 44.338    | -12.624 | -0.342 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -0.025    | 0.569   | -20.718  | PASSED |  |
| MBS183 | TEESM    | OP-45  | 0.000 AXT CBEN | 0.041 | 44.283    | -12.545 | 0.048 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 0.005     | -0.162  | -20.620  | PASSED |  |
| MBS184 | TEESM    | OP-45  | 0.000 AXT CBEN | 0.042 | 44.971    | -12.581 | 0.412 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 0.033     | -0.830  | -20.621  | PASSED |  |
| MBS185 | TEESM    | OP-45  | 0.000 AXT CBEN | 0.043 | 45.411    | -12.569 | 0.709 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 0.056     | -1.354  | -20.494  | PASSED |  |
| MBS186 | TEESM    | OP-45  | 0.000 AXT CBEN | 0.043 | 40.499    | -12.389 | 0.936 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 0.075     | -1.847  | -19.994  | PASSED |  |
| MBS187 | TEESM    | OP-0   | 0.000 H1-3 COM | 0.039 | -3.663    | -7.188  | 2.687 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | 0.262     | -7.782  | -11.065  | PASSED |  |
| MBS188 | TEESM    | OP-0   | 0.000 H1-3 COM | 0.035 | -26.878   | -5.496  | -2.562 M | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.188    | 7.363   | -7.867   | PASSED |  |
| MBS189 | TEESM    | OP-135 | 0.000 AXC TBEN | 0.060 | -145.927  | 4.581   | 3.200 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.306 | 0.278     | -12.713 | 16.174   | PASSED |  |
| MBS190 | TEESM    | OP-0   | 0.000 H2-1 TEN | 0.009 | 26.896    | -1.076  | -0.716 M | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.153 | 0.032     | 2.469   | -1.564   | PASSED |  |
| MBS191 | TEESM    | OP-135 | 0.000 H1-3 COM | 0.088 | -390.569  | 4.333   | 3.647 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.306 | 0.237     | -13.887 | 15.679   | PASSED |  |
| MBS192 | TEESM    | OP-90  | 3.000 H1-3 COM | 0.075 | -52.139   | 13.103  | -4.211 M | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.153 | -0.864    | -6.233  | -27.992  | PASSED |  |
| MBS193 | TEESM    | OP-90  | 6.000 H1-3 COM | 0.163 | -688.385  | 0.628   | -6.047 M | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.306 | -0.512    | -34.709 | -0.637   | PASSED |  |
| MBS194 | TEESM    | OP-90  | 3.000 H1-2 COM | 0.374 | -1741.872 | -1.025  | 44.519 M | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.153 | 3.748     | 92.583  | 0.803    | PASSED |  |
| MBS195 | TEESM    | OP-0   | 0.000 H1-3 COM | 0.094 | -420.870  | -1.629  | 5.157 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.306 | 0.460     | -16.440 | -2.821   | PASSED |  |
| MBS196 | TEESM    | OP-45  | 3.000 AXC TBEN | 0.081 | -69.704   | -20.395 | -1.673 M | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.153 | 0.263     | -1.360  | 39.758   | PASSED |  |
| MBS197 | TEESM    | OP-0   | 0.000 H1-3 COM | 0.082 | -246.573  | -1.794  | 6.721 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.306 | 0.545     | -20.405 | -3.286   | PASSED |  |
| MBS198 | TEESM    | OP-0   | 0.000 H1-3 COM | 0.029 | -93.441   | -4.537  | 1.018 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.153 | 0.037     | 1.568   | -7.494   | PASSED |  |
| MBS199 | TEESM    | OP-0   | 0.000 H1-3 COM | 0.086 | -255.161  | -1.347  | 7.406 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.306 | 0.615     | -22.326 | -2.784   | PASSED |  |
| MBS200 | TEESM    | OP-45  | 0.000 H1-3 COM | 0.025 | -100.799  | -3.734  | 0.569 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.153 | 0.066     | 1.951   | -4.964   | PASSED |  |
| MBS201 | TEESM    | OP-0   | 0.000 H1-3 COM | 0.089 | -251.056  | -1.248  | 7.757 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.306 | 0.647     | -23.379 | -3.160   | PASSED |  |
| MBS202 | TEESM    | OP-45  | 0.000 H1-3 COM | 0.024 | -107.929  | -2.306  | 0.356 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.153 | 0.033     | 2.476   | -3.150   | PASSED |  |
| MBS203 | TEESM    | OP-0   | 0.000 H1-3 COM | 0.091 | -252.024  | -1.095  | 7.939 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.306 | 0.666     | -23.947 | -3.530   | PASSED |  |
| MBS204 | TEESM    | OP-45  | 0.000 H1-3 COM | 0.022 | -111.201  | -1.103  | 0.125 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.153 | 0.014     | 2.894   | -1.441   | PASSED |  |

|                |                   |        |       |                     |                |                       |                   |                     |              |
|----------------|-------------------|--------|-------|---------------------|----------------|-----------------------|-------------------|---------------------|--------------|
| MBS205<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.093<br>0.306 | -256.942<br>0.673     | -0.952<br>-24.092 | 7.981 M<br>-3.963   | KN<br>PASSED |
| MBS206<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.020<br>0.153 | -112.827<br>-0.004    | 0.177<br>3.253    | -0.056 M<br>0.442   | KN<br>PASSED |
| MBS207<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.092<br>0.306 | -255.757<br>0.669     | -0.770<br>-23.839 | 7.890 M<br>-4.300   | KN<br>PASSED |
| MBS208<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.000 | H1-3 COM<br>B7 COMP | 0.023<br>0.153 | -104.130<br>1.559E-04 | 1.577<br>3.154    | 0.018 M<br>-2.336   | KN<br>PASSED |
| MBS209<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.091<br>0.306 | -251.156<br>0.654     | -0.621<br>-23.156 | 7.655 M<br>-4.692   | KN<br>PASSED |
| MBS210<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.000 | H1-3 COM<br>B7 COMP | 0.027<br>0.153 | -101.089<br>0.022     | 2.654<br>3.445    | 0.274 M<br>-4.031   | KN<br>PASSED |
| MBS211<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.089<br>0.306 | -251.852<br>0.623     | -0.494<br>-22.031 | 7.273 M<br>-5.033   | KN<br>PASSED |
| MBS212<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.000 | H1-3 COM<br>B7 COMP | 0.031<br>0.153 | -93.719<br>0.026      | 4.086<br>3.543    | 0.480 M<br>-6.522   | KN<br>PASSED |
| MBS213<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.083<br>0.306 | -243.421<br>0.577     | -0.047<br>-20.054 | 6.559 M<br>-4.562   | KN<br>PASSED |
| MBS214<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.000 | H1-3 COM<br>B7 COMP | 0.032<br>0.153 | -86.431<br>0.155      | 4.780<br>4.862    | 1.251 M<br>-6.217   | KN<br>PASSED |
| MBS215<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.098<br>0.306 | -423.196<br>0.406     | -0.126<br>-16.249 | 5.128 M<br>-4.877   | KN<br>PASSED |
| MBS216<br>ASD9 | TEESM<br>T460x267 | OP-45  | 3.000 | H1-3 COM<br>B7 COMP | 0.093<br>0.153 | -69.504<br>-0.669     | 20.330<br>-3.669  | -3.271 M<br>-39.377 | KN<br>PASSED |
| MBS217<br>ASD9 | TEESM<br>T460x267 | OP-90  | 6.000 | H1-3 COM<br>B7 COMP | 0.162<br>0.306 | -687.741<br>-0.494    | -0.590<br>-34.642 | -6.026 M<br>0.596   | KN<br>PASSED |
| MBS218<br>ASD9 | TEESM<br>T460x267 | OP-90  | 3.000 | H1-2 COM<br>B7 COMP | 0.375<br>0.153 | -1739.427<br>3.721    | 0.969<br>92.433   | 44.445 M<br>-0.711  | KN<br>PASSED |
| MBS219<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.104<br>0.306 | -413.552<br>0.359     | -3.712<br>-12.141 | 3.562 M<br>-12.960  | KN<br>PASSED |
| MBS220<br>ASD9 | TEESM<br>T460x267 | OP-90  | 3.000 | AXC TBEN<br>B7 COMP | 0.062<br>0.153 | -52.228<br>0.341      | -13.117<br>-3.241 | -2.137 M<br>27.993  | KN<br>PASSED |
| MBS221<br>ASD9 | TEESM<br>T460x267 | OP-90  | 0.000 | H1-3 COM<br>B7 COMP | 0.063<br>0.306 | -142.052<br>0.288     | -2.632<br>-14.320 | 3.557 M<br>-7.352   | KN<br>PASSED |
| MBS222<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H2-1 TEN<br>B7 COMP | 0.014<br>0.153 | 21.815<br>-0.171      | 1.634<br>2.750    | -0.885 M<br>2.747   | KN<br>PASSED |
| MBS223<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 | H1-3 COM<br>B7 COMP | 0.147<br>0.306 | -976.697<br>0.201     | 1.849<br>-10.620  | 2.614 M<br>3.049    | KN<br>PASSED |
| MBS224<br>ASD9 | TEESM<br>T460x267 | OP-45  | 3.000 | H1-1 COM<br>B7 COMP | 0.297<br>0.153 | -1898.903<br>-2.220   | 3.823<br>-43.939  | -26.541 M<br>-1.000 | KN<br>PASSED |
| MBS226<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H2-1 TEN<br>B7 TEN  | 0.232<br>0.102 | 216.454<br>3.068      | 4.870<br>-85.071  | 36.503 M<br>12.966  | KN<br>PASSED |
| MBS228<br>ASD9 | TEESM<br>T460x267 | OP-135 | 0.000 | AXT CBEN<br>B7 TEN  | 0.210<br>0.102 | 139.602<br>3.059      | -4.576<br>-86.078 | 36.554 M<br>-11.405 | KN<br>PASSED |
| MBS229<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.178<br>0.306 | -1016.725<br>0.323    | -3.610<br>-15.030 | 3.919 M<br>-8.937   | KN<br>PASSED |
| MBS230<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.000 | H1-1 COM<br>B7 COMP | 0.263<br>0.153 | -1469.704<br>-2.521   | 0.427<br>-46.986  | -29.991 M<br>-5.706 | KN<br>PASSED |
| MBS231<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.088<br>0.306 | -275.025<br>0.442     | -2.769<br>-17.674 | 5.259 M<br>-7.615   | KN<br>PASSED |
| MBS232<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.000 | H2-1 TEN<br>B7 COMP | 0.053<br>0.153 | 5.332<br>-0.636       | -7.326<br>-9.163  | -7.402 M<br>16.652  | KN<br>PASSED |
| MBS233<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.079<br>0.306 | -214.097<br>0.465     | -2.173<br>-18.583 | 5.555 M<br>-6.166   | KN<br>PASSED |
| MBS234<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.038<br>0.153 | -77.269<br>-0.577     | -0.466<br>12.547  | -6.864 M<br>-0.952  | KN<br>PASSED |
| MBS235<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.080<br>0.306 | -226.648<br>0.485     | -1.465<br>-19.208 | 5.768 M<br>-4.779   | KN<br>PASSED |
| MBS236<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.037<br>0.153 | -76.009<br>-0.560     | -0.963<br>12.303  | -6.645 M<br>-0.895  | KN<br>PASSED |

|                |                   |        |       |                     |                |                     |                   |                            |    |
|----------------|-------------------|--------|-------|---------------------|----------------|---------------------|-------------------|----------------------------|----|
| MBS237<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.079<br>0.306 | -232.623<br>0.490   | -0.973<br>-19.351 | 5.812 M<br>-3.923 PASSED   | KN |
| MBS238<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.036<br>0.153 | -79.996<br>-0.551   | -0.206<br>12.189  | -6.553 M<br>-0.118 PASSED  | KN |
| MBS239<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.076<br>0.306 | -230.186<br>0.483   | -0.451<br>-19.071 | 5.709 M<br>-3.008 PASSED   | KN |
| MBS240<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.036<br>0.153 | -76.631<br>-0.550   | 0.820<br>12.137   | -6.554 M<br>1.077 PASSED   | KN |
| MBS241<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.070<br>0.306 | -213.249<br>0.462   | 0.241<br>-18.314  | 5.437 M<br>-1.663 PASSED   | KN |
| MBS242<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.036<br>0.153 | -77.270<br>-0.564   | 0.249<br>12.288   | -6.732 M<br>0.904 PASSED   | KN |
| MBS243<br>ASD9 | TEESM<br>T460x267 | OP-135 | 0.000 | H1-3 COM<br>B7 COMP | 0.074<br>0.306 | -247.524<br>0.359   | 3.444<br>-16.541  | 4.262 M<br>11.253 PASSED   | KN |
| MBS244<br>ASD9 | TEESM<br>T460x267 | OP-135 | 3.000 | AXT CBEN<br>B7 COMP | 0.049<br>0.153 | 1.732<br>-0.517     | 6.860<br>-8.230   | -6.334 M<br>-15.652 PASSED | KN |
| MBS245<br>ASD9 | TEESM<br>T460x267 | OP-45  | 6.000 | H1-3 COM<br>B7 COMP | 0.162<br>0.306 | -989.779<br>0.323   | 2.435<br>7.782    | 3.812 M<br>-10.850 PASSED  | KN |
| MBS246<br>ASD9 | TEESM<br>T460x267 | OP-135 | 3.000 | H1-3 COM<br>B7 COMP | 0.260<br>0.153 | -1243.764<br>-2.554 | -4.192<br>-51.575 | -29.870 M<br>13.953 PASSED | KN |
| MBS248<br>ASD9 | TEESM<br>T460x267 | OP-90  | 0.000 | H2-1 TEN<br>B7 TEN  | 0.223<br>0.102 | 144.779<br>3.113    | 3.975<br>-86.668  | 36.878 M<br>9.856 PASSED   | KN |
| MBS250<br>ASD9 | TEESM<br>T460x267 | OP-90  | 0.000 | H2-1 TEN<br>B7 TEN  | 0.217<br>0.102 | 178.267<br>3.176    | -3.945<br>-88.597 | 38.049 M<br>-10.355 PASSED | KN |
| MBS251<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.163<br>0.306 | -1007.980<br>0.221  | -2.715<br>-9.944  | 2.485 M<br>-7.511 PASSED   | KN |
| MBS252<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.000 | H1-1 COM<br>B7 COMP | 0.312<br>0.153 | -1985.439<br>-2.237 | -1.745<br>-43.693 | -26.713 M<br>-3.907 PASSED | KN |
| MBS253<br>ASD9 | TEESM<br>T460x267 | OP-45  | 6.000 | H1-3 COM<br>B7 COMP | 0.150<br>0.306 | -973.932<br>-0.204  | 2.010<br>-5.079   | -2.637 M<br>-8.694 PASSED  | KN |
| MBS254<br>ASD9 | TEESM<br>T460x267 | OP-45  | 3.000 | H1-1 COM<br>B7 COMP | 0.293<br>0.153 | -1929.825<br>2.076  | 3.598<br>40.350   | 25.053 M<br>-0.540 PASSED  | KN |
| MBS256<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H2-1 TEN<br>B7 TEN  | 0.232<br>0.102 | 215.866<br>-3.080   | 4.734<br>85.371   | -36.652 M<br>12.736 PASSED | KN |
| MBS258<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H2-1 TEN<br>B7 TEN  | 0.203<br>0.102 | 173.987<br>-2.957   | -2.839<br>82.760  | -35.233 M<br>-8.818 PASSED | KN |
| MBS259<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.181<br>0.306 | -1019.095<br>-0.340 | -3.654<br>16.160  | -4.117 M<br>-9.046 PASSED  | KN |
| MBS260<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.000 | H1-1 COM<br>B7 COMP | 0.263<br>0.153 | -1471.694<br>2.474  | 0.802<br>46.086   | 29.455 M<br>-6.636 PASSED  | KN |
| MBS261<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.090<br>0.306 | -275.885<br>-0.448  | -2.770<br>18.465  | -5.321 M<br>-7.635 PASSED  | KN |
| MBS262<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.000 | H2-1 TEN<br>B7 COMP | 0.054<br>0.153 | 5.100<br>0.633      | -7.450<br>9.142   | 7.351 M<br>16.903 PASSED   | KN |
| MBS263<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.081<br>0.306 | -215.169<br>-0.466  | -2.179<br>19.232  | -5.567 M<br>-6.195 PASSED  | KN |
| MBS264<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 | H1-3 COM<br>B7 COMP | 0.038<br>0.153 | -77.285<br>0.574    | -0.441<br>-12.441 | 6.819 M<br>-1.004 PASSED   | KN |
| MBS265<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.081<br>0.306 | -227.898<br>-0.484  | -1.471<br>19.765  | -5.747 M<br>-4.812 PASSED  | KN |
| MBS266<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 | H1-3 COM<br>B7 COMP | 0.037<br>0.153 | -76.261<br>0.556    | -0.921<br>-12.195 | 6.599 M<br>-0.938 PASSED   | KN |
| MBS267<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.080<br>0.306 | -233.937<br>-0.487  | -0.983<br>19.878  | -5.780 M<br>-3.968 PASSED  | KN |
| MBS268<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 | H1-3 COM<br>B7 COMP | 0.036<br>0.153 | -80.265<br>0.547    | -0.135<br>-12.102 | 6.519 M<br>-0.112 PASSED   | KN |
| MBS269<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.078<br>0.306 | -231.486<br>-0.481  | -0.465<br>19.634  | -5.690 M<br>-3.066 PASSED  | KN |
| MBS270<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 | H1-3 COM<br>B7 COMP | 0.036<br>0.153 | -76.902<br>0.548    | 0.935<br>-12.105  | 6.546 M<br>1.143 PASSED    | KN |
| MBS271         | TEESM             | OP-0   | 0.000 | H1-3 COM            | 0.072          | -214.389            | 0.225             | -5.455 M                   | KN |

|        |          |        |       |          |       |           |         |         |        |    |
|--------|----------|--------|-------|----------|-------|-----------|---------|---------|--------|----|
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.463    | 18.979  | -1.727  | PASSED |    |
| MBS272 | TEESM    | OP-45  | 0.000 | H1-3 COM | 0.036 | -77.687   | 0.382   | 6.757   | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.153 | 0.566     | -12.330 | 1.040   | PASSED |    |
| MBS273 | TEESM    | OP-135 | 6.000 | H1-3 COM | 0.077 | -232.706  | 3.441   | -4.668  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.394    | -13.442 | -9.285  | PASSED |    |
| MBS274 | TEESM    | OP-135 | 3.000 | AXT CBEN | 0.051 | 6.364     | 7.163   | 7.094   | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.153 | 0.587     | 8.774   | -16.142 | PASSED |    |
| MBS275 | TEESM    | OP-45  | 6.000 | H1-3 COM | 0.163 | -994.690  | 2.392   | -3.906  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.331    | -8.041  | -10.673 | PASSED |    |
| MBS276 | TEESM    | OP-0   | 3.000 | H1-1 COM | 0.246 | -1424.867 | 2.783   | 28.718  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.153 | 2.398     | 44.681  | -1.609  | PASSED |    |
| MBS278 | TEESM    | OP-0   | 0.000 | H2-1 TEN | 0.217 | 166.541   | 3.434   | -35.192 | M      | KN |
| ASD9   | T460x267 |        |       | B7 TEN   | 0.102 | -2.957    | 82.763  | 10.090  | PASSED |    |
| MBS280 | TEESM    | OP-0   | 0.000 | H2-1 TEN | 0.215 | 226.682   | -4.135  | -36.553 | M      | KN |
| ASD9   | T460x267 |        |       | B7 TEN   | 0.102 | -3.066    | 85.184  | -11.797 | PASSED |    |
| MBS281 | TEESM    | OP-0   | 0.000 | H1-3 COM | 0.166 | -1006.472 | -2.669  | -2.883  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.253    | 11.648  | -7.424  | PASSED |    |
| MBS282 | TEESM    | OP-0   | 3.000 | H1-1 COM | 0.309 | -1981.766 | -2.011  | 26.428  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.153 | 2.217     | 43.258  | -3.231  | PASSED |    |
| MBS283 | TEESM    | OP-45  | 6.000 | H1-3 COM | 0.046 | -113.643  | 2.777   | -2.787  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.222    | -6.441  | -8.915  | PASSED |    |
| MBS284 | TEESM    | OP-0   | 3.000 | AXT CBEN | 0.019 | 26.987    | 4.929   | 1.109   | M      | KN |
| ASD9   | T460x267 |        |       | B7 TEN   | 0.102 | 0.096     | 0.213   | -9.523  | PASSED |    |
| MBS285 | TEESM    | OP-0   | 0.000 | H1-3 COM | 0.083 | -405.334  | 1.411   | -3.980  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.284    | 13.808  | 3.831   | PASSED |    |
| MBS286 | TEESM    | OP-0   | 3.000 | H1-3 COM | 0.061 | -55.854   | 9.454   | 3.503   | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.153 | 0.617     | 4.540   | -22.615 | PASSED |    |
| MBS287 | TEESM    | OP-0   | 6.000 | H1-3 COM | 0.158 | -728.633  | 3.113   | 2.928   | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | 0.265     | 19.767  | -12.094 | PASSED |    |
| MBS288 | TEESM    | OP-0   | 3.000 | H1-2 COM | 0.359 | -1816.332 | 16.225  | -28.484 | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.153 | -2.366    | -61.344 | -23.369 | PASSED |    |
| MBS289 | TEESM    | OP-0   | 0.000 | H1-3 COM | 0.100 | -425.106  | -2.166  | -5.339  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.474    | 17.575  | -4.160  | PASSED |    |
| MBS290 | TEESM    | OP-0   | 3.000 | AXC TBEN | 0.085 | -67.500   | -22.143 | 1.661   | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.153 | -0.240    | 1.235   | 41.898  | PASSED |    |
| MBS291 | TEESM    | OP-0   | 0.000 | H1-3 COM | 0.085 | -246.259  | -1.868  | -6.841  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.556    | 21.363  | -3.673  | PASSED |    |
| MBS292 | TEESM    | OP-45  | 0.000 | H1-3 COM | 0.028 | -91.580   | -4.418  | -0.948  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.153 | -0.035    | -1.643  | -7.283  | PASSED |    |
| MBS293 | TEESM    | OP-0   | 0.000 | H1-3 COM | 0.089 | -254.831  | -1.435  | -7.470  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.621    | 23.127  | -3.144  | PASSED |    |
| MBS294 | TEESM    | OP-45  | 0.000 | H1-3 COM | 0.025 | -99.142   | -3.638  | -0.487  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.153 | -0.057    | -2.139  | -4.835  | PASSED |    |
| MBS295 | TEESM    | OP-0   | 0.000 | H1-3 COM | 0.090 | -250.669  | -1.294  | -7.773  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.649    | 24.044  | -3.384  | PASSED |    |
| MBS296 | TEESM    | OP-45  | 0.000 | H1-3 COM | 0.023 | -106.082  | -2.186  | -0.299  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.153 | -0.028    | -2.606  | -2.970  | PASSED |    |
| MBS297 | TEESM    | OP-0   | 0.000 | H1-3 COM | 0.092 | -251.785  | -1.099  | -7.920  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.665    | 24.513  | -3.614  | PASSED |    |
| MBS298 | TEESM    | OP-45  | 0.000 | H1-3 COM | 0.021 | -108.966  | -0.904  | -0.082  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.153 | -0.010    | -2.992  | -1.177  | PASSED |    |
| MBS299 | TEESM    | OP-0   | 0.000 | H1-3 COM | 0.095 | -264.701  | -0.961  | -7.928  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.669    | 24.579  | -4.003  | PASSED |    |
| MBS300 | TEESM    | OP-45  | 0.000 | H1-3 COM | 0.020 | -116.801  | -0.025  | 0.107   | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.153 | 0.007     | -3.276  | 0.070   | PASSED |    |
| MBS301 | TEESM    | OP-0   | 0.000 | H1-3 COM | 0.094 | -255.665  | -0.786  | -7.872  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.667    | 24.410  | -4.301  | PASSED |    |
| MBS302 | TEESM    | OP-0   | 3.000 | H1-3 COM | 0.022 | -101.201  | 1.383   | -0.127  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.153 | -0.010    | -3.226  | -2.024  | PASSED |    |
| MBS303 | TEESM    | OP-0   | 0.000 | H1-3 COM | 0.092 | -250.748  | -0.593  | -7.677  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.655    | 23.837  | -4.548  | PASSED |    |

|                |                   |        |       |                     |                |                       |                    |                             |    |
|----------------|-------------------|--------|-------|---------------------|----------------|-----------------------|--------------------|-----------------------------|----|
| MBS304<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.000 | H1-3 COM<br>B7 COMP | 0.026<br>0.153 | -98.389<br>-0.030     | 2.536<br>-3.510    | -0.367 M<br>-3.862 PASSED   | KN |
| MBS305<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.091<br>0.306 | -251.486<br>-0.629    | -0.425<br>22.859   | -7.347 M<br>-4.750 PASSED   | KN |
| MBS306<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.000 | H1-3 COM<br>B7 COMP | 0.031<br>0.153 | -90.970<br>-0.031     | 3.995<br>-3.579    | -0.537 M<br>-6.386 PASSED   | KN |
| MBS307<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.085<br>0.306 | -243.083<br>-0.586    | 0.009<br>21.051    | -6.692 M<br>-4.246 PASSED   | KN |
| MBS308<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.000 | H1-3 COM<br>B7 COMP | 0.032<br>0.153 | -83.561<br>-0.155     | 4.543<br>-4.830    | -1.247 M<br>-5.959 PASSED   | KN |
| MBS309<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.099<br>0.306 | -427.406<br>-0.424    | 0.391<br>17.440    | -5.329 M<br>-3.614 PASSED   | KN |
| MBS310<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.000 | H1-3 COM<br>B7 COMP | 0.096<br>0.153 | -67.591<br>0.629      | 21.962<br>3.384    | 3.139 M<br>-40.964 PASSED   | KN |
| MBS311<br>ASD9 | TEESM<br>T460x267 | OP-0   | 6.000 | H1-3 COM<br>B7 COMP | 0.145<br>0.306 | -734.128<br>0.225     | -5.083<br>19.891   | 2.959 M<br>15.741 PASSED    | KN |
| MBS312<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.000 | H1-1 COM<br>B7 COMP | 0.329<br>0.153 | -1826.253<br>-2.405   | -12.627<br>-61.543 | -28.597 M<br>15.488 PASSED  | KN |
| MBS313<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.104<br>0.306 | -409.627<br>-0.378    | -3.188<br>13.651   | -3.884 M<br>-11.636 PASSED  | KN |
| MBS314<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.000 | AXC TBEN<br>B7 COMP | 0.053<br>0.153 | -57.265<br>-0.145     | -9.728<br>2.798    | 2.262 M<br>23.714 PASSED    | KN |
| MBS315<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.067<br>0.306 | -137.650<br>-0.262    | -4.045<br>11.006   | -2.951 M<br>-13.296 PASSED  | KN |
| MBS316<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.000 | H2-1 TEN<br>B7 TEN  | 0.022<br>0.102 | 22.173<br>0.068       | -4.829<br>-0.117   | 0.893 M<br>9.978 PASSED     | KN |
| MBS317<br>ASD9 | TEESM<br>T460x267 | OP-90  | 6.000 | AXC TBEN<br>B7 COMP | 0.722<br>0.306 | -237.272<br>0.082     | -88.905<br>1.995   | 0.968 M<br>364.112 PASSED   | KN |
| MBS318<br>ASD9 | TEESM<br>T460x267 | OP-0   | 6.000 | H1-3 COM<br>B7 COMP | 0.774<br>0.306 | -280.848<br>-0.016    | 92.163<br>-0.356   | -0.190 M<br>-374.439 PASSED | KN |
| MBS319<br>ASD9 | TEESM<br>T460x267 | OP-0   | 6.000 | AXC TBEN<br>B7 COMP | 0.739<br>0.306 | -279.951<br>-0.015    | -93.173<br>-0.345  | -0.184 M<br>374.646 PASSED  | KN |
| MBS320<br>ASD9 | TEESM<br>T460x267 | OP-90  | 6.000 | H1-3 COM<br>B7 COMP | 0.751<br>0.306 | -237.225<br>0.081     | 88.884<br>1.993    | 0.969 M<br>-363.994 PASSED  | KN |
| MBS330<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 | AXT CBEN<br>B7 TEN  | 0.056<br>0.128 | 83.727<br>-0.028      | -13.707<br>-0.236  | -0.569 M<br>-28.377 PASSED  | KN |
| MBS331<br>ASD9 | TEESM<br>T460x267 | OP-90  | 3.753 | H2-1 TEN<br>B7 TEN  | 0.041<br>0.128 | 22.889<br>0.503       | 4.175<br>16.998    | 5.702 M<br>0.812 PASSED     | KN |
| MBS332<br>ASD9 | TEESM<br>T460x267 | OP-90  | 3.753 | H2-1 TEN<br>B7 TEN  | 0.031<br>0.128 | 47.703<br>0.365       | 2.505<br>11.732    | 4.276 M<br>-1.778 PASSED    | KN |
| MBS333<br>ASD9 | TEESM<br>T460x267 | OP-90  | 3.753 | AXT CBEN<br>B7 TEN  | 0.165<br>0.128 | 54.920<br>-2.207      | 6.263<br>-70.132   | -25.194 M<br>-6.340 PASSED  | KN |
| MBS334<br>ASD9 | TEESM<br>T460x267 | OP-135 | 0.000 | H1-3 COM<br>B7 COMP | 0.027<br>0.191 | -9.823<br>-0.308      | -7.250<br>3.406    | -3.673 M<br>-9.123 PASSED   | KN |
| MBS335<br>ASD9 | TEESM<br>T460x267 | OP-90  | 3.753 | AXT CBEN<br>B7 TEN  | 0.179<br>0.128 | 29.212<br>2.335       | 8.344<br>72.344    | 26.371 M<br>-11.056 PASSED  | KN |
| MBS336<br>ASD9 | TEESM<br>T460x267 | OP-90  | 0.000 | H1-3 COM<br>B7 COMP | 0.042<br>0.191 | -99.121<br>0.043      | -9.798<br>0.116    | 0.519 M<br>-15.551 PASSED   | KN |
| MBS337<br>ASD9 | TEESM<br>T460x267 | OP-90  | 3.753 | H1-3 COM<br>B7 COMP | 0.034<br>0.191 | -55.174<br>-0.255     | 7.038<br>-9.686    | -3.014 M<br>-3.453 PASSED   | KN |
| MBS338<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.753 | H1-3 COM<br>B7 COMP | 0.019<br>0.191 | -125.742<br>-0.020    | 5.742<br>-0.770    | -0.240 M<br>-1.309 PASSED   | KN |
| MBS339<br>ASD9 | TEESM<br>T460x267 | OP-135 | 3.753 | H1-3 COM<br>B7 COMP | 0.024<br>0.191 | -76.952<br>0.092      | 6.821<br>2.710     | 1.080 M<br>-4.539 PASSED    | KN |
| MBS340<br>ASD9 | TEESM<br>T460x267 | OP-45  | 1.877 | H1-3 COM<br>B7 COMP | 0.018<br>0.191 | -136.836<br>0.001     | 0.468<br>-0.069    | 0.004 M<br>4.627 PASSED     | KN |
| MBS341<br>ASD9 | TEESM<br>T460x267 | OP-45  | 3.753 | H1-3 COM<br>B7 COMP | 0.019<br>0.191 | -94.161<br>0.026      | 6.603<br>0.538     | 0.326 M<br>-3.598 PASSED    | KN |
| MBS342<br>ASD9 | TEESM<br>T460x267 | OP-45  | 1.877 | H1-3 COM<br>B7 COMP | 0.019<br>0.191 | -138.221<br>5.444E-04 | 0.469<br>-0.076    | -0.004 M<br>4.531 PASSED    | KN |

|                |                   |        |                           |                |                       |                   |                            |    |
|----------------|-------------------|--------|---------------------------|----------------|-----------------------|-------------------|----------------------------|----|
| MBS343<br>ASD9 | TEESM<br>T460x267 | OP-135 | 3.753 H1-3 COM<br>B7 COMP | 0.019<br>0.191 | -87.322<br>0.025      | 6.631<br>0.605    | 0.290 M<br>-3.951 PASSED   | KN |
| MBS344<br>ASD9 | TEESM<br>T460x267 | OP-0   | 1.877 H1-3 COM<br>B7 COMP | 0.019<br>0.191 | -139.392<br>-0.009    | 0.490<br>-0.021   | -0.097 M<br>4.488 PASSED   | KN |
| MBS345<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.753 H1-3 COM<br>B7 COMP | 0.018<br>0.191 | -101.184<br>-0.007    | 6.398<br>-0.136   | -0.074 M<br>-3.171 PASSED  | KN |
| MBS346<br>ASD9 | TEESM<br>T460x267 | OP-0   | 1.877 H1-3 COM<br>B7 COMP | 0.019<br>0.191 | -139.225<br>-0.014    | 0.472<br>0.028    | -0.137 M<br>4.520 PASSED   | KN |
| MBS347<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.753 H1-3 COM<br>B7 COMP | 0.019<br>0.191 | -100.214<br>-0.026    | 6.435<br>-0.598   | -0.307 M<br>-3.249 PASSED  | KN |
| MBS348<br>ASD9 | TEESM<br>T460x267 | OP-0   | 1.877 H1-3 COM<br>B7 COMP | 0.018<br>0.191 | -137.926<br>-0.014    | 0.451<br>0.033    | -0.145 M<br>4.626 PASSED   | KN |
| MBS349<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.753 H1-3 COM<br>B7 COMP | 0.019<br>0.191 | -95.880<br>-0.037     | 6.562<br>-0.761   | -0.444 M<br>-3.504 PASSED  | KN |
| MBS350<br>ASD9 | TEESM<br>T460x267 | OP-45  | 3.753 H1-3 COM<br>B7 COMP | 0.018<br>0.191 | -128.485<br>0.014     | 5.693<br>0.586    | 0.183 M<br>-1.157 PASSED   | KN |
| MBS351<br>ASD9 | TEESM<br>T460x267 | OP-90  | 3.753 H1-3 COM<br>B7 COMP | 0.023<br>0.191 | -71.987<br>-0.091     | 6.854<br>-2.747   | -1.083 M<br>-4.607 PASSED  | KN |
| MBS352<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 H1-3 COM<br>B7 COMP | 0.042<br>0.191 | -95.666<br>-0.062     | -9.689<br>0.765   | -0.714 M<br>-15.188 PASSED | KN |
| MBS353<br>ASD9 | TEESM<br>T460x267 | OP-90  | 3.753 H1-3 COM<br>B7 COMP | 0.035<br>0.191 | -54.604<br>0.252      | 7.190<br>9.627    | 2.985 M<br>-3.945 PASSED   | KN |
| MBS354<br>ASD9 | TEESM<br>T460x267 | OP-90  | 3.753 H1-3 COM<br>B7 COMP | 0.027<br>0.191 | -2.981<br>0.326       | 2.858<br>11.041   | 3.933 M<br>-1.191 PASSED   | KN |
| MBS355<br>ASD9 | TEESM<br>T460x267 | OP-90  | 3.753 AXT CBEN<br>B7 TEN  | 0.173<br>0.128 | 29.457<br>-2.324      | 7.393<br>-71.903  | -26.242 M<br>-8.090 PASSED | KN |
| MBS356<br>ASD9 | TEESM<br>T460x267 | OP-90  | 3.753 H2-1 TEN<br>B7 TEN  | 0.031<br>0.128 | 47.437<br>-0.352      | 2.255<br>-11.669  | -4.122 M<br>-1.013 PASSED  | KN |
| MBS357<br>ASD9 | TEESM<br>T460x267 | OP-90  | 3.753 AXT CBEN<br>B7 TEN  | 0.172<br>0.128 | 54.823<br>2.216       | 7.215<br>70.518   | 25.300 M<br>-9.293 PASSED  | KN |
| MBS358<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 AXT CBEN<br>B7 TEN  | 0.059<br>0.128 | 84.436<br>0.014       | -13.792<br>0.888  | 0.387 M<br>-28.850 PASSED  | KN |
| MBS359<br>ASD9 | TEESM<br>T460x267 | OP-90  | 3.753 H2-1 TEN<br>B7 TEN  | 0.042<br>0.128 | 23.230<br>-0.495      | 3.951<br>-16.939  | -5.599 M<br>1.545 PASSED   | KN |
| MBS360<br>ASD9 | TEESM<br>T460x267 | OP-45  | 3.753 AXT CBEN<br>B7 TEN  | 0.056<br>0.128 | 86.977<br>-0.037      | 13.464<br>-0.683  | -0.183 M<br>-27.711 PASSED | KN |
| MBS361<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.753 H2-1 TEN<br>B7 TEN  | 0.144<br>0.128 | 155.377<br>0.013      | -22.105<br>-1.366 | -0.401 M<br>63.666 PASSED  | KN |
| MBS362<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.753 AXT CBEN<br>B7 TEN  | 0.029<br>0.128 | 55.396<br>-0.281      | 7.228<br>-3.682   | -3.135 M<br>-10.876 PASSED | KN |
| MBS363<br>ASD9 | TEESM<br>T460x267 | OP-45  | 3.753 H2-1 TEN<br>B7 TEN  | 0.055<br>0.128 | 29.016<br>0.113       | -4.082<br>1.862   | 0.879 M<br>24.310 PASSED   | KN |
| MBS364<br>ASD9 | TEESM<br>T460x267 | OP-135 | 3.753 H1-3 COM<br>B7 COMP | 0.022<br>0.191 | -15.304<br>0.130      | 6.963<br>1.531    | 1.608 M<br>-8.843 PASSED   | KN |
| MBS365<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.753 H2-1 TEN<br>B7 TEN  | 0.051<br>0.128 | 14.104<br>0.023       | -3.081<br>1.866   | 0.577 M<br>23.058 PASSED   | KN |
| MBS366<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.753 H1-3 COM<br>B7 COMP | 0.040<br>0.191 | -87.532<br>-0.036     | 9.678<br>-0.091   | -0.403 M<br>-15.397 PASSED | KN |
| MBS367<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.753 H2-1 TEN<br>B7 COMP | 0.100<br>0.191 | 22.931<br>-0.013      | -14.379<br>0.127  | 0.445 M<br>49.548 PASSED   | KN |
| MBS368<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 H1-3 COM<br>B7 COMP | 0.018<br>0.191 | -124.692<br>0.023     | -5.720<br>-0.825  | 0.270 M<br>-1.266 PASSED   | KN |
| MBS369<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.753 H1-3 COM<br>B7 COMP | 0.031<br>0.191 | -75.030<br>0.107      | 9.017<br>1.542    | 0.732 M<br>-9.559 PASSED   | KN |
| MBS370<br>ASD9 | TEESM<br>T460x267 | OP-45  | 1.877 H1-3 COM<br>B7 COMP | 0.018<br>0.191 | -135.331<br>0.001     | -0.470<br>-0.074  | 0.017 M<br>4.624 PASSED    | KN |
| MBS371<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.753 H1-3 COM<br>B7 COMP | 0.025<br>0.191 | -76.336<br>0.004      | 8.181<br>0.325    | 0.206 M<br>-8.156 PASSED   | KN |
| MBS372<br>ASD9 | TEESM<br>T460x267 | OP-45  | 1.877 H1-3 COM<br>B7 COMP | 0.018<br>0.191 | -136.491<br>8.454E-04 | -0.467<br>-0.072  | 0.016 M<br>4.525 PASSED    | KN |
| MBS373         | TEESM             | OP-0   | 3.753 H1-3 COM            | 0.025          | -79.438               | 7.928             | 0.133 M                    | KN |

|        |          |        |                |       |            |         |          |        |  |
|--------|----------|--------|----------------|-------|------------|---------|----------|--------|--|
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | 0.010      | 0.231   | -7.736   | PASSED |  |
| MBS374 | TEESM    | OP-0   | 1.877 H1-3 COM | 0.018 | -136.716   | -0.486  | 0.099 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | 0.009      | -0.024  | 4.443    | PASSED |  |
| MBS375 | TEESM    | OP-45  | 3.753 H1-3 COM | 0.024 | -80.283    | 7.848   | -0.025 M | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.002     | -0.072  | -7.612   | PASSED |  |
| MBS376 | TEESM    | OP-0   | 1.877 H1-3 COM | 0.018 | -137.587   | -0.445  | 0.118 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | 0.012      | 0.029   | 4.516    | PASSED |  |
| MBS377 | TEESM    | OP-45  | 3.753 H1-3 COM | 0.025 | -80.014    | 7.901   | -0.125 M | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.008     | -0.256  | -7.695   | PASSED |  |
| MBS378 | TEESM    | OP-0   | 1.877 H1-3 COM | 0.018 | -136.513   | -0.428  | 0.118 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | 0.011      | 0.031   | 4.627    | PASSED |  |
| MBS379 | TEESM    | OP-45  | 3.753 H1-3 COM | 0.026 | -77.539    | 8.150   | -0.231 M | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.005     | -0.450  | -8.112   | PASSED |  |
| MBS380 | TEESM    | OP-45  | 0.000 H1-3 COM | 0.018 | -126.873   | -5.696  | -0.199 M | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.016     | 0.579   | -1.182   | PASSED |  |
| MBS381 | TEESM    | OP-45  | 3.753 H1-3 COM | 0.030 | -78.910    | 9.041   | -0.578 M | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.085     | -1.110  | -9.523   | PASSED |  |
| MBS382 | TEESM    | OP-0   | 3.753 H1-3 COM | 0.041 | -98.199    | 9.475   | 0.651 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | 0.056      | 0.751   | -14.475  | PASSED |  |
| MBS383 | TEESM    | OP-0   | 3.753 H2-1 TEN | 0.098 | 8.018      | -12.755 | -1.595 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -0.115     | -3.307  | 45.624   | PASSED |  |
| MBS384 | TEESM    | OP-0   | 3.753 H1-3 COM | 0.023 | -3.296     | 6.749   | -2.763 M | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.225     | -2.719  | -8.655   | PASSED |  |
| MBS385 | TEESM    | OP-135 | 3.753 H2-1 TEN | 0.049 | 17.792     | -3.011  | 0.411 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 0.059      | 1.090   | 22.830   | PASSED |  |
| MBS386 | TEESM    | OP-45  | 3.753 AXT CBEN | 0.028 | 56.041     | 7.408   | 2.712 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 0.244      | 2.841   | -11.070  | PASSED |  |
| MBS387 | TEESM    | OP-0   | 3.753 H2-1 TEN | 0.051 | 26.940     | -4.169  | -0.280 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -0.067     | 0.170   | 24.492   | PASSED |  |
| MBS388 | TEESM    | OP-0   | 3.753 AXT CBEN | 0.060 | 89.229     | 13.753  | 0.376 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 0.048      | 1.500   | -28.753  | PASSED |  |
| MBS389 | TEESM    | OP-0   | 3.753 H2-1 TEN | 0.156 | 166.116    | -23.809 | -1.101 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -0.165     | -2.827  | 67.724   | PASSED |  |
| MBS390 | TEESM    | OP-45  | 3.753 H1-3 COM | 0.033 | -172.696   | 5.604   | -0.403 M | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.020     | -1.252  | -5.381   | PASSED |  |
| MBS391 | TEESM    | OP-135 | 3.753 H1-3 COM | 0.018 | -13.927    | 5.279   | 1.116 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | 0.099      | 3.405   | -4.523   | PASSED |  |
| MBS392 | TEESM    | OP-90  | 0.000 H2-1 TEN | 0.038 | 20.212     | 2.256   | 0.685 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | 0.063      | -0.516  | 17.887   | PASSED |  |
| MBS393 | TEESM    | OP-90  | 3.753 H1-3 COM | 0.042 | -12.317    | 4.762   | -4.781 M | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.391     | -13.734 | -5.431   | PASSED |  |
| MBS394 | TEESM    | OP-90  | 0.000 H2-1 TEN | 0.047 | 54.758     | 2.295   | -1.132 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -0.089     | 1.515   | 19.589   | PASSED |  |
| MBS395 | TEESM    | OP-90  | 3.753 AXT CBEN | 0.050 | 6.967      | 7.275   | 4.392 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | 0.391      | 12.458  | -11.389  | PASSED |  |
| MBS396 | TEESM    | OP-135 | 1.877 H2-1 TEN | 0.013 | 15.746     | 0.515   | 0.035 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | 0.002      | -0.122  | 5.800    | PASSED |  |
| MBS397 | TEESM    | OP-0   | 3.753 AXT CBEN | 0.039 | 9.777      | 11.204  | -0.346 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -0.020     | -1.365  | -18.311  | PASSED |  |
| MBS398 | TEESM    | OP-135 | 1.877 H2-1 TEN | 0.022 | 108.260    | -0.787  | -0.060 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -0.007     | -0.251  | 5.467    | PASSED |  |
| MBS399 | TEESM    | OP-0   | 3.753 AXT CBEN | 0.043 | 38.943     | 12.491  | 0.837 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 0.065      | 1.530   | -20.309  | PASSED |  |
| MBS400 | TEESM    | OP-45  | 1.877 H2-1 TEN | 0.022 | 111.436    | -1.287  | -0.022 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -4.232E-06 | -0.221  | 5.445    | PASSED |  |
| MBS401 | TEESM    | OP-0   | 3.753 AXT CBEN | 0.043 | 43.659     | 12.686  | 0.623 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 0.046      | 1.062   | -20.801  | PASSED |  |
| MBS402 | TEESM    | OP-45  | 1.877 H2-1 TEN | 0.022 | 114.932    | -1.367  | -0.005 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 2.170E-04  | -0.117  | 5.327    | PASSED |  |
| MBS403 | TEESM    | OP-0   | 3.753 AXT CBEN | 0.042 | 42.993     | 12.705  | 0.340 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 0.024      | 0.561   | -20.931  | PASSED |  |

|                |                   |        |                           |                |                       |                  |                             |    |
|----------------|-------------------|--------|---------------------------|----------------|-----------------------|------------------|-----------------------------|----|
| MBS404<br>ASD9 | TEESM<br>T460x267 | OP-45  | 1.877 H2-1 TEN<br>B7 TEN  | 0.022<br>0.128 | 116.282<br>0.002      | -1.367<br>0.014  | 0.027 M<br>5.296 PASSED     | KN |
| MBS405<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.753 AXT CBEN<br>B7 TEN  | 0.041<br>0.128 | 43.542<br>-0.005      | 12.658<br>-0.115 | -0.027 M<br>-20.862 PASSED  | KN |
| MBS406<br>ASD9 | TEESM<br>T460x267 | OP-45  | 1.877 H2-1 TEN<br>B7 TEN  | 0.022<br>0.128 | 116.097<br>0.003      | -1.365<br>0.145  | 0.057 M<br>5.325 PASSED     | KN |
| MBS407<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.753 AXT CBEN<br>B7 TEN  | 0.043<br>0.128 | 43.660<br>-0.033      | 12.621<br>-0.792 | -0.394 M<br>-20.725 PASSED  | KN |
| MBS408<br>ASD9 | TEESM<br>T460x267 | OP-45  | 1.877 H2-1 TEN<br>B7 TEN  | 0.022<br>0.128 | 112.225<br>0.003      | -1.291<br>0.254  | 0.070 M<br>5.449 PASSED     | KN |
| MBS409<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.753 AXT CBEN<br>B7 TEN  | 0.043<br>0.128 | 44.024<br>-0.057      | 12.562<br>-1.330 | -0.700 M<br>-20.469 PASSED  | KN |
| MBS410<br>ASD9 | TEESM<br>T460x267 | OP-0   | 1.877 H2-1 TEN<br>B7 TEN  | 0.022<br>0.128 | 106.337<br>0.016      | -1.163<br>0.368  | 0.165 M<br>5.533 PASSED     | KN |
| MBS411<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.753 AXT CBEN<br>B7 TEN  | 0.043<br>0.128 | 39.896<br>-0.078      | 12.352<br>-1.904 | -0.960 M<br>-19.867 PASSED  | KN |
| MBS412<br>ASD9 | TEESM<br>T460x267 | OP-90  | 1.877 H2-1 TEN<br>B7 COMP | 0.013<br>0.191 | 12.686<br>0.016       | 0.601<br>-0.010  | 0.189 M<br>5.756 PASSED     | KN |
| MBS413<br>ASD9 | TEESM<br>T460x267 | OP-45  | 3.753 AXT CBEN<br>B7 TEN  | 0.038<br>0.128 | 11.185<br>0.012       | 11.119<br>1.217  | 0.258 M<br>-18.055 PASSED   | KN |
| MBS414<br>ASD9 | TEESM<br>T460x267 | OP-135 | 0.000 H2-1 TEN<br>B7 TEN  | 0.047<br>0.128 | 52.357<br>0.090       | 2.459<br>-1.513  | 1.213 M<br>19.526 PASSED    | KN |
| MBS415<br>ASD9 | TEESM<br>T460x267 | OP-90  | 3.753 AXT CBEN<br>B7 COMP | 0.047<br>0.191 | 7.249<br>-0.415       | 6.537<br>-13.325 | -4.672 M<br>-9.054 PASSED   | KN |
| MBS416<br>ASD9 | TEESM<br>T460x267 | OP-90  | 0.000 H2-1 TEN<br>B7 COMP | 0.039<br>0.191 | 20.767<br>-0.071      | 2.055<br>0.897   | -0.776 M<br>17.786 PASSED   | KN |
| MBS417<br>ASD9 | TEESM<br>T460x267 | OP-90  | 3.753 H1-3 COM<br>B7 COMP | 0.045<br>0.191 | -12.090<br>0.366      | 5.505<br>12.837  | 4.490 M<br>-7.781 PASSED    | KN |
| MBS418<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.753 H1-3 COM<br>B7 COMP | 0.035<br>0.191 | -189.988<br>0.022     | 5.654<br>1.008   | 0.414 M<br>-5.644 PASSED    | KN |
| MBS419<br>ASD9 | TEESM<br>T460x267 | OP-90  | 3.753 H1-3 COM<br>B7 COMP | 0.016<br>0.191 | -4.803<br>-0.120      | 5.074<br>-3.812  | -1.342 M<br>-3.844 PASSED   | KN |
| MBS420<br>ASD9 | TEESM<br>T460x267 | OP-135 | 0.000 H1-3 COM<br>B7 COMP | 0.035<br>0.191 | -199.245<br>0.018     | -5.294<br>-0.978 | 0.373 M<br>-5.055 PASSED    | KN |
| MBS421<br>ASD9 | TEESM<br>T460x267 | OP-135 | 0.000 H1-3 COM<br>B7 COMP | 0.052<br>0.191 | -218.341<br>-0.010    | -13.300<br>0.160 | 0.187 M<br>-13.839 PASSED   | KN |
| MBS422<br>ASD9 | TEESM<br>T460x267 | OP-90  | 3.753 AXC TBEN<br>B7 COMP | 0.035<br>0.191 | -17.448<br>0.052      | -1.353<br>1.698  | 0.858 M<br>15.863 PASSED    | KN |
| MBS423<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.753 AXT CBEN<br>B7 TEN  | 0.246<br>0.128 | 56.034<br>-0.062      | 45.563<br>-1.125 | -0.485 M<br>-123.695 PASSED | KN |
| MBS424<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.753 H2-1 TEN<br>B7 TEN  | 0.043<br>0.128 | 39.189<br>0.089       | -1.736<br>1.911  | 1.222 M<br>17.997 PASSED    | KN |
| MBS425<br>ASD9 | TEESM<br>T460x267 | OP-135 | 3.753 AXT CBEN<br>B7 TEN  | 0.247<br>0.128 | 94.856<br>0.081       | 46.680<br>0.688  | 0.550 M<br>-124.770 PASSED  | KN |
| MBS426<br>ASD9 | TEESM<br>T460x267 | OP-0   | 1.877 AXC TBEN<br>B7 COMP | 0.010<br>0.191 | -16.422<br>0.025      | 0.199<br>-0.234  | 0.336 M<br>4.932 PASSED     | KN |
| MBS427<br>ASD9 | TEESM<br>T460x267 | OP-90  | 3.753 AXC TBEN<br>B7 COMP | 0.035<br>0.191 | -92.720<br>0.084      | 0.042<br>1.613   | 0.869 M<br>16.102 PASSED    | KN |
| MBS428<br>ASD9 | TEESM<br>T460x267 | OP-45  | 1.877 H2-1 TEN<br>B7 TEN  | 0.022<br>0.128 | 103.620<br>0.016      | 1.164<br>-0.284  | 0.145 M<br>5.471 PASSED     | KN |
| MBS429<br>ASD9 | TEESM<br>T460x267 | OP-45  | 1.877 H2-1 TEN<br>B7 TEN  | 0.019<br>0.128 | 64.300<br>-0.005      | 0.425<br>-0.191  | 0.194 M<br>6.024 PASSED     | KN |
| MBS430<br>ASD9 | TEESM<br>T460x267 | OP-0   | 1.877 H2-1 TEN<br>B7 TEN  | 0.022<br>0.128 | 111.809<br>-7.768E-04 | 1.283<br>-0.223  | 5.618E-04 M<br>5.445 PASSED | KN |
| MBS431<br>ASD9 | TEESM<br>T460x267 | OP-45  | 1.877 H2-1 TEN<br>B7 TEN  | 0.019<br>0.128 | 65.696<br>0.070       | -0.189<br>0.100  | 0.932 M<br>6.216 PASSED     | KN |
| MBS432<br>ASD9 | TEESM<br>T460x267 | OP-0   | 1.877 H2-1 TEN<br>B7 TEN  | 0.022<br>0.128 | 115.442<br>-6.133E-04 | 1.359<br>-0.120  | -0.011 M<br>5.324 PASSED    | KN |
| MBS433<br>ASD9 | TEESM<br>T460x267 | OP-45  | 1.877 H2-1 TEN<br>B7 TEN  | 0.019<br>0.128 | 62.913<br>0.041       | -0.621<br>0.057  | 0.560 M<br>6.317 PASSED     | KN |

|                |                   |        |                           |                |                       |                   |                             |    |
|----------------|-------------------|--------|---------------------------|----------------|-----------------------|-------------------|-----------------------------|----|
| MBS434<br>ASD9 | TEESM<br>T460x267 | OP-0   | 1.877 H2-1 TEN<br>B7 TEN  | 0.022<br>0.128 | 115.701<br>-0.001     | 1.347<br>0.009    | -0.026 M<br>5.262 PASSED    | KN |
| MBS435<br>ASD9 | TEESM<br>T460x267 | OP-45  | 1.877 H2-1 TEN<br>B7 TEN  | 0.019<br>0.128 | 62.305<br>0.010       | -0.734<br>0.066   | 0.128 M<br>6.345 PASSED     | KN |
| MBS436<br>ASD9 | TEESM<br>T460x267 | OP-0   | 1.877 H2-1 TEN<br>B7 TEN  | 0.022<br>0.128 | 116.676<br>-0.001     | 1.354<br>0.136    | -0.036 M<br>5.315 PASSED    | KN |
| MBS437<br>ASD9 | TEESM<br>T460x267 | OP-45  | 1.877 H2-1 TEN<br>B7 TEN  | 0.019<br>0.128 | 63.408<br>-0.020      | -0.634<br>0.074   | -0.297 M<br>6.303 PASSED    | KN |
| MBS438<br>ASD9 | TEESM<br>T460x267 | OP-0   | 1.877 H2-1 TEN<br>B7 TEN  | 0.022<br>0.128 | 113.383<br>-3.180E-04 | 1.288<br>0.249    | -0.036 M<br>5.444 PASSED    | KN |
| MBS439<br>ASD9 | TEESM<br>T460x267 | OP-45  | 1.877 H2-1 TEN<br>B7 TEN  | 0.019<br>0.128 | 65.964<br>-0.048      | -0.188<br>0.045   | -0.670 M<br>6.185 PASSED    | KN |
| MBS440<br>ASD9 | TEESM<br>T460x267 | OP-0   | 1.877 H2-1 TEN<br>B7 TEN  | 0.022<br>0.128 | 106.526<br>-0.013     | 1.149<br>0.365    | -0.125 M<br>5.527 PASSED    | KN |
| MBS441<br>ASD9 | TEESM<br>T460x267 | OP-45  | 1.877 H2-1 TEN<br>B7 TEN  | 0.019<br>0.128 | 66.431<br>0.019       | 0.491<br>0.244    | -0.008 M<br>5.979 PASSED    | KN |
| MBS442<br>ASD9 | TEESM<br>T460x267 | OP-0   | 1.877 AXC TBEN<br>B7 COMP | 0.011<br>0.191 | -13.219<br>-0.030     | 0.224<br>0.136    | -0.390 M<br>5.183 PASSED    | KN |
| MBS443<br>ASD9 | TEESM<br>T460x267 | OP-135 | 3.753 AXC TBEN<br>B7 COMP | 0.034<br>0.191 | -80.146<br>-0.059     | -0.320<br>-0.564  | -0.555 M<br>16.450 PASSED   | KN |
| MBS444<br>ASD9 | TEESM<br>T460x267 | OP-135 | 3.753 H2-1 TEN<br>B7 TEN  | 0.043<br>0.128 | 36.979<br>-0.074      | -1.804<br>-1.667  | -1.082 M<br>18.154 PASSED   | KN |
| MBS445<br>ASD9 | TEESM<br>T460x267 | OP-0   | 3.753 AXT CBEN<br>B7 TEN  | 0.250<br>0.128 | 116.835<br>-0.134     | 46.330<br>-2.513  | -1.181 M<br>-123.910 PASSED | KN |
| MBS446<br>ASD9 | TEESM<br>T460x267 | OP-135 | 3.753 AXC TBEN<br>B7 COMP | 0.035<br>0.191 | -7.861<br>-0.035      | -1.437<br>-1.353  | -0.715 M<br>16.285 PASSED   | KN |
| MBS447<br>ASD9 | TEESM<br>T460x267 | OP-135 | 3.753 AXT CBEN<br>B7 TEN  | 0.248<br>0.128 | 35.879<br>-0.012      | 45.913<br>-1.400  | -0.495 M<br>-124.453 PASSED | KN |
| MBS448<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 H1-3 COM<br>B7 COMP | 0.033<br>0.191 | -183.973<br>-0.009    | -5.688<br>0.529   | -0.264 M<br>-5.715 PASSED   | KN |
| MBS449<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 H1-3 COM<br>B7 COMP | 0.052<br>0.191 | -177.690<br>0.071     | -13.533<br>-1.063 | 0.602 M<br>-14.866 PASSED   | KN |
| MBS622<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 H2-1 TEN<br>B7 TEN  | 0.087<br>0.139 | 791.957<br>0.043      | -5.686<br>-1.474  | 0.716 M<br>-9.079 PASSED    | KN |
| MBS623<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 H2-1 TEN<br>B7 TEN  | 0.074<br>0.139 | 619.897<br>0.316      | -7.398<br>-3.147  | 1.504 M<br>-10.630 PASSED   | KN |
| MBS624<br>ASD9 | TEESM<br>T460x267 | OP-90  | 4.100 H2-1 TEN<br>B7 TEN  | 0.059<br>0.139 | 375.159<br>0.966      | 7.984<br>5.575    | 2.742 M<br>-15.861 PASSED   | KN |
| MBS625<br>ASD9 | TEESM<br>T460x267 | OP-45  | 4.100 AXC TBEN<br>B7 COMP | 0.108<br>0.209 | -73.228<br>1.353      | -13.709<br>6.537  | 3.612 M<br>47.505 PASSED    | KN |
| MBS626<br>ASD9 | TEESM<br>T460x267 | OP-0   | 4.100 H2-1 TEN<br>B7 TEN  | 0.106<br>0.139 | 980.013<br>-0.041     | 5.107<br>-1.774   | -0.733 M<br>-8.489 PASSED   | KN |
| MBS627<br>ASD9 | TEESM<br>T460x267 | OP-0   | 0.000 H2-1 TEN<br>B7 TEN  | 0.093<br>0.139 | 811.798<br>-0.313     | -7.301<br>2.920   | -1.541 M<br>-10.966 PASSED  | KN |
| MBS628<br>ASD9 | TEESM<br>T460x267 | OP-0   | 4.100 H2-1 TEN<br>B7 TEN  | 0.075<br>0.139 | 512.878<br>-0.951     | 8.559<br>-5.859   | -2.818 M<br>-18.835 PASSED  | KN |
| MBS629<br>ASD9 | TEESM<br>T460x267 | OP-0   | 4.100 H2-1 TEN<br>B7 TEN  | 0.128<br>0.139 | 137.538<br>-1.334     | -14.715<br>-7.125 | -3.682 M<br>50.391 PASSED   | KN |
| MBS630<br>ASD9 | TEESM<br>T460x267 | OP-45  | 4.100 H2-1 TEN<br>B7 TEN  | 0.106<br>0.139 | 978.823<br>0.039      | 5.181<br>1.726    | 0.710 M<br>-8.650 PASSED    | KN |
| MBS631<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 H2-1 TEN<br>B7 TEN  | 0.093<br>0.139 | 810.467<br>0.308      | -7.191<br>-2.838  | 1.483 M<br>-10.792 PASSED   | KN |
| MBS632<br>ASD9 | TEESM<br>T460x267 | OP-45  | 4.100 H2-1 TEN<br>B7 TEN  | 0.075<br>0.139 | 510.868<br>0.961      | 8.475<br>6.230    | 2.927 M<br>-18.498 PASSED   | KN |
| MBS633<br>ASD9 | TEESM<br>T460x267 | OP-0   | 4.100 H2-1 TEN<br>B7 TEN  | 0.120<br>0.139 | 124.275<br>1.301      | -14.172<br>5.573  | 3.164 M<br>48.687 PASSED    | KN |
| MBS634<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 H2-1 TEN<br>B7 TEN  | 0.087<br>0.139 | 795.215<br>-0.043     | -5.693<br>1.490   | -0.723 M<br>-9.129 PASSED   | KN |
| MBS635<br>ASD9 | TEESM<br>T460x267 | OP-45  | 0.000 H2-1 TEN<br>B7 TEN  | 0.075<br>0.139 | 621.442<br>-0.320     | -7.430<br>3.210   | -1.552 M<br>-10.705 PASSED  | KN |
| MBS636         | TEESM             | OP-90  | 4.100 H2-1 TEN            | 0.058          | 377.280               | 7.964             | -2.653 M                    | KN |

|        |          |       |       |          |       |          |         |          |        |  |
|--------|----------|-------|-------|----------|-------|----------|---------|----------|--------|--|
| ASD9   | T460x267 |       |       | B7 TEN   | 0.139 | -0.959   | -5.252  | -15.799  | PASSED |  |
| MBS637 | TEESM    | OP-0  | 4.100 | AXC TBEN | 0.115 | -103.044 | -14.439 | -4.110 M | KN     |  |
| ASD9   | T460x267 |       |       | B7 COMP  | 0.209 | -1.394   | -8.141  | 49.544   | PASSED |  |
| MBS638 | TEESM    | OP-0  | 0.000 | H2-1 TEN | 0.053 | 311.127  | -8.212  | 2.737 M  | KN     |  |
| ASD9   | T460x267 |       |       | B7 TEN   | 0.139 | 0.955    | -5.321  | -17.345  | PASSED |  |
| MBS639 | TEESM    | OP-0  | 4.100 | H2-1 TEN | 0.075 | 621.912  | 7.361   | 1.571 M  | KN     |  |
| ASD9   | T460x267 |       |       | B7 TEN   | 0.139 | 0.321    | 3.241   | -10.565  | PASSED |  |
| MBS640 | TEESM    | OP-0  | 4.100 | H2-1 TEN | 0.087 | 796.438  | 5.598   | 0.739 M  | KN     |  |
| ASD9   | T460x267 |       |       | B7 TEN   | 0.139 | 0.045    | 1.518   | -8.957   | PASSED |  |
| MBS641 | TEESM    | OP-0  | 4.100 | H2-1 TEN | 0.093 | 877.234  | 5.487   | 0.234 M  | KN     |  |
| ASD9   | T460x267 |       |       | B7 TEN   | 0.139 | -0.003   | 0.456   | -8.729   | PASSED |  |
| MBS642 | TEESM    | OP-45 | 0.000 | H2-1 TEN | 0.074 | 498.977  | -8.532  | -2.957 M | KN     |  |
| ASD9   | T460x267 |       |       | B7 TEN   | 0.139 | -0.963   | 6.293   | -18.650  | PASSED |  |
| MBS643 | TEESM    | OP-45 | 4.100 | H2-1 TEN | 0.092 | 802.718  | 7.206   | -1.515 M | KN     |  |
| ASD9   | T460x267 |       |       | B7 TEN   | 0.139 | -0.310   | -2.906  | -10.785  | PASSED |  |
| MBS644 | TEESM    | OP-45 | 0.000 | H2-1 TEN | 0.105 | 974.368  | -5.185  | -0.746 M | KN     |  |
| ASD9   | T460x267 |       |       | B7 TEN   | 0.139 | -0.042   | 1.800   | -8.649   | PASSED |  |
| MBS645 | TEESM    | OP-45 | 0.000 | H2-1 TEN | 0.111 | 1055.498 | -5.194  | -0.238 M | KN     |  |
| ASD9   | T460x267 |       |       | B7 TEN   | 0.139 | 0.003    | 0.770   | -8.665   | PASSED |  |
| MBS646 | TEESM    | OP-0  | 0.000 | H2-1 TEN | 0.074 | 506.228  | -8.644  | 2.822 M  | KN     |  |
| ASD9   | T460x267 |       |       | B7 TEN   | 0.139 | 0.952    | -5.861  | -18.914  | PASSED |  |
| MBS647 | TEESM    | OP-0  | 4.100 | H2-1 TEN | 0.092 | 807.199  | 7.128   | 1.533 M  | KN     |  |
| ASD9   | T460x267 |       |       | B7 TEN   | 0.139 | 0.312    | 2.915   | -10.617  | PASSED |  |
| MBS648 | TEESM    | OP-0  | 0.000 | H2-1 TEN | 0.106 | 977.299  | -5.268  | 0.724 M  | KN     |  |
| ASD9   | T460x267 |       |       | B7 TEN   | 0.139 | 0.040    | -1.749  | -8.812   | PASSED |  |
| MBS649 | TEESM    | OP-0  | 0.000 | H2-1 TEN | 0.111 | 1057.459 | -5.275  | 0.219 M  | KN     |  |
| ASD9   | T460x267 |       |       | B7 TEN   | 0.139 | -0.005   | -0.738  | -8.817   | PASSED |  |
| MBS650 | TEESM    | OP-0  | 0.000 | H2-1 TEN | 0.054 | 321.577  | -8.088  | -2.810 M | KN     |  |
| ASD9   | T460x267 |       |       | B7 TEN   | 0.139 | -0.961   | 5.601   | -16.872  | PASSED |  |
| MBS651 | TEESM    | OP-0  | 4.100 | H2-1 TEN | 0.075 | 623.604  | 7.273   | -1.496 M | KN     |  |
| ASD9   | T460x267 |       |       | B7 TEN   | 0.139 | -0.315   | -3.124  | -10.388  | PASSED |  |
| MBS652 | TEESM    | OP-0  | 4.100 | H2-1 TEN | 0.087 | 793.455  | 5.581   | -0.710 M | KN     |  |
| ASD9   | T460x267 |       |       | B7 TEN   | 0.139 | -0.042   | -1.459  | -8.853   | PASSED |  |
| MBS653 | TEESM    | OP-45 | 4.100 | H2-1 TEN | 0.092 | 871.144  | 5.563   | -0.219 M | KN     |  |
| ASD9   | T460x267 |       |       | B7 TEN   | 0.139 | 0.004    | -0.436  | -8.829   | PASSED |  |

UNITY CHECK AT EXTREM CONDITION - OP

\*\* MEMBERS WHICH FAIL ARE MARKED BY TWO ASTERISKS (\*\*) \*\*

| MEMBER<br>CODE | TABLE<br>PROFILE | LOADING<br>NAME | SECTION<br>LOCATION | PROVISION<br>NAME | ACTUAL/<br>ALLOWABLE | SECTION FORCES<br>FX/MT | FY/MY   | FZ/MZ     | UNITS<br>STATUS |
|----------------|------------------|-----------------|---------------------|-------------------|----------------------|-------------------------|---------|-----------|-----------------|
| MBS1           | TEESM            | EX-0            | 22.700              | AXT CBEN          | 0.236                | 119.553                 | 30.171  | 0.232 M   | KN              |
| ASD9           | T460x267         |                 |                     | B7 TEN            | 0.772                | 0.034                   | 2.286   | -117.379  | PASSED          |
| MBS2           | TEESM            | EX-135          | 0.000               | AXT CBEN          | 0.234                | 135.985                 | -30.225 | -0.116 M  | KN              |
| ASD9           | T460x267         |                 |                     | B7 TEN            | 0.772                | -0.026                  | 1.086   | -117.676  | PASSED          |
| MBS3           | TEESM            | EX-0            | 0.000               | H1-3 COM          | 0.083                | -81.541                 | -10.393 | -5.657 M  | KN              |
| ASD9           | T460x267         |                 |                     | B7 COMP           | 0.331                | -0.480                  | 19.241  | -15.727   | PASSED          |
| MBS4           | TEESM            | EX-0            | 6.500               | H1-3 COM          | 0.091                | -73.047                 | 11.709  | 6.468 M   | KN              |
| ASD9           | T460x267         |                 |                     | B7 COMP           | 0.331                | 0.553                   | 20.938  | -18.164   | PASSED          |
| MBS5           | TEESM            | EX-90           | 3.753               | H1-3 COM          | 0.012                | -1.370                  | 5.459   | -1.611 M  | KN              |
| ASD9           | T460x267         |                 |                     | B7 COMP           | 0.191                | -0.169                  | -2.888  | -2.751    | PASSED          |
| MBS6           | TEESM            | EX-90           | 0.000               | H2-1 TEN          | 0.203                | 57.301                  | 30.422  | -2.114 M  | KN              |
| ASD9           | T460x267         |                 |                     | B7 TEN            | 0.128                | -0.234                  | 6.535   | 93.085    | PASSED          |
| MBS7           | TEESM            | EX-90           | 0.000               | H2-1 TEN          | 0.209                | 57.152                  | 30.261  | 3.085 M   | KN              |
| ASD9           | T460x267         |                 |                     | B7 TEN            | 0.128                | 0.318                   | -9.557  | 92.790    | PASSED          |
| MBS8           | TEESM            | EX-90           | 3.753               | H1-3 COM          | 0.012                | -1.265                  | 5.525   | 1.583 M   | KN              |
| ASD9           | T460x267         |                 |                     | B7 COMP           | 0.191                | 0.168                   | 2.741   | -2.832    | PASSED          |
| MBS9           | TEESM            | EX-90           | 4.000               | H1-3 COM          | 0.228                | -84.822                 | 9.190   | -26.480 M | KN              |
| ASD9           | T460x267         |                 |                     | B7 COMP           | 0.204                | -2.188                  | -83.969 | -18.064   | PASSED          |
| MBS10          | TEESM            | EX-90           | 2.500               | AXC TBEN          | 0.732                | -291.328                | -53.509 | 175.410 M | KN              |
| ASD9           | T460x267         |                 |                     | B7 COMP           | 0.127                | 14.839                  | 258.218 | 86.023    | PASSED          |

|               |                   |        |                              |                |                      |                     |                             |    |
|---------------|-------------------|--------|------------------------------|----------------|----------------------|---------------------|-----------------------------|----|
| MBS11<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000<br>AXC TBEN<br>B7 COMP | 0.711<br>0.127 | -307.817<br>-14.983  | 46.060<br>261.539   | -177.459 M<br>71.648 PASSED | KN |
| MBS12<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000<br>H1-3 COM<br>B7 COMP | 0.232<br>0.204 | -98.125<br>2.364     | -8.696<br>-86.480   | 28.848 M<br>-16.592 PASSED  | KN |
| MBS13<br>ASD9 | TEESM<br>T460x267 | EX-90  | 4.000<br>H1-3 COM<br>B7 COMP | 0.232<br>0.204 | -101.176<br>-2.368   | 8.668<br>-85.987    | -28.679 M<br>-16.548 PASSED | KN |
| MBS14<br>ASD9 | TEESM<br>T460x267 | EX-90  | 2.500<br>AXC TBEN<br>B7 COMP | 0.704<br>0.127 | -310.642<br>14.892   | -45.947<br>258.572  | 176.077 M<br>71.516 PASSED  | KN |
| MBS15<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000<br>AXC TBEN<br>B7 COMP | 0.739<br>0.127 | -293.440<br>-14.933  | 53.424<br>261.287   | -176.832 M<br>85.880 PASSED | KN |
| MBS16<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000<br>H1-3 COM<br>B7 COMP | 0.229<br>0.204 | -85.405<br>2.184     | -9.150<br>-84.559   | 26.667 M<br>-17.975 PASSED  | KN |
| MBS17<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000<br>H2-1 TEN<br>B7 TEN  | 0.040<br>0.133 | 154.968<br>-0.294    | -2.632<br>10.123    | -3.524 M<br>1.154 PASSED    | KN |
| MBS18<br>ASD9 | TEESM<br>T460x267 | EX-135 | 4.120<br>H2-1 TEN<br>B7 TEN  | 0.026<br>0.140 | 217.098<br>0.013     | 6.581<br>0.059      | 0.213 M<br>-7.268 PASSED    | KN |
| MBS19<br>ASD9 | TEESM<br>T460x267 | EX-135 | 4.120<br>H2-1 TEN<br>B7 TEN  | 0.030<br>0.140 | 252.787<br>-0.029    | 6.248<br>-0.433     | -0.305 M<br>-6.584 PASSED   | KN |
| MBS20<br>ASD9 | TEESM<br>T460x267 | EX-0   | 4.060<br>H2-1 TEN<br>B7 TEN  | 0.030<br>0.138 | 275.657<br>0.002     | 5.338<br>0.132      | 0.010 M<br>-4.754 PASSED    | KN |
| MBS21<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000<br>H2-1 TEN<br>B7 TEN  | 0.031<br>0.133 | 281.645<br>0.009     | -5.441<br>-0.049    | 0.083 M<br>-5.184 PASSED    | KN |
| MBS22<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000<br>H2-1 TEN<br>B7 TEN  | 0.030<br>0.140 | 265.633<br>0.021     | -6.092<br>-0.271    | 0.220 M<br>-6.191 PASSED    | KN |
| MBS23<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000<br>H2-1 TEN<br>B7 TEN  | 0.027<br>0.140 | 227.606<br>-0.003    | -6.453<br>-0.007    | -0.089 M<br>-6.960 PASSED   | KN |
| MBS24<br>ASD9 | TEESM<br>T460x267 | EX-90  | 4.060<br>H2-1 TEN<br>B7 TEN  | 0.033<br>0.138 | 18.685<br>0.393      | 3.484<br>14.319     | 4.753 M<br>0.202 PASSED     | KN |
| MBS25<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000<br>H1-3 COM<br>B7 COMP | 0.021<br>0.204 | -33.523<br>-0.365    | -4.366<br>6.774     | -2.423 M<br>-1.442 PASSED   | KN |
| MBS26<br>ASD9 | TEESM<br>T460x267 | EX-90  | 4.000<br>H1-3 COM<br>B7 COMP | 0.037<br>0.204 | -64.387<br>0.364     | 6.759<br>7.842      | 2.619 M<br>-6.280 PASSED    | KN |
| MBS27<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000<br>H1-3 COM<br>B7 COMP | 0.055<br>0.204 | -172.855<br>-0.280   | -7.959<br>6.042     | -2.334 M<br>-11.199 PASSED  | KN |
| MBS28<br>ASD9 | TEESM<br>T460x267 | EX-90  | 4.000<br>H1-3 COM<br>B7 COMP | 0.028<br>0.204 | -37.230<br>0.386     | 4.563<br>8.849      | 2.666 M<br>-2.014 PASSED    | KN |
| MBS29<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000<br>AXC TBEN<br>B7 COMP | 0.076<br>0.199 | -8.916<br>-8.777E-04 | 11.267<br>-2.928    | 1.269 M<br>35.229 PASSED    | KN |
| MBS30<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000<br>AXT CBEN<br>B7 TEN  | 0.027<br>0.140 | 82.317<br>0.007      | -8.128<br>9.917E-04 | 0.116 M<br>-13.553 PASSED   | KN |
| MBS31<br>ASD9 | TEESM<br>T460x267 | EX-135 | 4.120<br>H2-1 TEN<br>B7 TEN  | 0.018<br>0.140 | 145.013<br>-0.006    | 5.952<br>0.071      | 0.003 M<br>-5.479 PASSED    | KN |
| MBS32<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000<br>H2-1 TEN<br>B7 TEN  | 0.018<br>0.138 | 153.493<br>-0.007    | -5.422<br>0.145     | -0.041 M<br>-4.826 PASSED   | KN |
| MBS33<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000<br>H2-1 TEN<br>B7 TEN  | 0.018<br>0.133 | 147.610<br>-0.008    | -5.319<br>0.208     | -0.072 M<br>-4.835 PASSED   | KN |
| MBS34<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000<br>H2-1 TEN<br>B7 TEN  | 0.017<br>0.140 | 134.824<br>-0.001    | -6.027<br>0.019     | -0.032 M<br>-5.439 PASSED   | KN |
| MBS35<br>ASD9 | TEESM<br>T460x267 | EX-135 | 4.120<br>AXT CBEN<br>B7 TEN  | 0.029<br>0.140 | 87.638<br>0.011      | 8.203<br>0.551      | 0.110 M<br>-13.899 PASSED   | KN |
| MBS36<br>ASD9 | TEESM<br>T460x267 | EX-135 | 4.060<br>AXC TBEN<br>B7 COMP | 0.092<br>0.207 | -19.053<br>0.006     | -12.252<br>-5.412   | -1.938 M<br>40.874 PASSED   | KN |
| MBS37<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000<br>H1-3 COM<br>B7 COMP | 0.042<br>0.204 | -5.109<br>-0.480     | -6.582<br>11.899    | -3.815 M<br>-7.612 PASSED   | KN |
| MBS38<br>ASD9 | TEESM<br>T460x267 | EX-90  | 4.000<br>H1-3 COM<br>B7 COMP | 0.050<br>0.204 | -193.525<br>0.398    | 6.010<br>8.770      | 2.991 M<br>-4.407 PASSED    | KN |
| MBS39<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000<br>H1-3 COM<br>B7 COMP | 0.052<br>0.204 | -195.904<br>-0.373   | -6.175<br>9.038     | -2.715 M<br>-4.890 PASSED   | KN |
| MBS40<br>ASD9 | TEESM<br>T460x267 | EX-90  | 4.000<br>H1-3 COM<br>B7 COMP | 0.042<br>0.204 | -5.623<br>0.534      | 6.475<br>12.593     | 4.419 M<br>-7.234 PASSED    | KN |

|               |                   |        |        |                     |                |                    |                     |                             |    |
|---------------|-------------------|--------|--------|---------------------|----------------|--------------------|---------------------|-----------------------------|----|
| MBS41<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000  | AXC TBEN<br>B7 COMP | 0.078<br>0.199 | -7.774<br>-0.012   | 11.603<br>3.186     | -1.363 M<br>36.171 PASSED   | KN |
| MBS42<br>ASD9 | TEESM<br>T460x267 | EX-45  | 0.000  | AXT CBEN<br>B7 TEN  | 0.027<br>0.140 | 79.856<br>-0.011   | -8.140<br>0.182     | -0.172 M<br>-13.575 PASSED  | KN |
| MBS43<br>ASD9 | TEESM<br>T460x267 | EX-0   | 4.120  | H2-1 TEN<br>B7 TEN  | 0.016<br>0.140 | 112.418<br>-0.019  | 6.384<br>-0.545     | -0.235 M<br>-6.080 PASSED   | KN |
| MBS44<br>ASD9 | TEESM<br>T460x267 | EX-0   | 4.060  | H2-1 TEN<br>B7 TEN  | 0.017<br>0.138 | 133.625<br>-0.016  | 5.417<br>-0.437     | -0.177 M<br>-4.775 PASSED   | KN |
| MBS45<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.900  | H2-1 TEN<br>B7 TEN  | 0.017<br>0.133 | 138.123<br>-0.015  | 5.122<br>-0.368     | -0.150 M<br>-4.405 PASSED   | KN |
| MBS46<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000  | H2-1 TEN<br>B7 TEN  | 0.016<br>0.140 | 125.462<br>-0.013  | -6.086<br>0.135     | -0.111 M<br>-5.592 PASSED   | KN |
| MBS47<br>ASD9 | TEESM<br>T460x267 | EX-135 | 4.120  | AXT CBEN<br>B7 TEN  | 0.028<br>0.140 | 53.139<br>0.008    | 8.276<br>0.115      | 0.117 M<br>-14.031 PASSED   | KN |
| MBS48<br>ASD9 | TEESM<br>T460x267 | EX-135 | 4.060  | AXC TBEN<br>B7 COMP | 0.083<br>0.207 | -68.383<br>-0.038  | -12.777<br>-0.049   | 0.225 M<br>42.203 PASSED    | KN |
| MBS49<br>ASD9 | TEESM<br>T460x267 | EX-0   | 4.000  | H1-3 COM<br>B7 COMP | 0.122<br>0.204 | -21.494<br>1.218   | 11.585<br>38.066    | 14.349 M<br>-18.702 PASSED  | KN |
| MBS50<br>ASD9 | TEESM<br>T460x267 | EX-0   | 2.500  | AXC TBEN<br>B7 COMP | 0.300<br>0.127 | -177.776<br>-5.891 | -28.741<br>-99.723  | -69.568 M<br>41.720 PASSED  | KN |
| MBS51<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000  | AXC TBEN<br>B7 COMP | 0.434<br>0.127 | -194.456<br>6.711  | 54.009<br>-117.911  | 78.854 M<br>89.938 PASSED   | KN |
| MBS52<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000  | H1-3 COM<br>B7 COMP | 0.112<br>0.204 | -8.782<br>-0.964   | -8.412<br>36.404    | -12.045 M<br>-16.217 PASSED | KN |
| MBS53<br>ASD9 | TEESM<br>T460x267 | EX-0   | 4.000  | AXT CBEN<br>B7 TEN  | 0.107<br>0.136 | 25.370<br>0.957    | 7.849<br>35.588     | 11.814 M<br>-14.888 PASSED  | KN |
| MBS54<br>ASD9 | TEESM<br>T460x267 | EX-0   | 2.500  | AXC TBEN<br>B7 COMP | 0.394<br>0.127 | -168.945<br>-6.421 | -48.113<br>-110.899 | -75.352 M<br>77.519 PASSED  | KN |
| MBS55<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000  | AXC TBEN<br>B7 COMP | 0.345<br>0.127 | -161.973<br>6.259  | 35.857<br>-108.147  | 74.031 M<br>55.656 PASSED   | KN |
| MBS56<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000  | H1-3 COM<br>B7 COMP | 0.130<br>0.204 | -17.367<br>-1.253  | -12.710<br>39.429   | -14.904 M<br>-21.110 PASSED | KN |
| MBS57<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000  | H2-1 TEN<br>B7 TEN  | 0.028<br>0.133 | 197.286<br>0.108   | -2.815<br>-3.429    | 1.228 M<br>0.703 PASSED     | KN |
| MBS58<br>ASD9 | TEESM<br>T460x267 | EX-135 | 4.120  | H2-1 TEN<br>B7 TEN  | 0.029<br>0.140 | 248.377<br>0.018   | 6.499<br>0.283      | 0.154 M<br>-7.062 PASSED    | KN |
| MBS59<br>ASD9 | TEESM<br>T460x267 | EX-135 | 4.120  | H2-1 TEN<br>B7 TEN  | 0.032<br>0.140 | 274.292<br>0.023   | 6.170<br>0.293      | 0.228 M<br>-6.395 PASSED    | KN |
| MBS60<br>ASD9 | TEESM<br>T460x267 | EX-135 | 4.060  | H2-1 TEN<br>B7 TEN  | 0.031<br>0.138 | 275.821<br>0.018   | 5.653<br>0.304      | 0.185 M<br>-5.424 PASSED    | KN |
| MBS61<br>ASD9 | TEESM<br>T460x267 | EX-135 | 3.900  | H2-1 TEN<br>B7 TEN  | 0.031<br>0.133 | 276.280<br>0.017   | 5.522<br>0.105      | 0.153 M<br>-5.062 PASSED    | KN |
| MBS62<br>ASD9 | TEESM<br>T460x267 | EX-45  | 0.000  | H2-1 TEN<br>B7 TEN  | 0.029<br>0.140 | 254.507<br>-0.017  | -6.018<br>0.202     | -0.180 M<br>-6.032 PASSED   | KN |
| MBS63<br>ASD9 | TEESM<br>T460x267 | EX-45  | 0.000  | H2-1 TEN<br>B7 TEN  | 0.026<br>0.140 | 218.451<br>-0.001  | -6.363<br>0.053     | 0.027 M<br>-6.743 PASSED    | KN |
| MBS64<br>ASD9 | TEESM<br>T460x267 | EX-0   | 4.060  | H2-1 TEN<br>B7 TEN  | 0.030<br>0.138 | 147.559<br>-0.189  | 3.137<br>-6.602     | -2.224 M<br>0.597 PASSED    | KN |
| MBS65<br>ASD9 | TEESM<br>T460x267 | EX-0   | 22.700 | AXT CBEN<br>B7 TEN  | 0.231<br>0.772 | 91.305<br>0.062    | 30.136<br>0.215     | 0.031 M<br>-116.951 PASSED  | KN |
| MBS66<br>ASD9 | TEESM<br>T460x267 | EX-90  | 4.100  | H1-3 COM<br>B7 COMP | 0.123<br>0.209 | -342.769<br>-1.326 | 25.755<br>-7.821    | -3.484 M<br>-33.540 PASSED  | KN |
| MBS67<br>ASD9 | TEESM<br>T460x267 | EX-90  | 4.100  | H1-3 COM<br>B7 COMP | 0.122<br>0.209 | -340.824<br>1.330  | 25.812<br>7.605     | 3.531 M<br>-33.567 PASSED   | KN |
| MBS68<br>ASD9 | TEESM<br>T460x267 | EX-135 | 4.100  | H2-1 TEN<br>B7 TEN  | 0.087<br>0.139 | 810.182<br>-0.007  | 6.134<br>0.380      | 0.169 M<br>-9.711 PASSED    | KN |
| MBS69<br>ASD9 | TEESM<br>T460x267 | EX-135 | 4.100  | H2-1 TEN<br>B7 TEN  | 0.087<br>0.139 | 817.630<br>0.004   | 6.168<br>-0.472     | -0.215 M<br>-9.669 PASSED   | KN |
| MBS70<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000  | AXT CBEN<br>B7 TEN  | 0.230<br>0.772 | 109.193<br>-0.038  | -30.124<br>0.019    | -0.022 M<br>-116.926 PASSED | KN |
| MBS71         | TEESM             | EX-90  | 6.500  | AXT CBEN            | 0.043          | 89.694             | 11.136              | 0.575 M                     | KN |

|        |          |        |                |       |          |         |         |        |    |
|--------|----------|--------|----------------|-------|----------|---------|---------|--------|----|
| ASD9   | T460x267 |        | B7 TEN         | 0.221 | 0.155    | 1.910   | -19.857 | PASSED |    |
| MBS72  | TEESM    | EX-90  | 0.000 AXT CBEN | 0.042 | 89.508   | -11.153 | -0.503  | M      | KN |
| ASD9   | T460x267 |        | B7 TEN         | 0.221 | -0.151   | 1.478   | -19.904 | PASSED |    |
| MBS73  | TEESM    | EX-90  | 3.753 H1-3 COM | 0.026 | -63.430  | 7.788   | 1.167   | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | 0.066    | 1.616   | -7.903  | PASSED |    |
| MBS74  | TEESM    | EX-135 | 3.753 H1-3 COM | 0.044 | -104.438 | 12.535  | 0.359   | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | 0.041    | 1.295   | -14.638 | PASSED |    |
| MBS75  | TEESM    | EX-0   | 3.753 H1-3 COM | 0.047 | -168.975 | 12.422  | -0.523  | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.066   | -0.956  | -13.050 | PASSED |    |
| MBS76  | TEESM    | EX-90  | 3.753 H1-3 COM | 0.026 | -63.108  | 7.796   | -1.271  | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.075   | -1.705  | -7.896  | PASSED |    |
| MBS77  | TEESM    | EX-90  | 4.000 AXC TBEN | 0.053 | -23.708  | 0.938   | -6.367  | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.204 | -0.533   | -19.249 | 5.518   | PASSED |    |
| MBS78  | TEESM    | EX-90  | 2.500 H2-1 TEN | 0.171 | 126.212  | -13.515 | 34.517  | M      | KN |
| ASD9   | T460x267 |        | B7 TEN         | 0.085 | 4.023    | 51.935  | 22.853  | PASSED |    |
| MBS79  | TEESM    | EX-90  | 0.000 H2-1 TEN | 0.159 | 128.010  | 13.083  | -32.137 | M      | KN |
| ASD9   | T460x267 |        | B7 TEN         | 0.085 | -3.803   | 46.429  | 23.168  | PASSED |    |
| MBS80  | TEESM    | EX-90  | 0.000 H1-3 COM | 0.049 | -76.227  | -1.163  | 5.619   | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.204 | 0.449    | -16.970 | 4.983   | PASSED |    |
| MBS81  | TEESM    | EX-90  | 4.000 H1-3 COM | 0.052 | -77.530  | 1.101   | -6.137  | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.204 | -0.507   | -18.380 | 5.096   | PASSED |    |
| MBS82  | TEESM    | EX-90  | 2.500 H2-1 TEN | 0.172 | 126.543  | -13.134 | 34.763  | M      | KN |
| ASD9   | T460x267 |        | B7 TEN         | 0.085 | 4.046    | 51.997  | 23.235  | PASSED |    |
| MBS83  | TEESM    | EX-90  | 0.000 H2-1 TEN | 0.159 | 125.392  | 13.430  | -31.977 | M      | KN |
| ASD9   | T460x267 |        | B7 TEN         | 0.085 | -3.788   | 46.469  | 22.760  | PASSED |    |
| MBS84  | TEESM    | EX-90  | 0.000 AXC TBEN | 0.049 | -23.992  | -0.995  | 5.731   | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.204 | 0.463    | -17.689 | 5.416   | PASSED |    |
| MBS85  | TEESM    | EX-90  | 3.900 H1-3 COM | 0.023 | -28.352  | 7.062   | -1.428  | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.199 | -0.122   | -1.794  | -7.974  | PASSED |    |
| MBS86  | TEESM    | EX-0   | 4.120 AXT CBEN | 0.020 | 106.214  | 7.795   | -0.309  | M      | KN |
| ASD9   | T460x267 |        | B7 TEN         | 0.140 | -0.026   | -0.539  | -9.416  | PASSED |    |
| MBS87  | TEESM    | EX-0   | 4.120 H2-1 TEN | 0.018 | 125.358  | 7.099   | -0.301  | M      | KN |
| ASD9   | T460x267 |        | B7 TEN         | 0.140 | -0.024   | -0.452  | -8.186  | PASSED |    |
| MBS88  | TEESM    | EX-0   | 4.060 H2-1 TEN | 0.018 | 136.607  | 6.422   | -0.172  | M      | KN |
| ASD9   | T460x267 |        | B7 TEN         | 0.138 | -0.013   | -0.181  | -6.871  | PASSED |    |
| MBS89  | TEESM    | EX-0   | 3.900 H2-1 TEN | 0.017 | 138.802  | 5.658   | -0.046  | M      | KN |
| ASD9   | T460x267 |        | B7 TEN         | 0.133 | -0.003   | 0.083   | -5.515  | PASSED |    |
| MBS90  | TEESM    | EX-135 | 0.000 AXT CBEN | 0.020 | 102.543  | -7.911  | 0.126   | M      | KN |
| ASD9   | T460x267 |        | B7 TEN         | 0.140 | 0.008    | -0.107  | -9.789  | PASSED |    |
| MBS91  | TEESM    | EX-135 | 0.000 AXT CBEN | 0.022 | 77.655   | -8.696  | 0.082   | M      | KN |
| ASD9   | T460x267 |        | B7 TEN         | 0.140 | 0.005    | -0.163  | -11.205 | PASSED |    |
| MBS92  | TEESM    | EX-135 | 0.000 AXT CBEN | 0.025 | 34.550   | -8.973  | 0.822   | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.207 | 0.075    | -0.852  | -11.925 | PASSED |    |
| MBS93  | TEESM    | EX-0   | 0.000 AXT CBEN | 0.049 | 78.213   | -11.904 | -3.425  | M      | KN |
| ASD9   | T460x267 |        | B7 TEN         | 0.136 | -0.860   | 7.380   | -16.753 | PASSED |    |
| MBS94  | TEESM    | EX-135 | 4.000 H1-3 COM | 0.056 | -28.829  | 12.005  | 3.916   | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.204 | 0.917    | 7.684   | -18.126 | PASSED |    |
| MBS95  | TEESM    | EX-0   | 0.000 AXT CBEN | 0.050 | 12.647   | -11.047 | -4.147  | M      | KN |
| ASD9   | T460x267 |        | B7 TEN         | 0.136 | -0.942   | 8.992   | -15.286 | PASSED |    |
| MBS96  | TEESM    | EX-0   | 4.000 AXT CBEN | 0.047 | 77.734   | 11.715  | 3.507   | M      | KN |
| ASD9   | T460x267 |        | B7 TEN         | 0.136 | 0.861    | 6.656   | -16.496 | PASSED |    |
| MBS97  | TEESM    | EX-0   | 3.900 AXT CBEN | 0.029 | 82.042   | 9.059   | -0.962  | M      | KN |
| ASD9   | T460x267 |        | B7 TEN         | 0.133 | -0.130   | -1.624  | -12.687 | PASSED |    |
| MBS98  | TEESM    | EX-0   | 4.120 H1-3 COM | 0.028 | -56.807  | 8.355   | 0.372   | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.210 | 0.033    | 0.655   | -10.133 | PASSED |    |
| MBS99  | TEESM    | EX-0   | 4.120 H1-3 COM | 0.017 | -3.784   | 7.214   | 0.075   | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.210 | 0.006    | 0.259   | -8.335  | PASSED |    |
| MBS100 | TEESM    | EX-135 | 0.000 AXT CBEN | 0.016 | 26.335   | -7.044  | -0.137  | M      | KN |
| ASD9   | T460x267 |        | B7 TEN         | 0.138 | -0.014   | 0.304   | -7.942  | PASSED |    |
| MBS101 | TEESM    | EX-135 | 0.000 AXT CBEN | 0.020 | 28.143   | -7.712  | -0.345  | M      | KN |
| ASD9   | T460x267 |        | B7 TEN         | 0.133 | -0.031   | 0.697   | -9.245  | PASSED |    |

|                |                   |        |       |                     |                |                   |                    |                            |    |
|----------------|-------------------|--------|-------|---------------------|----------------|-------------------|--------------------|----------------------------|----|
| MBS102<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | AXT CBEN<br>B7 COMP | 0.022<br>0.210 | 8.127<br>-0.039   | -8.171<br>0.959    | -0.445 M<br>-10.309 PASSED | KN |
| MBS103<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | H1-3 COM<br>B7 COMP | 0.032<br>0.210 | -44.281<br>-0.053 | -9.410<br>1.217    | -0.599 M<br>-12.266 PASSED | KN |
| MBS104<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | AXT CBEN<br>B7 TEN  | 0.029<br>0.138 | 97.236<br>0.019   | -10.041<br>-0.155  | -0.002 M<br>-14.798 PASSED | KN |
| MBS105<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 | AXT CBEN<br>B7 TEN  | 0.054<br>0.136 | 119.756<br>0.785  | -14.402<br>-4.501  | 2.141 M<br>-22.412 PASSED  | KN |
| MBS106<br>ASD9 | TEESM<br>T460x267 | EX-135 | 4.000 | H1-3 COM<br>B7 COMP | 0.052<br>0.204 | -4.445<br>-0.986  | 11.341<br>-8.995   | -4.487 M<br>-16.187 PASSED | KN |
| MBS107<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000 | AXT CBEN<br>B7 TEN  | 0.050<br>0.136 | 11.095<br>0.943   | -11.066<br>-8.985  | 4.140 M<br>-15.299 PASSED  | KN |
| MBS108<br>ASD9 | TEESM<br>T460x267 | EX-90  | 4.000 | AXT CBEN<br>B7 TEN  | 0.054<br>0.136 | 119.711<br>-0.809 | 14.457<br>-4.547   | -2.444 M<br>-22.566 PASSED | KN |
| MBS109<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.900 | AXT CBEN<br>B7 TEN  | 0.029<br>0.133 | 80.420<br>0.133   | 9.043<br>1.761     | 1.036 M<br>-12.722 PASSED  | KN |
| MBS110<br>ASD9 | TEESM<br>T460x267 | EX-0   | 4.120 | H1-3 COM<br>B7 COMP | 0.028<br>0.210 | -56.773<br>-0.032 | 8.388<br>-0.607    | -0.360 M<br>-10.196 PASSED | KN |
| MBS111<br>ASD9 | TEESM<br>T460x267 | EX-0   | 4.120 | H1-3 COM<br>B7 COMP | 0.017<br>0.210 | -2.777<br>-0.005  | 7.227<br>-0.208    | -0.056 M<br>-8.370 PASSED  | KN |
| MBS112<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | AXT CBEN<br>B7 COMP | 0.016<br>0.207 | 10.418<br>0.013   | -7.060<br>-0.325   | 0.128 M<br>-7.882 PASSED   | KN |
| MBS113<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | AXT CBEN<br>B7 COMP | 0.020<br>0.199 | 11.796<br>0.030   | -7.709<br>-0.703   | 0.326 M<br>-9.148 PASSED   | KN |
| MBS114<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | H1-3 COM<br>B7 COMP | 0.023<br>0.210 | -7.253<br>0.035   | -8.146<br>-0.933   | 0.401 M<br>-10.167 PASSED  | KN |
| MBS115<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | H1-3 COM<br>B7 COMP | 0.033<br>0.210 | -54.646<br>0.059  | -9.390<br>-1.306   | 0.663 M<br>-12.134 PASSED  | KN |
| MBS116<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | AXT CBEN<br>B7 TEN  | 0.031<br>0.138 | 111.054<br>-0.096 | -10.377<br>0.706   | -0.341 M<br>-15.056 PASSED | KN |
| MBS117<br>ASD9 | TEESM<br>T460x267 | EX-90  | 4.000 | AXT CBEN<br>B7 COMP | 0.024<br>0.204 | 27.756<br>-0.224  | 6.043<br>-7.437    | -3.079 M<br>-3.831 PASSED  | KN |
| MBS118<br>ASD9 | TEESM<br>T460x267 | EX-90  | 2.500 | AXT CBEN<br>B7 TEN  | 0.068<br>0.085 | 188.818<br>0.996  | 11.748<br>13.679   | 9.221 M<br>-19.412 PASSED  | KN |
| MBS119<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000 | H2-1 TEN<br>B7 TEN  | 0.146<br>0.085 | 162.062<br>1.502  | 25.857<br>-17.843  | 11.858 M<br>46.485 PASSED  | KN |
| MBS120<br>ASD9 | TEESM<br>T460x267 | EX-0   | 4.000 | AXT CBEN<br>B7 TEN  | 0.031<br>0.136 | 16.009<br>-0.174  | 9.540<br>-2.686    | -2.358 M<br>-12.611 PASSED | KN |
| MBS121<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | AXT CBEN<br>B7 TEN  | 0.032<br>0.136 | 45.042<br>0.105   | -10.056<br>-2.162  | 1.498 M<br>-13.628 PASSED  | KN |
| MBS122<br>ASD9 | TEESM<br>T460x267 | EX-0   | 2.500 | H2-1 TEN<br>B7 TEN  | 0.149<br>0.085 | 177.399<br>-1.596 | -23.758<br>-19.908 | -12.915 M<br>44.696 PASSED | KN |
| MBS123<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 | AXT CBEN<br>B7 TEN  | 0.066<br>0.085 | 188.523<br>-0.965 | -11.826<br>12.755  | -8.832 M<br>-19.493 PASSED | KN |
| MBS124<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 | AXT CBEN<br>B7 TEN  | 0.023<br>0.136 | 27.609<br>0.208   | -6.099<br>-7.188   | 2.930 M<br>-3.939 PASSED   | KN |
| MBS125<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.900 | AXT CBEN<br>B7 TEN  | 0.022<br>0.133 | 60.041<br>0.066   | 8.106<br>0.877     | 0.734 M<br>-10.106 PASSED  | KN |
| MBS126<br>ASD9 | TEESM<br>T460x267 | EX-0   | 4.120 | AXT CBEN<br>B7 TEN  | 0.020<br>0.140 | 95.158<br>0.027   | 7.761<br>0.585     | 0.328 M<br>-9.336 PASSED   | KN |
| MBS127<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | H2-1 TEN<br>B7 TEN  | 0.019<br>0.140 | 137.484<br>0.024  | -6.184<br>-0.731   | 0.269 M<br>-6.366 PASSED   | KN |
| MBS128<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | H2-1 TEN<br>B7 TEN  | 0.020<br>0.138 | 143.757<br>0.015  | -6.767<br>-0.481   | 0.153 M<br>-7.562 PASSED   | KN |
| MBS129<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | H2-1 TEN<br>B7 TEN  | 0.019<br>0.133 | 143.374<br>0.004  | -6.875<br>-0.207   | 0.015 M<br>-7.735 PASSED   | KN |
| MBS130<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | H2-1 TEN<br>B7 TEN  | 0.019<br>0.140 | 131.520<br>-0.005 | -7.714<br>0.002    | -0.088 M<br>-9.390 PASSED  | KN |
| MBS131<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | AXT CBEN<br>B7 TEN  | 0.021<br>0.140 | 114.520<br>-0.009 | -8.377<br>0.112    | -0.129 M<br>-10.583 PASSED | KN |

|                |                   |        |                           |                |                   |                   |                            |    |
|----------------|-------------------|--------|---------------------------|----------------|-------------------|-------------------|----------------------------|----|
| MBS132<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 AXT CBEN<br>B7 TEN  | 0.023<br>0.138 | 83.979<br>-0.028  | -8.737<br>0.130   | -0.265 M<br>-11.355 PASSED | KN |
| MBS133<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 H2-1 TEN<br>B7 TEN  | 0.140<br>0.139 | 21.080<br>1.356   | 18.639<br>-7.048  | 3.639 M<br>62.040 PASSED   | KN |
| MBS134<br>ASD9 | TEESM<br>T460x267 | EX-45  | 4.100 H2-1 TEN<br>B7 TEN  | 0.101<br>0.139 | 956.986<br>0.013  | 5.478<br>-0.528   | -0.137 M<br>-8.742 PASSED  | KN |
| MBS135<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 H2-1 TEN<br>B7 TEN  | 0.138<br>0.139 | 20.874<br>-1.347  | 18.501<br>6.502   | -3.542 M<br>61.673 PASSED  | KN |
| MBS136<br>ASD9 | TEESM<br>T460x267 | EX-135 | 4.100 H2-1 TEN<br>B7 TEN  | 0.101<br>0.139 | 960.925<br>-0.028 | 6.190<br>0.165    | -0.034 M<br>-10.202 PASSED | KN |
| MBS137<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 AXT CBEN<br>B7 TEN  | 0.038<br>0.128 | 6.983<br>-0.024   | -11.235<br>0.894  | -0.313 M<br>-18.298 PASSED | KN |
| MBS138<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 H1-3 COM<br>B7 COMP | 0.029<br>0.191 | -4.538<br>0.012   | -10.344<br>0.522  | -0.024 M<br>-13.888 PASSED | KN |
| MBS139<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000 AXT CBEN<br>B7 TEN  | 0.037<br>0.128 | 14.163<br>0.027   | -10.816<br>-1.226 | 0.356 M<br>-17.175 PASSED  | KN |
| MBS140<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 H1-3 COM<br>B7 COMP | 0.029<br>0.191 | -5.045<br>-0.054  | -10.252<br>0.968  | -0.484 M<br>-13.552 PASSED | KN |
| MBS141<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 H2-1 TEN<br>B7 TEN  | 0.059<br>0.128 | 23.169<br>-0.117  | 5.008<br>0.693    | -0.897 M<br>27.784 PASSED  | KN |
| MBS142<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 H2-1 TEN<br>B7 COMP | 0.060<br>0.191 | 2.095<br>-0.098   | 3.809<br>3.976    | -1.141 M<br>25.758 PASSED  | KN |
| MBS143<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 AXC TBEN<br>B7 COMP | 0.139<br>0.191 | -43.826<br>0.099  | 18.671<br>-4.298  | 1.059 M<br>65.846 PASSED   | KN |
| MBS144<br>ASD9 | TEESM<br>T460x267 | EX-45  | 0.000 H1-3 COM<br>B7 COMP | 0.029<br>0.191 | -69.666<br>-0.098 | -8.729<br>1.509   | -0.689 M<br>-8.986 PASSED  | KN |
| MBS145<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 H1-3 COM<br>B7 COMP | 0.024<br>0.191 | -76.417<br>0.029  | -7.864<br>-0.433  | 0.180 M<br>-7.402 PASSED   | KN |
| MBS146<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 H1-3 COM<br>B7 COMP | 0.024<br>0.191 | -76.008<br>0.027  | -7.656<br>-0.550  | 0.257 M<br>-7.084 PASSED   | KN |
| MBS147<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 H1-3 COM<br>B7 COMP | 0.024<br>0.191 | -75.732<br>0.032  | -7.628<br>-0.706  | 0.342 M<br>-7.051 PASSED   | KN |
| MBS148<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 H1-3 COM<br>B7 COMP | 0.025<br>0.191 | -74.227<br>0.038  | -7.728<br>-0.888  | 0.434 M<br>-7.241 PASSED   | KN |
| MBS149<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 H1-3 COM<br>B7 COMP | 0.025<br>0.191 | -70.588<br>0.030  | -7.984<br>-0.895  | 0.475 M<br>-7.696 PASSED   | KN |
| MBS150<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 H1-3 COM<br>B7 COMP | 0.031<br>0.191 | -66.709<br>0.139  | -8.707<br>-2.465  | 1.098 M<br>-8.933 PASSED   | KN |
| MBS151<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 AXC TBEN<br>B7 COMP | 0.140<br>0.191 | -44.267<br>-0.105 | 18.864<br>4.201   | -1.056 M<br>66.423 PASSED  | KN |
| MBS152<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 H2-1 TEN<br>B7 TEN  | 0.056<br>0.128 | 2.449<br>0.045    | 3.777<br>-2.075   | 0.496 M<br>25.833 PASSED   | KN |
| MBS153<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 H2-1 TEN<br>B7 TEN  | 0.061<br>0.128 | 23.011<br>0.042   | 5.058<br>1.918    | 0.009 M<br>27.776 PASSED   | KN |
| MBS154<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000 AXT CBEN<br>B7 TEN  | 0.085<br>0.128 | 40.982<br>1.124   | -5.451<br>-35.606 | 12.730 M<br>-3.837 PASSED  | KN |
| MBS155<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000 AXT CBEN<br>B7 COMP | 0.107<br>0.191 | 18.777<br>-1.433  | -7.104<br>42.552  | -15.661 M<br>-7.292 PASSED | KN |
| MBS156<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 H1-3 COM<br>B7 COMP | 0.024<br>0.191 | -51.117<br>-0.153 | -6.688<br>4.594   | -1.740 M<br>-4.307 PASSED  | KN |
| MBS157<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 H1-3 COM<br>B7 COMP | 0.020<br>0.191 | -81.279<br>-0.067 | -6.529<br>1.646   | -0.770 M<br>-3.772 PASSED  | KN |
| MBS158<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 H1-3 COM<br>B7 COMP | 0.019<br>0.191 | -87.584<br>-0.038 | -6.527<br>0.886   | -0.456 M<br>-3.587 PASSED  | KN |
| MBS159<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 H1-3 COM<br>B7 COMP | 0.018<br>0.191 | -89.502<br>-0.029 | -6.433<br>0.714   | -0.342 M<br>-3.400 PASSED  | KN |
| MBS160<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 H1-3 COM<br>B7 COMP | 0.017<br>0.191 | -88.176<br>-0.011 | -6.318<br>0.233   | -0.130 M<br>-3.200 PASSED  | KN |
| MBS161<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000 H1-3 COM<br>B7 COMP | 0.018<br>0.191 | -86.748<br>0.023  | -6.479<br>-0.558  | 0.281 M<br>-3.530 PASSED   | KN |
| MBS162         | TEESM             | EX-0   | 0.000 H1-3 COM            | 0.018          | -83.836           | -6.591            | 0.372 M                    | KN |

|        |          |        |                |       |          |         |           |        |  |
|--------|----------|--------|----------------|-------|----------|---------|-----------|--------|--|
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | 0.030    | -0.645  | -3.744    | PASSED |  |
| MBS163 | TEESM    | EX-0   | 0.000 H1-3 COM | 0.021 | -75.651  | -6.633  | 0.898 M   | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | 0.076    | -2.085  | -4.014    | PASSED |  |
| MBS164 | TEESM    | EX-0   | 0.000 H1-3 COM | 0.024 | -57.846  | -6.908  | -1.408 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.119   | 4.865   | -3.683    | PASSED |  |
| MBS165 | TEESM    | EX-0   | 0.000 AXT CBEN | 0.100 | 12.548   | -6.445  | 15.231 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | 1.387    | -41.364 | -5.246    | PASSED |  |
| MBS166 | TEESM    | EX-0   | 0.000 AXT CBEN | 0.092 | 40.977   | -5.963  | -13.368 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -1.191   | 37.326  | -5.526    | PASSED |  |
| MBS167 | TEESM    | EX-90  | 0.000 AXT CBEN | 0.275 | 150.009  | -50.217 | 1.465 M   | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 0.114    | -3.028  | -136.059  | PASSED |  |
| MBS168 | TEESM    | EX-90  | 0.000 AXT CBEN | 0.277 | 141.094  | -51.811 | 0.539 M   | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 0.005    | -1.314  | -139.239  | PASSED |  |
| MBS169 | TEESM    | EX-135 | 1.877 H2-1 TEN | 0.017 | 70.586   | -1.557  | -0.051 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 0.007    | -0.172  | 4.967     | PASSED |  |
| MBS170 | TEESM    | EX-0   | 1.877 H2-1 TEN | 0.017 | 61.566   | -0.228  | -0.819 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -0.058   | 0.084   | 5.667     | PASSED |  |
| MBS171 | TEESM    | EX-0   | 1.877 H2-1 TEN | 0.017 | 59.799   | 0.134   | -0.526 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -0.035   | 0.050   | 5.733     | PASSED |  |
| MBS172 | TEESM    | EX-0   | 1.877 H2-1 TEN | 0.017 | 59.790   | 0.221   | -0.166 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -0.010   | 0.055   | 5.737     | PASSED |  |
| MBS173 | TEESM    | EX-0   | 1.877 H2-1 TEN | 0.017 | 60.592   | 0.118   | 0.194 M   | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 0.015    | 0.060   | 5.665     | PASSED |  |
| MBS174 | TEESM    | EX-0   | 1.877 H2-1 TEN | 0.017 | 63.068   | -0.312  | 0.521 M   | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 0.040    | 0.029   | 5.524     | PASSED |  |
| MBS175 | TEESM    | EX-0   | 1.877 H2-1 TEN | 0.017 | 66.178   | -1.038  | -0.057 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -0.019   | 0.214   | 5.321     | PASSED |  |
| MBS176 | TEESM    | EX-90  | 0.000 AXT CBEN | 0.275 | 141.310  | -51.869 | -0.003 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 0.040    | -0.328  | -139.243  | PASSED |  |
| MBS177 | TEESM    | EX-90  | 0.000 AXT CBEN | 0.271 | 151.044  | -50.215 | -0.850 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -0.062   | 1.187   | -136.201  | PASSED |  |
| MBS178 | TEESM    | EX-0   | 0.000 H1-3 COM | 0.030 | -17.305  | -5.309  | 2.446 M   | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | 0.179    | -6.823  | -6.828    | PASSED |  |
| MBS179 | TEESM    | EX-90  | 0.000 H1-3 COM | 0.038 | -2.554   | -7.740  | 2.767 M   | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | 0.202    | -7.134  | -11.480   | PASSED |  |
| MBS180 | TEESM    | EX-45  | 0.000 AXT CBEN | 0.040 | 39.642   | -11.934 | -0.627 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -0.046   | 1.118   | -18.901   | PASSED |  |
| MBS181 | TEESM    | EX-45  | 0.000 AXT CBEN | 0.040 | 44.738   | -12.082 | -0.497 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -0.034   | 0.850   | -19.251   | PASSED |  |
| MBS182 | TEESM    | EX-135 | 0.000 AXT CBEN | 0.039 | 42.262   | -12.100 | -0.233 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -0.030   | 0.380   | -19.418   | PASSED |  |
| MBS183 | TEESM    | EX-135 | 0.000 AXT CBEN | 0.039 | 42.265   | -12.141 | 0.071 M   | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -0.006   | -0.187  | -19.624   | PASSED |  |
| MBS184 | TEESM    | EX-135 | 0.000 AXT CBEN | 0.041 | 42.861   | -12.312 | 0.336 M   | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 0.014    | -0.675  | -19.985   | PASSED |  |
| MBS185 | TEESM    | EX-135 | 0.000 AXT CBEN | 0.042 | 42.488   | -12.400 | 0.512 M   | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 0.029    | -0.983  | -20.153   | PASSED |  |
| MBS186 | TEESM    | EX-135 | 0.000 AXT CBEN | 0.041 | 36.244   | -12.274 | 0.546 M   | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 0.034    | -1.040  | -19.865   | PASSED |  |
| MBS187 | TEESM    | EX-90  | 0.000 H1-3 COM | 0.041 | -2.539   | -7.971  | -2.971 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.219   | 7.592   | -12.192   | PASSED |  |
| MBS188 | TEESM    | EX-0   | 0.000 H1-3 COM | 0.031 | -20.318  | -5.612  | -2.091 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.144   | 5.977   | -7.852    | PASSED |  |
| MBS189 | TEESM    | EX-90  | 0.000 H1-3 COM | 0.103 | -173.050 | 2.155   | 8.325 M   | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.306 | 0.736    | -35.794 | 4.921     | PASSED |  |
| MBS190 | TEESM    | EX-90  | 0.000 AXC TBEN | 0.016 | -44.691  | 2.172   | -1.081 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.153 | 0.071    | 3.968   | 3.769     | PASSED |  |
| MBS191 | TEESM    | EX-90  | 0.000 H1-3 COM | 0.122 | -378.879 | 1.981   | 7.363 M   | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.306 | 0.541    | -33.036 | 4.681     | PASSED |  |
| MBS192 | TEESM    | EX-90  | 3.000 H1-3 COM | 0.092 | -45.116  | 17.146  | -5.821 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.153 | -1.185   | -8.580  | -34.646   | PASSED |  |

|                |                   |        |       |                     |                |                    |                   |                            |    |
|----------------|-------------------|--------|-------|---------------------|----------------|--------------------|-------------------|----------------------------|----|
| MBS193<br>ASD9 | TEESM<br>T460x267 | EX-90  | 6.000 | H1-3 COM<br>B7 COMP | 0.193<br>0.306 | -684.244<br>-0.537 | 0.406<br>-48.151  | -6.529 M<br>-1.129 PASSED  | KN |
| MBS194<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.000 | H1-2 COM<br>B7 COMP | 0.454<br>0.153 | -1789.824<br>5.095 | -2.331<br>125.727 | 60.741 M<br>5.548 PASSED   | KN |
| MBS195<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 | H1-3 COM<br>B7 COMP | 0.123<br>0.306 | -383.822<br>0.669  | -1.510<br>-32.064 | 6.939 M<br>-2.735 PASSED   | KN |
| MBS196<br>ASD9 | TEESM<br>T460x267 | EX-135 | 3.000 | AXC TBEN<br>B7 COMP | 0.070<br>0.153 | -61.301<br>0.326   | -18.061<br>-1.524 | -1.494 M<br>34.003 PASSED  | KN |
| MBS197<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 | H1-3 COM<br>B7 COMP | 0.103<br>0.306 | -208.123<br>0.622  | -1.429<br>-33.282 | 7.565 M<br>-2.267 PASSED   | KN |
| MBS198<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | H1-3 COM<br>B7 COMP | 0.027<br>0.153 | -83.391<br>0.071   | -4.920<br>0.070   | 1.617 M<br>-8.897 PASSED   | KN |
| MBS199<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 | H1-3 COM<br>B7 COMP | 0.102<br>0.306 | -216.097<br>0.645  | -0.813<br>-33.472 | 7.640 M<br>-0.961 PASSED   | KN |
| MBS200<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | H1-3 COM<br>B7 COMP | 0.024<br>0.153 | -88.919<br>0.116   | -4.296<br>0.433   | 1.158 M<br>-6.850 PASSED   | KN |
| MBS201<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 | H1-3 COM<br>B7 COMP | 0.101<br>0.306 | -213.220<br>0.641  | -0.531<br>-33.435 | 7.623 M<br>-0.473 PASSED   | KN |
| MBS202<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | H1-3 COM<br>B7 COMP | 0.024<br>0.153 | -94.969<br>0.089   | -3.290<br>0.829   | 1.011 M<br>-5.669 PASSED   | KN |
| MBS203<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | AXC TBEN<br>B7 COMP | 0.102<br>0.306 | -233.600<br>0.627  | 5.105<br>-26.329  | 7.462 M<br>22.428 PASSED   | KN |
| MBS204<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | H1-3 COM<br>B7 COMP | 0.022<br>0.153 | -97.451<br>0.074   | -2.353<br>1.200   | 0.821 M<br>-4.368 PASSED   | KN |
| MBS205<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | AXC TBEN<br>B7 COMP | 0.102<br>0.306 | -238.241<br>0.641  | 5.309<br>-26.677  | 7.598 M<br>22.326 PASSED   | KN |
| MBS206<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | H1-3 COM<br>B7 COMP | 0.020<br>0.153 | -98.101<br>0.064   | -1.429<br>1.415   | 0.722 M<br>-3.089 PASSED   | KN |
| MBS207<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | AXC TBEN<br>B7 COMP | 0.102<br>0.306 | -236.850<br>0.647  | 5.527<br>-26.777  | 7.652 M<br>22.284 PASSED   | KN |
| MBS208<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.000 | H1-3 COM<br>B7 COMP | 0.022<br>0.153 | -92.760<br>0.042   | 1.793<br>3.448    | 0.513 M<br>-2.313 PASSED   | KN |
| MBS209<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | AXC TBEN<br>B7 COMP | 0.102<br>0.306 | -232.202<br>0.648  | 5.696<br>-26.624  | 7.620 M<br>22.182 PASSED   | KN |
| MBS210<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.000 | H1-3 COM<br>B7 COMP | 0.025<br>0.153 | -90.403<br>0.060   | 2.641<br>3.695    | 0.733 M<br>-3.641 PASSED   | KN |
| MBS211<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 | H1-3 COM<br>B7 COMP | 0.101<br>0.306 | -212.964<br>0.644  | 0.986<br>-33.457  | 7.636 M<br>1.695 PASSED    | KN |
| MBS212<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.000 | H1-3 COM<br>B7 COMP | 0.029<br>0.153 | -84.551<br>0.064   | 3.782<br>3.772    | 0.901 M<br>-5.641 PASSED   | KN |
| MBS213<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 | H1-3 COM<br>B7 COMP | 0.100<br>0.306 | -204.971<br>0.654  | 1.585<br>-33.258  | 7.537 M<br>2.979 PASSED    | KN |
| MBS214<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.000 | H1-3 COM<br>B7 COMP | 0.030<br>0.153 | -79.007<br>0.170   | 4.353<br>4.843    | 1.523 M<br>-5.386 PASSED   | KN |
| MBS215<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 | H1-3 COM<br>B7 COMP | 0.120<br>0.306 | -383.524<br>0.508  | 1.679<br>-32.139  | 7.069 M<br>3.476 PASSED    | KN |
| MBS216<br>ASD9 | TEESM<br>T460x267 | EX-135 | 3.000 | H1-3 COM<br>B7 COMP | 0.087<br>0.153 | -59.131<br>-0.775  | 17.569<br>-4.345  | -3.498 M<br>-36.040 PASSED | KN |
| MBS217<br>ASD9 | TEESM<br>T460x267 | EX-90  | 6.000 | H1-3 COM<br>B7 COMP | 0.191<br>0.306 | -683.312<br>-0.549 | -0.232<br>-48.217 | -6.546 M<br>0.842 PASSED   | KN |
| MBS218<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.000 | H1-2 COM<br>B7 COMP | 0.461<br>0.153 | -1786.584<br>5.109 | 2.253<br>125.799  | 60.791 M<br>-5.441 PASSED  | KN |
| MBS219<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 | H1-3 COM<br>B7 COMP | 0.127<br>0.306 | -378.653<br>0.683  | -1.808<br>-32.889 | 7.200 M<br>-3.929 PASSED   | KN |
| MBS220<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.000 | AXC TBEN<br>B7 COMP | 0.078<br>0.153 | -45.250<br>0.461   | -17.180<br>-4.492 | -2.979 M<br>34.652 PASSED  | KN |
| MBS221<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 | H1-3 COM<br>B7 COMP | 0.108<br>0.306 | -172.847<br>0.671  | -1.989<br>-35.773 | 8.340 M<br>-4.181 PASSED   | KN |
| MBS222<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 | H1-3 COM<br>B7 COMP | 0.023<br>0.153 | -44.558<br>-0.306  | -2.244<br>4.944   | -1.713 M<br>-3.927 PASSED  | KN |



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| MBS223<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | H1-3 COM<br>B7 COMP | 0.163<br>0.306 | -875.858<br>0.367   | 5.343<br>-18.702  | 4.536 M<br>21.891 PASSED   | KN |
| MBS224<br>ASD9 | TEESM<br>T460x267 | EX-135 | 3.000 | H1-1 COM<br>B7 COMP | 0.285<br>0.153 | -1708.360<br>-2.311 | -0.560<br>-48.038 | -27.299 M<br>7.054 PASSED  | KN |
| MBS226<br>ASD9 | TEESM<br>T460x267 | EX-45  | 0.000 | H2-1 TEN<br>B7 TEN  | 0.232<br>0.102 | 184.915<br>3.144    | 4.831<br>-87.030  | 37.338 M<br>12.026 PASSED  | KN |
| MBS228<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 | AXT CBEN<br>B7 TEN  | 0.223<br>0.102 | 122.634<br>3.271    | -5.149<br>-92.295 | 39.243 M<br>-11.029 PASSED | KN |
| MBS229<br>ASD9 | TEESM<br>T460x267 | EX-45  | 0.000 | H1-3 COM<br>B7 COMP | 0.172<br>0.306 | -897.936<br>0.317   | -4.373<br>-15.507 | 3.808 M<br>-13.061 PASSED  | KN |
| MBS230<br>ASD9 | TEESM<br>T460x267 | EX-45  | 3.000 | H1-3 COM<br>B7 COMP | 0.249<br>0.153 | -1269.493<br>-2.251 | 1.032<br>-43.489  | -26.939 M<br>-6.431 PASSED | KN |
| MBS231<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 | H1-3 COM<br>B7 COMP | 0.095<br>0.306 | -229.274<br>0.468   | -1.102<br>-28.816 | 5.512 M<br>-1.855 PASSED   | KN |
| MBS232<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.000 | AXC TBEN<br>B7 COMP | 0.048<br>0.153 | -1.897<br>-0.588    | -6.340<br>-8.616  | -6.832 M<br>14.937 PASSED  | KN |
| MBS233<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 | H1-3 COM<br>B7 COMP | 0.089<br>0.306 | -194.903<br>0.467   | -0.665<br>-28.830 | 5.524 M<br>-0.856 PASSED   | KN |
| MBS234<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | H1-3 COM<br>B7 COMP | 0.034<br>0.153 | -72.857<br>-0.488   | -0.492<br>10.253  | -5.834 M<br>-1.937 PASSED  | KN |
| MBS235<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | AXC TBEN<br>B7 COMP | 0.090<br>0.306 | -213.876<br>0.450   | 4.920<br>-21.710  | 5.353 M<br>21.420 PASSED   | KN |
| MBS236<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | H1-3 COM<br>B7 COMP | 0.035<br>0.153 | -73.657<br>-0.478   | -0.944<br>10.180  | -5.703 M<br>-2.155 PASSED  | KN |
| MBS237<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | AXC TBEN<br>B7 COMP | 0.092<br>0.306 | -220.500<br>0.462   | 5.344<br>-22.056  | 5.490 M<br>22.132 PASSED   | KN |
| MBS238<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | H1-3 COM<br>B7 COMP | 0.034<br>0.153 | -77.454<br>-0.479   | -0.355<br>10.304  | -5.735 M<br>-1.512 PASSED  | KN |
| MBS239<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | AXC TBEN<br>B7 COMP | 0.093<br>0.306 | -219.203<br>0.465   | 5.750<br>-22.129  | 5.530 M<br>22.807 PASSED   | KN |
| MBS240<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.033<br>0.153 | -71.908<br>-0.504   | 0.905<br>10.887   | -6.006 M<br>1.596 PASSED   | KN |
| MBS241<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | AXC TBEN<br>B7 COMP | 0.095<br>0.306 | -205.985<br>0.462   | 6.283<br>-21.941  | 5.477 M<br>23.807 PASSED   | KN |
| MBS242<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | H1-3 COM<br>B7 COMP | 0.033<br>0.153 | -76.815<br>-0.516   | 0.050<br>10.978   | -6.178 M<br>-0.418 PASSED  | KN |
| MBS243<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | AXC TBEN<br>B7 COMP | 0.096<br>0.306 | -251.051<br>0.455   | 6.638<br>-21.635  | 5.397 M<br>24.682 PASSED   | KN |
| MBS244<br>ASD9 | TEESM<br>T460x267 | EX-135 | 3.000 | AXT CBEN<br>B7 COMP | 0.051<br>0.153 | 2.504<br>-0.541     | 6.813<br>-8.430   | -6.628 M<br>-16.372 PASSED | KN |
| MBS245<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | H1-3 COM<br>B7 COMP | 0.172<br>0.306 | -884.475<br>0.421   | 7.277<br>-21.027  | 5.033 M<br>25.518 PASSED   | KN |
| MBS246<br>ASD9 | TEESM<br>T460x267 | EX-135 | 3.000 | H1-3 COM<br>B7 COMP | 0.262<br>0.153 | -1270.999<br>-2.511 | -5.804<br>-50.390 | -29.394 M<br>16.648 PASSED | KN |
| MBS248<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 | H2-1 TEN<br>B7 TEN  | 0.235<br>0.102 | 121.594<br>3.330    | 5.265<br>-92.443  | 39.333 M<br>11.030 PASSED  | KN |
| MBS250<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 | H2-1 TEN<br>B7 TEN  | 0.221<br>0.102 | 124.836<br>3.365    | -2.653<br>-93.833 | 40.418 M<br>-7.119 PASSED  | KN |
| MBS251<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.162<br>0.306 | -911.623<br>0.180   | -4.459<br>-8.151  | 2.016 M<br>-14.975 PASSED  | KN |
| MBS252<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.000 | H1-1 COM<br>B7 COMP | 0.282<br>0.153 | -1780.278<br>-1.945 | 0.244<br>-37.682  | -23.290 M<br>-6.886 PASSED | KN |
| MBS253<br>ASD9 | TEESM<br>T460x267 | EX-90  | 6.000 | H1-3 COM<br>B7 COMP | 0.167<br>0.306 | -919.626<br>0.380   | 4.733<br>7.527    | 4.286 M<br>-18.175 PASSED  | KN |
| MBS254<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | H1-1 COM<br>B7 COMP | 0.288<br>0.153 | -2020.981<br>1.655  | -2.594<br>-31.794 | 20.037 M<br>4.327 PASSED   | KN |
| MBS256<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000 | H2-1 TEN<br>B7 TEN  | 0.232<br>0.102 | 189.820<br>-3.113   | 5.075<br>86.359   | -37.030 M<br>12.498 PASSED | KN |
| MBS258<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000 | H2-1 TEN<br>B7 TEN  | 0.203<br>0.102 | 155.170<br>-2.993   | -3.031<br>83.828  | -35.661 M<br>-8.400 PASSED | KN |
| MBS259         | TEESM             | EX-0   | 0.000 | H1-3 COM            | 0.177          | -903.848            | -4.962            | -3.837 M                   | KN |

|        |          |        |       |          |       |           |         |         |        |    |
|--------|----------|--------|-------|----------|-------|-----------|---------|---------|--------|----|
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.319    | 15.283  | -15.638 | PASSED |    |
| MBS260 | TEESM    | EX-0   | 3.000 | H1-3 COM | 0.248 | -1287.315 | 2.153   | 25.623  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.153 | 2.149     | 39.629  | -8.957  | PASSED |    |
| MBS261 | TEESM    | EX-0   | 0.000 | H1-3 COM | 0.098 | -257.151  | -4.212  | -4.822  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.407    | 17.104  | -14.504 | PASSED |    |
| MBS262 | TEESM    | EX-0   | 3.000 | AXC TBEN | 0.049 | -2.121    | -6.466  | 6.903   | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.153 | 0.595     | 8.677   | 15.196  | PASSED |    |
| MBS263 | TEESM    | EX-0   | 0.000 | H1-3 COM | 0.090 | -202.424  | -3.784  | -4.980  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.418    | 17.624  | -13.435 | PASSED |    |
| MBS264 | TEESM    | EX-135 | 0.000 | H1-3 COM | 0.036 | -69.353   | -0.423  | 6.336   | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.153 | 0.531     | -11.438 | -1.871  | PASSED |    |
| MBS265 | TEESM    | EX-0   | 0.000 | H1-3 COM | 0.090 | -213.018  | -3.204  | -5.097  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.429    | 17.984  | -12.299 | PASSED |    |
| MBS266 | TEESM    | EX-135 | 0.000 | H1-3 COM | 0.037 | -69.132   | -0.895  | 6.249   | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.153 | 0.524     | -11.448 | -2.077  | PASSED |    |
| MBS267 | TEESM    | EX-0   | 0.000 | H1-3 COM | 0.090 | -218.337  | -2.815  | -5.099  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.430    | 18.017  | -11.625 | PASSED |    |
| MBS268 | TEESM    | EX-135 | 0.000 | H1-3 COM | 0.036 | -72.787   | -0.326  | 6.293   | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.153 | 0.526     | -11.600 | -1.465  | PASSED |    |
| MBS269 | TEESM    | EX-0   | 0.000 | H1-3 COM | 0.087 | -216.015  | -2.384  | -5.008  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.423    | 17.777  | -10.871 | PASSED |    |
| MBS270 | TEESM    | EX-135 | 0.000 | H1-3 COM | 0.034 | -70.283   | 0.623   | 6.429   | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.153 | 0.536     | -11.824 | -0.375  | PASSED |    |
| MBS271 | TEESM    | EX-0   | 0.000 | H1-3 COM | 0.082 | -200.766  | -1.809  | -4.801  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.407    | 17.211  | -9.746  | PASSED |    |
| MBS272 | TEESM    | EX-135 | 0.000 | H1-3 COM | 0.036 | -73.054   | 0.047   | 6.701   | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.153 | 0.559     | -12.214 | -0.392  | PASSED |    |
| MBS273 | TEESM    | EX-135 | 6.000 | H1-3 COM | 0.089 | -236.050  | 6.613   | -4.111  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.347    | -13.770 | -14.914 | PASSED |    |
| MBS274 | TEESM    | EX-135 | 3.000 | AXT CBEN | 0.053 | 8.587     | 7.222   | 7.112   | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.153 | 0.587     | 8.758   | -17.053 | PASSED |    |
| MBS275 | TEESM    | EX-135 | 6.000 | H1-3 COM | 0.159 | -885.300  | 6.928   | -2.488  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.210    | -7.170  | -16.652 | PASSED |    |
| MBS276 | TEESM    | EX-135 | 0.000 | H1-3 COM | 0.235 | -1332.398 | -5.215  | 24.539  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.153 | 2.041     | -39.238 | -0.161  | PASSED |    |
| MBS278 | TEESM    | EX-0   | 0.000 | H2-1 TEN | 0.218 | 145.652   | 3.884   | -35.692 | M      | KN |
| ASD9   | T460x267 |        |       | B7 TEN   | 0.102 | -3.000    | 84.057  | 10.214  | PASSED |    |
| MBS280 | TEESM    | EX-0   | 0.000 | H2-1 TEN | 0.214 | 205.760   | -4.237  | -36.794 | M      | KN |
| ASD9   | T460x267 |        |       | B7 TEN   | 0.102 | -3.086    | 85.872  | -11.305 | PASSED |    |
| MBS281 | TEESM    | EX-90  | 0.000 | H1-3 COM | 0.175 | -933.613  | -4.646  | 4.211   | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | 0.340     | -17.986 | -9.733  | PASSED |    |
| MBS282 | TEESM    | EX-0   | 3.000 | H1-1 COM | 0.279 | -1776.144 | -0.192  | 23.069  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.153 | 1.929     | 37.292  | -5.809  | PASSED |    |
| MBS283 | TEESM    | EX-135 | 0.000 | AXC TBEN | 0.060 | -109.800  | 7.829   | -0.471  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.020    | -0.076  | 30.614  | PASSED |    |
| MBS284 | TEESM    | EX-0   | 0.000 | H2-1 TEN | 0.020 | 19.757    | 4.936   | 1.122   | M      | KN |
| ASD9   | T460x267 |        |       | B7 TEN   | 0.102 | 0.096     | -3.053  | 5.922   | PASSED |    |
| MBS285 | TEESM    | EX-135 | 6.000 | H1-3 COM | 0.086 | -336.185  | 7.029   | -2.040  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.141    | -8.048  | -13.172 | PASSED |    |
| MBS286 | TEESM    | EX-0   | 3.000 | H1-3 COM | 0.049 | -53.226   | 7.665   | 2.686   | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.153 | 0.492     | 3.185   | -18.267 | PASSED |    |
| MBS287 | TEESM    | EX-0   | 6.000 | H1-3 COM | 0.130 | -632.320  | 1.126   | 1.933   | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | 0.178     | 15.405  | -8.749  | PASSED |    |
| MBS288 | TEESM    | EX-0   | 3.000 | H1-2 COM | 0.311 | -1534.097 | 17.456  | -22.995 | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.153 | -1.904    | -50.064 | -25.429 | PASSED |    |
| MBS289 | TEESM    | EX-0   | 0.000 | H1-3 COM | 0.108 | -381.125  | -3.757  | -5.118  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.451    | 17.006  | -11.876 | PASSED |    |
| MBS290 | TEESM    | EX-0   | 3.000 | AXC TBEN | 0.070 | -63.667   | -18.434 | 1.051   | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.153 | -0.229    | 0.258   | 35.292  | PASSED |    |
| MBS291 | TEESM    | EX-0   | 0.000 | H1-3 COM | 0.095 | -227.956  | -3.502  | -6.391  | M      | KN |
| ASD9   | T460x267 |        |       | B7 COMP  | 0.306 | -0.523    | 20.197  | -11.447 | PASSED |    |

|                |                   |        |       |                     |                |                     |                    |                            |    |
|----------------|-------------------|--------|-------|---------------------|----------------|---------------------|--------------------|----------------------------|----|
| MBS292<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | H1-3 COM<br>B7 COMP | 0.029<br>0.153 | -90.477<br>-0.070   | -4.839<br>-1.056   | -0.980 M<br>-8.667 PASSED  | KN |
| MBS293<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.098<br>0.306 | -234.948<br>-0.574  | -3.158<br>21.592   | -6.889 M<br>-11.020 PASSED | KN |
| MBS294<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | H1-3 COM<br>B7 COMP | 0.027<br>0.153 | -95.307<br>-0.068   | -4.148<br>-1.508   | -0.695 M<br>-6.782 PASSED  | KN |
| MBS295<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.100<br>0.306 | -230.948<br>-0.594  | -3.053<br>22.257   | -7.103 M<br>-11.215 PASSED | KN |
| MBS296<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | H1-3 COM<br>B7 COMP | 0.026<br>0.153 | -99.562<br>-0.047   | -3.109<br>-1.996   | -0.502 M<br>-5.470 PASSED  | KN |
| MBS297<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.101<br>0.306 | -231.938<br>-0.604  | -2.890<br>22.562   | -7.191 M<br>-11.377 PASSED | KN |
| MBS298<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | H1-3 COM<br>B7 COMP | 0.025<br>0.153 | -100.568<br>-0.029  | -2.154<br>-2.428   | -0.294 M<br>-4.117 PASSED  | KN |
| MBS299<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.103<br>0.306 | -244.468<br>-0.605  | -2.796<br>22.549   | -7.169 M<br>-11.714 PASSED | KN |
| MBS300<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | H1-3 COM<br>B7 COMP | 0.023<br>0.153 | -107.817<br>-0.010  | -1.020<br>-2.772   | -0.100 M<br>-2.583 PASSED  | KN |
| MBS301<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.102<br>0.306 | -235.560<br>-0.603  | -2.635<br>22.378   | -7.109 M<br>-11.906 PASSED | KN |
| MBS302<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.000 | H1-3 COM<br>B7 COMP | 0.022<br>0.153 | -90.064<br>-0.041   | 1.607<br>-3.435    | -0.496 M<br>-2.011 PASSED  | KN |
| MBS303<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.100<br>0.306 | -230.975<br>-0.591  | -2.468<br>21.894   | -6.941 M<br>-12.076 PASSED | KN |
| MBS304<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.000 | H1-3 COM<br>B7 COMP | 0.025<br>0.153 | -87.986<br>-0.058   | 2.522<br>-3.674    | -0.700 M<br>-3.468 PASSED  | KN |
| MBS305<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.099<br>0.306 | -231.778<br>-0.571  | -2.323<br>21.109   | -6.675 M<br>-12.219 PASSED | KN |
| MBS306<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.000 | H1-3 COM<br>B7 COMP | 0.028<br>0.153 | -82.151<br>-0.059   | 3.690<br>-3.725    | -0.836 M<br>-5.501 PASSED  | KN |
| MBS307<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.094<br>0.306 | -225.006<br>-0.537  | -1.965<br>19.661   | -6.151 M<br>-11.799 PASSED | KN |
| MBS308<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.000 | H1-3 COM<br>B7 COMP | 0.029<br>0.153 | -76.573<br>-0.160   | 4.110<br>-4.738    | -1.402 M<br>-5.114 PASSED  | KN |
| MBS309<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.107<br>0.306 | -384.547<br>-0.403  | -1.605<br>16.658   | -5.017 M<br>-11.194 PASSED | KN |
| MBS310<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.000 | H1-3 COM<br>B7 COMP | 0.079<br>0.153 | -63.978<br>0.493    | 18.768<br>2.069    | 2.276 M<br>-34.369 PASSED  | KN |
| MBS311<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.133<br>0.306 | -656.983<br>0.150   | -6.853<br>3.576    | 2.024 M<br>-21.822 PASSED  | KN |
| MBS312<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.000 | H1-1 COM<br>B7 COMP | 0.276<br>0.153 | -1552.987<br>-1.947 | -11.636<br>-50.523 | -23.266 M<br>13.219 PASSED | KN |
| MBS313<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.111<br>0.306 | -368.430<br>-0.361  | -4.601<br>13.444   | -3.790 M<br>-17.930 PASSED | KN |
| MBS314<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.000 | AXC TBEN<br>B7 COMP | 0.043<br>0.153 | -55.171<br>-0.138   | -7.574<br>1.848    | 1.700 M<br>19.613 PASSED   | KN |
| MBS315<br>ASD9 | TEESM<br>T460x267 | EX-0   | 0.000 | H1-3 COM<br>B7 COMP | 0.079<br>0.306 | -128.110<br>-0.260  | -5.416<br>11.103   | -2.951 M<br>-19.518 PASSED | KN |
| MBS316<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.000 | H2-1 TEN<br>B7 TEN  | 0.020<br>0.102 | 19.575<br>0.059     | -4.126<br>-0.203   | 0.777 M<br>9.174 PASSED    | KN |
| MBS317<br>ASD9 | TEESM<br>T460x267 | EX-90  | 6.000 | AXC TBEN<br>B7 COMP | 0.746<br>0.306 | -218.167<br>0.511   | -89.448<br>11.764  | 6.028 M<br>365.821 PASSED  | KN |
| MBS318<br>ASD9 | TEESM<br>T460x267 | EX-90  | 6.000 | H1-3 COM<br>B7 COMP | 0.786<br>0.306 | -231.274<br>0.499   | 91.562<br>11.814   | 5.916 M<br>-371.083 PASSED | KN |
| MBS319<br>ASD9 | TEESM<br>T460x267 | EX-90  | 6.000 | AXC TBEN<br>B7 COMP | 0.757<br>0.306 | -231.317<br>0.499   | -91.483<br>11.820  | 5.921 M<br>371.092 PASSED  | KN |
| MBS320<br>ASD9 | TEESM<br>T460x267 | EX-90  | 6.000 | H1-3 COM<br>B7 COMP | 0.774<br>0.306 | -218.201<br>0.506   | 89.526<br>11.753   | 6.026 M<br>-365.806 PASSED | KN |
| MBS330<br>ASD9 | TEESM<br>T460x267 | EX-135 | 0.000 | AXT CBEN<br>B7 TEN  | 0.055<br>0.128 | 82.542<br>-0.073    | -13.361<br>-0.002  | -0.904 M<br>-27.864 PASSED | KN |

|                |                   |        |                              |                |                    |                   |                             |    |
|----------------|-------------------|--------|------------------------------|----------------|--------------------|-------------------|-----------------------------|----|
| MBS331<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753<br>H2-1 TEN<br>B7 TEN  | 0.054<br>0.128 | 32.607<br>0.614    | 3.906<br>21.795   | 7.145 M<br>1.533 PASSED     | KN |
| MBS332<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753<br>H2-1 TEN<br>B7 TEN  | 0.037<br>0.128 | 42.423<br>0.427    | 2.546<br>14.825   | 5.224 M<br>-1.678 PASSED    | KN |
| MBS333<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753<br>AXT CBEN<br>B7 TEN  | 0.223<br>0.128 | 65.476<br>-3.000   | 7.008<br>-95.037  | -34.339 M<br>-8.180 PASSED  | KN |
| MBS334<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753<br>AXC TBEN<br>B7 COMP | 0.034<br>0.191 | -2.750<br>-0.457   | 2.295<br>-15.120  | -5.379 M<br>0.298 PASSED    | KN |
| MBS335<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753<br>AXT CBEN<br>B7 TEN  | 0.235<br>0.128 | 44.471<br>3.002    | 9.386<br>94.969   | 34.397 M<br>-14.029 PASSED  | KN |
| MBS336<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000<br>H1-3 COM<br>B7 COMP | 0.045<br>0.191 | -105.795<br>0.039  | -9.970<br>0.489   | 0.547 M<br>-15.975 PASSED   | KN |
| MBS337<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753<br>H1-3 COM<br>B7 COMP | 0.042<br>0.191 | -48.601<br>-0.391  | 7.019<br>-14.021  | -4.578 M<br>-3.217 PASSED   | KN |
| MBS338<br>ASD9 | TEESM<br>T460x267 | EX-135 | 1.877<br>H1-3 COM<br>B7 COMP | 0.018<br>0.191 | -127.808<br>-0.007 | 0.507<br>-0.311   | -0.103 M<br>4.870 PASSED    | KN |
| MBS339<br>ASD9 | TEESM<br>T460x267 | EX-135 | 3.753<br>H1-3 COM<br>B7 COMP | 0.023<br>0.191 | -78.194<br>0.091   | 6.742<br>2.683    | 1.082 M<br>-4.308 PASSED    | KN |
| MBS340<br>ASD9 | TEESM<br>T460x267 | EX-135 | 1.877<br>H1-3 COM<br>B7 COMP | 0.018<br>0.191 | -130.317<br>0.024  | 0.280<br>-0.038   | 0.249 M<br>4.517 PASSED     | KN |
| MBS341<br>ASD9 | TEESM<br>T460x267 | EX-135 | 3.753<br>H1-3 COM<br>B7 COMP | 0.019<br>0.191 | -85.221<br>0.032   | 6.651<br>0.683    | 0.396 M<br>-3.914 PASSED    | KN |
| MBS342<br>ASD9 | TEESM<br>T460x267 | EX-135 | 1.877<br>H1-3 COM<br>B7 COMP | 0.017<br>0.191 | -129.322<br>0.026  | 0.325<br>-0.051   | 0.269 M<br>4.418 PASSED     | KN |
| MBS343<br>ASD9 | TEESM<br>T460x267 | EX-135 | 3.753<br>H1-3 COM<br>B7 COMP | 0.019<br>0.191 | -87.595<br>0.029   | 6.568<br>0.711    | 0.341 M<br>-3.770 PASSED    | KN |
| MBS344<br>ASD9 | TEESM<br>T460x267 | EX-135 | 3.753<br>H1-3 COM<br>B7 COMP | 0.018<br>0.191 | -129.482<br>0.025  | 5.266<br>0.483    | 0.259 M<br>-0.884 PASSED    | KN |
| MBS345<br>ASD9 | TEESM<br>T460x267 | EX-135 | 3.753<br>H1-3 COM<br>B7 COMP | 0.018<br>0.191 | -87.458<br>0.015   | 6.524<br>0.345    | 0.159 M<br>-3.673 PASSED    | KN |
| MBS346<br>ASD9 | TEESM<br>T460x267 | EX-0   | 1.877<br>H1-3 COM<br>B7 COMP | 0.017<br>0.191 | -130.016<br>-0.017 | 0.389<br>0.016    | -0.172 M<br>4.409 PASSED    | KN |
| MBS347<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.753<br>H1-3 COM<br>B7 COMP | 0.018<br>0.191 | -89.424<br>-0.025  | 6.487<br>-0.586   | -0.298 M<br>-3.547 PASSED   | KN |
| MBS348<br>ASD9 | TEESM<br>T460x267 | EX-0   | 1.877<br>H1-3 COM<br>B7 COMP | 0.017<br>0.191 | -129.324<br>-0.016 | 0.363<br>0.021    | -0.169 M<br>4.508 PASSED    | KN |
| MBS349<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.753<br>H1-3 COM<br>B7 COMP | 0.019<br>0.191 | -86.185<br>-0.033  | 6.597<br>-0.704   | -0.402 M<br>-3.764 PASSED   | KN |
| MBS350<br>ASD9 | TEESM<br>T460x267 | EX-135 | 3.753<br>H1-3 COM<br>B7 COMP | 0.018<br>0.191 | -115.627<br>0.036  | 5.664<br>1.091    | 0.404 M<br>-1.283 PASSED    | KN |
| MBS351<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753<br>H1-3 COM<br>B7 COMP | 0.023<br>0.191 | -58.866<br>-0.088  | 6.963<br>-2.955   | -1.071 M<br>-4.980 PASSED   | KN |
| MBS352<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000<br>H1-3 COM<br>B7 COMP | 0.044<br>0.191 | -104.980<br>-0.047 | -10.038<br>-0.293 | -0.637 M<br>-16.016 PASSED  | KN |
| MBS353<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753<br>H1-3 COM<br>B7 COMP | 0.044<br>0.191 | -47.965<br>0.388   | 7.236<br>13.966   | 4.545 M<br>-3.902 PASSED    | KN |
| MBS354<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753<br>H1-3 COM<br>B7 COMP | 0.035<br>0.191 | -2.939<br>0.465    | 2.620<br>15.118   | 5.482 M<br>-0.698 PASSED    | KN |
| MBS355<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753<br>AXT CBEN<br>B7 TEN  | 0.226<br>0.128 | 44.722<br>-2.989   | 8.132<br>-94.454  | -34.241 M<br>-10.116 PASSED | KN |
| MBS356<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753<br>H2-1 TEN<br>B7 TEN  | 0.037<br>0.128 | 42.125<br>-0.415   | 2.214<br>-14.805  | -5.072 M<br>-0.657 PASSED   | KN |
| MBS357<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753<br>AXT CBEN<br>B7 TEN  | 0.233<br>0.128 | 65.348<br>3.014    | 8.320<br>95.649   | 34.518 M<br>-12.231 PASSED  | KN |
| MBS358<br>ASD9 | TEESM<br>T460x267 | EX-45  | 0.000<br>AXT CBEN<br>B7 TEN  | 0.053<br>0.128 | 76.809<br>0.021    | -12.815<br>0.792  | 0.414 M<br>-26.034 PASSED   | KN |
| MBS359<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753<br>H2-1 TEN<br>B7 TEN  | 0.055<br>0.128 | 32.921<br>-0.604   | 3.625<br>-21.715  | -7.027 M<br>2.460 PASSED    | KN |
| MBS360<br>ASD9 | TEESM<br>T460x267 | EX-135 | 3.753<br>AXT CBEN<br>B7 TEN  | 0.051<br>0.128 | 73.225<br>-0.045   | 12.480<br>-0.800  | -0.284 M<br>-24.870 PASSED  | KN |
| MBS361         | TEESM             | EX-0   | 3.753<br>H2-1 TEN            | 0.119          | 135.353            | -17.299           | -0.699 M                    | KN |

|        |          |        |                |       |          |         |         |        |    |
|--------|----------|--------|----------------|-------|----------|---------|---------|--------|----|
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -0.021   | -2.060  | 51.589  | PASSED |    |
| MBS362 | TEESM    | EX-0   | 3.753 AXT CBEN | 0.029 | 44.889   | 7.258   | -2.743  | M      | KN |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -0.249   | -3.356  | -10.762 | PASSED |    |
| MBS363 | TEESM    | EX-0   | 3.753 H2-1 TEN | 0.054 | 27.373   | -4.114  | 0.617   | M      | KN |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 0.083    | 1.372   | 24.656  | PASSED |    |
| MBS364 | TEESM    | EX-90  | 3.753 H1-3 COM | 0.023 | -21.025  | 6.651   | -1.390  | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.134   | -1.594  | -8.455  | PASSED |    |
| MBS365 | TEESM    | EX-0   | 3.753 H2-1 TEN | 0.051 | 13.491   | -3.145  | 0.557   | M      | KN |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 0.026    | 1.761   | 23.305  | PASSED |    |
| MBS366 | TEESM    | EX-0   | 3.753 H1-3 COM | 0.036 | -83.037  | 8.930   | -0.251  | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.023   | 0.114   | -13.200 | PASSED |    |
| MBS367 | TEESM    | EX-0   | 3.753 H2-1 TEN | 0.083 | 20.405   | -11.035 | 0.220   | M      | KN |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -0.035   | -0.346  | 40.622  | PASSED |    |
| MBS368 | TEESM    | EX-0   | 0.000 H1-3 COM | 0.018 | -116.627 | -5.640  | 0.283   | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | 0.025    | -0.808  | -1.272  | PASSED |    |
| MBS369 | TEESM    | EX-0   | 3.753 H1-3 COM | 0.029 | -68.087  | 8.750   | 0.724   | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | 0.104    | 1.548   | -9.075  | PASSED |    |
| MBS370 | TEESM    | EX-135 | 1.877 H1-3 COM | 0.017 | -129.157 | -0.372  | -0.274  | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.027   | -0.071  | 4.485   | PASSED |    |
| MBS371 | TEESM    | EX-135 | 3.753 H1-3 COM | 0.024 | -71.904  | 7.964   | -0.176  | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.029   | -0.376  | -7.754  | PASSED |    |
| MBS372 | TEESM    | EX-135 | 0.000 H1-3 COM | 0.018 | -128.730 | -5.320  | -0.282  | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.028   | 0.487   | -0.993  | PASSED |    |
| MBS373 | TEESM    | EX-135 | 3.753 H1-3 COM | 0.024 | -72.243  | 7.771   | -0.281  | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.029   | -0.611  | -7.457  | PASSED |    |
| MBS374 | TEESM    | EX-135 | 0.000 H1-3 COM | 0.018 | -127.822 | -5.379  | -0.264  | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.025   | 0.495   | -1.164  | PASSED |    |
| MBS375 | TEESM    | EX-135 | 3.753 H1-3 COM | 0.024 | -71.672  | 7.746   | -0.349  | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.032   | -0.725  | -7.437  | PASSED |    |
| MBS376 | TEESM    | EX-135 | 0.000 H1-3 COM | 0.018 | -127.374 | -5.373  | -0.226  | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.021   | 0.452   | -1.064  | PASSED |    |
| MBS377 | TEESM    | EX-135 | 3.753 H1-3 COM | 0.025 | -70.227  | 7.845   | -0.426  | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.038   | -0.868  | -7.622  | PASSED |    |
| MBS378 | TEESM    | EX-0   | 1.877 H1-3 COM | 0.017 | -128.157 | -0.357  | 0.145   | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | 0.014    | 0.019   | 4.509   | PASSED |    |
| MBS379 | TEESM    | EX-135 | 3.753 H1-3 COM | 0.026 | -65.811  | 8.089   | -0.499  | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.033   | -1.001  | -8.059  | PASSED |    |
| MBS380 | TEESM    | EX-135 | 0.000 H1-3 COM | 0.017 | -111.871 | -5.770  | -0.296  | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.026   | 0.682   | -1.590  | PASSED |    |
| MBS381 | TEESM    | EX-135 | 3.753 H1-3 COM | 0.029 | -62.078  | 8.723   | -0.853  | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.120   | -1.687  | -9.092  | PASSED |    |
| MBS382 | TEESM    | EX-0   | 3.753 H1-3 COM | 0.036 | -100.054 | 8.633   | 0.523   | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | 0.044    | 0.620   | -11.878 | PASSED |    |
| MBS383 | TEESM    | EX-0   | 3.753 AXC TBEN | 0.076 | -1.715   | -8.617  | -1.670  | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.132   | -3.589  | 34.772  | PASSED |    |
| MBS384 | TEESM    | EX-0   | 3.753 H1-3 COM | 0.024 | -10.332  | 6.878   | -2.373  | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | -0.195   | -2.444  | -8.814  | PASSED |    |
| MBS385 | TEESM    | EX-135 | 3.753 H2-1 TEN | 0.049 | 20.305   | -2.931  | 0.498   | M      | KN |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 0.071    | 1.361   | 22.476  | PASSED |    |
| MBS386 | TEESM    | EX-135 | 3.753 AXT CBEN | 0.027 | 41.215   | 7.347   | 2.008   | M      | KN |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 0.201    | 2.788   | -10.855 | PASSED |    |
| MBS387 | TEESM    | EX-0   | 3.753 H2-1 TEN | 0.051 | 23.204   | -4.124  | -0.203  | M      | KN |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -0.055   | 0.274   | 24.575  | PASSED |    |
| MBS388 | TEESM    | EX-0   | 3.753 AXT CBEN | 0.054 | 78.411   | 12.702  | 0.413   | M      | KN |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | 0.050    | 1.521   | -25.636 | PASSED |    |
| MBS389 | TEESM    | EX-0   | 3.753 H2-1 TEN | 0.136 | 151.143  | -19.922 | -1.307  | M      | KN |
| ASD9   | T460x267 |        | B7 TEN         | 0.128 | -0.186   | -3.383  | 57.861  | PASSED |    |
| MBS390 | TEESM    | EX-135 | 3.753 H1-3 COM | 0.030 | -130.841 | 6.757   | 0.003   | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | 0.002    | -0.472  | -7.165  | PASSED |    |
| MBS391 | TEESM    | EX-90  | 3.753 AXT CBEN | 0.032 | 33.217   | 7.741   | 1.877   | M      | KN |
| ASD9   | T460x267 |        | B7 COMP        | 0.191 | 0.151    | 5.663   | -9.728  | PASSED |    |

|                |                   |        |       |                     |                |                      |                   |                     |              |
|----------------|-------------------|--------|-------|---------------------|----------------|----------------------|-------------------|---------------------|--------------|
| MBS392<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 | H2-1 TEN<br>B7 TEN  | 0.052<br>0.128 | 63.082<br>0.152      | 3.066<br>-2.449   | 1.926 M<br>20.342   | KN<br>PASSED |
| MBS393<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753 | AXT CBEN<br>B7 COMP | 0.052<br>0.191 | 5.647<br>-0.503      | 5.413<br>-17.282  | -5.937 M<br>-7.316  | KN<br>PASSED |
| MBS394<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 | H2-1 TEN<br>B7 TEN  | 0.051<br>0.128 | 70.303<br>-0.076     | 2.956<br>0.837    | -0.840 M<br>21.570  | KN<br>PASSED |
| MBS395<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753 | AXT CBEN<br>B7 TEN  | 0.060<br>0.128 | 18.299<br>0.533      | 7.238<br>17.305   | 6.167 M<br>-11.556  | KN<br>PASSED |
| MBS396<br>ASD9 | TEESM<br>T460x267 | EX-90  | 1.877 | H2-1 TEN<br>B7 COMP | 0.017<br>0.191 | 39.259<br>0.023      | 1.521<br>0.021    | 0.333 M<br>6.665    | KN<br>PASSED |
| MBS397<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.753 | AXT CBEN<br>B7 TEN  | 0.036<br>0.128 | 13.760<br>-0.027     | 10.738<br>-1.302  | -0.379 M<br>-16.920 | KN<br>PASSED |
| MBS398<br>ASD9 | TEESM<br>T460x267 | EX-135 | 1.877 | H2-1 TEN<br>B7 TEN  | 0.022<br>0.128 | 109.283<br>-0.003    | -0.908<br>-0.254  | -0.013 M<br>5.489   | KN<br>PASSED |
| MBS399<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.753 | AXT CBEN<br>B7 TEN  | 0.039<br>0.128 | 39.852<br>0.047      | 11.817<br>1.190   | 0.655 M<br>-18.549  | KN<br>PASSED |
| MBS400<br>ASD9 | TEESM<br>T460x267 | EX-135 | 1.877 | H2-1 TEN<br>B7 TEN  | 0.022<br>0.128 | 112.239<br>0.007     | -1.026<br>-0.164  | 0.040 M<br>5.296    | KN<br>PASSED |
| MBS401<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.753 | AXT CBEN<br>B7 TEN  | 0.039<br>0.128 | 44.378<br>0.033      | 11.957<br>0.858   | 0.504 M<br>-18.885  | KN<br>PASSED |
| MBS402<br>ASD9 | TEESM<br>T460x267 | EX-135 | 1.877 | H2-1 TEN<br>B7 TEN  | 0.022<br>0.128 | 113.115<br>0.005     | -1.067<br>-0.067  | 0.017 M<br>5.178    | KN<br>PASSED |
| MBS403<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.753 | AXT CBEN<br>B7 TEN  | 0.038<br>0.128 | 43.948<br>0.016      | 11.941<br>0.467   | 0.283 M<br>-18.909  | KN<br>PASSED |
| MBS404<br>ASD9 | TEESM<br>T460x267 | EX-135 | 1.877 | H2-1 TEN<br>B7 TEN  | 0.022<br>0.128 | 113.836<br>0.006     | -1.069<br>0.046   | 0.034 M<br>5.167    | KN<br>PASSED |
| MBS405<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.753 | AXT CBEN<br>B7 TEN  | 0.037<br>0.128 | 44.469<br>-0.008     | 11.872<br>-0.081  | -0.014 M<br>-18.776 | KN<br>PASSED |
| MBS406<br>ASD9 | TEESM<br>T460x267 | EX-135 | 1.877 | H2-1 TEN<br>B7 TEN  | 0.022<br>0.128 | 113.189<br>0.007     | -1.081<br>0.158   | 0.053 M<br>5.213    | KN<br>PASSED |
| MBS407<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.753 | AXT CBEN<br>B7 TEN  | 0.038<br>0.128 | 44.537<br>-0.031     | 11.823<br>-0.641  | -0.317 M<br>-18.611 | KN<br>PASSED |
| MBS408<br>ASD9 | TEESM<br>T460x267 | EX-45  | 1.877 | H2-1 TEN<br>B7 TEN  | 0.022<br>0.128 | 109.548<br>1.879E-04 | -1.083<br>0.208   | 0.034 M<br>5.294    | KN<br>PASSED |
| MBS409<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.753 | AXT CBEN<br>B7 TEN  | 0.039<br>0.128 | 44.842<br>-0.051     | 11.767<br>-1.100  | -0.578 M<br>-18.372 | KN<br>PASSED |
| MBS410<br>ASD9 | TEESM<br>T460x267 | EX-90  | 1.877 | H2-1 TEN<br>B7 TEN  | 0.022<br>0.128 | 107.890<br>0.007     | -0.539<br>0.323   | 0.022 M<br>5.344    | KN<br>PASSED |
| MBS411<br>ASD9 | TEESM<br>T460x267 | EX-135 | 3.753 | AXT CBEN<br>B7 TEN  | 0.039<br>0.128 | 43.577<br>-0.051     | 11.719<br>-1.612  | -0.785 M<br>-18.208 | KN<br>PASSED |
| MBS412<br>ASD9 | TEESM<br>T460x267 | EX-90  | 1.877 | H2-1 TEN<br>B7 TEN  | 0.017<br>0.128 | 39.042<br>-0.012     | 1.493<br>-0.132   | -0.196 M<br>6.775   | KN<br>PASSED |
| MBS413<br>ASD9 | TEESM<br>T460x267 | EX-135 | 3.753 | AXT CBEN<br>B7 TEN  | 0.038<br>0.128 | 17.530<br>0.053      | 10.702<br>2.035   | 0.624 M<br>-17.082  | KN<br>PASSED |
| MBS414<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 | H2-1 TEN<br>B7 TEN  | 0.051<br>0.128 | 70.704<br>0.069      | 3.236<br>-0.466   | 0.764 M<br>21.765   | KN<br>PASSED |
| MBS415<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753 | AXT CBEN<br>B7 TEN  | 0.057<br>0.128 | 18.636<br>-0.569     | 6.253<br>-18.569  | -6.592 M<br>-8.439  | KN<br>PASSED |
| MBS416<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 | H2-1 TEN<br>B7 COMP | 0.052<br>0.191 | 63.629<br>-0.157     | 2.802<br>2.796    | -1.982 M<br>20.209  | KN<br>PASSED |
| MBS417<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753 | AXT CBEN<br>B7 COMP | 0.056<br>0.191 | 5.878<br>0.469       | 6.418<br>16.044   | 5.533 M<br>-10.479  | KN<br>PASSED |
| MBS418<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.753 | H1-3 COM<br>B7 COMP | 0.031<br>0.191 | -167.448<br>0.018    | 5.478<br>0.839    | 0.355 M<br>-5.186   | KN<br>PASSED |
| MBS419<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753 | AXT CBEN<br>B7 COMP | 0.031<br>0.191 | 33.748<br>-0.185     | 7.498<br>-6.285   | -2.280 M<br>-8.928  | KN<br>PASSED |
| MBS420<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753 | H1-3 COM<br>B7 COMP | 0.052<br>0.191 | -253.056<br>0.067    | 7.486<br>1.960    | 1.164 M<br>-9.812   | KN<br>PASSED |
| MBS421<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000 | H1-3 COM<br>B7 COMP | 0.059<br>0.191 | -331.032<br>0.035    | -12.170<br>-1.351 | 0.948 M<br>-9.198   | KN<br>PASSED |

|                |                   |        |                  |                |                       |                  |                             |    |
|----------------|-------------------|--------|------------------|----------------|-----------------------|------------------|-----------------------------|----|
| MBS422<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753<br>B7 COMP | 0.037<br>0.191 | -47.837<br>0.150      | -0.786<br>3.771  | 2.224 M<br>14.626 PASSED    | KN |
| MBS423<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.753<br>B7 COMP | 0.250<br>0.191 | 56.642<br>-0.054      | 46.523<br>-0.870 | -0.377 M<br>-126.128 PASSED | KN |
| MBS424<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.753<br>B7 TEN  | 0.045<br>0.128 | 42.213<br>0.078       | -1.885<br>1.752  | 1.080 M<br>18.537 PASSED    | KN |
| MBS425<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.753<br>B7 TEN  | 0.249<br>0.128 | 106.833<br>0.083      | 46.826<br>1.008  | 0.685 M<br>-125.459 PASSED  | KN |
| MBS426<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753<br>B7 COMP | 0.013<br>0.191 | -18.205<br>0.049      | 6.609<br>0.940   | 0.655 M<br>-4.642 PASSED    | KN |
| MBS427<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753<br>B7 COMP | 0.055<br>0.191 | -123.243<br>0.071     | -3.691<br>1.194  | 0.704 M<br>26.758 PASSED    | KN |
| MBS428<br>ASD9 | TEESM<br>T460x267 | EX-135 | 1.877<br>B7 TEN  | 0.021<br>0.128 | 103.039<br>0.003      | 1.098<br>-0.202  | 0.022 M<br>5.373 PASSED     | KN |
| MBS429<br>ASD9 | TEESM<br>T460x267 | EX-135 | 1.877<br>B7 TEN  | 0.018<br>0.128 | 70.411<br>-0.018      | 0.865<br>-0.261  | -0.078 M<br>5.529 PASSED    | KN |
| MBS430<br>ASD9 | TEESM<br>T460x267 | EX-0   | 1.877<br>B7 TEN  | 0.021<br>0.128 | 107.446<br>-3.606E-04 | 1.131<br>-0.181  | -0.006 M<br>5.292 PASSED    | KN |
| MBS431<br>ASD9 | TEESM<br>T460x267 | EX-135 | 1.877<br>B7 TEN  | 0.018<br>0.128 | 64.024<br>0.055       | 0.040<br>0.108   | 0.651 M<br>5.755 PASSED     | KN |
| MBS432<br>ASD9 | TEESM<br>T460x267 | EX-0   | 1.877<br>B7 TEN  | 0.021<br>0.128 | 110.732<br>-7.270E-05 | 1.194<br>-0.099  | -0.013 M<br>5.181 PASSED    | KN |
| MBS433<br>ASD9 | TEESM<br>T460x267 | EX-135 | 1.877<br>B7 TEN  | 0.018<br>0.128 | 60.429<br>0.029       | -0.427<br>0.046  | 0.303 M<br>5.943 PASSED     | KN |
| MBS434<br>ASD9 | TEESM<br>T460x267 | EX-0   | 1.877<br>B7 TEN  | 0.021<br>0.128 | 110.957<br>-2.832E-04 | 1.179<br>0.005   | -0.021 M<br>5.118 PASSED    | KN |
| MBS435<br>ASD9 | TEESM<br>T460x267 | EX-135 | 1.877<br>B7 TEN  | 0.018<br>0.128 | 59.530<br>0.004       | -0.578<br>0.059  | -0.048 M<br>6.056 PASSED    | KN |
| MBS436<br>ASD9 | TEESM<br>T460x267 | EX-0   | 1.877<br>B7 TEN  | 0.021<br>0.128 | 112.038<br>3.753E-06  | 1.186<br>0.108   | -0.022 M<br>5.165 PASSED    | KN |
| MBS437<br>ASD9 | TEESM<br>T460x267 | EX-135 | 1.877<br>B7 TEN  | 0.018<br>0.128 | 60.089<br>-0.018      | -0.530<br>0.066  | -0.372 M<br>6.101 PASSED    | KN |
| MBS438<br>ASD9 | TEESM<br>T460x267 | EX-0   | 1.877<br>B7 TEN  | 0.022<br>0.128 | 109.754<br>0.002      | 1.136<br>0.204   | -0.008 M<br>5.286 PASSED    | KN |
| MBS439<br>ASD9 | TEESM<br>T460x267 | EX-135 | 1.877<br>B7 TEN  | 0.018<br>0.128 | 60.543<br>-0.039      | -0.204<br>0.044  | -0.632 M<br>6.078 PASSED    | KN |
| MBS440<br>ASD9 | TEESM<br>T460x267 | EX-0   | 1.877<br>B7 TEN  | 0.022<br>0.128 | 104.128<br>-0.007     | 1.022<br>0.301   | -0.060 M<br>5.391 PASSED    | KN |
| MBS441<br>ASD9 | TEESM<br>T460x267 | EX-45  | 1.877<br>B7 TEN  | 0.018<br>0.128 | 66.015<br>0.025       | 0.809<br>0.248   | 0.120 M<br>5.511 PASSED     | KN |
| MBS442<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753<br>B7 COMP | 0.014<br>0.191 | -19.205<br>-0.058     | 6.650<br>-1.176  | -0.763 M<br>-4.784 PASSED   | KN |
| MBS443<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753<br>B7 COMP | 0.055<br>0.191 | -123.147<br>-0.049    | -3.841<br>-0.426 | -0.443 M<br>27.201 PASSED   | KN |
| MBS444<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.753<br>B7 TEN  | 0.043<br>0.128 | 42.720<br>-0.060      | -1.990<br>-1.032 | -0.801 M<br>18.733 PASSED   | KN |
| MBS445<br>ASD9 | TEESM<br>T460x267 | EX-0   | 3.753<br>B7 TEN  | 0.254<br>0.128 | 106.587<br>-0.113     | 47.416<br>-2.029 | -0.941 M<br>-126.832 PASSED | KN |
| MBS446<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753<br>B7 COMP | 0.036<br>0.191 | -47.394<br>-0.138     | -0.825<br>-3.377 | -2.083 M<br>14.645 PASSED   | KN |
| MBS447<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753<br>B7 COMP | 0.248<br>0.191 | -49.241<br>-0.054     | 44.391<br>-2.585 | -1.142 M<br>-120.110 PASSED | KN |
| MBS448<br>ASD9 | TEESM<br>T460x267 | EX-90  | 3.753<br>B7 COMP | 0.053<br>0.191 | -251.769<br>-0.075    | 7.422<br>-2.269  | -1.268 M<br>-9.650 PASSED   | KN |
| MBS449<br>ASD9 | TEESM<br>T460x267 | EX-90  | 0.000<br>B7 COMP | 0.058<br>0.191 | -329.355<br>-0.024    | -12.050<br>1.362 | -0.813 M<br>-9.137 PASSED   | KN |
| MBS622<br>ASD9 | TEESM<br>T460x267 | EX-90  | 4.100<br>B7 TEN  | 0.084<br>0.139 | 750.019<br>0.029      | 8.007<br>1.071   | 0.484 M<br>-13.213 PASSED   | KN |
| MBS623<br>ASD9 | TEESM<br>T460x267 | EX-90  | 4.100<br>B7 TEN  | 0.079<br>0.139 | 680.196<br>0.309      | 6.956<br>2.593   | 1.232 M<br>-10.016 PASSED   | KN |
| MBS624         | TEESM             | EX-90  | 4.100 H2-1 TEN   | 0.074          | 514.136               | 9.556            | 2.707 M                     | KN |

|        |          |        |                |       |         |         |          |        |  |
|--------|----------|--------|----------------|-------|---------|---------|----------|--------|--|
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | 0.980   | 5.689   | -18.246  | PASSED |  |
| MBS625 | TEESM    | EX-0   | 4.100 AXC TBEN | 0.095 | -53.911 | -11.386 | 3.567 M  | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.209 | 1.344   | 6.582   | 40.976   | PASSED |  |
| MBS626 | TEESM    | EX-45  | 4.100 H2-1 TEN | 0.096 | 886.109 | 5.455   | -0.592 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | -0.030  | -1.432  | -8.686   | PASSED |  |
| MBS627 | TEESM    | EX-0   | 0.000 H2-1 TEN | 0.084 | 730.814 | -7.204  | -1.421 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | -0.305  | 2.716   | -10.451  | PASSED |  |
| MBS628 | TEESM    | EX-45  | 4.100 H2-1 TEN | 0.068 | 463.527 | 8.237   | -2.641 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | -0.943  | -5.434  | -16.977  | PASSED |  |
| MBS629 | TEESM    | EX-0   | 4.100 H2-1 TEN | 0.114 | 119.295 | -12.513 | -3.631 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | -1.320  | -7.056  | 44.287   | PASSED |  |
| MBS630 | TEESM    | EX-135 | 4.100 H2-1 TEN | 0.096 | 892.450 | 6.172   | 0.413 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | 0.014   | 1.045   | -10.152  | PASSED |  |
| MBS631 | TEESM    | EX-0   | 0.000 H2-1 TEN | 0.084 | 725.617 | -7.198  | 1.409 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | 0.304   | -2.716  | -10.499  | PASSED |  |
| MBS632 | TEESM    | EX-135 | 4.100 H2-1 TEN | 0.069 | 479.977 | 8.762   | 2.539 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | 0.937   | 5.262   | -17.852  | PASSED |  |
| MBS633 | TEESM    | EX-0   | 4.100 H2-1 TEN | 0.104 | 97.421  | -11.767 | 3.104 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | 1.303   | 5.529   | 41.888   | PASSED |  |
| MBS634 | TEESM    | EX-90  | 4.100 H2-1 TEN | 0.085 | 751.034 | 8.009   | -0.671 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | -0.045  | -1.452  | -13.217  | PASSED |  |
| MBS635 | TEESM    | EX-90  | 4.100 H2-1 TEN | 0.080 | 681.525 | 6.966   | -1.456 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | -0.328  | -3.083  | -10.046  | PASSED |  |
| MBS636 | TEESM    | EX-90  | 4.100 H2-1 TEN | 0.074 | 516.012 | 9.529   | -2.781 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | -0.986  | -5.701  | -18.159  | PASSED |  |
| MBS637 | TEESM    | EX-0   | 4.100 AXC TBEN | 0.104 | -88.524 | -12.522 | -3.921 M | KN     |  |
| ASD9   | T460x267 |        | B7 COMP        | 0.209 | -1.363  | -7.763  | 44.219   | PASSED |  |
| MBS638 | TEESM    | EX-0   | 0.000 H2-1 TEN | 0.049 | 288.679 | -7.968  | 2.645 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | 0.950   | -5.174  | -16.061  | PASSED |  |
| MBS639 | TEESM    | EX-0   | 4.100 H2-1 TEN | 0.069 | 571.603 | 7.075   | 1.468 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | 0.315   | 3.023   | -9.749   | PASSED |  |
| MBS640 | TEESM    | EX-0   | 4.100 H2-1 TEN | 0.080 | 730.843 | 5.482   | 0.674 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | 0.040   | 1.376   | -8.306   | PASSED |  |
| MBS641 | TEESM    | EX-0   | 0.000 H2-1 TEN | 0.085 | 804.645 | -5.343  | 0.213 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | -0.004  | -0.467  | -8.032   | PASSED |  |
| MBS642 | TEESM    | EX-135 | 0.000 H2-1 TEN | 0.067 | 447.297 | -7.742  | -2.846 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | -0.953  | 5.962   | -16.667  | PASSED |  |
| MBS643 | TEESM    | EX-135 | 4.100 H2-1 TEN | 0.085 | 723.889 | 8.068   | -1.564 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | -0.315  | -3.008  | -12.062  | PASSED |  |
| MBS644 | TEESM    | EX-135 | 4.100 H2-1 TEN | 0.097 | 881.741 | 6.461   | -0.843 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | -0.052  | -1.484  | -10.736  | PASSED |  |
| MBS645 | TEESM    | EX-135 | 4.100 H2-1 TEN | 0.102 | 957.464 | 6.484   | -0.409 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | -0.013  | -0.590  | -10.776  | PASSED |  |
| MBS646 | TEESM    | EX-0   | 0.000 H2-1 TEN | 0.067 | 453.818 | -8.276  | 2.678 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | 0.945   | -5.516  | -17.176  | PASSED |  |
| MBS647 | TEESM    | EX-45  | 4.100 H2-1 TEN | 0.084 | 723.623 | 7.331   | 1.474 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | 0.309   | 2.820   | -10.666  | PASSED |  |
| MBS648 | TEESM    | EX-0   | 0.000 H2-1 TEN | 0.096 | 882.374 | -5.365  | 0.647 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | 0.035   | -1.550  | -8.491   | PASSED |  |
| MBS649 | TEESM    | EX-135 | 4.100 H2-1 TEN | 0.101 | 947.731 | 6.506   | 0.367 M  | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | 0.010   | 0.488   | -10.860  | PASSED |  |
| MBS650 | TEESM    | EX-0   | 0.000 H2-1 TEN | 0.051 | 306.576 | -7.792  | -2.670 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | -0.953  | 5.330   | -15.389  | PASSED |  |
| MBS651 | TEESM    | EX-0   | 4.100 H2-1 TEN | 0.069 | 577.818 | 6.943   | -1.370 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | -0.306  | -2.855  | -9.495   | PASSED |  |
| MBS652 | TEESM    | EX-0   | 4.100 H2-1 TEN | 0.080 | 731.020 | 5.454   | -0.625 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | -0.035  | -1.278  | -8.163   | PASSED |  |
| MBS653 | TEESM    | EX-45  | 4.100 H2-1 TEN | 0.085 | 798.837 | 5.811   | -0.201 M | KN     |  |
| ASD9   | T460x267 |        | B7 TEN         | 0.139 | 0.006   | -0.393  | -8.908   | PASSED |  |

SUMMARY UNITY CHECK AT OPERATING (OP) AND EXTREM (EX) CONDITION

| MEMBER                      | PASS/<br>FAIL | LOAD   | UC    | CRITICAL<br>PROVISION |
|-----------------------------|---------------|--------|-------|-----------------------|
| -----//-----//-----//-----/ |               |        |       |                       |
| MBS773                      | Pass          | OP-0   | 0.791 | H1-3 COM              |
| MBS759                      | Pass          | OP-45  | 0.789 | H1-3 COM              |
| MBS667                      | Pass          | OP-0   | 0.784 | H1-3 COM              |
| MBS691                      | Pass          | OP-45  | 0.784 | H1-3 COM              |
| MBS669                      | Pass          | OP-0   | 0.784 | H1-3 COM              |
| MBS693                      | Pass          | OP-45  | 0.783 | H1-3 COM              |
| MBS769                      | Pass          | OP-0   | 0.783 | H1-3 COM              |
| MBS763                      | Pass          | OP-45  | 0.782 | H1-3 COM              |
| MBS318                      | Pass          | OP-0   | 0.774 | H1-3 COM              |
| MBS673                      | Pass          | OP-0   | 0.773 | H1-3 COM              |
|                             |               |        |       |                       |
| MBS759                      | Pass          | EX-90  | 0.802 | H1-3 COM              |
| MBS773                      | Pass          | EX-90  | 0.796 | H1-3 COM              |
| MBS763                      | Pass          | EX-90  | 0.794 | H1-3 COM              |
| MBS769                      | Pass          | EX-90  | 0.793 | H1-3 COM              |
| MBS790                      | Pass          | EX-90  | 0.793 | H1-3 COM              |
| MBS804                      | Pass          | EX-90  | 0.786 | H1-3 COM              |
| MBS318                      | Pass          | EX-90  | 0.786 | H1-3 COM              |
| MBS794                      | Pass          | EX-90  | 0.783 | H1-3 COM              |
| MBS693                      | Pass          | EX-135 | 0.782 | H1-3 COM              |
| MBS800                      | Pass          | EX-90  | 0.782 | H1-3 COM              |

SUPPORT REACTION (TOTAL AT 0,0,0)

ACTIVE UNITS M KN DEG DEGF SEC

| LOADING                     | FORCE     |          |           | MOMENT    |           |          |
|-----------------------------|-----------|----------|-----------|-----------|-----------|----------|
|                             | X FORCE   | Y FORCE  | Z FORCE   | X MOMENT  | Y MOMENT  | Z MOMENT |
| -----//-----//-----//-----/ |           |          |           |           |           |          |
| OP-0                        | -322.1299 | 143637.4 | 0.6096359 | -3744069. | -8427.228 | 3248978. |
| OP-45                       | -138.4152 | 143636.2 | -136.9105 | -3739639. | -313.4740 | 3254272. |
| OP-90                       | 1.841616  | 130927.0 | -938.8757 | -3384196. | 21492.56  | 2969223. |
| OP-135                      | 738.3475  | 130928.0 | -736.5079 | -3390335. | 36207.99  | 2990689. |
| EX-0                        | -474.9664 | 131627.3 | 0.6495994 | -3430269. | -12423.10 | 2972765. |
| EX-45                       | -351.1617 | 131625.7 | -350.0803 | -3420972. | -1158.477 | 2977070. |
| EX-90                       | 5.045890  | 118899.4 | -2343.687 | -3040795. | 53463.19  | 2696241. |
| EX-135                      | 873.9369  | 131619.9 | -871.1658 | -3409475. | 42552.75  | 3005950. |

ACTIVE UNITS M TON DEG DEGF SEC

| LOADING                     | FORCE     |          |               | MOMENT    |           |          |
|-----------------------------|-----------|----------|---------------|-----------|-----------|----------|
|                             | X FORCE   | Y FORCE  | Z FORCE       | X MOMENT  | Y MOMENT  | Z MOMENT |
| -----//-----//-----//-----/ |           |          |               |           |           |          |
| OP-0                        | -36.20884 | 16145.48 | 0.6852580E-01 | -420850.1 | -947.2581 | 365199.6 |
| OP-45                       | -15.55848 | 16145.35 | -15.38935     | -420352.2 | -35.23587 | 365794.8 |
| OP-90                       | 0.2070059 | 14716.78 | -105.5338     | -380398.7 | 2415.860  | 333753.9 |
| OP-135                      | 82.99356  | 14716.89 | -82.78678     | -381088.8 | 4069.940  | 336166.8 |
| EX-0                        | -53.38837 | 14795.50 | 0.7301790E-01 | -385577.7 | -1396.413 | 334152.1 |
| EX-45                       | -39.47215 | 14795.32 | -39.35061     | -384532.6 | -130.2180 | 334636.1 |
| EX-90                       | 0.5671808 | 13364.83 | -263.4410     | -341799.0 | 6009.503  | 303069.7 |
| EX-135                      | 98.23444  | 14794.66 | -97.92296     | -383240.3 | 4783.121  | 337882.3 |

JOINT SUPPORT DISPLACEMENT (SETTLEMENT) AT OPERATING CONDITION - OP

ACTIVE UNITS MM KN DEG DEGF SEC

--- LOADING - OP-0

RESULTANT JOINT DISPLACEMENTS SUPPORTS

| JOINT |        | DISPLACEMENT |              |           | ROTATION  |           |           |
|-------|--------|--------------|--------------|-----------|-----------|-----------|-----------|
|       |        | X DISP.      | Y DISP.      | Z DISP.   | X ROT.    | Y ROT.    | Z ROT.    |
| 7945  | GLOBAL | 0.0000000    | -170.7522430 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8095  | GLOBAL | 0.0000000    | -171.9385681 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8096  | GLOBAL | 0.0000000    | -170.6323853 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8097  | GLOBAL | 0.0000000    | -169.4183350 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8098  | GLOBAL | 0.0000000    | -161.9174805 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8099  | GLOBAL | 0.0000000    | -172.6563110 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8100  | GLOBAL | 0.0000000    | -165.0580597 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8101  | GLOBAL | 0.0000000    | -168.6677704 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8102  | GLOBAL | 0.0000000    | -171.8843842 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8103  | GLOBAL | 0.0000000    | -174.3274231 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8104  | GLOBAL | 0.0000000    | -172.0074921 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8105  | GLOBAL | 0.0000000    | -175.1179810 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |

|      |        |           |              |           |           |           |           |
|------|--------|-----------|--------------|-----------|-----------|-----------|-----------|
| 8107 | GLOBAL | 0.0000000 | -173.8359222 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8108 | GLOBAL | 0.0000000 | -170.7334747 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8109 | GLOBAL | 0.0000000 | -170.6232910 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8110 | GLOBAL | 0.0000000 | -170.4637756 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8111 | GLOBAL | 0.0000000 | -169.9615021 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8112 | GLOBAL | 0.0000000 | -171.6352234 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8113 | GLOBAL | 0.0000000 | -172.5611572 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8114 | GLOBAL | 0.0000000 | -172.9915009 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8115 | GLOBAL | 0.0000000 | -173.3764496 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8116 | GLOBAL | 0.0000000 | -169.5115356 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8117 | GLOBAL | 0.0000000 | -169.2154846 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8118 | GLOBAL | 0.0000000 | -169.1084442 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8119 | GLOBAL | 0.0000000 | -169.2039337 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8120 | GLOBAL | 0.0000000 | -169.4997559 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8121 | GLOBAL | 0.0000000 | -170.0237885 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8122 | GLOBAL | 0.0000000 | -170.7434387 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8126 | GLOBAL | 0.0000000 | -169.3235321 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8127 | GLOBAL | 0.0000000 | -170.7689056 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8131 | GLOBAL | 0.0000000 | -169.5561981 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8132 | GLOBAL | 0.0000000 | -169.3639221 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8133 | GLOBAL | 0.0000000 | -169.2822418 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8134 | GLOBAL | 0.0000000 | -169.3674927 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8135 | GLOBAL | 0.0000000 | -169.6176147 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8136 | GLOBAL | 0.0000000 | -170.0585327 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8137 | GLOBAL | 0.0000000 | -170.6250610 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8141 | GLOBAL | 0.0000000 | -170.0505524 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8142 | GLOBAL | 0.0000000 | -171.5187988 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8146 | GLOBAL | 0.0000000 | -170.2846832 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8147 | GLOBAL | 0.0000000 | -170.0933685 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8148 | GLOBAL | 0.0000000 | -170.0134735 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8149 | GLOBAL | 0.0000000 | -170.1012726 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8150 | GLOBAL | 0.0000000 | -170.3546448 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8151 | GLOBAL | 0.0000000 | -170.7997589 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8152 | GLOBAL | 0.0000000 | -171.3710632 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8153 | GLOBAL | 0.0000000 | -172.0272675 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8154 | GLOBAL | 0.0000000 | -171.7999878 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8155 | GLOBAL | 0.0000000 | -171.3236084 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8156 | GLOBAL | 0.0000000 | -173.0128174 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8157 | GLOBAL | 0.0000000 | -173.9159851 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8158 | GLOBAL | 0.0000000 | -174.6930847 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8159 | GLOBAL | 0.0000000 | -170.8939972 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8160 | GLOBAL | 0.0000000 | -170.6174622 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8161 | GLOBAL | 0.0000000 | -170.5276031 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8162 | GLOBAL | 0.0000000 | -170.9237366 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8163 | GLOBAL | 0.0000000 | -171.4348450 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8164 | GLOBAL | 0.0000000 | -172.1387939 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8165 | GLOBAL | 0.0000000 | -161.6048737 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8166 | GLOBAL | 0.0000000 | -163.0329285 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |

LOADING - OP-45

# RESULTANT JOINT DISPLACEMENTS SUPPORTS

| JOINT |        | DISPLACEMENT |              |           | ROTATION  |           |           |
|-------|--------|--------------|--------------|-----------|-----------|-----------|-----------|
|       |        | X DISP.      | Y DISP.      | Z DISP.   | X ROT.    | Y ROT.    | Z ROT.    |
| 7945  | GLOBAL | 0.0000000    | -172.1902008 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8095  | GLOBAL | 0.0000000    | -171.9829102 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8096  | GLOBAL | 0.0000000    | -170.0168457 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8097  | GLOBAL | 0.0000000    | -170.0088959 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8098  | GLOBAL | 0.0000000    | -162.7978058 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8099  | GLOBAL | 0.0000000    | -171.4442596 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8100  | GLOBAL | 0.0000000    | -164.1739197 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8101  | GLOBAL | 0.0000000    | -169.8777313 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8102  | GLOBAL | 0.0000000    | -171.2875671 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8103  | GLOBAL | 0.0000000    | -173.0524292 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8104  | GLOBAL | 0.0000000    | -172.2794800 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8105  | GLOBAL | 0.0000000    | -173.6691437 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8107  | GLOBAL | 0.0000000    | -173.5650940 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8108  | GLOBAL | 0.0000000    | -172.0670166 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8109  | GLOBAL | 0.0000000    | -171.8869171 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8110  | GLOBAL | 0.0000000    | -171.6555481 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8111  | GLOBAL | 0.0000000    | -171.0345459 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8112  | GLOBAL | 0.0000000    | -171.7937469 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8113  | GLOBAL | 0.0000000    | -172.5999756 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8114  | GLOBAL | 0.0000000    | -172.9499359 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8115  | GLOBAL | 0.0000000    | -173.2499542 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8116  | GLOBAL | 0.0000000    | -170.4700165 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8117  | GLOBAL | 0.0000000    | -170.0558929 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8118  | GLOBAL | 0.0000000    | -169.8331451 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8119  | GLOBAL | 0.0000000    | -169.8161316 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8120  | GLOBAL | 0.0000000    | -170.0044403 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8121  | GLOBAL | 0.0000000    | -170.4144897 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8122  | GLOBAL | 0.0000000    | -171.0185394 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8126  | GLOBAL | 0.0000000    | -169.9571228 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |

|      |        |           |              |           |           |           |           |
|------|--------|-----------|--------------|-----------|-----------|-----------|-----------|
| 8127 | GLOBAL | 0.0000000 | -170.6197815 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8131 | GLOBAL | 0.0000000 | -170.0892487 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8132 | GLOBAL | 0.0000000 | -169.7938538 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8133 | GLOBAL | 0.0000000 | -169.6125488 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8134 | GLOBAL | 0.0000000 | -169.6014099 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8135 | GLOBAL | 0.0000000 | -169.7597961 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8136 | GLOBAL | 0.0000000 | -170.1038666 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8137 | GLOBAL | 0.0000000 | -170.5722961 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8141 | GLOBAL | 0.0000000 | -170.2022552 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8142 | GLOBAL | 0.0000000 | -170.8746185 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8146 | GLOBAL | 0.0000000 | -170.3423309 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8147 | GLOBAL | 0.0000000 | -170.0513611 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8148 | GLOBAL | 0.0000000 | -169.8728943 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8149 | GLOBAL | 0.0000000 | -169.8634949 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8150 | GLOBAL | 0.0000000 | -170.0226440 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8151 | GLOBAL | 0.0000000 | -170.3664856 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8152 | GLOBAL | 0.0000000 | -170.8331604 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8153 | GLOBAL | 0.0000000 | -172.1560974 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8154 | GLOBAL | 0.0000000 | -171.7640533 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8155 | GLOBAL | 0.0000000 | -171.1674347 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8156 | GLOBAL | 0.0000000 | -171.9297180 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8157 | GLOBAL | 0.0000000 | -172.7131195 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8158 | GLOBAL | 0.0000000 | -173.3481903 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8159 | GLOBAL | 0.0000000 | -170.6248474 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8160 | GLOBAL | 0.0000000 | -170.2313232 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8161 | GLOBAL | 0.0000000 | -170.0258179 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8162 | GLOBAL | 0.0000000 | -170.1983337 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8163 | GLOBAL | 0.0000000 | -170.5919952 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8164 | GLOBAL | 0.0000000 | -171.1763153 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8165 | GLOBAL | 0.0000000 | -161.9934540 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8166 | GLOBAL | 0.0000000 | -162.6414642 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |

LOADING - OP-90

# RESULTANT JOINT DISPLACEMENTS SUPPORTS

| JOINT |        | DISPLACEMENT |              |           | ROTATION  |           |           |
|-------|--------|--------------|--------------|-----------|-----------|-----------|-----------|
|       |        | X DISP.      | Y DISP.      | Z DISP.   | X ROT.    | Y ROT.    | Z ROT.    |
| 7945  | GLOBAL | 0.0000000    | -161.1004028 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8095  | GLOBAL | 0.0000000    | -153.5494080 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8096  | GLOBAL | 0.0000000    | -151.5695190 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8097  | GLOBAL | 0.0000000    | -153.5337524 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8098  | GLOBAL | 0.0000000    | -148.9000397 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8099  | GLOBAL | 0.0000000    | -153.4604950 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8100  | GLOBAL | 0.0000000    | -148.8129425 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8101  | GLOBAL | 0.0000000    | -157.1633759 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8102  | GLOBAL | 0.0000000    | -157.0707245 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8103  | GLOBAL | 0.0000000    | -153.5078278 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8104  | GLOBAL | 0.0000000    | -154.0391998 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8105  | GLOBAL | 0.0000000    | -153.9813995 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8107  | GLOBAL | 0.0000000    | -161.0260620 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8108  | GLOBAL | 0.0000000    | -161.0766144 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8109  | GLOBAL | 0.0000000    | -160.9453430 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8110  | GLOBAL | 0.0000000    | -160.7549591 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8111  | GLOBAL | 0.0000000    | -160.1926117 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8112  | GLOBAL | 0.0000000    | -160.1673584 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8113  | GLOBAL | 0.0000000    | -160.7133636 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8114  | GLOBAL | 0.0000000    | -160.8946533 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8115  | GLOBAL | 0.0000000    | -161.0167847 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8116  | GLOBAL | 0.0000000    | -159.6586456 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8117  | GLOBAL | 0.0000000    | -159.2415314 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8118  | GLOBAL | 0.0000000    | -158.9790955 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8119  | GLOBAL | 0.0000000    | -158.8852386 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8120  | GLOBAL | 0.0000000    | -158.9627380 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8121  | GLOBAL | 0.0000000    | -159.2162323 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8122  | GLOBAL | 0.0000000    | -159.6242371 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8126  | GLOBAL | 0.0000000    | -156.6718903 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8127  | GLOBAL | 0.0000000    | -156.6440887 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8131  | GLOBAL | 0.0000000    | -156.7129211 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8132  | GLOBAL | 0.0000000    | -156.3889160 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8133  | GLOBAL | 0.0000000    | -156.1627655 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8134  | GLOBAL | 0.0000000    | -156.0809937 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8135  | GLOBAL | 0.0000000    | -156.1449890 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8136  | GLOBAL | 0.0000000    | -156.3609314 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8137  | GLOBAL | 0.0000000    | -156.6806183 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8141  | GLOBAL | 0.0000000    | -153.8778076 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8142  | GLOBAL | 0.0000000    | -153.8700562 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8146  | GLOBAL | 0.0000000    | -153.9751740 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8147  | GLOBAL | 0.0000000    | -153.6862640 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8148  | GLOBAL | 0.0000000    | -153.4806061 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8149  | GLOBAL | 0.0000000    | -153.4073944 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8150  | GLOBAL | 0.0000000    | -153.4686279 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8151  | GLOBAL | 0.0000000    | -153.6698608 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8152  | GLOBAL | 0.0000000    | -153.9601288 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |

|      |        |           |              |           |           |           |           |
|------|--------|-----------|--------------|-----------|-----------|-----------|-----------|
| 8153 | GLOBAL | 0.0000000 | -153.7680206 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8154 | GLOBAL | 0.0000000 | -153.3167419 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8155 | GLOBAL | 0.0000000 | -152.7697754 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8156 | GLOBAL | 0.0000000 | -152.7493591 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8157 | GLOBAL | 0.0000000 | -153.2823029 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8158 | GLOBAL | 0.0000000 | -153.7197418 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8159 | GLOBAL | 0.0000000 | -152.2711334 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8160 | GLOBAL | 0.0000000 | -151.8876801 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8161 | GLOBAL | 0.0000000 | -151.6517639 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8162 | GLOBAL | 0.0000000 | -151.6374207 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8163 | GLOBAL | 0.0000000 | -151.8657074 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8164 | GLOBAL | 0.0000000 | -152.2413330 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8165 | GLOBAL | 0.0000000 | -148.1194611 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8166 | GLOBAL | 0.0000000 | -148.0966339 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |

LOADING - OP-135

RESULTANT JOINT DISPLACEMENTS SUPPORTS

| JOINT |        | DISPLACEMENT |              |           | ROTATION  |           |           |
|-------|--------|--------------|--------------|-----------|-----------|-----------|-----------|
|       |        | X DISP.      | Y DISP.      | Z DISP.   | X ROT.    | Y ROT.    | Z ROT.    |
| 7945  | GLOBAL | 0.0000000    | -163.6275482 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8095  | GLOBAL | 0.0000000    | -157.0919952 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8096  | GLOBAL | 0.0000000    | -152.4899139 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8097  | GLOBAL | 0.0000000    | -157.6334534 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8098  | GLOBAL | 0.0000000    | -152.4414520 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8099  | GLOBAL | 0.0000000    | -150.3332977 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8100  | GLOBAL | 0.0000000    | -145.2705383 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8101  | GLOBAL | 0.0000000    | -160.2935486 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8102  | GLOBAL | 0.0000000    | -152.9697723 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8103  | GLOBAL | 0.0000000    | -151.8197174 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8104  | GLOBAL | 0.0000000    | -158.3537903 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8105  | GLOBAL | 0.0000000    | -151.4545898 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8107  | GLOBAL | 0.0000000    | -156.7197113 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8108  | GLOBAL | 0.0000000    | -163.0807953 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8109  | GLOBAL | 0.0000000    | -162.6308899 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8110  | GLOBAL | 0.0000000    | -162.1315002 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8111  | GLOBAL | 0.0000000    | -161.0935822 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8112  | GLOBAL | 0.0000000    | -157.4116669 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8113  | GLOBAL | 0.0000000    | -157.4799194 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8114  | GLOBAL | 0.0000000    | -157.3614197 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8115  | GLOBAL | 0.0000000    | -157.1828003 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8116  | GLOBAL | 0.0000000    | -160.1097260 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8117  | GLOBAL | 0.0000000    | -159.2280273 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8118  | GLOBAL | 0.0000000    | -158.5081024 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8119  | GLOBAL | 0.0000000    | -157.9662628 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8120  | GLOBAL | 0.0000000    | -157.6123199 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8121  | GLOBAL | 0.0000000    | -157.4049530 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8122  | GLOBAL | 0.0000000    | -157.3432312 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8126  | GLOBAL | 0.0000000    | -157.8662415 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8127  | GLOBAL | 0.0000000    | -154.6954651 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8131  | GLOBAL | 0.0000000    | -157.5262604 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8132  | GLOBAL | 0.0000000    | -156.8024902 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8133  | GLOBAL | 0.0000000    | -156.1839142 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8134  | GLOBAL | 0.0000000    | -155.7174683 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8135  | GLOBAL | 0.0000000    | -155.4105530 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8136  | GLOBAL | 0.0000000    | -155.2297516 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8137  | GLOBAL | 0.0000000    | -155.1415710 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8141  | GLOBAL | 0.0000000    | -155.8266754 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8142  | GLOBAL | 0.0000000    | -152.6600952 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8146  | GLOBAL | 0.0000000    | -155.5286255 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8147  | GLOBAL | 0.0000000    | -154.8293457 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8148  | GLOBAL | 0.0000000    | -154.2244720 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8149  | GLOBAL | 0.0000000    | -153.7629089 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8150  | GLOBAL | 0.0000000    | -153.4526062 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8151  | GLOBAL | 0.0000000    | -153.2595673 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8152  | GLOBAL | 0.0000000    | -153.1484680 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8153  | GLOBAL | 0.0000000    | -157.6110992 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8154  | GLOBAL | 0.0000000    | -156.5595093 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8155  | GLOBAL | 0.0000000    | -155.5340729 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8156  | GLOBAL | 0.0000000    | -151.8445282 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8157  | GLOBAL | 0.0000000    | -151.9024353 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8158  | GLOBAL | 0.0000000    | -151.7140503 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8159  | GLOBAL | 0.0000000    | -154.5781097 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8160  | GLOBAL | 0.0000000    | -153.7230682 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8161  | GLOBAL | 0.0000000    | -153.0240173 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8162  | GLOBAL | 0.0000000    | -152.1250916 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8163  | GLOBAL | 0.0000000    | -151.8943787 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8164  | GLOBAL | 0.0000000    | -151.8048401 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8165  | GLOBAL | 0.0000000    | -149.6751556 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8166  | GLOBAL | 0.0000000    | -146.5324097 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |

JOINT SUPPORT DISPLACEMENT (SETTLEMENT) AT EXTREM CONDITION - EX

ACTIVE UNITS MM KN DEG DEGF SEC

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--- LOADING - EX-0  
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RESULTANT JOINT DISPLACEMENTS SUPPORTS

| JOINT |        | /-----DISPLACEMENT-----// |              |           | -----ROTATION----- |           |           |
|-------|--------|---------------------------|--------------|-----------|--------------------|-----------|-----------|
|       |        | X DISP.                   | Y DISP.      | Z DISP.   | X ROT.             | Y ROT.    | Z ROT.    |
| 7945  | GLOBAL | 0.0000000                 | -307.4603882 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8095  | GLOBAL | 0.0000000                 | -310.6921387 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8096  | GLOBAL | 0.0000000                 | -312.1893616 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8097  | GLOBAL | 0.0000000                 | -307.2274475 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8098  | GLOBAL | 0.0000000                 | -299.9418640 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8099  | GLOBAL | 0.0000000                 | -316.4605103 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8100  | GLOBAL | 0.0000000                 | -309.0621338 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8101  | GLOBAL | 0.0000000                 | -305.6554565 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8102  | GLOBAL | 0.0000000                 | -314.8667603 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8103  | GLOBAL | 0.0000000                 | -317.6559753 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8104  | GLOBAL | 0.0000000                 | -309.9851990 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8105  | GLOBAL | 0.0000000                 | -319.0030518 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8107  | GLOBAL | 0.0000000                 | -316.4494019 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8108  | GLOBAL | 0.0000000                 | -307.9100037 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8109  | GLOBAL | 0.0000000                 | -308.1127625 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8110  | GLOBAL | 0.0000000                 | -308.2783813 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8111  | GLOBAL | 0.0000000                 | -308.3295593 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8112  | GLOBAL | 0.0000000                 | -313.2502747 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8113  | GLOBAL | 0.0000000                 | -314.4370422 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8114  | GLOBAL | 0.0000000                 | -315.0533752 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8115  | GLOBAL | 0.0000000                 | -315.6383057 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8116  | GLOBAL | 0.0000000                 | -308.4013367 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8117  | GLOBAL | 0.0000000                 | -308.6176758 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8118  | GLOBAL | 0.0000000                 | -308.9829712 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8119  | GLOBAL | 0.0000000                 | -309.5036621 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8120  | GLOBAL | 0.0000000                 | -310.1695251 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8121  | GLOBAL | 0.0000000                 | -311.0454712 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8122  | GLOBAL | 0.0000000                 | -312.0805969 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8126  | GLOBAL | 0.0000000                 | -307.9668884 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8127  | GLOBAL | 0.0000000                 | -312.5363159 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8131  | GLOBAL | 0.0000000                 | -308.6036682 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8132  | GLOBAL | 0.0000000                 | -308.8846130 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8133  | GLOBAL | 0.0000000                 | -309.2489929 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8134  | GLOBAL | 0.0000000                 | -309.7409363 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8135  | GLOBAL | 0.0000000                 | -310.3505249 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8136  | GLOBAL | 0.0000000                 | -311.1391296 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8137  | GLOBAL | 0.0000000                 | -312.0292664 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8141  | GLOBAL | 0.0000000                 | -309.5076904 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8142  | GLOBAL | 0.0000000                 | -314.1015625 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8146  | GLOBAL | 0.0000000                 | -310.1452637 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8147  | GLOBAL | 0.0000000                 | -310.4265137 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8148  | GLOBAL | 0.0000000                 | -310.7923584 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8149  | GLOBAL | 0.0000000                 | -311.2868958 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8150  | GLOBAL | 0.0000000                 | -311.9000854 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8151  | GLOBAL | 0.0000000                 | -312.6936035 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8152  | GLOBAL | 0.0000000                 | -313.5895386 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8153  | GLOBAL | 0.0000000                 | -310.4700623 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8154  | GLOBAL | 0.0000000                 | -310.8765259 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8155  | GLOBAL | 0.0000000                 | -310.9511414 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8156  | GLOBAL | 0.0000000                 | -315.8899841 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8157  | GLOBAL | 0.0000000                 | -317.0564880 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8158  | GLOBAL | 0.0000000                 | -318.2236023 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8159  | GLOBAL | 0.0000000                 | -311.0418091 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8160  | GLOBAL | 0.0000000                 | -311.2767944 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8161  | GLOBAL | 0.0000000                 | -311.6590576 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8162  | GLOBAL | 0.0000000                 | -312.8515015 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8163  | GLOBAL | 0.0000000                 | -313.7155151 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8164  | GLOBAL | 0.0000000                 | -314.7362976 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8165  | GLOBAL | 0.0000000                 | -301.4257812 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8166  | GLOBAL | 0.0000000                 | -305.9557190 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |

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--- LOADING - EX-45  
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RESULTANT JOINT DISPLACEMENTS SUPPORTS

| JOINT |  | /-----DISPLACEMENT-----// |         |         | -----ROTATION----- |        |        |
|-------|--|---------------------------|---------|---------|--------------------|--------|--------|
|       |  | X DISP.                   | Y DISP. | Z DISP. | X ROT.             | Y ROT. | Z ROT. |

|      |        |           |              |           |           |           |           |
|------|--------|-----------|--------------|-----------|-----------|-----------|-----------|
| 7945 | GLOBAL | 0.0000000 | -311.6243591 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8095 | GLOBAL | 0.0000000 | -308.2473755 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8096 | GLOBAL | 0.0000000 | -308.9383850 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8097 | GLOBAL | 0.0000000 | -306.4329224 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8098 | GLOBAL | 0.0000000 | -300.9483032 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8099 | GLOBAL | 0.0000000 | -313.5984192 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8100 | GLOBAL | 0.0000000 | -308.0397034 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8101 | GLOBAL | 0.0000000 | -308.5016785 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8102 | GLOBAL | 0.0000000 | -315.6453857 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8103 | GLOBAL | 0.0000000 | -313.6206665 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8104 | GLOBAL | 0.0000000 | -307.8546753 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8105 | GLOBAL | 0.0000000 | -314.8216553 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8107 | GLOBAL | 0.0000000 | -318.5659790 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8108 | GLOBAL | 0.0000000 | -311.9955750 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8109 | GLOBAL | 0.0000000 | -312.1341553 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8110 | GLOBAL | 0.0000000 | -312.2260132 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8111 | GLOBAL | 0.0000000 | -312.1403809 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8112 | GLOBAL | 0.0000000 | -315.9356384 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8113 | GLOBAL | 0.0000000 | -316.9754333 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8114 | GLOBAL | 0.0000000 | -317.4879150 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8115 | GLOBAL | 0.0000000 | -317.9591980 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8116 | GLOBAL | 0.0000000 | -312.0742798 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8117 | GLOBAL | 0.0000000 | -312.1459961 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8118 | GLOBAL | 0.0000000 | -312.3678589 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8119 | GLOBAL | 0.0000000 | -312.7482910 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8120 | GLOBAL | 0.0000000 | -313.2801819 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8121 | GLOBAL | 0.0000000 | -314.0148010 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8122 | GLOBAL | 0.0000000 | -314.9078064 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8126 | GLOBAL | 0.0000000 | -310.1353455 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8127 | GLOBAL | 0.0000000 | -313.6724854 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8131 | GLOBAL | 0.0000000 | -310.6345825 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8132 | GLOBAL | 0.0000000 | -310.7763977 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8133 | GLOBAL | 0.0000000 | -311.0062256 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8134 | GLOBAL | 0.0000000 | -311.3688354 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8135 | GLOBAL | 0.0000000 | -311.8567200 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8136 | GLOBAL | 0.0000000 | -312.5190430 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8137 | GLOBAL | 0.0000000 | -313.2846680 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8141 | GLOBAL | 0.0000000 | -308.3710938 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8142 | GLOBAL | 0.0000000 | -311.9277954 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8146 | GLOBAL | 0.0000000 | -308.8939209 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8147 | GLOBAL | 0.0000000 | -309.0504761 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8148 | GLOBAL | 0.0000000 | -309.2896118 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8149 | GLOBAL | 0.0000000 | -309.6569519 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8150 | GLOBAL | 0.0000000 | -310.1452637 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8151 | GLOBAL | 0.0000000 | -310.8035278 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8152 | GLOBAL | 0.0000000 | -311.5595703 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8153 | GLOBAL | 0.0000000 | -308.1376038 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8154 | GLOBAL | 0.0000000 | -308.3291626 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8155 | GLOBAL | 0.0000000 | -308.2583008 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8156 | GLOBAL | 0.0000000 | -312.0682068 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8157 | GLOBAL | 0.0000000 | -313.0961914 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8158 | GLOBAL | 0.0000000 | -314.1227722 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8159 | GLOBAL | 0.0000000 | -308.2136230 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8160 | GLOBAL | 0.0000000 | -308.3069458 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8161 | GLOBAL | 0.0000000 | -308.5478516 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8162 | GLOBAL | 0.0000000 | -309.4651489 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8163 | GLOBAL | 0.0000000 | -310.1847229 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8164 | GLOBAL | 0.0000000 | -311.0595703 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8165 | GLOBAL | 0.0000000 | -301.9346924 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8166 | GLOBAL | 0.0000000 | -305.4465332 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |

LOADING - EX-90

RESULTANT JOINT DISPLACEMENTS SUPPORTS

| JOINT |        | DISPLACEMENT |              |           | ROTATION  |           |           |
|-------|--------|--------------|--------------|-----------|-----------|-----------|-----------|
|       |        | X DISP.      | Y DISP.      | Z DISP.   | X ROT.    | Y ROT.    | Z ROT.    |
| 7945  | GLOBAL | 0.0000000    | -303.4408875 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8095  | GLOBAL | 0.0000000    | -261.5962830 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8096  | GLOBAL | 0.0000000    | -259.9926147 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8097  | GLOBAL | 0.0000000    | -269.0096741 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8098  | GLOBAL | 0.0000000    | -275.0588379 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8099  | GLOBAL | 0.0000000    | -268.7180176 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8100  | GLOBAL | 0.0000000    | -274.7590332 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8101  | GLOBAL | 0.0000000    | -292.6964111 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8102  | GLOBAL | 0.0000000    | -292.3917236 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8103  | GLOBAL | 0.0000000    | -261.3867493 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8104  | GLOBAL | 0.0000000    | -262.3879395 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8105  | GLOBAL | 0.0000000    | -262.1135864 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8107  | GLOBAL | 0.0000000    | -303.1540222 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8108  | GLOBAL | 0.0000000    | -303.7371521 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8109  | GLOBAL | 0.0000000    | -303.7609253 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8110  | GLOBAL | 0.0000000    | -303.6962891 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8111  | GLOBAL | 0.0000000    | -303.2873230 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |

|      |        |           |              |           |           |           |           |
|------|--------|-----------|--------------|-----------|-----------|-----------|-----------|
| 8112 | GLOBAL | 0.0000000 | -303.1433411 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8113 | GLOBAL | 0.0000000 | -303.5070496 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8114 | GLOBAL | 0.0000000 | -303.5445251 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8115 | GLOBAL | 0.0000000 | -303.4935913 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8116 | GLOBAL | 0.0000000 | -302.8634644 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8117 | GLOBAL | 0.0000000 | -302.5253906 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8118 | GLOBAL | 0.0000000 | -302.3046570 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8119 | GLOBAL | 0.0000000 | -302.2148132 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8120 | GLOBAL | 0.0000000 | -302.2608032 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8121 | GLOBAL | 0.0000000 | -302.4437256 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8122 | GLOBAL | 0.0000000 | -302.7437744 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8126 | GLOBAL | 0.0000000 | -291.5620422 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8127 | GLOBAL | 0.0000000 | -291.4160767 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8131 | GLOBAL | 0.0000000 | -291.5601196 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8132 | GLOBAL | 0.0000000 | -291.2591553 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8133 | GLOBAL | 0.0000000 | -291.0469666 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8134 | GLOBAL | 0.0000000 | -290.9604187 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8135 | GLOBAL | 0.0000000 | -291.0013733 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8136 | GLOBAL | 0.0000000 | -291.1737976 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8137 | GLOBAL | 0.0000000 | -291.4398499 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8141 | GLOBAL | 0.0000000 | -270.4174805 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8142 | GLOBAL | 0.0000000 | -270.2919006 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8146 | GLOBAL | 0.0000000 | -270.5824280 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8147 | GLOBAL | 0.0000000 | -270.3911438 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8148 | GLOBAL | 0.0000000 | -270.2415161 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8149 | GLOBAL | 0.0000000 | -270.1774902 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8150 | GLOBAL | 0.0000000 | -270.2031555 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8151 | GLOBAL | 0.0000000 | -270.3199463 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8152 | GLOBAL | 0.0000000 | -270.4831543 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8153 | GLOBAL | 0.0000000 | -261.8771667 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8154 | GLOBAL | 0.0000000 | -261.3583374 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8155 | GLOBAL | 0.0000000 | -260.9235229 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8156 | GLOBAL | 0.0000000 | -260.7823792 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8157 | GLOBAL | 0.0000000 | -261.1743164 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8158 | GLOBAL | 0.0000000 | -261.6423035 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8159 | GLOBAL | 0.0000000 | -260.5443115 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8160 | GLOBAL | 0.0000000 | -260.2518005 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8161 | GLOBAL | 0.0000000 | -260.0670776 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8162 | GLOBAL | 0.0000000 | -260.0255432 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8163 | GLOBAL | 0.0000000 | -260.1731262 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8164 | GLOBAL | 0.0000000 | -260.4279480 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8165 | GLOBAL | 0.0000000 | -274.6240234 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8166 | GLOBAL | 0.0000000 | -274.4859314 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |

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--- LOADING - EX-135  
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RESULTANT JOINT DISPLACEMENTS SUPPORTS

| JOINT<br>/ |        | /-----DISPLACEMENT-----// |              |           | -----ROTATION----- |           |           |
|------------|--------|---------------------------|--------------|-----------|--------------------|-----------|-----------|
|            |        | X DISP.                   | Y DISP.      | Z DISP.   | X ROT.             | Y ROT.    | Z ROT.    |
| 7945       | GLOBAL | 0.0000000                 | -328.7478027 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8095       | GLOBAL | 0.0000000                 | -312.4086609 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8096       | GLOBAL | 0.0000000                 | -303.7433777 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8097       | GLOBAL | 0.0000000                 | -315.9974060 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8098       | GLOBAL | 0.0000000                 | -313.3325195 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8099       | GLOBAL | 0.0000000                 | -298.1602173 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8100       | GLOBAL | 0.0000000                 | -295.6102905 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8101       | GLOBAL | 0.0000000                 | -323.8959961 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8102       | GLOBAL | 0.0000000                 | -306.0321350 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8103       | GLOBAL | 0.0000000                 | -299.1001587 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8104       | GLOBAL | 0.0000000                 | -314.9269409 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8105       | GLOBAL | 0.0000000                 | -297.6541138 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8107       | GLOBAL | 0.0000000                 | -311.4406128 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8108       | GLOBAL | 0.0000000                 | -327.5029907 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8109       | GLOBAL | 0.0000000                 | -326.6100464 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8110       | GLOBAL | 0.0000000                 | -325.6644592 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8111       | GLOBAL | 0.0000000                 | -323.9075623 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8112       | GLOBAL | 0.0000000                 | -314.4956360 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8113       | GLOBAL | 0.0000000                 | -313.8513184 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8114       | GLOBAL | 0.0000000                 | -313.2810059 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8115       | GLOBAL | 0.0000000                 | -312.6450195 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8116       | GLOBAL | 0.0000000                 | -322.2251892 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8117       | GLOBAL | 0.0000000                 | -320.6104431 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8118       | GLOBAL | 0.0000000                 | -319.1614685 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8119       | GLOBAL | 0.0000000                 | -317.9039917 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8120       | GLOBAL | 0.0000000                 | -316.8642273 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8121       | GLOBAL | 0.0000000                 | -315.9325256 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8122       | GLOBAL | 0.0000000                 | -315.1451111 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8126       | GLOBAL | 0.0000000                 | -318.8855591 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8127       | GLOBAL | 0.0000000                 | -310.1555786 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |
| 8131       | GLOBAL | 0.0000000                 | -317.8763733 | 0.0000000 | 0.0000000          | 0.0000000 | 0.0000000 |

|      |        |           |              |           |           |           |           |
|------|--------|-----------|--------------|-----------|-----------|-----------|-----------|
| 8132 | GLOBAL | 0.0000000 | -316.4376831 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8133 | GLOBAL | 0.0000000 | -315.1087341 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8134 | GLOBAL | 0.0000000 | -313.9460144 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8135 | GLOBAL | 0.0000000 | -312.9729919 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8136 | GLOBAL | 0.0000000 | -312.0903625 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8137 | GLOBAL | 0.0000000 | -311.2998657 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8141 | GLOBAL | 0.0000000 | -311.8367004 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8142 | GLOBAL | 0.0000000 | -303.1456909 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8146 | GLOBAL | 0.0000000 | -310.8901978 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8147 | GLOBAL | 0.0000000 | -309.4930420 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8148 | GLOBAL | 0.0000000 | -308.1898499 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8149 | GLOBAL | 0.0000000 | -307.0391235 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8150 | GLOBAL | 0.0000000 | -306.0649109 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8151 | GLOBAL | 0.0000000 | -305.1673889 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8152 | GLOBAL | 0.0000000 | -304.3457031 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8153 | GLOBAL | 0.0000000 | -313.4033813 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8154 | GLOBAL | 0.0000000 | -311.4100952 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8155 | GLOBAL | 0.0000000 | -309.6582031 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8156 | GLOBAL | 0.0000000 | -300.2561646 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8157 | GLOBAL | 0.0000000 | -299.6130066 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8158 | GLOBAL | 0.0000000 | -298.5708923 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8159 | GLOBAL | 0.0000000 | -308.0039368 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8160 | GLOBAL | 0.0000000 | -306.4171753 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8161 | GLOBAL | 0.0000000 | -304.9910583 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8162 | GLOBAL | 0.0000000 | -302.6947632 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8163 | GLOBAL | 0.0000000 | -301.7422180 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8164 | GLOBAL | 0.0000000 | -300.9301758 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8165 | GLOBAL | 0.0000000 | -307.9996643 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8166 | GLOBAL | 0.0000000 | -299.3455505 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |

=====

FORCE MAXIMUM AND MINIMUM AT OPERATING (OP)

Max/Min Section Forces for all requested members  
Units: M      TON

|         | Value  | Member | Load     | Location |
|---------|--------|--------|----------|----------|
| Max FX: | 146.71 | TD7391 | OP130002 | 0.0000   |
| Min FX: | -33.43 | TD7733 | OP130001 | 0.2500   |
| Max FY: | 5.35   | TD7791 | OP900002 | 1.0000   |
| Min FY: | -5.32  | TD7784 | OP900002 | 1.0000   |
| Max FZ: | 10.79  | TD7787 | OP900002 | 1.0000   |
| Min FZ: | -9.32  | TD7791 | OP900002 | 1.0000   |
| Max MX: | 2.88   | TD7514 | OP130002 | 1.0000   |
| Min MX: | -2.89  | TD7064 | OP130001 | 1.0000   |
| Max MY: | 16.91  | TD7733 | OP900001 | 1.0000   |
| Min MY: | -20.32 | TD7793 | OP900002 | 0.0000   |
| Max MZ: | 2.97   | TD7793 | OP900002 | 0.0000   |
| Min MZ: | -4.10  | TD7733 | OP130001 | 1.0000   |

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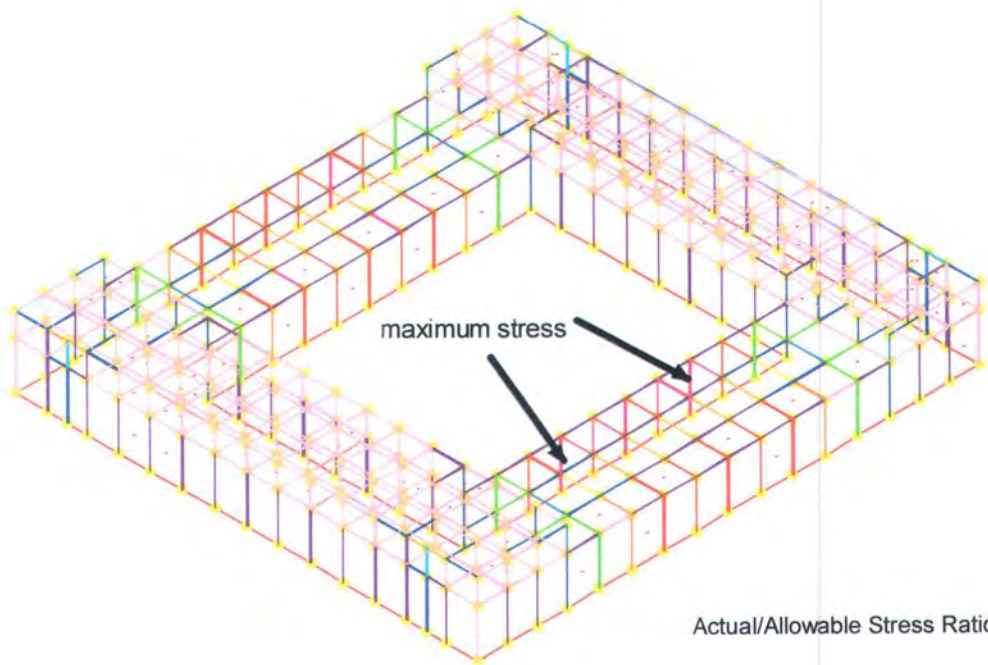
FORCE MAXIMUM AND MINIMUM AT OPERATING (OP)

Max/Min Section Forces for all requested members  
Units: M      TON

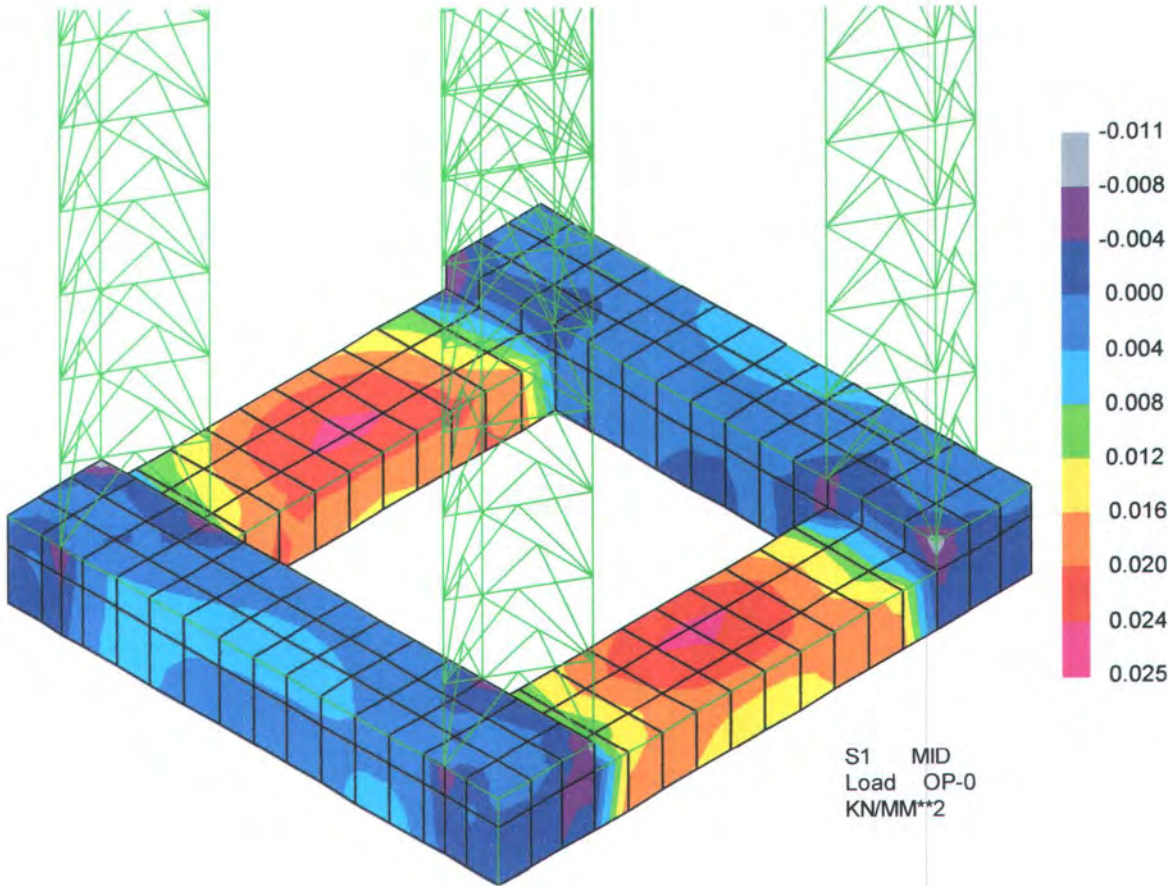
|         | Value  | Member | Load     | Location |
|---------|--------|--------|----------|----------|
| Max FX: | 208.35 | TD7173 | EX900002 | 0.0000   |
| Min FX: | -89.96 | TD7733 | EX130001 | 0.2500   |
| Max FY: | 13.61  | TD7783 | EX900002 | 1.0000   |
| Min FY: | -13.51 | TD7790 | EX900002 | 1.0000   |
| Max FZ: | 32.37  | TD7785 | EX900002 | 1.0000   |
| Min FZ: | -25.56 | TD7783 | EX900002 | 1.0000   |
| Max MX: | 6.81   | TD7514 | EX130001 | 1.0000   |
| Min MX: | -7.07  | TD7064 | EX130001 | 1.0000   |
| Max MY: | 47.52  | TD7733 | EX900002 | 1.0000   |
| Min MY: | -61.12 | TD7785 | EX900002 | 0.0000   |
| Max MZ: | 8.84   | TD7785 | EX900002 | 0.0000   |
| Min MZ: | -8.80  | TD7796 | EX900002 | 0.0000   |

\*\*\*\*\*  
\* END OF TRACE OUTPUT \*  
\*\*\*\*\*

Unity Check

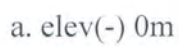


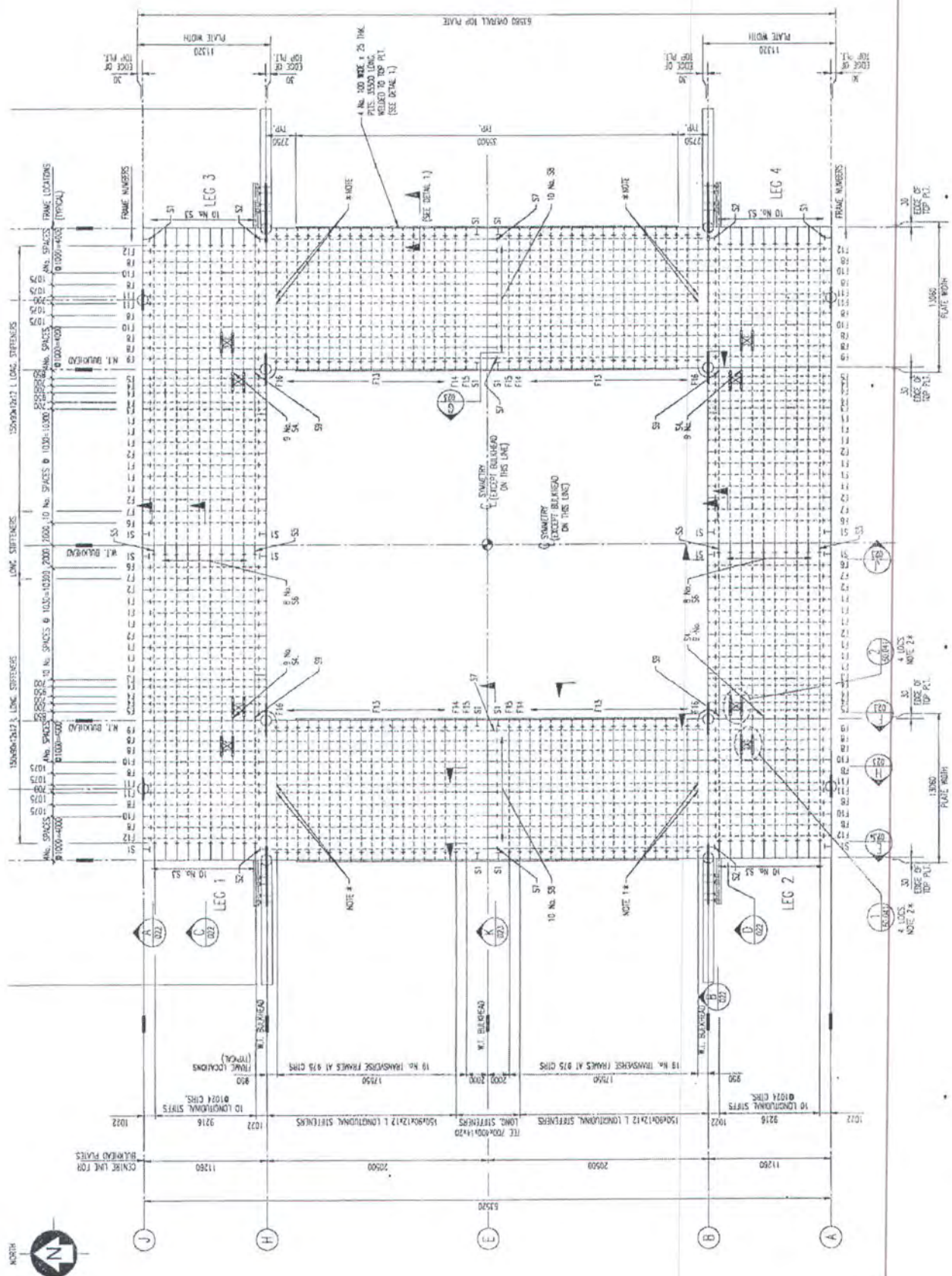
Distribusi Tegangan



# LAMPIRAN

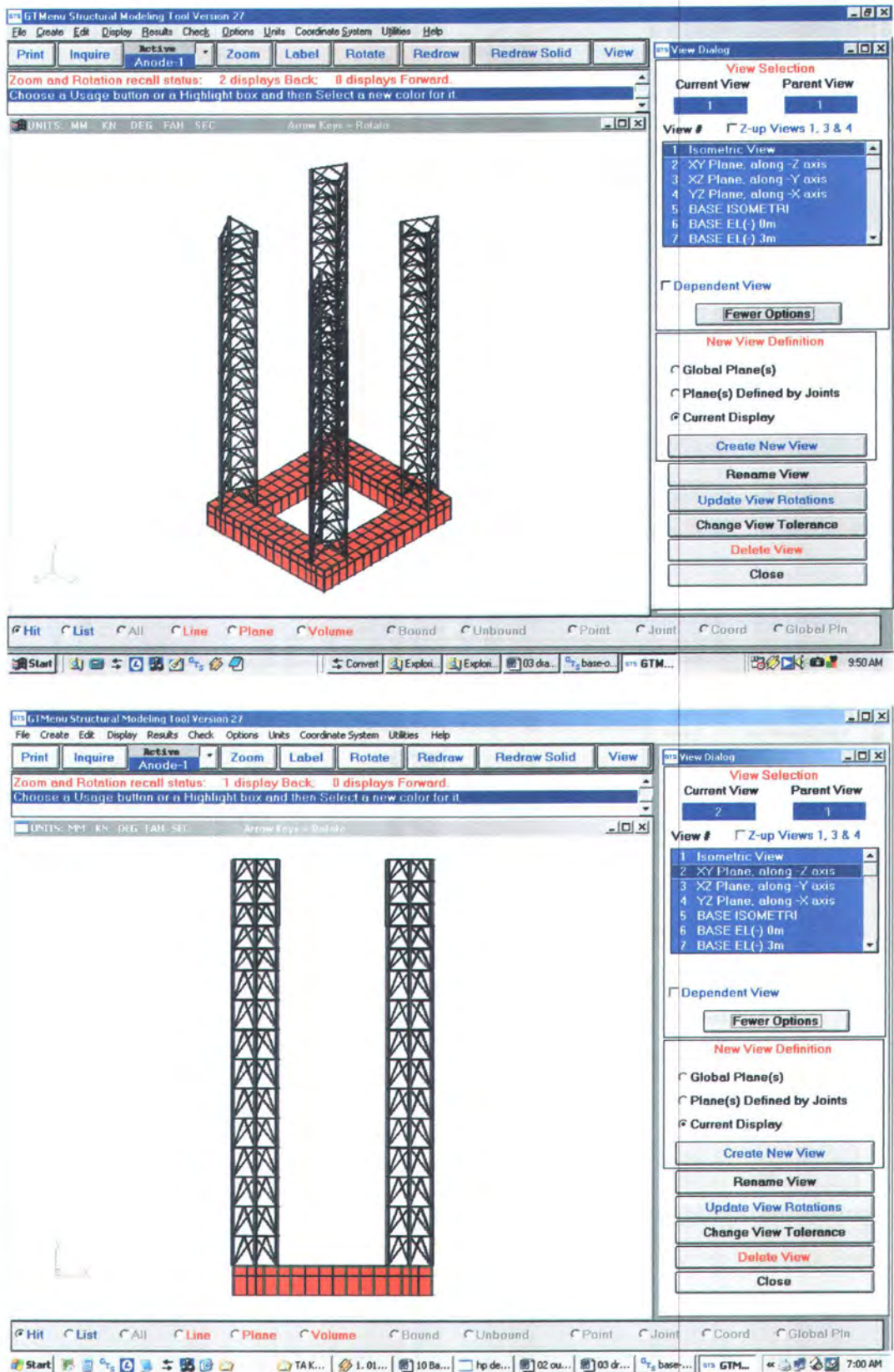
## Gambar & Pemodelan

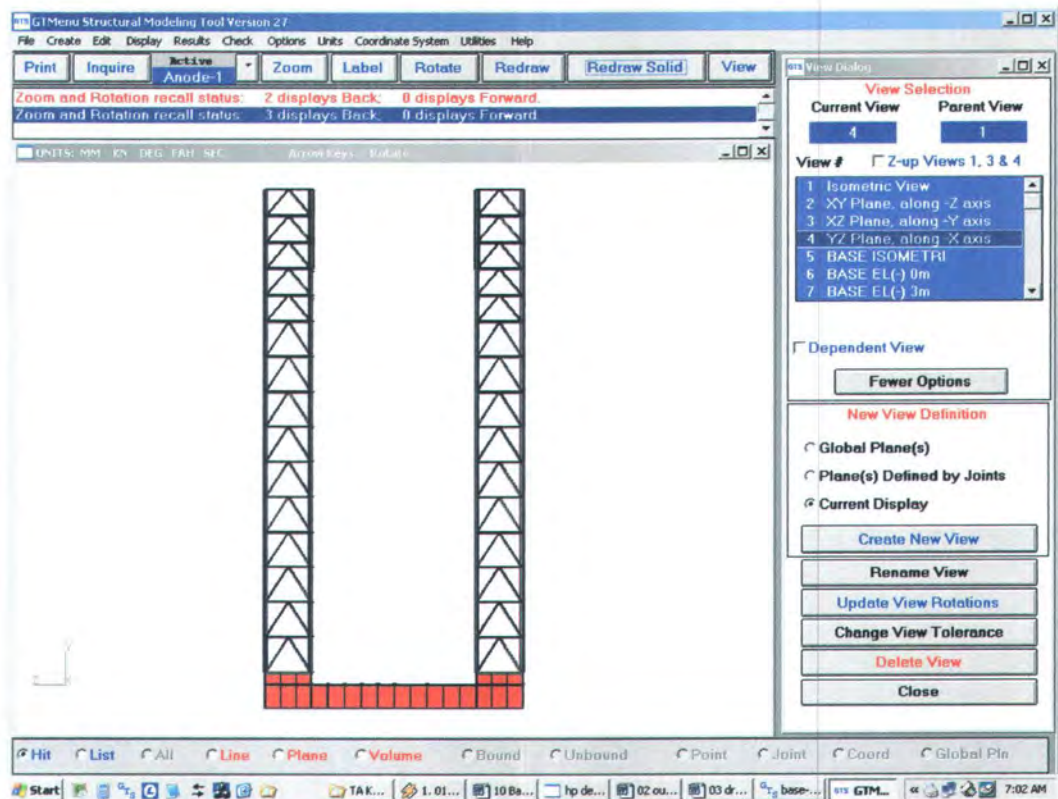
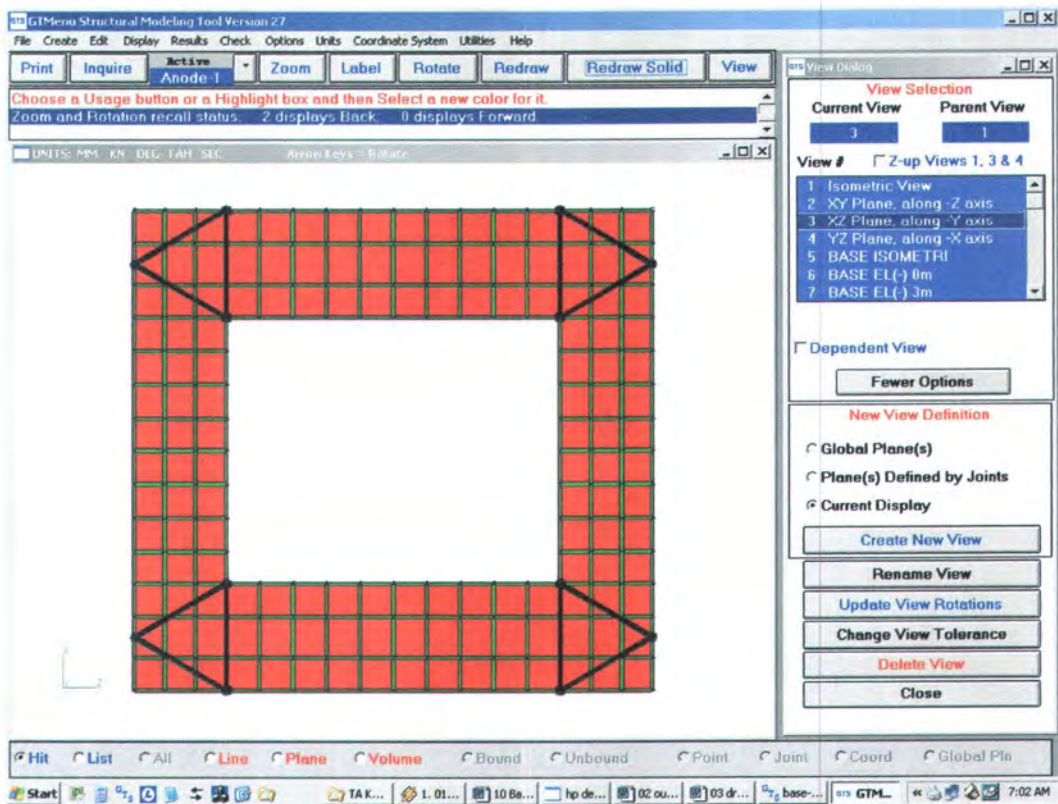




b. elev(-) 3m

Modelling by GT-StrudL ver 2.7





# LAMPIRAN

## Lembar Asistensi



DEPARTEMEN PENDIDIKAN NASIONAL  
INSTITUT TEKNOLOGI SEPULUH NOPEMBER  
FAKULTAS TEKNOLOGI KELAUTAN  
JURUSAN TEKNIK KELAUTAN

Kampus ITS-Sukolilo, Surabaya 60111 Telp 5947274, 5947254 psw 144 telex 34224 fax 597254

**FORMULIR EVALUASI KEMAJUAN TUGAS AKHIR**

Kami, dosen pembimbing Tugas Akhir dari mahasiswa :

Nama : M. KADAFI

NRP : 4398 100 009

Judul TA : Analisis Kekuatan & Stabilitas Pondasi MOgPU Platform di Perairan Natuna

Setelah mempertimbangkan butir-butir berikut :

- Keaktifan mahasiswa dalam mengadakan asistensi.
- Proporsi materi TA yang telah diselesaikan sampai saat ini.
- Prospek penyelesaian TA dalam jangka waktu yang relevan.
- Masa studi yang tersisa.

Dengan ini kami mengusulkan agar TA mahasiswa tersebut diputuskan untuk

- ☐ Dibatalkan keseluruhannya dan mengajukan judul baru.  
☐ Diperkenankan menyelesaikan tanpa perubahan (Perpanjangan)  
☒ Diperkenankan mengikuti ujian Tugas Akhir dengan judul tetap/berubah.

Selanjutnya mahasiswa di atas diharuskan untuk dapat menyelesaikan Tugas Akhirnya dan dapat mengikuti ujian Tugas Akhir untuk wisuda ..... 2004.

Surabaya, 26 April 2004

Dosen Pembimbing I

Dr. Ir. Handayanu, MSc  
NIP. 131 782 032

Dosen Pembimbing II

Ir. Murdjito, MEng  
NIP. 132 149 376



**DEPARTEMEN PENDIDIKAN NASIONAL  
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JURUSAN TEKNIK KELAUTAN**

Kampus ITS, Sukolilo Surabaya 60111 Telp/Fax 031-5928105, 5994251-5 Pes 1104-1105

**LEMBAR KONSULTASI TUGAS AKHIR**

**NAMA MAHASISWA** : M. KADAFI  
**NOMOR POKOK** : 4398.100.009  
**DOSEN PEMBIMBING I** : Dr. Ir. HANDAYANU, MSc  
**TUGAS DIMULAI** : .....  
**TUGAS DISELESAIKAN** : .....  
**JUDUL TUGAS AKHIR** : ANALISIS KEKUATAN DAN  
STABILITAS PONDASI MOgPU  
PLATFORM DI PERAIRAN NATUNA

| No. | TANGGAL | MATERI KONSULTASI      | TANDA TANGAN |
|-----|---------|------------------------|--------------|
| 1   | 24/4 03 | Cari Referensi data    | Hdys         |
| 2   | 5/5 03  | Pemodelan Struktur     | Hdys         |
| 3   | 15/1 04 | Pemodelan tanah, betan | Hdys         |
| 4   | 4/2 04  | Analisis In-Place.     | Hdys         |
| 5   | 16/2 04 | Koreksi In-Place.      | Hdys         |
| 6   | 3/3 04  | Analisis Bearing Cap.  | Hdys         |
| 7   | 24/3 04 | Analisis Settlement    | Hdys         |
| 8   | 23/4 04 | Laporan.               | Hdys         |
|     |         |                        |              |



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Kampus ITS, Sukolilo Surabaya 60111 Telp/Fax 031-5928105, 5994251-5 Pes 1104-1105

LEMBAR KONSULTASI TUGAS AKHIR

NAMA MAHASISWA : M. KADAFI  
NOMOR POKOK : 4398.100.009  
DOSEN PEMBIMBING II : Ir. MURDJITO, MEng  
TUGAS DIMULAI : .....  
TUGAS DISELESAIKAN : .....  
JUDUL TUGAS AKHIR : ANALISIS KEKUATAN DAN  
STABILITAS PONDASI MOgPU  
PLATFORM DI PERAIRAN NATUNA

| No. | TANGGAL | MATERI KONSULTASI          | TANDA TANGAN       |
|-----|---------|----------------------------|--------------------|
| 1   | 21/4 03 | Identifikasi permasalahan. | <i>[Signature]</i> |
| 2   | 5/5 03  | Verifikasi data            | <i>[Signature]</i> |
| 3   | 8/1 04  | Pemodelan pondasi.         | <i>[Signature]</i> |
| 4   | 12/2 04 | In-Place analisis          | <i>[Signature]</i> |
| 5   | 19/2 04 | Korelasi Pembebanan.       | <i>[Signature]</i> |
| 6   | 3/3 04  | Daya dukung, Respon        | <i>[Signature]</i> |
| 7   | 25/3 04 | Settlement, Overturning    | <i>[Signature]</i> |
| 8   | 25/4 04 | Laporan.                   | <i>[Signature]</i> |
|     |         |                            |                    |