



QTR I 295-T

Qualification Test Results

QTR for ITAM Roller Swage tooling (Mandrel, Rollers and Cage)

Rev.: 01

Date:

27-07-2015

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INDUSTRIA DE TUBERIAS AERONAUTICAS MEXICO
 S.A. DE C.V.
 Acceso IV No 6B Fracc. Ind. Benito Juárez
 CP. 76120 Querétaro, Qro. México

Product: ASNA3759 SLEEVE, ASNA3760 FLARELESS
 UNION & ABS5004 TUBE
 ROLLER SWAGE

Issued:
 Rogelio Acuña

Approved:
 Ramón Robles



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1. Document Approval

Customer: Airbus

Description of the document:

Qualification Test Results for ITAM Roller Swage tooling (Mandrel, Rollers and Cage).

Material Specification:

ABS5004 for Titanium

ITAM Evaluated by:


Rogello Acuña

ITAM Approved by:


Ramon Robles

Airbus Visa by:

| Issue | Date | Modified by | Modified sections | Observations |
|-------|----------|---------------|-------------------|-----------------------------------|
| 00 | 29/07/15 | Rogello Acuña | Issue | ITAM validation report |
| 01 | 30/07/15 | Rogello Acuña | Section 9-11 | Add Aeroftit pressure test report |
| | | | | |
| | | | | |

2. Scope

The scope of this plan is to approve ITAM to manufacture ATA 27, 29 and 32 Hydraulic Pipes for the Single Aisle Program, made of Titanium from 0.250" to 1.000" outside diameter with developed tools for Roller swage process according to 80-T-34-0108. Those tools at the beginning will be Mandrel, set of rollers and cage. This report covers the results of the tests performed.



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3. General

3.1. Purpose

The purpose of this document is to show the results of tests that were performed to qualify ITAM for using developed tools to Roller swage process according to 80-T-34-0108. This report covers the results of the tests performed.

3.2. Glossary

| Glossary | |
|----------|--------------------------------------|
| QTP | Qualification test plan: QTP I294-T |
| ATP | Acceptance test procedure: ATP I XXX |

4. Samples Traceability for ITAM

4.1. SAMPLE 1/4" OD X 0.016 WT ROLLER SWAGE SLEEVE (225641932 WORK ORDER)

Fecha: 14.06.2015 10:01:30 L:7063

NOVA DE ACOMPAÑAMIENTO DE LA ORDEN Pagina: 1 de 1

Compañía: 774

Orden Fabricante: 225641932

Coordinador Proyecto: 641932

| Característica | Valor | Comentarios / Observaciones |
|---|-------|-----------------------------|
| SAMPLE 1/4" OD X 0.016 WT ROLLER SWAGE SLEEVE | | |

Descripción: Perfor. 1-56.201 | Perfor. 175962

DCP-0076641132-000-0

NOVA DE BUENA (Requiere) Page: 1 de 2

ORDEN DE FABRICACIÓN

ACTIVIDAD: Bsp. Fabric. 100 TUBOS

ORDEN DE FABRICACIÓN: 225641932

| Item | Descripción | Material | Unidad | Cantidad | Estado | Observaciones |
|------|--|----------|--------|----------|--------|---------------|
| 100 | 1/4" OD X 0.016 WT ROLLER SWAGE SLEEVE | 304 SS | PIECE | 1 | OK | |
| 100 | 1/4" OD X 0.016 WT ROLLER SWAGE SLEEVE | 304 SS | PIECE | 1 | OK | |
| 100 | 1/4" OD X 0.016 WT ROLLER SWAGE SLEEVE | 304 SS | PIECE | 1 | OK | |

Perfor. 1-56.201 | Perfor. 175962



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| NMA DE ESTA (Requisito) | | PAL 3 de 3 | | ORDEN DE FABRICACIÓN | |
|-------------------------|---------|-------------------------------------|------------------|----------------------|----------|
| | | P/N: 2364103 Edición de PLANO: 1 | | 2364103 | |
| TABLA 1 DE DETALLE | | FECHA: 13 de 2015 | | CANT. ORDEN: 1 | |
| Item | Nombre | Material de Trabajo | Material de Base | Material | Material |
| 100 | 2364103 | 2364103 | 2364103 | 2364103 | 2364103 |
| 101 | 2364103 | 2364103 | 2364103 | 2364103 | 2364103 |
| 102 | 2364103 | 2364103 | 2364103 | 2364103 | 2364103 |

| NMA DE ESTA (Requisito) | | PAL 4 de 3 | | ORDEN DE FABRICACIÓN | |
|-------------------------|---------|-------------------------------------|------------------|----------------------|----------|
| | | P/N: 2364103 Edición de PLANO: 1 | | 2364103 | |
| TABLA 1 DE DETALLE | | FECHA: 13 de 2015 | | CANT. ORDEN: 1 | |
| Item | Nombre | Material de Trabajo | Material de Base | Material | Material |
| 100 | 2364103 | 2364103 | 2364103 | 2364103 | 2364103 |
| 101 | 2364103 | 2364103 | 2364103 | 2364103 | 2364103 |
| 102 | 2364103 | 2364103 | 2364103 | 2364103 | 2364103 |

| NMA DE ESTA (Requisito) | | PAL 5 de 3 | | ORDEN DE FABRICACIÓN | |
|-------------------------|---------|-------------------------------------|------------------|----------------------|----------|
| | | P/N: 2364103 Edición de PLANO: 1 | | 2364103 | |
| TABLA 1 DE DETALLE | | FECHA: 13 de 2015 | | CANT. ORDEN: 1 | |
| Item | Nombre | Material de Trabajo | Material de Base | Material | Material |
| 100 | 2364103 | 2364103 | 2364103 | 2364103 | 2364103 |
| 101 | 2364103 | 2364103 | 2364103 | 2364103 | 2364103 |
| 102 | 2364103 | 2364103 | 2364103 | 2364103 | 2364103 |

| NMA DE ESTA (Requisito) | | PAL 6 de 3 | | ORDEN DE FABRICACIÓN | |
|-------------------------|---------|-------------------------------------|------------------|----------------------|----------|
| | | P/N: 2364103 Edición de PLANO: 1 | | 2364103 | |
| TABLA 1 DE DETALLE | | FECHA: 13 de 2015 | | CANT. ORDEN: 1 | |
| Item | Nombre | Material de Trabajo | Material de Base | Material | Material |
| 100 | 2364103 | 2364103 | 2364103 | 2364103 | 2364103 |
| 101 | 2364103 | 2364103 | 2364103 | 2364103 | 2364103 |
| 102 | 2364103 | 2364103 | 2364103 | 2364103 | 2364103 |



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4.2. SAMPLE 3/8" OD X 0.019 WT ROLLER SWAGE SLEEVE (225641934 WORK ORDER)

Form with ITA logo and header information including 'ORDEN DE FABRICACION' and '225641934'.

| Item | Descripción | Mat | Observaciones | Proy | Act | Proy | Act | Proy | Act |
|------|--|-----|---------------|------|-----|------|-----|------|-----|
| 1 | 1.100 MANDRIL PARA ROLAR ROLLO DE 3/8" X 0.019" DE 225641934 | 304 | | | | | | | |
| 2 | 1.100 ROLLO PARA ROLAR ROLLO DE 3/8" X 0.019" DE 225641934 | 304 | | | | | | | |
| 3 | 1.100 CAGE PARA ROLAR ROLLO DE 3/8" X 0.019" DE 225641934 | 304 | | | | | | | |

Form with ITA logo and header information including 'ORDEN DE FABRICACION' and '225641934'. Includes handwritten notes and a circular stamp.

| Item | Descripción | Mat | Observaciones | Proy | Act | Proy | Act | Proy | Act |
|------|--|-----|---------------|------|-----|------|-----|------|-----|
| 1 | 1.100 MANDRIL PARA ROLAR ROLLO DE 3/8" X 0.019" DE 225641934 | 304 | | | | | | | |
| 2 | 1.100 ROLLO PARA ROLAR ROLLO DE 3/8" X 0.019" DE 225641934 | 304 | | | | | | | |
| 3 | 1.100 CAGE PARA ROLAR ROLLO DE 3/8" X 0.019" DE 225641934 | 304 | | | | | | | |

Form with ITA logo and header information including 'ORDEN DE FABRICACION' and '225641934'. Includes handwritten notes and a circular stamp.

| Item | Descripción | Mat | Observaciones | Proy | Act | Proy | Act | Proy | Act |
|------|--|-----|---------------|------|-----|------|-----|------|-----|
| 1 | 1.100 MANDRIL PARA ROLAR ROLLO DE 3/8" X 0.019" DE 225641934 | 304 | | | | | | | |
| 2 | 1.100 ROLLO PARA ROLAR ROLLO DE 3/8" X 0.019" DE 225641934 | 304 | | | | | | | |
| 3 | 1.100 CAGE PARA ROLAR ROLLO DE 3/8" X 0.019" DE 225641934 | 304 | | | | | | | |

Form with ITA logo and header information including 'ORDEN DE FABRICACION' and '225641934'. Includes handwritten notes and a circular stamp.

| Item | Descripción | Mat | Observaciones | Proy | Act | Proy | Act | Proy | Act |
|------|--|-----|---------------|------|-----|------|-----|------|-----|
| 1 | 1.100 MANDRIL PARA ROLAR ROLLO DE 3/8" X 0.019" DE 225641934 | 304 | | | | | | | |
| 2 | 1.100 ROLLO PARA ROLAR ROLLO DE 3/8" X 0.019" DE 225641934 | 304 | | | | | | | |
| 3 | 1.100 CAGE PARA ROLAR ROLLO DE 3/8" X 0.019" DE 225641934 | 304 | | | | | | | |



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4.4. SAMPLE 1/2" OD X 0.026 WT ROLLER SWAGE SLEEVE (225642152 WORK ORDER)

Fecha: 11.06.2013 10:50:19 (UTC+3) **NOVA DE ALUMINAMIENTO DE LA DIBER** Pagina: 1 de 1

Compañía de Ingeniería: CUBA **Compañía FIA**

Artículo: 1 **PLA** **TI: BGA** **Edición: 000** **Lot: NRP Código Párr: 137042152**

Emp. Fabric: 1 **PLA** **Edición: 000** **Unid. Fabricación: 1** **64113**

Almacén: **PLA** **Edición: 000** **Unid. Fabricación: 1** **64113**

Motor: **PLA** **Edición: 000** **Unid. Fabricación: 1** **64113**

Lot: **PLA** **Edición: 000** **Unid. Fabricación: 1** **64113**

SAMPLE 1/2" OD X 0.026 WT ROLLER SWAGE SLEEVE

Observaciones: Fecha: 11.06.2013 Hora: 17:00:00

017 0023642152-042-P

ITA **NOVA DE ALTA (Original)** **PAG. 1 de 3** **ORDEN DE FABRICACIÓN**

ARTÍCULO: **PLA** **Edición: 000** **Unid. Fabricación: 1** **64113**

Emp. Fabric: **PLA** **Edición: 000** **Unid. Fabricación: 1** **64113**

Almacén: **PLA** **Edición: 000** **Unid. Fabricación: 1** **64113**

Motor: **PLA** **Edición: 000** **Unid. Fabricación: 1** **64113**

Lot: **PLA** **Edición: 000** **Unid. Fabricación: 1** **64113**

| Item | Forma | Descripción | Unid. | Descripción | Prep. | Regr. | Prep. | Prep. | Prep. | Prep. |
|------|-------|------------------------------|-------|-------------|-------|-------|-------|-------|-------|-------|
| 001 | PLA | ELAS MONTAJE PARA MONTAJE DE | 1 | 6 MDS | 0 | 0 | 0 | 0 | 0 | 0 |
| 002 | PLA | ELAS MONTAJE PARA MONTAJE DE | 1 | 6 MDS | 0 | 0 | 0 | 0 | 0 | 0 |
| 003 | PLA | ELAS MONTAJE PARA MONTAJE DE | 1 | 6 MDS | 0 | 0 | 0 | 0 | 0 | 0 |
| 004 | PLA | ELAS MONTAJE PARA MONTAJE DE | 1 | 6 MDS | 0 | 0 | 0 | 0 | 0 | 0 |

Observaciones: Fecha: 11.06.2013 Hora: 17:00:00

ITA **NOVA DE ALTA (Original)** **PAG. 2 de 3** **ORDEN DE FABRICACIÓN**

ARTÍCULO: **PLA** **Edición: 000** **Unid. Fabricación: 1** **64113**

Emp. Fabric: **PLA** **Edición: 000** **Unid. Fabricación: 1** **64113**

Almacén: **PLA** **Edición: 000** **Unid. Fabricación: 1** **64113**

Motor: **PLA** **Edición: 000** **Unid. Fabricación: 1** **64113**

Lot: **PLA** **Edición: 000** **Unid. Fabricación: 1** **64113**

| Item | Forma | Descripción | Unid. | Descripción | Prep. | Regr. | Prep. | Prep. | Prep. | Prep. |
|------|-------|------------------------------|-------|-------------|-------|-------|-------|-------|-------|-------|
| 001 | PLA | ELAS MONTAJE PARA MONTAJE DE | 1 | 6 MDS | 0 | 0 | 0 | 0 | 0 | 0 |
| 002 | PLA | ELAS MONTAJE PARA MONTAJE DE | 1 | 6 MDS | 0 | 0 | 0 | 0 | 0 | 0 |
| 003 | PLA | ELAS MONTAJE PARA MONTAJE DE | 1 | 6 MDS | 0 | 0 | 0 | 0 | 0 | 0 |
| 004 | PLA | ELAS MONTAJE PARA MONTAJE DE | 1 | 6 MDS | 0 | 0 | 0 | 0 | 0 | 0 |

Observaciones: Fecha: 11.06.2013 Hora: 17:00:00

ITA **NOVA DE ALTA (Original)** **PAG. 3 de 3** **ORDEN DE FABRICACIÓN**

ARTÍCULO: **PLA** **Edición: 000** **Unid. Fabricación: 1** **64113**

Emp. Fabric: **PLA** **Edición: 000** **Unid. Fabricación: 1** **64113**

Almacén: **PLA** **Edición: 000** **Unid. Fabricación: 1** **64113**

Motor: **PLA** **Edición: 000** **Unid. Fabricación: 1** **64113**

Lot: **PLA** **Edición: 000** **Unid. Fabricación: 1** **64113**

| Item | Forma | Descripción | Unid. | Descripción | Prep. | Regr. | Prep. | Prep. | Prep. | Prep. |
|------|-------|------------------------------|-------|-------------|-------|-------|-------|-------|-------|-------|
| 001 | PLA | ELAS MONTAJE PARA MONTAJE DE | 1 | 6 MDS | 0 | 0 | 0 | 0 | 0 | 0 |
| 002 | PLA | ELAS MONTAJE PARA MONTAJE DE | 1 | 6 MDS | 0 | 0 | 0 | 0 | 0 | 0 |
| 003 | PLA | ELAS MONTAJE PARA MONTAJE DE | 1 | 6 MDS | 0 | 0 | 0 | 0 | 0 | 0 |
| 004 | PLA | ELAS MONTAJE PARA MONTAJE DE | 1 | 6 MDS | 0 | 0 | 0 | 0 | 0 | 0 |

Observaciones: Fecha: 11.06.2013 Hora: 17:00:00



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| MODA DE BETA ORIGINAL | | PAG 2 de 3 | | ORDEN DE FABRICACION | |
|-----------------------|---|--|---------------|----------------------|---------------|
| | | Mod. Fabric. 001-10000 001-10000 001-10000 | | 27062113 | |
| Item | Descripción | Material | Prop. de Bata | Material | Prop. de Bata |
| 001 | CLAS 0010145 P001 0010145 Y ADP01 0010145 | 001 | 0 001 | 001 | 0 001 |
| 002 | CLAS 0010145 P001 0010145 Y ADP01 0010145 | 001 | 0 001 | 001 | 0 001 |
| 003 | CLAS 0010145 P001 0010145 Y ADP01 0010145 | 001 | 0 001 | 001 | 0 001 |

| MODA DE BETA ORIGINAL | | PAG 3 de 3 | | ORDEN DE FABRICACION | |
|-----------------------|---|--|---------------|----------------------|---------------|
| | | Mod. Fabric. 001-10000 001-10000 001-10000 | | 27062113 | |
| Item | Descripción | Material | Prop. de Bata | Material | Prop. de Bata |
| 004 | CLAS 0010145 P001 0010145 Y ADP01 0010145 | 001 | 0 001 | 001 | 0 001 |
| 005 | CLAS 0010145 P001 0010145 Y ADP01 0010145 | 001 | 0 001 | 001 | 0 001 |
| 006 | CLAS 0010145 P001 0010145 Y ADP01 0010145 | 001 | 0 001 | 001 | 0 001 |
| 007 | CLAS 0010145 P001 0010145 Y ADP01 0010145 | 001 | 0 001 | 001 | 0 001 |

| MODA DE BETA ORIGINAL | | PAG 4 de 3 | | ORDEN DE FABRICACION | |
|-----------------------|---|--|---------------|----------------------|---------------|
| | | Mod. Fabric. 001-10000 001-10000 001-10000 | | 27062113 | |
| Item | Descripción | Material | Prop. de Bata | Material | Prop. de Bata |
| 008 | CLAS 0010145 P001 0010145 Y ADP01 0010145 | 001 | 0 001 | 001 | 0 001 |
| 009 | CLAS 0010145 P001 0010145 Y ADP01 0010145 | 001 | 0 001 | 001 | 0 001 |
| 010 | CLAS 0010145 P001 0010145 Y ADP01 0010145 | 001 | 0 001 | 001 | 0 001 |

Partes 11000000 100100

Lista de Partes

Operador: MANUEL J. J. J.

Programa: 0010145 Y ADP01

Orden: 27062113

Part number: 0010145 Y ADP01

Mat. Of superior: 0010145 Y ADP01

Requisitos: 0010145 Y ADP01

| Item | Descripción | Material | Prop. de Bata | Material | Prop. de Bata |
|------|-----------------|----------|---------------|----------|---------------|
| 1 | 0010145 Y ADP01 | 001 | 0 001 | 001 | 0 001 |



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4.6. SAMPLE 5/8" OD X 0.032 WT ROLLER SWAGE SLEEVE (225642154 WORK ORDER)

Fecha: 17/06/2013 14:46:00 (17/06/13)
 NOVA DE ACUMPARACIONES DE LA ORDEN
 Pagina 1 de 1
 Componente: P136
 I.O. S.A.P. Orden Fabric: 225642154
 Orden Fabricacion: 042124
 E cantidad Pedido: 1

Orden de Fabricación

Fecha: 17/06/2013
 Folio: 57/204

Observaciones

Fecha: 17/06/2013
 Folio: 57/204

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 ORDEN DE FABRICACION
 225642154

ITAM

ADPTA S.A.
 Resp. Fabric: P136
 Orden Fabric: 225642154
 Orden Fabricacion: 042124

Orden de Fabricación

Fecha: 17/06/2013
 Folio: 57/204

Observaciones

Fecha: 17/06/2013
 Folio: 57/204

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 ORDEN DE FABRICACION
 225642154

ITAM

ADPTA S.A.
 Resp. Fabric: P136
 Orden Fabric: 225642154
 Orden Fabricacion: 042124

Orden de Fabricación

Fecha: 17/06/2013
 Folio: 57/204

Observaciones

Fecha: 17/06/2013
 Folio: 57/204

NOVA DE BU'YA (Original) Page 1 de 3
 ORDEN DE FABRICACION
 225642154

ITAM

ADPTA S.A.
 Resp. Fabric: P136
 Orden Fabric: 225642154
 Orden Fabricacion: 042124

Orden de Fabricación

Fecha: 17/06/2013
 Folio: 57/204

Observaciones

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| ITAM | | HOJA DE BUSTA (English) | | PAGE 2 of 3 | | ORDEN DE FABRICACIÓN | |
|------------------------|-----|--------------------------------|---|-------------|---|----------------------|---|
| ABRUSAD | | PA | | 20640974 | | 20640974 | |
| Resp. Fabr. 000 75 000 | | E 00 000 00 | | E 00 000 00 | | E 00 000 00 | |
| Materiales | | E 00 000 00 | | E 00 000 00 | | E 00 000 00 | |
| 1 | 000 | ELABORACION DE MONTAJE Y ARBOL | 1 | 1 | 1 | 1 | 1 |
| 2 | 000 | ELABORACION DE MONTAJE Y ARBOL | 1 | 1 | 1 | 1 | 1 |
| 3 | 000 | ELABORACION DE MONTAJE Y ARBOL | 1 | 1 | 1 | 1 | 1 |

| ITAM | | HOJA DE BUSTA (English) | | PAGE 3 of 3 | | ORDEN DE FABRICACIÓN | |
|------------------------|-----|--------------------------------|---|-------------|---|----------------------|---|
| ABRUSAD | | PA | | 20640974 | | 20640974 | |
| Resp. Fabr. 000 75 000 | | E 00 000 00 | | E 00 000 00 | | E 00 000 00 | |
| Materiales | | E 00 000 00 | | E 00 000 00 | | E 00 000 00 | |
| 4 | 000 | ELABORACION DE MONTAJE Y ARBOL | 1 | 1 | 1 | 1 | 1 |
| 5 | 000 | ELABORACION DE MONTAJE Y ARBOL | 1 | 1 | 1 | 1 | 1 |
| 6 | 000 | ELABORACION DE MONTAJE Y ARBOL | 1 | 1 | 1 | 1 | 1 |

| ITAM | | HOJA DE BUSTA (English) | | PAGE 4 of 5 | | ORDEN DE FABRICACIÓN | |
|------------------------|-----|--------------------------------|---|-------------|---|----------------------|---|
| ABRUSAD | | PA | | 20640974 | | 20640974 | |
| Resp. Fabr. 000 75 000 | | E 00 000 00 | | E 00 000 00 | | E 00 000 00 | |
| Materiales | | E 00 000 00 | | E 00 000 00 | | E 00 000 00 | |
| 7 | 000 | ELABORACION DE MONTAJE Y ARBOL | 1 | 1 | 1 | 1 | 1 |
| 8 | 000 | ELABORACION DE MONTAJE Y ARBOL | 1 | 1 | 1 | 1 | 1 |
| 9 | 000 | ELABORACION DE MONTAJE Y ARBOL | 1 | 1 | 1 | 1 | 1 |

| ITAM | | HOJA DE BUSTA (English) | | PAGE 5 of 5 | | ORDEN DE FABRICACIÓN | |
|------------------------|-----|--------------------------------|---|-------------|---|----------------------|---|
| ABRUSAD | | PA | | 20640974 | | 20640974 | |
| Resp. Fabr. 000 75 000 | | E 00 000 00 | | E 00 000 00 | | E 00 000 00 | |
| Materiales | | E 00 000 00 | | E 00 000 00 | | E 00 000 00 | |
| 10 | 000 | ELABORACION DE MONTAJE Y ARBOL | 1 | 1 | 1 | 1 | 1 |
| 11 | 000 | ELABORACION DE MONTAJE Y ARBOL | 1 | 1 | 1 | 1 | 1 |
| 12 | 000 | ELABORACION DE MONTAJE Y ARBOL | 1 | 1 | 1 | 1 | 1 |



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| ITAM | | MESA DE DE FABRICACION | | PAG. 3 de 3 | | ORDEN DE FABRICACION | |
|-------------|---|------------------------|--------------------|-----------------|-----------|----------------------|-----------|
| Mesa: 295-T | | Mesa: 295-T | | Mesa: 295-T | | Mesa: 295-T | |
| Item | Descripción | Material | Proceso de Trabajo | Proceso de Reto | Material | Proceso | Proceso |
| 001 | 4.24 100% 1.40 100% 1.40 100% 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% |
| 002 | 4.24 100% 1.40 100% 1.40 100% 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% |
| 003 | 4.24 100% 1.40 100% 1.40 100% 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% |

| ITAM | | MESA DE DE FABRICACION | | PAG. 3 de 3 | | ORDEN DE FABRICACION | |
|-------------|---|------------------------|--------------------|-----------------|-----------|----------------------|-----------|
| Mesa: 295-T | | Mesa: 295-T | | Mesa: 295-T | | Mesa: 295-T | |
| Item | Descripción | Material | Proceso de Trabajo | Proceso de Reto | Material | Proceso | Proceso |
| 001 | 4.24 100% 1.40 100% 1.40 100% 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% |
| 002 | 4.24 100% 1.40 100% 1.40 100% 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% |
| 003 | 4.24 100% 1.40 100% 1.40 100% 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% |

| ITAM | | MESA DE DE FABRICACION | | PAG. 3 de 3 | | ORDEN DE FABRICACION | |
|-------------|---|------------------------|--------------------|-----------------|-----------|----------------------|-----------|
| Mesa: 295-T | | Mesa: 295-T | | Mesa: 295-T | | Mesa: 295-T | |
| Item | Descripción | Material | Proceso de Trabajo | Proceso de Reto | Material | Proceso | Proceso |
| 001 | 4.24 100% 1.40 100% 1.40 100% 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% |
| 002 | 4.24 100% 1.40 100% 1.40 100% 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% |
| 003 | 4.24 100% 1.40 100% 1.40 100% 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% | 1.40 100% |

Fecha: 27-07-2015 10:01:00
999 8 muestra: 00000000

Letra: Outbound
Operario: Jose Raul Velasco

Programa: 0000111 ARBES P000
Grupo: 00000000 Tipo de herramienta: Grupo de herramientas
00000000
Part number: Programa: 0001112
No. Of quantity: 00000000, 001 AMPLIAT.
Proveedor: 000011 INDUSTRIA DE TUBERIAS AGROQUIMICAS DE MEXICO, S.A. DE C.V.

| Item | Material | Proceso | Proceso | Proceso | Proceso | Proceso | Proceso |
|------|----------|--------------|---------|---------|---------|---------|---------|
| 1 | 1001100 | TUBO ABRAZON | 00001 | 000001 | 000001 | 000001 | 000001 |
| 1 | 1001100 | ARMAS FORMAS | 0001100 | 1001100 | 1001100 | 1001100 | 1001100 |



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4.10. SAMPLE 1" OD X 0.051 WT ROLLER SWAGE SLEEVE (225642077 WORK ORDER)

Fecha: 17/06/2015 14:40:37 L715041
 Compañía de I+D+i: C 632
 INGENIERIA DE ACOMPAÑAMIENTO DE LA ORDEN
 Proyecto: 225642077
 Cliente: IAP Ordes Fabre
 Descripción: 225642077
 Orden de Fabricación: 225642077

| Item | Descripción | Material | Proceso | Estado | Observaciones |
|------|---|----------|---------|--------|---------------|
| 1 | SAMPLE 1" OD X 0.051 WT ROLLER SWAGE SLEEVE | | | | |

Forma: 17/06/2015
 Folio: 17/06/2015

Fecha: 17/06/2015 14:40:37 L715041
 Compañía de I+D+i: C 632
 INGENIERIA DE ACOMPAÑAMIENTO DE LA ORDEN
 Proyecto: 225642077
 Cliente: IAP Ordes Fabre
 Descripción: 225642077

| Item | Descripción | Material | Proceso | Estado | Observaciones |
|------|---|----------|---------|--------|---------------|
| 1 | SAMPLE 1" OD X 0.051 WT ROLLER SWAGE SLEEVE | | | | |

Forma: 17/06/2015
 Folio: 17/06/2015

Fecha: 17/06/2015 14:40:37 L715041
 Compañía de I+D+i: C 632
 INGENIERIA DE ACOMPAÑAMIENTO DE LA ORDEN
 Proyecto: 225642077
 Cliente: IAP Ordes Fabre
 Descripción: 225642077

| Item | Descripción | Material | Proceso | Estado | Observaciones |
|------|---|----------|---------|--------|---------------|
| 1 | SAMPLE 1" OD X 0.051 WT ROLLER SWAGE SLEEVE | | | | |

Forma: 17/06/2015
 Folio: 17/06/2015

Fecha: 17/06/2015 14:40:37 L715041
 Compañía de I+D+i: C 632
 INGENIERIA DE ACOMPAÑAMIENTO DE LA ORDEN
 Proyecto: 225642077
 Cliente: IAP Ordes Fabre
 Descripción: 225642077

| Item | Descripción | Material | Proceso | Estado | Observaciones |
|------|---|----------|---------|--------|---------------|
| 1 | SAMPLE 1" OD X 0.051 WT ROLLER SWAGE SLEEVE | | | | |

Forma: 17/06/2015
 Folio: 17/06/2015



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ORDEN DE FABRICACION

PROGRAMA: 0001310 - JETSETUB PAPER

ORDEN: 00000001 Tipo de herramienta: Orden de fabricación

ORDEN NRO. DE CONTROL: 00000001

Part Number: Programa: 0001310

Dist. Of Autor: Descripcion: BR. INMAGPLATE

Operacion: 00001 - INSPECCION DE TUBERIAS ALUMINUMICAS DE 80 EN 8000 S.A. DE C.V.

| Item | Material | Quantity | Unit | Remarks |
|------|----------|----------|-------|----------------------------------|
| 01 | 80-01 | 0.000 | 0.000 | for rolling paper for workpieces |
| 02 | 1100 | 0.000 | 0.000 | 404 |
| 03 | 1100 | 0.000 | 0.000 | 404 |

Fecha: 21 de Julio de 2015 10:07:05

VRS F. Alvarez Quintero

Libro de Orden

Orden: 00000001 - 21 de Julio de 2015

Programa: 0001310 - JETSETUB PAPER

ORDEN: 00000001 Tipo de herramienta: Orden de fabricación

ORDEN NRO. DE CONTROL: 00000001

Part Number: Programa: 0001310

Dist. Of Autor: Descripcion: BR. INMAGPLATE

Operacion: 00001 - INSPECCION DE TUBERIAS ALUMINUMICAS DE 80 EN 8000 S.A. DE C.V.

| Item | Material | Quantity | Unit | Remarks |
|------|----------|----------|-------|----------------------------------|
| 01 | 80-01 | 0.000 | 0.000 | for rolling paper for workpieces |
| 02 | 1100 | 0.000 | 0.000 | 404 |
| 03 | 1100 | 0.000 | 0.000 | 404 |

5. Dimensions after roller swaging for sleeves

According to 80-T-34-0108 5.2.4.6 inspection area (after swaging) the tube ID after swaging is the only criterion for acceptance or rejection. Fig. 1

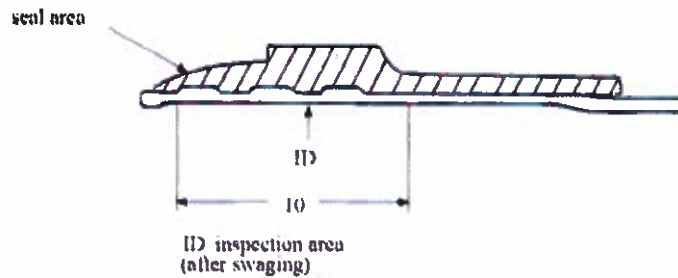


Fig. 1



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5.7. Summary of dimensional ID sleeve

| Summary of test sleeve | | | | | | |
|------------------------|--------------|----------------|----------------|--------|-------|------|
| OF | Size | Min difference | Max difference | Sample | End 1 | End2 |
| 225641932 | 04 (1/4" OD) | 0,18 mm | 0,35 mm | 1 | 0,21 | 0,24 |
| | | | | 2 | 0,22 | 0,20 |
| | | | | 3 | 0,23 | 0,25 |
| | | | | 4 | 0,26 | 0,20 |
| | | | | 5 | 0,22 | 0,24 |
| 225641934 | 06 (3/8" OD) | 0,25 mm | 0,43 mm | 1 | 0,34 | 0,36 |
| | | | | 2 | 0,35 | 0,30 |
| | | | | 3 | 0,32 | 0,34 |
| | | | | 4 | 0,33 | 0,35 |
| | | | | 5 | 0,33 | 0,32 |
| 225642152 | 08 (1/2" OD) | 0,24 mm | 0,43 mm | 1 | 0,34 | 0,40 |
| | | | | 2 | 0,35 | 0,38 |
| | | | | 3 | 0,34 | 0,37 |
| | | | | 4 | 0,36 | 0,40 |
| | | | | 5 | 0,36 | 0,38 |
| 225642154 | 10 (5/8" OD) | 0,37 mm | 0,67 mm | 1 | 0,41 | 0,42 |
| | | | | 2 | 0,43 | 0,41 |
| | | | | 3 | 0,43 | 0,38 |
| | | | | 4 | 0,38 | 0,39 |
| | | | | 5 | 0,43 | 0,43 |
| 225642075 | 12 (3/4" OD) | 0,31 mm | 0,63mm | 1 | 0,33 | 0,39 |
| | | | | 2 | 0,38 | 0,35 |
| | | | | 3 | 0,32 | 0,33 |
| | | | | 4 | 0,38 | 0,36 |
| | | | | 5 | 0,39 | 0,37 |
| 225642077 | 16 (1" OD) | 0,40 mm | 0,54mm | 1 | 0,43 | 0,40 |
| | | | | 2 | 0,46 | 0,45 |
| | | | | 3 | 0,41 | 0,40 |
| | | | | 4 | 0,42 | 0,44 |
| | | | | 5 | 0,40 | 0,42 |



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6.5. Summary of dimensional ID union

| Summary of test union | | | | | | |
|-----------------------|--------------|----------------|----------------|--------|-------|------|
| OF | Size | Min difference | Max difference | Sample | End 1 | End2 |
| 225641935 | 06 (3/8" OD) | 0,25 mm | 0,43 mm | 1 | 0,35 | 0,33 |
| | | | | 2 | 0,35 | 0,32 |
| | | | | 3 | 0,28 | 0,32 |
| | | | | 4 | 0,39 | 0,38 |
| | | | | 5 | 0,36 | 0,32 |
| 225642153 | 08 (1/2" OD) | 0,26 mm | 0,49 mm | 1 | 0,42 | 0,47 |
| | | | | 2 | 0,43 | 0,46 |
| | | | | 3 | 0,47 | 0,42 |
| | | | | 4 | 0,43 | 0,46 |
| | | | | 5 | 0,42 | 0,45 |
| 225642074 | 10 (5/8" OD) | 0,37 mm | 0,57 mm | 1 | 0,40 | 0,43 |
| | | | | 2 | 0,40 | 0,46 |
| | | | | 3 | 0,41 | 0,42 |
| | | | | 4 | 0,40 | 0,43 |
| | | | | 5 | 0,39 | 0,45 |
| 225642076 | 12 (3/4" OD) | 0,31 mm | 0,58mm | 1 | 0,35 | 0,36 |
| | | | | 2 | 0,37 | 0,40 |
| | | | | 3 | 0,37 | 0,41 |
| | | | | 4 | 0,38 | ,044 |
| | | | | 5 | 0,37 | 0,40 |



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7.2. Pressure test report F3002 for 3/8" OD samples sleeve. 225641934

| REPORTE DE RESULTADOS DE PRUEBA DE PRESIÓN PARA EL TALLER DE TUBERÍA TUBE FACILITY PRESSURE TEST RESULTS REPORT | | | | | | | | | |
|--|---|--|--|---|---|--|--|-------------------------------------|---|
| REPORTE No (REPORT No.) | FECHA DE LA PRUEBA (TEST DATE) | BANCO DE PRUEBAS Y FLUIDO DE PRUEBA (TESTING FACILITY AND TEST FLUID) | | | | PROCEDIMIENTO APLICABLE (APPLICABLE PROCEDURE) | HOJA 1 DE 1 (SHEET) | | |
| 02 | 05/07/13 | HIDRÁULICA / HYDRAULIC | | PNEUMÁTICA / PNEUMATIC | | 1201 | | | |
| NÚMERO DE PARTE (PART NUMBER) | R&V (REV.) | ORDEN DE COMPRA (PURCHASE ORDER) | ORDEN DE FABRICACIÓN (MANUFACTURING ORDER) | CLIENTE / CLIENT | | | | | |
| Sample 3/8" OD Roller Sleeve | | | 225641934 | | | | | | |
| CONDICIONES DE PRUEBA (TEST CONDITIONS) | | | | | | | | | |
| PRESIÓN DE PRUEBA TEST PRESSURE | 4000 | Hasta 30 psig, tolerancia +/- 2 psig Up to 30 psig, tolerance +/- 2 psig 71 a 80 psig, tolerancia +/- 4 psig 71 to 80 psig, tolerance +/- 4 psig Arriba de 80 psig, tolerancia +/- 8% Over 80 psig, tolerance +/- 8% Ver tabla 1 / See table 1 | | | | MATERIALES BASE (BASE MATERIAL) | | | |
| TOLERANCIA APLICADA (TOLERANCE APPLIED) | 300 | | | | | ACEROS INOXIDABLES (STAINLESS STEEL) | | | |
| | | | | | | TITANIO (TITANIUM) | | | |
| | | | | | | ALUMINIO (ALUMINUM) | | | |
| DURACION EN MIN (DURATION IN MIN) | 3 <th>TEMPERATURA DEL AGUA (WATER TEMPERATURE) C°</th> <td>15</td> <th>TAMANO DEL LOTE (LOT SIZE)</th> <td>4 <th>PIEZAS ACEPTADAS (ACCEPTED PIECES)</th> <td>4 <th>PIEZAS RECHAZADAS (REJECTED PIECES)</th> <td>0 </td></td></td> | TEMPERATURA DEL AGUA (WATER TEMPERATURE) C° | 15 | TAMANO DEL LOTE (LOT SIZE) | 4 <th>PIEZAS ACEPTADAS (ACCEPTED PIECES)</th> <td>4 <th>PIEZAS RECHAZADAS (REJECTED PIECES)</th> <td>0 </td></td> | PIEZAS ACEPTADAS (ACCEPTED PIECES) | 4 <th>PIEZAS RECHAZADAS (REJECTED PIECES)</th> <td>0 </td> | PIEZAS RECHAZADAS (REJECTED PIECES) | 0 |
| OBSERVACIONES PARA PIEZAS RECHAZADAS / OBSERVATIONS FOR REJECTED PIECES | | | | | | | | | |
| N° SERIE (SERIAL NUMBER) | PRESIÓN DE PRUEBA (PSIG) (TEST PRESSURE TEST) | PRESIÓN DE PRUEBA FINAL (PSIG) (FINAL PRESSURE TEST) | CAÍDA DE PRESIÓN EN PSIG (PRESSURE DROP IN PSIG) | RESULTADO (RESULT) | | | | | |
| | | | | | | | | | |
| OBSERVACIONES: (REMARKS) | | | | OPERADOR DEL BANCO DE PRUEBAS (TESTING FACILITY OPERATOR) | | | FIRMA (SIGNATURE) | | |
| | | | | Rogelio Avila | | | BAA | | |
| NOTA 1: Tolerancia a menos que se especifique otra cosa en el traveler. NOTE 1: Tolerance unless otherwise specified in the traveler. | | | | | | | | | |



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7.7. Pressure test report F3002 for 3/8" OD samples Union. 225641935

| REPORTE DE RESULTADOS DE PRUEBA DE PRESIÓN PARA EL TALLER DE TUBERÍA TUBE FACILITY PRESSURE TEST RESULTS REPORT | | | | | | | | | |
|--|--|--|--|-------------------------------|---|---------------------------------------|---|--|---|
| REPORTE No. (REPORT NO.) | FECHA DE LA PRUEBA (TEST DATE) | MATERIAL DE PRUEBA Y FLUIDO DE PRUEBA (TESTING FACILITY AND TEST FLUID) | | | PROCEDIMIENTO APLICABLE (APPLICABLE PROCEDURE) | HOJA: <u>1</u> DE <u>1</u> (SHEET) | | | |
| 03 | 03/07/13 | HIDRÁULICA / HYDRAULIC | <input checked="" type="checkbox"/> | NEUMÁTICA / PNEUMATIC | 1201 | | | | |
| NÚMERO DE PARTE (PART NUMBER) | REV. (REV.) | ORDEN DE COMPRA (PURCHASE ORDER) | ORDEN DE FABRICACIÓN (MANUFACTURING ORDER) | CLIENTE / CUSTOMER | | | | | |
| Sample 3500 Roller Union | | | 225641935 | | | | | | |
| CONDICIONES DE PRUEBA (TEST CONDITIONS) | | | | | | | | | |
| PRESIÓN DE PRUEBA (TEST PRESSURE) | 1000 | Hasta 20 psig, tolerancia ± 1 psig 10 to 20 psig, tolerance ± 1 psig | | | MATERIALES BASE (PARENT METAL) | ACEROS INOXIDABLES (ST) | | | |
| TOLERANCIA APLICADA (TOLERANCE APPLIED) | 300 | 21 a 80 psig, tolerancia ± 4 psig 21 to 80 psig, tolerance ± 4 psig | | | | ALEACIONES BASE NIQUEL (NICKEL ALLOY) | | | |
| | | Arriba de 80 psig, tolerancia ± 6 psig Over 80 psig, tolerance ± 6 psig | | | TITANIO (TITANIUM ALLOY) | | | | |
| | | Ver Nota 1 / See Note 1 | | | ALUMINIO (ALUMINUM) | | | | |
| DURACION EN MIN (DURATION IN MIN) | 3 <th>TEMPERATURA PARA PRUEBA (TEST TEMPERATURE)</th> <td>C°</td> <th>TAMAÑO DEL LOTE (LOT SIZE)</th> <td>18</td> <th>PIEZAS ACEPTADAS (ACCEPTED PIECES)</th> <td>4</td> <th>PIEZAS RECHAZADAS (REJECTED PIECES)</th> <td>0</td> | TEMPERATURA PARA PRUEBA (TEST TEMPERATURE) | C° | TAMAÑO DEL LOTE (LOT SIZE) | 18 | PIEZAS ACEPTADAS (ACCEPTED PIECES) | 4 | PIEZAS RECHAZADAS (REJECTED PIECES) | 0 |
| OBSERVACIONES PARA PIEZAS RECHAZADAS / OBSERVATIONS FOR REJECTED PIECES | | | | | | | | | |
| N° SERIE (SERIAL NUMBER) | PRESIÓN DE PRUEBA INICIAL (INITIAL PRESSURE TEST) | PRESIÓN DE PRUEBA FINAL (FINAL PRESSURE TEST) | CÁIDA DE PRESIÓN EN PSIG (PRESSURE DROP IN PSIG) | RESULTADO (RESULT) | | | | | |
| | | | | | | | | | |
| OBSERVACIONES: (REMARKS) | | | OPERADOR DEL BANCO DE PRUEBAS (TESTING FACILITY OPERATOR) | | | FIRMA: (SIGNATURE) | | | |
| | | | Rogelio Acuña | | | RAA | | | |

NOTA 1: Tolerancia a menos que se especifique otra cosa en el traveler.
NOTE 1: Tolerance unless otherwise specified in the traveler.



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7.8. Pressure test report F3002 for 1/2" OD samples Union. 225642153

| ITA | | REPORTE DE RESULTADOS DE PRUEBA DE PRESIÓN PARA EL TALLER DE TUBERÍA | | | | | |
|--|---|--|--|--|--|---|-----------------------------------|
| TUBE FACILITY PRESSURE TEST RESULTS REPORT | | REPORT No (REPORT NO.) | FECHA DE LA PRUEBA (TEST DATE) | BANCO DE PRUEBAS Y FLUJO DE PRUEBA (TESTING FACILITY AND TEST FLUID) | | PROCEDIMIENTO APLICABLE (APPLICABLE PROCEDURE) | NOVA: <u>L</u> DE <u>L</u> (RECT) |
| 05 | | 05/09/13 | <input checked="" type="checkbox"/> HIDRÁULICA / HYDRAULIC <input type="checkbox"/> NEUMÁTICA / PNEUMATIC | 1201 | | | |
| NÚMERO DE PARTE (PART NUMBER) | REV (REV) | ORDEN DE COMPRA (PURCHASE ORDER) | ORDEN DE FABRICACIÓN (MANUFACTURING ORDER) | | CLIENTE / CUSTOMER | | |
| Sample 42.02 Roller Union | | | 225642153 | | A.2625 | | |
| CONDICIONES DE PRUEBA (TEST CONDITIONS) | | | | | | | |
| PRESIÓN DE PRUEBA (TEST PRESSURE) | 4000 | Hasta 30 psig, tolerancia +/- 3 psig Up to 30 psig, tolerance +/- 3 psig 21 a 60 psig, tolerancia +/- 4 psig 21 to 60 psig, tolerance +/- 4 psig Arriba de 60 psig, tolerancia +/- 5% Over 60 psig, tolerance +/- 5% Ver Nota 1 / See Note 1 | | | ACEROS INOXIDABLES (SS) <input type="checkbox"/> ALEACION BASE NIQUEL (nickel alloy) <input type="checkbox"/> TITANIO (Titanium alloy) <input checked="" type="checkbox"/> ALUMINIO (ALUMINUM) <input type="checkbox"/> | | |
| TOLERANCIA APLICADA (TOLERANCE APPLIED) | 300 | MATERIALES BASE (BASE METAL) | | | | | |
| DURACION EN MIN (DURATION IN MIN) | 3 | TEMPERATURA DEL AGUA (WATER TEMPERATURE) C° | TAMAÑO DEL LOTE (LOT SIZE) | PIEZAS ACEPTADAS (ACCEPTED PIECES) | PIEZAS RECHAZADAS (REJECTED PIECES) | NÚMERO DE PIEZAS RECHAZADAS (NUMBER OF REJECTED PIECES) NÚMERO DE PIEZAS ACEPTADAS (NUMBER OF ACCEPTED PIECES) | |
| | | 18 | 4 | 4 | 0 | | |
| OBSERVACIONES PARA PIEZAS RECHAZADAS / OBSERVATIONS FOR REJECTED PIECES | | | | | | | |
| N° SERIE (SERIAL NUMBER) | PRESIÓN DE PRUEBA INICIAL (INITIAL PRESSURE TEST) | PRESIÓN DE PRUEBA FINAL (FINAL PRESSURE TEST) | CAÍDA DE PRESIÓN EN PSIG (PRESSURE DROP IN PSIG) | RESULTADO (RESULT) | | | |
| | | | | | | | |
| OBSERVACIONES (REMARKS) | | OPERADOR DEL BANCO DE PRUEBAS (TESTING FACILITY OPERATOR) | | | FIRMA (SIGNATURE) | | |
| | | Rogelio Avila | | | RAA | | |
| NOTA 1: Tolerancia a menos que se especifique otra cosa en el traveler. NOTE 1: Tolerance unless otherwise specified in the traveler. | | | | | | | |



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Qualification Test Results

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7.9. Pressure test report F3002 for 5/8" OD samples sleeve. 225642074

| ITA | | REPORTE DE RESULTADOS DE PRUEBA DE PRESIÓN PARA EL TALLER DE TUBERÍA TUBE FACILITY PRESSURE TEST RESULTS REPORT | | | | |
|---|---|---|---|--|-------------------------------------|--|
| REPORTE No (REPORT No) | FECHA DE LA PRUEBA (TEST DATE) | BANCO DE PRUEBAS Y FLUJO DE PRUEBA (TESTING FACILITY AND TEST FLOW) | | PROCEDIMIENTO APLICABLE (APPLICABLE PROCEDURE) | HOJA / DE (PAGE / OF) | |
| 07 | 05/07/13 | <input type="checkbox"/> HIDRÁULICA / HYDRAULIC <input checked="" type="checkbox"/> NEUMÁTICA / PNEUMATIC | | 1201 | | |
| NÚMERO DE PARTE (PART NUMBER) | REV (REV) | ORDEN DE COMPRA (PURCHASE ORDER) | ORDEN DE FABRICACIÓN (MANUFACTURING ORDER) | CLIENTE / CLIENTE(S) | | |
| Sample 5/8" OD Roller Union | | | 225642074 | | | |
| CONDICIONES DE PRUEBA (TEST CONDITIONS) | | | | | | |
| PRESIÓN DE PRUEBA TEST PRESSURE | 1000 | Masa 30 psg, tolerancia ± 3 psg 15 a 22 psg, tolerancia ± 2 psg 21 a 80 psg, tolerancia ± 4 psg 25 a 80 psg, tolerancia ± 4 psg Arriba de 80 psg, tolerancia ± 6 psg Ver Nota 1 / See Note 1 | | ACEROS INOXIDABLES (SST) | | |
| TOLERANCIA APLICADA (TOLERANCE APPLIED) | 300 | MATERIALES BASE (PARENT METAL) | | FLEXIÓN BASE MODEL (CYCLE STAY) | | |
| DURACIÓN EN MIN (DURATION IN MIN) | 3 | TEMPERATURA DEL AGUA (WATER TEMPERATURE) C° | TAMAÑO DEL LOTE (LOT SIZE) | PIEZAS ACEPTADAS (ACCEPTED PIECES) | PIEZAS RECHAZADAS (REJECTED PIECES) | |
| | | 16 | 4 | 4 | 0 | |
| OBSERVACIONES PARA PIEZAS RECHAZADAS / OBSERVATIONS FOR REJECTED PIECES | | | | | | |
| N° SERIE (SERIAL NUMBER) | PRESIÓN DE PRUEBA INICIAL (INITIAL PRESSURE TEST) | PRESIÓN DE PRUEBA FINAL (FINAL PRESSURE TEST) | CADA DE PRESIÓN EN PSI (PRESSURE DROP IN PSI) | RESULTADO (RESULT) | | |
| | | | | | | |
| OBSERVACIONES: | | OPERADOR DEL BANCO DE PRUEBAS (TESTING FACILITY OPERATOR) | | FIRMA (SIGNATURE) | | |
| | | Rogelio Acuña | | | | |

NOTA 1: Tolerancia a menos que se especifique otra cosa en el trabajo.
 NOTE 1: Tolerance unless otherwise specified in the drawing.



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Qualification Test Results

QTR for ITAM Roller Swage tooling (Mandrel, Rollers and Cage)




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7.10. Pressure test report F3002 for 5/8" OD samples sleeve. 225642076

|  REPORTE DE RESULTADOS DE PRUEBA DE PRESIÓN PARA EL TALLER DE TUBERÍA TUBE FACILITY PRESSURE TEST RESULTS REPORT | | | | | | | |
|--|---|--|--|---|---|------------------------------------|---|
| REPORTE N° (REPORT NO.) | FECHA DE LA PRUEBA (TEST DATE) | BANCO DE PRUEBAS Y FLUIDO DE PRUEBA (TESTING FACILITY AND FLUID USED) | | PROCEDIMIENTO APLICABLE (APPLICABLE PROCEDURE) | HOJA: / (PAGE: /) | | |
| 09 | 09/07/15 | HIDRÁULICA / HYDRAULIC | ✓ | NEUMÁTICA / PNEUMATIC | 1 | 301 | |
| NÚMERO DE PARTE (PART NUMBER) | R.S.V (REV.) | ORDEN DE COMPRA (PURCHASE ORDER) | ORDEN DE FABRICACIÓN (MANUFACTURING ORDER) | CLIENTE / CUSTOMER | | | |
| Sample 34402 Roller Sleeve | | | 225642076 | | | | |
| CONDICIONES DE PRUEBA (TEST CONDITIONS) | | | | | | | |
| PRESIÓN DE PRUEBA (TEST PRESSURE) | 6000 | Hasta 20 psig, tolerancia ± 2 psig 10 a 20 psig, tolerancia ± 2 psig 21 a 50 psig, tolerancia ± 4 psig 51 a 80 psig, tolerancia ± 4 psig Arriba de 80 psig, tolerancia ± 8 psig Ver Nota 1 / See Note 1 | | MATERIALES BASE (BASE METAL) | AGRIETOS NOTICABLES (NOTICE) FLECCION BARRA MOVIL (FLEXIBLE BARR) ✓ TUBO (SHIM/SLIP) ✓ NÚMERO (NUMBER) | | |
| TOLERANCIA APLICADA (TOLERANCE APPLIED) | 300 | | | | | | |
| DURACION EN MIN (DURATION IN MIN) | 3 | TEMPERATURA DEL AGUA (WATER TEMPERATURE) | C° | TAMAÑO DEL LOTE (LOT SIZE) | 18 | PIEZAS ACEPTADAS (ACCEPTED PIECES) | 4 |
| | | PIEZAS RECHAZADAS (REJECTED PIECES) | 0 | <small>Ver Nota 1 / See Note 1</small> OBSERVACIONES PARA PIEZAS RECHAZADAS / OBSERVATIONS FOR REJECTED PIECES | | | |
| N° SERIE (SERIAL NUMBER) | PRESIÓN DE PRUEBA INICIAL (INITIAL PRESSURE TEST) | PRESIÓN DE PRUEBA FINAL (FINAL PRESSURE TEST) | CAIDA DE PRESIÓN EN PSIG (PRESSURE DROP IN PSIG) | RESULTADO (RESULT) | | | |
| | | | |  | | | |
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| | | | | | | | |
| OBSERVACIONES: (REMARKS) | | OPERADOR DEL BANCO DE PRUEBAS (TESTING FACILITY OPERATOR) | | FIRMA: (SIGNATURE) | | | |
| | | Regelio Huñu | |  RAA | | | |
| <small>NOTA 1: Tolerancia o menos que se especifique otra cosa en el traveler. NOTE 1: Tolerance unless otherwise specified in the traveler.</small> | | | | | | | |



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7.11. Summary of test

All samples were proof pressure tested at 6000 psi and no leakage was found. Total was 24 pieces for sleeve configuration and 16 pieces for union configuration.

8. Metallographic results

Internal Metallurgical laboratory is selected to perform metallographic cuts to all samples configuration in order to prove a full flounce of material into the grooves of fitting as a Quality assurance of 80-T-34-0108 requires.

ITP
the power of talent

LABORATORIO METALURGICO
Metalurgical Laboratory

Report No. LM PE-0045-13
Report No. Report No.
Date Julio 18, 2013
Date Date
Page Page
Page Page

CLIENTS
Customer

ITAM

ORDEN DE SERVICIO
Job Order

NA

ORDEN DE TRABAJO
Work Order

BQA 52038

DESCRIPCIÓN DE PRUEBA REALIZADA
Description of the Test

Inspección de sección transversal de tubos "sleeve" con diferentes diámetros.
Procesados con Roller swage 80-T-34-0108.
Cross section inspection on "sleeve" tubes with different diameters
Processed with Roller swage 80-T-34-0108

Procedimiento Interno
Internal Procedure

1113

ESPECIFICACIÓN
Specification

Ref. 80-T-34-0108

RESULTADOS DE LA PRUEBA
Results of the Test

Ver figuras anexas
See figures attached

OBSERVACIONES
Remarks

Muestras atacadas con solución de Tucker
Samples etched with Tucker's solution

Realizado por:
Q.M. Alejandra Hernández

F 2113 R 10 (Rev. 20/2012)



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Metallurgical Laboratory

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Fecha 26 de Julio 2015
Página 2 de 9

Sleeve Tubes



SAMPLE 1M OD X 0.032 WT ROLLER SWAGE SL



SAMPLE 2M OD X 0.032 WT ROLLER SWAGE SL



SAMPLE 12Z LU X 0.032 WT ROLLER SWAGE SL



SAMPLE 2N OD X 0.032 WT ROLLER SWAGE SL

Prepared por
Analisis de

Alfredo Hernandez



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Qualification Test Results

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Metallurgical Laboratory

Reporte No. LM P8-0045-83
Fecha 26 de 10.2015

Sleeve Tubes



SAMPLE 24 OD X 0.833 WT ROLLER SWAGE SL



SAMPLE 1 OD X 0.833 WT ROLLER SWAGE SL

Prepared por
Analized by

Analized por



QTR I 295-T

Qualification Test Results

QTR for ITAM Roller Swage tooling (Mandrel, Rollers and Cage)

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LABORATORIO METALURGICO
Metallurgical Laboratory

Reporte No.: LM PE-0046-13
Report No.:
Fecha: Julio 18, 2015
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CLIENTE:
Customer

ITAM

ORDEN DE SERVICIO:
Job Order

NA

ORDEN DE TRABAJO:
Work Order

SIGA 52938

DESCRIPCIÓN DE PRUEBA REALIZADA

Description of the Test

Inspección de sección transversal sobre de tubos "union" con diferentes diámetros.
Procesados con Roller Swage s/80-T-34-0108.
Cross section inspection on "union" tubes with different diameters.
Processed with Roller Swage s/80-T-34-0108

Procedimiento Interno
Internal Procedure

1113

ESPECIFICACIÓN:
Specification

Ref. 80-T-34-0108

RESULTADOS DE LA PRUEBA
Results of the Test

Ver figuras anexas

See figures attached

OBSERVACIONES
Remarks

Samples etched with Tucker's solution

Realizado por:

Realizado por:

Q.M. Alejandro Hernández



QTR I 295-T

Qualification Test Results

QTR for ITAM Roller Swage tooling (Mandrel, Rollers and Cage)

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LABORATORIO METALURGICO
Metallurgical Laboratory

Reporte No.: LM PE-0040-13
Aspeto del Foto: JUN 18, 2013
Páginas: 2 de 2

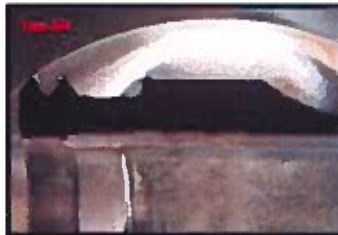
Tubos Union



SAMPLE 3/8 OD X 0.032 WT ROLLER SWAGE UN



SAMPLE 5/8 OD X 0.032 WT ROLLER SWAGE UN



SAMPLE 3/4 OD X 0.032 WT ROLLER SWAGE UN

Realizado por
Analizado by

Alejandro Fernandez



QTR I 295-T

Qualification Test Results

QTR for ITAM Roller Swage tooling (Mandrel, Rollers and Cage)

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27-07-2015
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9. Samples Traceability for Aeroft

9.1. SAMPLE 1/4" OD X 0.016 WT ROLLER SWAGE (225670129 WORK ORDER)

Fecha: 06.07.2015 20:00:00 1/1477
 Empresa de Producción: 1382
 MAMA DE AN COMPARTAMENTO DE LA ORDEN
 Pagina 4 de 4
 Completa: 714
 Q.Ord. S.A.P. Orden País: 225670129
 Rep. Fabric: 100 Puntos
 2 Días de Ret: 1
 Orden Fabricación: 076129
 Material: 10080000000000000000
 Cantidad Pedido: 6

| Linea | Material | Descripción | Cant. Orden | Cant. Pedido |
|-------|----------------------|---------------------------------|-------------|--------------|
| 1 | 10080000000000000000 | 1/4" OD X 0.016 WT ROLLER SWAGE | 6 | 6 |

Nota: 1500253

Observaciones: Fecha: 06.07.2015 Puntos: 171799

OP: 0000070129-4134

Nota de Ruta (Impresión) PÁG. 1 de 3
 ORDEN DE FABRICACIÓN
 225670129

| Linea | Material | Descripción | Cant. Orden | Cant. Pedido |
|-------|----------------------|---------------------------------|-------------|--------------|
| 001 | 10080000000000000000 | 1/4" OD X 0.016 WT ROLLER SWAGE | 6 | 6 |
| 002 | 10080000000000000000 | 1/4" OD X 0.016 WT ROLLER SWAGE | 6 | 6 |
| 003 | 10080000000000000000 | 1/4" OD X 0.016 WT ROLLER SWAGE | 6 | 6 |

Handwritten notes: 07, 15, 10/15, 1097, 15, 150024

Nota de Ruta (Impresión) PÁG. 2 de 3
 ORDEN DE FABRICACIÓN
 225670129

| Linea | Material | Descripción | Cant. Orden | Cant. Pedido |
|-------|----------------------|---------------------------------|-------------|--------------|
| 001 | 10080000000000000000 | 1/4" OD X 0.016 WT ROLLER SWAGE | 6 | 6 |
| 002 | 10080000000000000000 | 1/4" OD X 0.016 WT ROLLER SWAGE | 6 | 6 |
| 003 | 10080000000000000000 | 1/4" OD X 0.016 WT ROLLER SWAGE | 6 | 6 |

Handwritten notes: 20, 15, 150024, 10917

Nota de Ruta (Impresión) PÁG. 3 de 3
 ORDEN DE FABRICACIÓN
 225670129

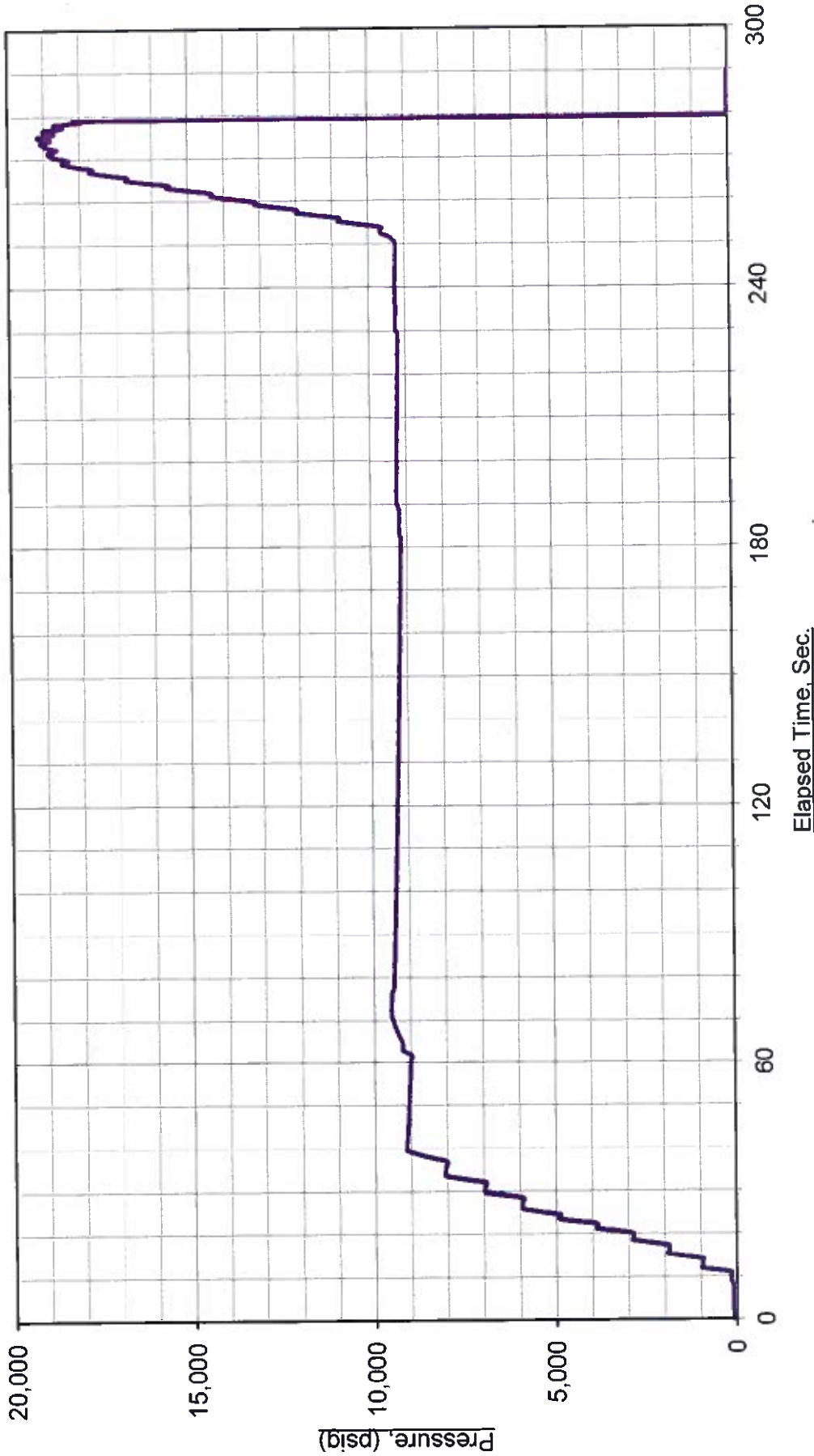
| Linea | Material | Descripción | Cant. Orden | Cant. Pedido |
|-------|----------------------|---------------------------------|-------------|--------------|
| 001 | 10080000000000000000 | 1/4" OD X 0.016 WT ROLLER SWAGE | 6 | 6 |
| 002 | 10080000000000000000 | 1/4" OD X 0.016 WT ROLLER SWAGE | 6 | 6 |
| 003 | 10080000000000000000 | 1/4" OD X 0.016 WT ROLLER SWAGE | 6 | 6 |

Handwritten notes: 150024, 10917



Test No: 2984
Test Date: 7/17/2015

Burst Pressure Test

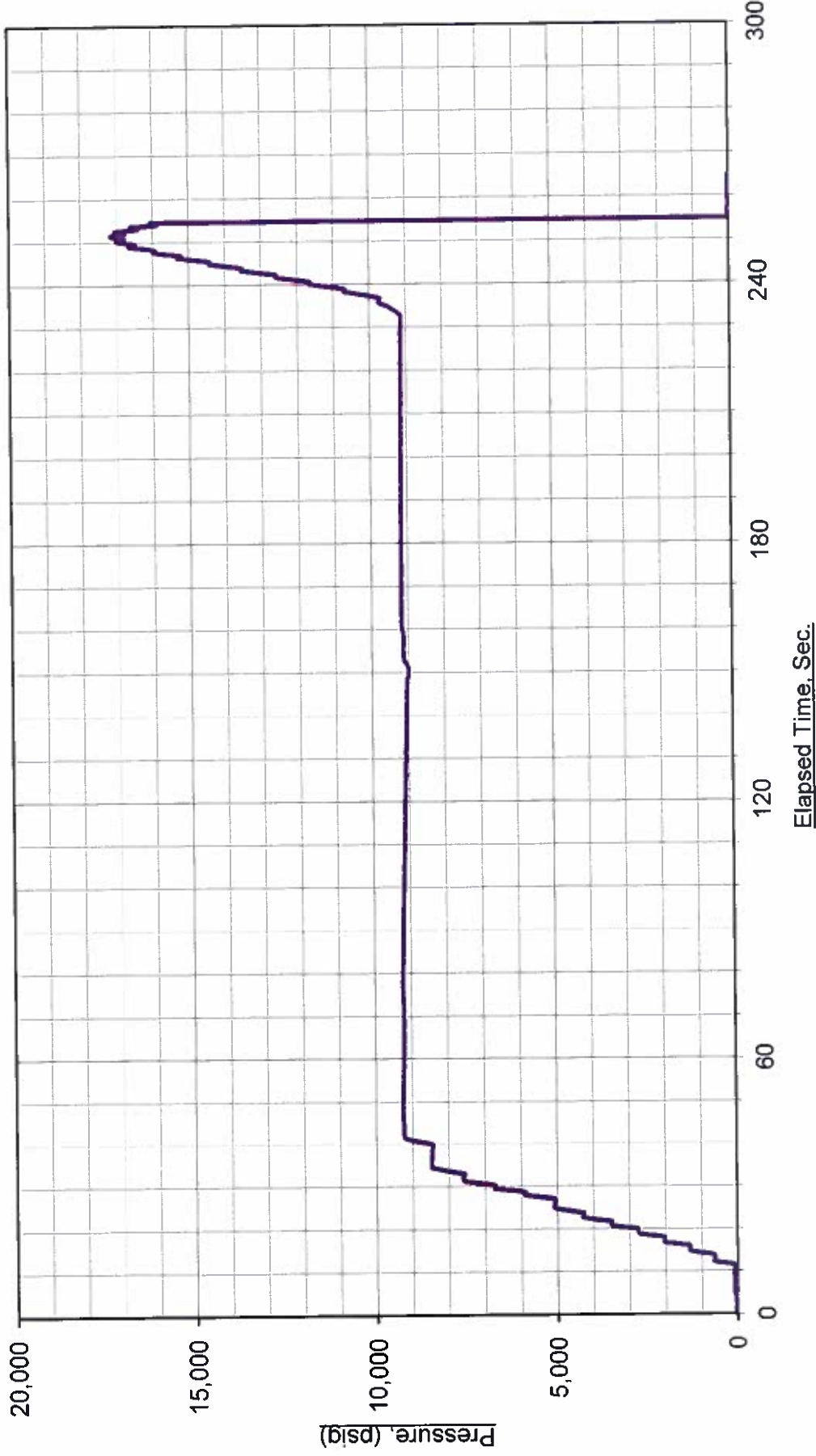


| | |
|--------------------------|---------------|
| <u>Customer Info</u> | |
| Test Specimen No(s): | 2984-01-16B |
| Customer Name: | ITA Mexico |
| Customer PO No: | 3000038416 |
| Specification: | ISO 7169 |
| <u>Test Requirements</u> | |
| Test Pressure (psi): | 9,000 |
| Test Duration: | 3 Minutes |
| Test Temperature: | Ambient |
| Test Media: | MIL-PRF-83282 |
| <u>Actual Data</u> | |
| Max. Pressure (psi): | 19,161 |
| Test Duration: | 290 Seconds |
| Temperature: | 25°C |



Test No: 2984
Test Date: 7/18/2015

Burst Pressure Test

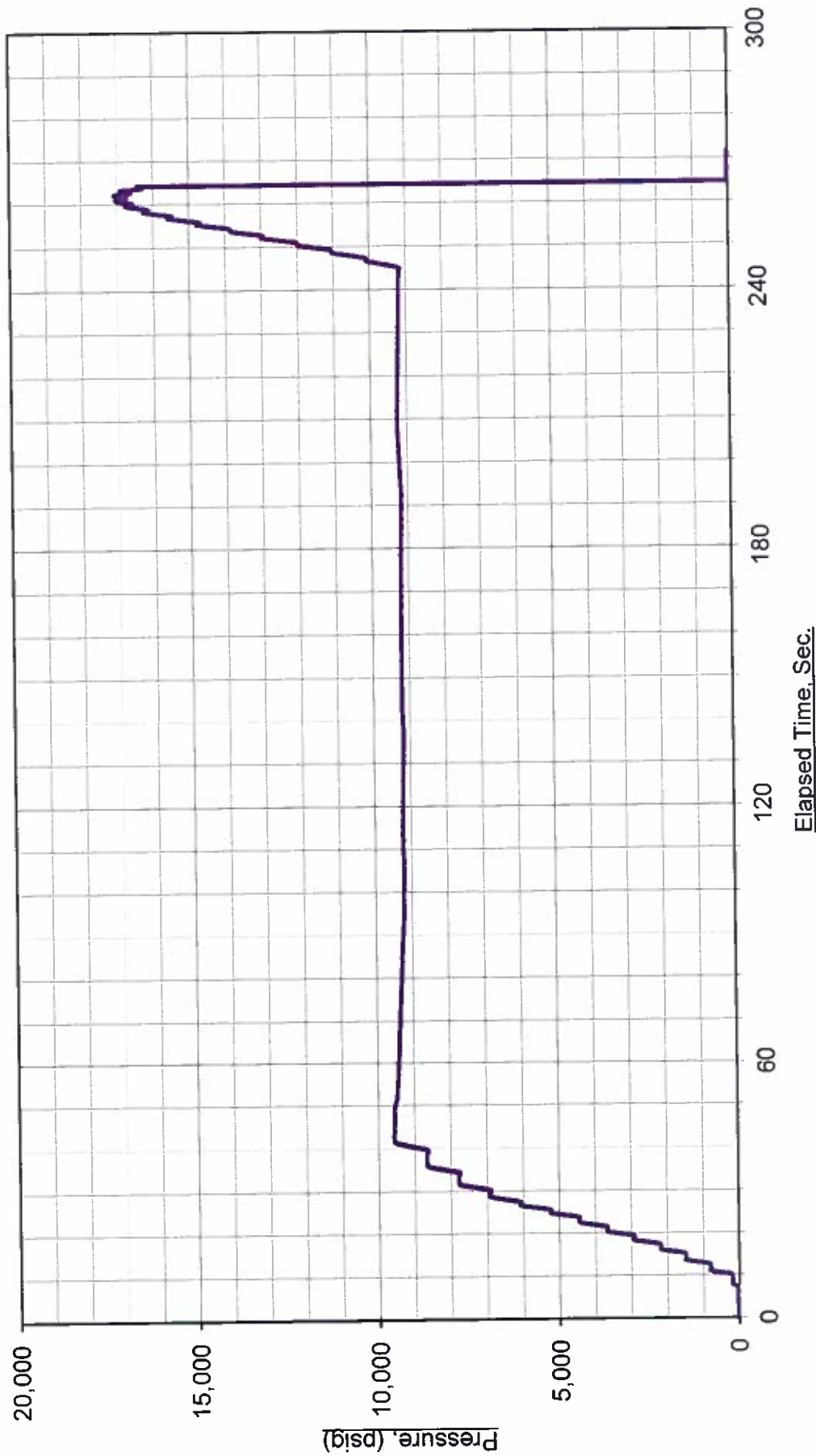


| | |
|----------------------------------|-----------------------------|
| Customer Info | Actual Data |
| Test Specimen No(s): 2984-01-16C | Max. Pressure (psi): 17,154 |
| Customer Name: ITA Mexico | Test Duration: 265 Seconds |
| Customer PO No: 3000038416 | Test Temperature: +95°C |
| Specification: ISO 7169 | |
| Test Requirements | |
| Test Pressure (psi): 9,000 | |
| Test Duration: 3 Minutes | |
| Test Temperature: +95°C | |
| Test Media: MIL-PRF-83282 | |



Test No: 2984
Test Date: 7/18/2015

Burst Pressure Test



Actual Data
Max. Pressure (psi): **17,059**
Test Duration: 272 Seconds
Temperature: +95°C

Test Requirements
Test Pressure (psi): 9,000
Test Duration: 3 Minutes
Test Temperature: +95°C
Test Media: MIL-PRF-83282

Customer Info
Test Specimen No(s): 2984-01-16D
Customer Name: ITA Mexico
Customer PO No: 3000038416
Specification: ISO 7169



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Fecha: 07.01.2015 22:47:50
W02 Estímulo Cuéntanos

Operario: 71443 0701-15 ITA CRM

Programa: CB01313 AIRBUS TUBES
Orden: 225670130 Tipo de necesidad: Orden de fabricación
OT: 0000188635
008084324 Of superior
Part number: Programa: CB01313
Mat. Of superior: Descripción: BH. NAMEPLATE
Destinatario: 0600812 INDUSTRIA DE TUBERIAS AERONAUTICAS DE MEXICO, S.A. DE C.V.

- Completar Etiqueta Pasang sobre Linea Lata Pasang (P. Lata completa)
- Subir M. Lata completa en ubicación indicada en la Lista de Pasang
- Completar PM de Etiqueta Pasang como Etiqueta o Marca de la Placa
- SOLD B. CONSIDEN M. Lata completa y PM. Pagar Etiqueta Pasang y sep
- Margar la Linea Lata Pasang como hecho

| Pos | Codigos | Descripción | Lata | Peso | Of. adic. lote | T.alm. | Libra. pes. | Part Number | C. est. | Of. est. |
|-------------------------------|----------|---|---------|------|----------------|--------|-------------|-------------|---------|----------|
| 1 | 13014722 | MS21821-4T. NUT / AS21821-4T. NUT | 1958850 | | | MOT | 1-002 | TFC0284 | 12 | 201 |
| CR: Lata no fabricada en ZAMU | | | | | | | | | | |
| 2 | 13014686 | ASHA3789VAD4 SLEEVE - SWAGE TYPE | 1988370 | | | MOT | 7-406 | TFC0247 | 12 | 211 |
| CR: Lata no fabricada en ZAMU | | | | | | | | | | |
| 3 | 11011753 | TUBE ARB5004 AS400J15001 1.500000 4.1mm | 2328807 | | | MOT | RACK | TT00008 | 1.308 | 214 |
| CR: Lata no fabricada en ZAMU | | | | | | | | | | |

9.2. SAMPLE 3/8" OD X 0.019 WT ROLLER SWAGE (225670130 WORK ORDER)

Fecha: 06.01.2015 09:05:19 171477
Compañía de Estandarización: ITA

FORMA DE ACOMPAÑAMIENTO DE LA TUBERÍA
Página: 1 de 1

Orden: 225670130
Tipo de necesidad: Orden de fabricación
OT: 0000188635
008084324 Of superior

Part number: Programa: CB01313
Mat. Of superior: Descripción: BH. NAMEPLATE
Destinatario: 0600812 INDUSTRIA DE TUBERIAS AERONAUTICAS DE MEXICO, S.A. DE C.V.

| Cond. Lata | Cond. Of. | Cond. Descripción |
|------------|-----------|-------------------|
| | | |

DOF: 02/04/2015
Fecha: 06.01.2015
Forma: 171477

ITIA

ORDEN DE FABRICACIÓN

06/01/2015
06/01/2015

| Item | Descripción | Cond. | Of. | Descripción | Pres. | Tip. | Pres. | Pres. | Pres. |
|------|--|-------|-----|-------------|-------|------|-------|-------|-------|
| 01 | ETIQUETA PASANG SOBRE LINEA LATA PASANG (P. LATA COMPLETA) | | | | | | | | |
| 02 | ETIQUETA PASANG COMO ETIQUETA O MARCA DE LA PLACA | | | | | | | | |
| 03 | PAGAR ETIQUETA PASANG Y SEPARAR | | | | | | | | |
| 04 | MARGAR LA LINEA LATA PASANG COMO HECHO | | | | | | | | |

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7015
LATA

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ETI
008
6 0 6

02
01
15
7017
HAM
6 0 6

15/02/15



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Qualification Test Results

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9.3. SAMPLE 1/2" OD X 0.026 WT ROLLER SWAGE (225670131 WORK ORDER)

Form with ITA logo and header information including 'FORMA DE ACOMPAÑAMIENTO DE LA ORDEN' and 'Página: 7 de 7'. It contains a barcode and various fields for order details.

Form titled 'ORDEN DE FABRICACION' with ITA logo. It includes a barcode and a table with columns for 'Materia', 'Cantidad', 'Unidad', 'Observaciones', 'Fecha', 'Hora', 'Estado', 'Materia', 'Cantidad', 'Unidad', 'Observaciones', 'Fecha', 'Hora', 'Estado'. The table contains three rows of data with handwritten notes and dates.

Form titled 'ORDEN DE FABRICACION' with ITA logo. It includes a barcode and a table with columns for 'Materia', 'Cantidad', 'Unidad', 'Observaciones', 'Fecha', 'Hora', 'Estado', 'Materia', 'Cantidad', 'Unidad', 'Observaciones', 'Fecha', 'Hora', 'Estado'. The table contains three rows of data with handwritten notes and dates.

Form titled 'ORDEN DE FABRICACION' with ITA logo. It includes a barcode and a table with columns for 'Materia', 'Cantidad', 'Unidad', 'Observaciones', 'Fecha', 'Hora', 'Estado', 'Materia', 'Cantidad', 'Unidad', 'Observaciones', 'Fecha', 'Hora', 'Estado'. The table contains three rows of data with handwritten notes and dates.



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Date:
27-07-2015

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Fecha: 27.07.2015 Hora: 10:30 UTMASZ
Comprobante de Expediente: C1302

NOTA ENTREGA DE MATERIALES (Requisitorio)

Orden de Compra: P116

Atención: PDI
Temp. Fabric: TUBOS
Almacén: 18471 000
Módulo: Zonas NR
Labor. N° Plano: 0

Orden de Compra: 23470121
Cantidad Pedido: 0

| Art | An. Stock | Artículo | PA | 1 a | 10 | See otro | Paq. For. | Observaciones |
|-----------|-----------|---------------------------------|----|-----|----|----------|-----------|---------------|
| 225670132 | | 5/8" OD X 0.032 WT ROLLER SWAGE | | | | | | |

9.4. SAMPLE 5/8" OD X 0.032 WT ROLLER SWAGE (225670132 WORK ORDER)

Fecha: 27.07.2015 Hora: 10:30 UTMASZ
Comprobante de Expediente: C1302

NOTA DE ACOMPAÑAMIENTO DE LA ORDEN (Requisitorio)

Orden de Compra: P116

Atención: PDI
Temp. Fabric: TUBOS
Almacén: 18471 000
Módulo: Zonas NR
Labor. N° Plano: 0

Orden Fabricación: 23470121
Cantidad Pedido: 0

| Art | An. Stock | Artículo | PA | 1 a | 10 | See otro | Paq. For. | Observaciones |
|-----------|-----------|---------------------------------|----|-----|----|----------|-----------|---------------|
| 225670132 | | 5/8" OD X 0.032 WT ROLLER SWAGE | | | | | | |

Observaciones: Fecha: 27.07.2015 Hora: 10:30

Fecha: 27.07.2015 Hora: 10:30 UTMASZ
Comprobante de Expediente: C1302

NOTA DE ENTREGA DE MATERIALES (Requisitorio)

Orden de Compra: P116

Atención: PDI
Temp. Fabric: TUBOS
Almacén: 18471 000
Módulo: Zonas NR
Labor. N° Plano: 0

Orden de Compra: 23470121
Cantidad Pedido: 0

| Art | An. Stock | Artículo | PA | 1 a | 10 | See otro | Paq. For. | Observaciones |
|-----------|-----------|---------------------------------|----|-----|----|----------|-----------|---------------|
| 225670132 | | 5/8" OD X 0.032 WT ROLLER SWAGE | | | | | | |

Observaciones: Fecha: 27.07.2015 Hora: 10:30



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| MESA DE BATA (Original) | | ORDEN DE FABRICACION | |
|-------------------------|--|----------------------|----|
| Mesa de Bata | | Orden de Fabricacion | |
| Mesa de Bata | | Orden de Fabricacion | |
| 1 | 4.148 MONTAJE PUNTA DE AVANCE Y AVANCE | 15 | 03 |
| 2 | 4.148 BILLAGA PUNTA DE AVANCE Y AVANCE | 15 | 03 |
| 3 | 4.148 BILLAGA PUNTA DE AVANCE Y AVANCE | 15 | 03 |

| MESA DE BATA (Original) | | ORDEN DE FABRICACION | |
|-------------------------|--|----------------------|----|
| Mesa de Bata | | Orden de Fabricacion | |
| Mesa de Bata | | Orden de Fabricacion | |
| 1 | 4.148 MONTAJE PUNTA DE AVANCE Y AVANCE | 15 | 03 |
| 2 | 4.148 BILLAGA PUNTA DE AVANCE Y AVANCE | 15 | 03 |
| 3 | 4.148 BILLAGA PUNTA DE AVANCE Y AVANCE | 15 | 03 |

Fecha: 26.01.2015 15:33:54
W02 Extomas Querétaro

Programa: 0001312 AIRBUS TUBES
Orden: 226479123 Tipo de necesidad: Orden de fabricación
OTI: 0000182829
Part number: Programa: 0001312
Mat. CP superior Descripción: BK: NAMEPLATE
Destinatario: 0000013 INDUSTRIA DE TUBERIAS AERONAUTICAS DE MEXICO, S.A. DE C.V.

Control Equeto Plating contra Linea Lata Plating (P Lata completa)
Buser N° Lata completa en situación indicada en la Lista de Plating
Controlador PDI de Equeto Plating contra Equeto o Mandrel de la Plating
SOLO SI: 00000000 N° Lata completa y PDI. Pagar Equeto Plating y equ
Mandar la Linea Lata Plating como Inspe.

| Pos | Código | Descripción | Lata | P. partes | CP superior | T. Lata | Lata. area | Part Number | C. mil | C. mil |
|-------------------------------|----------|--|---------|-----------|-------------|---------|------------|-------------|--------|--------|
| 1 | 13014607 | ABNA3780VA10 SLEEVE - SWAGE TYPE | 1983782 | | | MDT | 9-P02 | TF00280 | 0 | 1.00 |
| CP: Lata no fabricada en ZAMU | | | | | | | | | | |
| 2 | 13014738 | MS21821-10J NUT / AS1821-10J NUT | 1948614 | | | MDT | 9-C05 | TF00280 | 0 | 62 |
| CP: Lata no fabricada en ZAMU | | | | | | | | | | |
| 3 | 13014702 | ABNA3780VA10 COUPLING STRAIGHT FOR SWAGE | 1983044 | | | MDT | 9-P02 | TF00280 | 0 | 0 |
| CP: Lata no fabricada en ZAMU | | | | | | | | | | |
| 4 | 13014702 | ABNA3780VA10 COUPLING STRAIGHT FOR SWAGE | 1983040 | | | MDT | 9-P02 | TF00280 | 4 | 20 |
| CP: Lata no fabricada en ZAMU | | | | | | | | | | |
| 5 | 11011708 | TUBE AB48004 AMPNOS 18x03.832x008.3 Lmm | 3029117 | | | MDT | RACK | TF00000 | 1.200 | 86.01 |
| CP: Lata no fabricada en ZAMU | | | | | | | | | | |



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225670134
Operario: JMS DT-1-15
ITAM
CMM

Fecha: 07.01.2015 22:48:11
W02 Estación Operarios

Programa: C001313 AIRGUN TUBES
Orden: 225670134 Tipo de necesidad: Orden de fabricación
OT: 000010027
000043294 Of superior
Part number: Programa C001313
Mat. Of superior: Descripción: SN NAMEPLATE
Destinatario: 0000013 INDUSTRIA DE TUBERIAS AERONAUTICAS DE MEXICO, S.A. DE C.V.

| Pos | Código | Descripción | Lot | D. partes | Of. superior | T. adm. | Unid. adm. | Part. Number | Q. adm. | Q. req. |
|--------------------------------|----------|--|---------|-----------|--------------|---------|------------|--------------|---------|---------|
| 3 | 13014000 | ABNASTIPWA12 SLEEVE - SWAGE TYPE | 1940042 | | | MD7 | 3-201 | TPC0001 | 1 | 10 |
| Cil. Lata de fabricada en ZAM. | | | | | | | | | | |
| 1 | 13014000 | ABNASTIPWA12 SLEEVE - SWAGE TYPE | 1988071 | | | MD7 | 3-200 | TPC0001 | 2 | 0 |
| Cil. Lata de fabricada en ZAM. | | | | | | | | | | |
| 3 | 13014700 | ABNASTIPWA12 OJAL, PUNTA DE TUBO DE TUBO | 1915227 | | | MD7 | 3-204 | TPC0007 | 0 | 10 |
| Cil. Lata de fabricada en ZAM. | | | | | | | | | | |
| 3 | 13014000 | ABNASTIPWA12 SLEEVE - SWAGE TYPE | 1907300 | | | MD7 | 4-200 | TPC0001 | 2 | 0 |
| Cil. Lata de fabricada en ZAM. | | | | | | | | | | |
| 4 | 13014700 | MEL 100-132 HUI / ACD 100-132 HUI | 1987327 | | | MD7 | 7-400 | TPC0000 | 0 | 50 |
| Cil. Lata de fabricada en ZAM. | | | | | | | | | | |
| 5 | 11011700 | TUBO AB0004 AM002100-1 TPC0000 0000 | 5401100 | | | MD7 | 7-400 | TPC0010 | 1.200 | 100.00 |
| Cil. Lata de fabricada en ZAM. | | | | | | | | | | |

9.6. SAMPLE 1" OD X 0.032 WT ROLLER SWAGE (225670134 WORK ORDER)

Fecha: 06.01.2015 15:12:17
Sistema de Tránsito: C100

ORDEN DE ACOMPAÑAMIENTO DE LA ORDEN
Página 1 de 1

Artículo: TUBOS
Resp. Fabric: P00
Almacén: M000

Código de Orden: 225670134
Código de Material: 11011700
Cantidad Pedido: 6

| Cat. Lata | Lot | Cantidad | Observaciones |
|-----------|-----|----------|---------------|
| | | | |

SAMPLE 1" OD X 0.032 WT ROLLER SWAGE

Observaciones: Tubos TPC0000

Fecha: 06.01.2015
Por: 171477

ORDEN DE RUTA (Interno) PÁG. 1 de 2
ORDEN DE FABRICACIÓN

ARTÍCULO: TUBOS
Resp. Fabric: P00
Almacén: M000

Código de Orden: 225670134

| FECHA | FECHA DE ENTRADA | FECHA DE SALIDA | OPERARIO | FECHA DE ENTRADA | FECHA DE SALIDA | OPERARIO | FECHA DE ENTRADA | FECHA DE SALIDA | OPERARIO |
|----------|------------------|-----------------|----------|------------------|-----------------|----------|------------------|-----------------|----------|
| 07-01-15 | | | JMS | | | JMS | | | JMS |
| 07-15-15 | | | JMS | | | JMS | | | JMS |
| 07-15-15 | | | JMS | | | JMS | | | JMS |



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| FAMILIA DE QUILIBRADO | | UBICACION | | FECHA | | CANT. QUILIBRADO | | CANT. | |
|-----------------------|-------|-----------|-------|-------|-------|------------------|-------|-------|-------|
| 1 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 2 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 3 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

| FAMILIA DE QUILIBRADO | | UBICACION | | FECHA | | CANT. QUILIBRADO | | CANT. | |
|-----------------------|-------|-----------|-------|-------|-------|------------------|-------|-------|-------|
| 1 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 2 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 3 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Fecha: 07/01/2015 22:44:30
W03 Entrenamiento Quilibrado

Programa: 0001510 AIRBUS TUBES
Orden: 225470154 Tipo de necesidad: Orden de fabricación
OT: 0000189628
0000643298 OF superior
Part number: Programar: 0001510
Mat. Of superior: Desaplatan EN: NAMEPLATE
Desarrollado: 0000012 INDUSTRIA DE TUBERIAS AERONAUTICAS DE MEXICO, S.A. DE C.V.

- Completar Etiqueta Pickling contra Línea Lote Pickling (P) Lote completo
- Buscar 'P' Lote completo en ubicación indicada en la Lista de Pickling
- Completar Pick en Zepique Pickling contra Etiqueta a Mándel de la Pizarra
- SOLO SI CONVIERNE 'P' Lote completo y PIR Pagar Etiqueta Pickling y dep
- Mandar la Línea Lote Pickling contra fecha

| Part Number | Descripción | Lote | Partido | OF superior | Tam. | Lote gen. | Part Number | Cant. | Uso |
|-------------|-------------------------------|---------|---------|-------------|------|-----------|---------------|-------|-----|
| 13013418 | ARMAS TUBERIA B-BEVE | 1999008 | | | MDT | 2-1-02 | ARMAS TUBERIA | 8 | 30 |
| 13013418 | ARMAS TUBERIA B-BEVE | 1999171 | | | MDT | 6-034 | ARMAS TUBERIA | 4 | 30 |
| 13014706 | M321921-16J NUT / AS21921-16J | 1967316 | | | MDT | 7-A27 | TY00260 | 7 | 30 |
| 13014706 | M321921-16J NUT / AS21921-16J | 1967300 | | | MDT | 1-008 | TY00260 | 10 | 30 |
| 11011754 | TUBO ABS6004 ARAB6318001 | 3420400 | | | MDT | RA04 | TY000911 | 1300 | 173 |



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10.2. Dimensional Report F3025 for 3/8" OD samples. 225670130
Difference between diameters 0,25 mm-min, 0,43 mm-max. Sleeve and union

| ITA | | INSPECCIÓN DIMENSIONAL DIMENSIONAL INSPECTION | | | | INSTRUCCIONES DE USO: Este formulario es propiedad de ITA y debe ser usado solo para fines de inspección y control de calidad. No debe ser usado para otros fines. | | FECHA: 21/01/2015 | | HORA: 11 | |
|------------|---------|--|------|---------------------|---------------|--|-------|-------------------|-------|----------|-------|
| PROYECTO | CLIENTE | REFERENCIA | ITEM | DESCRIPCIÓN | UNIDAD | VALOR | VALOR | VALOR | VALOR | VALOR | VALOR |
| | | | | 870130 | ROLLER BRIDGE | | | | | | 6 |
| UNION I | | DIAMETRO DE 0,25 mm | | DIAMETRO DE 0,43 mm | | VALOR | | VALOR | | VALOR | |
| Mandrel I | | DIAMETRO DE 0,25 mm | | DIAMETRO DE 0,43 mm | | VALOR | | VALOR | | VALOR | |
| Mandrel II | | DIAMETRO DE 0,25 mm | | DIAMETRO DE 0,43 mm | | VALOR | | VALOR | | VALOR | |
| Sleeve | | DIAMETRO DE 0,25 mm | | DIAMETRO DE 0,43 mm | | VALOR | | VALOR | | VALOR | |
| Union | | DIAMETRO DE 0,25 mm | | DIAMETRO DE 0,43 mm | | VALOR | | VALOR | | VALOR | |
| Mandrel | | DIAMETRO DE 0,25 mm | | DIAMETRO DE 0,43 mm | | VALOR | | VALOR | | VALOR | |
| Roller | | DIAMETRO DE 0,25 mm | | DIAMETRO DE 0,43 mm | | VALOR | | VALOR | | VALOR | |
| Cage | | DIAMETRO DE 0,25 mm | | DIAMETRO DE 0,43 mm | | VALOR | | VALOR | | VALOR | |



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10.7. Summary of dimensional ID

| Summary of dimensional ID | | | | | | |
|---------------------------|--------------|-------------------|-------------------|--------|--------|-------|
| OF | Size | Sleeve tolerance | Union tolerance | Sample | Sleeve | Union |
| 225670129 | 04 (1/4" OD) | 0,18 mm - 0,35 mm | | 1 | 0,29 | 0,27 |
| | | | | 2 | 0,27 | 0,30 |
| | | | | 3 | 0,27 | 0,29 |
| | | | | 4 | 0,33 | 0,30 |
| | | | | 5 | 0,33 | 0,31 |
| | | | | 6 | 0,30 | 0,29 |
| 225670130 | 06 (3/8" OD) | 0,25 mm - 0,43 mm | 0,25 mm - 0,43 mm | 1 | 0,29 | 0,31 |
| | | | | 2 | 0,29 | 0,29 |
| | | | | 3 | 0,34 | 0,33 |
| | | | | 4 | 0,30 | 0,34 |
| | | | | 5 | 0,32 | 0,31 |
| | | | | 6 | 0,30 | 0,31 |
| 225670131 | 08 (1/2" OD) | 0,24 mm - 0,43 mm | 0,26mm - 0,49 mm | 1 | 0,43 | 0,46 |
| | | | | 2 | 0,39 | 0,47 |
| | | | | 3 | 0,42 | 0,48 |
| | | | | 4 | 0,40 | 0,42 |
| | | | | 5 | 0,43 | 0,46 |
| | | | | 6 | 0,42 | 0,49 |
| 225670132 | 10 (5/8" OD) | 0,37 mm - 0,67 mm | 0,37 mm - 0,57 mm | 1 | 0,39 | 0,41 |
| | | | | 2 | 0,41 | 0,43 |
| | | | | 3 | 0,38 | 0,40 |
| | | | | 4 | 0,42 | 0,41 |
| | | | | 5 | 0,41 | 0,42 |
| | | | | 6 | 0,42 | 0,43 |
| 225670133 | 12 (3/4" OD) | 0,31 mm - 0,63 mm | 0,31 mm - 0,63mm | 1 | 0,36 | 0,43 |
| | | | | 2 | 0,39 | 0,37 |
| | | | | 3 | 0,34 | 0,40 |
| | | | | 4 | 0,36 | 0,35 |
| | | | | 5 | 0,36 | 0,41 |
| | | | | 6 | 0,37 | 0,42 |
| 225670134 | 16 (1" OD) | 0,40 mm 0,54 mm | | 1 | 0,41 | 0,43 |
| | | | | 2 | 0,42 | 0,46 |
| | | | | 3 | 0,41 | 0,44 |
| | | | | 4 | 0,50 | 0,45 |
| | | | | 5 | 0,44 | 0,43 |
| | | | | 6 | 0,41 | 0,42 |

11. Proof, impulse and burst testing of 3,000 PSI Aircraft tubing in accordance with ISO 7169 and ISO 6772. AEROFIT.



TEST REPORT NO. 2984

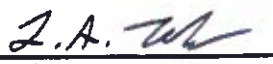
**PROOF, IMPULSE AND BURST TESTING OF 3,000
PSI AIRCRAFT TUBING, IN ACCORDANCE WITH
ISO 7169 AND ISO 6772, IN THE FOLLOWING TUBE
SIZES:**

**SIZE -04 (.250" OD) ABS5004 TI
SIZE -06 (.375" OD) ABS5004 TI
SIZE -08 (.500" OD) ABS5004 TI
SIZE -10 (.625" OD) ABS5004 TI
SIZE -12 (.750" OD) ABS5004 TI
SIZE -16 (1.000" OD) ABS5004 TI**

ISSUED July 23, 2015

REVISION DATE N/C

Prepared By:


F. Cowles
Laboratory Supervisor

Approved By:


D. W. Gordon
Engineering Manager

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1. Preface

1.1 Overview

Tube assemblies composed of ABS5004 Titanium and were submitted to Aerofit, LLC for hydraulic pressure testing and penetrant inspection, in accordance with ITA Purchase Order 3000038416. The tube assemblies consisted of straight lengths of tube with flareless sleeves or unions roller swaged onto the ends. Following pressure testing selected tube ends were sectioned and the swage area was inspected per the PO instructions.

The test specimens were supplied by:

ITA Industria de Tuberias Aeronauticas
S.A. de C.V.
Acceso IV No. 6, Zona Industrial
Benito Jarez
Queretaro, Qro. 76120
Mexico

The test specimens were subjected to proof, impulse and burst testing at the operating pressures specified in Table 2. The test requirements, procedures and results are listed on the following pages.

1.2 Test Facilities

The testing was conducted at the following locations:

Aerofit, LLC
1425 S. Acacia Avenue
Fullerton, California 92831

2. Test Requirements, Procedures and Results

2.1 Test Specimens

Each test specimen was labeled with a unique identification number prior to testing. The Aerofit identification number and the ITA part number are both listed in the test results for cross-reference.

MS style flareless fittings were used throughout the test program to connect the tube assemblies to Aerofit test equipment. All test specimens were assembled to the minimum torque values listed in ISO 7169, Table 11.

The tubing sizes and sample quantities are listed in Table 1; test pressure requirements are listed in Table 2, below:

Table 1 Test Specimen Quantities

| Tube Dash Size | Tube Material | Number of Specimens per Test | | | | |
|----------------|---------------|------------------------------|--------------|----------------------|------------|----------------------|
| | | Proof Test | Impulse Test | Penetrant Inspection | Burst Test | Tube-End Examination |
| -04 | Titanium | 6 | 6 | 6 | 4 | 2 |
| -06 | Titanium | 6 | 6 | 6 | 4 | 2 |
| -08 | Titanium | 6 | 6 | 6 | 4 | 2 |
| -10 | Titanium | 6 | 6 | 6 | 4 | 2 |
| -12 | Titanium | 6 | 6 | 6 | 4 | 2 |
| -16 | Titanium | 6 | 6 | 6 | 4 | 2 |

Table 2 Test Pressure Requirements

| Pressure Characteristic | Operating System Pressure (psi) |
|-------------------------|---------------------------------|
| Nominal | 3,000 |
| Proof | 4,500 |
| Impulse Peak | 4,500 |
| Burst | 9,000 |

2.2 Proof Pressure Test

Requirement:

Each test specimen shall be subjected to the proof pressure test in accordance with ISO 7169, Para. 4.6.1. The test specimens shall be pressurized to 150% of the nominal operating pressure (3,000 psi) for a period of 3 minutes. The proof test shall be performed at ambient temperature, prior to any other testing. The test assemblies shall show no signs of leakage or permanent deformation.

Procedure:

The test specimens shall be assembled to the minimum torque value listed in ISO 7169, Table 11. The specimens shall be connected to a hydraulic test stand capable of achieving and maintaining 20,000 psi. The pressure shall be increased at a rate of 21,760 ($\pm 5,440$) psi/minute and held for 3 minutes, then released. Following the test, each specimen shall be examined for leakage, permanent deformation or other malfunction.

Results:

All specimens passed the proof test in accordance with ISO 7169, Para. 4.6.1. The individual test results are listed in Table 3, below:

Table 3 Proof Test Results

| Aerofit Specimen No. | ITA P/N | Dash Size | Tube Material | Proof Test (3 Min @ 4,500 psi) | Results |
|----------------------|------------|-----------|---------------|--------------------------------|-----------------------------|
| 2984-01-04A | ABS5004-1 | -04 | Titanium | Passed | Passed, No Leakage, 5/5/15 |
| 2984-01-04B | ABS5004-2 | -04 | Titanium | Passed | Passed, No Leakage, 5/5/15 |
| 2984-01-04C | ABS5004-3 | -04 | Titanium | Passed | Passed, No Leakage, 5/12/15 |
| 2984-01-04D | ABS5004-4 | -04 | Titanium | Passed | Passed, No Leakage, 5/12/15 |
| 2984-01-04E | ABS5004-5 | -04 | Titanium | Passed | Passed, No Leakage, 5/19/15 |
| 2984-01-04F | ABS5004-6 | -04 | Titanium | Passed | Passed, No Leakage, 5/19/15 |
| 2984-01-06A | ABS5004-7 | -06 | Titanium | Passed | Passed, No Leakage, 5/5/15 |
| 2984-01-06B | ABS5004-8 | -06 | Titanium | Passed | Passed, No Leakage, 5/5/15 |
| 2984-01-06C | ABS5004-9 | -06 | Titanium | Passed | Passed, No Leakage, 5/12/15 |
| 2984-01-06D | ABS5004-10 | -06 | Titanium | Passed | Passed, No Leakage, 5/12/15 |
| 2984-01-06E | ABS5004-11 | -06 | Titanium | Passed | Passed, No Leakage, 5/19/15 |
| 2984-01-06F | ABS5004-12 | -06 | Titanium | Passed | Passed, No Leakage, 5/19/15 |
| 2984-01-08A | ABS5004-13 | -08 | Titanium | Passed | Passed, No Leakage, 5/5/15 |
| 2984-01-08B | ABS5004-14 | -08 | Titanium | Passed | Passed, No Leakage, 5/5/15 |
| 2984-01-08C | ABS5004-15 | -08 | Titanium | Passed | Passed, No Leakage, 5/12/15 |
| 2984-01-08D | ABS5004-16 | -08 | Titanium | Passed | Passed, No Leakage, 5/12/15 |
| 2984-01-08E | ABS5004-17 | -08 | Titanium | Passed | Passed, No Leakage, 5/19/15 |
| 2984-01-08F | ABS5004-18 | -08 | Titanium | Passed | Passed, No Leakage, 5/19/15 |
| 2984-01-10A | ABS5004-19 | -10 | Titanium | Passed | Passed, No Leakage, 5/5/15 |
| 2984-01-10B | ABS5004-20 | -10 | Titanium | Passed | Passed, No Leakage, 5/5/15 |
| 2984-01-10C | ABS5004-21 | -10 | Titanium | Passed | Passed, No Leakage, 5/12/15 |
| 2984-01-10D | ABS5004-22 | -10 | Titanium | Passed | Passed, No Leakage, 5/12/15 |
| 2984-01-10E | ABS5004-23 | -10 | Titanium | Passed | Passed, No Leakage, 5/19/15 |
| 2984-01-10F | ABS5004-24 | -10 | Titanium | Passed | Passed, No Leakage, 5/19/15 |

Table 3 Proof Test Results (cont'd)

| Aerofit Specimen No. | ITA P/N | Dash Size | Tube Material | Proof Test (3 Min @ 4,500 psi) | Results |
|----------------------|------------|-----------|---------------|--------------------------------|-----------------------------|
| 2984-01-12A | ABS5004-25 | -12 | Titanium | Passed | Passed, No Leakage, 5/5/15 |
| 2984-01-12B | ABS5004-26 | -12 | Titanium | Passed | Passed, No Leakage, 5/5/15 |
| 2984-01-12C | ABS5004-27 | -12 | Titanium | Passed | Passed, No Leakage, 5/12/15 |
| 2984-01-12D | ABS5004-28 | -12 | Titanium | Passed | Passed, No Leakage, 5/12/15 |
| 2984-01-12E | ABS5004-29 | -12 | Titanium | Passed | Passed, No Leakage, 5/19/15 |
| 2984-01-12F | ABS5004-30 | -12 | Titanium | Passed | Passed, No Leakage, 5/19/15 |
| 2984-01-16A | ABS5004-31 | -16 | Titanium | Passed | Passed, No Leakage, 5/5/15 |
| 2984-01-16B | ABS5004-32 | -16 | Titanium | Passed | Passed, No Leakage, 5/5/15 |
| 2984-01-16C | ABS5004-33 | -16 | Titanium | Passed | Passed, No Leakage, 5/12/15 |
| 2984-01-16D | ABS5004-34 | -16 | Titanium | Passed | Passed, No Leakage, 5/12/15 |
| 2984-01-16E | ABS5004-35 | -16 | Titanium | Passed | Passed, No Leakage, 5/19/15 |
| 2984-01-16F | ABS5004-36 | -16 | Titanium | Passed | Passed, No Leakage, 5/19/15 |

2.3 Impulse Test

Requirement:

The test specimens shall be subjected to the impulse test in accordance with ISO 6772 and ITA Qualification Test Plan "Appendix 1". The test specimens shall withstand 200,000 impulse cycles at a peak pressure equal to 150% of the nominal operating pressure (3,000 psi) as listed in Table 2. The impulse waveform shall conform to ISO 6772, Figure 1, and be monitored periodically during the test. The test specimens shall be maintained at various temperatures as required throughout the test.

Procedure:

The test specimens shall be assembled to the impulse test manifold using the minimum torque values listed in ISO 7169, Table 11. The back pressure shall be maintained at 1% to 3% of the nominal test pressure. The cycle rate shall be 70 ± 5 cycles per minute.

Following the impulse test, each tube assembly shall be examined for signs of leakage, permanent deformation or other malfunction.

Results:

The individual test results are listed in Tables 4A through 4F.

Table 4A Impulse Test Results, Size -04 Titanium Tubes

| Aerofit Specimen No. | ITA P/N | Peak Pressure (psi) | Rate of Pressure Rise (psi/sec) | Cycles at +95°C | Cycles at Ambient Temp | Cycles at -40°C | Cycles at +95°C | Cycles at Ambient Temp | Total Cycles | Results/ Comments |
|----------------------|-----------|---------------------|---------------------------------|-----------------|------------------------|-----------------|-----------------|------------------------|--------------|--------------------------------|
| 2984-01-04A | ABS5004-1 | 4,500 | 92,307 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/11/2015 |
| 2984-01-04B | ABS5004-2 | 4,500 | 92,307 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/11/2015 |
| 2984-01-04C | ABS5004-3 | 4,500 | 92,000 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/18/2015 |
| 2984-01-04D | ABS5004-4 | 4,500 | 92,000 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/18/2015 |
| 2984-01-04E | ABS5004-5 | 4,500 | 92,000 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/26/2015 |
| 2984-01-04F | ABS5004-6 | 4,500 | 92,000 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/26/2015 |



Table 4B Impulse Test Results, Size -06 Titanium Tubes

| Aerofit Specimen No. | ITA P/N | Peak Pressure (psi) | Rate of Pressure Rise (psi/sec) | Cycles at +95°C | Cycles at Ambient Temp | Cycles at -40°C | Cycles at +95°C | Cycles at Ambient Temp | Total Cycles | Results/ Comments |
|----------------------|------------|---------------------|---------------------------------|-----------------|------------------------|-----------------|-----------------|------------------------|--------------|--------------------------------|
| 2984-01-06A | ABS5004-7 | 4,500 | 92,307 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/11/2015 |
| 2984-01-06B | ABS5004-8 | 4,500 | 92,307 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/11/2015 |
| 2984-01-06C | ABS5004-9 | 4,500 | 92,000 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/18/2015 |
| 2984-01-06D | ABS5004-10 | 4,500 | 92,000 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/18/2015 |
| 2984-01-06E | ABS5004-11 | 4,500 | 92,000 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/26/2015 |
| 2984-01-06F | ABS5004-12 | 4,500 | 92,000 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/26/2015 |

Table 4C Impulse Test Results, Size -08 Titanium Tubes

| Aerofit Specimen No. | ITA P/N | Peak Pressure (psi) | Rate of Pressure Rise (psi/sec) | Cycles at +95°C | Cycles at Ambient Temp | Cycles at -40°C | Cycles at +95°C | Cycles at Ambient Temp | Total Cycles | Results/ Comments |
|----------------------|------------|---------------------|---------------------------------|-----------------|------------------------|-----------------|-----------------|------------------------|--------------|--------------------------------|
| 2984-01-08A | ABS5004-13 | 4,500 | 92,307 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/11/2015 |
| 2984-01-08B | ABS5004-14 | 4,500 | 92,307 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/11/2015 |
| 2984-01-08C | ABS5004-15 | 4,500 | 92,000 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/18/2015 |
| 2984-01-08D | ABS5004-16 | 4,500 | 92,000 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/18/2015 |
| 2984-01-08E | ABS5004-17 | 4,500 | 92,000 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/26/2015 |
| 2984-01-08F | ABS5004-18 | 4,500 | 92,000 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/26/2015 |

Table 4D Impulse Test Results, Size -10 Titanium Tubes

| Aerofit Specimen No. | ITA P/N | Peak Pressure (psi) | Rate of Pressure Rise (psi/sec) | Cycles at +95°C | Cycles at Ambient Temp | Cycles at -40°C | Cycles at +95°C | Cycles at Ambient Temp | Total Cycles | Results/ Comments |
|----------------------|------------|---------------------|---------------------------------|-----------------|------------------------|-----------------|-----------------|------------------------|--------------|--------------------------------|
| 2984-01-10A | ABS5004-19 | 4,500 | 92,307 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/11/2015 |
| 2984-01-10B | ABS5004-20 | 4,500 | 92,307 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/11/2015 |
| 2984-01-10C | ABS5004-21 | 4,500 | 92,000 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/18/2015 |
| 2984-01-10D | ABS5004-22 | 4,500 | 92,000 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/18/2015 |
| 2984-01-10E | ABS5004-23 | 4,500 | 92,000 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/26/2015 |
| 2984-01-10F | ABS5004-24 | 4,500 | 92,000 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/26/2015 |



Table 4E. Impulse Test Results, Size -12 Titanium Tubes

| Aerofit Specimen No. | ITA P/N | Peak Pressure (psi) | Rate of Pressure Rise (psi/sec) | Cycles at +95°C | Cycles at Ambient Temp | Cycles at -40°C | Cycles at +95°C | Cycles at Ambient Temp | Total Cycles | Results/ Comments |
|----------------------|------------|---------------------|---------------------------------|-----------------|------------------------|-----------------|-----------------|------------------------|--------------|--------------------------------|
| 2984-01-12A | ABS5004-25 | 4,500 | 92,307 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/11/2015 |
| 2984-01-12B | ABS5004-26 | 4,500 | 92,307 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/11/2015 |
| 2984-01-12C | ABS5004-27 | 4,500 | 92,000 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/18/2015 |
| 2984-01-12D | ABS5004-28 | 4,500 | 92,000 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/18/2015 |
| 2984-01-12E | ABS5004-29 | 4,500 | 92,000 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/26/2015 |
| 2984-01-12F | ABS5004-30 | 4,500 | 92,000 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/26/2015 |

Table 4F. Impulse Test Results, Size -16 Titanium Tubes

| Aerofit Specimen No. | ITA P/N | Peak Pressure (psi) | Rate of Pressure Rise (psi/sec) | Cycles at +95°C | Cycles at Ambient Temp | Cycles at -40°C | Cycles at +95°C | Cycles at Ambient Temp | Total Cycles | Results/ Comments |
|----------------------|------------|---------------------|---------------------------------|-----------------|------------------------|-----------------|-----------------|------------------------|--------------|--------------------------------|
| 2984-01-16A | ABS5004-31 | 4,500 | 92,307 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/11/2015 |
| 2984-01-16B | ABS5004-32 | 4,500 | 92,307 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/11/2015 |
| 2984-01-16C | ABS5004-33 | 4,500 | 92,000 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/18/2015 |
| 2984-01-16D | ABS5004-34 | 4,500 | 92,000 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/18/2015 |
| 2984-01-16E | ABS5004-35 | 4,500 | 92,000 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/26/2015 |
| 2984-01-16F | ABS5004-36 | 4,500 | 92,000 | 100,000 | 48,000 | 2,000 | 10,000 | 40,000 | 200,000 | Passed, No Leakage – 5/26/2015 |

2.4 Penetrant Dye Inspection

Requirement:

Following the impulse test, all test specimens shall be subjected to the penetrant dye inspection in accordance with ASTM E1417/E1417M, Type 1, Method A. The penetrant dye inspection was performed at Aerofit, LLC.

Results:

All test specimens subjected to the penetrant dye inspection passed the inspection criteria. No rejectable defects were found. The test certification is shown in Appendix II of this report.

2.5 Burst Pressure Test

Requirement:

Following the impulse test, 4 test specimens per size shall be subjected to the burst test, in accordance with ISO 7169. Each tube assembly shall be pressurized to 9,000 psi for a period of 3 minutes. 2 test specimens shall be tested at ambient temperature and 2 shall be tested at +95°C. The test assemblies shall show no signs of leakage or permanent deformation. Following the standard burst test, the pressure shall be increased until failure occurs.

Procedure:

The test specimens shall be assembled using the minimum torque values listed in ISO 7169, Table 11, and connected to a source of pressure with one end unrestrained. The pressure shall then be increased to the burst pressure at a rate of 21,760 ($\pm 5,440$) psi/minute and held for 3 minutes. Following 3 minutes at sustained pressure, the pressure shall be increased until failure occurs. The maximum pressure achieved and mode of failure shall be recorded.

Results:

The individual test results are listed in Tables 5A through 5F.

Table 5A Burst Test Results, Size -04 Titanium Tubes

| Aerofit Specimen No. | ITA P/N | Min. Burst Pressure 3 Min @ 9,000 psi | Ultimate Burst Pressure (psi) | Mode of Failure |
|----------------------|-----------|--|-------------------------------|-------------------|
| 2984-01-04A | ABS5004-1 | No Leakage, Passed (Ambient) | 19,433 | Rupture in Tubing |
| 2984-01-04B | ABS5004-2 | No Leakage, Passed (Ambient) | 20,292 | Rupture in Tubing |
| 2984-01-04C | ABS5004-3 | No Leakage, Passed (+95°C) | 16,123 | Rupture in Tubing |
| 2984-01-04D | ABS5004-4 | No Leakage, Passed (+95°C) | 16,954 | Rupture in Tubing |

Table 5B Burst Test Results, Size -06 Titanium Tubes

| Aerofit Specimen No. | ITA P/N | Min. Burst Pressure 3 Min @ 9,000 psi | Ultimate Burst Pressure (psi) | Mode of Failure |
|----------------------|------------|--|-------------------------------|-------------------|
| 2984-01-06A | ABS5004-7 | No Leakage, Passed (Ambient) | 17,164 | Rupture in Tubing |
| 2984-01-06B | ABS5004-8 | No Leakage, Passed (Ambient) | 16,731 | Rupture in Tubing |
| 2984-01-06C | ABS5004-9 | No Leakage, Passed (+95°C) | 14,239 | Rupture in Tubing |
| 2984-01-06D | ABS5004-10 | No Leakage, Passed (+95°C) | 14,279 | Rupture in Tubing |

Table 5C Burst Test Results, Size -08 Titanium Tubes

| Aerofit Specimen No. | ITA P/N | Min. Burst Pressure 3 Min @ 9,000 psi | Ultimate Burst Pressure (psi) | Mode of Failure |
|----------------------|------------|--|-------------------------------|-------------------|
| 2984-01-08A | ABS5004-13 | No Leakage, Passed (Ambient) | 18,763 | Rupture in Tubing |
| 2984-01-08B | ABS5004-14 | No Leakage, Passed (Ambient) | 18,866 | Rupture in Tubing |
| 2984-01-08C | ABS5004-15 | No Leakage, Passed (+95°C) | 16,839 | Rupture in Tubing |
| 2984-01-08D | ABS5004-16 | No Leakage, Passed (+95°C) | 16,560 | Rupture in Tubing |

Table 5D Burst Test Results, Size -10 Titanium Tubes

| Aerofit Specimen No. | ITA P/N | Min. Burst Pressure 3 Min @ 9,000 psi | Ultimate Burst Pressure (psi) | Mode of Failure |
|----------------------|------------|--|-------------------------------|-------------------|
| 2984-01-10A | ABS5004-19 | No Leakage, Passed (Ambient) | 18,900 | Rupture in Tubing |
| 2984-01-10B | ABS5004-20 | No Leakage, Passed (Ambient) | 18,704 | Rupture in Tubing |
| 2984-01-10C | ABS5004-21 | No Leakage, Passed (+95°C) | 17,384 | Rupture in Tubing |
| 2984-01-10D | ABS5004-22 | No Leakage, Passed (+95°C) | 16,331 | Rupture in Tubing |

Table 5E Burst Test Results, Size -12 Titanium Tubes

| Aerofit Specimen No. | ITA P/N | Min. Burst Pressure 3 Min @ 9,000 psi | Ultimate Burst Pressure (psi) | Mode of Failure |
|----------------------|------------|--|-------------------------------|-------------------|
| 2984-01-12A | ABS5004-25 | No Leakage, Passed (Ambient) | 18,849 | Rupture in Tubing |
| 2984-01-12B | ABS5004-26 | No Leakage, Passed (Ambient) | 18,821 | Rupture in Tubing |
| 2984-01-12C | ABS5004-27 | No Leakage, Passed (+95°C) | 16,621 | Rupture in Tubing |
| 2984-01-12D | ABS5004-28 | No Leakage, Passed (+95°C) | 16,992 | Rupture in Tubing |

Table 5F Burst Test Results, Size -16 Titanium Tubes

| Aerofit Specimen No. | ITA P/N | Min. Burst Pressure 3 Min @ 9,000 psi | Ultimate Burst Pressure (psi) | Mode of Failure |
|----------------------|------------|--|-------------------------------|-------------------|
| 2984-01-16A | ABS5004-31 | No Leakage, Passed (Ambient) | 19,298 | Rupture in Tubing |
| 2984-01-16B | ABS5004-32 | No Leakage, Passed (Ambient) | 19,161 | Rupture in Tubing |
| 2984-01-16C | ABS5004-33 | No Leakage, Passed (+95°C) | 17,154 | Rupture in Tubing |
| 2984-01-16D | ABS5004-34 | No Leakage, Passed (+95°C) | 17,059 | Rupture in Tubing |

2.6 Fitting End Examination

Requirement:

Following the impulse test, 2 test specimens per size shall be sectioned and examined at each end fitting zone, in accordance with ITA Qualification Test Plan, Para. 4.5

Procedure:

The tube assemblies shall be sectioned longitudinally through the swaged fitting area at each end (4 pieces total per size/material). The tubing shall be inspected as follows:

- Visual inspection for cracks or incipient cracks on the OD and ID surface of the tubes at 10X magnification.
- Binocular inspection for cracks or incipient cracks on the OD and ID of the surface of the tubes at 100X magnification.

Results:

The inside and outside diameters of the sectioned tube ends were examined with a stereo microscope at 10X and 100X magnification. No cracks, or insipient cracks, were observed during the examination. Photographs showing representative areas of the inside and outside tube diameters are included in Appendix I of this report.

3. Test Equipment

The individual test equipment and calibrated instruments used for this test program are listed in Table 6, below.

Table 6 Calibrated Test Equipment

| Item Description | Manufacture | Model or P/N | Identification | Calib. Date | Calib. Interval |
|---|----------------------|--------------|----------------|-------------|-----------------|
| Digital Pressure Gage, 0 – 40,000 psi | Omega | P4000 | S/N 2634 | 6/11/14 | 12 Months |
| Signal Controller (Servo Valve, Impulse Test) | MTS | 458 | S/N 0084696 | 5/4/15 | Each Use |
| Data Acquisition System | National Instruments | Labview | 6036 | 5/4/15 | Each Use |
| Pressure Transducer | Honeywell | 20 kpsi | S/N 5637 | 5/28/14 | 12 Months |
| Pressure Transducer | Honeywell | 50 kpsi | S/N 5968 | 2/24/15 | 12 Months |
| Pressure Transducer | GP:50 | 111-B-SB7 | S/N 5606 | 1/6/15 | 12 Months |
| Temperature Chamber | BMA | TC-27 | S/N 5232 | 3/29/15 | 12 Months |
| Digital Thermometer | Extech | 421502 | S/N 6201 | 10/7/14 | 12 Months |
| Digital Stopwatch | Extech | 365535 | S/N 4899 | 4/12/15 | 12 Months |
| Torque Wrench | Snap-On | ATECHFR100 | S/N 5247 | 4/10/15 | 12 Months |

4. Photographs

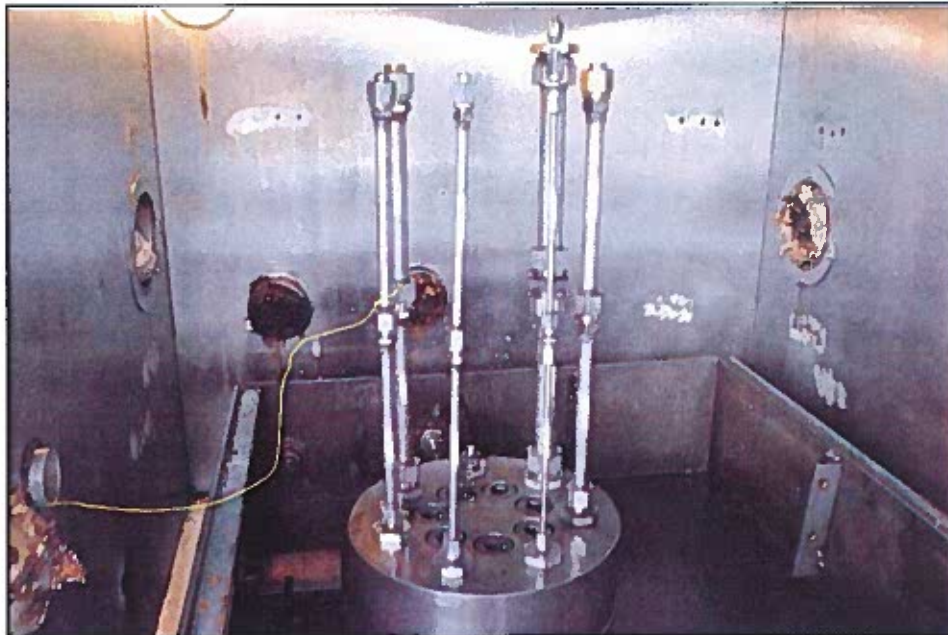


Photo No. 2984-01

Representative impulse test set-up is shown above. Illustrates 3,000 psi titanium tube assemblies mounted to the test manifold, located inside environmental test chamber.

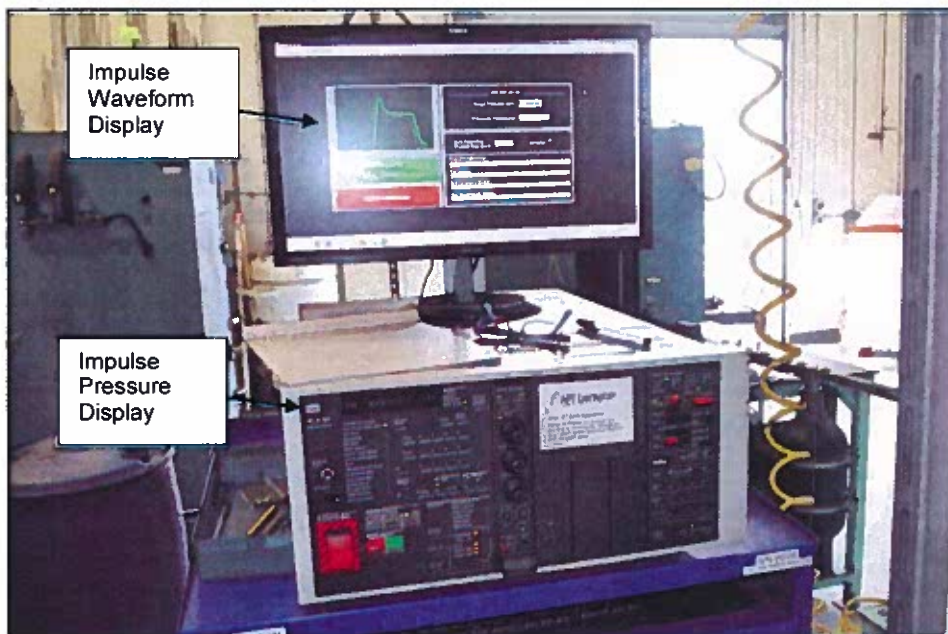


Photo No. 2984-02

Impulse Signal Generator and waveform display are shown above. Peak Pressure is displayed at lower left side of controller.



Photo No. 2894-03
MTS signal generator is shown above, which displays peak pressure (at left) and back pressure (right) readings throughout the impulse test.

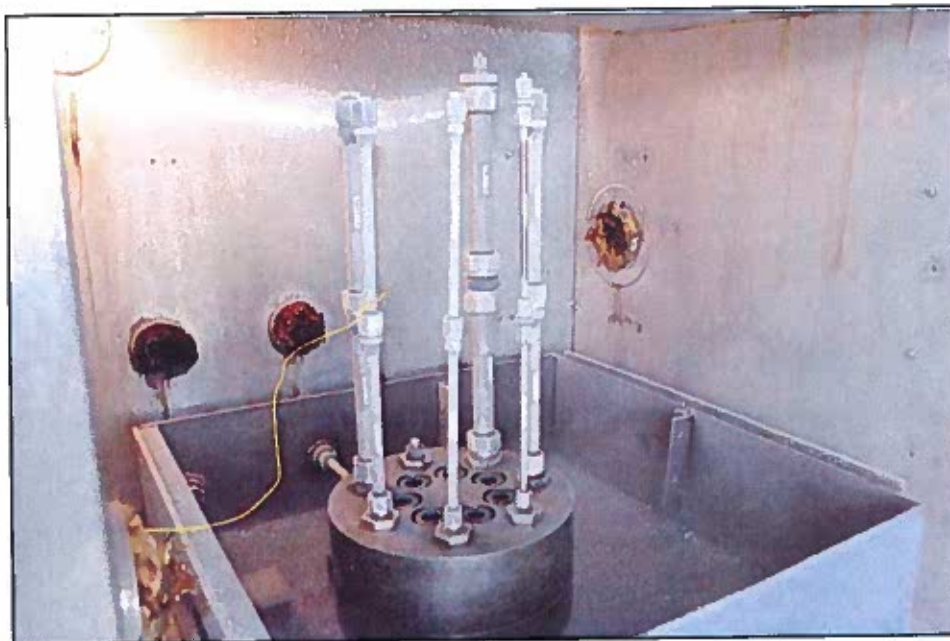


Photo No. 2894-04
Tube assemblies are shown above following the -40°C temperature test sequence.

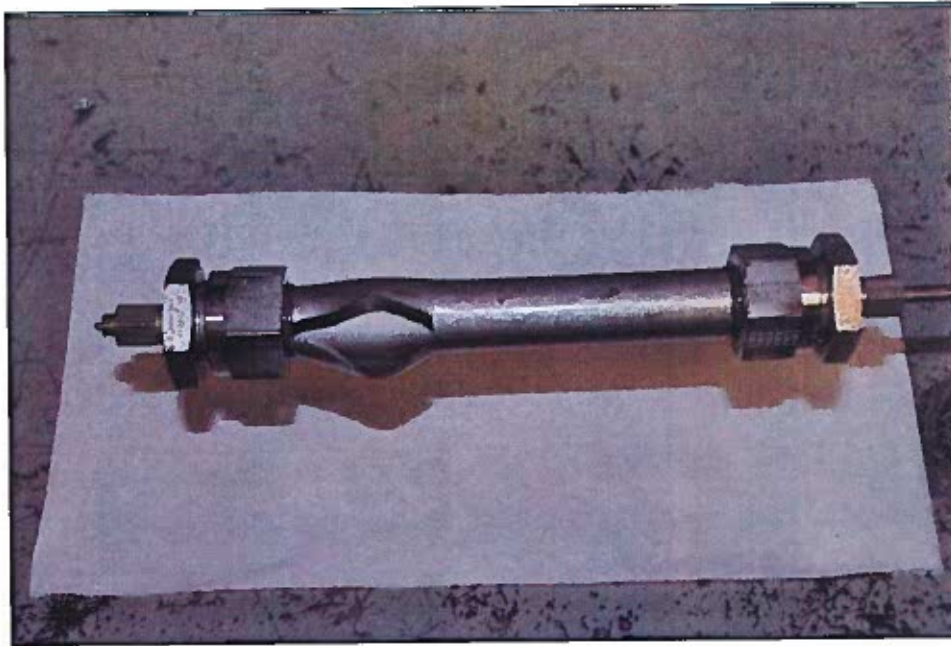


Photo No. 2984-05

Representative burst test set-up is shown above. Test Specimen No. 2984-01-16C ruptured at 17,059 psi, while tested at +95°C. (Ref. Table 5F)

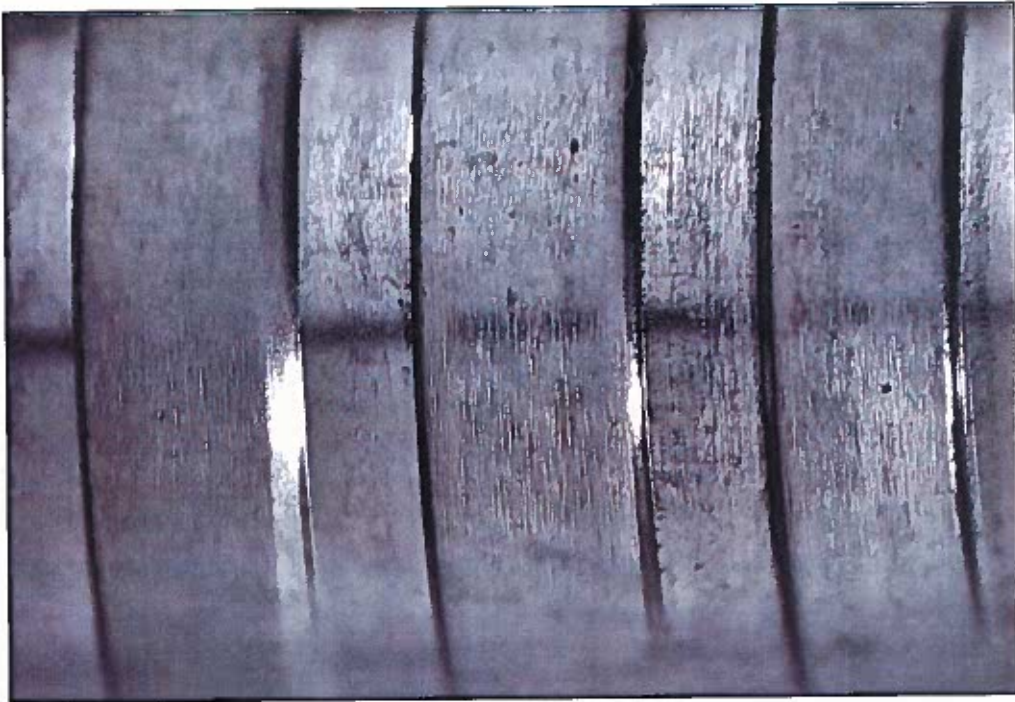


Photo No. 2984-06

Tube assemblies subjected to the burst test, following completion of the impulse test, are shown above. The failure mode for each specimen was tubing rupture (no fitting failures).

Appendix I

Photographs from Tube / Fitting Examination



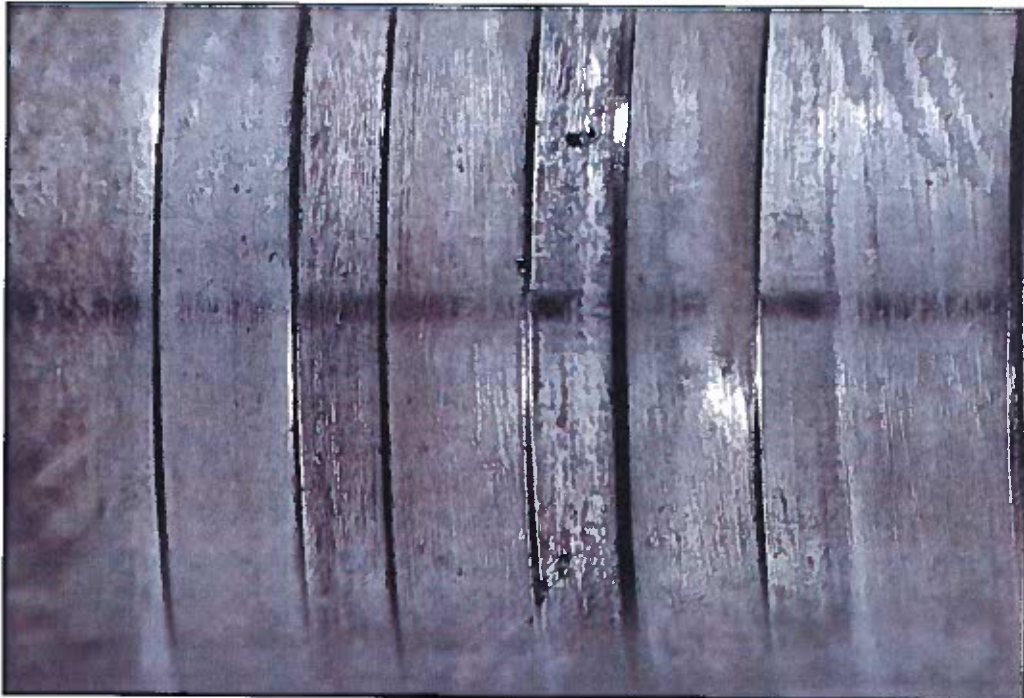
Test Specimen 2984-01-04E

Outside diameter of size -04 tube surface, at **Sleeve End** of tube assembly. No cracks were observed at 10x or 100x magnification.

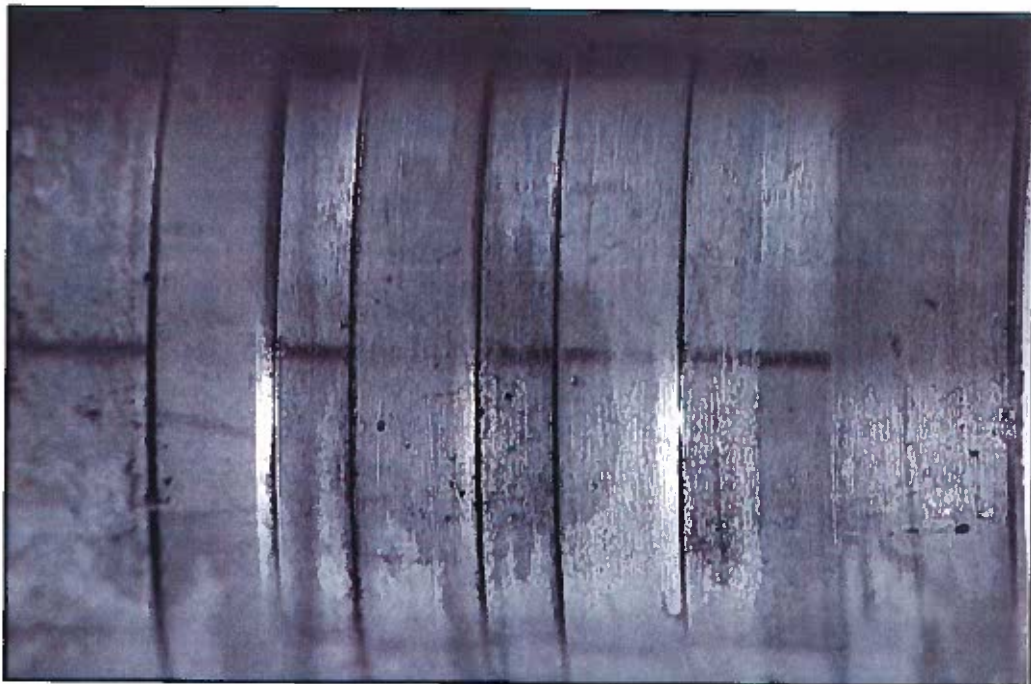


Test Specimen 2984-01-04E

Inside diameter of size -04 tube end at internally swaged sleeve. Photo shows typical contact marks from swaging and removal of swage tool after swaging. No cracks were observed at 10x or 100x magnification.



Test Specimen 2984-01-06E
Outside diameter of size -06 tube surface, at **Sleeve End** of tube assembly. No cracks were observed at 10x or 100x magnification.



Test Specimen 2984-01-06E
Outside diameter of size -06 tube surface, at **Union End** of tube assembly. No cracks were observed at 10x or 100x magnification.

Appendix II

Penetrant Dye Inspection Certification



1425 S. Acacia Ave., Fullerton, CA 92831 • (714) 521-5060

CERTIFICATION OF CONFORMANCE

| | | | | |
|----------------------------------|---------|-----------------------|--------------|----------------------|
| CERTIFICATION DATE | | PURCHASE ORDER NUMBER | | CERTIFICATION NUMBER |
| 7/10/15 | | 300038416 | | 2984 |
| PART NUMBER | REV | DESCRIPTION | MATERIAL H/T | QUANTITY |
| NSA855036, ASNA3759, ASNA3760 | VARIOUS | TUBE ASSY | TITANIUM | 24 |

| | |
|-------------------------------|--------------------------------------|
| PROCESS | SPECIFICATION |
| FLUORESCENT PENETRANT INSPECT | ASTM E1417/E1417M TYPE I METHOD A |

Area Inspected Tubes

Sample(s) # N/A

Quantity Inspected 24

Quantity Accepted 24

Quantity Rejected 0

AeroFit, LLC certifies that, except as otherwise stated, the parts listed above have been processed and tested in accordance with the requirements of the indicated specifications. Records are on file and available for examination.

Robert Mendez
QUALITY ASSURANCE AUTHORIZED SIGNATURE

7/10/15
DATE



In accordance with SAE Aerospace Standard AS7003, to the revision in effect at the time of the audit, this certificate is granted and awarded by the authority of the Nadcap Management Council to:

Aerofit, LLC

1425 S. Acacia Avenue
Fullerton, CA 92831
United States

This certificate demonstrates conformance and recognition of accreditation for specific services, as listed in www.eAuditNet.com on the Qualified Manufacturers List (QML), to the revision in effect at the time of the audit for:

NonDestructive Testing

Certificate Number: 3113156444
Expiration Date: 31 January 2017

Joseph G. Pinto
Vice President and Chief Operating Officer

Performance Review Institute (PRI) | 161 Thorn Hill Road | Warrendale, PA 15086-7527



SCOPE OF ACCREDITATION
NonDestructive Testing

Aerofit, LLC
1425 S. Acacia Avenue
Fullerton, CA 92831

This certificate expiration is updated based on periodic audits. The current expiration date and scope of accreditation are listed at: www.eAuditNet.com - Online QML (Qualified Manufacturer Listing).

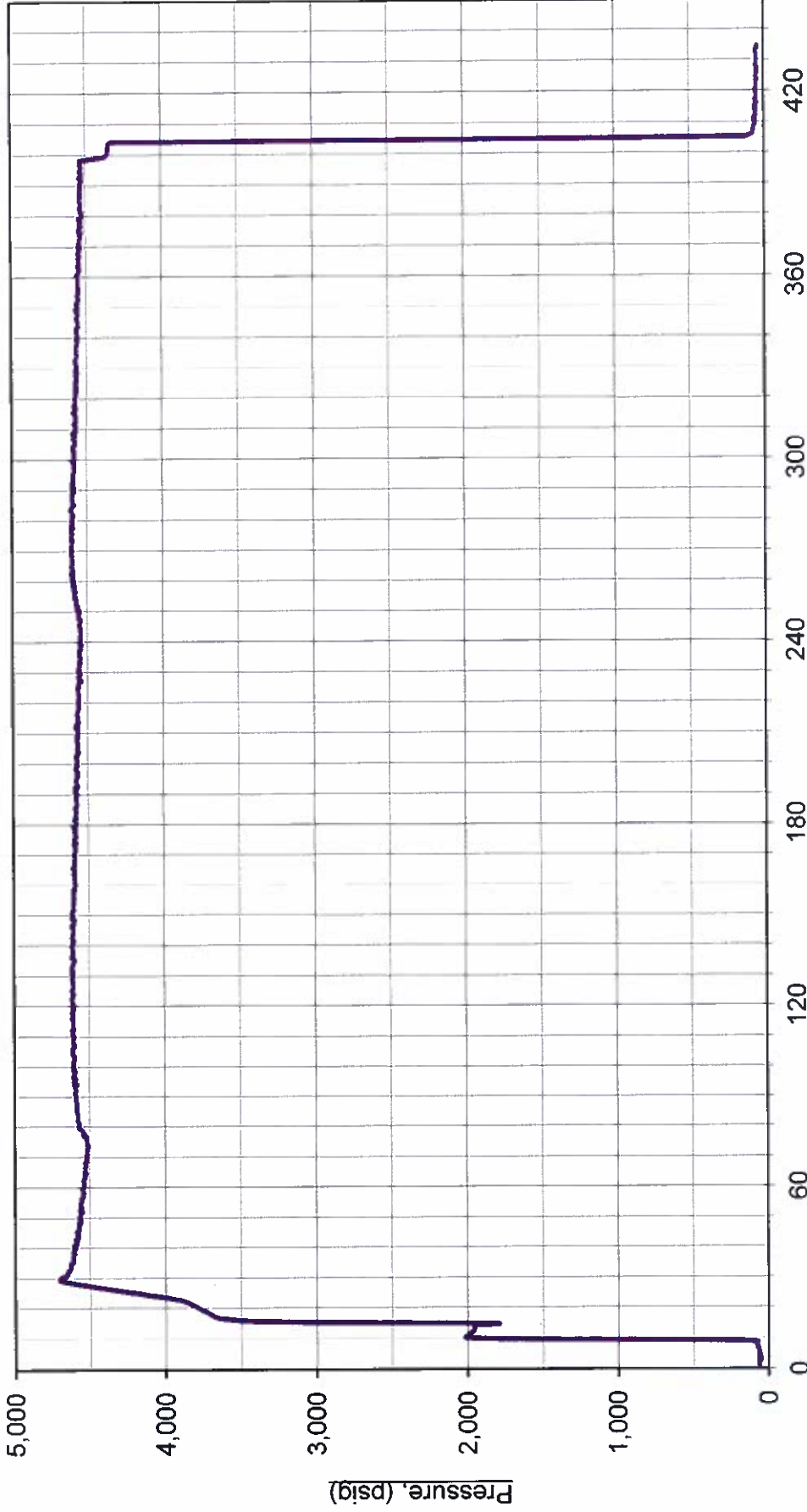
In recognition of the successful completion of the PRI evaluation process, accreditation is granted to this facility to perform the following:

AC7114 Rev G - Nadcap Audit Criteria for NonDestructive Testing (NDT) Suppliers Accreditation (to be used on audits before 25 January 2015)

AC7114/1 Rev G - Nadcap Audit Criteria for NonDestructive Testing Facility Penetrant Survey (to be used on audits before 25 January 2015)

Appendix III

Pressure Test Data Plots

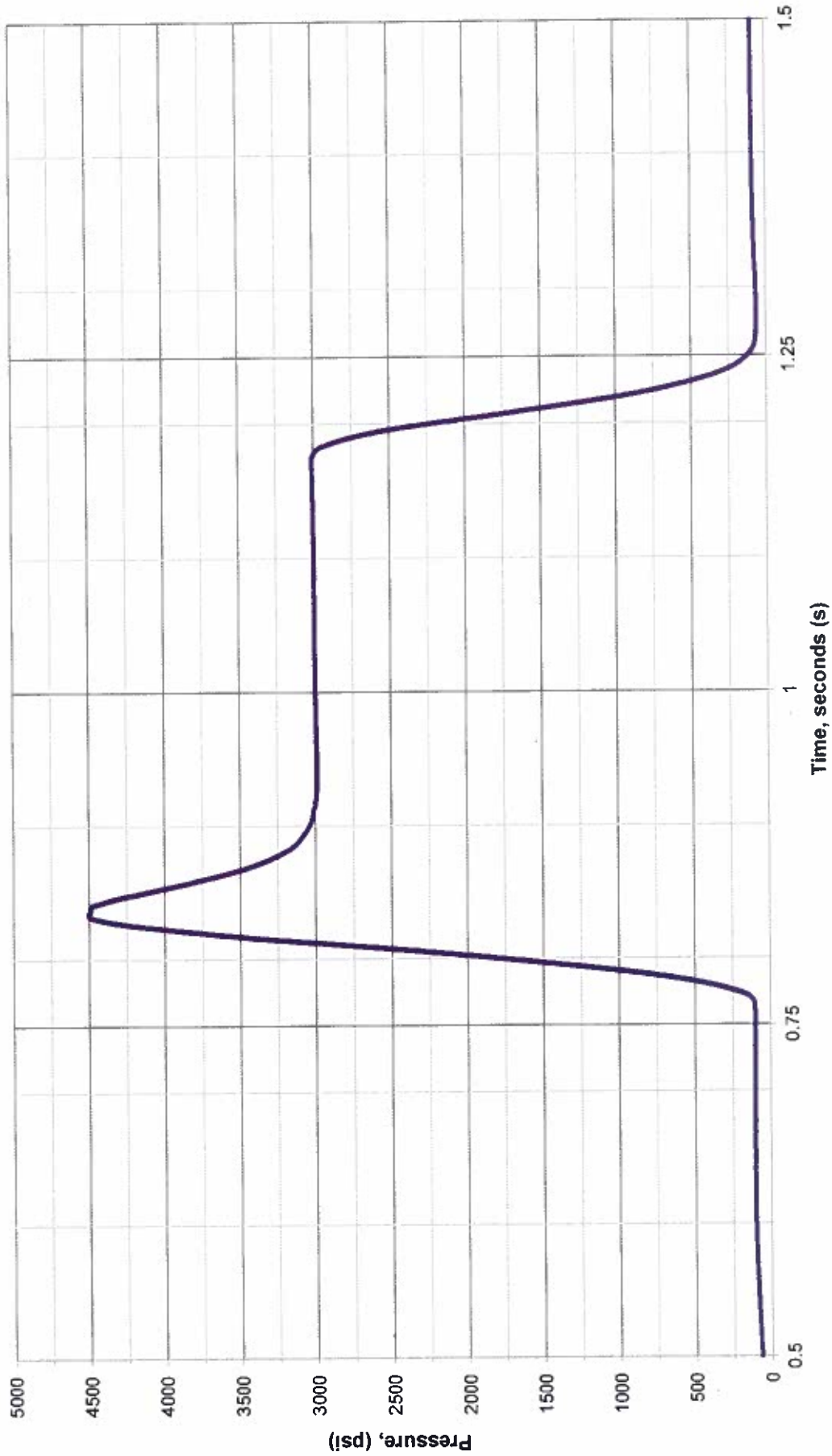


| <u>Customer Info</u> | | <u>Test Requirements</u> | | <u>Actual Data</u> | |
|----------------------|-------------|--------------------------|-----------------|----------------------|-------------|
| Test Specimen No(s): | 2984-01-04A | Test Pressure: | 4500 psi (Min) | Test Pressure: | 4,560 psi |
| Customer Name: | ITA Mexico | Test Duration: | 3 Minutes (Min) | Test Duration: | 435 Seconds |
| Customer PO No: | 3000038416 | Test Temperature: | Ambient | Max. Pressure (psi): | 4,585 |
| Specification: | ISO 7169 | Test Media: | Skydrol LD-4 | Test Temperature: | 26°C |



Impulse Test Data Plot

Test No: 2984
Test Date: 5/5/2015



Customer Info

Test Specimen No(s): 2 Units per Size
Customer Name: ITA Mexico
Customer PO No: 3000038416
Test Specification: ISO 6772

Test Requirements

Test Pressure (psi): 3kpsi / 4.5kpsi Peak
Test Duration: 200,000 Cycles
Test Temperature: +95°C
Test Media: BMS 3-11 Skydrol LD-4

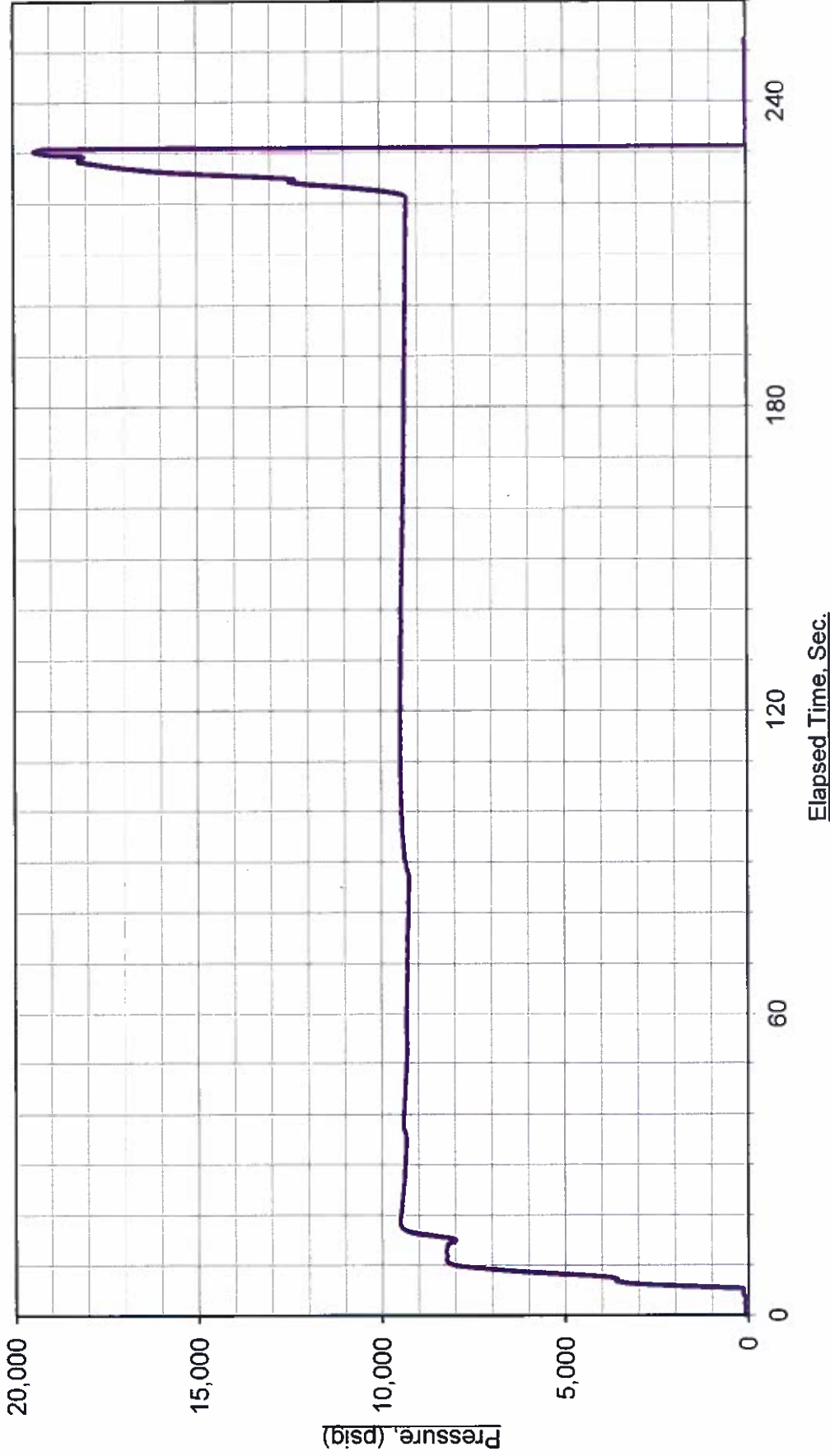
Actual Test Data

Peak Pressure (psi): 4,534
Back Pressure (psi): 66
Calculated Rise Rate: 92,307 psi/sec
Cycle Rate (cpm): 74



Burst Pressure Test

Test No: 2984
Test Date: 7/14/2015

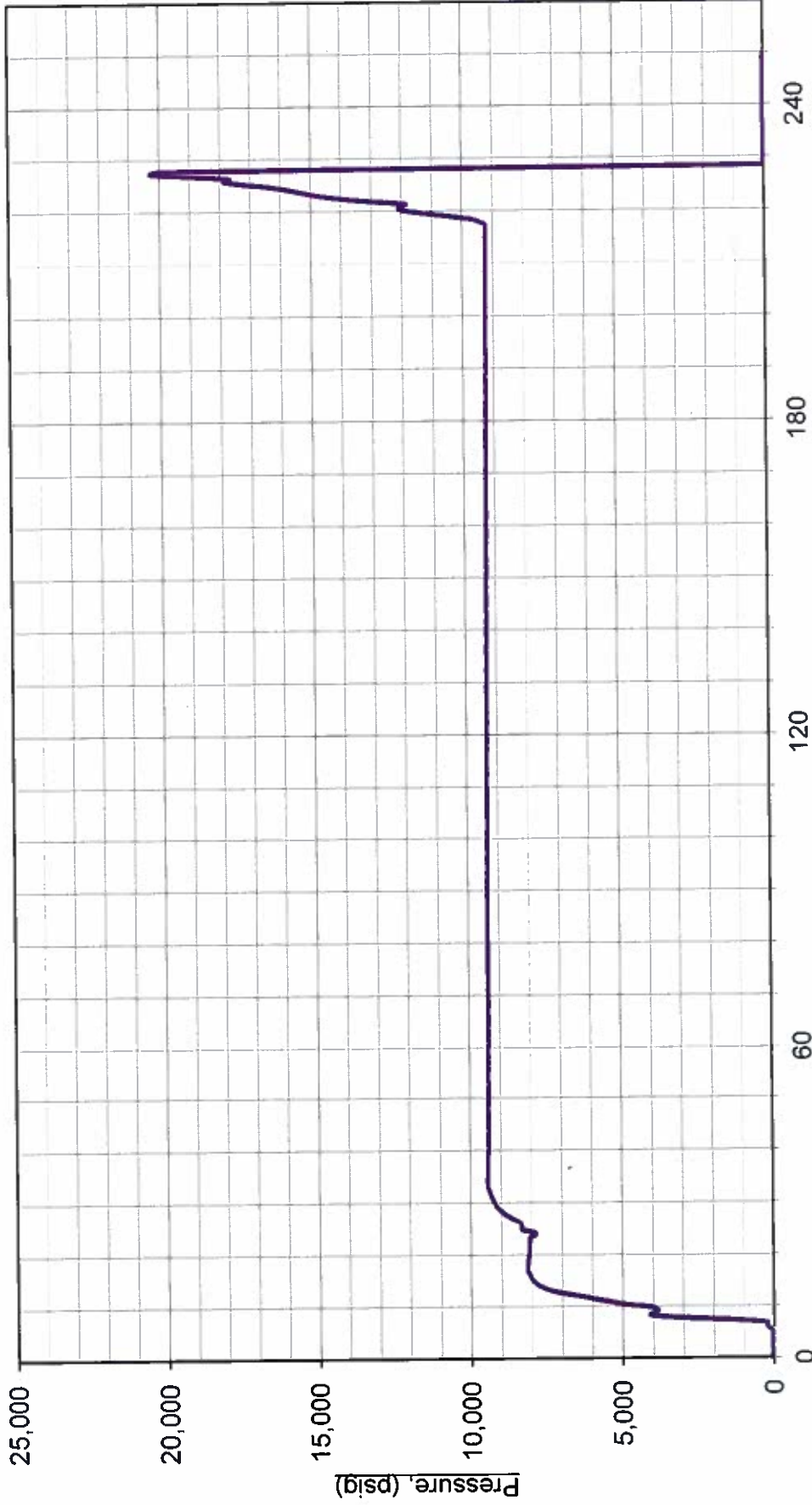


| | | |
|----------------------------------|----------------------------|-----------------------------|
| Customer Info | Test Requirements | Actual Data |
| Test Specimen No(s): 2984-01-04A | Test Pressure (psi): 9,000 | Max. Pressure (psi): 19,433 |
| Customer Name: ITA Mexico | Test Duration: 3 Minutes | Test Duration: 250 Seconds |
| Customer PO No: 3000038416 | Test Temperature: Ambient | Test Temperature: 25°C |
| Specification: ISO 7169 | Test Media: MIL-PRF-83282 | |



Test No: 2984
Test Date: 7/14/2015

Burst Pressure Test



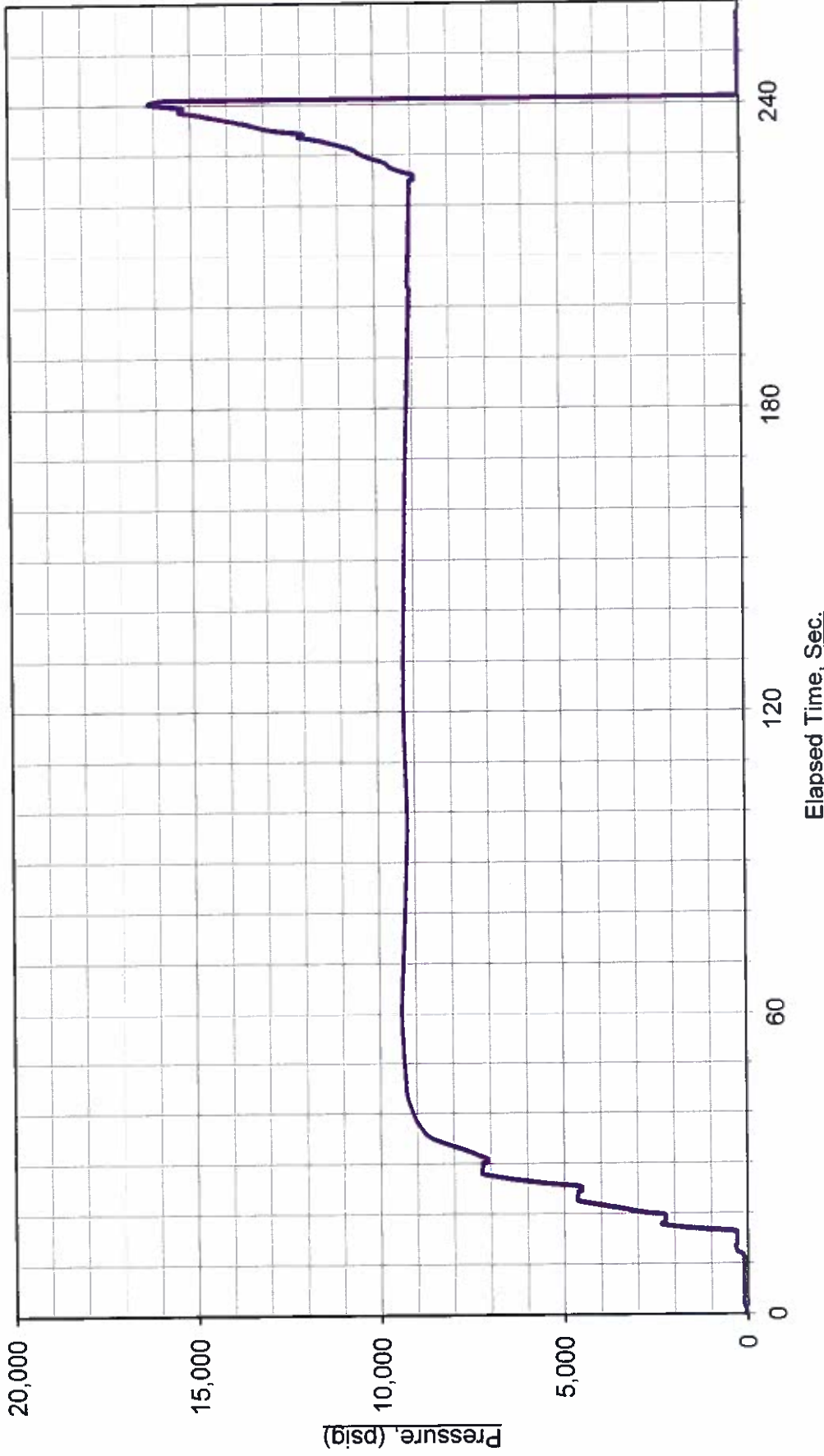
Elapsed Time, Sec.

| | | |
|----------------------------------|----------------------------|-----------------------------|
| Customer Info | Test Requirements | Actual Data |
| Test Specimen No(s): 2984-01-04B | Test Pressure (psi): 9,000 | Max. Pressure (psi): 20,292 |
| Customer Name: ITA Mexico | Test Duration: 3 Minutes | Test Duration: 250 Seconds |
| Customer PO No: 3000038416 | Test Temperature: Ambient | Temperature: 25°C |
| Specification: ISO 7169 | Test Media: MIL-PRF-83282 | |



Test No: 2984
Test Date: 7/14/2015

Burst Pressure Test

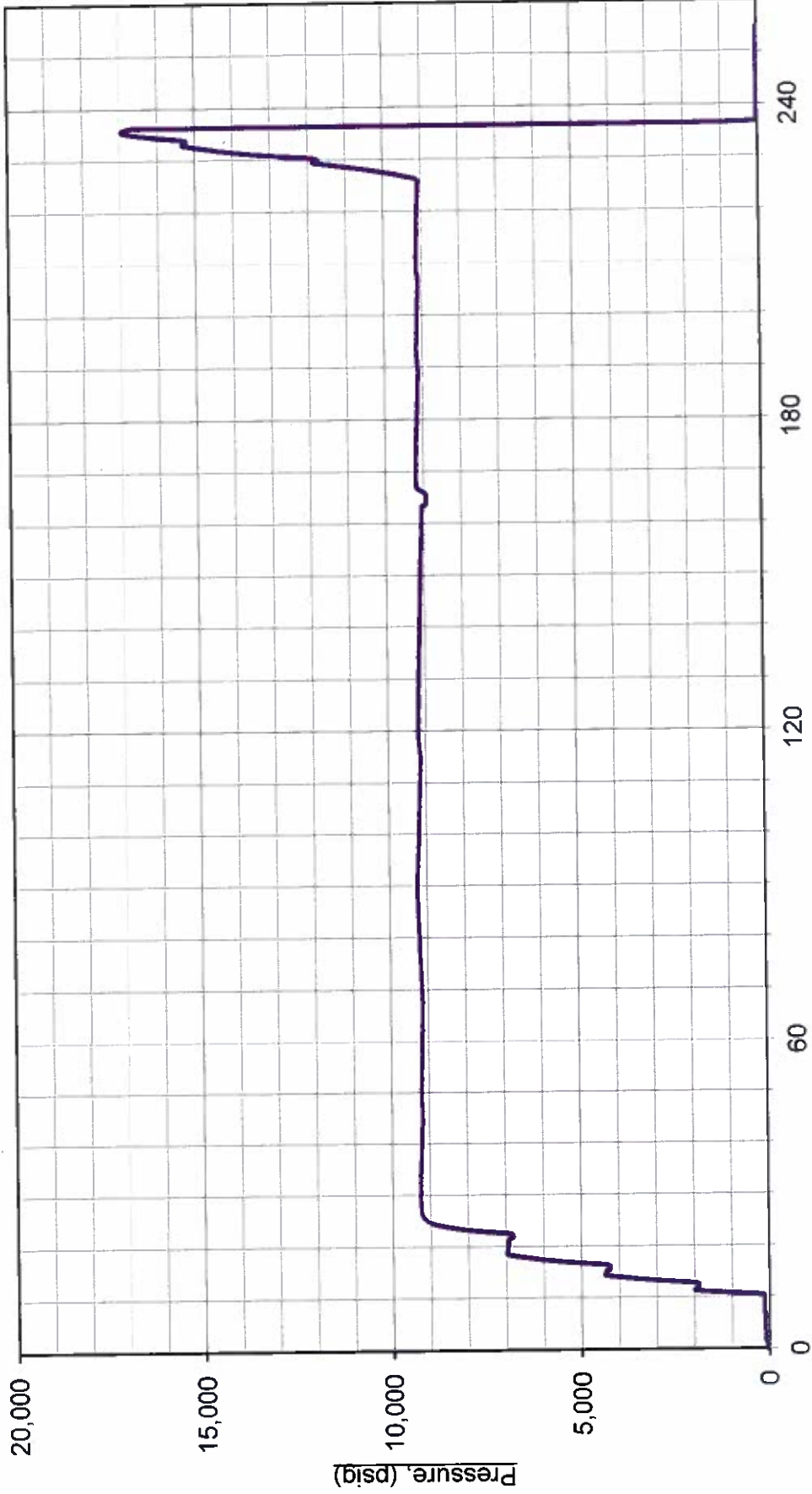


| | |
|----------------------------------|-----------------------------|
| Customer Info | Actual Data |
| Test Specimen No(s): 2984-01-04C | Max. Pressure (psi): 16,123 |
| Customer Name: ITA Mexico | Test Duration: 258 Seconds |
| Customer PO No: 3000038416 | Temperature: +95°C |
| Specification: ISO 7169 | |
| Test Requirements | |
| Test Pressure (psi): 9,000 | |
| Test Duration: 3 Minutes | |
| Test Temperature: +95°C | |
| Test Media: MIL-PRF-83282 | |



Test No: 2984
Test Date: 7/14/2015

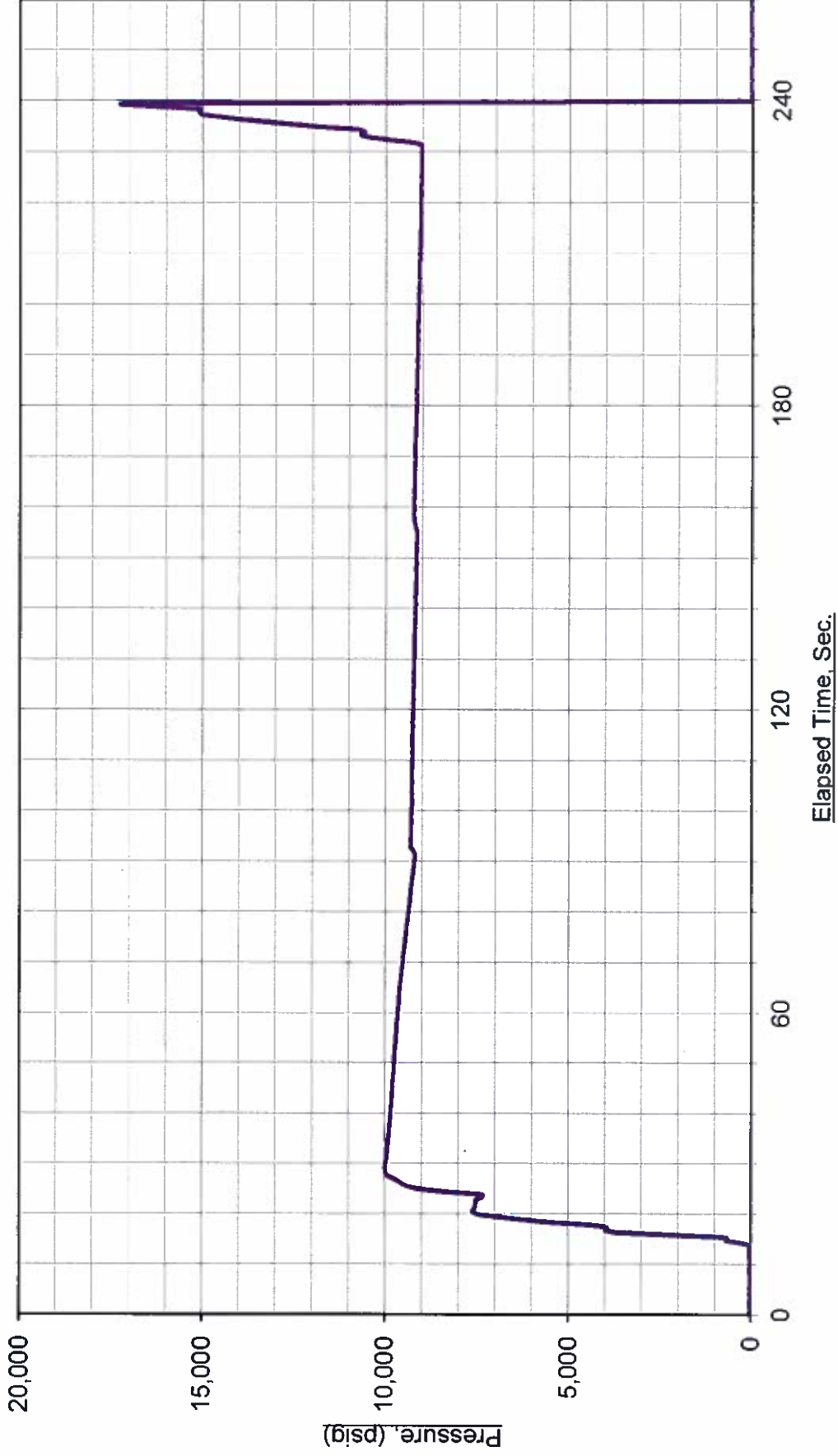
Burst Pressure Test



| Customer Info | | Test Requirements | | Actual Data | |
|----------------------|-------------|----------------------|---------------|----------------------|-------------|
| Test Specimen No(s): | 2984-01-04D | Test Pressure (psi): | 9,000 | Max. Pressure (psi): | 16,954 |
| Customer Name: | ITA Mexico | Test Duration: | 3 Minutes | Test Duration: | 255 Seconds |
| Customer PO No: | 3000038416 | Test Temperature: | +95°C | Temperature: | +95°C |
| Specification: | ISO 7169 | Test Media: | MIL-PRF-83282 | | |



Burst Pressure Test
Test No: 2984
Test Date: 7/14/2015

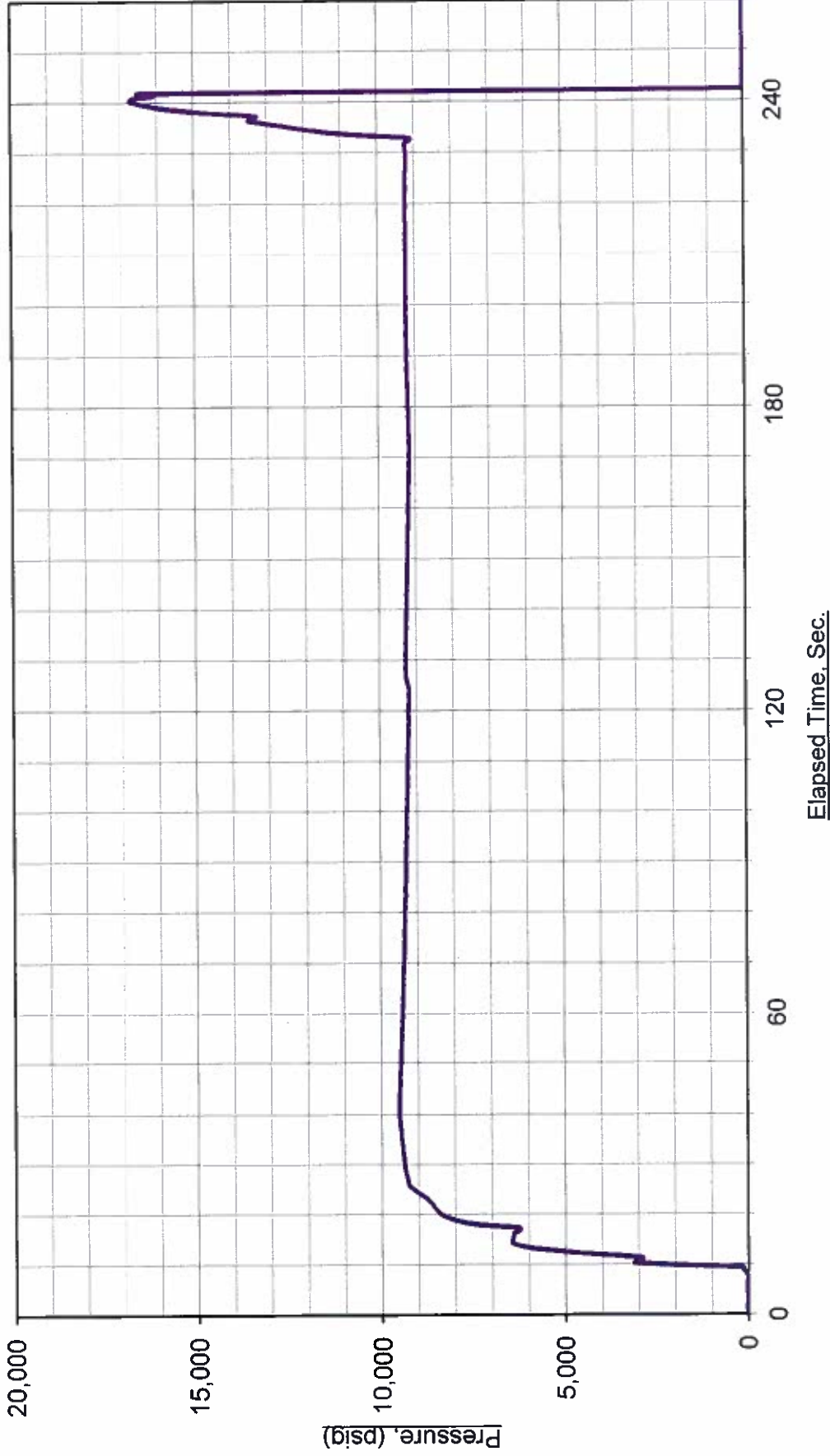


| | | |
|----------------------------------|----------------------------|-----------------------------|
| Customer Info | Test Requirements | Actual Data |
| Test Specimen No(s): 2984-01-06A | Test Pressure (psi): 9,000 | Max. Pressure (psi): 17,164 |
| Customer Name: ITA Mexico | Test Duration: 3 Minutes | Test Duration: 285 Seconds |
| Customer PO No: 3000038416 | Test Temperature: Ambient | Temperature: 25°C |
| Specification: ISO 7169 | Test Media: MIL-PRF-83282 | |



Test No: 2984
Test Date: 7/14/2015

Burst Pressure Test



Actual Data
Max. Pressure (psi): 16,731
Test Duration: 265 Seconds
Temperature: 25°C

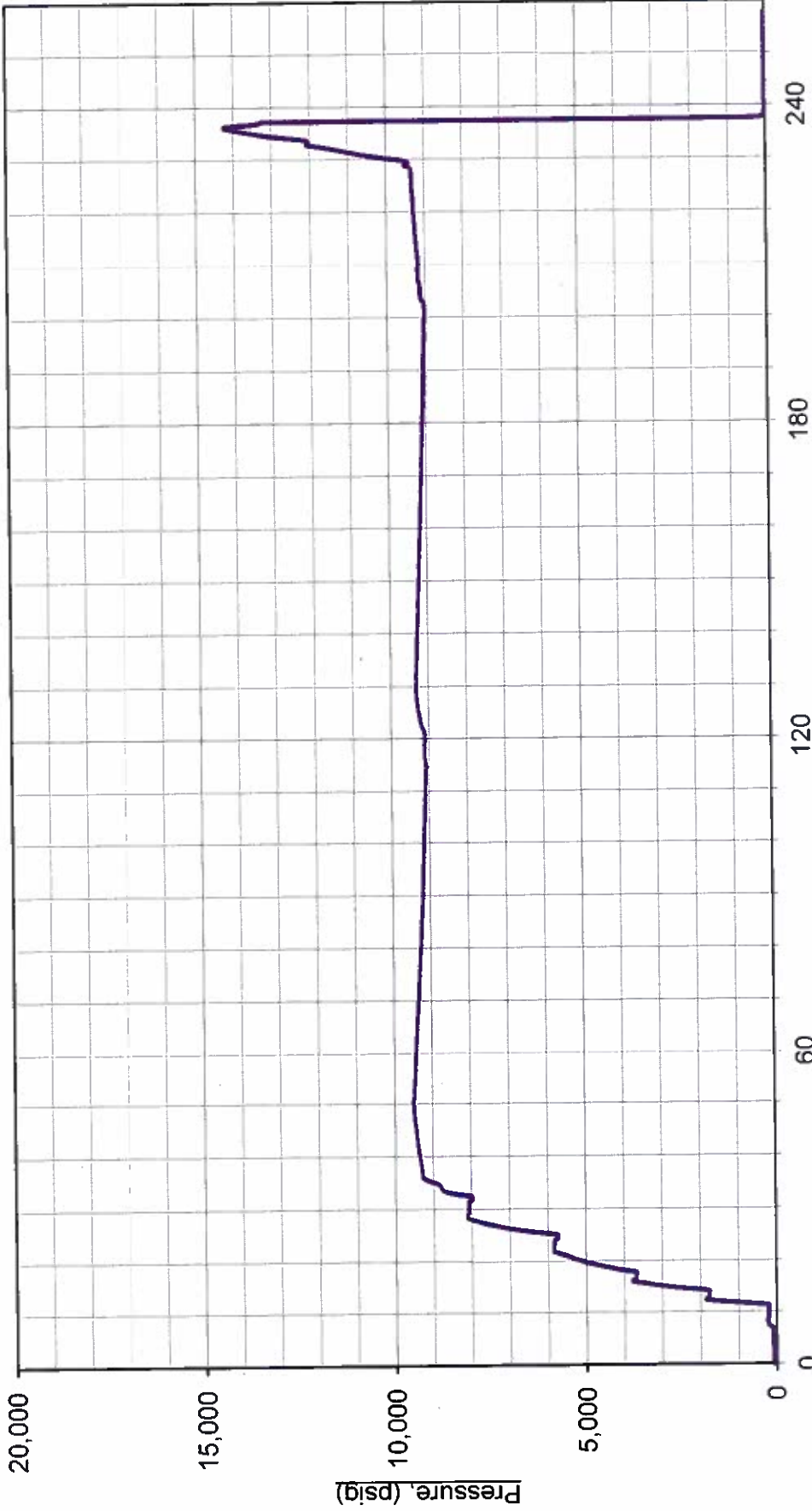
Test Requirements
Test Pressure (psi): 9,000
Test Duration: 3 Minutes
Test Temperature: Ambient
Test Media: MIL-PRF-83282

Customer Info
Test Specimen No(s): 2984-01-06B
Customer Name: ITA Mexico
Customer PO No: 3000038416
Specification: ISO 7169



Test No: 2984
Test Date: 7/18/2015

Burst Pressure Test



Elapsed Time, Sec.

Actual Data

Max. Pressure (psi): **14,239**
Test Duration: 255 Seconds
Temperature: +95°C

Test Requirements

Test Pressure (psi): 9,000
Test Duration: 3 Minutes
Test Temperature: +95°C
Test Media: MIL-PRF-83282

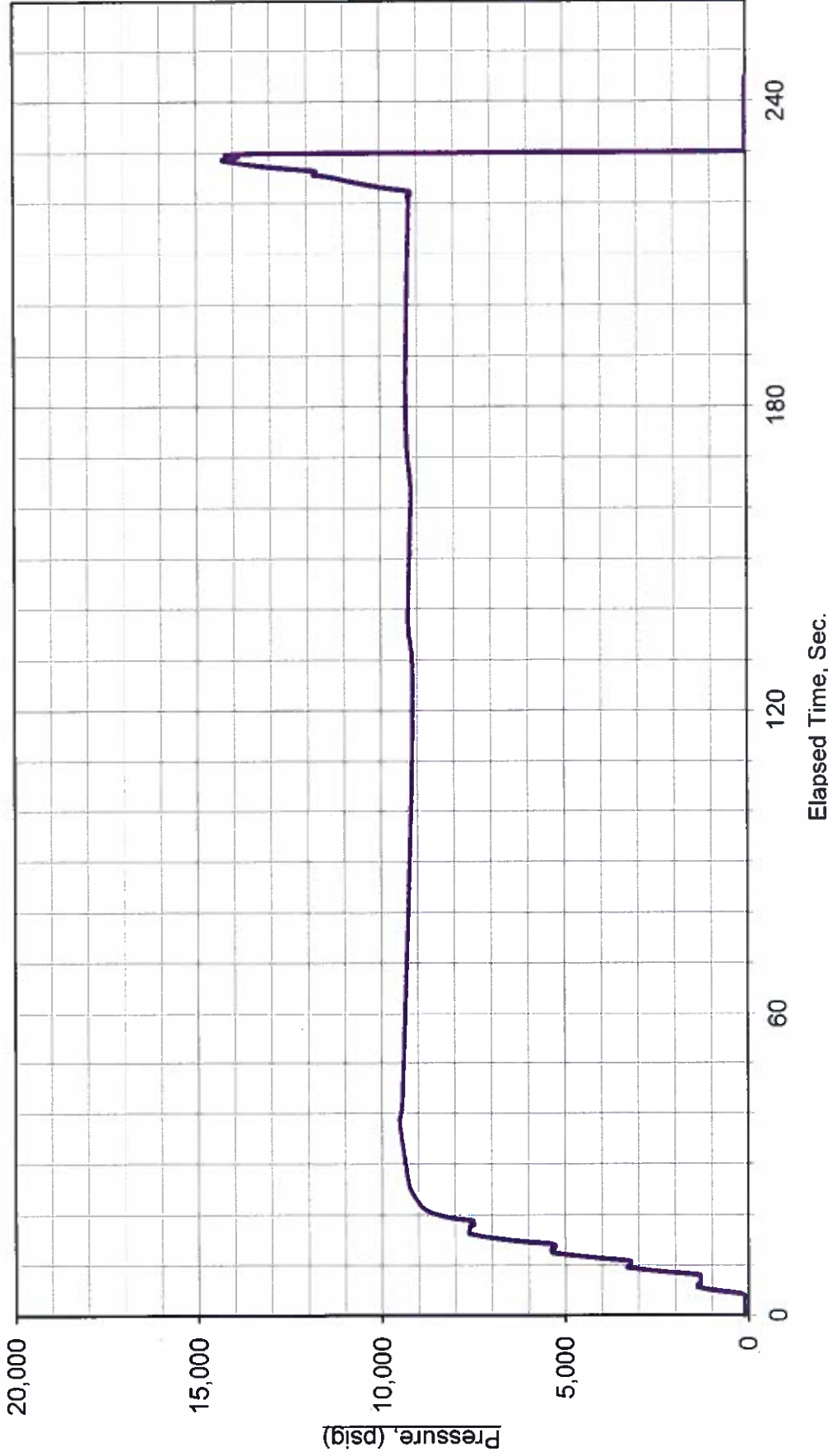
Customer Info

Test Specimen No(s): 2984-01-06C
Customer Name: ITA Mexico
Customer PO No: 3000038416
Specification: ISO 7169



Test No: 2984
Test Date: 7/18/2015

Burst Pressure Test

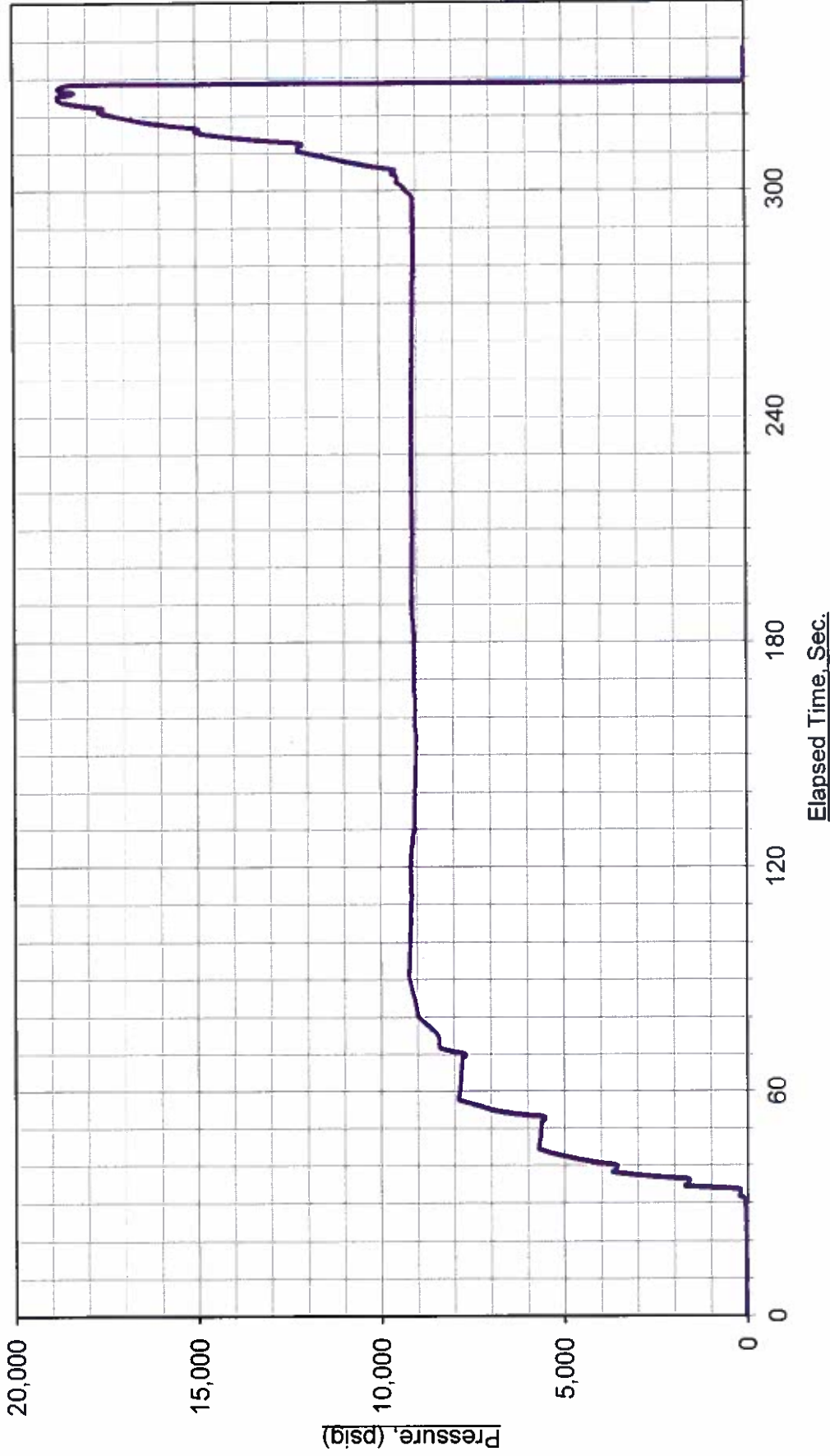


| | | |
|----------------------------------|----------------------------|-----------------------------|
| Customer Info | Test Requirements | Actual Data |
| Test Specimen No(s): 2984-01-06D | Test Pressure (psi): 9,000 | Max. Pressure (psi): 14,279 |
| Customer Name: ITA Mexico | Test Duration: 3 Minutes | Test Duration: 245 Seconds |
| Customer PO No: 3000038416 | Test Temperature: +95°C | Test Temperature: +95°C |
| Specification: ISO 7169 | Test Media: MIL-PRF-83282 | |



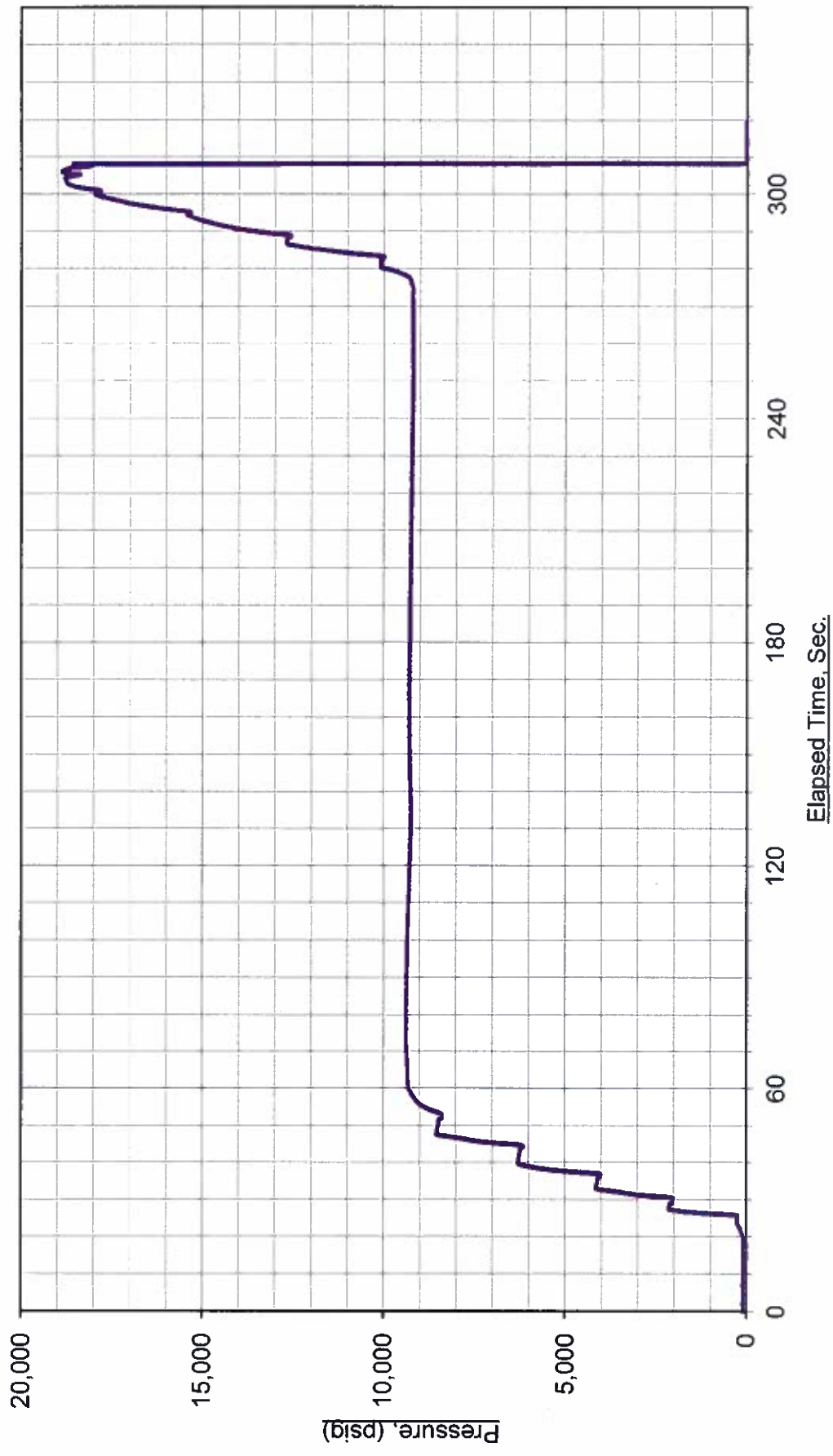
Test No: 2984
Test Date: 7/17/2015

Burst Pressure Test





Burst Pressure Test
Test No: 2984
Test Date: 7/17/2015

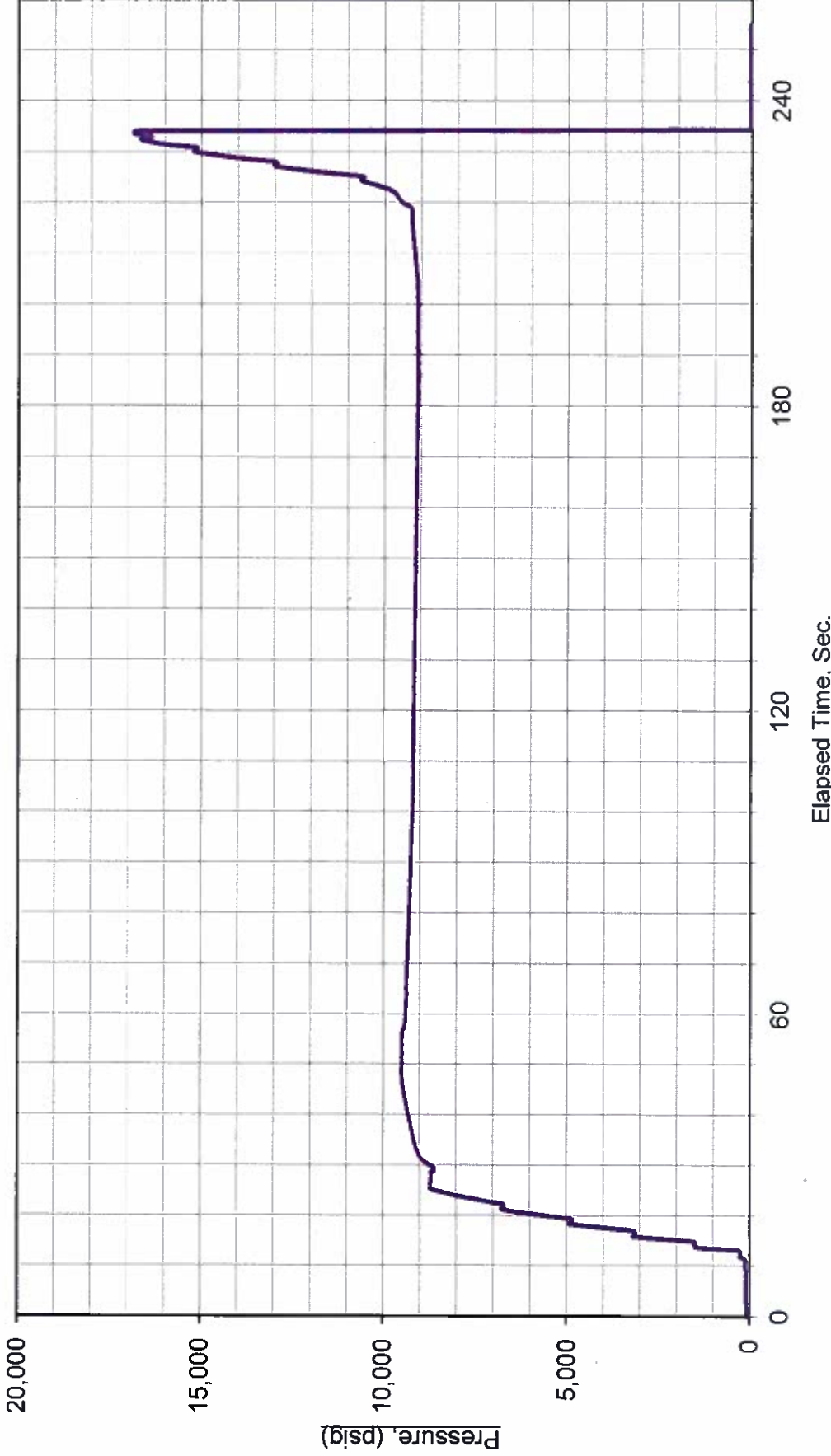


| | | |
|----------------------------------|----------------------------|-----------------------------|
| Customer Info | Test Requirements | Actual Data |
| Test Specimen No(s): 2984-01-08B | Test Pressure (psi): 9,000 | Max. Pressure (psi): 18,866 |
| Customer Name: ITA Mexico | Test Duration: 3 Minutes | Test Duration: 320 Seconds |
| Customer PO No: 3000038416 | Test Temperature: Ambient | Temperature: 25°C |
| Specification: ISO 7169 | Test Media: MIL-PRF-83282 | |



Burst Pressure Test

Test No: 2984
Test Date: 7/18/2015

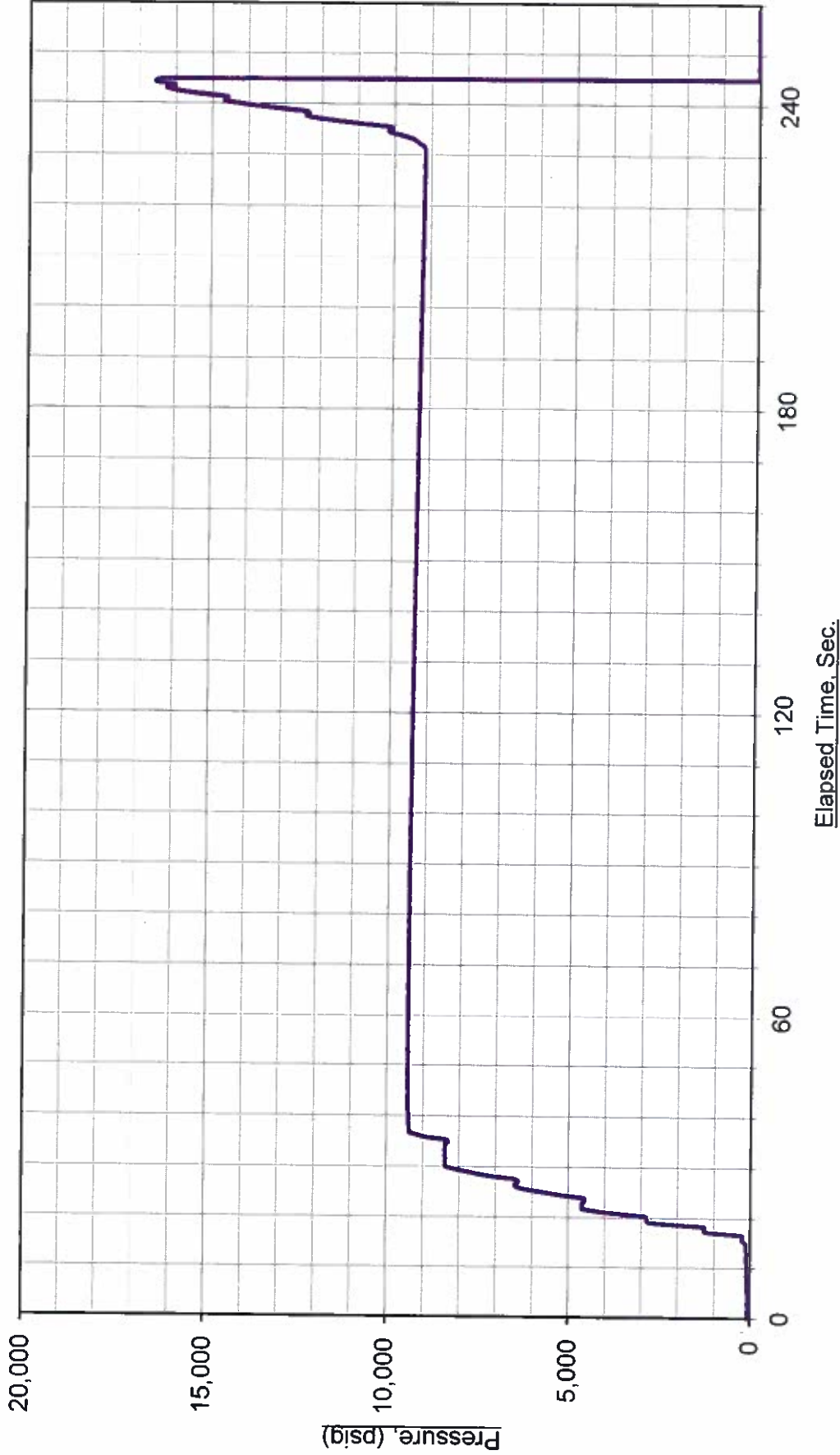


| | | |
|----------------------------------|----------------------------|-----------------------------|
| Customer Info | Test Requirements | Actual Data |
| Test Specimen No(s): 2984-01-08C | Test Pressure (psi): 9,000 | Max. Pressure (psi): 16,839 |
| Customer Name: ITA Mexico | Test Duration: 3 Minutes | Test Duration: 258 Seconds |
| Customer PO No: 300038416 | Test Temperature: +95°C | Temperature: +95°C |
| Specification: ISO 7169 | Test Media: MIL-PRF-83282 | |



Burst Pressure Test

Test No: 2984
Test Date: 7/18/2015



Customer Info

Test Specimen No(s): 2984-01-08D
Customer Name: ITA Mexico
Customer PO No: 3000038416
Specification: ISO 7169

Test Requirements

Test Pressure (psi): 9,000
Test Duration: 3 Minutes
Test Temperature: +95°C
Test Media: MIL-PRF-83282

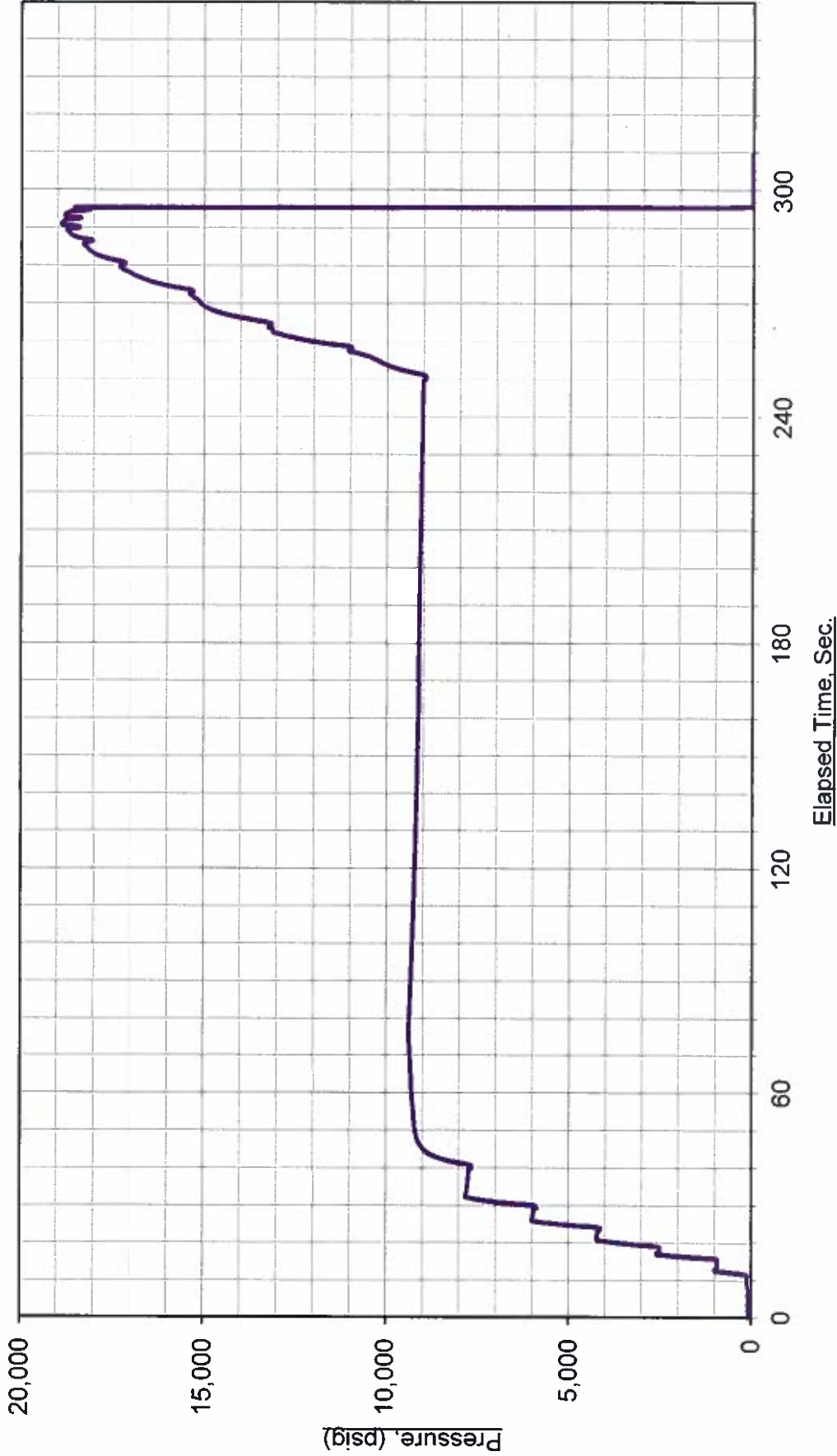
Actual Data

Max. Pressure (psi): 16,560
Test Duration: 260 Seconds
Temperature: +95°C



Burst Pressure Test

Test No: 2984
Test Date: 7/17/2015

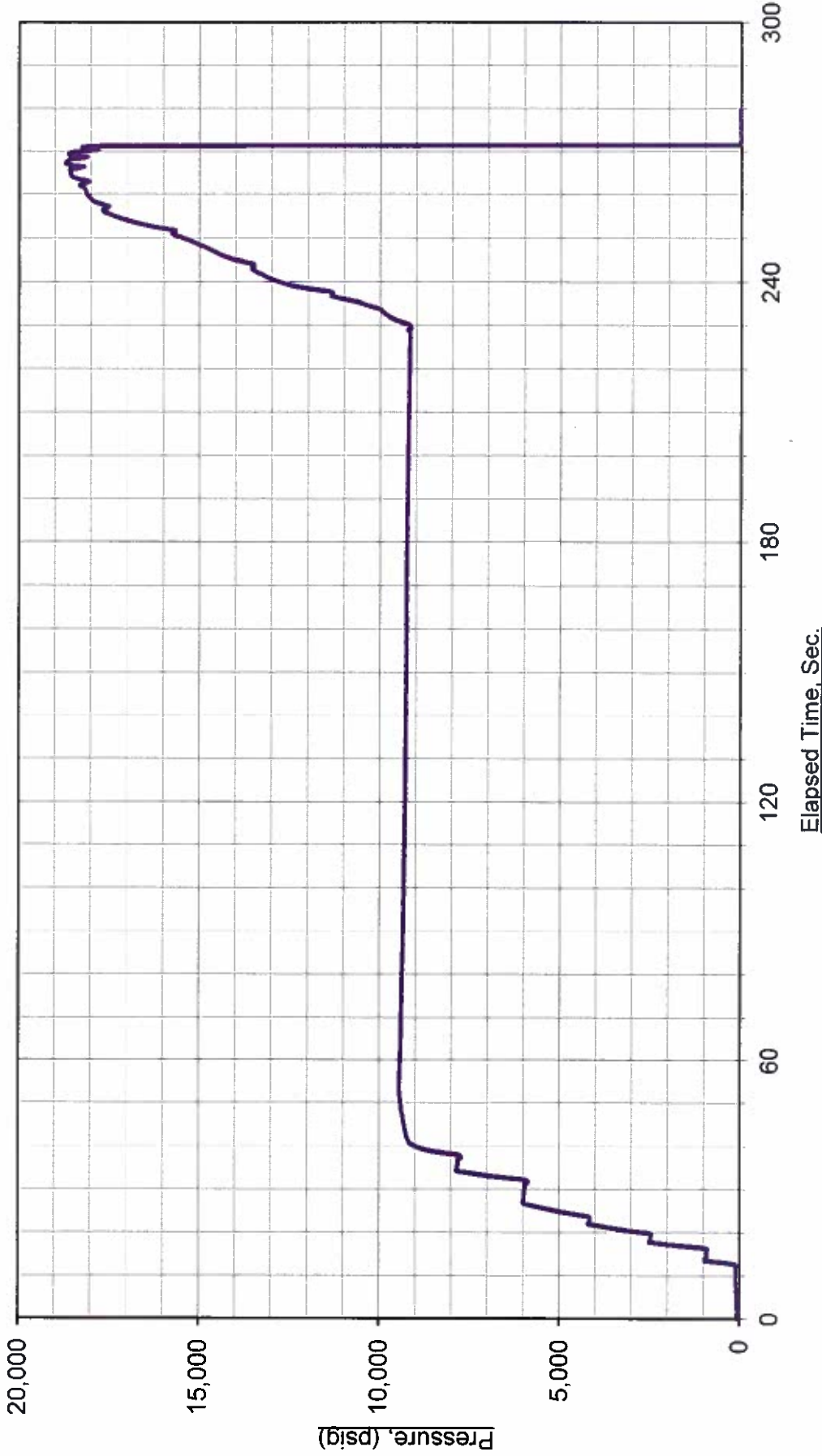


| Customer Info | | Test Requirements | | Actual Data | |
|----------------------|-------------|----------------------|---------------|----------------------|-------------|
| Test Specimen No(s): | 2984-01-10A | Test Pressure (psi): | 9,000 | Max. Pressure (psi): | 18,900 |
| Customer Name: | ITA Mexico | Test Duration: | 3 Minutes | Test Duration: | 310 Seconds |
| Customer PO No: | 3000038416 | Test Temperature: | Ambient | Temperature: | 25°C |
| Specification: | ISO 7169 | Test Media: | MIL-PRF-83282 | | |



Burst Pressure Test

Test No: 2984
Test Date: 7/17/2015



Customer Info

Test Specimen No(s): 2984-01-10B
Customer Name: ITA Mexico
Customer PO No: 300038416
Specification: ISO 7169

Test Requirements

Test Pressure (psi): 9,000
Test Duration: 3 Minutes
Test Temperature: Ambient
Test Media: MIL-PRF-83282

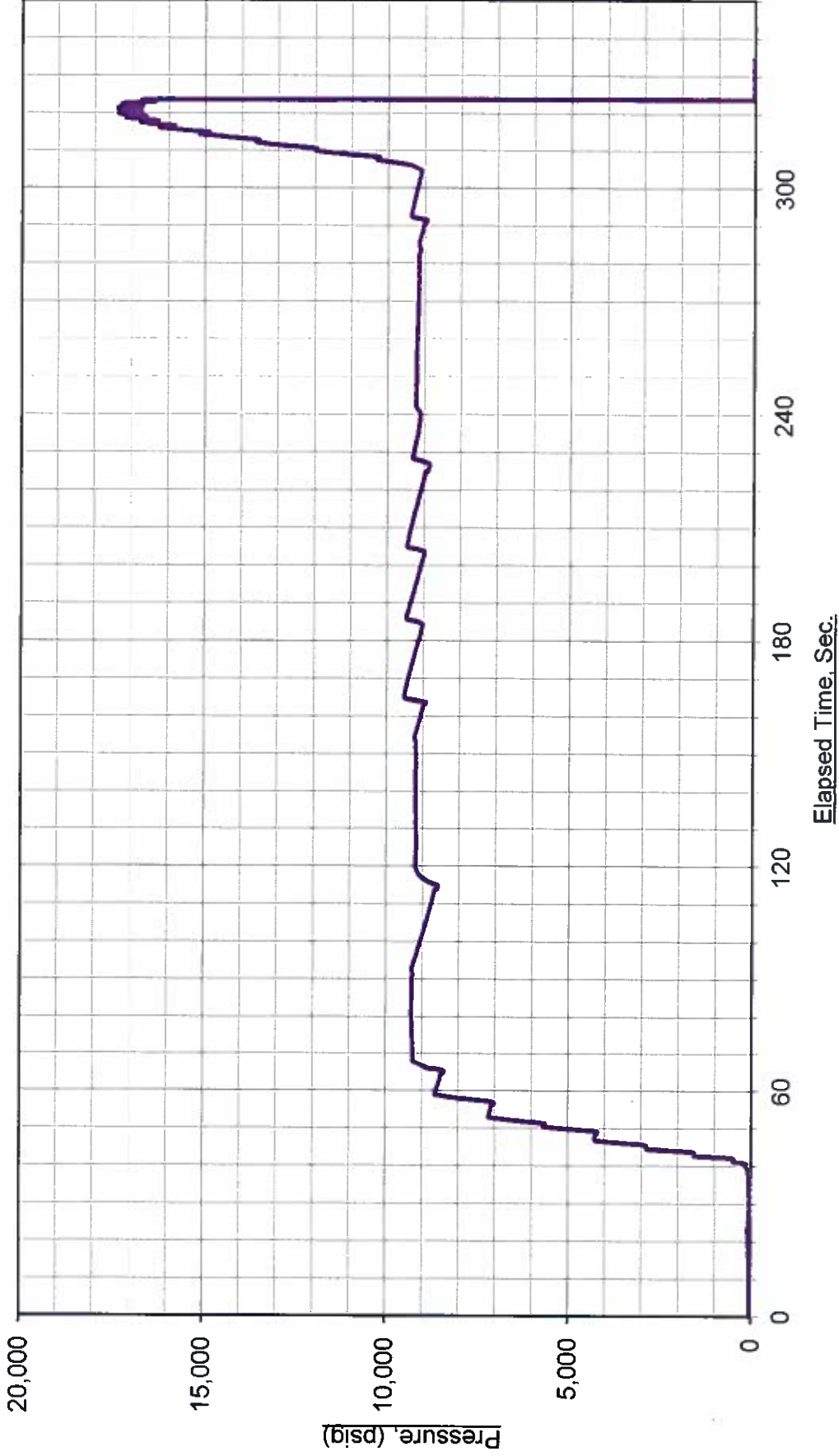
Actual Data

Max. Pressure (psi): 18,704
Test Duration: 280 Seconds
Temperature: 25°C



Burst Pressure Test

Test No: 2984
Test Date: 7/18/2015

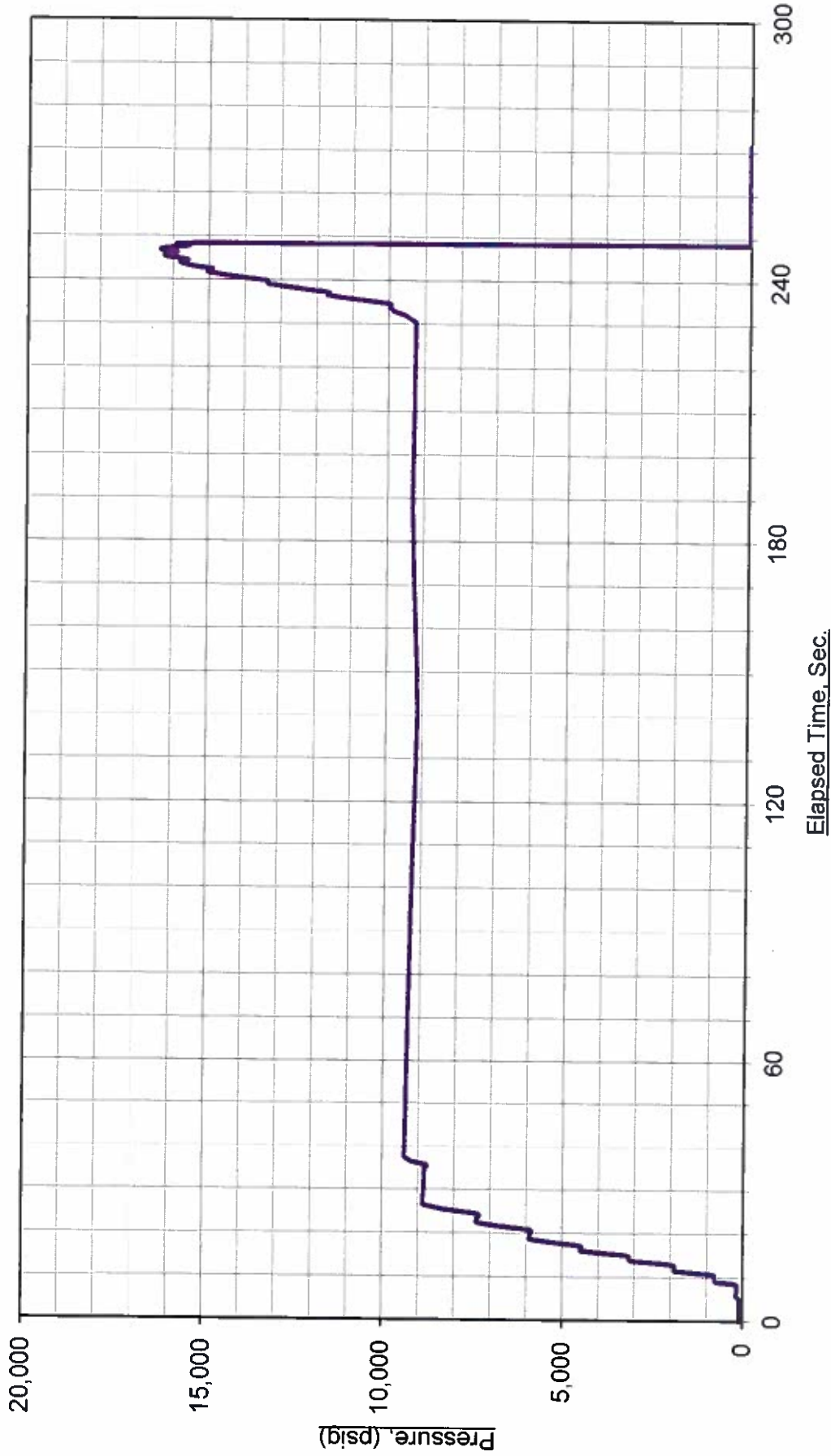


| | |
|----------------------------------|-----------------------------|
| Customer Info | Actual Data |
| Test Specimen No(s): 2984-01-10C | Max. Pressure (psi): 17,384 |
| Customer Name: ITA Mexico | Test Duration: 335 Seconds |
| Customer PO No: 3000038416 | Temperature: +95°C |
| Specification: ISO 7169 | |
| | |
| Test Requirements | |
| Test Pressure (psi): 9,000 | |
| Test Duration: 3 Minutes | |
| Test Temperature: +95°C | |
| Test Media: MIL-PRF-83282 | |



Burst Pressure Test

Test No: 2984
Test Date: 7/18/2015



Customer Info

Test Specimen No(s): 2984-01-10D
Customer Name: ITA Mexico
Customer PO No: 3000038416
Specification: ISO 7169

Test Requirements

Test Pressure (psi): 9,000
Test Duration: 3 Minutes
Test Temperature: +95°C
Test Media: MIL-PRF-83282

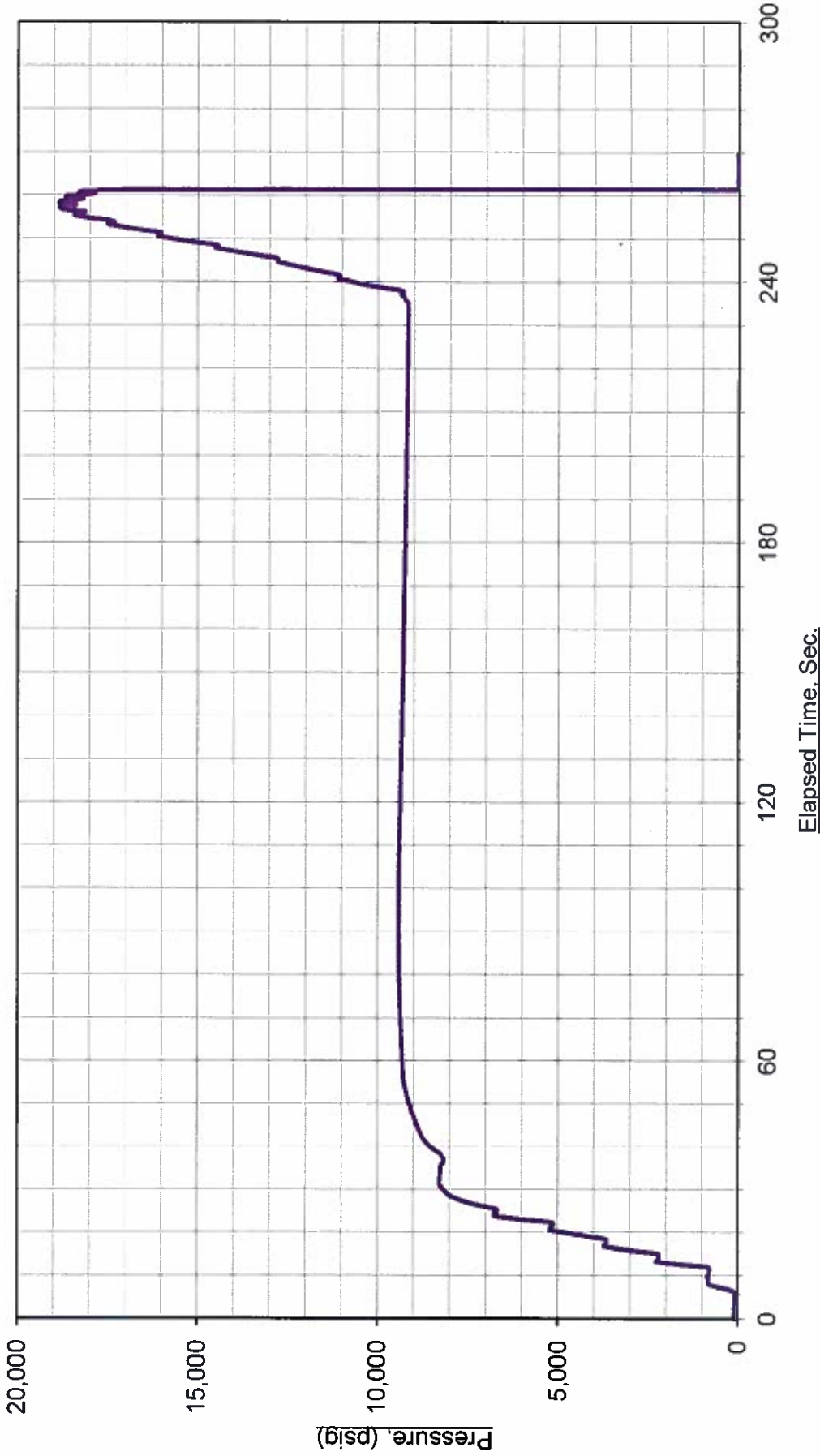
Actual Data

Max. Pressure (psi): 16,331
Test Duration: 272 Seconds
Temperature: +95°C



Burst Pressure Test

Test No: 2984
Test Date: 7/17/2015



| Customer Info | | Test Requirements | | Actual Data | |
|----------------------|-------------|----------------------|---------------|----------------------|-------------|
| Test Specimen No(s): | 2984-01-12A | Test Pressure (psi): | 9,000 | Max. Pressure (psi): | 18,849 |
| Customer Name: | ITA Mexico | Test Duration: | 3 Minutes | Test Duration: | 270 Seconds |
| Customer PO No: | 300038416 | Test Temperature: | Ambient | Temperature: | 25°C |
| Specification: | ISO 7169 | Test Media: | MIL-PRF-83282 | | |



Burst Pressure Test

Test No: 2984

Test Date: 7/17/2015



Actual Data
Max. Pressure (psi): 18,821
Test Duration: 275 Seconds
Temperature: 25°C

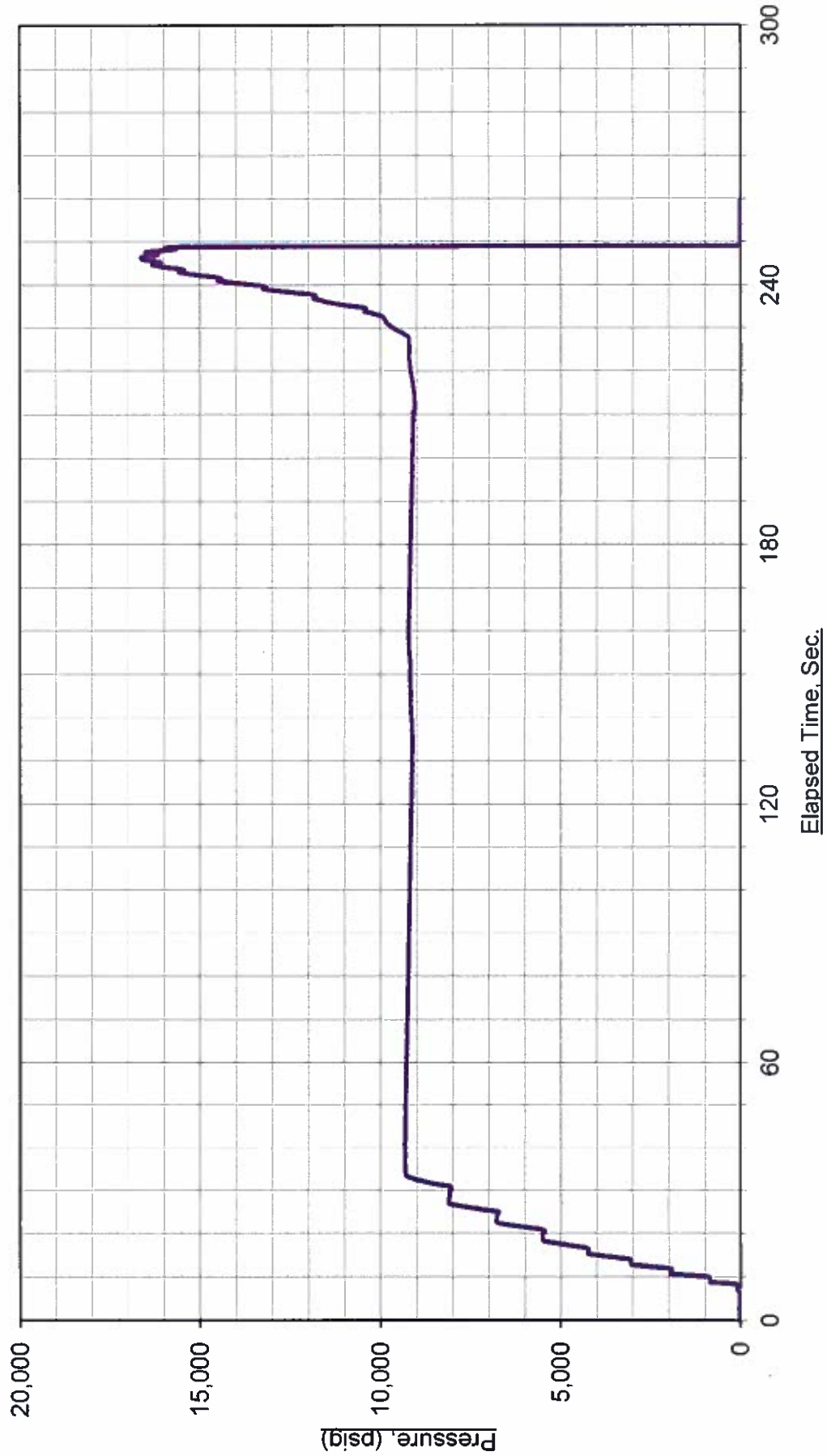
Test Requirements
Test Pressure (psi): 9,000
Test Duration: 3 Minutes
Test Temperature: Ambient
Test Media: MIL-PRF-83282

Customer Info
Test Specimen No(s): 2984-01-12B
Customer Name: ITA Mexico
Customer PO No: 3000038416
Specification: ISO 7169



Test No: 2984
Test Date: 7/18/2015

Burst Pressure Test

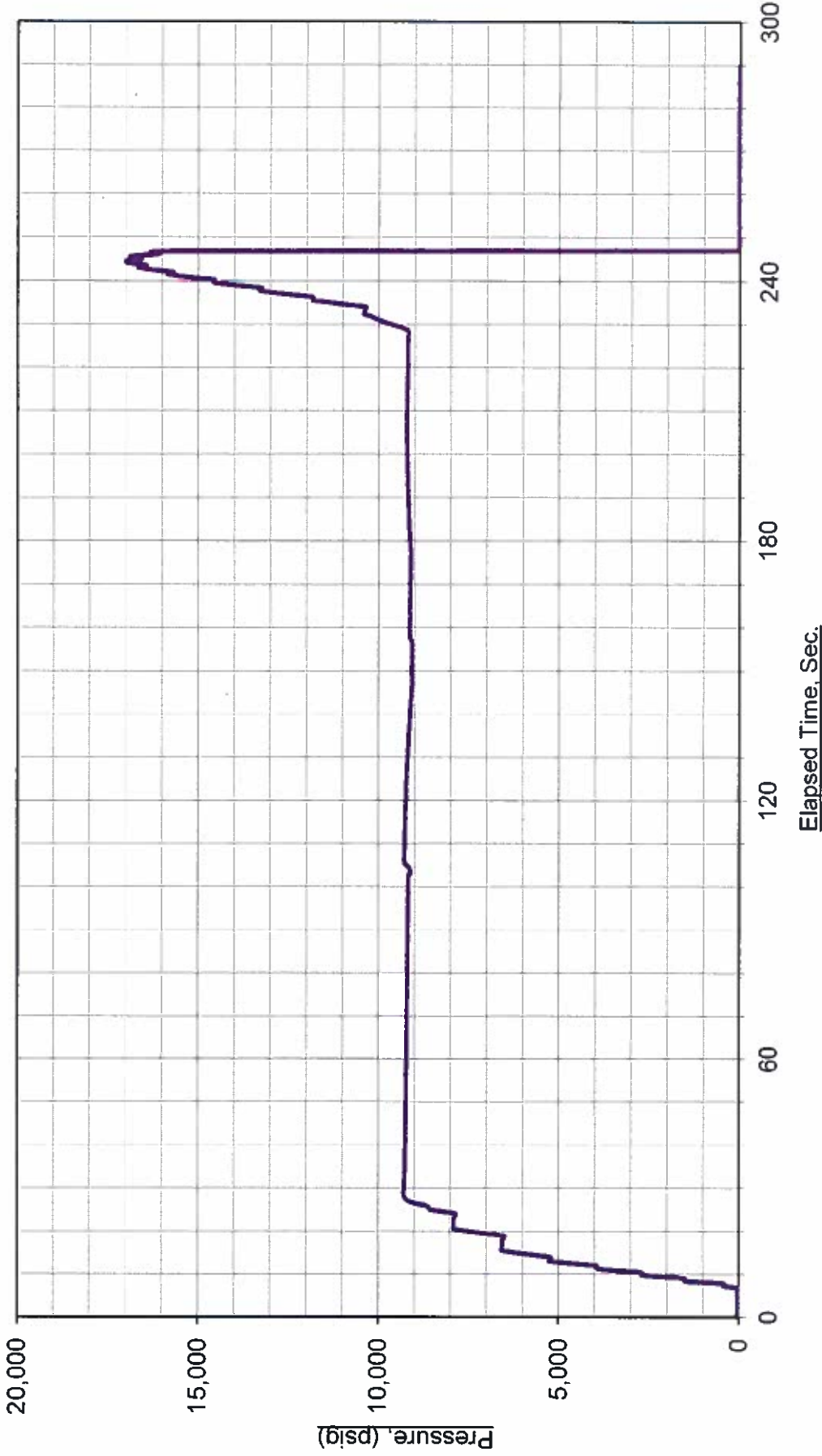


| | | |
|----------------------------------|----------------------------|-----------------------------|
| Customer Info | Test Requirements | Actual Data |
| Test Specimen No(s): 2984-01-12C | Test Pressure (psi): 9,000 | Max. Pressure (psi): 16,621 |
| Customer Name: ITA Mexico | Test Duration: 3 Minutes | Test Duration: 260 Seconds |
| Customer PO No: 3000038416 | Test Temperature: +95°C | Temperature: +95°C |
| Specification: ISO 7169 | Test Media: MIL-PRF-83282 | |



Burst Pressure Test

Test No: 2984
Test Date: 7/18/2015



Customer Info

Test Specimen No(s): 2984-01-12D
Customer Name: ITA Mexico
Customer PO No: 3000038416
Specification: ISO 7169

Test Requirements

Test Pressure (psi): 9,000
Test Duration: 3 Minutes
Test Temperature: +95°C
Test Media: MIL-PRF-83282

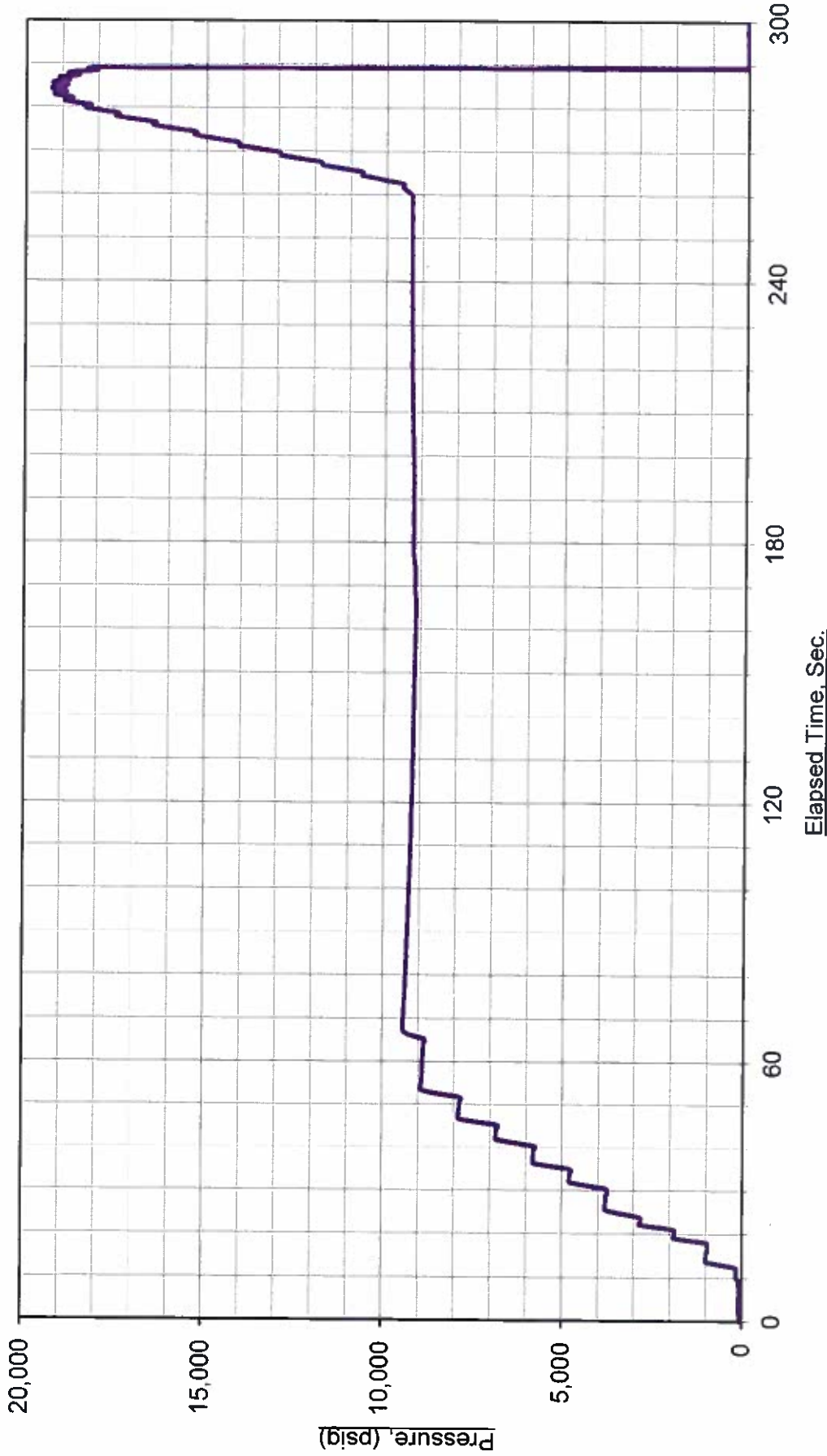
Actual Data

Max. Pressure (psi): 16,992
Test Duration: 290 Seconds
Temperature: +95°C



Burst Pressure Test

Test No: 2984
Test Date: 7/17/2015



| | | |
|----------------------------------|----------------------------|-----------------------------|
| Customer Info | Test Requirements | Actual Data |
| Test Specimen No(s): 2984-01-16A | Test Pressure (psi): 9,000 | Max. Pressure (psi): 19,298 |
| Customer Name: ITA Mexico | Test Duration: 3 Minutes | Test Duration: 310 Seconds |
| Customer PO No: 3000038416 | Test Temperature: Ambient | Temperature: 25°C |
| Specification: ISO 7169 | Test Media: MIL-PRF-83282 | |