



Bri-Steel Manufacturing Inc.
 2125-64 Avenue, Edmonton, AB Canada T6P 1Z4
 Tel: 001 (780) 469-6603
 Fax: 001 (780) 469-6986
 www.brichemsteel.com

Mill Test Certificate

Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0284** Product Size: **NPS 16 XS** Production Date: **April 9, 2012**
 Production Method: **Hot Expansion** Product Heat Treatment: **As-rolled**
 Product Standards: **ASTM/ASME A/SA106-2011 Grade B/C, A/SA53-2010 Grade B Type S, NACE MR0175-2009**
 Product Markings: **.BRI-STEEL MFG NPS 16 XS ASTM/ASME A/SA106 GR B/C A/SA53 GR B HEAT BSM-0284 (PIPE # LENGTH MASS) 82.77lb/ft NDE 1490PSI NACE MR0175 2012/04 MADE IN CANADA.**

| Product Details | | | | Non-Destructive Testing | | | | | | | | | | |
|-----------------|-----------|-----|-----|-------------------------|--------|-------|--------|-----------|--------|------|------|-----------|-------------|-------------|
| Heat | Test Type | NPS | SCH | Pieces | Length | Mass | Geiger | Res. Mag. | Visual | UT | UT | ET | Hydro Test | End |
| BSM-0284 | Heat | 16 | XS | 11 | DRL | 82.77 | <5 | <20 | Insp. | WT | --- | ASTM E309 | 1490 psi/5s | 37.5° Bevel |
| | | | | | | | Pass | Pass | Pass | Pass | Pass | Pass | Pass | Pass |

| Chemical Analysis (wt%) | | | | | | | | | | | | | | |
|-------------------------|-----------|--------------------|------|-------|-------|------|------|------|------|------|-------|-------|-------|------|
| Heat | Test Type | Steelmaking Method | | | | | | | | | | | | |
| | | C | Mn | P | S | Si | Cr | Cu | Mo | Ni | V | Ti | Nb | CE |
| BSM-0284 | Heat | 0.20 | 0.88 | 0.014 | 0.009 | 0.26 | 0.06 | 0.11 | 0.02 | 0.05 | 0.003 | 0.001 | 0.001 | 0.37 |
| | | | | | | | | | | | | | | |

| Mechanical Properties | | | | | | | | | |
|-----------------------|-----------|--------------------|----------|-----------------|--------------------|---------------|--------------|------|----------------|
| Heat | Test Type | Microstructure | Hardness | Flattening Test | Tension Test | | Tensile (Rm) | Y/T | Elongation (A) |
| | | | | | 50mm GL; 38mm x WT | Transverse | | | |
| BSM-0284 | Heat | Ferrite & Pearlite | HRBW 77 | Pass | Yield (Rt0.5) | Yield (Rp0.2) | psi | psi | psi |
| | | | | | 47,100 | 45,600 | 74,000 | 0.64 | 43 |
| | | | | | 45,600 | 45,800 | 73,000 | 0.62 | 44 |

Additional Details:

- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with ASTM/ASME A/SA106-2011, A/SA53-2010 and the purchase order requirements, and that the results meet the corresponding requirements.
- ✓ This pipe product meet the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service, and NACE MR0103-2010 Section 2.1.
- ✓ No weld repairs have been performed on this product. This product has no mercury contamination.
- ✓ This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.

Mill Test Certificate approved by:

2012 Apr 16

Kenton Dechant, P.Eng.
 Manager of Quality and R&D



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Mill Test Certificate

Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0284** Product Size: **NPS 16 STD** Production Date: **April 9, 2012**

Production Method: **Hot Expansion** Product Heat Treatment: **As-rolled**

Product Standards: **ASTM/ASME A/SA106-2011 Grade B/C, A/SA53-2010 Grade B Type S, NACE MR0175-2009**

Product Markings: **.BRI-STEEL MFG NPS 16 STD ASTM/ASME A/SA106 GR B/C A/SA53 GR B HEAT BSM-0284 (PIPE # LENGTH MASS) 82.77lb/ft NDE 1490PSI NACE MR0175 2012/04 MADE IN CANADA.**

| Product Details | | | | Non-Destructive Testing | | | | | | | | | | |
|-----------------|-----------|-----|------|-------------------------|--------|-------|--------|-----------|--------|------|-----|------|-------------|-------------|
| Heat | Test Type | NPS | SCH | Pieces | Length | Mass | Geiger | Res. Mag. | Visual | OD | UT | ET | Hydro Test | End |
| BSM-0284 | Heat | 16 | STD* | 1 | DRL | 82.77 | <5 | <20 | Insp. | Pass | WT | Pass | 1490 psi/5s | 37.5° Bevel |
| | | | | | | | | | Pass | Pass | --- | Pass | Pass | |

| Chemical Analysis (wt%) | | | | | | | | | | | | | | |
|-------------------------|-----------|--------------------|------|-------|-------|------|------|------|------|------|-------|-------|-------|------|
| Heat | Test Type | Steelmaking Method | | | | | | | | | | | | |
| | | C | Mn | P | S | Si | Cr | Cu | Mo | Ni | V | Ti | Nb | CE |
| BSM-0284 | Heat | 0.20 | 0.88 | 0.014 | 0.009 | 0.26 | 0.06 | 0.11 | 0.02 | 0.05 | 0.003 | 0.001 | 0.001 | 0.37 |
| | | | | | | | | | | | | | | 0.38 |


| Mechanical Properties | | | | | | | | | |
|-----------------------|-----------|--------------------|----------|-----------------|--------------------|------------|--------------|------|----------------|
| Heat | Test Type | Microstructure | Hardness | Flattening Test | Tension Test | | Tensile (Rm) | Y/T | Elongation (A) |
| | | | | | 50mm GL; 38mm x WT | Transverse | | | |
| BSM-0284 | Heat | Ferrite & Pearlite | 77 | Pass | 77 | 46,600 | 74,000 | 0.64 | 43 |
| | | | | | | 45,800 | 73,000 | 0.62 | 44 |

Additional Details:

- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with ASTM/ASME A/SA106-2011, A/SA53-2010 and the purchase order requirements, and that the results meet the corresponding requirements.
- ✓ This pipe product meet the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service, and NACE MR0103-2010 Section 2.1.
- ✓ No weld repairs have been performed on this product. This product has no mercury contamination.
- ✓ This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.

* Note that pipe 004A was downgraded from NPS 16 XS to NPS 16 STD.

Mill Test Certificate approved by:


 2012 July 9

Kenton Dechant, P.Eng.
 Manager of Quality and R&D