



Mill Test Certificate

Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0023** Product Size: **NPS 18 STD** Production Date: **2011 Aug 31**

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

Product Standards: **ASTM/ASME A/SA106-2010 Grade B, A/SA53-2010 Grade B Type S, NACE MR0175-2003**

Product Markings: **.BRI-STEEL MFG NPS 18 STD ASTM/ASME A/SA106 GR B HEAT BSM-0023 NDE 900 PSI NACE MR0175-03 2011/09 MADE IN CANADA.**

| Product Details | | | | | | Non-Destructive Testing | | | | | | | | | |
|-----------------|-----------|-----|-----|--------|--------|-------------------------|-------------------|-----------------|--------------|------|-------|--------------|--------------|----------------------|---------------|
| Heat | Test Type | NPS | SCH | Pieces | Length | Metric Tonnes | Gelger $\mu R/hr$ | Res. Mag. Gauss | Visual Insp. | OD | UT WT | UT ASTM E213 | ET ASTM E309 | HydroTest 900 psi/5s | End Condition |
| BSM-0023 | Heat | 18 | STD | 2 | DRL | 2.82 | <5 | <20 | Pass | Pass | Pass | --- | Pass | Pass | 37.5" Bevel |

| | | Chemical Analysis (wt%) | | | | | | | | | | | | | | | | |
|------|-----------|---|------|------|-------|-------|------|------|------|------|------|-------|-------|-------|-------|--------|----------|----------|
| Heat | Test Type | Steelmaking Method | | C | Mn | P | S | Si | Cr | Cu | Mo | Ni | V | Ti | Nb | B | CE (IIV) | CE (CSA) |
| | | Blast Furnace; EAF; Ladle Refining; Vacuum Degass | 0.21 | 0.88 | 0.014 | 0.010 | 0.23 | 0.04 | 0.11 | 0.01 | 0.04 | 0.003 | 0.001 | 0.001 | 0.001 | 0.0002 | 0.38 | 0.38 |

| Mechanical Properties | | | | | | | | | | |
|-----------------------|-----------|----------------|--------------|-----------------|--------------------|----|-------------------|-------------------|------------------|------------------|
| Heat | Test Type | Microstructure | Hardness HRB | Flattening Test | Tension Test | | Yield (Rt0.5) psi | Yield (Rp0.2) psi | Tensile (Rm) psi | Elongation (A) % |
| | | | | | Ferrite & Pearlite | 81 | | | | |

Additional Details:

- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected in accordance with ASTM/ASME A/SA106-2010, 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 15156-2003 Annex A2 for Region 3 Sour Service, and NACE MR0103-2004 Para. 2.1.
- ✓ This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.

Mill Test Certificate approved by:

[Handwritten Signature]
2011 Sept 21

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