

**CERTIFICATE****No. A/11-190843 Rev 00**  
**Date 2011-09-19 Page 1/2**INSPECTION CERTIFICATE acc to  
EN 10 204 3.1Processkontroll Items AB  
Box 2088  
444 02 STORA HÖGA  
SWEDENINSPECTION STAMP  
QA-TUBE

| <b>Customer References</b><br><br>710329<br><br>003-00991 ITEMS<br><br>Customer<br>order<br>2011-07-21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                     | <b>Sandvik References</b><br>Order No. Subs No. ABSMT Dispatch note<br>253816 507844 01036/54<br>ABSMT No. C.Code<br>300-48094 15                                         |       |        |                     |        |       |        |    |    |    |                 |        |       |      |      |        |       |              |       |      |  |   |  |       |  |  |  |    |      |        |       |  |  |  |  |  |  |  |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |  |   |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
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| <b>Material description</b><br>SEAMLESS STAINLESS COLD FINISHED<br>HYDRAULIC TUBING<br><br><b>Steel making process</b><br>Electric furnace                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                     | <b>Steel/material Designations</b><br>Sandvik SS<br>3R60 2353<br>AISI AFNOR<br>TP316/TP316L Z2CND17-13<br>W.nr DIN<br>1.4435 X 2 CRNIMO 18 14 3<br>EN no<br><b>1.4435</b> |       |        |                     |        |       |        |    |    |    |                 |        |       |      |      |        |       |              |       |      |  |   |  |       |  |  |  |    |      |        |       |  |  |  |  |  |  |  |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |  |   |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
| <b>Technical requirements</b><br>PED/23/EC, EN 10216-5 TC1<br>SS 219711, DIN 17458 TC1, NFA 49-117-09/85<br>ASTM A-213-09A AW, ASME SA-213-ED-10 AW, ASTM A-269-08<br>NACE MR0175/ISO 15156-3:2009, HRB Max 80                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                     |                                                                                                                                                                           |       |        |                     |        |       |        |    |    |    |                 |        |       |      |      |        |       |              |       |      |  |   |  |       |  |  |  |    |      |        |       |  |  |  |  |  |  |  |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |  |   |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
| <b>EXTENT OF DELIVERY</b> <table border="1"><thead><tr><th>It</th><th>Product designation</th><th>Heat</th><th>Lot</th><th>Pieces</th><th>Kg</th><th>M</th></tr></thead><tbody><tr><td>01</td><td>THT-3R60-12-1.5</td><td>529120</td><td>31196</td><td>20</td><td>50.0</td><td>120.00</td></tr><tr><td></td><td>12.00 X 1.50</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td colspan="4">Total</td><td>20</td><td>50.0</td><td>120.00</td></tr></tbody></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                     |                                                                                                                                                                           |       | It     | Product designation | Heat   | Lot   | Pieces | Kg | M  | 01 | THT-3R60-12-1.5 | 529120 | 31196 | 20   | 50.0 | 120.00 |       | 12.00 X 1.50 |       |      |  |   |  | Total |  |  |  | 20 | 50.0 | 120.00 |       |  |  |  |  |  |  |  |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |  |   |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
| It                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Product designation | Heat                                                                                                                                                                      | Lot   | Pieces | Kg                  | M      |       |        |    |    |    |                 |        |       |      |      |        |       |              |       |      |  |   |  |       |  |  |  |    |      |        |       |  |  |  |  |  |  |  |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |  |   |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
| 01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | THT-3R60-12-1.5     | 529120                                                                                                                                                                    | 31196 | 20     | 50.0                | 120.00 |       |        |    |    |    |                 |        |       |      |      |        |       |              |       |      |  |   |  |       |  |  |  |    |      |        |       |  |  |  |  |  |  |  |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |  |   |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 12.00 X 1.50        |                                                                                                                                                                           |       |        |                     |        |       |        |    |    |    |                 |        |       |      |      |        |       |              |       |      |  |   |  |       |  |  |  |    |      |        |       |  |  |  |  |  |  |  |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |  |   |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
| Total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                     |                                                                                                                                                                           |       | 20     | 50.0                | 120.00 |       |        |    |    |    |                 |        |       |      |      |        |       |              |       |      |  |   |  |       |  |  |  |    |      |        |       |  |  |  |  |  |  |  |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |  |   |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
| <b>TEST RESULTS</b><br><b>Chemical composition (weight%)</b> <table border="1"><thead><tr><th>Heat</th><th>C</th><th>Si</th><th>Mn</th><th>P</th><th>S</th><th>Cr</th><th>Ni</th><th>Mo</th></tr></thead><tbody><tr><td>529120</td><td>0.023</td><td>0.39</td><td>1.58</td><td>0.028</td><td>0.006</td><td>17.25</td><td>13.06</td><td>2.52</td></tr><tr><td></td><td>N</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>529120</td><td>0.050</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table><br><b>Chemical composition, product (weight%)</b> <table border="1"><thead><tr><th>Heat</th><th>C</th><th>Si</th><th>Mn</th><th>P</th><th>S</th><th>Cr</th><th>Ni</th><th>Mo</th></tr></thead><tbody><tr><td>529120</td><td>0.025</td><td>0.39</td><td>1.57</td><td>0.029</td><td>0.006</td><td>17.27</td><td>13.00</td><td>2.52</td></tr><tr><td></td><td>N</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>529120</td><td>0.046</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table> |                     |                                                                                                                                                                           |       | Heat   | C                   | Si     | Mn    | P      | S  | Cr | Ni | Mo              | 529120 | 0.023 | 0.39 | 1.58 | 0.028  | 0.006 | 17.25        | 13.06 | 2.52 |  | N |  |       |  |  |  |    |      | 529120 | 0.050 |  |  |  |  |  |  |  | Heat | C | Si | Mn | P | S | Cr | Ni | Mo | 529120 | 0.025 | 0.39 | 1.57 | 0.029 | 0.006 | 17.27 | 13.00 | 2.52 |  | N |  |  |  |  |  |  |  | 529120 | 0.046 |  |  |  |  |  |  |  |
| Heat                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | C                   | Si                                                                                                                                                                        | Mn    | P      | S                   | Cr     | Ni    | Mo     |    |    |    |                 |        |       |      |      |        |       |              |       |      |  |   |  |       |  |  |  |    |      |        |       |  |  |  |  |  |  |  |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |  |   |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
| 529120                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.023               | 0.39                                                                                                                                                                      | 1.58  | 0.028  | 0.006               | 17.25  | 13.06 | 2.52   |    |    |    |                 |        |       |      |      |        |       |              |       |      |  |   |  |       |  |  |  |    |      |        |       |  |  |  |  |  |  |  |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |  |   |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | N                   |                                                                                                                                                                           |       |        |                     |        |       |        |    |    |    |                 |        |       |      |      |        |       |              |       |      |  |   |  |       |  |  |  |    |      |        |       |  |  |  |  |  |  |  |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |  |   |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
| 529120                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.050               |                                                                                                                                                                           |       |        |                     |        |       |        |    |    |    |                 |        |       |      |      |        |       |              |       |      |  |   |  |       |  |  |  |    |      |        |       |  |  |  |  |  |  |  |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |  |   |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
| Heat                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | C                   | Si                                                                                                                                                                        | Mn    | P      | S                   | Cr     | Ni    | Mo     |    |    |    |                 |        |       |      |      |        |       |              |       |      |  |   |  |       |  |  |  |    |      |        |       |  |  |  |  |  |  |  |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |  |   |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
| 529120                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.025               | 0.39                                                                                                                                                                      | 1.57  | 0.029  | 0.006               | 17.27  | 13.00 | 2.52   |    |    |    |                 |        |       |      |      |        |       |              |       |      |  |   |  |       |  |  |  |    |      |        |       |  |  |  |  |  |  |  |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |  |   |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | N                   |                                                                                                                                                                           |       |        |                     |        |       |        |    |    |    |                 |        |       |      |      |        |       |              |       |      |  |   |  |       |  |  |  |    |      |        |       |  |  |  |  |  |  |  |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |  |   |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
| 529120                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.046               |                                                                                                                                                                           |       |        |                     |        |       |        |    |    |    |                 |        |       |      |      |        |       |              |       |      |  |   |  |       |  |  |  |    |      |        |       |  |  |  |  |  |  |  |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |  |   |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
| <b>Quality assurance - Ulrik Rodling / QA-manager Tube &amp; Pipe</b><br><b>MTC Service / Certificates</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                     |                                                                                                                                                                           |       |        |                     |        |       |        |    |    |    |                 |        |       |      |      |        |       |              |       |      |  |   |  |       |  |  |  |    |      |        |       |  |  |  |  |  |  |  |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |  |   |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |

**CERTIFICATE****No. A/11-190843****Rev 00****Date 2011-09-19****Page 2/2****Tensile test at room temperature**

| Lot   | Yield strength |       | Tensile strength | Elongation |    |
|-------|----------------|-------|------------------|------------|----|
|       | MPa            | MPa   | MPa              | %          | %  |
|       | Rp0.2          | Rp1.0 | Rm               | A          | 2" |
| 31196 | 299            | 338   | 564              | 48         | 46 |
|       | 301            | 339   | 565              | 49         | 46 |

**Hardness test**

| Lot   | Min | Max |
|-------|-----|-----|
|       | HRB | HRB |
| 31196 | 77  | 78  |

**Following controls/tests have been satisfactorily performed:**

- Flattening test.
- Flaring test
- PMI-test.
- Intergranular corrosion test acc to ASTM A-262 PR.E
- Intergranular corrosion test acc. to EN ISO3651-2, Method A.
- Leak test: Eddy current test acc to EN 10246-2, ASME SA-1016.
- Visual inspection and dimensional control.

**Heat Treatment:**

Solution annealed and quenched.

**Marking:**

SANDVIK 3R60 ASTM/ASME A/SA-213AW A-269 NFA 49-117 EN 10216-5 TC1 SS 2353-22 W  
NR 1.4435 Z2CND17-13 EN 1.4435 TP316/316L M S PK1 NDE 12.00 X 1.50 MM HT 52912  
0 SS LOT 31196 DIN 2391/EN 10305-1 COLD \*QA-TUBE\*

Approved acc. AD 2000-Merkblatt W0 and certified acc. to  
Pressure Equipment Directive (97/23/EC) by  
TUEV NORD; notified body, reg.no. 0045.

The number of tests are based on the size of the manufacturing lot  
before cutting to finished lengths.

The delivered products comply with the specifications and  
requirements of the order.

The material is manufactured according to a Quality system,  
approved and registered to ISO 9001.

The certificate is produced with EDP and valid without signature.