

**CERTIFICATE****No. A/11-191016****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

| Customer References |                              | Sandvik References  |                        |
|---------------------|------------------------------|---------------------|------------------------|
| 710525              | Customer order<br>2011-09-19 | Order No. 260516    | Subs No. 510741        |
| 003-00991 ITEMS     |                              | ABSMT No. 300-51216 | Dispatch note 01088/54 |
|                     |                              | C.Code 15           |                        |

| Material description                                 | Steel/material Designations                                                                                                         |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| SEAMLESS STAINLESS COLD FINISHED<br>HYDRAULIC TUBING | 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>Steel making process</b><br>Electric furnace      |                                                                                                                                     |

| Technical requirements                                                                                                                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 |

| EXTENT OF DELIVERY |                                 |        |       |        |      |       |
|--------------------|---------------------------------|--------|-------|--------|------|-------|
| It                 | Product designation             | Heat   | Lot   | Pieces | Kg   | M     |
| 01                 | THT-3R60-20-2.5<br>20.00 X 2.50 | 529522 | 31503 | 6      | 39.0 | 36.00 |
| Total              |                                 |        |       | 6      | 39.0 | 36.00 |

| TEST RESULTS                            |       |      |      |       |       |       |       |      |
|-----------------------------------------|-------|------|------|-------|-------|-------|-------|------|
| Chemical composition (weight%)          |       |      |      |       |       |       |       |      |
| Heat                                    | C     | Si   | Mn   | P     | S     | Cr    | Ni    | Mo   |
| 529522                                  | 0.018 | 0.37 | 1.62 | 0.033 | 0.006 | 17.22 | 13.12 | 2.54 |
|                                         | N     |      |      |       |       |       |       |      |
| 529522                                  | 0.034 |      |      |       |       |       |       |      |
| Chemical composition, product (weight%) |       |      |      |       |       |       |       |      |
| Heat                                    | C     | Si   | Mn   | P     | S     | Cr    | Ni    | Mo   |
| 529522                                  | 0.019 | 0.35 | 1.62 | 0.030 | 0.009 | 17.03 | 13.00 | 2.50 |
|                                         | N     |      |      |       |       |       |       |      |
| 529522                                  | 0.035 |      |      |       |       |       |       |      |

**Quality assurance - Ulrik Rodling / QA-manager Tube & Pipe**  
**MTC Service / Certificates**

**CERTIFICATE****No. A/11-191016****Rev 00****Date 2011-09-19****Page 2/2****Tensile test at room temperature**

|       | Yield strength |       | Tensile strength | Elongation |    |
|-------|----------------|-------|------------------|------------|----|
|       | MPa            | MPa   | MPa              | %          | %  |
| Lot   | Rp0.2          | Rp1.0 | Rm               | A          | 2" |
| 31503 | 264            | 302   | 574              | 55         | 58 |
|       | 267            | 304   | 574              | 55         | 57 |

**Hardness test**

|       | Min | Max |
|-------|-----|-----|
| Lot   | HRB | HRB |
| 31503 | 76  | 79  |

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

- Flattening test.
- Ring expansion 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 20.00 X 2.50 MM HT 52952  
2 SS LOT 31503 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.