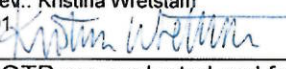
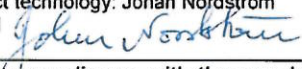

	<b>Qualification Test Record (QTR)</b>				QTR. No.: 2304 - 2012	
	<b>NORSOK M-650</b>				Rev. No.:6	
<b>Manufacturer name/address/ Web page:</b>	Outokumpu Stainless AB, Avesta Works, P.O. Box 74, SE 77422 Avesta, Sweden www.outokumpu.com					
<b>Reference standard</b>	NORSOK M-650, Edition 4					
<b>Material designation and MDS No.:</b>	ASTM A240: UNS S32304; EN 10088-2 & 10028-7: 1.4362 Outokumpu MDS – D35, Rev 4					
<b>Manufacturing Summary doc. No.:</b>	MS NORSOK 18-2304				Rev. No.:1	
<b>Products and manufacturing process(es):</b>	Hot and cold rolled stainless steel plate, sheet and strip Hot rolled: Melting – Casting – Hot Rolling – Annealing and Pickling – Finishing and testing  Cold rolled: Melting – Casting – Hot Rolling – Annealing and Pickling – Cold rolling – Annealing and pickling – Finishing and testing					
<b>Mandatory conditions and sub-contractors:</b>						
<b>Other information:</b>	<p>1. NORSOK has no MDS for lean duplex SS. The qualification has therefore been carried out to the Outokumpu MDS D35, rev 4, allowing maximum 35 ppm Boron in the chemical composition resulting in some Nitride precipitates; see Section 4 of the QTR. A supplementary test programme with 316L SS as reference has been carried out on base and welded material. The test programme shows that toughness and weldability are not adversely affected by the precipitates. The corrosion resistance (CPT) of UNS 32304 base material is better than 316L SS. The corrosion resistance (CPT) of the welds match that of 316L SS. The test programme shows that UNS 32304 meets the requirements in Outokumpu MDS-D35 rev 4. The suitability of the material for a specific application should be evaluated for the relevant service conditions by the end user.</p> <p>2. Temperature of quenching medium in AP-line is 50-55 C.</p>					
<b>Qualification expires:</b>	20th september 2023					
<b>Tested and qualified thickness and weight</b>						
<b>Products and manufacturing process(es):</b>	<b>Test record No.</b>	<b>Tested thickness mm</b>	<b>Qualified thickness mm</b>	<b>Test piece weight kg</b>	<b>Qualified weight kg</b>	
Hot rolled plate and strip	UNS 32304 HR Qualification test report	10	Max 12,5	N/A	N/A	
Cold rolled plate, sheet and strip	UNS 32304 CR Qualification test report	6	Max 7,5	N/A	N/A	
<b>Qualification/acceptance signatures</b>						
<b>Manufacturer:</b> Outokumpu Stainless AB, Avesta Works	<b>Prepared by/Date:</b> Product Dev.: Kristina Wretstam 2018-09-01 	<b>Checked by/Date:</b> Mgr product technology: Johan Nordström 2018-09-01 				
<p>The manufacturer and this QTR are evaluated and found to be in compliance with the requirements of NORSOK M-650 for supply of the above listed products and materials. This acceptance does not exempt any purchaser from his responsibility to ensure that this qualification is valid for his products within the essential variables of NORSOK M-650.</p>						
<b>Qualified/Accepted by (company name /address):</b>				<b>Signature/Date:</b> 27/9/2018		
 Aker Engineering & Technology AS Reg.nr. 879 817 552				