

**ZAO VNIITneft**  
R&D Institute for OCTG Design and Operation  
Private Stock Company

ENDORSED by:

A.A. Klachkov  
Deputy CEO, Chief Engineer, OAO TMK  
\_\_\_\_\_ «\_\_\_», 2012

APPROVED by:

Y.N. Antipov  
CEO, ZAO VNIITneft  
\_\_\_\_\_ «\_\_\_», 2012

**LINE PIPE**

**OPERATION MANUAL**

**REVISION No. 2**

DEVELOPED by:

A.A. Donskoy  
CTO, ZAO VNIITneft

\_\_\_\_\_ «\_\_\_», 2012

Samara, 2012

1 Table 3. Change pipe sizes for TU 14-156-93-2010 *Seamless steel pipe for sub-sea pipelines* as follows: outside diameter shall be 114-426 mm, wall thickness shall be 6.0-28.0 mm.

2 Add the following normative documents to Table 3:

Table 3 – Normative Documents Regulating the Manufacture and Delivery of Seamless Pipe

Normative Document	Pipe Size		Steel Grade	Pipe Grade
	Outside Diameter, mm	Wall Thickness, mm		
TU 14-3P-118-2011* Seamless steel pipe for field pipelines under a working pressure up to 27.5 MPa, inclusive.	114.3	6.7; 7.9	-	X65; SMLS 450FD
	219.1	14.3	-	
	273.1	15.9	-	
TU 1381-007-53570464-2011* Seamless steel pipe for main and process oil and oil-product pipelines.	159-426	6.0-18.0	-	K36, K42, K48, K50, K52

3 Add the following data to Table 4:

Table 4 - Seamless Line Pipe. Mechanical properties

Normative Document	Steel Grade	Pipe Grade	Ultimate Tensile Strength, $\sigma_U$ , N/mm <sup>2</sup>	Yield strength, $\sigma_Y$ , N/mm <sup>2</sup>	$\sigma_Y/\sigma_U$	Elongation, $\delta_5$ , %	Impact Strength, J/cm <sup>2</sup>		
			min.	max.			min.	min.	
TU 14-3P-118-2011**		X65/ SMLS 450FD	535-655	450-570	0.90	20	KCV <sup>-32</sup> 130 longitud. (for pipe Ø 114.3 mm)	KCV <sup>-32</sup> 130 transverse	Shear fracture percentage 85% min.
TU 1381-007-53570464-2011**		K36	355	215	0.90	24	KCU <sup>-60</sup> 39,2 longitud.	KCV <sup>-20</sup> 34,3 transverse	Shear fracture percentage 50% min.
		K42	410	245	0.90	21			
		K48	470	265	0.90	21			
		K50	490	275	0.90	17			
		K52	510	295	0.90	17			

4 Add the following data to Table 5:

Table 5 – Seamless Pipe Manufactured According to TU. Corrosion Resistance Criteria

Normative Document	Steel Grade	Properties			
		Corrosion Cracking		Sulfide Stress Cracking Resistance	Corrosion Rate
		Test Method			
		NACE MR 0284		NACE MR 0177	Method of ZAO VNIITneft «STO Ros-NITI 00190420-001-2007» and other ND
		Index			
		Limit Ratio		Threshold Stress, SSC	Total Corrosion Rate in Simulated Environments
		length, CLR	thickness, CTR		
		max.		max.	max.
TY 14-156-93-2010	-	15%	-	85% $\sigma_T$	-

5 Add the following items to Section 8:

99 TU 14-3P-118-2011 Seamless steel pipe for field pipelines under a pressure up to 27.5, inclusive.

100 TU 1381-007-53570464-2011 Seamless steel pipe for main and process oil and oil-product pipelines.

*Certified the foregoing Document to be a true, complete, and accurate English translation of the original document translated from Russian by the INTERSERVICE translation agency.*

  
A. Itskovich  
Director

