

Certificate №: 994	MILL CERTIFICATE Drill Collar and Kellys Plant Sumy Frunze Made in Ukraine	Manufacturer Stamp 
SPIRAL DRILL COLLAR WITH SLIP/ ELEVATOR RECESS		Dahl Oilfield Services a.s.
Bar №: 83498 Heat №: 35475 Customer S/№: UGV-29084		Customer: T 1/015-01-08 Order №: 24
Grade: SAE 4145 H Mod	Specification: API 7-1/ISO10424-1	Delivery State: Quenched and Tempered
Nominal size: OD: 120,7 mm ID: 57,2mm	Thread Type NC38	Length: 9450 mm Weight: 585 Kg

Chemical Analysis:

	C%	Si%	Cr%	Mn%	Mo%	Ni%	P%	S%	Cu%
Required	0.42/0.49	0.15/0.40	0.90/1.35	0.85/1.30	0.15/0.35	max 0.50	max 0.030	max 0.025	max 0.35
Actual	0.45	0.25	1.09	0.99	0.25	0.06	0.008	0.007	0.06

Mechanical Properties: As per ASTM A 370 and API 7. Longitudinal at one inch below the surface

	Tensile Test at Room Temperature					Hardness tests:	
	Yield Strength Mpa	Tensile Strength Mpa	Elongation %	Impact Tests (J)		Brinell Hardness	
Required: OD ≤ 6 7/8	758	965	13	54		≥ 285	
Required: OD ≥ 7	758	931	13	54		≥ 285	
Actual	959	1082	17	57	61	60	335 337

Additional Tests

Microcleanliness (ASTM E45 - JK scale)				Grain Size (ASTM E112)	Melting Process
A	B	C	D	8	Electric furnace and vacuum degassed
1.0	0	0	1.0		

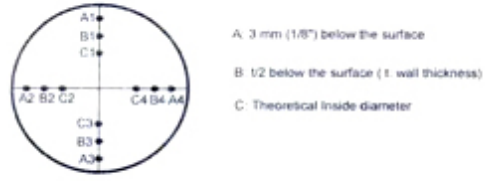
Non Destructive Inspections

Ultrasonic inspection 100%	PASS	ANSI/API Spec 7-1/2006/ISO 10424-1/2004
MPI inspection	NO CRACKS	KTO - 0068 rev. 02
API Drift Mandrel	PASS	
Thread connections are phosphated		

Heat Treatment


	AUST/QUENCHING	TEMPERING
Temp. (°C)	850	650

Hardness Testing according to SQAIR AA 03.38.10.1110 Specification



A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
329	337	329	337	313	313	306	306	306	306	298	306

We herewith certify that the products are according to API Spec 7-1/ISO 10424-1 latest edition KTO-0068 rev.02

Work inspector :	DATE : 03.03.2009	Signature:  BTH No 4
API Official Monogram: 7-0021		