

Drill Pipe Performance Characteristics Sheet

TSC Drill Pipe



Patent: **9,885,214**
 Pipe Size and Weight: 5 19.50 IEU
 Pipe Grade: S-135
 Range: 2
 Tool Joint: 5 7/8 X 3 1/4 PTECH+™47



110 Cypress Station Drive
 Suite 160
 Houston, TX 77090
 Phone: (832) 230-8228
 Fax: (281) 741-9914

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Pipe Body		
	New-API	Premium
OD (in)	5.000	4.855
Wall Thickness (in)	0.362	0.290
ID (in)	4.276	4.276
Calculated Plain End weights (lbs/ft)	17.923	14.114
Note: Premium properties are calculated based on uniform OD and wall thickness.		
Cross sectional area pipe body (in ²)	5.275	4.154
Cross sectional area OD (in ²)	19.635	18.514
Cross sectional area ID (in ²)	14.360	14.360
Section Modulus (in ³)	5.708	4.476
Polar Section Modulus (in ³)	11.415	8.953
	New-API	Premium
Torsional Strength (ft-lbs)	74,100	58,100
Tensile Strength (lbs)	712,100	560,800
80% Torsional Strength (ft-lbs)	59,300	46,500
Pressure Capacity (psi)	17,105	15,638
Collapse Capacity (psi)	18,133	10,024

Tool Joint		
	PTECH+™47	
	OD (in)	5 7/8
	ID (in)	3 1/4
Tool Joint with a Material Yield Strength of 135000 psi		
	Pin Tong length (in)	13.00
	Box Tong length (in)	15.00
	Friction Factor	1.00 1.15
	Torsional Strength (ft-lbs)	69,500 55,900
	Severe Service Level Recommended Make-up Torque (ft-lbs)(70%)	48,600 48,000
	Standard Service Level Recommended Make-up Torque (ft-lbs)(60%)	41,700 48,000
	Minimum Recommended Make-up Torque (ft-lbs)	32,800 37,700
	Balance OD (in)	5.920
	Tensile Strength (lbs)	1,123,200
	Tool joint/DP torsional ratio (New pipe)	0.94
	Tool joint/DP torsional ratio (Prem pipe)	1.20
	Min Tool Joint OD for premium class (in)	5.578
	Min Tool Joint OD/Drill pipe torsional ratio (Prem pipe)	0.94
	BSR	1.79

Minimum make-up is based on shoulder separation caused by bending.

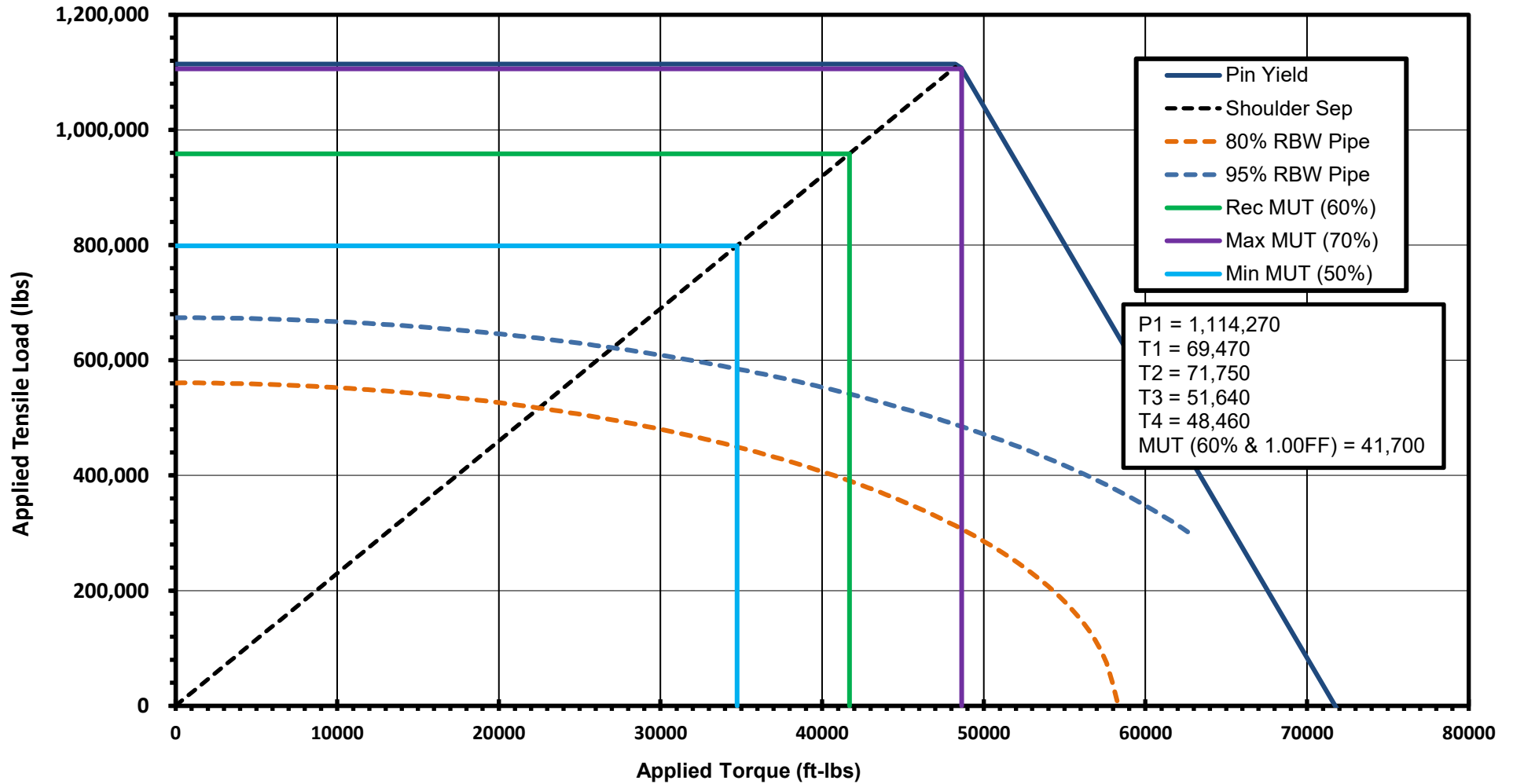
Drill Pipe Assembly with PTECH+ Tool Joint		Drill Pipe Bend Radius							
API Adjusted weight (lbs/ft)	21.87	* These calculations are based on new pipe with nominal wall							
Approximate length (ft)	32.00	Based on Bending Stress (psi) at Pipe OD	<table border="1"> <tr> <td>15,000</td> <td>30,000</td> </tr> <tr> <td>417</td> <td>208</td> </tr> <tr> <td>14</td> <td>28</td> </tr> </table>	15,000	30,000	417	208	14	28
15,000	30,000								
417	208								
14	28								
API Fluid Displacement (gal/ft)	0.334	Radius of Curvature (R) (ft.) (@ OD of pipe)							
Fluid Capacity (gal/ft)	0.768	BUR (dogleg) deg/100 ft.							
Drift Size	3.125								

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TORQUE TENSION COMBINED LOAD CURVE



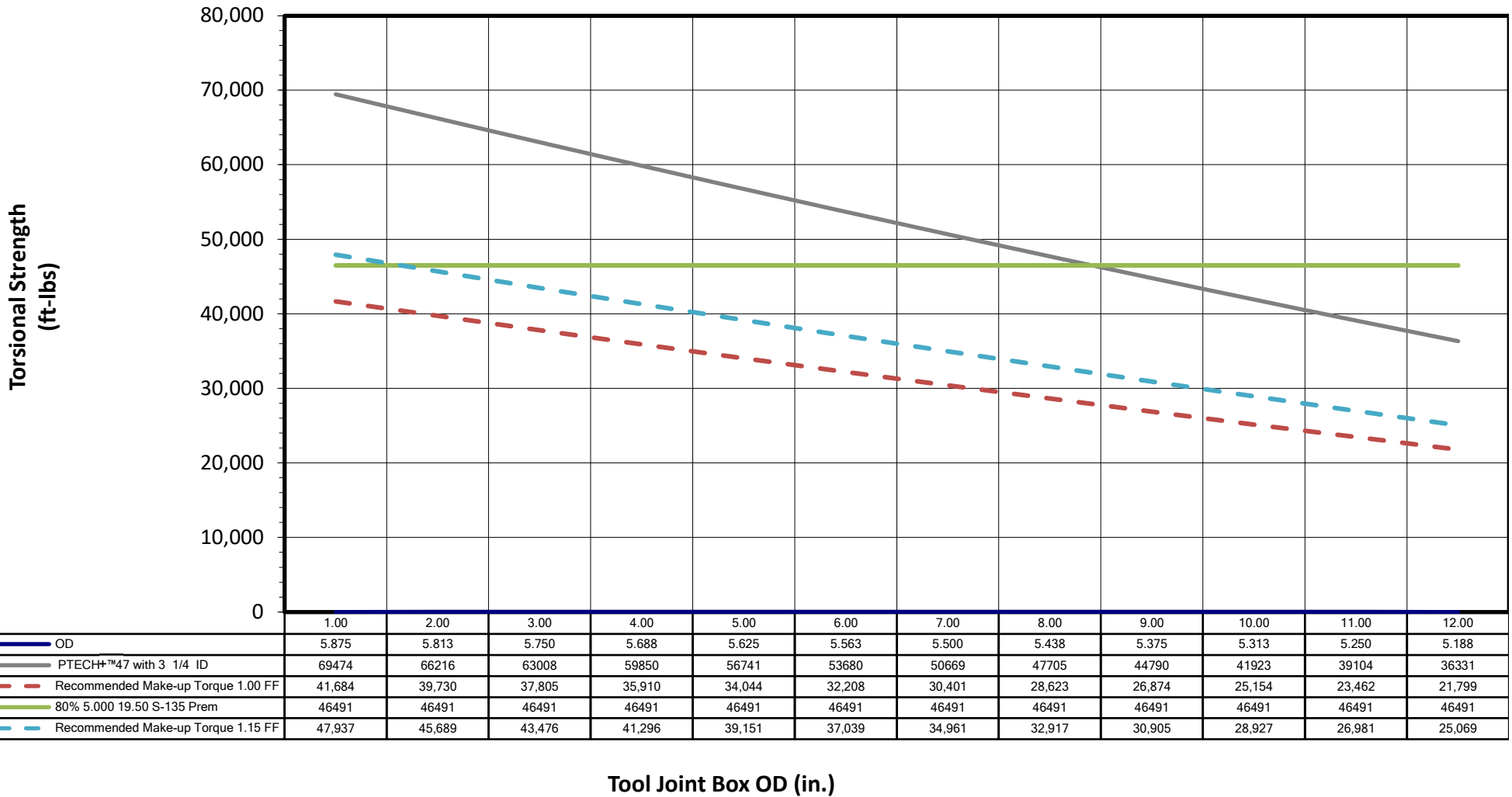
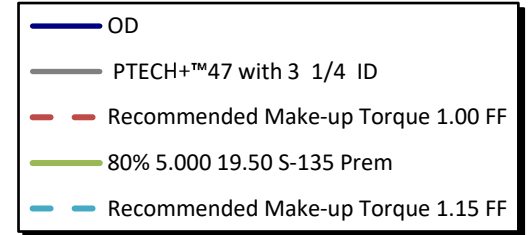
For PTECH+™47 5 7/8 X 3 1/4 Tool Joint with a Material Strength of 135000 psi, using a Coefficient of Friction of 0.08 and a Safety Factor of 1.0. On Pipe: 5 S-135 Premium Class.



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PTECH+™47 5 7/8 X 3 1/4 TOOL JOINT OD WEAR CURVE



Elevator Hoist Capacity, where new Pipe OD= 5.000 in. & new Pipe Wall= 0.362 in. & pipe SMYS = 135,000 psi & Elevator Contact Stress= 110,000 psi & new Tool Joint OD= 5.875 in. and Elevator Bore Dia = 5.250 in.

