



10.125” 75.90 lb/ft (.758 wt) Q125XHP

Wedge-Lock SF

Connection Brief

Industry Standard Connection Qualification Testing

API RP 5C5:2017 4th ed. CAL IV

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A deep water Gulf of Mexico Operator requested qualification testing for the 10.125 75.90 (0.758 wall) Wedge-Lock SF connection on USS Q125XHP casing for High Pressure High Temperature well applications.

Qualification tests were conducted in accordance with API RP 5C5 CAL IV: 2017 test protocol. The qualification testing was conducted at Hunting Energy Services R&D laboratory located in Baytown, Texas. All testing was witnessed by Edif NDE/Rina third party inspection company. The manufacturing and testing of the specimens was conducted from September 2017 until July 2018.

The product was qualified using combined load testing under ambient and elevated temperatures (180°C), which includes tension, compression, internal pressure, external pressure and applied bending. Combined loads varied from 1,935 kips tension to 2,087 kips of compression with over 20,000 psi of internal pressure and 17,870 psi of external pressure for the various defined API load points. Bending of 10°/100ft was also tested in conjunction with the combined loads.

All required specimen geometries successfully passed the CAL IV protocol.

Specimen Geometry	MBG	FMU	Bake	TS-B	TS- C	TS-A 90%	TS-A 95%	LL
SP1 (XH-XL)	X	X	X	X	X	X	X	X
SP2 (XH-XL)	-	X	X	X	X	X	X	X
SP3 (L-H)	-	X	X	X	X	X	X	X
SP4 (L-L)	X	X	X	X	X	X	X	X
SP5 (H-H)	X	X	-	-	-	-	-	X

Physical Testing Summary

Limit Load Testing of the Specimens was conducted after the required CAL IV combined load testing sequence. Failure loads included over 2,500 kips of pure tension, 1,375 kips of tension with over 18,000 psi of internal pressure, 1,151 kips of compression with over 21,500 psi of external pressure, 2600 kips of tension with over 19,200 psi of internal pressure, and 2,450 kips of compression with over 13,300 psi if internal pressure. All limit load testing was well beyond the 100% VME failure criteria defined for the connection.

The deviations from the API RP 5C5 protocol were limited during the Cal IV qualification testing. The deviations included, increasing the number of MBG assemblies for 2 to 3, limiting high torque make up to 90,000 ft-lbs, limiting the minimum and average walls of the CEE to nominal casing wall, and limiting the bending during Series B testing to 10°/100ft.

The 10.125 75.90 (0.758 wall) Wedge-Lock SF connection for High Pressure High Temperature well applications displayed a robust connection design which was successfully qualified to API RP 5C5:2017 CAL IV requirements.



WEDGE-LOCK SF

10.125" 75.9 LB/FT (.758"Wall)
USS Q125 XHP

Pipe Body Data

Nominal OD:	10.125	in
Nominal Wall:	.758	in
Nominal Weight:	75.90	lb/ft
Plain End Weight:	75.90	lb/ft
Material Grade:	Q125 XHP	
Mill/Specification:	USS	
Yield Strength:	135,000	psi
Tensile Strength:	150,000	psi
Nominal ID:	8.609	in
API Drift Diameter:	8.453	in
Special Drift Diameter:	8.500	in
RBW:	87.5 %	
Body Yield:	3,011,000	lbf
Burst:	18,190	psi
Collapse:	17,870	psi

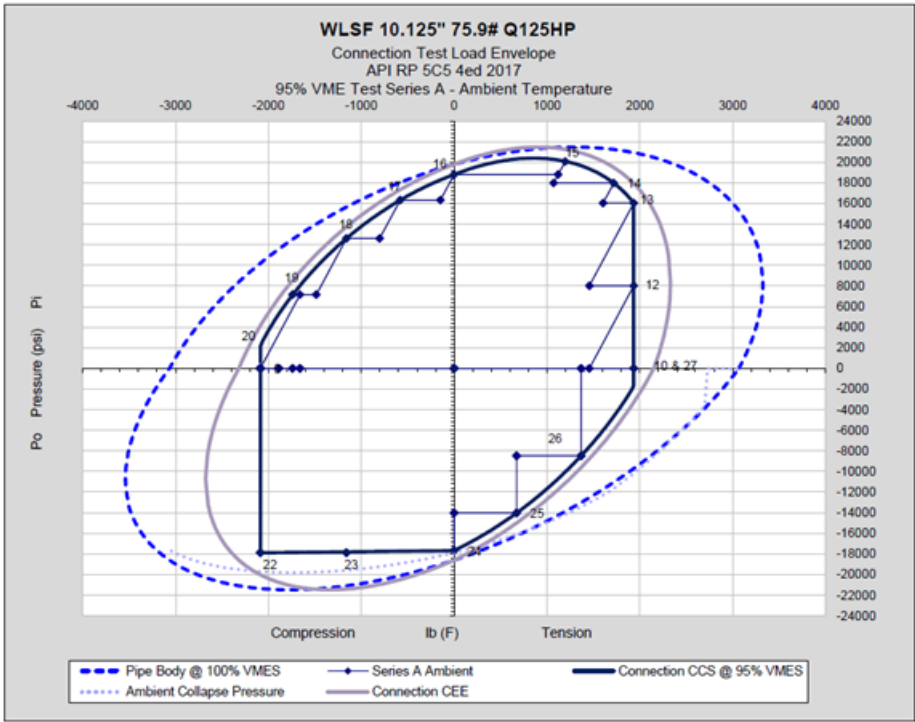
Connection Data

Standard OD:	10.368	in
Pin Bored ID:	8.618	in
Critical Section Area:	15.645	in ²
Tensile Efficiency:	70.1 %	
Compressive Efficiency:	75.6 %	
Longitudinal Yield Strength:	2,112,000	lbf
Compressive Limit:	2,275,000	lbf
Internal Pressure Rating:	18,190	psi
External Pressure Rating:	17,870	psi
Maximum Bend:	42.9	°/100ft

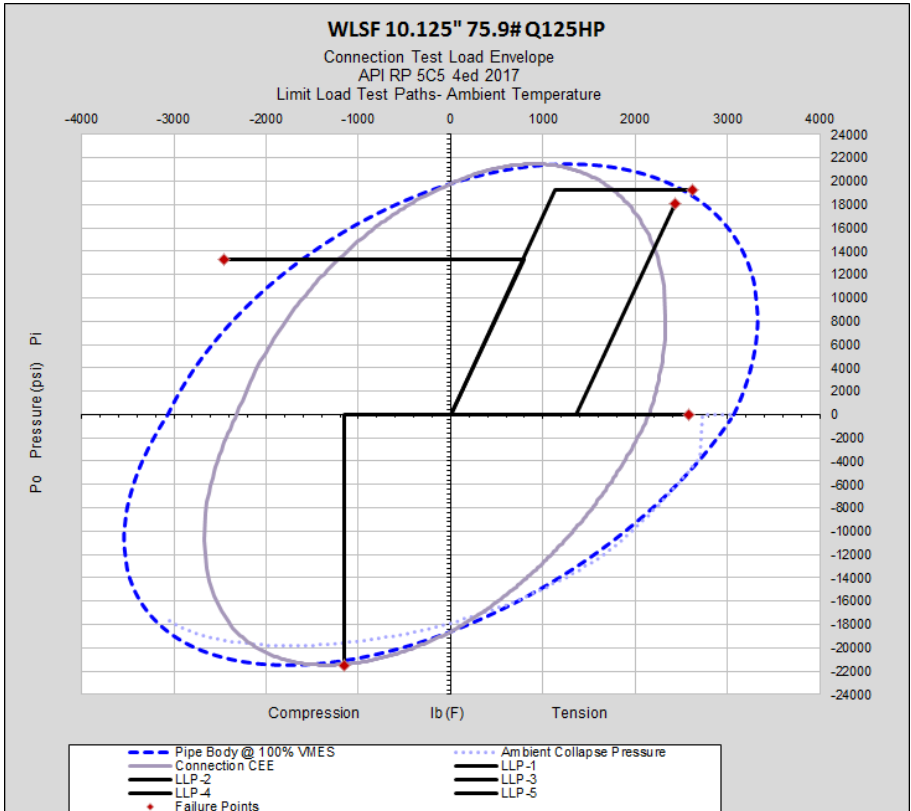
Operational Data

Minimum Makeup Torque:	59,700	ft*lbf
Optimum Makeup Torque:	75,300	ft*lbf
Maximum Makeup Torque:	122,300	ft*lbf
Minimum Yield:	185,000	ft*lbf
Makeup Loss:	9.92	in

Notes



10.125" 75.90 lb/ft TLE with Failure Point



10.125" 75.90 lb/ft WLSF Limit Loads