

## Registered Data Sheet Perforating System Evaluation, API RP 19B Section 1

API Form 19B-Section 1 Gonforms to All Requirements of Section 1				☐ Special Test - See Remarks/Exceptions below							
Service Company Available to all from Titan Specialties Ltd.				weight	18.0	gm, HMX	powde	er, Case N	Material	Stee	
Gun OD & Trade Name 2-7/8" EXP Gun, 6 SPF 60 Degree			Max Tem	p, °F	400	1 hr	3	hr :	24 hr	100 hr	200 hr
Charge Name 2-7/8" 18G HMX SDP				Maximum Pressure Rating 25,000 psi, Carrier Material H.T. Steel						H.T. Steel	
Manufacturer Charge Part No. EXP-2818-421T	Date of Manufacture	19 Oct 2009	Shot Der	sity Tested			6		<ul><li>Shots/ft</li></ul>		6
Gun Type Hollow Steel Carrie	er, Expendable (HC, E)		Recomm	Recommended Minimum ID for Running				3.	3.25		
Phasing Tested 60 degrees, Firing 6	Order: X Top down	Bottom up	Available Firing Mode:			X Selective			X		———— in. Simultaneous
Debris Description Small steel chips, usually retained in carrier			Debris W	eight	n/a		 gm/charge,	Debris	n/	а	in³/charge
Remarks/Exceptions per Section 1.11											
Casing Data 4-1/2" OD,	Weight 1	1.6	lb/ft,	API Grade,	L-80	Date of Sec	tion 1 Test		17 Decen	nber 2009	
Target Data 96" OD,	Amount of Cement	9,926	lb,	Amount of San	d	19,852	lb,	Amount of V	Vater	5,204	lb.
Date of Compressive Strength Test 17 D	ecember 2009	Briquette Co	mpressive S	Strength	6,850	psi,	Age	of Target		28	days
Shot No.	No 1 No 2	No 3	No 4	No 5	No 6	No 7	No 8	No 9	No 10	No 11	
Clearance, in.	0.00 0.34	1.21	1.75	1.21	0.34	0.00	0.34	1.21	1.75	1.21	
Casing Hole Diameter, Short Axis, in	0.44 0.43	0.40	0.30	0.30	0.39	0.45	0.42	0.44	0.30	0.28	
Casing Hole Diameter, Long Axis, in		0.40	0.31	0.30	0.43	0.45	0.46	0.45	0.31	0.28	
Average Casing Hole Diameter, in		0.40	0.31	0.30	0.41	0.45	0.44	0.45	0.31	0.28	
Total Depth, in.		39.75	41.05	40.50	35.25	37.00	40.00	39.00	40.38	41.00	
Burr Height, in.		0.04	0.06	0.05	0.05	0.04	0.07	0.05	0.06	0.05	
Shot No.	No 12 No 13	No 14	No 15	No 16	No 17	No 18	No 19	No 20	No 21	No 22	Average
Clearance, in.		0.34									-
	0.34 0.00 0.38 0.45	0.43	1.21	1.75 0.29	1.21	0.34	0.00	0.34	1.21	1.75	XXXXXX
Casing Hole Diameter, Long Axis, in		0.45	0.41	0.30	0.30	0.41		0.42	0.40	0.30	0.38
Average Casing Hole Diameter, in	0,10	0.44	0.43	0.30	0.32	AND DESCRIPTION OF THE PARTY OF	0.48	0.45	0.42	0.31	0.39
Total Depth, in.		38.38	36.25	39.75	40.00	36.50	<u>0.47</u> 36.25	35.50	<u>0.41</u> 34.25	0.31 36.00	0.39
Burr Height, in.		0.04	0.05	0.07	0.06	0.05	0.06	0.05	0.06	0.04	<u>37.50</u> 0.05
Remarks	0.01		0.03	0.07	0.00	0.05	<u> </u>	0.03	0.00	0,04	0.03
Manufacturer's Certification											
Type of Certification: Self	XThi	rd Party	AF	PI Witness: Jin	n Stout & M	lona Elkhatib					
I certify that these tests were made according to the procedures as outlined in API 19B: Recommended Practice for Evaluation of Well Perforators, Second Edition, September 2006. All of the equipment used in these tests, such as the guns, jet charges detonator cord, etc., was standard equipment with our company for the use in the gun being tested and was not changed in any manner for the test. Furthermore, the equipment was chosen at random from stock and therefore will be substantially the same as the equipment that would be furnished to perforate a well for any operator. API neither endorses these tests nor recommends the use of the perforator system described.											
X CERTIFIED BY Senuel 6. Basseck CEO 23 December 2009 Titan Specialties Ltd. 143 HCR 4361, Milford, TX 76670								X 76670			
RECERTIFIED (Company Official) (Title) (Date) (Company) (Address)											
Name of test as it should appear on website: 2.88-in. EXP 6 SPF w/ DP EXP-2818-421T											
Name of test as it appears on application and application date: EXP-2818-421T, Charge, 2-7/8" 18G HMX SDP (Appl: 20 Nov. 2009)											



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Service Company Available to all from Titan Specialties Ltd.			Explosive weight	18.0	gm, HMX	powde	r, Case I	Material	Stee	<u> </u>	
Gun OD & Trade Name	2-7/8" EXP Gun, 6 SPF	60 Degree	Max Temp, °F	400	1 hr	3 h	nr	24 hr	100 hr	200 hr	
Charge Name 2-7/8" 18G HMX SDP			Maximum Pressure Rat	Maximum Pressure Rating 25,000 psi, Carrier					H.T. Steel		
Manufacturer Charge Part No. EX	Shot Density Tested	Shot Density Tested6				Shots/ft	6				
Gun Type Hollow	Recommended Minimu	Recommended Minimum ID for Running				.25		in.			
Phasing Tested60 degrees, Firing Order: X _ Top down Bottom up			Available Firing Mode:	X Selective		X			Simultaneous		
Debris Description Small steel chips, usually retained in carrier			Debris Weight	gm/charge, Deb		Debris	ris <u>n/a</u>		in³/charge		
Remarks/Exceptions per Section 1.	1										
Casing Data 4-1/2"			_lb/ft, API Grade,	Date of Section 1 Test		17 December 2		nber 2009			
Target Data 96"	OD, Amount of C	lement 9,926	_lb, Amount of Sa	nd	19,852	lb,	Amount of \	Water	5,204	lb.	
Date of Compressive Strength Test	17 December 200	9 Briquette Co	mpressive Strength	6,850	psi,	Age o	of Target		28	davs	
Shot No. Clearance, in. Casing Hole Diameter, Short Axis, in Casing Hole Diameter, Long Axis, in Average Casing Hole Diameter, in. Total Depth, in. Burr Height, in. Shot No. Clearance, in. Casing Hole Diameter, Short Axis, in Casing Hole Diameter, Long Axis, in Average Casing Hole Diameter, in. Total Depth, in. Burr Height, in.	0.28 0.28 0.28 0.28 34.25 0.05 No 34	No 24 No 25		No 28	No 29	No 30	No 31	No 32	No 33	Average  XXXXXXX  0.39  0.39  37.50  0.05	
Remarks  Manufacturer's Certification											
Type of Certification:	SelfX	Third Party	API Witness:	Jim Stout &	Mona Elkhatib	)					
I certify that these tests were mad in these tests, such as the guns, journal the equipment was chosen at rand nor recommends the use of the permanent of the p	et charges detonator cord, et charges detonator cord, et lom from stock and therefor etforator system described.  Company Official)	etc., was standard equipmere will be substantially the substantially the CEO (Title)	ent with our company fo	r the use in t that would b	the gun being to be furnished to p an Specialties (Company)	ested and wa perforate a w	is not change ell for any ope	d in any manr erator. API ne	ner for the test ither endorses 1, Milford, T	. Furthermore, s these tests	
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