

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

Service Company Available to all from Titlan Specialisting Litty Seption (19 per 14 per	API Form 19B-Section 1				ecial Test - See	Remarks/E	exceptions belo	ow				
Max Temp. Fig. Max M	Service Company Available to all from Titan Specialties Ltd.									er. Case Material Zinc		
Manufacturer Charge Part No. PLO-4623-411FZ Date of Manufacture 10 August 2009 Manufacture 10 August 2009 Manufacturer Charge Part No. PLO-4623-411FZ Date of Manufacture 10 August 2009 Manufacturer Charge Part No. PLO-4623-411FZ Date of Manufacturer	Gun OD & Trade Name 4-5/8" EXP Gun, 16 SPF 140/20 Degree					-		-				
Manufacture Charge Park No. FL-CA6223-110C Date of Manufacture 10 August 2008 Solution Solu											-	200111
Curry pre	Manufacturer Charge Part No. FLO-4623-411CFZ Date of Manufacture 10 August 2009									A 61 . 16		10
Phasing Tested 140/20 degrees Firing Order X Top down Debris Weight New Selective X Simultaneous Debris Weight New Selective New Selective New												
Debris Weight Debris Weigh	Phasing Tested 140/20 degrees, Fir	ing Order: X Top do	wn Bottom up									Simultaneous
Remarks/Exceptions per Section 1.11	Debris Description Acid soluble zinc powder						gm/charge,					
Target Data 60" OD, Amount of Cement 4,136 Ib, Amount of Sand 8,272 Ib, Amount of Water 21 September 2009 Briquette Compressive Strength 6,070 psi, Age of Target 28 days 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. 0.56 0.86 0.70 0.64 0.90 0.57 0.82 0.76 0.80 0.91 0.90 0.90 0.90 0.90 0.90 0.90 0.9	Remarks/Exceptions per Section 1.11							- 0	152	V .		
Date of Compressive Strength Test 21 September 2009 Bit quette Compressive Strength 6,070 psl, Age of Target 28 days days		Weight	32	lb/ft,	API Grade, _	L-80	Date of Sec	tion 1 Test	U_{D}	21 Septemi	ber 2009	
September 2009 Bridguette Compressive Strength 6,070 psl, Age of Target 28 days			t4,136	lb,	Amount of San	d	8,272	lb,	Amount of V	/ater	2,160	Ih
Clearance, In. 0.56 0.86 0.70 0.64 0.90 0.57 0.82 0.76 0.80 0.91 0.60	Date of Compressive Strength Test 2	1 September 2009	Briquette Co	ompressive :	Strength	6,070	psi,	Age	of Target		28	
Clearance, In. 0.58 0.68 0.70 0.64 0.90 0.57 0.82 0.76 0.60 0.91 0.60	Shot No.	No 1 No	2 No 3	No 4	No 5	No 6	No 7	No 8	No 9	No 10	No 11	
Casing Hole Diameter, Long Axis, in 0.80 0.69 0.77 0.78 0.77 0.75 0.74 0.77 0.74 0.81 0.79 0.73 0.81 Average Casing Hole Diameter, In. 0.81 0.71 0.78 0.77 0.76 0.77 0.76 0.77 0.74 0.81 0.79 0.72 0.72 0.79 Total Depth, in. 5.83 7.70 5.95 5.20 5.45 0.33 6.45 5.20 6.58 9.00 5.95 Burr Height, in. 0.05 0.04 0.04 0.06 0.05 0.07 0.03 0.04 0.05 0.05 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 Casing Hole Diameter, Long Axis, in 0.70 0.70 0.71 0.77 0.79 0.70 0.88 Casing Hole Diameter, Short Axis, in 0.70 0.70 0.71 0.77 0.79 0.70 0.86 No 17 No 18 No 19 No 20 No 21 No 22 Average Casing Hole Diameter, Long Axis, in 0.72 0.75 0.75 0.75 0.77 0.79 0.72 0.76 No 18 No 19 No 20 No 21 No 22 Average Casing Hole Diameter, In. 0.71 0.73 0.73 0.77 0.79 0.72 0.76 No 18 No 19 No 20 No 21 No 22 Average Casing Hole Diameter, In. 0.71 0.73 0.73 0.77 0.79 0.70 0.78 0.70 0.75 No 18 No 19 No 20 No 21 No 22 Average Casing Hole Diameter, In. 0.71 0.73 0.75 0.75 0.77 0.79 0.72 0.76 No 18 No 19 No 20 No 21 No 22 Average Casing Hole Diameter, In. 0.71 0.73 0.73 0.77 0.79 0.70 0.75 No 18 No 19 No 20 No 21 No 22 Average Casing Hole Diameter, In. 0.71 0.79 0.70 0.79 0.70 0.75 No 18 No 19 No 20 No 21 No 22 Average Casing Hole Diameter, In. 0.71 0.79 0.70 0.79 0.71 0.76 No 18 No 19 No 20 No 21 No 22 Average Casing Hole Diameter, In. 0.71 0.79 0.70 0.79 0.71 0.76 No 18 No 19 No 20 No 21 No 22 Average Casing Hole Diameter, In. 0.71 0.79 0.70 0.79 0.71 0.76 No 18 No 19 No 20 No 21 No 22 Average Casing Hole Diameter, In. 0.71 0.79 0.70 0.79 0.71 0.76 No 18 No 19 No 20 No 21 No 21 No 22 Average Casing Hole Diameter, In. 0.71 0.79 0.70 0.79 0.71 0.79 0.79 0.71 0.76 No 18 No 19 No 20 No 21 No 21 No 22 No	Clearance, in.	0.560.86	0.70	0.64	0.90	0.57						
Casing Hole Diameter, Long Akis, in 0.82 0.78 0.78 0.77 0.76 0.77 0.74 0.81 0.79 0.73 0.81 Average Casing Hole Diameter, In. 0.81 0.71 0.78 0.77 0.76 0.76 0.73 0.77 0.77 0.72 0.79 Burr Height, In. 0.83 7.70 5.95 5.20 6.45 6.33 6.45 5.20 6.58 9.00 5.95 Burr Height, In. 0.05 0.04 0.04 0.06 0.05 0.07 0.03 0.04 0.05 0.05 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. 0.76 0.82 0.57 0.90 0.84 0.70 0.88 Clearance, In. 0.70 0.70 0.71 0.77 0.79 0.70 0.75 Casing Hole Diameter, Short Axis, In 0.70 0.70 0.71 0.77 0.79 0.70 0.75 Average Casing Hole Diameter, In. 0.71 0.73 0.73 0.77 0.79 0.71 0.76 0.78 Burr Height, In. 0.06 0.05 0.06 0.05 0.07 0.05 0.05 0.06 0.05 Average Casing Hole Diameter, In. 0.71 0.73 0.73 0.77 0.79 0.71 0.76 0.70 0.75 Total Depth, In. 0.06 0.07 0.05 0.05 0.05 0.06 0.04 0.05 0.05 0.05 0.05 0.05 0.05 0.05	Casing Hole Diameter, Short Axis, in	0.80 0.69	0.77	0.77	0.75	0.74						•
Average Casing Hole Diameter, In. 0.81 0.71 0.78 0.77 0.76 0.76 0.76 0.73 0.77 0.77 0.72 0.79	Casing Hole Diameter, Long Axis, in	0.82 0.73	0.78	0.77		0.77					Marie Control of the	•
Total Depth, In.		0.81 0.71	0.78	0.77	3 3 7 2	7433		AL				•
Shot No.	Total Depth, in	5,83 7.70	5.95	5.20	1 - 3 1 1 1							
Clearance, in.	Burr Height, in.	0.05 0.04	0.04	0.06	0.05	0.07					-	
Clearance, in. 0.76 0.82 0.57 0.90 0.64 0.70 0.86 XXXXXXX	Shot No.	No 12 No 1	3 No 14	No 15	No 16	No 17	No 18	No 19	No 20	No 21	No 22	Average
Casing Hole Diameter, Short Axis, in 0.70 0.70 0.71 0.77 0.79 0.70 0.75 0.75 0.75 0.75 0.75 0.75 0.75	Clearance, in.	0.76 0.82	0.57	0.90	0.64	0.70	0.86				110 22	FT.
Casing Hole Diameter, Long Axis, in	Casing Hole Diameter, Short Axis, in	0.70 0.70	0.71	0.77	0.79	0.70	0.75				-	Company of the Compan
Average Casing Hole Diameter, in. 0.71 0.73 0.73 0.77 0.79 0.71 0.76 Total Depth, in. 5.33 5.45 5.85 6.20 5.45 5.95 6.08 6.11 Burr Height, in. 0.06 0.07 0.05 0.05 0.06 0.04 0.05 Remarks Manufacturer's Certification Type of Certification: X Self Third Party 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 lest. 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 on the company of the described of the perforator of the company of 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 on the company of 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 on the company of 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 on the company of 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 on the company of 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 on the company of the same as the equipment that would be furnished to perfora	Casing Hole Diameter, Long Axis, in	0.72 0.75	0.75	0.77	0.79	0.72	0.76					
Total Depth, in	Average Casing Hole Diameter, in	0.71 0.73	0.73	0.77	0.79	0.71	0.76					
Burr Height, in	Total Depth, in.	5.33 5.45	5.85	6.20	5.45	5.95	6.08					
Manufacturer's Certification Type of Certification: X SelfThird Party 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			0.05	0.05	0.06	0.04	0.05					
Type of Certification: X SelfThird Party 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		18/1/4 N										
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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 RECERTIFIED (Company Official) (Company Official) (Title) (Date) (Company) (Address) Name of test as it should appear on website: 4.63-in. EXP 16 SPF w/ BH FLO-4623-411CFZ	Type of Certification:	Self	_Third Party									
RECERTIFIED (Company Official) (Title) (Date) (Company) (Address) Name of test as it should appear on website: 4.63-in. EXP 16 SPF w/ BH FLO-4623-411CFZ	the equipment was chosen at random from nor recommends the use of the perforator s	s detonator cord, etc., w stock and therefore will ystem described	as standard equipm	ent with ou same as th	r company for ne equipment t	the use in th	e gun being te furnished to p	ested and wo	as not changed well for any ope	in any manne rator. API neiti	r for the tes ner endorse	t. Furthermore, s these tests
Name of test as it should appear on website: 4.63-in. EXP 16 SPF w/ BH FLO-4623-411CFZ											X /66/U	
Name of test as it appears on application and application date:		12 (12	• • • • • • • • • • • • • • • • • • • •	7.	353	3-411CF				(Addre	33)	
	Name of test as it appears on application and ap	plication date:										