



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

API Form 19B-Section 1 Conforms to All Requirements of Section 1 Special Test - See Remarks/Exceptions below

Service Company Available to all from Titan Specialties Ltd. Explosive weight 21 gm, HMX powder, Case Material Steel

Gun OD & Trade Name 3-1/8" EXP Gun, 6 SPF 60 Degree Max Temp, °F 400 1 hr 3 hr 24 hr 100 hr 200 hr

Charge Name 3-3/8" 21 Gm HMX GH Maximum Pressure Rating 20,000 psi, Carrier Material H.T. Steel

Manufacturer Charge Part No. EXP-3321-431 Date of Manufacture 25 Aug 2010 Shot Density Tested 6 Shots/ft 6

Gun Type Hollow Steel Carrier, Expendable (HC, E) Recommended Minimum ID for Running 3.58 in.

Phasing Tested 60 degrees, Firing Order: Top down Bottom up Available Firing Mode: X Selective X Simultaneous

Debris Description Small steel chips, usually retained in carrier Debris Weight n/a gm/charge, Debris n/a in³/charge

Remarks/Exceptions per Section 1.11 _____

Casing Data 4-1/2" OD, Weight 11.6 lb/ft, API Grade, L-80 Date of Section 1 Test 30 Sept 2010

Target Data 78" OD, Amount of Cement 6,354 lb, Amount of Sand 12,708 lb, Amount of Water 3,317 lb.

Date of Compressive Strength Test 30 Sept 2010 Briquette Compressive Strength 6,375 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	0.18	0.62	0.87	0.62	0.18	0.00	0.18	0.62	0.87	0.62	
Casing Hole Diameter, Short Axis, in	0.58	0.60	0.50	0.46	0.60	0.49	0.56	0.61	0.48	0.50	0.50	
Casing Hole Diameter, Long Axis, in	0.60	0.63	0.55	0.50	0.62	0.59	0.58	0.62	0.56	0.54	0.59	
Average Casing Hole Diameter, in.	0.59	0.62	0.53	0.48	0.61	0.54	0.57	0.62	0.52	0.52	0.55	
Total Depth, in.	31.25	22.25	29.75	30.63	28.00	31.00	31.75	26.50	30.13	30.25	28.25	
Burr Height, in.	0.08	0.07	0.06	0.06	0.05	0.05	0.04	0.06	0.05	0.07	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.	0.18											XXXXXX
Casing Hole Diameter, Short Axis, in	0.56											0.54
Casing Hole Diameter, Long Axis, in	0.59											0.58
Average Casing Hole Diameter, in.	0.58											0.56
Total Depth, in.	31.00											29.23
Burr Height, in.	0.03											0.06

Manufacturer's Certification

Type of Certification: 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 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.

CERTIFIED BY Kenneth B. Balwood CEO 18 Oct 2010 Titan Specialties Ltd. 143 HCR 4361, Milford, TX 76670

____ RECERTIFIED (Company Official) (Title) (Date) (Company) (Address)

Name of test as it should appear on website: 3.13-in. EXP 6 SPF w/ GH EXP-3321-431

Name of test as it appears on application and application date: _____