



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 BVT, CJSC
 Gun OD & Trade Name 2" (50 mm) PK050-AT
 Charge Name ZPK50-AT-M-10
 Manufacturer Charge Part No. ZPK50-AT-M-10 Date of Manufacture February 17, 2012
 Gun Type Expendable Gun TCP/Wireline
 Phasing Tested 60 degrees, Firing Order: Top Down X Bottom up
 Debris Description N/A
 Remarks/Exceptions per Section 1.11 Casing used: 3.5" (89 mm)x0.26"(6.5 mm) GRADE D, GOST 633-80; 1.11.3 Gun shot with air
 Casing Data 3.5" (89 mm) OD, Weight 8.88 (13.22 kg/m) lb/ft
 Target Data 39.37" (1000 mm) OD, Amount of Cement 1940 (880 kg) lb, Amount of Sand 3880.1 (1760 kg) lb, Date of Section 1 Test October 01, 2012
 Date of Compressive Strength Test October 01, 2012 Briquette Compressive Strength 6018.9 (41.50 MPa) psi, Amount of Water 1009.7 (458 kg) lb, Age of Target 31 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 (mm).....	0.34 (8.6)	0.43 (10.9)	0.63 (16.0)	0.74 (18.8)	0.63 (16.0)	0.43 (10.9)	0.34 (8.6)	0.43 (10.9)	0.63 (16.0)	0.74 (18.8)	0.63 (16.0)
Casing Hole Diameter, Short Axis, in (mm).....	0.47 (12.00)	0.46 (11.80)	0.49 (12.50)	0.47 (12.00)	0.49 (12.40)	0.47 (12.00)	0.49 (12.50)	0.47 (12.00)	0.47 (12.00)	0.46 (11.80)	0.48 (12.30)
Casing Hole Diameter, Long Axis, in (mm).....	0.48 (12.20)	0.47 (12.00)	0.50 (12.70)	0.48 (12.30)	0.49 (12.50)	0.47 (12.00)	0.51 (13.00)	0.47 (12.00)	0.49 (12.50)	0.47 (12.00)	0.49 (12.40)
Average Casing Hole Diameter, in (mm).....	0.48 (12.10)	0.47 (11.90)	0.50 (12.60)	0.48 (12.15)	0.49 (12.45)	0.47 (12.00)	0.50 (12.75)	0.47 (12.00)	0.48 (12.25)	0.47 (11.90)	0.49 (12.35)
Total Depth, in (mm).....	6.3 (160)	6.2 (158)	6.7 (171)	5.6 (143)	4.3 (108)	5.6 (143)	6.1 (154)	5.4 (137)	6.0 (152)	5.6 (143)	5.3 (135)
Burr Height, in (mm).....	0.07 (1.80)	0.06 (1.60)	0.06 (1.50)	0.08 (2.10)	0.06 (1.50)	0.08 (2.00)	0.08 (2.00)	0.04 (1.00)	0.08 (2.10)	0.04 (1.00)	0.06 (1.60)

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 (mm).....	0.43 (10.9)	0.34 (8.6)	0.43 (10.9)	0.63 (16.0)	0.74 (18.8)							xxxxxx xxxxxx
Casing Hole Diameter, Short Axis, in (mm).....	0.49 (12.40)	0.43 (11.00)	0.47 (12.00)	0.50 (12.70)	0.50 (12.70)							0.48 (12.13)
Casing Hole Diameter, Long Axis, in (mm).....	0.50 (12.60)	0.46 (11.60)	0.50 (12.60)	0.51 (13.00)	0.51 (13.00)							0.49 (12.40)
Average Casing Hole Diameter, in (mm).....	0.49 (12.50)	0.44 (11.30)	0.48 (12.30)	0.51 (12.85)	0.51 (12.85)							0.48 (12.27)
Total Depth, in (mm).....	6.4 (163)	6.2 (157)	5.6 (141)	5.6 (141)	6.6 (167)							5.8 (148)
Burr Height, in (mm).....	0.04 (1.00)	0.08 (2.10)	0.04 (0.90)	0.08 (2.00)	0.07 (1.70)							0.06 (1.62)


Remarks The gun can be used in gas wells. Penetration normalized to 5000 psi by method of SPE 27424 (approx. 3.8% / 1000psi) = 6.1 " (154 mm)

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 describes.

API Witness A. Tovmachenko  October 04, 2012
(Date)

CERTIFIED BY A.Yakuba  Technical Director October 04, 2012 BVT, CJSC 41 Rabochaya St., Samara, 443041, Russian Federation
 RECERTIFIED BY (Company Official) (Title) (Date) (Company) (Address)

Name of test as it should appear on website: PK050-AT / ZPK50-AT-M-10

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