



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		Explosive Weight	5,5	gm,	RDX	powder,	Case Material	Steel					
Gun OD & Trade Name	2,087" (53 mm)	PKO50-AT	Max Temp. °F	302(150°C)	2hr	284(140°C)	5hr	266(130°C)	12hr	248(120°C)	30hr	230(110°C)	72hr	
Charge Name	ZPK50-AT-M-03		Maximum Pressure Rating	11603 (80 MPa)			psi,	Carrier Material	Steel					
Manufacturer Charge Part No.	ZPK50-AT-M-03	Date of Manufacture	April 08, 2014			Shot Density Tested	6,1 (20 shots/m)			shots/ft				
Gun Type	Expendable Gun TCP/Wireline		Recommended Minimum ID for Running	2,8			(71 mm)		in.					
Phasing Test: 60 degrees,	Firing Order:	Top Down	X	Bottom up		Available Firing Mode:	Selective		X	Simultaneous				
Debris Description	N/A		Debris Weight	N/A		gm/charge,	Debris		N/A		in/charge			
Remarks/Exceptions per Section 1.11	Casing used: 3,5" (89 mm)x0,26"(6,5 mm) GRADE D, GOST 633-80; Gun shot with water													
Casing Data	3,5" (89 mm)	OD,	Weight	8,88	(13,22 kg/m)	lb/ft	API Grade,	Date of Section 1 Test			May 19, 2014			
Target Data	55,12" (1400 mm)	OD,	Amount of Cement	3593,5 (1630kg)		lb,	Amount of Sand	7187 (3260 kg)		lb,	Amount of Water	1868,6 (847,6 kg)		lb.
Date of Compressive Strength Test	May 19, 2014		Briquette Compressive Strength	7527,2		(51,90 MPa)	psi,	Age of Target	32		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).....	0,33	(8,5)	0,43	(10,9)	0,63	(16,0)	0,74	(18,9)	0,63	(16,0)	0,43	(10,9)	0,33	(8,5)	0,43	(10,9)	0,63	(16,0)	0,74	(18,9)	0,63	(16,0)
Casing Hole Diameter, Short Axis, in (mm)...	0,22	(5,70)	0,21	(5,30)	0,21	(5,30)	0,22	(5,50)	0,21	(5,40)	0,23	(5,90)	0,21	(5,40)	0,20	(5,10)	0,21	(5,40)	0,21	(5,30)	0,20	(5,20)
Casing Hole Diameter, Long Axis, in (mm)....	0,25	(6,30)	0,23	(5,80)	0,21	(5,30)	0,22	(5,60)	0,22	(5,50)	0,24	(6,10)	0,22	(5,50)	0,23	(5,80)	0,23	(5,80)	0,23	(5,80)	0,22	(5,50)
Average Casing Hole Diameter, in (mm).....	0,24	(6,00)	0,22	(5,55)	0,21	(5,30)	0,22	(5,55)	0,21	(5,45)	0,24	(6,00)	0,21	(5,45)	0,21	(5,45)	0,22	(5,60)	0,22	(5,55)	0,21	(5,35)
Total Depth, in (mm).....	23,0	(583)	20,2	(512)	22,6	(574)	21,7	(551)	22,1	(561)	21,5	(547)	22,4	(569)	20,4	(517)	21,8	(554)	22,7	(577)	22,5	(572)
Burr Height, in (mm).....	0,04	(1,00)	0,04	(1,00)	0,02	(0,60)	0,02	(0,60)	0,05	(1,20)	0,03	(0,80)	0,04	(1,10)	0,04	(1,00)	0,06	(1,50)	0,02	(0,60)	0,04	(1,00)

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)	0,33	(8,5)	0,43	(10,9)	0,63	(16,0)	0,74	(18,9)	0,63	(16,0)	0,43	(10,9)	0,33	(8,5)	0,43	(10,9)					xxxxxx	xxxxxx
Casing Hole Diameter, Short Axis, in (mm)...	0,21	(5,30)	0,20	(5,10)	0,22	(5,50)	0,22	(5,60)	0,22	(5,70)	0,20	(5,00)	0,21	(5,40)	0,21	(5,40)	0,21	(5,40)					0,21	(5,40)
Casing Hole Diameter, Long Axis, in (mm)....	0,22	(5,60)	0,24	(6,00)	0,23	(5,90)	0,23	(5,90)	0,23	(5,90)	0,21	(5,40)	0,22	(5,70)	0,22	(5,50)	0,22	(5,60)					0,23	(5,73)
Average Casing Hole Diameter, in (mm).....	0,21	(5,45)	0,22	(5,55)	0,22	(5,70)	0,23	(5,75)	0,23	(5,80)	0,20	(5,20)	0,22	(5,55)	0,21	(5,45)	0,22	(5,50)					0,22	(5,56)
Total Depth, in (mm).....	20,6	(522)	20,9	(532)	Lost		22,1	(562)	22,3	(567)	22,7	(577)	20,7	(527)	23,1	(587)	Lost						21,8	(555)
Burr Height, in (mm).....	0,04	(1,10)	0,04	(0,90)	0,04	(0,90)	0,03	(0,80)	0,02	(0,60)	0,02	(0,50)	0,02	(0,50)	0,03	(0,80)	0,03	(0,70)					0,04	(0,86)

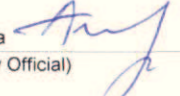
Remarks The gun can be used in gas wells. Penetration normalized to 5000 psi by method of SPE 27424 (approx. 3,8% / 1000psi) = 24,0 " (608 mm)

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  May 22, 2014 (Date)

CERTIFIED BY A. Yakuba  Technical Director May 22, 2014 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: PKO50-AT / ZPK50-AT-M-03

Name of test as it should appear on application and application date: ZPK50-AT-M-03 / PKO50-AT April 04, 2014