American Petroleum Institute

API Perforator Design Registration

REGISTERED DATA SHEET PERFORATING SYSTEM EVALUATION, API RP 19B SECTION 1

Service Company Available to ALL Design Number

Gun OD & Trade Name 4 5/8" High Shot Density Gun

Charge Name 39 gms. HMX Barracuda Premium DP (DSC 02-09-23)

Manufacturer Charge Part No. TC47HP Date of Manufacture Sept 20th 2002

Gun Type Expendable, Retrievable HSC TCP/WL 60° 5 SPF

Phasing Tested 60 degrees, Firing Order X Top Down, ____ Bottom Up

Debris Description n/a

Remarks * Gun OD after shoting in water 4.89 in. (Scallop Gun)

Explosive Weight 39 gm, HMX powder, Case Material Steel

Max. Temp, °F 400 1 hr ____ 3 hr ____ 24 hr ____ 100 hr ____ 200 hr

Maximum Pressure Rating 20.000 psi, Carrier Material Steel

Shot Density Tested 5 Shots/ft

Recommended Minimum ID for Running * in.

Available Firing Mode X Selective, X Simultaneous

Debris Weight n/a gm/charge, Debris n/a in^3/charge

SECTION 1 - CONCRETE TARGET

Casing Data 7" OD, Weight 32 lb/ft, L-80 API Grade, Date of Section 1 Test Nov 13th 2002

Target Data 110.5" OD, Amount of Cement 15135 lb., Amount of Sand 30270 lb., Amount of Water 7870 lb.

Date of Compressive Strength Test Nov 12th 2002, Briquette Compressive Strength **8122** psi, Age of Target 35 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.	0.000	0.300	1.034	1.469	1.034	0.300	0.000	0.300	1.034	1.469	1.034	
Casing Hole Diameter, Short Axis, in.	0.472	0.410	0.483	0.410	0.405	0.490	0.458	0.434	0.414	0.425	0.442	
Casing Hole Diameter, Long Axis, in.	0.478	0.440	0.492	0.415	0.418	0.506	0.481	0.438	0.422	0.435	0.446	
Average Casing Hole Diameter, in.	0.475	0.425	0.488	0.413	0.412	0.498	0.467	0.436	0.418	0.430	0.444	
Total Depth, in.	42.430	43.180	42.180	42.680	46.180	45.180	45.930	42.930	42.680	45.180	47.180	
Burr Height, in.	0.071	0.042	0.047	0.042	0.080	0.049	0.047	0.022	0.056	0.035	0.052	

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.	0.300	0.000	0.300	1.034								0.641
Casing Hole Diameter, Short Axis, in.	0.435	0.405	0.440	0.305								0.429
Casing Hole Diameter, Long Axis, in.	0.438	0.428	0.470	0.325								0.442
Average Casing Hole Diameter, in.	0.437	0.417	0.455	0.315								0.435
Total Depth, in.	40.180	44.680	46.305	43.930								44.055
Burr Height, in.	0.058	0.030	0.040	0.036								0.047

WITNESSING INFORMATION

Date of Notice of Intent to Test: April 22th 2002 Witnessed by: Juan C. Valladares

Other Activities Witnessed: Target Pouring ____ Briquette: Preparation ____ Testing X Burr Height Measurements X Samples Taken: Concrete X Casing X

CERTIFICATION

I certify that these tests were made according to the procedures as outlined in API RP 19B: Recommended Practices for Evaluation of Well Perforators, First Edition, November 2000. 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, which would be furnished to perforate a well for any operator. The American Petroleum Institute neither endorses these test results nor recommends the use of the perforator system described.

X CERTIFIED BY / ____ RECERTIFIED	(Company Official)	Perforating Projects Manager (Title)	Nov. 15th 2002 (Date)	E.T.A. S.A. (Company)	Ruta 25 Km 13 Pilar Bs. As. Argentina (Address)

API Form 19R-A