



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

Service Company Available to all Design Number \_\_\_\_\_ Explosive Weight 14.5 gm, HMX powder, Case Material Steel  
 Gun OD & Trade Name 2 1/8" Fully Expendable Low Debris Link, BH HMX Max. Temp, °F 400 1 hr 3 hr 24 hr 100 hr 200 hr  
 Charge Name 2 1/8" Piranha Next Generation BH HMX (DSC 04-07-41) Maximum Pressure Rating 20,000 psi, Carrier Material Steel  
 Manufacturer Charge Part No. TG 30HNGBH Date of Manufacture July 29<sup>th</sup> 2004 Shot Density Tested 6 Shots/ft  
 Gun Type Retrievable Trough Tubing Gun, 6 SPF 45° Recommended Minimum ID for Running 2.25 in.  
 Phasing Tested 45 degrees, Firing Order X Top Down, \_\_\_\_\_ Bottom Up Available Firing Mode \_\_\_\_\_ Selective, \_\_\_\_\_ Simultaneous  
 Debris Description Case & Link: small steel chips; Steel cap breaks in two or three parts Debris Weight 165 gm/charge, Debris \* in<sup>3</sup>/charge  
 Remarks \* Debris fill in 4 1/2" 11.6#: 5 1/2" 17#: 7" 32# casing is 0.172", 0.115", 0.074" respectively per charge.

**SECTION 1 - CONCRETE TARGET**

Casing Data 4 1/2" OD, Weight 11.6 lb/ft, L-80 API Grade, Date of Section 1 Test August 30<sup>th</sup> 2004  
 Target Data 40" OD, Amount of Cement 1900 lb., Amount of Sand 3800 lb., Amount of Water 990 lb.  
 Date of Compressive Strength Test August 31<sup>th</sup> 2004 Briquette Compressive Strength 6356 psi, 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. ....	0.00	0.162	0.704	1.487	1.875	1.487	0.704	0.162	0.00	0.162	0.704
Casing Hole Diameter, Short Axis, in. ....	0.60	0.59	0.53	0.52	0.51	0.50	0.52	0.58	0.50	0.60	0.57
Casing Hole Diameter, Long Axis, in. ....	0.63	0.61	0.56	0.60	0.52	0.52	0.58	0.60	0.55	0.63	0.60
Average Casing Hole Diameter, in. ....	0.615	0.600	0.545	0.560	0.515	0.510	0.550	0.590	0.525	0.615	0.585
Total Depth, in. ....	6.501	8.751	8.251	7.001	7.251	7.001	6.001	8.501	8.001	6.501	7.501
Burr Height, in. ....	0.036	0.023	0.052	0.049	0.028	0.052	0.065	0.080	0.040	0.058	0.062

  

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. ....	1.487	1.875	1.487									0.878
Casing Hole Diameter, Short Axis, in. ....	0.64	0.53	0.52									0.551
Casing Hole Diameter, Long Axis, in. ....	0.66	0.60	0.56									0.587
Average Casing Hole Diameter, in. ....	0.65	0.565	0.540									0.569
Total Depth, in. ....	7.251	8.001	5.571									7.305
Burr Height, in. ....	0.084	0.061	0.079									0.055

**WITNESSING INFORMATION**

Date of Notice of Intent to Test: July 27<sup>th</sup> 2004 Witnessed by: J. Smirnoff (API Certified)  
 Other Activities Witnessed: Target Pouring \_\_\_\_\_ Briquette: Preparation \_\_\_\_\_ Testing X Burr Height Measurement 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 DANIEL E. LATTANZIO Perforating Projects Manager Sept 1<sup>st</sup> 2004 Explosivos Tecnológicos Argentinos S.A. Ruta 25Km.13 Pilar- Bs.As. Argentina  
 \_\_\_\_\_ RECERTIFIED \_\_\_\_\_ (Title) (Date) (Company) (Address)

**DANIEL E. LATTANZIO**  
 PERFORATING PROJECTS MANAGER