

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

Service Company Available to all _____ Design Number _____
 Gun OD & Trade Name 2 7/8" High Shot Density Gun 6 SPF 60°
 Charge Name 2 7/8" Barracuda, HMX (DSC 02-12-23)
 Manufacturer Charge Part No. TC-46-H Date of Manufacture Dec 18th 2002
 Gun Type Expendable, Retrievable HSC TCP/WL
 Phasing Tested 60 degrees, Firing Order X Top Down, _____ Bottom Up
 Debris Description Case Debris kept inside the gun after shooting
 Remarks * Gun OD after shooting 3.05 in.

Explosive Weight 16.5 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 _____ 6 _____ Shots/ft
 Recommended Minimum ID for Running _____ * _____ in.
 Available Firing Mode _____ Selective, _____ Simultaneous
 Debris Weight N/A gm/charge, Debris N/A in³/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 Jan 21st 2003
 Target Data 70.5" OD, Amount of Cement 5710 lb., Amount of Sand 11420 lb., Amount of Water 2969 lb.
 Date of Compressive Strength Test Jan 21st 2003, Briquette Compressive Strength 7237 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.....	<u>0.00</u>	<u>0.221</u>	<u>0.784</u>	<u>1.125</u>	<u>0.784</u>	<u>0.221</u>	<u>0.00</u>	<u>0.221</u>	<u>0.784</u>	<u>1.125</u>	<u>0.784</u>
Casing Hole Diameter, Short Axis, in..	<u>0.282</u>	<u>0.267</u>	<u>0.308</u>	<u>0.289</u>	<u>0.302</u>	<u>0.290</u>	<u>0.290</u>	<u>0.320</u>	<u>0.326</u>	<u>0.303</u>	<u>0.196</u>
Casing Hole Diameter, Long Axis, in. .	<u>0.296</u>	<u>0.311</u>	<u>0.356</u>	<u>0.296</u>	<u>0.331</u>	<u>0.295</u>	<u>0.310</u>	<u>0.333</u>	<u>0.328</u>	<u>0.312</u>	<u>0.250</u>
Average Casing Hole Diameter, in.....	<u>0.289</u>	<u>0.289</u>	<u>0.332</u>	<u>0.293</u>	<u>0.317</u>	<u>0.293</u>	<u>0.300</u>	<u>0.327</u>	<u>0.327</u>	<u>0.308</u>	<u>0.223</u>
Total Depth, in.....	<u>32.260</u>	<u>30.510</u>	<u>31.760</u>	<u>29.260</u>	<u>31.010</u>	<u>30.510</u>	<u>30.760</u>	<u>31.260</u>	<u>31.510</u>	<u>31.260</u>	<u>31.010</u>
Burr Height, in.....	<u>0.056</u>	<u>0.034</u>	<u>0.062</u>	<u>0.034</u>	<u>0.056</u>	<u>0.030</u>	<u>0.050</u>	<u>0.041</u>	<u>0.062</u>	<u>0.040</u>	<u>0.081</u>

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.....	<u>0.221</u>	<u>0.00</u>	<u>0.221</u>	<u>0.784</u>	<u>1.125</u>	<u>0.784</u>	<u>0.221</u>	<u>0.00</u>	<u>0.221</u>	_____	_____	<u>0.481</u>
Casing Hole Diameter, Short Axis, in..	<u>0.290</u>	<u>0.316</u>	<u>0.330</u>	<u>0.330</u>	<u>0.275</u>	<u>0.230</u>	<u>0.298</u>	<u>0.338</u>	<u>0.348</u>	_____	_____	<u>0.296</u>
Casing Hole Diameter, Long Axis, in. .	<u>0.292</u>	<u>0.333</u>	<u>0.354</u>	<u>0.338</u>	<u>0.277</u>	<u>0.255</u>	<u>0.300</u>	<u>0.359</u>	<u>0.355</u>	_____	_____	<u>0.314</u>
Average Casing Hole Diameter, in.....	<u>0.291</u>	<u>0.325</u>	<u>0.342</u>	<u>0.334</u>	<u>0.276</u>	<u>0.243</u>	<u>0.299</u>	<u>0.349</u>	<u>0.351</u>	_____	_____	<u>0.305</u>
Total Depth, in.....	<u>29.260</u>	<u>31.010</u>	<u>32.260</u>	<u>28.260</u>	<u>29.760</u>	<u>31.760</u>	<u>29.260</u>	<u>29.260</u>	<u>30.260</u>	_____	_____	<u>30.610</u>
Burr Height, in.....	<u>0.030</u>	<u>0.020</u>	<u>0.040</u>	<u>0.043</u>	<u>0.041</u>	<u>0.058</u>	<u>0.035</u>	<u>0.052</u>	<u>0.010</u>	_____	_____	<u>0.044</u>

WITNESSING INFORMATION

Date of Notice of Intent to Test: April 22th 2002 Witnessed by: J. Smirnof J. Smirnof (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 _____ Perforating Projects Manager Jan 31st 2003 Explosivos Tecnologicos Argentinos S.A. Ruta 25Km.13 Pilar- Bs.As. Argentina
 _____ RECERTIFIED _____ (Company Official) (Title) (Date) (Company) (Address)