

CERTIFICATION DATA SHEET

7" OD, TAG, 12 SPF, 135/45° 39G, (TAG-4500-311)

FORM 43F

PERFORATING SYSTEM EVALUATION, RP 43, SECTIONS 1 AND 2

TAG-4500-311

Service Company <u>AVAILABLE TO ALL FROM OWEN OIL TOOLS, INC.</u>	Explosive Weight <u>39</u> gm, <u>RDX</u> powder, Case Material <u>STEEL</u>
Gun OD & Trade Name <u>7" OD, TAG, 12 SPF, 135/45° 39G, (TAG-4500-311)</u>	Max. Temp, F <u>330</u> 1 hr <u> </u> 3 hr <u> </u> 24 hr <u> </u> 100 hr <u> </u> hr
Charge Name <u>PERFORATOR, 4-1/2", DP/GH, 39G, RDX</u>	Maximum Pressure Rating <u>13,000</u> psi, Carrier Material <u>STEEL</u>
Manufacturer Charge Part No. <u>TAG-4500-311</u> Date of Manufacture <u>12-Dec-08</u>	Shot Density <u>12</u> shots/ft
Gun Type <u>SCALLPOED, EXPENDABLE</u>	Recommended Minimum ID for Running <u>7.630</u> in.
Phasing Tested <u>135/45</u> degrees, Firing Order <u>X</u> Top down, <u> </u> Bottom up	Available Firing Mode <u> </u> Selective, <u>X</u> Simultaneous.
Debris Description <u>SMALL STEEL PIECES</u>	Debris Weight <u>N/A</u> gm/charge, Debris <u>N/A</u> in.3/charge
Remarks <u>HMX VERSION AVAILABLE AS TAG-4500-411</u>	

SECTION 1 - CONCRETE TARGET

Casing Data <u>9-5/8"</u>	OD, Weight <u>47</u> lb/ft,	L-80	API Grade, Date of Concrete Test	<u>30-Jan-08</u>	
Target Data <u>96</u>	OD, Briquet Compressive Strength	<u>6100</u>	psi, Age of Target	<u>28</u>	days

Shot No.	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9	No. 10
Clearance, in.	<u>0.00</u>	<u>1.39</u>	<u>0.76</u>	<u>0.21</u>	<u>1.68</u>	<u>0.21</u>	<u>0.76</u>	<u>1.39</u>	<u>0.00</u>	<u>1.39</u>
Casing Hole Diameter, Short Axis, in.	<u>0.59</u>	<u>0.45</u>	<u>0.57</u>	<u>0.52</u>	<u>0.52</u>	<u>0.54</u>	<u>0.53</u>	<u>0.47</u>	<u>0.58</u>	<u>0.44</u>
Casing Hole Diameter, Long Axis, in.	<u>0.60</u>	<u>0.44</u>	<u>0.57</u>	<u>0.55</u>	<u>0.52</u>	<u>0.55</u>	<u>0.55</u>	<u>0.47</u>	<u>0.58</u>	<u>0.45</u>
Average Casing Hole Diameter, in.	<u>0.60</u>	<u>0.45</u>	<u>0.57</u>	<u>0.54</u>	<u>0.52</u>	<u>0.55</u>	<u>0.54</u>	<u>0.47</u>	<u>0.58</u>	<u>0.45</u>
Total Depth, in.	<u>40.50</u>	<u>44.80</u>	<u>43.80</u>	<u>38.50</u>	<u>47.60</u>	<u>39.80</u>	<u>43.80</u>	<u>46.10</u>	<u>42.70</u>	<u>44.90</u>
Burr Height, in.	<u>0.02</u>	<u>0.05</u>	<u>0.04</u>	<u>0.04</u>	<u>0.03</u>	<u>0.04</u>	<u>0.03</u>	<u>0.03</u>	<u>0.04</u>	<u>0.04</u>

Shot No.	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17	No. 18	No. 19	No. 20	Average
Clearance, in.	<u>0.76</u>	<u>0.21</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
Casing Hole Diameter, Short Axis, in.	<u>0.54</u>	<u>0.58</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u>0.53</u>
Casing Hole Diameter, Long Axis, in.	<u>0.56</u>	<u>0.56</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u>0.53</u>
Average Casing Hole Diameter, in.	<u>0.55</u>	<u>0.57</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u>0.53</u>
Total Depth, in.	<u>44.50</u>	<u>41.50</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u>43.21</u>
Burr Height, in.	<u>0.04</u>	<u>0.04</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u>0.04</u>

Remarks PENETRATION NORMALIZED TO 5000 PSI CONCRETE WOULD BE 45.57" (5% PER 1000 PSI)

SECTION 2 - BEREA SANDSTONE CORE TARGET

	Shot No.	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	Average
Berea Bulk Porosity, <u> </u>	Faceplate Hole Diameter, Short Axis, in.	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
	Faceplate Hole Diameter, Long Axis, in.	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
Date of Berea Test <u> </u>	Average Faceplate Hole Diameter, in.	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
	Total Depth, in.	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

CERTIFICATION

Type of Certification: Self Third Party

I certify that these tests were made according to the procedures as outlined in RP 43: Recommended Practices for Evaluation of Well Perforators, Fifth Edition, January 1991. All of the equipment used in these tests, such as the guns, jet charges, detonator cord, etc., was standard with our company for 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.

CERTIFIED BY <u>Dan W. Pratt</u>	DAN W. PRATT	VICE PRESIDENT - ENGINEERING	30-Jan-08	OWEN OIL TOOLS, INC 8900 FORUM WAY, FT. WORTH TX. 76140
RECERTIFIED	(Company Officer)	(Title)	(Date)	(Address)