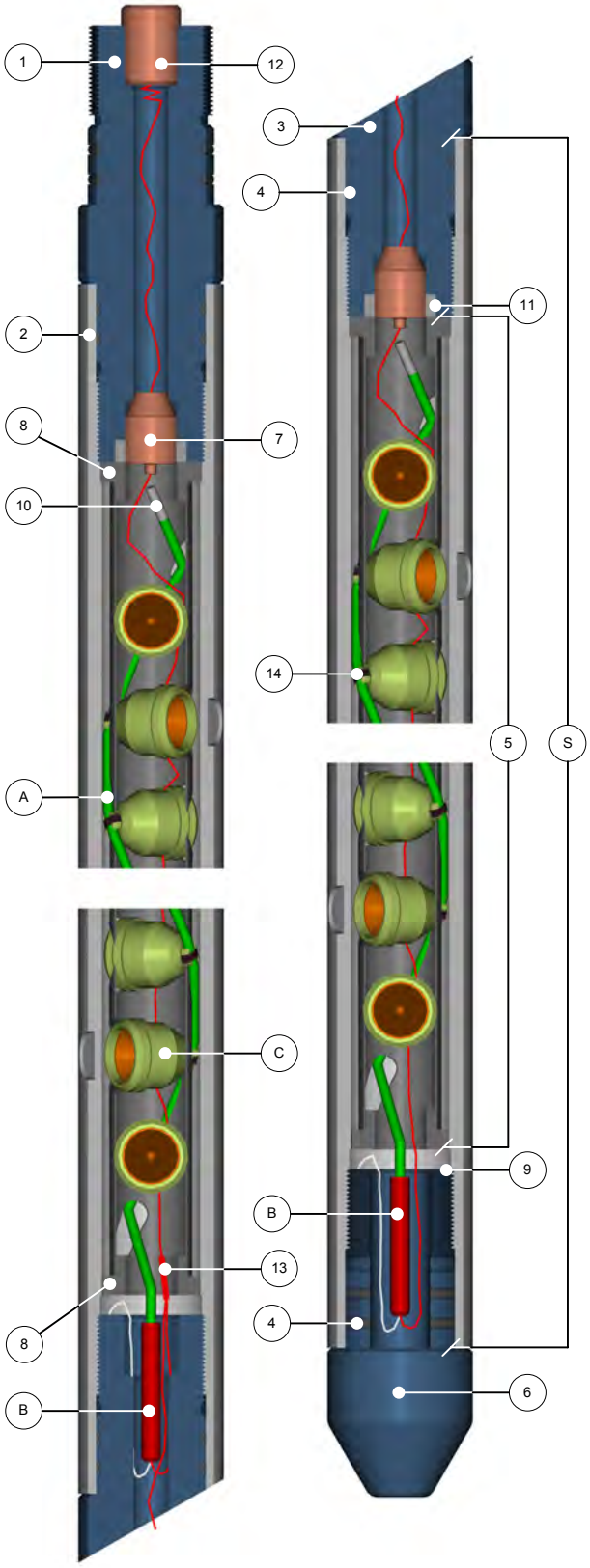
HIGH SHOT DENSITY GUN SYSTEM

2 7/8" High Shot Density Gun 6 SPF 60º
BOTTOM FIRE



ITEM	Part Nbr.	DESCRIPTION
1	EHS-2875-001	2 7/8" Top Sub adapts to WL or TCP Head
2	EHS-2875-006	2 7/8" Scalloped Gun Body 21´, 6 SPF, 60º
	EHS-2875-007	2 7/8" Scalloped Gun Body 15´, 6 SPF, 60º
	EHS-2875-008	2 7/8" Scalloped Gun Body 11´, 6 SPF, 60º
	EHS-2875-009	2 7/8" Scalloped Gun Body 7´, 6 SPF, 60º
	EHS-2875-010	2 7/8" Scalloped Gun Body 4´, 6 SPF, 60º
3	EHS-2875-011	2 7/8" Tandem Sub
4	EHS-2875-016	O-rings Kit
5	EHS-2875-021	Loading tube 21´, 6 SPF, 60º
	EHS-2875-022	Loading tube 15´, 6 SPF, 60º
	EHS-2875-023	Loading tube 11´, 6 SPF, 60º
	EHS-2875-024	Loading tube 7´, 6 SPF, 60º
	EHS-2875-025	Loading tube 4´, 6 SPF, 60º
6	EHS-2875-026	2 7/8" Bull Plug
7	EHS-4625-080	Dart seal - Simultaneous firing mode
	EHS-4625-081	Diode assy - Selective firing mode
8	EHS-2875-036	End Plates
9	EHS-2875-041	Snap Rings
10	EHS-4000-046	80 Detonating Cord End Cover
	EHS-2875-046	60 Detonating Cord End Cover
11	EHS-4625-082	Dart seal or Diode assy Retainer nut
12	EHS-4625-083	Lead wire assy w/contact spring
13	EHS-4625-084	Lead wire splice
14	3009-NG	Detonating Cord Clip (provided with charges)
A		80 Grains High Velocity Detonating Cord
		60 Grains High Velocity Detonating Cord
B		Fluid desensitized detonator
C	TC46RBH	16.5 gms Barracuda BH RDX
	TC46H	2 7/8" Barracuda HMX
S	EHS-2875-061	Shipping Assy 21´, 6 SPF, 60º
	EHS-2875-062	Shipping Assy 15´, 6 SPF, 60º
	EHS-2875-063	Shipping Assy 11´, 6 SPF, 60º
	EHS-2875-064	Shipping Assy 7´, 6 SPF, 60º
	EHS-2875-065	Shipping Assy 4´, 6 SPF, 60º

SYSTEM PRESSURE RATING 20,000 PSI

API RP 19B Certified

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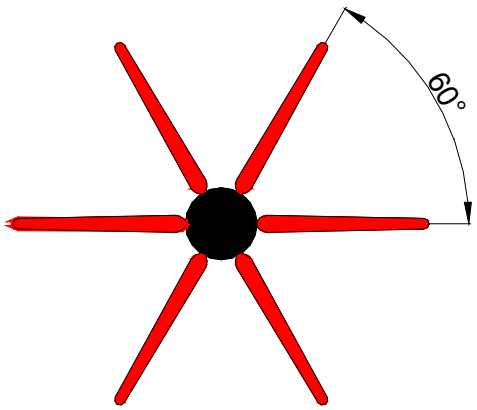
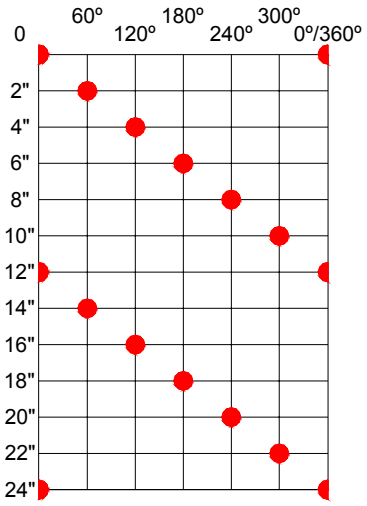
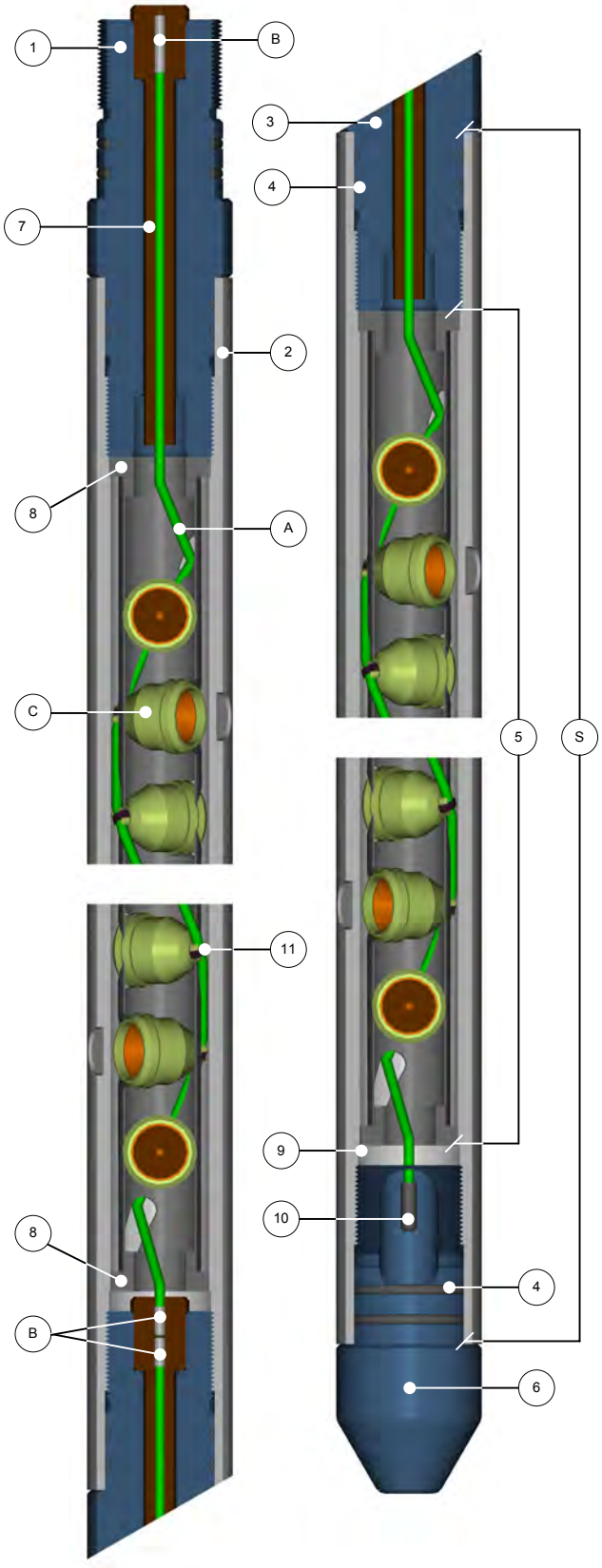
2 7/8" High Shot Density Gun 6 SPF 60º
BOTTOM FIRE

6 SPF 60º





2 7/8" High Shot Density Gun 6 SPF 60º
TOP FIRE

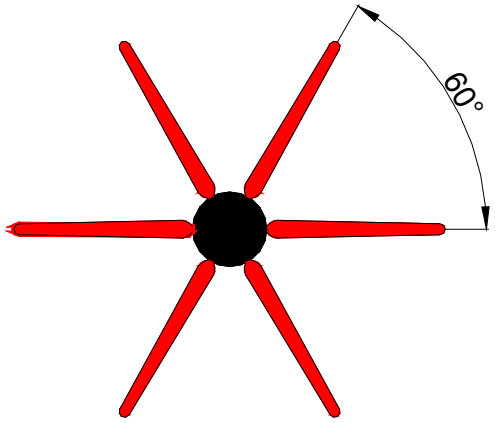


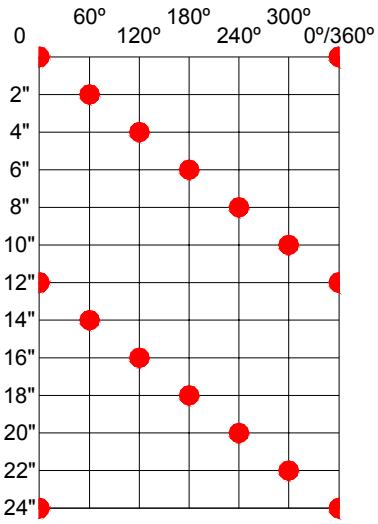
ITEM	Part Nbr.	DESCRIPTION
1	EHS-2875-001	Top Sub 2 7/8" Adapts to WL or TCP head
2	EHS-2875-006	2 7/8" Scalloped Gun Body 21´, 6 SPF, 60º
	EHS-2875-007	2 7/8" Scalloped Gun Body 15´, 6 SPF, 60º
	EHS-2875-008	2 7/8" Scalloped Gun Body 11´, 6 SPF, 60º
	EHS-2875-009	2 7/8" Scalloped Gun Body 7´, 6 SPF, 60º
	EHS-2875-010	2 7/8" Scalloped Gun Body 4´, 6 SPF, 60º
3	EHS-2875-011	2 7/8" Tandem Sub
4	EHS-2875-016	O-rings Kit
5	EHS-2875-021	Loading tube 21´, 6 SPF, 60º
	EHS-2875-022	Loading tube 15´, 6 SPF, 60º
	EHS-2875-023	Loading tube 11´, 6 SPF, 60º
	EHS-2875-024	Loading tube 7´, 6 SPF, 60º
	EHS-2875-025	Loading tube 4´, 6 SPF, 60º
6	EHS-2875-026	2 7/8" Bull Plug
7	EHS-2875-031	Transference Kit
8	EHS-2875-036	End Plates
9	EHS-2875-041	Snap Rings
10	EHS-4000-046	80 Detonating Cord End Cover
	EHS-2875-046	60 Detonating Cord End Cover
11	3009-NG	Detonating Cord Clip (provided with charges)
A		80 Grains High Velocity Detonating Cord
		60 Grains High Velocity Detonating Cord
B		Bi-Directional Booster
C	TC46RBH	16.5 gms Barracuda BH RDX
	TC46H	2 7/8" Barracuda HMX
S	EHS-2875-061	Shipping Assy 21´, 6 SPF, 60º
	EHS-2875-062	Shipping Assy 15´, 6 SPF, 60º
	EHS-2875-063	Shipping Assy 11´, 6 SPF, 60º
	EHS-2875-064	Shipping Assy 7´, 6 SPF, 60º
	EHS-2875-065	Shipping Assy 4´, 6 SPF, 60º

SYSTEM PRESSURE RATING 20,000 PSI

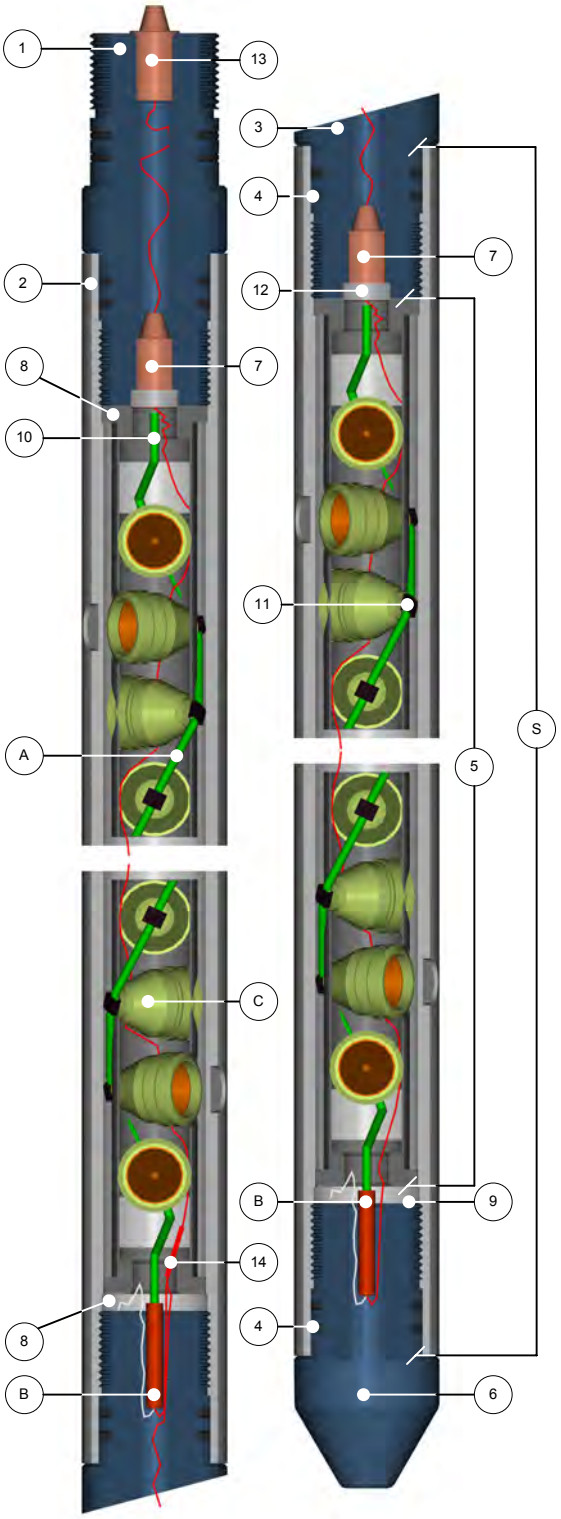
API RP 19B Certified

6 SPF 60º





3 3/8" High Shot Density Gun 6 SPF 60º
BOTTOM FIRE



ITEM	Part Nbr.	DESCRIPTION
1	EHS-3375-001	Top Sub 3 3/8" Adapts to WL or TCP head
2	EHS-3375-006	3 3/8" Scalloped Gun Body 21´, 6 SPF, 60º
	EHS-3375-007	3 3/8" Scalloped Gun Body 15´, 6 SPF, 60º
	EHS-3375-008	3 3/8" Scalloped Gun Body 11´, 6 SPF, 60º
	EHS-3375-009	3 3/8" Scalloped Gun Body 7´, 6 SPF, 60º
	EHS-3375-010	3 3/8" Scalloped Gun Body 4´, 6 SPF, 60º
3	EHS-3375-011	3 3/8" Tandem Sub
4	EHS-3375-016	O-rings Kit
5	EHS-3375-021	Loading tube 21´, 6 SPF, 60º
	EHS-3375-022	Loading tube 15´, 6 SPF, 60º
	EHS-3375-023	Loading tube 11´, 6 SPF, 60º
	EHS-3375-024	Loading tube 7´, 6 SPF, 60º
	EHS-3375-025	Loading tube 4´, 6 SPF, 60º
6	EHS-3375-026	3 3/8" Bull Plug
7	EHS-4625-080	Dart seal - Simultaneous firing mode
	EHS-4625-081	Diode assy - Selective firing mode
8	EHS-3375-036	End Plates
9	EHS-3375-041	Snap Rings
10	EHS-4000-046	Detonating Cord End Cover
11	2602-00	Detonating Cord Clip (provided with charges)
12	EHS-4625-082	Diode assy / Dart seal retainet nut
13	EHS-4625-083	Lead wire assy w/contact spring
14	EHS-4625-084	Lead wire splice
A		80 Grains High Velocity Detonating Cord
B		Fluid Desensitized detonator
C	TC26HP	22.7 gms HMX Universal Premium DP
	TC26HNG	22.7 gms Universal Next Generation DP HMX
	TC26R	22.7 gms Universal DP RDX
S	EHS-3375-061	Shipping Assy 21´, 6 SPF, 60º
	EHS-3375-062	Shipping Assy 15´, 6 SPF, 60º
	EHS-3375-063	Shipping Assy 11´, 6 SPF, 60º
	EHS-3375-064	Shipping Assy 7´, 6 SPF, 60º
	EHS-3375-065	Shipping Assy 4´, 6 SPF, 60º

SYSTEM PRESSURE RATING 20,000 PSI

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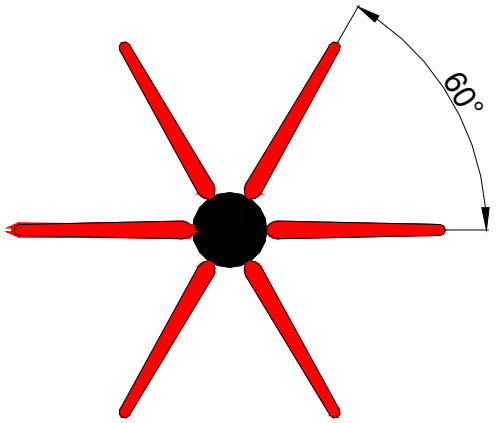
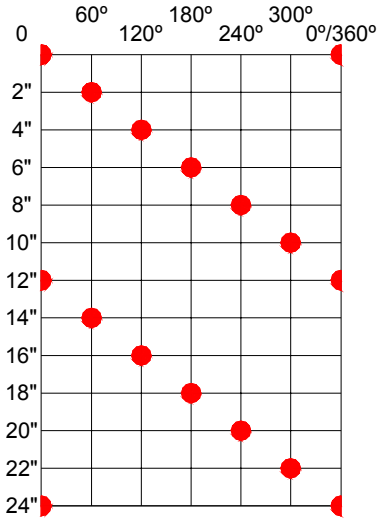
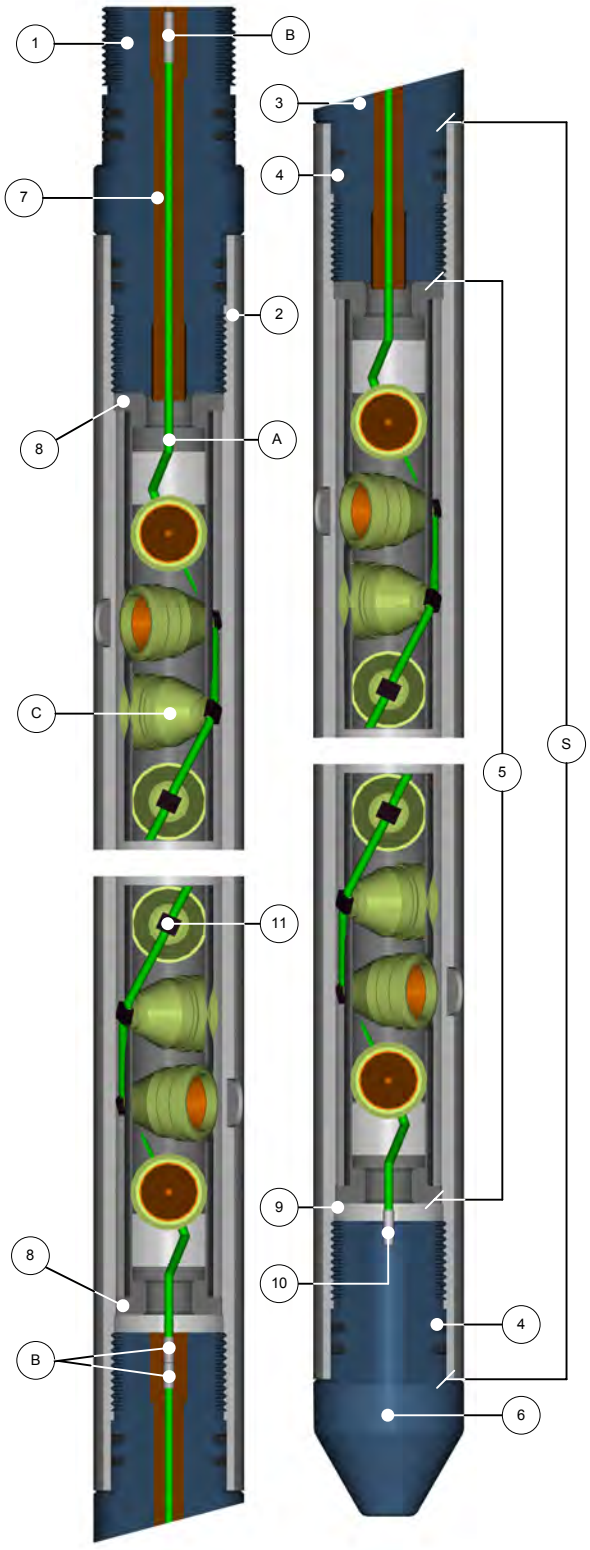
6 SPF 60º





3 3/8" High Shot Density Gun 6 SPF 60º
TOP FIRE



ITEM	Part Nbr.	DESCRIPTION
1	EHS-3375-001	Top Sub 3 3/8" Adapts to WL or TCP head
2	EHS-3375-006	3 3/8" Scalloped Gun Body 21´, 6 SPF, 60º
	EHS-3375-007	3 3/8" Scalloped Gun Body 15´, 6 SPF, 60º
	EHS-3375-008	3 3/8" Scalloped Gun Body 11´, 6 SPF, 60º
	EHS-3375-009	3 3/8" Scalloped Gun Body 7´, 6 SPF, 60º
	EHS-3375-010	3 3/8" Scalloped Gun Body 4´, 6 SPF, 60º
3	EHS-3375-011	3 3/8" Tandem Sub
4	EHS-3375-016	O-rings Kit
5	EHS-3375-021	Loading tube 21´, 6 SPF, 60º
	EHS-3375-022	Loading tube 15´, 6 SPF, 60º
	EHS-3375-023	Loading tube 11´, 6 SPF, 60º
	EHS-3375-024	Loading tube 7´, 6 SPF, 60º
	EHS-3375-025	Loading tube 4´, 6 SPF, 60º
6	EHS-3375-026	3 3/8" Bull Plug
7	EHS-3375-031	Transference Kit
8	EHS-3375-036	End Plates
9	EHS-3375-041	Snap Rings
10	EHS-4000-046	Detonating Cord End Cover
11	2602-00	Detonating Cord Clip (provided with charges)
A		80 Grains High Velocity Detonating Cord
B		Bi-Directional Booster
C	TC26HP	22.7 gms HMX Universal Premium DP
	TC26HNG	22.7 gms Universal Next Generation DP HMX
	TC26R	22.7 gms Universal DP RDX
S	EHS-3375-061	Shipping Assy 21´, 6 SPF, 60º
	EHS-3375-062	Shipping Assy 15´, 6 SPF, 60º
	EHS-3375-063	Shipping Assy 11´, 6 SPF, 60º
	EHS-3375-064	Shipping Assy 7´, 6 SPF, 60º
	EHS-3375-065	Shipping Assy 4´, 6 SPF, 60º

SYSTEM PRESSURE RATING 20,000 PSI

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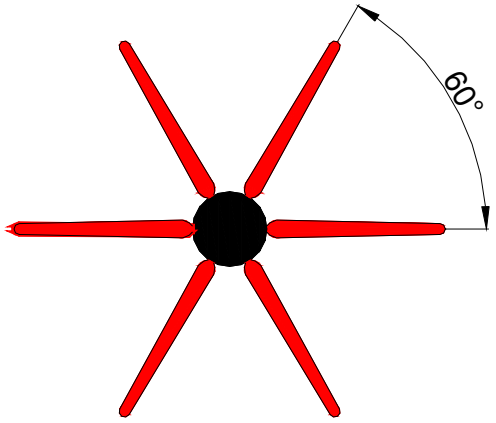
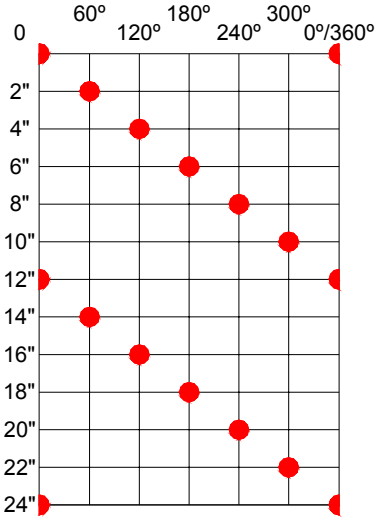
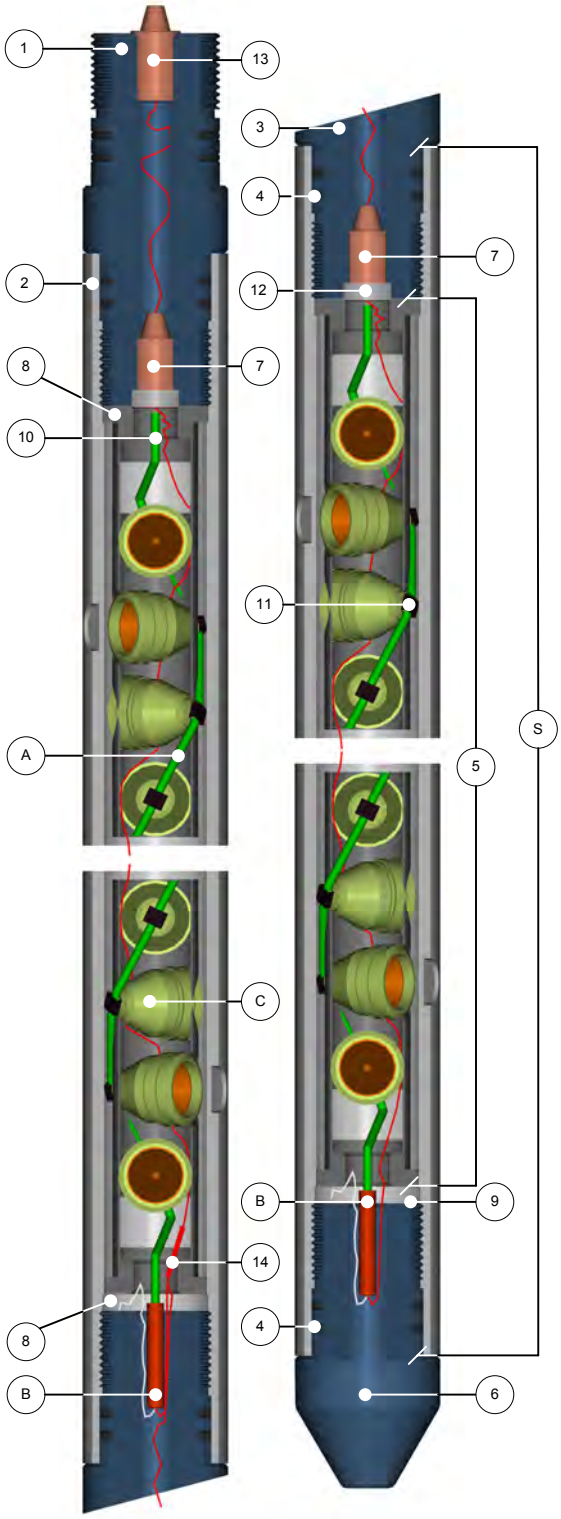
6 SPF 60º





4" High Shot Density Gun 4 SPF 90º
BOTTOM FIRE



ITEM	Part Nbr.	DESCRIPTION
1	EHS-4000-001	Top Sub 4" Adapts to WL or TCP head
2	EHS-4000-106	4" Scalloped Gun Body 21´, 4 SPF, 90º
	EHS-4000-107	4" Scalloped Gun Body 15´, 4 SPF, 90º
	EHS-4000-108	4" Scalloped Gun Body 11´, 4 SPF, 90º
	EHS-4000-109	4" Scalloped Gun Body 7´, 4 SPF, 90º
	EHS-4000-110	4" Scalloped Gun Body 4´, 4 SPF, 90º
3	EHS-4000-011	4" Tandem Sub
4	EHS-4000-016	O-rings Kit
5	EHS-4000-121	Loading tube 21´, 4 SPF, 90º
	EHS-4000-122	Loading tube 15´, 4 SPF, 90º
	EHS-4000-123	Loading tube 11´, 4 SPF, 90º
	EHS-4000-124	Loading tube 7´, 4 SPF, 90º
	EHS-4000-125	Loading tube 4´, 4 SPF, 90º
6	EHS-4000-026	4" Bull Plug
7	EHS-4625-080	Dart seal - Simultaneous firing mode
	EHS-4625-081	Diode assy - Selective firing mode
8	EHS-4000-036	End Plates
9	EHS-4000-041	Snap Rings
10	EHS-4000-046	Detonating Cord End Cover
11	2502-00	Detonating Cord Clip (provided with charges)
12	EHS-4625-082	Diode assy / Dart seal retainer nut
13	EHS-4625-083	Lead wire assy w/contact spring
14	EHS-4625-084	Lead wire splice
A		80 Grains High Velocity Detonating Cord
B		Fluid Desensitized detonator
C	TC47H	39 gms. Barracuda DP HMX
S	EHS-4000-161	Shipping Assy 21´, 4 SPF, 90º
	EHS-4000-162	Shipping Assy 15´, 4 SPF, 90º
	EHS-4000-163	Shipping Assy 11´, 4 SPF, 90º
	EHS-4000-164	Shipping Assy 7´, 4 SPF, 90º
	EHS-4000-165	Shipping Assy 4´, 4 SPF, 90º

SYSTEM PRESSURE RATING 20,000 PSI

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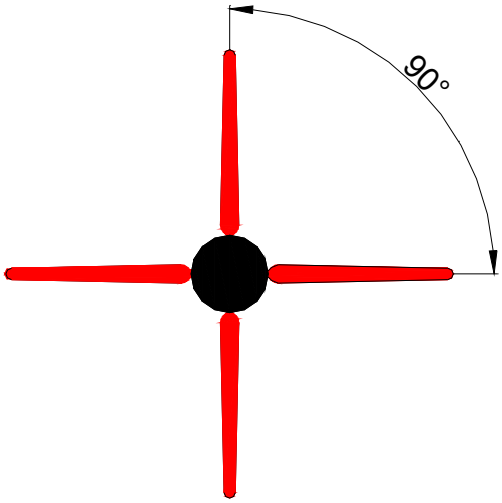
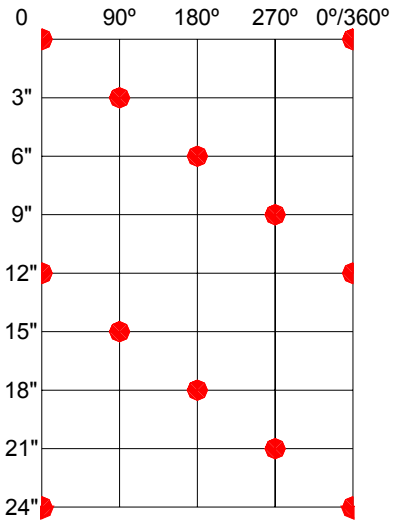
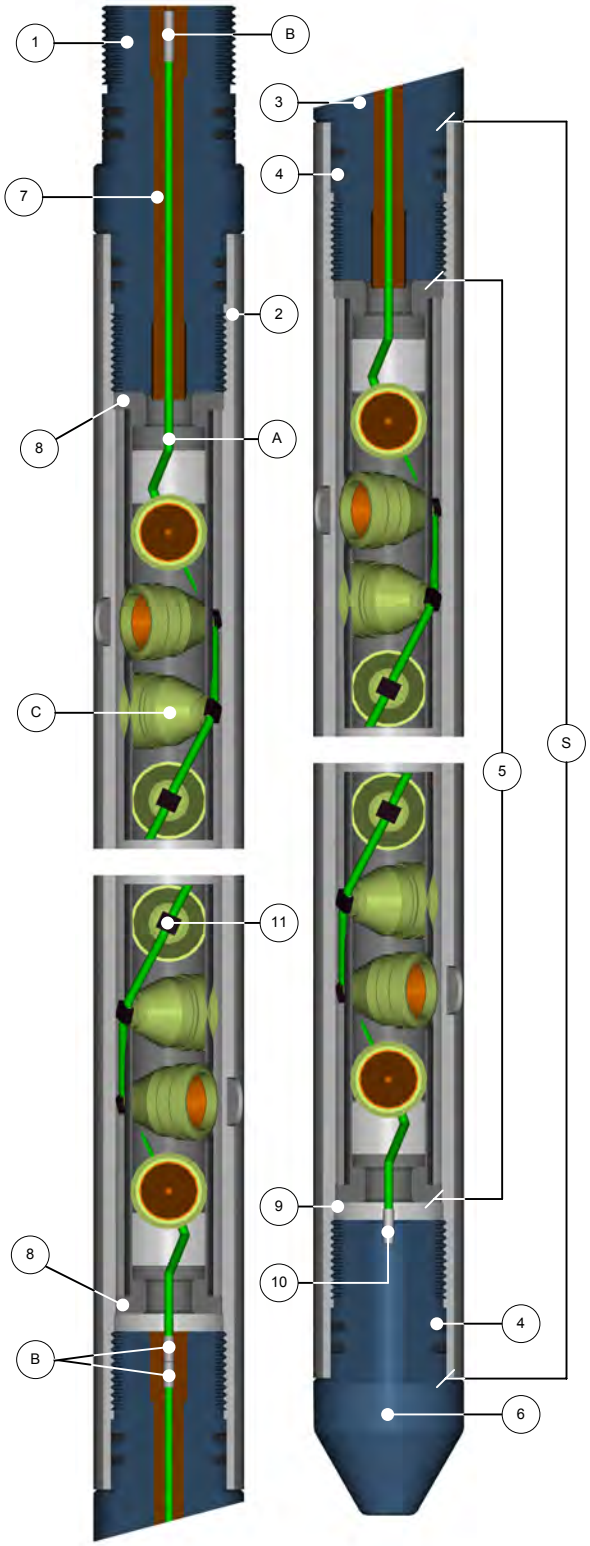
4 SPF 90º





4" High Shot Density Gun 4 SPF 90º
TOP FIRE



ITEM	Part Nbr.	DESCRIPTION
1	EHS-4000-001	Top Sub 4" Adapts to WL or TCP head
2	EHS-4000-106	4" Scalloped Gun Body 21´, 4 SPF, 90º
	EHS-4000-107	4" Scalloped Gun Body 15´, 4 SPF, 90º
	EHS-4000-108	4" Scalloped Gun Body 11´, 4 SPF, 90º
	EHS-4000-109	4" Scalloped Gun Body 7´, 4 SPF, 90º
	EHS-4000-110	4" Scalloped Gun Body 4´, 4 SPF, 90º
3	EHS-4000-011	4" Tandem Sub
4	EHS-4000-016	O-rings Kit
5	EHS-4000-121	Loading tube 21´, 4 SPF, 90º
	EHS-4000-122	Loading tube 15´, 4 SPF, 90º
	EHS-4000-123	Loading tube 11´, 4 SPF, 90º
	EHS-4000-124	Loading tube 7´, 4 SPF, 90º
	EHS-4000-125	Loading tube 4´, 4 SPF, 90º
6	EHS-4000-026	4" Bull Plug
7	EHS-4000-031	Transference Kit
8	EHS-4000-036	End Plates
9	EHS-4000-041	Snap Rings
10	EHS-4000-046	Detonating Cord End Cover
11	2502-00	Detonating Cord Clip (provided with charges)
A		80 Grains High Velocity Detonating Cord
B		Bi-Direccional Booster
C	TC47H	39 gms Barracuda DP HMX
S	EHS-4000-161	Shipping Assy 21´, 4 SPF, 90º
	EHS-4000-162	Shipping Assy 15´, 4 SPF, 90º
	EHS-4000-163	Shipping Assy 11´, 4 SPF, 90º
	EHS-4000-164	Shipping Assy 7´, 4 SPF, 90º
	EHS-4000-165	Shipping Assy 4´, 4 SPF, 90º

SYSTEM PRESSURE RATING 20,000 PSI

API RP 19B Certified

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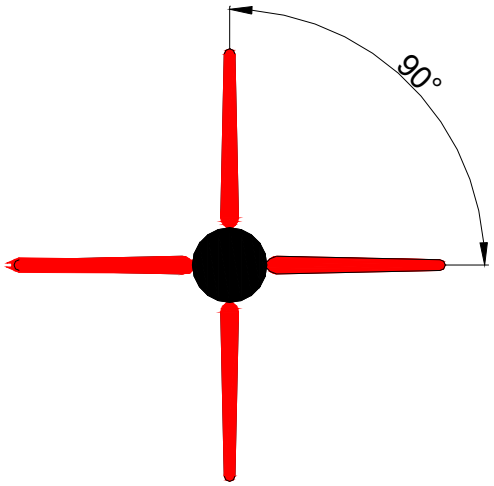
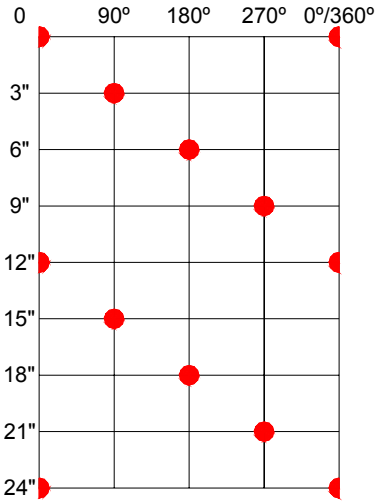
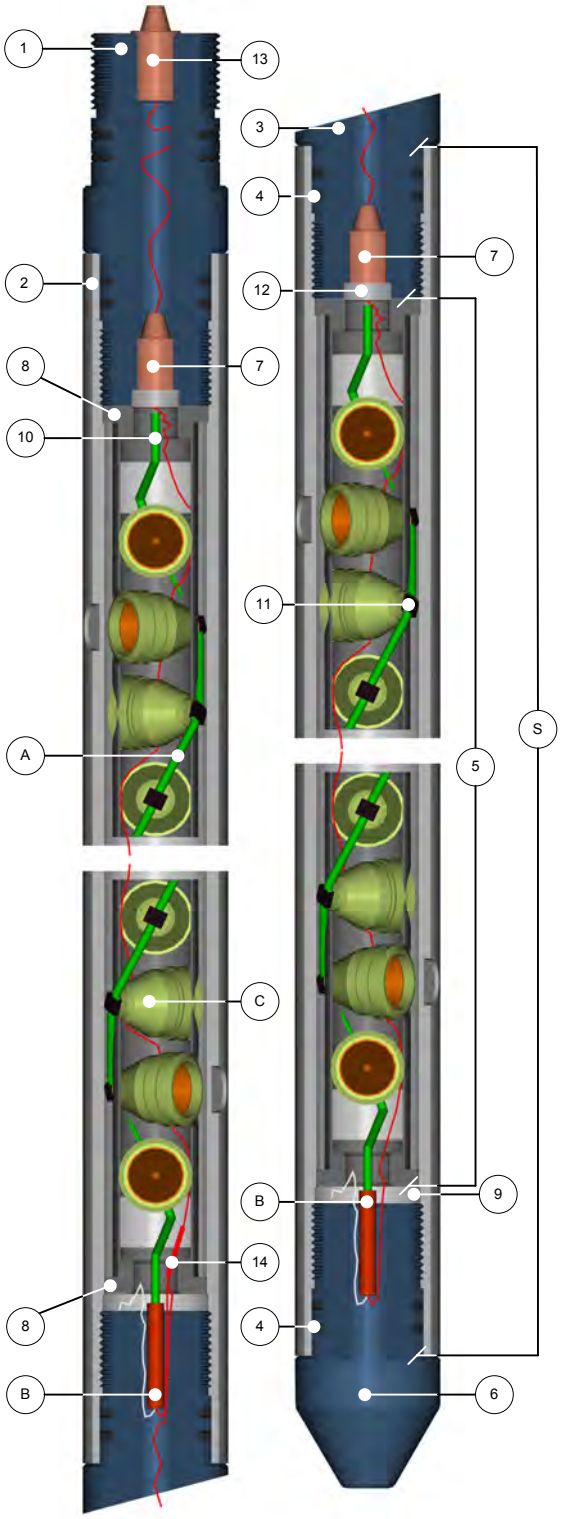
4 SPF 90º





4" High Shot Density Gun 6 SPF 60º
BOTTOM FIRE



ITEM	Part Nbr.	DESCRIPTION
1	EHS-4000-001	Top Sub 4" Adapts to WL or TCP head
2	EHS-4000-206	4" Scalloped Gun Body 21´, 6 SPF, 60º
	EHS-4000-207	4" Scalloped Gun Body 15´, 6 SPF, 60º
	EHS-4000-208	4" Scalloped Gun Body 11´, 6 SPF, 60º
	EHS-4000-209	4" Scalloped Gun Body 7´, 6 SPF, 60º
	EHS-4000-210	4" Scalloped Gun Body 4´, 6 SPF, 60º
3	EHS-4000-011	4" Tandem Sub
4	EHS-4000-016	O-rings Kit
5	EHS-4000-221	Loading tube 21´, 6 SPF, 60º
	EHS-4000-222	Loading tube 15´, 6 SPF, 60º
	EHS-4000-223	Loading tube 11´, 6 SPF, 60º
	EHS-4000-224	Loading tube 7´, 6 SPF, 60º
	EHS-4000-225	Loading tube 4´, 6 SPF, 60º
6	EHS-4000-026	4" Bull Plug
7	EHS-4625-080	Dart seal - Simultaneous firing mode
	EHS-4625-081	Diode assy - Selective firing mode
8	EHS-4000-036	End Plates
9	EHS-4000-041	Snap Rings
10	EHS-4000-046	Detonating Cord End Cover
11	2502-00	Detonating Cord Clip (provided with charges)
12	EHS-4625-082	Diode assy / Dart seal, retainer nut
13	EHS-4625-083	Lead wire assy w/contact spring
14	EHS-4625-084	Lead wire Splice
A		80 Grains High Velocity Detonating Cord
B		Fluid desensitized detonator
C	TC27R	4" Barracuda 32 gms. RDX
S	EHS-4000-261	Shipping Assy 21´, 6 SPF, 60º
	EHS-4000-262	Shipping Assy 15´, 6 SPF, 60º
	EHS-4000-263	Shipping Assy 11´, 6 SPF, 60º
	EHS-4000-264	Shipping Assy 7´, 6 SPF, 60º
	EHS-4000-265	Shipping Assy 4´, 6 SPF, 60º

SYSTEM PRESSURE RATING 20,000 PSI

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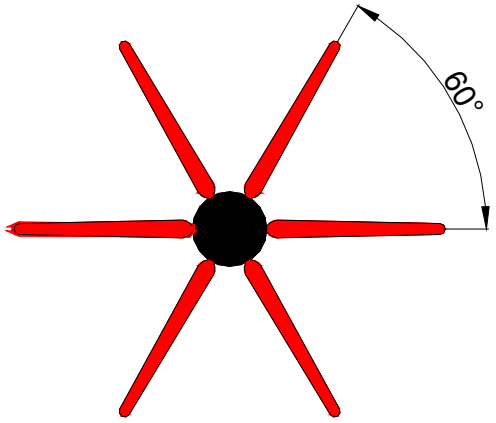
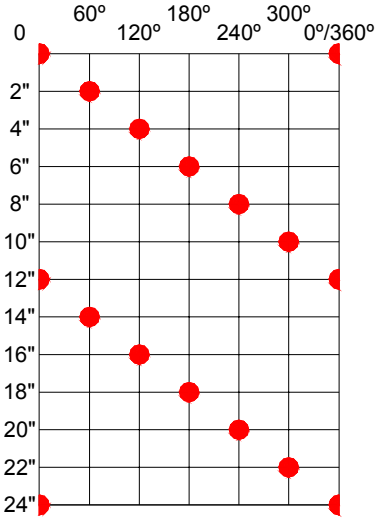
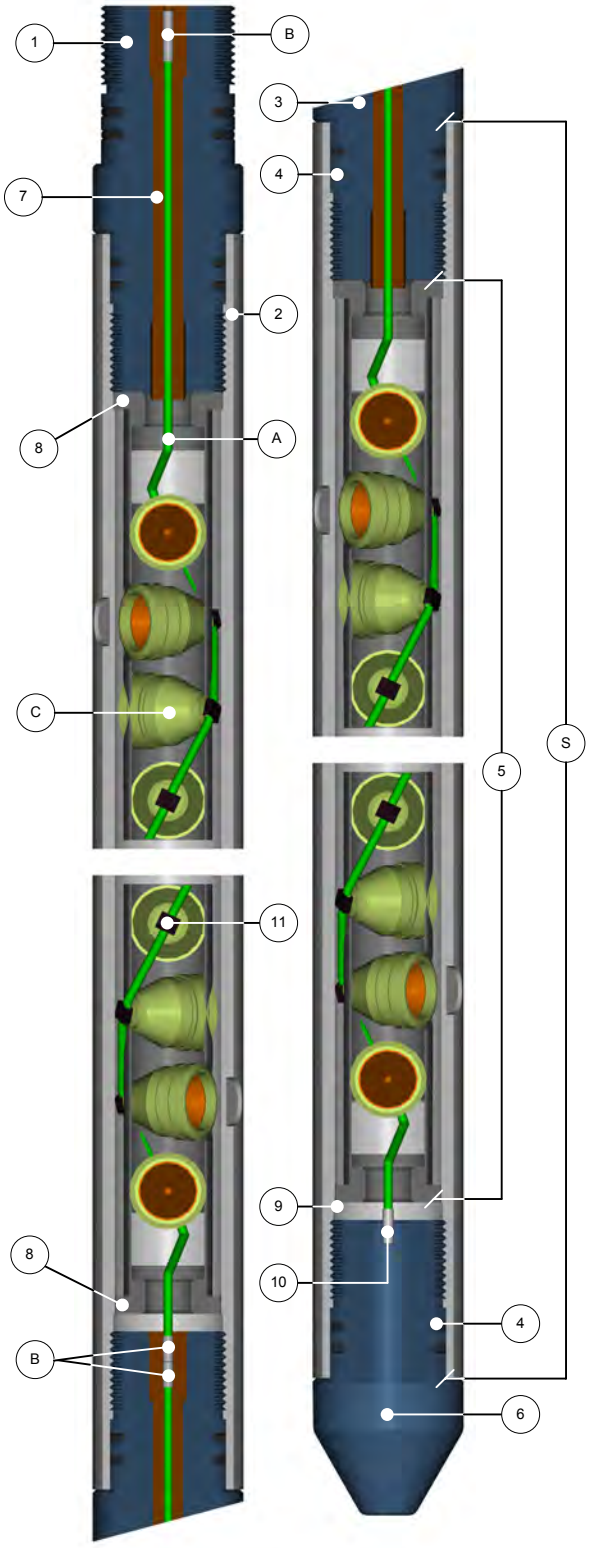
6 SPF 60º





4" High Shot Density Gun 6 SPF 60º
TOP FIRE



ITEM	Part Nbr.	DESCRIPTION
1	EHS-4000-001	Top Sub 4" Adapts to WL or TCP head
2	EHS-4000-206	4" Scalloped Gun Body 21´, 6 SPF, 60º
	EHS-4000-207	4" Scalloped Gun Body 15´, 6 SPF, 60º
	EHS-4000-208	4" Scalloped Gun Body 11´, 6 SPF, 60º
	EHS-4000-209	4" Scalloped Gun Body 7´, 6 SPF, 60º
	EHS-4000-210	4" Scalloped Gun Body 4´, 6 SPF, 60º
3	EHS-4000-011	4" Tandem Sub
4	EHS-4000-016	O-rings Kit
5	EHS-4000-221	Loading tube 21´, 6 SPF, 60º
	EHS-4000-222	Loading tube 15´, 6 SPF, 60º
	EHS-4000-223	Loading tube 11´, 6 SPF, 60º
	EHS-4000-224	Loading tube 7´, 6 SPF, 60º
	EHS-4000-225	Loading tube 4´, 6 SPF, 60º
6	EHS-4000-026	4" Bull Plug
7	EHS-4000-031	Transference Kit
8	EHS-4000-036	End Plates
9	EHS-4000-041	Snap Rings
10	EHS-4000-046	Detonating Cord End Cover
11	2502-00	Detonating Cord Clip (provided with charges)
A		80 Grains High Velocity Detonating Cord
B		Bi-Directional Booster
C	TC27R	4" Barracuda 32 gms. RDX
S	EHS-4000-261	Shipping Assy 21´, 6 SPF, 60º
	EHS-4000-262	Shipping Assy 15´, 6 SPF, 60º
	EHS-4000-263	Shipping Assy 11´, 6 SPF, 60º
	EHS-4000-264	Shipping Assy 7´, 6 SPF, 60º
	EHS-4000-265	Shipping Assy 4´, 6 SPF, 60º

SYSTEM PRESSURE RATING 20,000 PSI

API RP 19B Certified

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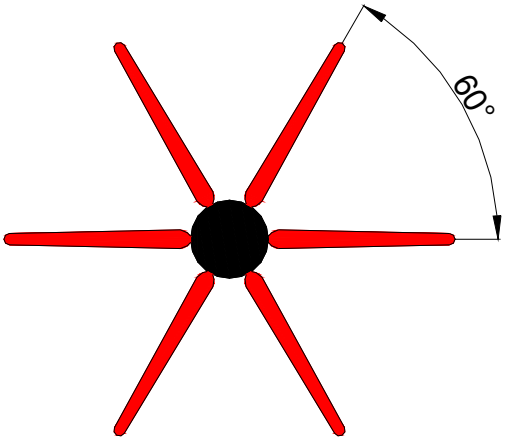
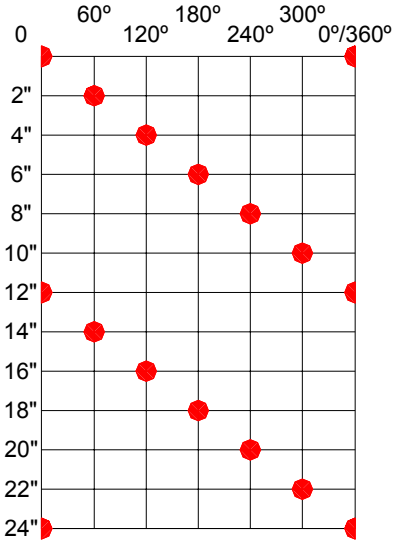
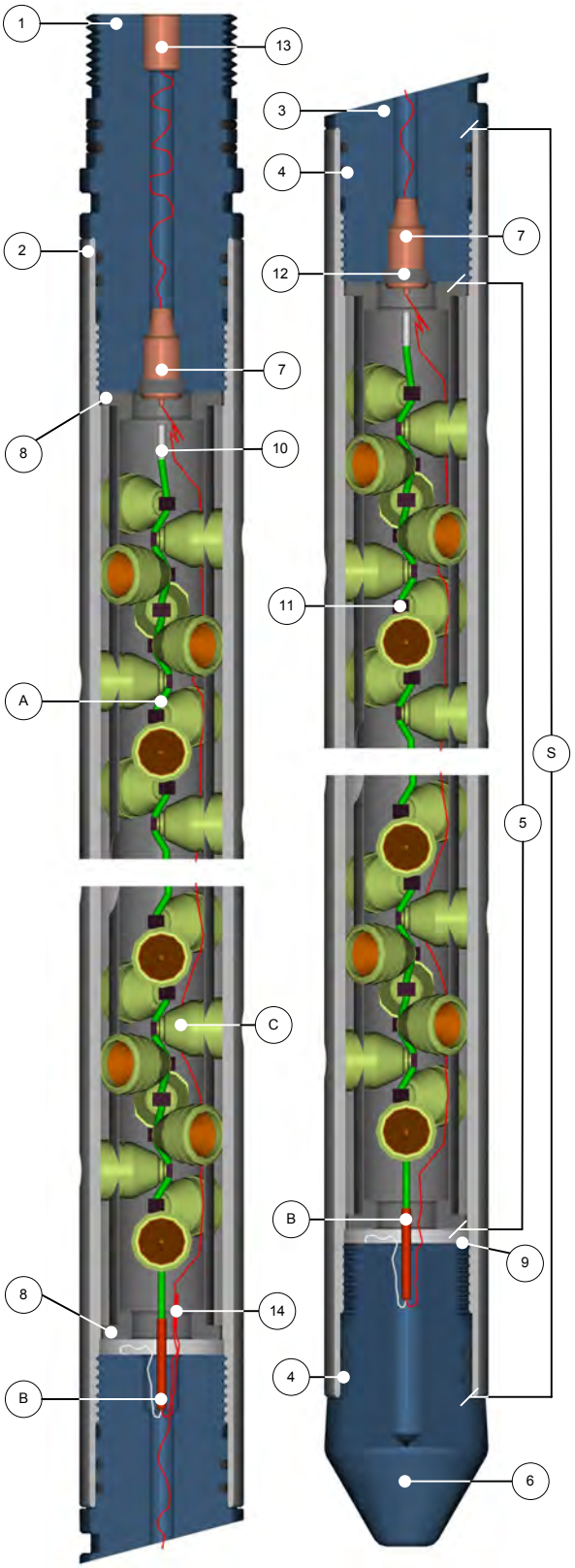
+54 2322 494311 +54 2322 494167 Fax. +54 2322 494165
www.etasa.com

6 SPF 60º





4" High Shot Density Gun 12 SPF 135º
BOTTOM FIRE



ITEM	Part Nbr.	DESCRIPTION
1	EHS-4000-001	Top Sub 4" Adapts to WL or TCP head
2	EHS-4000-006	4" Scalloped Gun Body 21´, 12 SPF, 135º
	EHS-4000-007	4" Scalloped Gun Body 15´, 12 SPF, 135º
	EHS-4000-008	4" Scalloped Gun Body 11´, 12 SPF, 135º
	EHS-4000-009	4" Scalloped Gun Body 7´, 12 SPF, 135º
	EHS-4000-010	4" Scalloped Gun Body 4´, 12 SPF, 135º
3	EHS-4000-011	4" Tandem Sub
4	EHS-4000-016	O-rings Kit
5	EHS-4000-021	Loading tube 21´, 12 SPF, 135º
	EHS-4000-022	Loading tube 15´, 12 SPF, 135º
	EHS-4000-023	Loading tube 11´, 12 SPF, 135º
	EHS-4000-024	Loading tube 7´, 12 SPF, 135º
	EHS-4000-025	Loading tube 4´, 12 SPF, 135º
6	EHS-4000-026	4" Bull Plug
7	EHS-4625-080	Dart seal - Simultaneous firing mode
	EHS-4625-081	Diode assy - Selective firing mode
8	EHS-4000-036	End Plates
9	EHS-4000-041	Snap Rings
10	EHS-4000-046	80 Detonating Cord End Cover
	EHS-2875-046	60 Detonating Cord End Cover
11	3009-NG	Detonating Cord Clip (provided with charges)
12	EHS-4625-082	Diose assy / Dart seal retainer nut
13	EHS-4625-083	Lead wire assy w/contact spring
14	EHS-4625-084	Lead wire splice
A		80 Grains High Velocity Detonating Cord
		60 Grains High Velocity Detonating Cord
B		Fluid Desensitized detonator
C	TC46HBH	16.5 gms Barracuda BH HMX
	TC46H	16.5 gms Barracuda DP HMX
	TC46H&TC46HBH	16.5 gms Barracuda DP & BH HMX
S	EHS-4000-061	Shipping Assy 21´, 12 SPF, 135º
	EHS-4000-062	Shipping Assy 15´, 12 SPF, 135º
	EHS-4000-063	Shipping Assy 11´, 12 SPF, 135º
	EHS-4000-064	Shipping Assy 7´, 12 SPF, 135º
	EHS-4000-065	Shipping Assy 4´, 12 SPF, 135º

SYSTEM PRESSURE RATING 20,000 PSI

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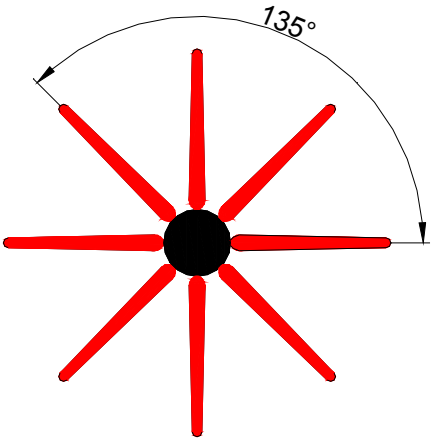
12 SPF 135º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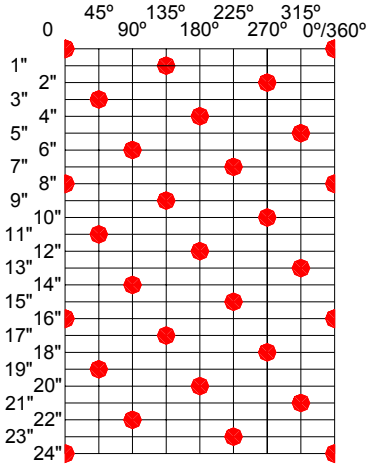
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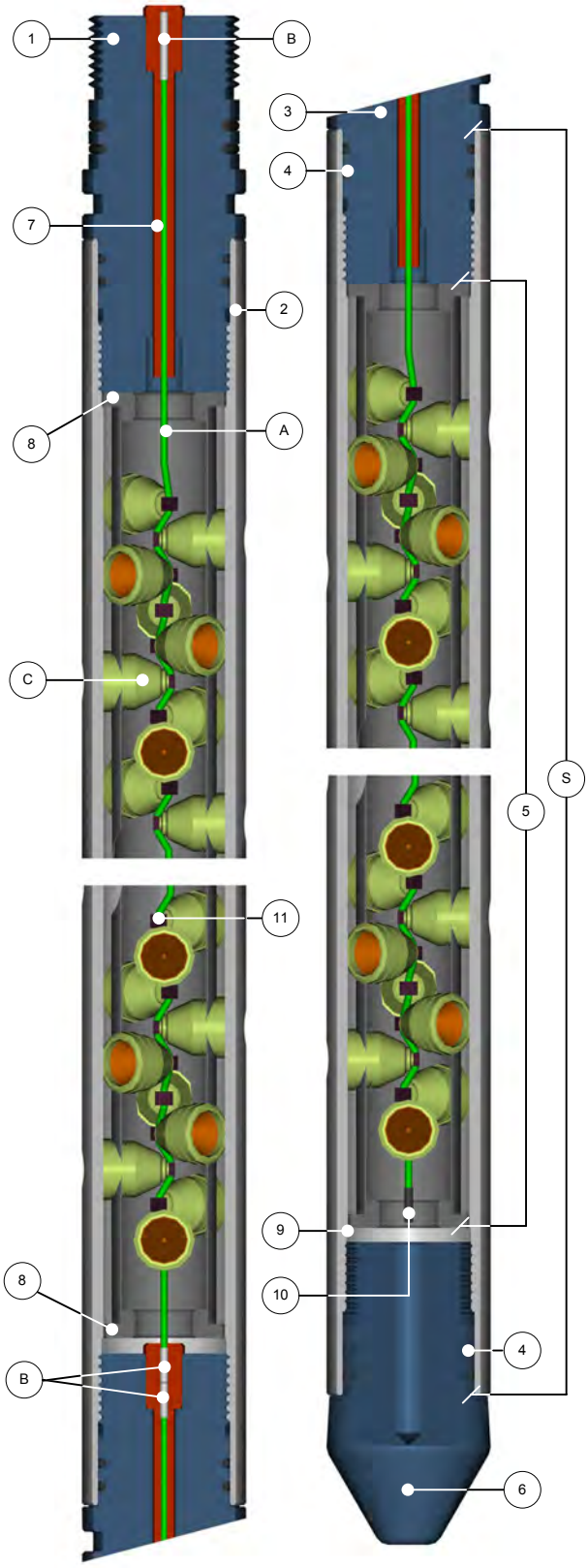
4" High Shot Density Gun 12 SPF 135º
TOP FIRE

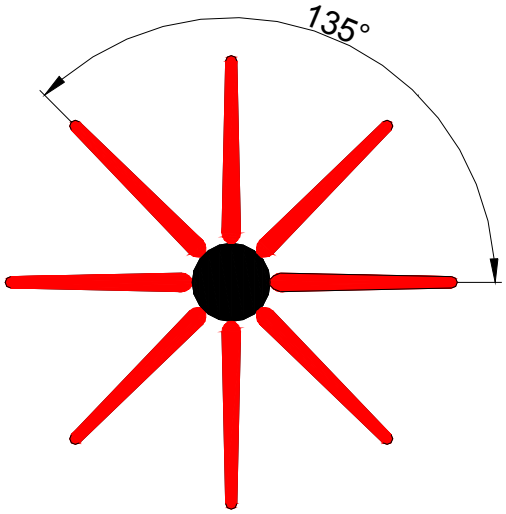


ITEM	Part Nbr.	DESCRIPTION
1	EHS-4000-001	Top Sub 4" Adapts to WL or TCP head
2	EHS-4000-006	4" Scalloped Gun Body 21´, 12 SPF, 135º
	EHS-4000-007	4" Scalloped Gun Body 15´, 12 SPF, 135º
	EHS-4000-008	4" Scalloped Gun Body 11´, 12 SPF, 135º
	EHS-4000-009	4" Scalloped Gun Body 7´, 12 SPF, 135º
	EHS-4000-010	4" Scalloped Gun Body 4´, 12 SPF, 135º
3	EHS-4000-011	4" Tandem Sub
4	EHS-4000-016	O-rings Kit
5	EHS-4000-021	Loading tube 21´, 12 SPF, 135º
	EHS-4000-022	Loading tube 15´, 12 SPF, 135º
	EHS-4000-023	Loading tube 11´, 12 SPF, 135º
	EHS-4000-024	Loading tube 7´, 12 SPF, 135º
	EHS-4000-025	Loading tube 4´, 12 SPF, 135º
6	EHS-4000-026	4" Bull Plug
7	EHS-4000-031	Transference Kit
8	EHS-4000-036	End Plates
9	EHS-4000-041	Snap Rings
10	EHS-4000-046	80 Detonating Cord End Cover
	EHS-2875-046	60 Detonating Cord End Cover
11	3009-NG	Detonating Cord Clip (provided with charges)
A		80 Grains High Velocity Detonating Cord
		60 Grains High Velocity Detonating Cord
B		Bi-Direccional Booster
C	TC46HBH	16.5 gms Barracuda BH HMX
	TC46H	16.5 gms Barracuda DP HMX
	TC26H&TC46HBH	16.5 gms Barracuda DP & BH HMX
S	EHS-4000-061	Shipping Assy 21´, 12 SPF, 135º
	EHS-4000-062	Shipping Assy 15´, 12 SPF, 135º
	EHS-4000-063	Shipping Assy 11´, 12 SPF, 135º
	EHS-4000-064	Shipping Assy 7´, 12 SPF, 135º
	EHS-4000-065	Shipping Assy 4´, 12 SPF, 135º

SYSTEM PRESSURE RATING 20,000 PSI

API RP 19B Certified

12 SPF 135º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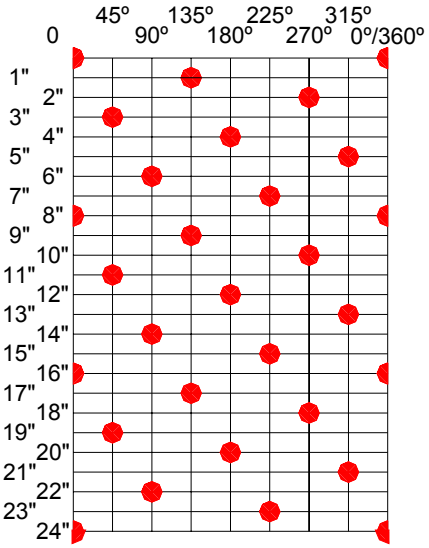
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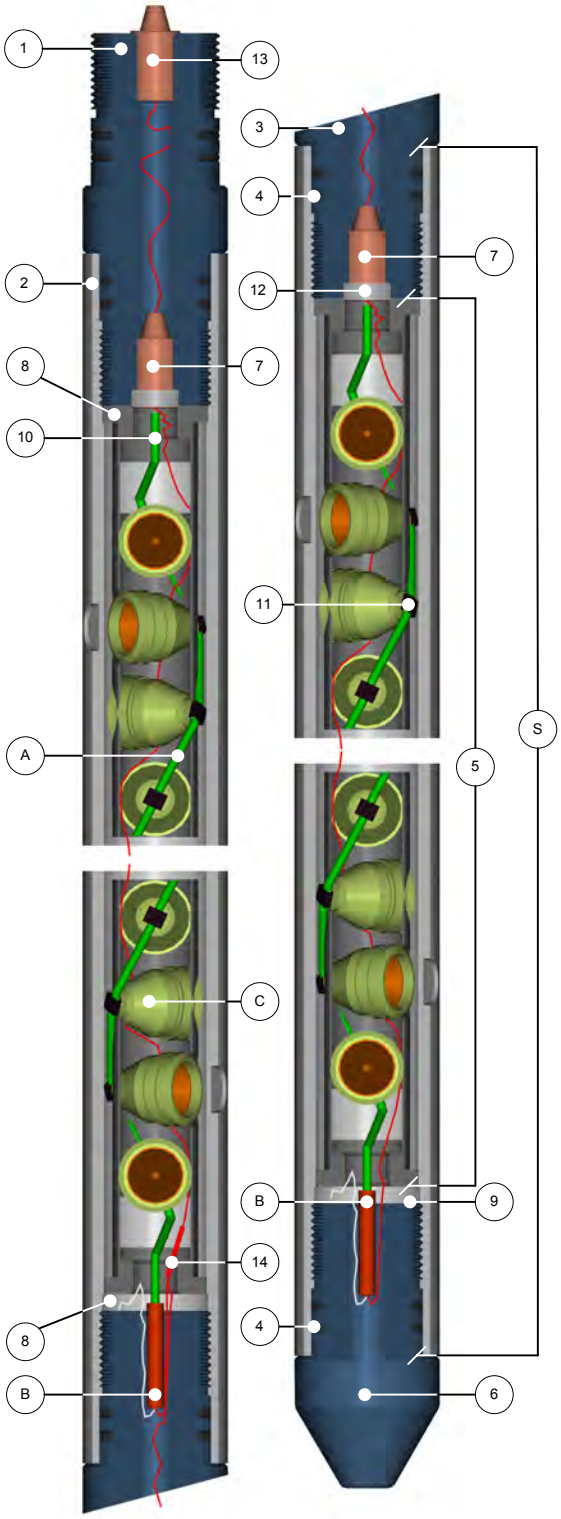
4 5/8" High Shot Density Gun 5 SPF 60º
BOTTOM FIRE



ITEM	Part Nbr.	DESCRIPTION
1	EHS-4625-001	Top Sub 4 5/8" Adapts to WL or TCP head
2	EHS-4625-106	4 5/8" Scalloped Gun Body 21´, 5 SPF, 60º
	EHS-4625-107	4 5/8" Scalloped Gun Body 15´, 5 SPF, 60º
	EHS-4625-108	4 5/8" Scalloped Gun Body 11´, 5 SPF, 60º
	EHS-4625-109	4 5/8" Scalloped Gun Body 7´, 5 SPF, 60º
	EHS-4625-110	4 5/8" Scalloped Gun Body 4´, 5 SPF, 60º
3	EHS-4625-011	4 5/8" Tandem Sub
4	EHS-4625-016	O-rings Kit
5	EHS-4625-121	Loading tube 21´, 5 SPF, 60º
	EHS-4625-122	Loading tube 15´, 5 SPF, 60º
	EHS-4625-123	Loading tube 11´, 5 SPF, 60º
	EHS-4625-124	Loading tube 7´, 5 SPF, 60º
	EHS-4625-125	Loading tube 4´, 5 SPF, 60º
6	EHS-4625-026	4 5/8" Bull Plug
7	EHS-4625-080	Dart seal - Simultaneous firing mode
	EHS-4625-081	Diode assy - Selective firing mode
8	EHS-4625-036	End Plates
9	EHS-4625-041	Snap Rings
10	EHS-4000-046	Detonating Cord End Cover
11	2502-00	Detonating Cord Clip (provided with charges)
12	EHS-4625-082	Diode assy / Dart seal retainer nut
13	EHS-4625-083	Lead wire assy w/contact spring
14	EHS-4625-084	Lead wire splice
A		80 Grains High Velocity Detonating Cord
B		Fluid Desensitized detonator
C	TC47HP	39 gms HMX Barracuda Premium DP
S	EHS-4625-161	Shipping Assy 21´, 5 SPF, 60º
	EHS-4625-162	Shipping Assy 15´, 5 SPF, 60º
	EHS-4625-163	Shipping Assy 11´, 5 SPF, 60º
	EHS-4625-164	Shipping Assy 7´, 5 SPF, 60º
	EHS-4625-165	Shipping Assy 4´, 5 SPF, 60º

SYSTEM PRESSURE RATING 20,000 PSI

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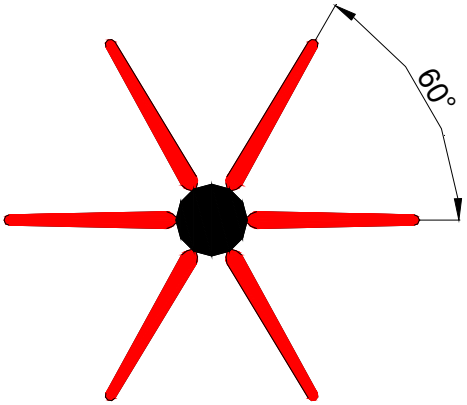
5 SPF 60º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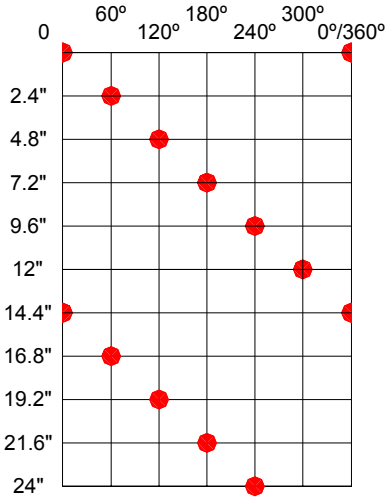
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16.8"
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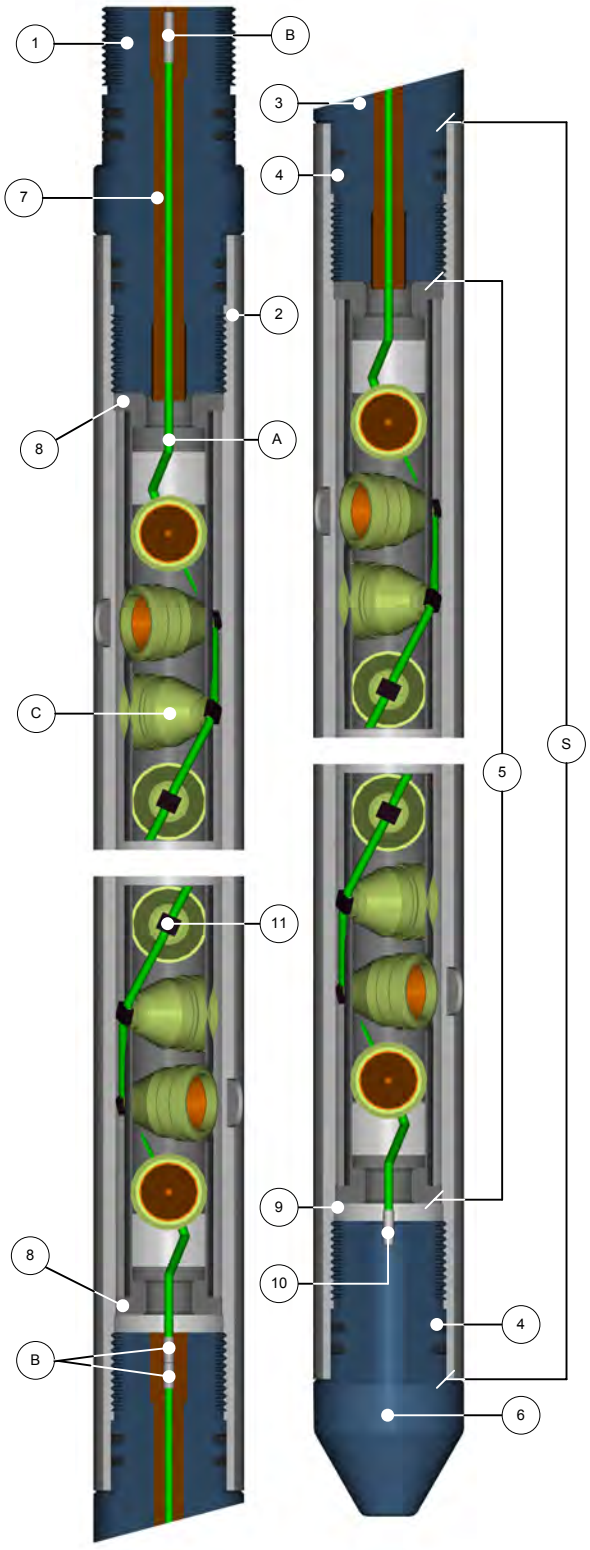
21.6"
24"

4 5/8" High Shot Density Gun 5 SPF 60º
TOP FIRE



ITEM	Part Nbr.	DESCRIPTION
1	EHS-4625-001	Top Sub 4 5/8" Adapts to WL or TCP head
2	EHS-4625-106	4 5/8" Scalloped Gun Body 21´, 5 SPF, 60º
	EHS-4625-107	4 5/8" Scalloped Gun Body 15´, 5 SPF, 60º
	EHS-4625-108	4 5/8" Scalloped Gun Body 11´, 5 SPF, 60º
	EHS-4625-109	4 5/8" Scalloped Gun Body 7´, 5 SPF, 60º
	EHS-4625-110	4 5/8" Scalloped Gun Body 4´, 5 SPF, 60º
3	EHS-4625-011	4 5/8" Tandem Sub
4	EHS-4625-016	O-rings Kit
5	EHS-4625-121	Loading tube 21´, 5 SPF, 60º
	EHS-4625-122	Loading tube 15´, 5 SPF, 60º
	EHS-4625-123	Loading tube 11´, 5 SPF, 60º
	EHS-4625-124	Loading tube 7´, 5 SPF, 60º
	EHS-4625-125	Loading tube 4´, 5 SPF, 60º
6	EHS-4625-026	4 5/8" Bull Plug
7	EHS-4625-031	Transference Kit
8	EHS-4625-036	End Plates
9	EHS-4625-041	Snap Rings
10	EHS-4000-046	Detonating Cord End Cover
11	2502-00	Detonating Cord Clip (provided with charges)
A		80 Grains High Velocity Detonating Cord
B		Bi-Directional Booster
C	TC47HP	39 gms HMX Barracuda Premium DP
S	EHS-4625-161	Shipping Assy 21´, 5 SPF, 60º
	EHS-4625-162	Shipping Assy 15´, 5 SPF, 60º
	EHS-4625-163	Shipping Assy 11´, 5 SPF, 60º
	EHS-4625-164	Shipping Assy 7´, 5 SPF, 60º
	EHS-4625-165	Shipping Assy 4´, 5 SPF, 60º

SYSTEM PRESSURE RATING 20,000 PSI

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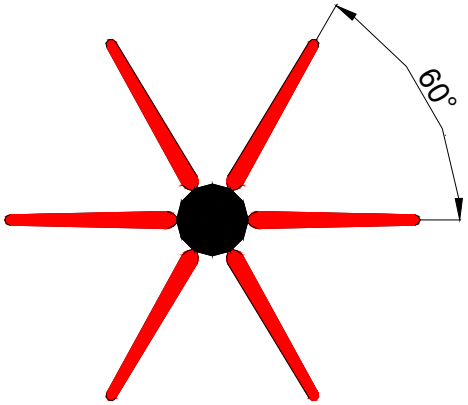
5 SPF 60º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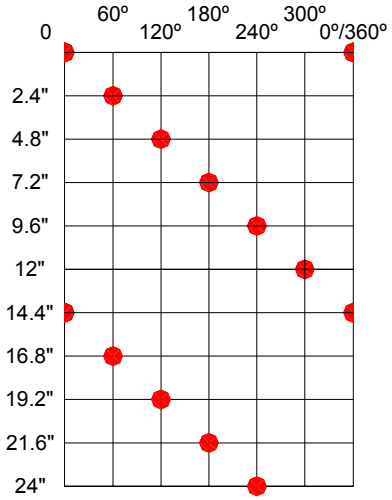
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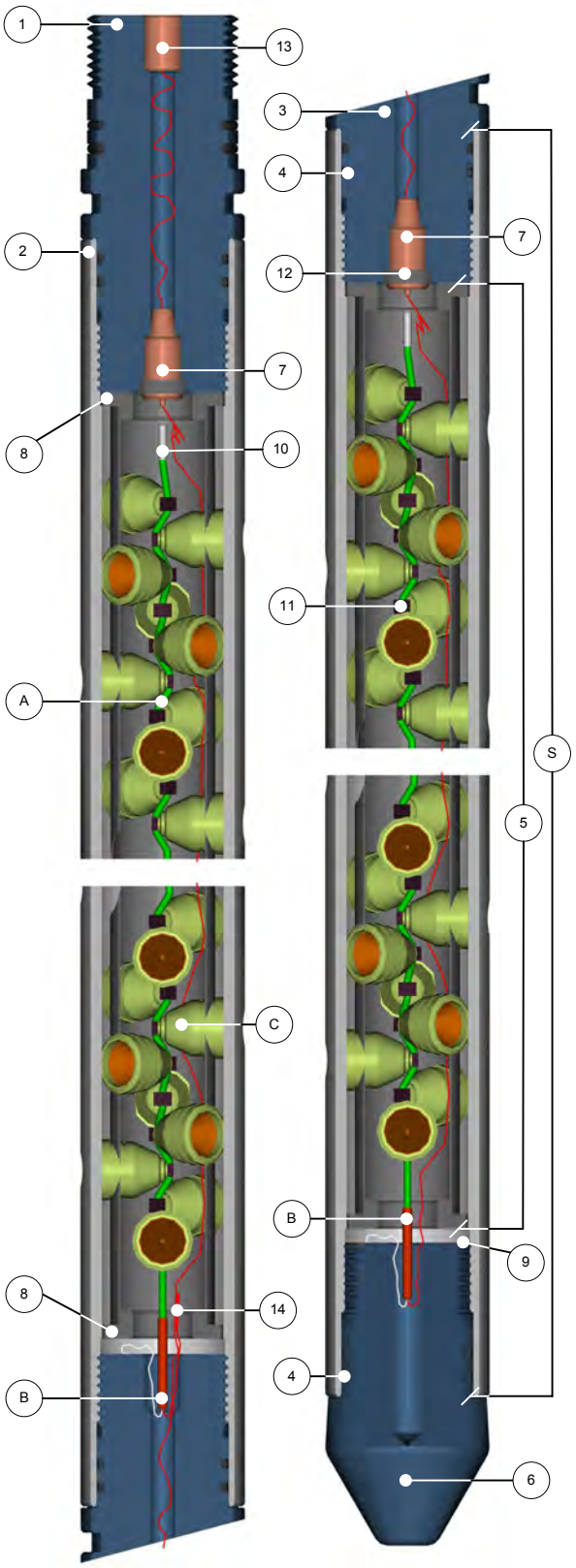
4 5/8" High Shot Density Gun 12 SPF 135º
BOTTOM FIRE



ITEM	Part Nbr.	DESCRIPTION
1	EHS-4625-001	Top Sub 4 5/8" Adapts to WL or TCP head
2	EHS-4625-006	4 5/8" Scalloped Gun Body 21´, 12 SPF, 135º
	EHS-4625-007	4 5/8" Scalloped Gun Body 15´, 12 SPF, 135º
	EHS-4625-008	4 5/8" Scalloped Gun Body 11´, 12 SPF, 135º
	EHS-4625-009	4 5/8" Scalloped Gun Body 7´, 12 SPF, 135º
	EHS-4625-010	4 5/8" Scalloped Gun Body 4´, 12 SPF, 135º
3	EHS-4625-011	4 5/8" Tandem Sub
4	EHS-4625-016	O-rings Kit
5	EHS-4625-021	Loading tube 21´, 12 SPF, 135º, DP Charge
	EHS-4625-022	Loading tube 15´, 12 SPF, 135º, DP Charge
	EHS-4625-023	Loading tube 11´, 12 SPF, 135º, DP Charge
	EHS-4625-024	Loading tube 7´, 12 SPF, 135º, DP Charge
	EHS-4625-025	Loading tube 4´, 12 SPF, 135º, DP Charge
	EHS-4625-021B	Loading tube 21´, 12 SPF, 135º, BH Charge
	EHS-4625-022B	Loading tube 15´, 12 SPF, 135º, BH Charge
	EHS-4625-023B	Loading tube 11´, 12 SPF, 135º, BH Charge
	EHS-4625-024B	Loading tube 7´, 12 SPF, 135º, BH Charge
	EHS-4625-025B	Loading tube 4´, 12 SPF, 135º, BH Charge
6	EHS-4625-026	4 5/8" Bull Plug
7	EHS-4625-080	Dart seal - Simultaneous firing mode
	EHS-4625-081	Diode assy - Selective firing mode
8	EHS-4625-036	End Plates
9	EHS-4625-041	Snap Rings
10	EHS-4000-046	Detonating Cord End Cover
11	2602-00	Detonating Cord Clip (provided with charges)
12	EHS-4625-082	Diode assy / Dart seal retainer nut
13	EHS-4625-083	Lead wire assy w/contact spring
14	EHS-4625-084	Lead wire splice
A		80 Grains High Velocity Detonating Cord
B		Fluid Desensitized detonator
C	TC26H	Universal DP 22.7 gms HMX
	TC38H	Universal BH 22.7 gms HMX
S	EHS-4625-061	Shipping Assy 21´, 12 SPF, 135º, DP Charge
	EHS-4625-062	Shipping Assy 15´, 12 SPF, 135º, DP Charge
	EHS-4625-063	Shipping Assy 11´, 12 SPF, 135º, DP Charge
	EHS-4625-064	Shipping Assy 7´, 12 SPF, 135º, DP Charge
	EHS-4625-065	Shipping Assy 4´, 12 SPF, 135º, DP Charge
	EHS-4625-061B	Shipping Assy 21´, 12 SPF, 135º, BH Charge
	EHS-4625-062B	Shipping Assy 15´, 12 SPF, 135º, BH Charge
	EHS-4625-063B	Shipping Assy 11´, 12 SPF, 135º, BH Charge
	EHS-4625-064B	Shipping Assy 7´, 12 SPF, 135º, BH Charge
	EHS-4625-065B	Shipping Assy 4´, 12 SPF, 135º, BH Charge

SYSTEM PRESSURE RATING 20,000 PSI

API RP 19B Certified

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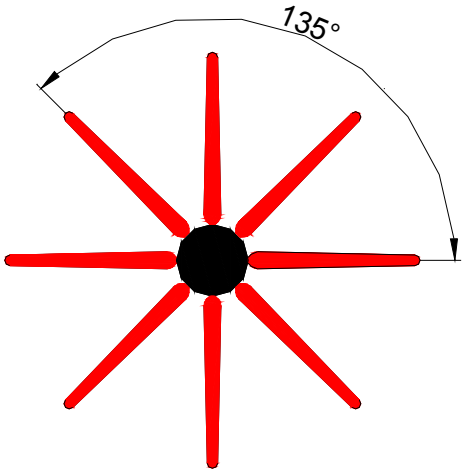
www.etasa.com

12 SPF 135º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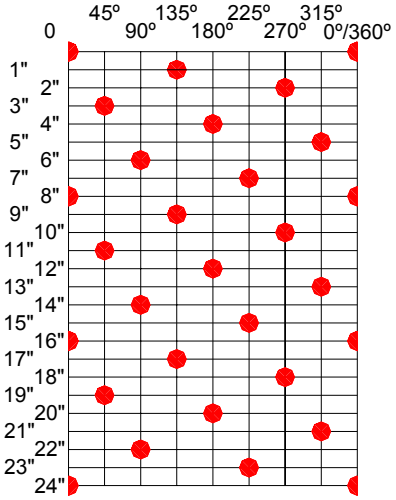
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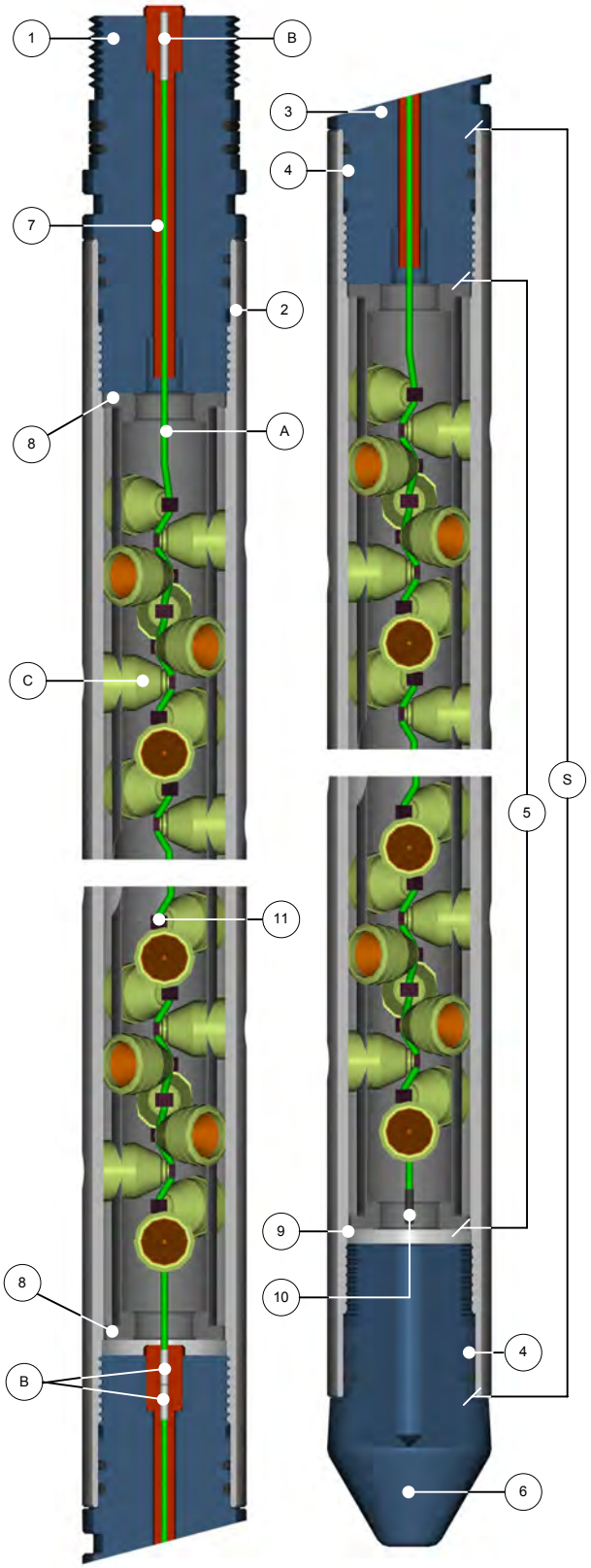
4 5/8" High Shot Density Gun 12 SPF 135º TOP FIRE



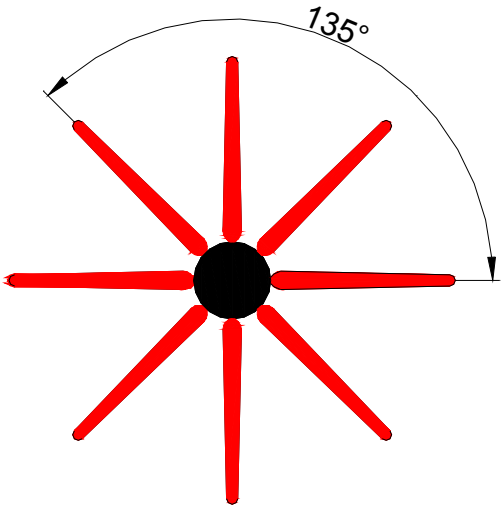
ITEM	Part Nbr.	DESCRIPTION
1	EHS-4625-001	Top Sub 4 5/8" Adapts to WL or TCP head
2	EHS-4625-006	4 5/8" Scalloped Gun Body 21´, 12 SPF, 135º
	EHS-4625-007	4 5/8" Scalloped Gun Body 15´, 12 SPF, 135º
	EHS-4625-008	4 5/8" Scalloped Gun Body 11´, 12 SPF, 135º
	EHS-4625-009	4 5/8" Scalloped Gun Body 7´, 12 SPF, 135º
	EHS-4625-010	4 5/8" Scalloped Gun Body 4´, 12 SPF, 135º
3	EHS-4625-011	4 5/8" Tandem Sub
4	EHS-4625-016	O-rings Kit
5	EHS-4625-021	Loading tube 21´, 12 SPF, 135º, DP Charge
	EHS-4625-022	Loading tube 15´, 12 SPF, 135º, DP Charge
	EHS-4625-023	Loading tube 11´, 12 SPF, 135º, DP Charge
	EHS-4625-024	Loading tube 7´, 12 SPF, 135º, DP Charge
	EHS-4625-025	Loading tube 4´, 12 SPF, 135º, DP Charge
	EHS-4625-021B	Loading tube 21´, 12 SPF, 135º, BH Charge
	EHS-4625-022B	Loading tube 15´, 12 SPF, 135º, BH Charge
	EHS-4625-023B	Loading tube 11´, 12 SPF, 135º, BH Charge
	EHS-4625-024B	Loading tube 7´, 12 SPF, 135º, BH Charge
	EHS-4625-025B	Loading tube 4´, 12 SPF, 135º, BH Charge
6	EHS-4625-026	4 5/8" Bull Plug
7	EHS-4625-031	Transference Kit
8	EHS-4625-036	End Plates
9	EHS-4625-041	Snap Rings
10	EHS-4000-046	Detonating Cord End Cover
11	2602-00	Detonating Cord Clip (provided with charges)
A		80 Grains High Velocity Detonating Cord
B		Bi-Directional Booster
C	TC26H	Universal DP 22.7 gms HMX
	TC38H	Universal BH 22.7 gms HMX
S	EHS-4625-061	Shipping Assy 21´, 12 SPF, 135º, DP Charge
	EHS-4625-062	Shipping Assy 15´, 12 SPF, 135º, DP Charge
	EHS-4625-063	Shipping Assy 11´, 12 SPF, 135º, DP Charge
	EHS-4625-064	Shipping Assy 7´, 12 SPF, 135º, DP Charge
	EHS-4625-065	Shipping Assy 4´, 12 SPF, 135º, DP Charge
	EHS-4625-061B	Shipping Assy 21´, 12 SPF, 135º, BH Charge
	EHS-4625-062B	Shipping Assy 15´, 12 SPF, 135º, BH Charge
	EHS-4625-063B	Shipping Assy 11´, 12 SPF, 135º, BH Charge
	EHS-4625-064B	Shipping Assy 7´, 12 SPF, 135º, BH Charge
	EHS-4625-065B	Shipping Assy 4´, 12 SPF, 135º, BH Charge

SYSTEM PRESSURE RATING 20,000 PSI

API RP 19B Certified

Explosivos Tecnológicos Argentinos Sociedad Anónima. Ruta 25 Km. 13 Pilar, Buenos Aires, Argentina Tel. +54 2322 494382
+54 2322 494311 +54 2322 494167 Fax. +54 2322 494165
www.etasa.com

12 SPF 135º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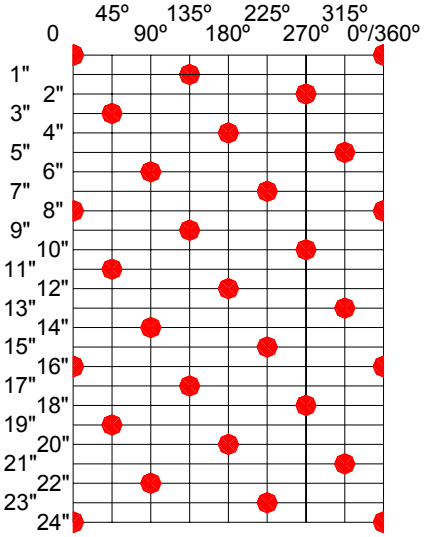
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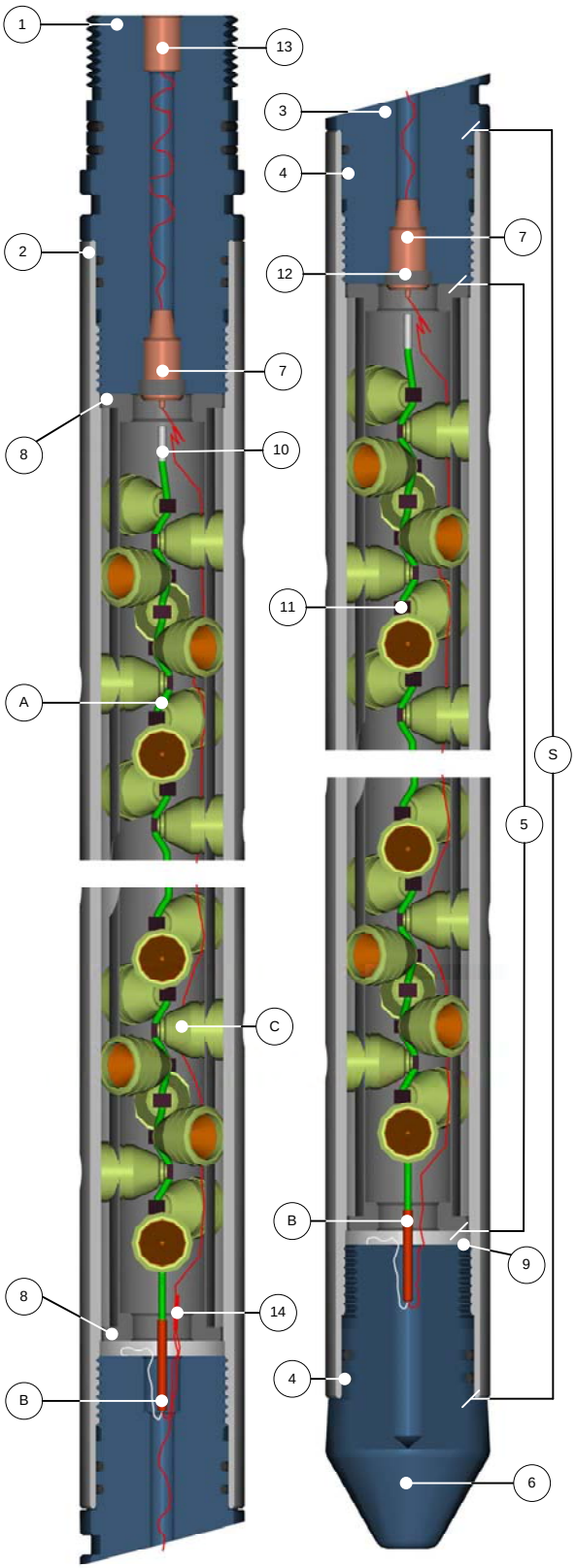
7" High Shot Density Gun 12 SPF 135º
BOTTOM FIRE



ITEM	Part Nbr.	DESCRIPTION
1	EHS-7000-001	Top Sub 7" Adapts to WL or TCP head
2	EHS-7000-007	7" Scalloped Gun Body 15´, 12 SPF, 135º
	EHS-7000-008	7" Scalloped Gun Body 11´, 12 SPF, 135º
	EHS-7000-009	7" Scalloped Gun Body 7´, 12 SPF, 135º
	EHS-7000-010	7" Scalloped Gun Body 4´, 12 SPF, 135º
3	EHS-7000-011	7" Tandem Sub
4	EHS-7000-016	O-rings Kit
5	EHS-7000-022	Loading tube 15´, 12 SPF, 135º, DP Charge
	EHS-7000-023	Loading tube 11´, 12 SPF, 135º, DP Charge
	EHS-7000-024	Loading tube 7´, 12 SPF, 135º, DP Charge
	EHS-7000-025	Loading tube 4´, 12 SPF, 135º, DP Charge
	EHS-7000-022B	Loading tube 15´, 12 SPF, 135º, BH Charge
	EHS-7000-023B	Loading tube 11´, 12 SPF, 135º, BH Charge
	EHS-7000-024B	Loading tube 7´, 12 SPF, 135º, BH Charge
	EHS-7000-025B	Loading tube 4´, 12 SPF, 135º, BH Charge
6	EHS-7000-026	7" Bull Plug
7	EHS-4625-080	Dart seal - Simultaneous firing mode
	EHS-4625-081	Diode assy - Selective firing mode
8	EHS-7000-036	End Plates
9	EHS-7000-041	Snap Rings
10	EHS-4000-046	Detonating Cord End Cover
11	2602-00	Detonating Cord Clip (provided with charges)
12	EHS-4625-082	Diode assy / Dart seal retainer nut
13	EHS-4625-083	Lead wire assy w/contact spring
14	EHS-4625-084	Lead wire splice
A		80 Grains High Velocity Detonating Cord
B		Fluid Desensitized detonator
C	TC47HP	DP Charge 39 gms. HMX
	TC50HBH	BH Charge 39 gms. HMX (ZAMAC CASE)
	EHS-7000-062	Shipping Assy 15´, 12 SPF, 135º, DP Charge
S	EHS-7000-063	Shipping Assy 11´, 12 SPF, 135º, DP Charge
	EHS-7000-064	Shipping Assy 7´, 12 SPF, 135º, DP Charge
	EHS-7000-065	Shipping Assy 4´, 12 SPF, 135º, DP Charge
	EHS-7000-062B	Shipping Assy 15´, 12 SPF, 135º, BH Charge
	EHS-7000-063B	Shipping Assy 11´, 12 SPF, 135º, BH Charge
	EHS-7000-064B	Shipping Assy 7´, 12 SPF, 135º, BH Charge
	EHS-7000-065B	Shipping Assy 4´, 12 SPF, 135º, BH Charge

SYSTEM PRESSURE RATING 13,000 PSI

API RP 19B Certified

Explosivos Tecnológicos Argentinos Sociedad Anónima. Ruta 25 Km. 13 Pilar, Buenos Aires, Argentina Tel. +54 2322 494382
+54 2322 494311 +54 2322 494167 Fax. +54 2322 494165
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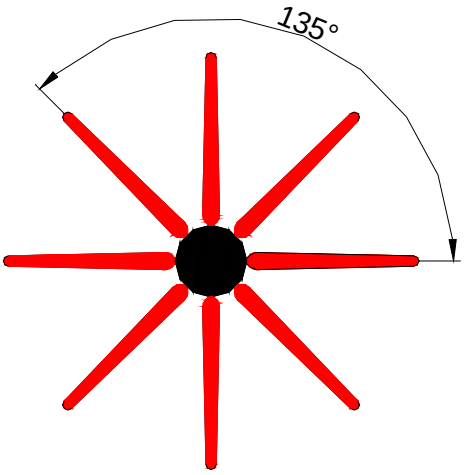
12 SPF 135º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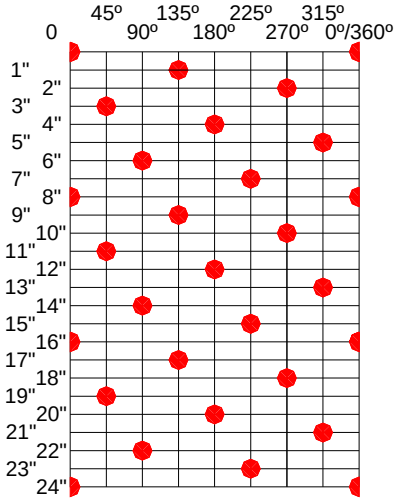
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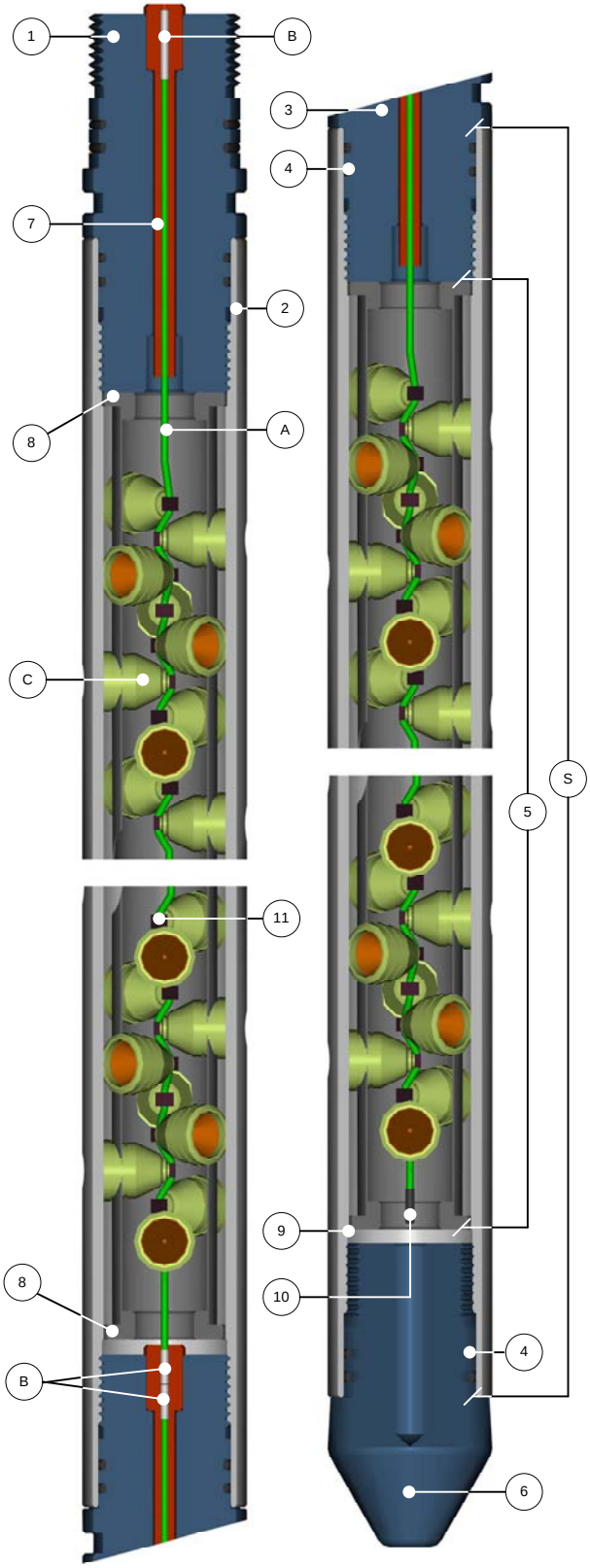
7" High Shot Density Gun 12 SPF 135º
TOP FIRE



ITEM	Part Nbr.	DESCRIPTION
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	EHS-7000-010	7" Scalloped Gun Body 4´, 12 SPF, 135º
3	EHS-7000-011	7" Tandem Sub
4	EHS-7000-016	O-rings Kit
5	EHS-7000-022	Loading tube 15´, 12 SPF, 135º, DP Charge
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	EHS-7000-024	Loading tube 7´, 12 SPF, 135º, DP Charge
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	EHS-7000-022B	Loading tube 15´, 12 SPF, 135º, BH Charge
	EHS-7000-023B	Loading tube 11´, 12 SPF, 135º, BH Charge
	EHS-7000-024B	Loading tube 7´, 12 SPF, 135º, BH Charge
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6	EHS-7000-026	7" Bull Plug
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	EHS-7000-064B	Shipping Assy 7´, 12 SPF, 135º, BH Charge
	EHS-7000-065B	Shipping Assy 4´, 12 SPF, 135º, BH Charge

SYSTEM PRESSURE RATING 13,000 PSI

API RP 19B Certified

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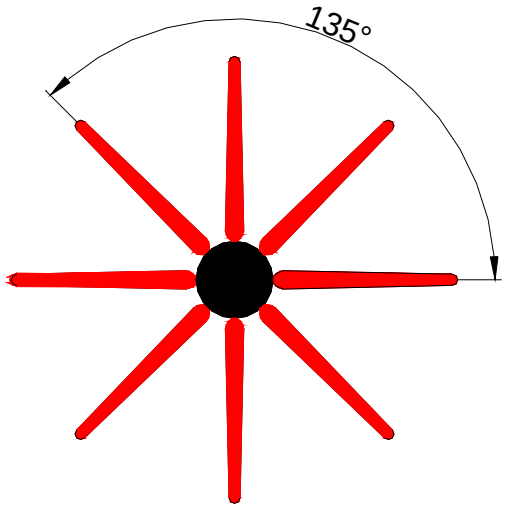
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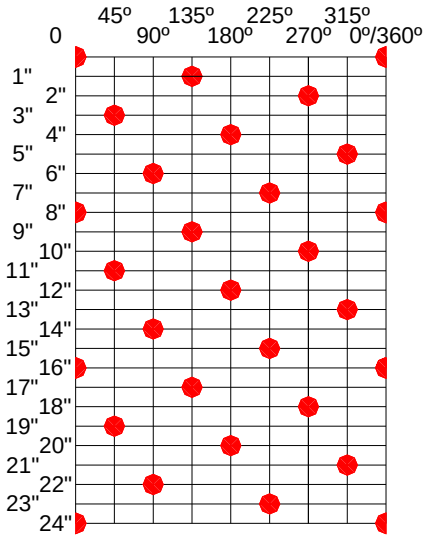
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American Petroleum Institute

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: 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 in^3/charge

SECTION 1 - CONCRETE TARGET

Casing Data: 4 ½" 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.	0.00	0.221	0.784	1.125	0.784	0.221	0.00	0.221	0.784	1.125	0.784
Casing Hole Diameter, Short Axis, in.	0.282	0.267	0.308	0.289	0.302	0.290	0.290	0.320	0.326	0.303	0.196
Casing Hole Diameter, Long Axis, in.	0.296	0.311	0.356	0.296	0.331	0.295	0.310	0.333	0.328	0.312	0.250
Average Casing Hole Diameter, in.	0.289	0.289	0.332	0.293	0.317	0.293	0.300	0.327	0.327	0.308	0.223
Total Depth, in.	32.260	30.510	31.760	29.260	31.010	30.510	30.760	31.260	31.510	31.260	31.010
Burr Height, in.	0.056	0.034	0.062	0.034	0.056	0.030	0.050	0.041	0.062	0.040	0.081

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

WITNESSING INFORMATION

Date of Notice of Intent to Test: April 22th 2002 — 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.

	(Company Official)	(Title)	(Date)	(Company)	(Address)
X CERTIFIED BY		Perforating Projects Manager	Jan 31st 2003	Explosivos Tecnologicos Argentinos S.A.	Ruta 25Km.13 Pilar- Bs.As. Argentina
____ RECERTIFIED					

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: 2 7/8" High Shot Density Gun BH - RDX

Charge Name: 16.5 gms. Barracuda BH – RDX (DSC 03-08-48)

Manufacturer Charge Part No.: TC46RBH — Date of Manufacture: Aug 19th 2003

Gun Type: High Shot Density Gun for WL or TCP

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

Debris Description: N/A

Remarks: * Gun OD After firing in liquid 3.06"

Explosive Weight: 16.5 gm, RDX powder, Case Material: Steel

Max. Temp, °F: 330 1 hr, 305 3 hr, 260 24 hr, 230 100 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 ½" OD, Weight: 11.6 lb/ft, L-80 API Grade, Date of Section 1 Test: Sept 22nd 2003

Target Data: ____ OD, Amount of Cement: 1730 lb., Amount of Sand: 3455 lb., Amount of Water: 900 lb.

Date of Compressive Strength Test: Sept 23rd 2003, Briquette Compressive Strength: 7042 psi, Age of Target: 30 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	0.221	0.784	1.126	0.784	0.221	0.000	0.221	0.784	1.126	0.784
Casing Hole Diameter, Short Axis, in.	0.700	0.680	0.690	0.650	0.700	0.660	0.710	0.670	0.660	0.670	0.700
Casing Hole Diameter, Long Axis, in.	0.770	0.730	0.760	0.710	0.780	0.690	0.760	0.700	0.690	0.700	0.760
Average Casing Hole Diameter, in.	0.735	0.705	0.725	0.680	0.740	0.675	0.735	0.685	0.675	0.685	0.730
Total Depth, in.	5.563	6.500	6.375	6.438	7.000	6.000	6.000	5.750	6.000	7.250	7.000
Burr Height, in.	0.040	0.054	0.074	0.082	0.088	0.063	0.052	0.063	0.047	0.072	0.064

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.	0.221	0.000										1.106
Casing Hole Diameter, Short Axis, in.	0.740	0.620										0.681
Casing Hole Diameter, Long Axis, in.	0.780	0.670										0.731
Average Casing Hole Diameter, in.	0.760	0.645										0.706
Total Depth, in.	6.750	5.375										6.308
Burr Height, in.	0.054	0.043										0.061

WITNESSING INFORMATION

Date of Notice of Intent to Test: July 25th 2003 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 ____ RECERTIFIED	DARIO R. MATTANZI (Company Official)	Perforating Projects Manager (Title)	Sept 24th 2003 (Date)	Explosivos Tecnologicos Argentinos S.A. (Company)	Ruta 25Km.13 Pilar- Bs.As. Argentina (Address)

E.T.A. S.A.
GERENTE DE PROYECTOS Y SISTEMAS
PERFORATING PROJECTS MANAGER

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: 2 7/8" High Shot Density Gun DP HMX

Charge Name: 2 7/8" HMX ExTrA! DP (DSC 07-01-50)

Manufacturer Charge Part No.: TC46H ExTrA! — Date of Manufacture: 01/25/07

Gun Type: High Shot Density Gun, 6 SPF 60°

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

Debris Description: N/A

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: X Selective, X Simultaneous

Debris Weight: N/A gm/charge, Debris: N/A in^3/charge

Remarks: * Gun OD after shooting in liquid 3.05In.

SECTION 1 - CONCRETE TARGET

Casing Data: 4 ½" OD, Weight: 11.6 lb/ft, L-80 API Grade, Date of Section 1 Test: 05/02/07

Target Data: 88" OD, Amount of Cement: 9,150 lb., Amount of Sand: 18,300 lb., Amount of Water: 4,750 lb.

Date of Compressive Strength Test: 05/02/07, Briquette Compressive Strength: 7,113 psi, Age of Target: 33 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	0.221	0.784	1.127	0.784	0.221	0.000	0.221	0.784	1.125	0.784	
Casing Hole Diameter, Short Axis, in.	0.410	0.380	0.390	0.380	0.360	0.410	0.390	0.390	0.370	0.380	0.420	
Casing Hole Diameter, Long Axis, in.	0.430	0.400	0.400	0.390	0.370	0.420	0.410	0.400	0.380	0.390	0.430	
Average Casing Hole Diameter, in.	0.420	0.390	0.395	0.385	0.365	0.415	0.400	0.395	0.375	0.385	0.425	
Total Depth, in.	35.25	36.25	37.25	38.50	37.75	37.75	35.75	34.75	37.00	37.25	38.25	
Burr Height, in.	0.052	0.049	0.054	0.057	0.037	0.048	0.035	0.037	0.051	0.048	0.053	

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.	0.221	0.000	0.221	0.784	1.125	0.784	0.221	0.000	0.221			
Casing Hole Diameter, Short Axis, in.	0.420	0.370	0.370	0.360	0.370	0.400	0.410	0.390	0.370			0.387
Casing Hole Diameter, Long Axis, in.	0.440	0.380	0.390	0.360	0.390	0.420	0.430	0.390	0.380			0.400
Average Casing Hole Diameter, in.	0.430	0.375	0.380	0.360	0.380	0.410	0.420	0.390	0.375			0.394
Total Depth, in.	39.00	38.25	37.75	37.00	39.25	38.50	36.50	36.00	37.75			37.29
Burr Height, in.	0.029	0.033	0.043	0.024	0.019	0.028	0.032	0.065	0.046			0.042

WITNESSING INFORMATION

Date of Notice of Intent to Test: March 14th 2007 — Witnessed by: J. Smirnoff (API Certified)

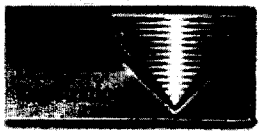
Other Activities Witnessed: Target Pouring ____ Briquette: Preparation ____ Testing X Burr Height Measurement X Samples Taken: Concrete X Casing X

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 ____ RECERTIFIED	E.T.A. S.A. DARIO E. LATTANZIO GERENTE PRODUCTO Y SISTEMAS "PERFORATING PROJECTS MANAGER"	Perforating Projects Manager	05/03/07	Explosivos Tecnologicos Argentinos S.A.	Ruta 25Km.13 Pilar- Bs.As. Argentina
	(Company Official)	(Title)	(Date)	(Company)	(Address)

American Petroleum Institute



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

Service Company Available to all Design Number

Gun OD & Trade Name 3 1/8" High Shot Density Gun 6 SPF 60° DP HMX

Charge Name 22.7 gms. Universal DP, HMX (DSC 04-09-52)

Manufacturer Charge Part No. TC28HP Date of Manufacture Sept 27th 2004

Gun Type High Shot Density Gun, 6 SPF 60°

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

Debris Description N/A

Remarks * Gun OD after shooting in liquid is 3.34in.

Explosive Weight 22.7 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 in^3/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 December 20th 2004

Target Data 85" OD, Amount of Cement 8650 lb., Amount of Sand 17300 lb., Amount of Water 4500 lb.

Date of Compressive Strength Test December 21st 2004, Briquette Compressive Strength 5564 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.	0.00	0.18	0.62	0.87	0.62	0.18	0.00	0.18	0.62	0.87	0.62
Casing Hole Diameter, Short Axis, in.	0.41	0.36	0.36	0.37	0.39	0.38	0.39	0.35	0.38	0.37	0.38
Casing Hole Diameter, Long Axis, in.	0.42	0.39	0.37	0.38	0.40	0.39	0.40	0.37	0.40	0.39	0.40
Average Casing Hole Diameter, in.	0.415	0.385	0.365	0.375	0.395	0.385	0.395	0.360	0.390	0.380	0.390
Total Depth, in.	34.500	29.750	30.750	27.500	28.750	31.750	32.250	34.000	30.500	24.250	32.000
Burr Height, in.	0.027	0.032	0.048	0.056	0.050	0.039	0.028	0.053	0.048	0.029	0.045

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.	0.18											0.412
Casing Hole Diameter, Short Axis, in.	0.38											0.378
Casing Hole Diameter, Long Axis, in.	0.39											0.392
Average Casing Hole Diameter, in.	0.385											0.385
Total Depth, in.	33.250											30.771
Burr Height, in.	0.051											0.0423

WITNESSING INFORMATION

Date of Notice of Intent to Test: November 15th 2004 Witnessed by: J. Smimoff (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	S.A. (Company Official)	Perforating Projects Manager (Title)	Dec 21st 2004 (Date)	Explosivos Tecnologicos Argentinos S.A. (Company)	Ruta 25Km.13 Pilar- Bs.As. Argentina (Address)
____ RECERTIFIED					

DARIO [illegible]
GERENTE [illegible]
PERFORATING PROJECTS MANAGER

API Form 19R-A

American Petroleum Institute

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

Service Company Available to SCHLUMBERGER Design Number

Gun OD & Trade Name 3 3/8 " High Shot Density Gun

Charge Name ULTRAJET 34 JL HMX (DSC 04-07-42)

Manufacturer Charge Part No. P448940 Date of Manufacture July 30th 2004

Gun Type High Shot Density Gun, 6 SPF 60°

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

Debris Description N/A

Remarks * Gun OD after shooting in liquid is 3.75 In.

Explosive Weight 22.7 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 in^3/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 30th 2004

Target Data 80.5" OD, Amount of Cement 7640 lb., Amount of Sand 15270 lb., Amount of Water 3970 lb.

Date of Compressive Strength Test August 31st 2004, Briquette Compressive Strength **6089** 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	0.138	0.450	0.625	0.450	0.138	0.00	0.138	0.450	0.625	0.450
Casing Hole Diameter, Short Axis, in.	0.40	0.40	0.41	0.43	0.44	0.43	0.40	0.39	0.41	0.42	0.40
Casing Hole Diameter, Long Axis, in.	0.43	0.44	0.42	0.48	0.48	0.46	0.44	0.43	0.42	0.45	0.41
Average Casing Hole Diameter, in.	0.415	0.420	0.415	0.455	0.460	0.445	0.420	0.410	0.415	0.435	0.405
Total Depth, in.	34.255	31.255	32.505	30.255	33.255	31.005	30.755	29.505	32.755	32.755	32.005
Burr Height, in.	0.081	0.062	0.059	0.055	0.078	0.049	0.055	0.041	0.069	0.060	0.071

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.	0.138	0.00	0.138									0.267
Casing Hole Diameter, Short Axis, in.	0.46	0.41	0.40									0.414
Casing Hole Diameter, Long Axis, in.	0.50	0.43	0.44									0.445
Average Casing Hole Diameter, in.	0.480	0.420	0.420									0.430
Total Depth, in.	33.005	32.005	31.255									31.898
Burr Height, in.	0.080	0.047	0.039									0.060

WITNESSING INFORMATION

Date of Notice of Intent to Test: July 27th 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 DARIO E. LAZZANZIO Perforating Projects Manager Sept 1st 2004 Explosivos Tecnologicos Argentinos S.A. Ruta 25Km.13 Pilar- Bs.As. Argentina

_____ RECERTIFIED (Official) (Title) (Date) (Company) (Address)

E.T.A. S.A.
GERENTE PRODUCTOS PERFORATIVOS
PERFORATING PROJECTS MANAGER

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: 3 3/8" High Shot Density Gun DP - HMX

Charge Name: 22.7 gms. Universal Next Generation DP – HMX (DSC 03-08-44)

Manufacturer Charge Part No.: TC26HNG — Date of Manufacture: Aug 14th 2003

Gun Type: High Shot Density Gun for WL or TCP

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

Debris Description: N/A

Remarks: * Gun OD After firing in liquid 3.75"

Explosive Weight: 22.7 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 in^3/charge

SECTION 1 - CONCRETE TARGET

Casing Data: 4 ½" OD, Weight: 11.6 lb/ft, L-80 API Grade, Date of Section 1 Test: Sept 22nd 2003

Target Data: 90" OD, Amount of Cement: 8745 lb., Amount of Sand: 17490 lb., Amount of Water: 4550 lb.

Date of Compressive Strength Test: Sept 23rd 2003, Briquette Compressive Strength: 7452 psi, Age of Target: 30 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	0.138	0.450	0.625	0.450	0.138	0.000	0.138	0.450	0.625	0.450	
Casing Hole Diameter, Short Axis, in.	0.330	0.352	0.339	0.338	0.315	0.343	0.321	0.335	0.332	0.334	0.334	
Casing Hole Diameter, Long Axis, in.	0.350	0.357	0.348	0.349	0.342	0.375	0.357	0.365	0.345	0.340	0.362	
Average Casing Hole Diameter, in.	0.340	0.355	0.344	0.344	0.329	0.359	0.339	0.350	0.339	0.337	0.348	
Total Depth, in.	37.250	36.750	40.500	38.750	38.000	38.375	40.000	36.250	38.750	39.500	38.250	
Burr Height, in.	0.056	0.030	0.053	0.048	0.065	0.025	0.058	0.063	0.017	0.070	0.046	

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.	0.138	0.000										0.277
Casing Hole Diameter, Short Axis, in.	0.328	0.354										0.335
Casing Hole Diameter, Long Axis, in.	0.333	0.365										0.353
Average Casing Hole Diameter, in.	0.331	0.360										0.344
Total Depth, in.	38.000	39.000										38.413
Burr Height, in.	0.031	0.065										0.048

WITNESSING INFORMATION

Date of Notice of Intent to Test: July 25th 2003 — 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 ____ RECERTIFIED	DARIO E. [illegible] TANZI GERENTE [illegible] Company Officials PERFORATING PROJECTS MANAGER	Perforating Projects Manager (Title)	Sept 24th 2003 (Date)	Explosivos Tecnologicos Argentinos S.A. (Company)	Ruta 25Km.13 Pilar- Bs.As. Argentina (Address)

E.T.A. S.A.

API Form 19R-A

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: 3 3/8" High Shot Density Gun

Charge Name: 22.7 gms. HMX Universal Premium DP (DSC 02-09-22)

Manufacturer Charge Part No.: TC26HP — Date of Manufacture: Sept 19th 2002

Gun Type: Expendable, Retrievable HSC TCP/WL 60° 6 SPF

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

Debris Description: n/a

Remarks: * Gun OD after shoting in water 3.75 in. (Scallop Gun)

Explosive Weight: 22.7 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: X Selective, X Simultaneous

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

SECTION 1 - CONCRETE TARGET

Casing Data: 4.5" OD, Weight: 11.6 lb/ft, L-80 API Grade, Date of Section 1 Test: Nov 13th 2002

Target Data: 91" OD, Amount of Cement: 8000 lb., Amount of Sand: 16000 lb., Amount of Water: 4160 lb.

Date of Compressive Strength Test: Nov 12th 2002, Briquette Compressive Strength: **7490** 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	0.138	0.450	0.625	0.450	0.138	0.000	0.138	0.450	0.625	0.450
Casing Hole Diameter, Short Axis, in.	0.320	0.330	0.290	0.300	0.320	0.320	0.335	0.330	0.320	0.325	0.340
Casing Hole Diameter, Long Axis, in.	0.325	0.340	0.335	0.336	0.350	0.335	0.350	0.360	0.350	0.348	0.350
Average Casing Hole Diameter, in.	0.323	0.335	0.313	0.318	0.335	0.328	0.343	0.345	0.335	0.337	0.345
Total Depth, in.	33.270	31.020	29.020	30.395	31.770	30.520	33.770	31.270	29.770	30.770	33.520
Burr Height, in.	0.013	0.029	0.032	0.031	0.029	0.015	0.040	0.025	0.023	0.022	0.020

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.	0.138	0.000	0.138	0.450	0.625	0.450	0.138	0.000	0.138			0.277
Casing Hole Diameter, Short Axis, in.	0.308	0.342	0.320	0.305	0.340	0.327	0.317	0.307	0.316			0.321
Casing Hole Diameter, Long Axis, in.	0.318	0.353	0.330	0.315	0.355	0.360	0.318	0.311	0.325			0.338
Average Casing Hole Diameter, in.	0.313	0.348	0.325	0.310	0.338	0.344	0.318	0.309	0.321			0.329
Total Depth, in.	32.520	35.395	31.395	33.270	30.395	32.520	31.270	29.520	31.145			31.626
Burr Height, in.	0.015	0.035	0.017	0.014	0.025	0.012	0.013	0.033	0.018			0.023

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

American Petroleum Institute

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

Service Company Available to all Design Number

Gun OD & Trade Name 3 3/8 " High Shot Density Gun, RDX

Charge Name 22.7 gms. Universal DP RDX (DSC 04-07-43)

Manufacturer Charge Part No. TC26R Date of Manufacture July 31st 2004

Gun Type High Shot Density Gun, 6 SPF 60°

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

Debris Description N/A

Explosive Weight 22.7 gm, RDX powder, Case Material Steel

Max. Temp, °F 330 1 hr 305 3 hr 260 24 hr 230 100 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 in^3/charge

Remarks * Gun OD after shooting in liquid is 3.75In.

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 30th 2004

Target Data 70" OD, Amount of Cement 5850 lb., Amount of Sand 11690 lb., Amount of Water 3040 lb.

Date of Compressive Strength Test August 31st 2004, Briquette Compressive Strength 6561 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	0.138	0.450	0.625	0.450	0.138	0.00	0.138	0.450	0.625	0.450	
Casing Hole Diameter, Short Axis, in.	0.36	0.38	0.38	0.39	0.35	0.34	0.36	0.34	0.38	0.35	0.35	
Casing Hole Diameter, Long Axis, in.	0.38	0.39	0.38	0.40	0.37	0.35	0.39	0.36	0.40	0.37	0.38	
Average Casing Hole Diameter, in.	0.370	0.385	0.380	0.395	0.360	0.345	0.375	0.350	0.390	0.360	0.365	
Total Depth, in.	25.755	25.505	26.755	27.755	24.005	25.755	26.505	26.255	26.255	27.255	24.755	
Burr Height, in.	0.068	0.070	0.058	0.046	0.063	0.066	0.065	0.033	0.066	0.070	0.056	
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.	0.138	0.00	0.138									0.267
Casing Hole Diameter, Short Axis, in.	0.37	0.35	0.35									0.361
Casing Hole Diameter, Long Axis, in.	0.40	0.37	0.35									0.378
Average Casing Hole Diameter, in.	0.385	0.360	0.350									**0.369**
Total Depth, in.	27.005	27.505	25.005									**26.148**
Burr Height, in.	0.038	0.049	0.035									0.057

WITNESSING INFORMATION

Date of Notice of Intent to Test: July 27th 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 ____ RECERTIFIED

E.T.A. S.A.
DARIO E. ATTANZIO
GERENTE PRODUCTO Y SISTEMAS
PERFORADORES PROJECTS MANAGER

(Company Official) Perforating Projects Manager (Title) Sept 1st 2004 (Date) Explosivos Tecnologicos Argentinos S.A. (Company) Ruta 25Km.13 Pilar- Bs.As. Argentina (Address)

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: Available to all service companies. Manufactured by ETASA

Gun OD & Trade Name: 3 3/8" DP HMX ExTrA! 6 SPF 60°

Charge Name: 25 grams HMX DP ExTrA!

Manufacturer Charge Part No.: TC53H ExTrA! Date of Manufacture:

Gun Type: High Shot Density Gun.

Phasing Tested: 60° degrees, Firing Order: ___ Top down X ___ Bottom up

Debris Description: Cases and loading tube debris keeps inside the gun

Explosive weight: 25 gm, HMX powder, Case Material: STEEL

Max Temp, °F: 400°F 1 hr ___ 3 hr ___ 24 hr ___ 100 hr ___ 200 hr

Maximum Pressure Rating: 20000 psi, Carrier Material: STEEL

Shot Density Tested: 6 Shots/ft: ___

Recommended Minimum ID for Running ___ in.

Available Firing Mode: ___ Selective X ___ Simultaneous

Debris Weight: N/A gm/charge, Debris: N/A in³/charge

Remarks/Exceptions per Section 1.11: ___

Casing Data: 4 1/2" OD, Weight: 11,6 lb/ft, API Grade: L-80 Date of Section 1 Test: May 28th 2008

Target Data: 147" OD, Amount of Cement: 26400 lb, Amount of Sand: 52800 lb, Amount of Water: 13730 lb.

Date of Compressive Strength Test: May 29th 2008 Briquette Compressive Strength: 7186 psi, Age of Target: 30 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	0.138	0.450	0.625	0.450	0.138	0.000	0.138	0.450	0.625	0.450
Casing Hole Diameter, Short Axis, in	0.390	0.390	0.380	0.400	0.370	0.390	0.380	0.370	0.360	0.390	0.410
Casing Hole Diameter, Long Axis, in	0.400	0.410	0.400	0.420	0.380	0.420	0.430	0.390	0.400	0.400	0.420
Average Casing Hole Diameter, in.	0.395	0.400	0.390	0.410	0.375	0.405	0.405	0.380	0.380	0.395	0.415
Total Depth, in.	42.750	47.250	47.250	42.500	44.250	45.750	40.750	39.250	42.250	44.250	LOST
Burr Height, in.	0.036	0.025	0.032	0.051	0.042	0.056	0.022	0.043	0.076	0.015	0.019

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.	0.138	0.000	0.138	0.450	0.625							XXXXXX
Casing Hole Diameter, Short Axis, in	0.420	0.390	0.360	0.420	0.390							0.388
Casing Hole Diameter, Long Axis, in	0.430	0.420	0.380	0.430	0.400							0.408
Average Casing Hole Diameter, in.	0.425	0.405	0.370	0.425	0.395							0.398
Total Depth, in.	47.750	38.750	43.500	39.250	41.750							43.150
Burr Height, in.	0.052	0.043	0.029	0.043	0.035							0.039

Remarks: ___

Manufacturer's Certification

Type of Certification: ___ Self Jorge Smirnoff API W 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 described.

	Company Official	Title	Date	Company	Address
X CERTIFIED BY	Dario E. Cattanzio	Perforating Projects Manager	May 30th 2008	ETASA	Ruta 25 Km 13- Villa Rosa - Buenos Aires - Argentina
___ RECERTIFIED					

Name of test as it should appear on website: 3 3/8" High Shot Density Gun ExTrA! With TC53H ExTrA! 25grams HMX DP

Name of test as it appears on application and application date: 3 3/8" High Shot Density Gun ExTrA! With TC53H ExTrA! 25grams HMX DP

American Petroleum Institute

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

Service Company Available to all Design Number

Gun OD & Trade Name 4" High Shot Density Gun,RDX

Charge Name 4" Barracuda 32 gms RDX (DSC 03-02-18)

Manufacturer Charge Part No. TC27R Date of Manufacture Feb 06th 2003

Gun Type High Shot Density Gun 6 SPF 60° WL/TCP

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

Debris Description N/A

Remarks Gun OD After shooting in Liquid 4.47In., in air 4,56In.

Explosive Weight 32 gm, RDX powder, Case Material Steel

Max. Temp, °F 330 1 hr 305 3 hr 260 24 hr 230 100 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 in^3/charge

SECTION 1 - CONCRETE TARGET

Casing Data 5 ½" OD, Weight 17 lb/ft, L-80 API Grade, Date of Section 1 Test March 11th 2003

Target Data 90" OD, Amount of Cement 9555 lb., Amount of Sand 19110 lb., Amount of Water 4970 lb.

Date of Compressive Strength Test March 11th 2003, Briquette Compressive Strength 5812 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.	0.00	0.192	0.638	0.892	0.638	0.192	0.00	0.192	0.638	0.892	0.638
Casing Hole Diameter, Short Axis, in.	0.412	0.394	0.391	0.416	0.390	0.458	0.390	0.403	0.425	0.415	0.451
Casing Hole Diameter, Long Axis, in.	0.418	0.409	0.435	0.425	0.415	0.461	0.405	0.411	0.458	0.426	0.452
Average Casing Hole Diameter, in.	0.415	0.402	0.413	0.421	0.403	0.460	0.398	0.407	0.442	0.421	0.452
Total Depth, in.	38.830	36.580	38.330	40.830	39.080	39.830	32.080	39.330	37.080	37.580	32.830
Burr Height, in.	0.040	0.073	0.053	0.056	0.061	0.052	0.088	0.074	0.057	0.056	0.085

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.	0.192	0.00	0.192	0.638	0.892	0.638	0.192	0.00	0.192			0.392
Casing Hole Diameter, Short Axis, in.	0.404	0.390	0.384	0.374	0.401	0.415	0.400	0.436	0.407			0.408
Casing Hole Diameter, Long Axis, in.	0.419	0.409	0.388	0.417	0.459	0.416	0.415	0.438	0.432			0.425
Average Casing Hole Diameter, in.	0.412	0.400	0.386	0.396	0.430	0.416	0.408	0.437	0.420			**0.417**
Total Depth, in.	33.830	36.455	36.330	35.830	37.330	33.830	31.830	34.830	35.830			**36.424**
Burr Height, in.	0.097	0.031	0.090	0.029	0.078	0.077	0.081	0.030	0.034			0.062

WITNESSING INFORMATION

Date of Notice of Intent to Test: Jan 03rd 2003 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 ____ RECERTIFIED

E.T.A. S.A.
DARIO E. LAPITANZO
GERENTE PRODUCTO Y SISTEMAS
PERFORATING PROJECTS MANAGER

Company Official Refracting Projects Manager (Title) 03/12/2003 (Date) Explosivos Tecnológicos Argentinos S.A. (Company) Ruta 25Km.13 Pilar- Bs.As. Argentina (Address)

API Form 19R-A

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" High Shot Density Gun 12 SPF 135° - DP - HMX

Charge Name 16.5 gms. Barracuda DP HMX (DSC 03-08-45)

Manufacturer Charge Part No. TC46H Date of Manufacture Aug 15th 2003

Gun Type High Shot Density Gun For WL or TCP

Phasing Tested 135° degrees, Firing Order X Top Down, ___ Bottom Up

Debris Description N/A

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 12 Shots/ft

Recommended Minimum ID for Running * in.

Available Firing Mode ___ Selective, ___ Simultaneous

Debris Weight N/A gm/charge, Debris N/A in^3/charge

Remarks * Gun OD After firing in liquid 4.24"

SECTION 1 - CONCRETE TARGET

Casing Data 5 ½" OD, Weight 17 lb/ft, L-80 API Grade, Date of Section 1 Test Sept 22nd 2003

Target Data 70 ½" OD, Amount of Cement 4809 lb., Amount of Sand 9618 lb., Amount of Water 2500 lb.

Date of Compressive Strength Test Sept 23rd 2003, Briquette Compressive Strength 6809 psi, Age of Target 30 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	0.741	0.405	0.110	0.892	0.110	0.405	0.741	0.000	0.741	0.405
Casing Hole Diameter, Short Axis, in.	0.388	0.399	0.344	0.371	0.374	0.370	0.340	0.391	0.389	0.366	0.354
Casing Hole Diameter, Long Axis, in.	0.395	0.401	0.348	0.385	0.376	0.382	0.361	0.414	0.393	0.378	0.362
Average Casing Hole Diameter, in.	0.392	0.400	0.346	0.378	0.375	0.376	0.351	0.403	0.391	0.372	0.358
Total Depth, in.	27.304	27.429	28.804	30.054	26.304	28.304	26.804	27.554	27.804	26.804	28.804
Burr Height, in.	0.062	0.025	0.090	0.085	0.052	0.036	0.059	0.088	0.080	0.064	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.	0.110	0.892	0.110	0.405	0.741	0.000	0.741	0.405	0.110	0.892	0.110	0.412
Casing Hole Diameter, Short Axis, in.	0.369	0.405	0.388	0.413	0.370	0.368	0.356	0.379	0.360	0.417	0.386	0.377
Casing Hole Diameter, Long Axis, in.	0.392	0.409	0.395	0.423	0.379	0.400	0.370	0.386	0.390	0.420	0.395	0.389
Average Casing Hole Diameter, in.	0.381	0.407	0.392	0.418	0.375	0.384	0.363	0.383	0.375	0.419	0.391	0.383
Total Depth, in.	26.554	28.554	25.804	27.304	27.054	26.304	28.554	27.554	29.304	26.804	24.804	27.480
Burr Height, in.	0.081	0.045	0.062	0.053	0.071	0.052	0.073	0.059	0.084	0.073	0.051	0.064

WITNESSING INFORMATION

Date of Notice of Intent to Test: July 25th 2003 Witnessed by: [signature] 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 DARIO E. CATTANZIO (Company Official) GERENTE PROYECTOS ESPECIALES PERFORATING PROJECTS MANAGER E.T.S.A. | Perforating Projects Manager (Title) | Sept 24th 2003 (Date) | Explosivos Tecnologicos Argentinos S.A. (Company) | Ruta 25Km.13 Pilar- Bs.As. Argentina (Address)

___ RECERTIFIED

API Form 19R-A

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" High Shot Density Gun 12 SPF 135° - COMBO - HMX___

Charge Name ___16.5 gms. Barracuda DP & BH HMX (DSC 03-08-45 & 03-08-47)___

Manufacturer Charge Part No. TC46H&TC46HBH Date of Manufacture ___Aug 15th & 19th 2003___

Gun Type ___High Shot Density Gun For WL or TCP___

Phasing Tested ___135°___ degrees, Firing Order ___X___ Top Down, ______ Bottom Up

Debris Description ___N/A___

Remarks ___* Gun OD After firing in liquid 4.28"___

Explosive Weight ___16.5___ gm, ___HMX___ powder, Case Material ___Steel___

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

Maximum Pressure Rating ___20,000___ psi, Carrier Material ___Steel___

Shot Density Tested ___12___ 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 ___5 ½"___ OD, Weight ___17___ lb/ft, ___L-80___ API Grade, Date of Section 1 Test ___Sept 22nd 2003___

Target Data ___70"___ OD, Amount of Cement ___4810___ lb., Amount of Sand ___9618___ lb., Amount of Water ___2500___ lb.

Date of Compressive Strength Test ___Sept 23rd 2003___, Briquette Compressive Strength ___**7164**___ psi, Age of Target ___30___ 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	0.741	0.405	0.110	0.892	0.110	0.405	0.741	0.000	0.741	0.405
Casing Hole Diameter, Short Axis, in.	0.382	0.684	0.356	0.726	0.380	0.650	0.384	0.670	0.371	0.675	0.358
Casing Hole Diameter, Long Axis, in.	0.392	0.692	0.382	0.740	0.410	0.720	0.387	0.720	0.377	0.715	0.383
Average Casing Hole Diameter, in.	0.387	0.688	0.369	0.733	0.395	0.685	0.386	0.695	0.374	0.695	0.371
Total Depth, in.	28.554	6.304	29.804	6.179	27.054	7.054	29.304	6.304	28.179	5.804	29.304
Burr Height, in.	0.062	0.042	0.081	0.083	0.052	0.048	0.030	0.073	0.041	0.063	0.035

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.	0.110	0.892	0.110	0.405	0.741	0.000	0.741	0.405	0.110	0.892	0.110	0.412
Casing Hole Diameter, Short Axis, in.	0.728	0.396	0.715	0.357	0.686	0.356	0.690	0.367	0.701	0.357	0.678	0.503
Casing Hole Diameter, Long Axis, in.	0.733	0.404	0.723	0.379	0.705	0.375	0.710	0.395	0.708	0.368	0.742	0.553
Average Casing Hole Diameter, in.	0.731	0.400	0.719	0.368	0.696	0.366	0.700	0.381	0.705	0.363	0.710	0.542
Total Depth, in.	7.554	27.804	6.304	26.304	6.429	27.617	6.804	28.054	6.054	28.429	5.804	17.318
Burr Height, in.	0.045	0.041	0.092	0.072	0.044	0.034	0.036	0.081	0.039	0.038	0.082	0.055

Remarks ___DP Performance Pen. 28.219" EH 0.378" BH Performance Pen 6.418" EH 0.705"___

WITNESSING INFORMATION

Date of Notice of Intent to Test: ___July 25th 2003___ 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	DARIO E. [illegible]ANZIO	Perforating Projects Manager	Sept 25th 2003	Explosivos Tecnologicos Argentinos S.A.	Ruta 25Km.13 Pilar- Bs.As. Argentina
______ RECERTIFIED	(Company Official)	(Title)	(Date)	(Company)	(Address)

E.T.A. S.A. GERENTE [illegible] PERFORATING PROJECTS MANAGER

API Form 19R-A

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" High Shot Density Gun 12 SPF 135° - BH - HMX

Charge Name: 16.5 gms. Barracuda BH HMX (DSC 03-08-45)

Manufacturer Charge Part No.: TC46HBH — Date of Manufacture: Aug 15th 2003

Gun Type: High Shot Density Gun For WL or TCP

Phasing Tested: 135° degrees, Firing Order: X Top Down, ____ Bottom Up

Debris Description: N/A

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: 12 Shots/ft

Recommended Minimum ID for Running: * in.

Available Firing Mode: ____ Selective, ____ Simultaneous

Debris Weight: N/A gm/charge, Debris: N/A in^3/charge

Remarks: * Gun OD After firing in liquid 4.31"

SECTION 1 - CONCRETE TARGET

Casing Data: 5 ½" OD, Weight: 17 lb/ft, L-80 API Grade, Date of Section 1 Test: Sept 22nd 2003

Target Data: 42" OD, Amount of Cement: 1570 lb., Amount of Sand: 3140 lb., Amount of Water: 817 lb.

Date of Compressive Strength Test: Sept 23rd 2003, Briquette Compressive Strength: **7205** psi, Age of Target: 30 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	0.741	0.405	0.110	0.892	0.110	0.405	0.741	0.000	0.741	0.405	
Casing Hole Diameter, Short Axis, in.	0.650	0.650	0.690	0.710	0.702	0.750	0.780	0.700	0.600	0.680	0.720	
Casing Hole Diameter, Long Axis, in.	0.690	0.700	0.703	0.730	0.710	0.770	0.790	0.730	0.630	0.690	0.790	
Average Casing Hole Diameter, in.	0.670	0.675	0.697	0.720	0.706	0.760	0.785	0.715	0.615	0.685	0.755	
Total Depth, in.	7.304	6.554	7.054	6.554	6.054	7.554	6.304	6.804	5.554	6.804	6.304	
Burr Height, in.	0.059	0.062	0.086	0.077	0.040	0.066	0.042	0.077	0.054	0.059	0.080	

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.	0.110	0.892	0.110	0.405	0.741	0.000	0.741	0.405	0.110	0.892	0.110	0.412
Casing Hole Diameter, Short Axis, in.	0.700	0.680	0.710	0.650	0.630	0.720	0.690	0.690	0.700	0.680	0.710	0.691
Casing Hole Diameter, Long Axis, in.	0.720	0.710	0.740	0.670	0.690	0.760	0.710	0.730	0.750	0.710	0.740	0.721
Average Casing Hole Diameter, in.	0.710	0.695	0.725	0.660	0.660	0.740	0.700	0.710	0.725	0.695	0.725	**0.706**
Total Depth, in.	5.804	6.179	6.429	7.804	6.054	5.554	5.804	6.304	6.679	6.554	5.554	**6.435**
Burr Height, in.	0.058	0.044	0.068	0.061	0.069	0.067	0.073	0.083	0.043	0.054	0.078	0.064

WITNESSING INFORMATION

Date of Notice of Intent to Test: July 25th 2003 — 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 / ____ RECERTIFIED	DARIO E. MATTANZI (Company Official)	Perforating Projects Manager (Title)	Sept 24th 2003 (Date)	Explosivos Tecnologicos Argentinos S.A. (Company)	Ruta 25Km.13 Pilar- Bs.As. Argentina (Address)

E.T.A. S.A. GERENTE PRODUCTO Y SISTEMAS PERFORATING PROJECTS MANAGER

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" High Shot Density Gun DP - HMX

Charge Name: 39 gms. Barracuda DP – HMX (DSC 03-08-46)

Manufacturer Charge Part No.: TC47H — Date of Manufacture: Aug 16th 2003

Gun Type: High Shot Density Gun for WL or TCP

Phasing Tested: 90 degrees, Firing Order: X Top Down, ____ Bottom Up

Debris Description: N/A

Remarks: * Gun OD After firing in liquid 4.40"

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: 4 Shots/ft

Recommended Minimum ID for Running: * in.

Available Firing Mode: ____ Selective, ____ Simultaneous

Debris Weight: N/A gm/charge, Debris: N/A in^3/charge

SECTION 1 - CONCRETE TARGET

Casing Data: 5 ½" OD, Weight: 17 lb/ft, L-80 API Grade, Date of Section 1 Test: Sept 22nd 2003

Target Data: 110" OD, Amount of Cement: 7125 lb., Amount of Sand: 14250 lb., Amount of Water: 3705 lb.

Date of Compressive Strength Test: Sept 23rd 2003, Briquette Compressive Strength: **6881** psi, Age of Target: 30 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	0.405	0.892	0.405	0.000	0.405	0.892	0.405	0.000	0.405	0.892
Casing Hole Diameter, Short Axis, in.	0.493	0.524	0.552	0.448	0.504	0.546	0.465	0.474	0.507	0.526	0.482
Casing Hole Diameter, Long Axis, in.	0.515	0.537	0.558	0.477	0.512	0.551	0.483	0.481	0.571	0.532	0.510
Average Casing Hole Diameter, in.	0.504	0.531	0.555	0.463	0.508	0.549	0.474	0.478	0.539	0.529	0.496
Total Depth, in.	47.054	46.304	51.304	48.429	42.304	47.554	48.054	45.304	38.804	47.304	46.804
Burr Height, in.	0.056	0.044	0.023	0.071	0.035	0.053	0.060	0.017	0.048	0.059	0.033

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.	0.405	0.000										0.393
Casing Hole Diameter, Short Axis, in.	0.489	0.556										0.505
Casing Hole Diameter, Long Axis, in.	0.528	0.560										0.524
Average Casing Hole Diameter, in.	0.509	0.558										**0.551**
Total Depth, in.	47.804	44.804										**46.294**
Burr Height, in.	0.061	0.025										0.045

WITNESSING INFORMATION

Date of Notice of Intent to Test: July 25th 2003 — 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 ____ RECERTIFIED	E.T.W.S.A. DARIO E. ATTANZIO GERENTE PROYECTO Y SISTEMAS PERFORATING PROJECTO MANAGER (Company Official)	Perforating Projects Manager (Title)	Sept 24th 2003 (Date)	Explosivos Tecnologicos Argentinos S.A. (Company)	Ruta 25Km.13 Pilar- Bs.As. Argentina (Address)

API Form 19R-A

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: Available to all service companies. Manufactured by ETASA
Explosive weight: 39 gm, HMX powder, Case Material: STEEL
Gun OD & Trade Name: 4" DP HMX ExTrA! 4 SPF 90°
Max Temp, °F: 400°F 1 hr 3 hr 24 hr 100 hr 200 hr
Charge Name: 39 grams HMX DP ExTrA!
Maximum Pressure Rating: 20000 psi, Carrier Material: STEEL
Manufacturer Charge Part No.: TC47H ExTrA! Date of Manufacture:
Shot Density Tested: 4 Shots/ft:
Gun Type: High Shot Density Gun.
Recommended Minimum ID for Running: in.
Phasing Tested: 90° degrees, Firing Order: Top down X Bottom up
Available Firing Mode: Selective X Simultaneous
Debris Description: Cases and loading tube debris keeps inside the gun
Debris Weight: N/A gm/charge, Debris: N/A in³/charge

Remarks/Exceptions per Section 1.11:

Casing Data: 5 1/2" OD, Weight: 17 lb/ft, API Grade: L-80 Date of Section 1 Test: 03 / 15 / 2010
Target Data: 150" OD, Amount of Cement: 31800 lb, Amount of Sand: 63600 lb, Amount of Water: 16520 lb.
Date of Compressive Strength Test: 03 / 16 / 2010 Briquette Compressive Strength: 6175 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.	0.000	0.405	0.892	0.405	0.000	0.405	0.892	0.405	0.000	0.405	0.892
Casing Hole Diameter, Short Axis, in	0.450	0.420	0.390	0.460	0.530	0.490	0.420	0.460	0.530	0.510	0.420
Casing Hole Diameter, Long Axis, in	0.480	0.450	0.400	0.490	0.540	0.510	0.430	0.490	0.540	0.520	0.450
Average Casing Hole Diameter, in.	0.465	0.435	0.395	0.475	0.535	0.500	0.425	0.475	0.535	0.515	0.435
Total Depth, in.	50.308	54.308	62.308	58.308	47.808	56.808	61.308	56.308	49.308	57.808	60.308
Burr Height, in.	0.055	0.047	0.027	0.076	0.080	0.058	0.035	0.068	0.059	0.065	0.022

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.	0.405											XXXXX
Casing Hole Diameter, Short Axis, in	0.430											0.459
Casing Hole Diameter, Long Axis, in	0.440											0.478
Average Casing Hole Diameter, in.	0.435											0.469
Total Depth, in.	58.308											56.100
Burr Height, in.	0.040											0.053

Remarks:

Manufacturer's Certification

Type of Certification: Self Jorge Smirnoff API W 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 described.

X CERTIFIED BY	Gabriel O. Scipioni	Explosives Plant Manager		ETASA	Ruta 25 Km 13- Villa Rosa - Buenos Aires - Argentina
RECERTIFIED	(Company Official)	(Title)	(Date)	(Company)	(Address)

Name of test as it should appear on website: 4" High Shot Density Gun ExTrA! With TC47H ExTrA! 39grams HMX DP

Name of test as it appears on application and application date: 4" High Shot Density Gun ExTrA! With TC47H ExTrA! 39grams HMX DP

American Petroleum Institute

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

Service Company Available to SCHLUMBERGER Design Number ______

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

Charge Name 4621 PowerFlow, RDX (DSC 05-01-58)

Manufacturer Charge Part No. P447540 Date of Manufacture January 28th 2005

Gun Type TCP & Wireline Hollow Carrier, Non Reusable

Phasing Tested 120/60 degrees, Firing Order X Top Down, ____ Bottom Up

Debris Description N/A

Explosive Weight 19.4 gm, RDX powder, Case Material Steel

Max. Temp, °F 330 1 hr 305 3 hr 260 24 hr 230 100 hr ____ 200 hr

Maximum Pressure Rating 15.000 psi, Carrier Material Steel

Shot Density Tested 21 Shots/ft

Recommended Minimum ID for Running * in.

Available Firing Mode ______ Selective, ______ Simultaneous

Debris Weight N/A gm/charge, Debris N/A in^3/charge

Remarks * Gun OD after shooting in liquid is 4.82In.

SECTION 1 - CONCRETE TARGET

Casing Data 7" OD, Weight 32 lb/ft, L-80 API Grade, Date of Section 1 Test March 21st 2005

Target Data 43.75" OD, Amount of Cement 1350 lb., Amount of Sand 2700 lb., Amount of Water 700 lb.

Date of Compressive Strength Test March 21st 2005, Briquette Compressive Strength **7390** 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.	0.56	0.82	0.82	0.65	0.91	0.65	0.56	0.82	0.82	0.65	0.91
Casing Hole Diameter, Short Axis, in.	0.76	0.83	0.70	0.80	0.73	0.80	0.73	0.82	0.76	0.76	0.72
Casing Hole Diameter, Long Axis, in.	0.82	0.85	0.79	0.83	0.80	0.85	0.77	0.82	0.82	0.78	0.79
Average Casing Hole Diameter, in.	0.790	0.840	0.745	0.815	0.765	0.825	0.750	0.820	0.790	0.770	0.755
Total Depth, in.	6.703	7.203	7.703	7.453	6.578	5.703	7.578	7.953	6.578	6.703	8.203
Burr Height, in.	0.087	0.090	0.059	0.082	0.045	0.063	0.050	0.078	0.086	0.072	0.082

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.	0.65	0.56	0.82	0.82	0.65	0.91	0.65	0.56	0.82	0.82		0.735
Casing Hole Diameter, Short Axis, in.	0.80	0.74	0.85	0.81	0.77	0.75	0.80	0.75	0.80	0.74		0.772
Casing Hole Diameter, Long Axis, in.	0.82	0.80	0.88	0.85	0.83	0.80	0.8[illegible]	0.82	0.80	0.81		0.819
Average Casing Hole Diameter, in.	0.810	0.770	0.865	0.830	0.800	0.775	0.830	0.785	0.800	0.775		0.795
Total Depth, in.	5.453	6.953	6.453	5.953	6.328	6.703	6.453	7.203	7.328	7.203		6.876
Burr Height, in.	0.091	0.078	0.075	0.088	0.069	0.058	0.081	0.066	0.081	0.068		0.074

WITNESSING INFORMATION

Date of Notice of Intent to Test: February 18th 2005 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 ____ (Official) | Perforating Projects Manager (Title) | March 21st 2005 (Date) | Explosivos Tecnológicos Argentinos S.A. (Company) | Ruta 25Km.13 Pilar- Bs.As. Argentina (Address)

____ RECERTIFIED

E.T.A. S.A. DARIO E. [illegible]ANZIO GERENTE [illegible] Y SISTEMAS PERFORATING PROJECTS MANAGER

RECEIVED MAR 23 2005

API Form 19R-A

American Petroleum Institute

API Perforator Design Registration

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

Service Company Available to SCHLUMBERGER Design Number

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

Charge Name 4621 PowerFlow, HMX (DSC 04-10-56)

Manufacturer Charge Part No. P447541 Date of Manufacture October 28th 2004

Gun Type TCP & Wireline Hollow Crrier, Non Reusable

Phasing Tested 120/60 degrees, Firing Order X Top Down, Bottom Up

Debris Description N/A

Explosive Weight 19.4 gm, HMX powder, Case Material Steel

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

Maximum Pressure Rating 15.000 psi, Carrier Material Steel

Shot Density Tested 21 Shots/ft

Recommended Minimum ID for Running * in.

Available Firing Mode Selective, Simultaneous

Debris Weight N/A gm/charge, Debris N/A in^3/charge

Remarks * Gun OD after shooting in liquid is 4.82In.

SECTION 1 - CONCRETE TARGET

Casing Data 7" OD, Weight 32 lb/ft, L-80 API Grade, Date of Section 1 Test December 20th 2004

Target Data 40" OD, Amount of Cement 1350 lb., Amount of Sand 2700 lb., Amount of Water 700 lb.

Date of Compressive Strength Test December 21st 2004, Briquette Compressive Strength **5607** 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.	0.56	0.82	0.82	0.65	0.91	0.65	0.56	0.82	0.82	0.65	0.91
Casing Hole Diameter, Short Axis, in.	0.81	0.73	0.79	0.78	0.79	0.74	0.81	0.83	0.71	0.79	0.78
Casing Hole Diameter, Long Axis, in.	0.83	0.75	0.81	0.81	0.82	0.74	0.82	0.84	0.72	0.83	0.85
Average Casing Hole Diameter, in.	0.820	0.740	0.800	0.795	0.805	0.740	0.815	0.835	0.715	0.810	0.815
Total Depth, in.	7.203	6.203	6.453	5.953	6.203	7.453	6.453	5.453	5.953	5.703	5.703
Burr Height, in.	0.062	0.079	0.095	0.089	0.092	0.091	0.068	0.054	0.061	0.093	0.055

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.	0.65	0.56	0.82	0.82	0.65	0.91	0.65	0.56	0.82	0.82		0.735
Casing Hole Diameter, Short Axis, in.	0.83	0.74	0.72	0.74	0.73	0.79	0.78	0.69	0.78	0.79		0.769
Casing Hole Diameter, Long Axis, in.	0.85	0.74	0.74	0.75	0.77	0.85	0.80	0.74	0.79	0.80		0.793
Average Casing Hole Diameter, in.	0.840	0.740	0.730	0.745	0.750	0.820	0.790	0.715	0.785	0.795		0.781
Total Depth, in.	5.953	6.453	4.953	5.703	5.703	6.203	5.953	4.953	5.703	5.953		6.013
Burr Height, in.	0.076	0.063	0.090	0.077	0.094	0.095	0.063	0.080	0.094	0.073		0.078

WITNESSING INFORMATION

Date of Notice of Intent to Test: November 15th 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 ____ RECERTIFIED	E.T.A. S.A. DARIO E. LATTANZIO GERENTE PRODUCTO Y SISTEMAS PERFORATING PROJECTS MANAGER	Perforating Projects Manager	Dec 21st 2004	Explosivos Tecnologicos Argentinos S.A.	Ruta 25Km.13 Pilar- Bs.As. Argentina
	(Company Official)	(Title)	(Date)	(Company)	(Address)

API Form 19R-A

American Petroleum Institute

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, HMX

Charge Name 4 5/8" Universal DP 22.7 gms. HMX (DSC 03-02-17)

Manufacturer Charge Part No. TC26H Date of Manufacture Feb 05th 2003

Gun Type High Shot Density Gun 12 SPF 135° WL/TCP

Phasing Tested 135 degrees, Firing Order X Top Down, ____ Bottom Up

Debris Description N/A

Explosive Weight 22.7 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 12 Shots/ft

Recommended Minimum ID for Running * in.

Available Firing Mode ____ Selective, ____ Simultaneous

Debris Weight N/A gm/charge, Debris N/A in^3/charge

Remarks * Gun OD After shooting in Liquid 4.98In., in air 5.19In.

SECTION 1 - CONCRETE TARGET

Casing Data 7" OD, Weight 32 lb/ft, L-80 API Grade, Date of Section 1 Test March 11th 2003

Target Data 70" OD, Amount of Cement 4625 lb., Amount of Sand 9250 lb., Amount of Water 2405 lb.

Date of Compressive Strength Test March 11th 2003, Briquette Compressive Strength 5654 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.	0.00	1.314	0.694	0.182	1.602	0.182	0.694	1.314	0.00	1.314	0.694
Casing Hole Diameter, Short Axis, in.	0.290	0.320	0.294	0.301	0.326	0.298	0.314	0.330	0.310	0.334	0.313
Casing Hole Diameter, Long Axis, in.	0.315	0.363	0.320	0.311	0.342	0.330	0.341	0.341	0.347	0.347	0.325
Average Casing Hole Diameter, in.	0.303	0.342	0.307	0.306	0.334	0.314	0.328	0.336	0.329	0.341	0.319
Total Depth, in.	27.454	26.704	26.454	27.954	25.954	28.954	28.454	28.704	24.954	26.704	25.454
Burr Height, in.	0.063	0.050	0.028	0.061	0.062	0.051	0.039	0.034	0.065	0.019	0.051

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.	0.182	1.602	0.182	0.694	1.314	0.00	1.314	0.694	0.182	1.602	0.182	0.724
Casing Hole Diameter, Short Axis, in.	0.307	0.339	0.300	0.290	0.331	0.278	0.317	0.322	0.294	0.306	0.308	0.310
Casing Hole Diameter, Long Axis, in.	0.337	0.355	0.304	0.340	0.359	0.315	0.328	0.330	0.310	0.313	0.310	0.331
Average Casing Hole Diameter, in.	0.322	0.347	0.302	0.315	0.345	0.297	0.323	0.326	0.302	0.310	0.309	**0.321**
Total Depth, in.	28.204	24.954	26.704	27.954	30.954	27.954	29.954	26.954	28.954	24.454	26.204	**27.318**
Burr Height, in.	0.030	0.044	0.045	0.070	0.067	0.034	0.062	0.060	0.036	0.039	0.030	0.047

WITNESSING INFORMATION

Date of Notice of Intent to Test: Jan 03rd 2003 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 ____ RECERTIFIED	DARIO [illegible]	Perforating Projects Manager (Title)	03/12/2003 (Date)	Explosivos Tecnológicos Argentinos S.A. (Company)	Ruta 25Km.13 Pilar- Bs.As. Argentina (Address)

E.T.A.S.S.A.

API Form 19R-A

American Petroleum Institute

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, HMX, BH

Charge Name 4 5/8" Universal BH 22.7 gms. HMX (DSC 03-02-20)

Manufacturer Charge Part No. TC38H Date of Manufacture Feb 07th 2003

Gun Type High Shot Density Gun 12 SPF 135° WL/TCP

Phasing Tested 135 degrees, Firing Order X Top Down, ____ Bottom Up

Debris Description N/A

Explosive Weight 22.7 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 12 Shots/ft

Recommended Minimum ID for Running * in.

Available Firing Mode ____ Selective, ____ Simultaneous

Debris Weight N/A gm/charge, Debris N/A in^3/charge

Remarks * Gun OD After shooting in Liquid 4.93In., in air 5.20In.

SECTION 1 - CONCRETE TARGET

Casing Data 7" OD, Weight 32 lb/ft, L-80 API Grade, Date of Section 1 Test March 11th 2003

Target Data 35" OD, Amount of Cement 1155 lb., Amount of Sand 2310 lb., Amount of Water 600 lb.

Date of Compressive Strength Test March 11th 2003, Briquette Compressive Strength 5843 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.	0.00	1.314	0.694	0.182	1.602	0.182	0.694	1.314	0.00	1.314	0.694
Casing Hole Diameter, Short Axis, in.	0.840	0.870	0.930	0.860	0.880	0.830	0.800	0.860	0.850	0.900	0.910
Casing Hole Diameter, Long Axis, in.	0.890	0.970	0.930	0.920	0.920	0.870	0.860	0.970	0.960	0.920	0.960
Average Casing Hole Diameter, in.	0.865	0.920	0.930	0.890	0.900	0.850	0.830	0.915	0.905	0.910	0.935
Total Depth, in.	6.433	7.433	6.933	7.183	6.183	6.433	6.683	6.933	7.683	6.183	6.683
Burr Height, in.	0.076	0.059	0.084	0.107	0.094	0.077	0.063	0.105	0.105	0.072	0.063

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.	0.182	1.602	0.182	0.694	1.314	0.00	1.314	0.694	0.182	1.602	0.182	0.724
Casing Hole Diameter, Short Axis, in.	0.830	0.850	0.850	0.850	0.920	0.860	0.910	0.880	0.870	0.840	0.890	0.867
Casing Hole Diameter, Long Axis, in.	0.890	0.880	0.930	0.920	0.930	0.930	0.920	0.930	0.870	0.960	0.940	0.921
Average Casing Hole Diameter, in.	0.860	0.865	0.890	0.885	0.925	0.895	0.915	0.905	0.870	0.900	0.915	**0.894**
Total Depth, in.	7.433	6.433	7.683	7.183	6.933	LOST	8.183	6.933	7.433	6.433	7.433	6.993
Burr Height, in.	0.084	0.094	0.093	0.097	0.096	0.107	0.090	0.055	0.106	0.088	0.102	0.087

WITNESSING INFORMATION

Date of Notice of Intent to Test: Jan 03rd 2003 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 / ____ RECERTIFIED	E.T.A. S.A. DARIO E. LATTANZIO GERENTE PRODUCTO Y SISTEMAS PERFORATING PROJECTS MANAGER (Company Official)	Perforating Projects Manager (Title)	03/12/2003 (Date)	Explosivos Tecnológicos Argentinos S.A. (Company)	Ruta 25Km.13 Pilar- Bs.As. Argentina (Address)

API Form 19R-A

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

API Form 19R-A

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 DP HMX

Charge Name: 39gms HMX ExTrAl DP (DSC 07-03-53)

Manufacturer Charge Part No.: TC47H ExTrAl — Date of Manufacture: 03/26/07

Gun Type: High Shot Density Gun, 5 SPF 60°

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

Debris Description: N/A

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

Remarks: * Gun OD after shooting in liquid 4.89In.

SECTION 1 - CONCRETE TARGET

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

Target Data: 150" OD, Amount of Cement: 26.400 lb., Amount of Sand: 52.800 lb., Amount of Water: 13.728 lb.

Date of Compressive Strength Test: 05/02/07, Briquette Compressive Strength: 6.877 psi, Age of Target: 33 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.	0.510	0.430	0.430	0.450	0.440	0.490	0.480	0.440	0.480	0.490	0.480
Casing Hole Diameter, Long Axis, in.	0.540	0.470	0.440	0.470	0.450	0.510	0.490	0.450	0.490	0.520	0.510
Average Casing Hole Diameter, in.	0.525	0.450	0.435	0.460	0.445	0.500	0.485	0.445	0.485	0.505	0.495
Total Depth, in.	65.70	68.95	64.45	63.45	64.25	61.45	63.45	65.95	62.95	58.45	56.45
Burr Height, in.	0.077	0.065	0.081	0.065	0.090	0.055	0.046	0.085	0.072	0.066	0.079

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	1.469	1.034						
Casing Hole Diameter, Short Axis, in.	0.470	0.430	0.470	0.510	0.500	0.470						0.469
Casing Hole Diameter, Long Axis, in.	0.480	0.440	0.490	0.530	0.500	0.490						0.486
Average Casing Hole Diameter, in.	0.475	0.435	0.480	0.520	0.500	0.480						0.478
Total Depth, in.	60.45	62.45	60.95	59.45	63.45	61.95						**62.63**
Burr Height, in.	0.085	0.057	0.084	0.091	0.054	0.080						0.072

WITNESSING INFORMATION

Date of Notice of Intent to Test: March 14th 2007 — 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 ____ RECERTIFIED	E.T.A. S.A. DARIO E. CATANCHO GERENTE PRODUCTO Y SISTEMAS PERFORATING PROJECTS MANAGER	Perforating Projects Manager	05/03/07	Explosivos Tecnologicos Argentinos S.A.	Ruta 25Km.13 Pilar- Bs.As. Argentina
	(Official)	(Title)	(Date)	(Company)	(Address)

API Form 19R-A

American Petroleum Institute

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

Service Company: Available to all — Design Number:

Gun OD & Trade Name: 7" High Shot Density Gun DP HMX

Charge Name: 39gms HMX Barracuda DP (DSC 06-02-35)

Manufacturer Charge Part No.: TC47HP — Date of Manufacture: Feb 21st 2006

Gun Type: High Shot Density Gun, 12 SPF 135°

Phasing Tested: 135° degrees, Firing Order: X Top Down, ____ Bottom Up

Debris Description: N/A

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: 13.000 psi, Carrier Material: Steel

Shot Density Tested: 12 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

Remarks: * Gun OD after shooting in liquid 7.15In.

SECTION 1 - CONCRETE TARGET

Casing Data: 9 5/8" OD, Weight: 47 lb/ft, L-80 API Grade, Date of Section 1 Test: June 05th 2006

Target Data: 110" OD, Amount of Cement: 14040 lb., Amount of Sand: 28080 lb., Amount of Water: 7300 lb.

Date of Compressive Strength Test: June 06th 2006, Briquette Compressive Strength: **6883** 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	1.394	0.758	0.205	1.681	0.205	0.758	1.394	0.000	1.394	0.758
Casing Hole Diameter, Short Axis, in.	0.460	0.440	0.440	0.450	0.440	0.440	0.450	0.450	0.430	0.450	0.460
Casing Hole Diameter, Long Axis, in.	0.460	0.450	0.450	0.450	0.480	0.450	0.470	0.480	0.440	0.480	0.470
Average Casing Hole Diameter, in.	0.460	0.445	0.445	0.450	0.460	0.445	0.460	0.465	0.435	0.465	0.465
Total Depth, in.	46.220	49.470	44.970	43.470	47.970	46.470	50.470	45.470	46.470	45.470	48.470
Burr Height, in.	0.065	0.043	0.044	0.036	0.043	0.053	0.051	0.033	0.023	0.051	0.037

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.	0.205	1.681	0.205	0.758	1.394	0.000	1.394	0.758	0.205	1.681		0.801
Casing Hole Diameter, Short Axis, in.	0.480	0.450	0.400	0.420	0.430	0.460	0.470	0.440	0.450	0.460		0.446
Casing Hole Diameter, Long Axis, in.	0.480	0.470	0.430	0.430	0.440	0.480	0.470	0.460	0.480	0.460		0.461
Average Casing Hole Diameter, in.	0.480	0.460	0.415	0.425	0.435	0.470	0.470	0.450	0.465	0.460		**0.454**
Total Depth, in.	46.220	47.720	45.470	49.720	43.470	47.220	47.470	43.970	48.470	44.470		**46.672**
Burr Height, in.	0.039	0.067	0.032	0.060	0.052	0.038	0.035	0.020	0.042	0.051		0.044

WITNESSING INFORMATION

Date of Notice of Intent to Test: May 2nd 2006 — 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	(Company Official)	Perforating Projects Manager (Title)	June 08th 2006 (Date)	Explosivos Tecnologicos Argentinos S.A. (Company)	Ruta 25Km.13 Pilar- Bs.As. Argentina (Address)
____ RECERTIFIED					

API Form 19R-A

American Petroleum Institute

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

Service Company: Available to all — Design Number:

Gun OD & Trade Name: 7" High Shot Density Gun BH HMX

Charge Name: 39gms HMX BH Universal (DSC 06-02-50)

Manufacturer Charge Part No.: TC50HBH — Date of Manufacture: Feb 28th 2006

Gun Type: High Shot Density Gun, 12 SPF 135°

Phasing Tested: 135° degrees, Firing Order: X Top Down, ____ Bottom Up

Debris Description: N/A

Explosive Weight: 39 gm, HMX powder, Case Material: Zamac

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

Maximum Pressure Rating: 13,000 psi, Carrier Material: Steel

Shot Density Tested: 12 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

Remarks: * Gun OD after shooting in liquid 7.15In.

SECTION 1 - CONCRETE TARGET

Casing Data: 9 5/8" OD, Weight: 47 lb/ft, L-80 API Grade, Date of Section 1 Test: June 06th 2006

Target Data: 50" OD, Amount of Cement: 2900 lb., Amount of Sand: 5800 lb., Amount of Water: 1500 lb.

Date of Compressive Strength Test: June 06th 2006, Briquette Compressive Strength: 7187 psi, Age of Target: 36 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.	0.375	1.179	0.860	0.520	1.306	0.520	0.860	1.179	0.375	1.179	0.860	
Casing Hole Diameter, Short Axis, in.	0.890	0.990	0.980	0.940	1.100	0.960	0.980	1.120	0.900	1.050	0.990	
Casing Hole Diameter, Long Axis, in.	0.950	1.050	1.000	0.980	1.200	0.990	1.000	1.130	0.940	1.100	1.040	
Average Casing Hole Diameter, in.	0.920	1.020	0.990	0.960	1.150	0.975	0.990	1.125	0.920	1.075	1.015	
Total Depth, in.	5.470	6.470	6.720	6.470	6.220	6.720	7.470	6.720	6.220	6.970	5.470	
Burr Height, in.	0.050	0.045	0.050	0.035	0.070	0.023	0.041	0.055	0.054	0.032	0.050	

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.	0.520	1.306	0.520	0.860	1.179	0.375	1.179	0.860	0.520			0.827
Casing Hole Diameter, Short Axis, in.	0.960	1.150	0.970	0.990	1.100	0.960	0.980	1.000	0.990			1.000
Casing Hole Diameter, Long Axis, in.	0.990	1.170	1.020	1.050	1.120	0.980	0.990	1.120	1.200			1.051
Average Casing Hole Diameter, in.	0.975	1.160	0.995	1.020	1.110	0.970	0.985	1.060	1.095			**1.026**
Total Depth, in.	6.220	5.720	5.470	6.970	7.220	5.970	5.220	5.470	6.220			**6.270**
Burr Height, in.	0.043	0.060	0.065	0.042	0.040	0.055	0.045	0.051	0.049			0.048

WITNESSING INFORMATION

Date of Notice of Intent to Test: May 2nd 2006 — 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	(Company Official)	Perforating Projects Manager (Title)	June 08th 2006 (Date)	Explosivos Tecnologicos Argentinos S.A. (Company)	Ruta 25Km.13 Pilar- Bs.As. Argentina (Address)
____ RECERTIFIED					

API Form 19R-A

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: Available to all service companies. Manufactured by ETASA

Gun OD & Trade Name: 7" DP HMX ExTrA! 12 SPF 135°

Charge Name: 39 grams HMX DP ExTrA!

Manufacturer Charge Part No.: TC47H ExTrA! Date of Manufacture:

Gun Type: High Shot Density Gun.

Phasing Tested: 135° degrees, Firing Order: ___ Top down X ___ Bottom up

Debris Description: Cases and loading tube debris keeps inside the gun

Explosive weight: 39 gm, HMX powder, Case Material: STEEL

Max Temp, °F: 400°F 1 hr ___ 3 hr ___ 24 hr ___ 100 hr ___ 200 hr

Maximum Pressure Rating: 13000 psi, Carrier Material: STEEL

Shot Density Tested: 12 Shots/ft:

Recommended Minimum ID for Running: ___ in.

Available Firing Mode: ___ Selective X Simultaneous

Debris Weight: N/A gm/charge, Debris: N/A in³/charge

Remarks/Exceptions per Section 1.11:

Casing Data: 9 5/8" OD, Weight: 47 lb/ft, API Grade: L-80 Date of Section 1 Test: 03 /15 /2010

Target Data: 150" OD, Amount of Cement: 31800 lb, Amount of Sand: 63600 lb, Amount of Water: 16520 lb.

Date of Compressive Strength Test: 03 / 16 / 2010 Briquette Compressive Strength: 6210 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.	0.000	1.394	0.758	0.205	1.681	0.205	0.758	1.394	0.000	1.394	0.758
Casing Hole Diameter, Short Axis, in	0.370	0.430	0.400	0.380	0.480	0.420	0.410	0.420	0.370	0.430	0.400
Casing Hole Diameter, Long Axis, in	0.420	0.440	0.450	0.400	0.520	0.450	0.430	0.430	0.430	0.460	0.410
Average Casing Hole Diameter, in.	0.395	0.435	0.425	0.390	0.500	0.435	0.420	0.425	0.400	0.445	0.405
Total Depth, in.	45.470	57.470	59.470	54.470	55.970	55.470	56.470	58.470	50.470	56.470	57.470
Burr Height, in.	0.056	0.019	0.059	0.031	0.034	0.038	0.030	0.055	0.057	0.021	0.049

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.	0.205	1.681	0.205	0.758	1.394	0.000	1.394	0.758				XXXXXX
Casing Hole Diameter, Short Axis, in	0.390	0.490	0.420	0.420	0.400	0.390	0.460	0.380				0.414
Casing Hole Diameter, Long Axis, in	0.420	0.520	0.430	0.440	0.420	0.450	0.480	0.430				0.444
Average Casing Hole Diameter, in.	0.405	0.505	0.425	0.430	0.410	0.420	0.470	0.405				0.429
Total Depth, in.	48.470	53.470	57.470	62.470	61.470	52.470	55.970	56.470				55.575
Burr Height, in.	0.056	0.065	0.041	0.025	0.048	0.068	0.042	0.065				0.045

Remarks:

Manufacturer's Certification

Type of Certification: ___ Self Jorge Smirnoff API W 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 described.

X CERTIFIED BY	Gabriel O. Scipioni	Explosives Plant Manager		ETASA	Ruta 25 Km 13- Villa Rosa - Buenos Aires - Argentina
___ RECERTIFIED	(Company Official)	(Title)	(Date)	(Company)	(Address)

Name of test as it should appear on website: 7" High Shot Density Gun ExTrA! With TC47H ExTrA! 39grams HMX DP

Name of test as it appears on application and application date: 7" High Shot Density Gun ExTrA! With TC47H ExTrA! 39grams HMX DP