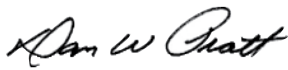


OWEN TECHNOLOGY INSIDER

A Publication of the Owen Oil Tools Engineering Department

From The Desk Of



Dan W. Pratt
Vice President

Engineering & Explosives Technology
Owen Oil Tools



In this issue of the OWEN Technology Insider, I would like to dedicate my article to the memory of the founder of our company, Harrold D. Owen. Harrold passed away on January 22nd 2008, just two days after his 84th birthday. To all who knew him, and to the industry to which he devoted most of his life, he will be sorely missed. Harrold was known by many as a taskmaster, however one with a heart of gold. He expected the best of everyone around him, but he expected and exemplified the same of himself. Harrold was a mentor to many over the years; he was certainly mine, and the single most influential individual in my career.

Harrold was born in Fort Worth, Texas on January 20th, 1924 and joined the Army Air Corp at the age of 17. He flew P-38 fighters in the Pacific conflict during World War II, logging 5 enemy kills. Harrold began his career in the petroleum industry after returning from the War and graduating from Texas Christian University in 1951. His first employment was with Welex, where he was Chief Design Engineer for Well Explosives. It was while at Welex that Harrold helped prove the “jet effect” of the shaped charge and it’s effectiveness in penetrating casing, cement and

formation. Being the entrepreneur he was, Harrold, along with a colleague Marvin Gearhart, left Welex and started a fledgling company, Gearhart-Owen in 1955.

Gearhart-Owen Industries, Inc., otherwise known as the “Go Company”, developed downhole logging tools and explosives / perforating products. During this high point in the petroleum industry, Gearhart-Owen became the world’s third largest oil-field service company, behind Schlumberger and Welex. In 1978 Harrold and Marvin went their separate ways and after a 5-year stint as CEO and Chairman of PENGU Industries, Harrold started the company that still bears his name – Owen Oil Tools.

Owen Oil Tools LP (originally Owen Oil Tools, Inc) was founded in 1983 on a shoestring, and will be celebrating its 25th anniversary later this year. Charge manufacture at the Godley facility began in early 1984 with an order of 20,000, 2-1/8” Bi-Wire charges, for a foreign customer. There was no guarantee of further orders, but Harrold’s never-say-die attitude, and reputation for customer service, kept the doors open and sales continued. During these early years, hardware and gun manufacture were performed at the facilities in Fort Worth, while all explosives continued to be manufactured in Godley, affectionately known as “The Ranch”. Owen Oil Tools managed to make it through both adversity and the eighties

because Harrold was determined to keep the doors open. The company flourished and by the mid 1990’s Owen Oil Tools had strongly established itself as one of the leading suppliers of explosives products to the oil and gas industry. Manufacturing consisted of shaped charges and associated guns and hardware, pipe recovery, initiation devices, bridge plugs, power charges and setting tools, and other products using “energetic” materials. Most of these are still manufactured in some form today.

During his career Harrold designed innumerable products used by service companies around the world. Harrold was the inventor on numerous patents, including the Swing-Jet™ from 1958, and the Spiral Shogun Perforating

Continued on page 2

On The Inside:

<i>Meet The Staff.....</i>	<i>2</i>
<i>Gravity Oriented Gun System .</i>	<i>2</i>
<i>What If?.....</i>	<i>3</i>
<i>Safe Ignition System</i>	
<i>For Exposed Operations.....</i>	<i>3</i>
<i>3.125” Compact Setting Tool .</i>	<i>3</i>
<i>Shaped Charges.....</i>	<i>4</i>
<i>Smaller Packaging</i>	
<i>For Circulators.....</i>	<i>5</i>
<i>Tie Down Subs.....</i>	<i>5</i>

Meet The Staff

Gravity Oriented Gun System



Glenda Walker

Internal Customer Support

Glenda was born in Hillsboro, Texas and was raised in the Fort Worth, Texas area. She and her family have a long history with Owen. Her son, who is a fireman now, worked here for over 9 years, her husband worked for Owen for 19 years and her daughter has worked at Owen for over 20 years.

Glenda started working for Owen in 1990 in Liner Manufacturing. In 1994 she moved into Quality Control, while still working with liners. Four years later, Glenda moved to the Engineering Department and currently works in the Internal Customer Support Group as an Engineering Aide.

Glenda's hobbies include; singing and participating at her church, camping and spending time with her children and grandchildren.



Bob Ford

Innovative Development Group

Bob was born in Mineral Wells, Texas and was raised in Milsap, Texas. He moved to the DFW area in 1969, is married and has three daughters. In 1976 Bob began working for Gearhart - Owen as a Draftsman. In 1980 he went to Pengo and also worked as a Draftsman. Then in 1983 Bob came back to Owen and worked both as a Draftsman and in Purchasing. In 1992 he was promoted to Chief Engineer and Product Line Manager of wireline products. In 2003 when the Engineering Department expanded and diversified, Bob became a Senior Technologist, working mainly on gun systems and design modifications for specific customer needs. Bob's hobbies include photography and spending time with his grandchildren.



Chris Montanez

Explosives Technology Group

Chris was born and raised in Joshua, Texas. He is married and has 3 children. Before coming to Owen, Chris worked for Goex in charge production and testing. Chris started working for Owen in 1985 as a Technician/Production Specialist. In 1988 he was promoted to Lead Person. In the early 90's, he became the Charge Manufacturing Supervisor and in the mid-90's was promoted to Production Manager. In 1998, Chris moved to the Engineering department as a Ballistic Technologist, and is highly involved in charge design and testing. Chris's hobbies include fishing, gardening, hunting and living the good life.

The development of a Gravity Oriented Gun System is currently underway and will be field tested in the late of 2008. This new 3.375" gun system contains an internal orienting charge tube with eccentric weight. The eccentric weight is connected to the charge tube and provides a method to orient the charge tube via gravity. The charge tube is centralized inside the gun carrier and uses roller bearings, as well as thrust bearings, to provide free rotation of the charge tube and eccentric weight assembly. The eccentric weight may be oriented to the charge tube to provide the direction of perforation desired. Furthermore, orienting marks provide the operator the ability to accurately set the direction of the charge tube (and subsequent perforations) in relation to the eccentric weight. This gun system utilizes an unscalped carrier and is assembled like a standard Owen Oil Tools gun system utilizing existing gun subs in conjunction with standard Tandem Booster Kits.

This system is an improvement over the standard orientation method using gun swivels between perforating guns in combination with gun fins. Standard swivel and gun fin systems cannot be easily adjusted and require welded fins that may be damaged when tripping in hole. Furthermore, gun fins require clearance from the casing and do not provide accurate orientation of the gun system. The new Gravity Oriented Gun System provides accurate orientation of the gun to the fracture plane and may be adjusted as needed prior to gun deployment.

This ability to orient the perforations to the fracture planes allows operators to optimize the perforating process to maximize fracture depths and thereby reduce fracturing pressures. Although this Gravity Oriented Gun System was originally developed for Barnett Shale applications, it is suitable for a variety of applications. For further information, contact your local Owen Oil Tools Representative.

- Tim LaGrange P.E.

Manager - Innovative Development Group

Continued from page 1

System™ which was issued in 1997. Harrold also served for over 25 years as a representative on the API's Subcommittee on Perforating. Harrold received many honors and accolades during his 50 plus years in the oil and gas industry. However probably none surpassed his inclusion in Hart Publications the 100 Most Influential People of the Petroleum Century which was published in 2000.

Harrold sold Owen Oil Tools to Core Laboratories in June of 1998. Although not owner or employee, he still remained active in the company for several years, continuing to re-engineer existing products and design new ones. Due to health problems Harrold was forced to retire, but this did not stop "the man" and he continued to sprout new ideas right up to the time of his death.

To those who had the honor of knowing Harrold Owen, he was indeed a great man and one you were proud to work with and for. For those that did not have this opportunity his legacy lives on, in the Company that stands today, Owen Oil Tools.

What If?

Have you ever wondered what would happen if an oilfield explosive device were to detonate on the surface? Simply put, the results would be catastrophic.

All of us in the business of engineering and manufacturing explosive devices for use in the oil industry, along with those who deploy the devices at the well site, are well aware of the inherent danger of these products. Attention to detail and strict adherence to established procedures is critical to preventing accidental surface detonations.

Although accidents with explosive devices in our industry are relatively rare, they do happen. It is believed that on average there are about five accidents per year, most of which result in loss of life or at the very least, extremely serious injury and damage to equipment and facilities.

Even though the majority of the individuals who handle explosives in our industry are aware of the danger, many have not actually seen the results. In keeping with Owen Oil Tools' commitment to safety, both in-house and with our valued customers, we have produced a short video titled simply, "What If?"

Trained professionals filmed this video at a remote location. It shows, in rather graphic fashion, surface detonations of the most popular oilfield explosive devices. There is little doubt after watching the video what the result of a surface detonation would be.

We believe that the use of this video and stressing the importance of procedures such as those outlined in API Recommended Practice 67 will be a powerful training aid for our customers. A distribution scheme for the video is currently under consideration and plans will be finalized very soon.

Congratulations go out to the Engineering Department for a job well done in producing this video, with special thanks to Chris Montanez and John Davis for their efforts at setting up the shots and pulling the trigger. It took a great deal of professionalism and experience to accomplish the task and Chris and John are among only a handful of people who could have pulled it off.

– Craig Beveridge
AES Product Line Manager,
Operational Safety & Well Solutions

Safe Ignition System For Exposed Operations

Owen has been providing Safe Fire Systems for the oil field, for shooting TAG and RTG Guns, Cutters and Setting Tools. For many years these systems use the PX-I Fireset and EBW Detonators, which add increased safety against rig-site hazards such as RF transmitters, cathodic protection, and stray voltages. These systems also allow normal oil field operations to continue while perforating and other completion services are being performed.

Owen now offers an enclosed system that adapts to exposed perforating guns, such as Shogun strips and Stim Tube Assemblies. By adapting the Ecosse Detonator Sealing Assembly in our hardware, the Fireset and Detonator remain protected while providing a safe fire detonation to Detonating Cord and Charges exposed to the well fluids and pressures.

This new system gives our customers a complete range of enclosed and exposed Safe Fire Ignition Systems to meet the safe requirements when needed on their job site.

– Bob Ford
Senior Technologist

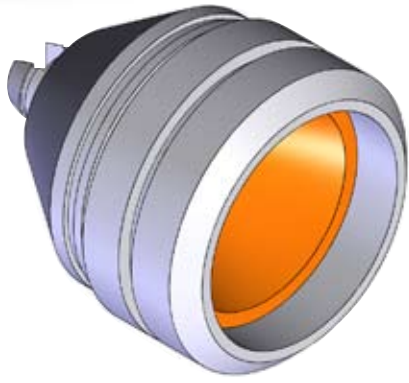
3.125" Compact Setting Tool

Owen Oil Tools' methodology of using its proven downhole tools along with continual development of new and improved ways to apply this technology has allowed for the growth of new designs. In order to meet the rigorous demands and ever changing needs of the oil industry, Owen Oil Tools has consistently met the challenge by developing downhole tools that allow for increased productivity and well optimization.

One such addition is the development of a 3.125" Compact Setting Tool. With the discovery and subsequent drilling of the Barnett Shale, horizontal well drilling technology has been utilized to tap resources that would otherwise be unattainable using traditional vertical wells. These horizontal wells come with greater challenges for completion and retrieval. If there were ever an issue in a well where a tool needed to be fished or jarred, a large diameter tool set in a horizontal well would be impossible to retrieve. Because there is no longer the ability to utilize gravity and weight to jar the tool, a smaller tool is being developed that will allow a fishing tool to retrieve the tool. The 3.125" Compact Setting Tool will be able to have the capability of a larger setting tool without the power loss associated with smaller sizes.

The size and functionality of the 3.125" Compact Setting Tool now gives the freedom of setting various tools downhole with great ease of use and retrieval ability. The setting tool will be field tested late 2008. For more information, please contact your local Owen Oil Tools representative.

– James Talavera
Mechanical Design Engineer



Shaped Charges

4-1/2" NT3 Super HERO™

The Shaped Charge Development Team at Owen Oil Tools strives to design charges that are compatible with a wide variety of gun systems. The SDP-4500-41 INT3, for example, was designed to fit in all of the existing gun systems, from 4" 4 shots per foot to 7" 18 shots per foot. As reported in the November 2007 issue, the Super Deep Penetrating 4-1/2" SUPER-HERO™ (SDP-4500-41 INT3) was shot in 4 1/2" gun for a witnessed API-19B Section I registered test, and came in at an industry leading 54.2" with a 0.40" entry hole. This represents a 16.8% increase in penetration when compared to our closest competitor. Due to the compatibility of this charge with other gun systems, Owen Engineering decided to have the charge tested in 7" and 4" guns in witnessed API-19B Section I tests. Also, to increase the performance of our second tier charge, the TAG-4500-311 was created to replace the TAG-5000-382. The new TAG-4500-311 uses the same advanced liner designs as the SDP-4500-41 INT3 SUPER-HERO™ to get as much performance out of the charge as possible.

The SDP-4500-41 INT3 SUPER-HERO™ was shot in a 7" gun at 12 shots per foot in a registered API-19B Section I test in November of 2007. The results were another industry leader for Owen, 51.3" penetration with a 0.39" entry hole. The performance represents an impressive 31% improvement in penetration from our

previous generation. When compared to our closest competitor, the SDP-4500-41 INT3 SUPER-HERO™ is more than 10% deeper.

In our most recent round of API-19B testing the 4-1/2" SUPER-HERO™ was also tested in a 4" 4 shots per foot gun in a registered API-19B Section I test in March of 2008. Again, the performance shattered existing records by penetrating 49.16" with a 0.43" entry hole. When the compressive strength of the target is used to normalize penetration, the total depth increases to 55.2".

with a 0.52" entry hole. This is a 12.4% increase in penetration and a 13% gain in entry hole. The 7" gun was also tested and penetration was 43.21" with a 0.53" entry hole. This makes the new charge 29.3% deeper in penetration and 33.3% larger in entry hole.

As promised in the November 2007 issue of the Owen Technology Insider, the Shaped Charge Development Team has delivered great advances in charge performance. The addition of the SDP-4500-41 INT3 SUPER-HERO™ and the TAG-4500-311 continues to show

NEW CHARGE P/N	Gun System	OLD CHARGE P/N
SDP-4500-41 INT3 SUPER-HERO™		SDP-5000-400 Raptor
54.2" / 0.40" *	4.5" 5 SPF	39.2" / 0.42" *
51.3" / 0.39" *	7" 12 SPF	39.17" / 0.43" *
49.16" / 0.43" *	4" 4 SPF	
TAG-4500-311		TAG-5000-382
43.21" / 0.53" **	4.5" 5 SPF	36.1" / 0.46" **
42.27" / 0.52" **	7" 12 SPF	37.61" / 0.46" **
40.18" / 0.58" **	4" 4 SPF	33.41" / 0.45" **
* API-19B Certified Target		** RP-43 Target

The TAG-4500-311 was developed to offer a Good Hole charge with very good penetration and have the same gun system compatibility as the 4-1/2" SUPER-HERO™. This charge replaces the TAG-5000-382. In API-RP43 gun system tests for the 4", 4-1/2" and the 7", the TAG-4500-311 performed greater than its predecessor. In the 4" 4 shot per foot gun system the charge shot 40.18" with a 0.58" entry hole. This represents an 11% increase in penetration and a 26% gain in entry hole. When shot in the 4-1/2" 5 shots per foot gun system, the charge shot 42.27" of penetration

our customers why Owen Oil Tools is the leader in the design of oilfield perforators. However, do not think that we are resting on our success. The Shaped Charge Development Team will continue to design new and innovative charges that our customers demand. Owen Oil Tools offers a wide selection of shaped charges to fit any application. However, if there is a need for a shaped charge that we do not currently make, please go to www.OwenHelp.com and complete a project request

– **Matthew Clay**

Shape Charge Development Manager



Smaller Packaging For Circulators

Owen Oil Tools has received several project requests to provide boxes that hold smaller quantities of shaped charges. Some of our customers wanted these smaller quantities because it may take several days to many weeks to shoot all of the charges in one 50 count box. Owen Engineering has heard the call and is currently working on a new box for such applications. This new box holds fewer charges and is significantly smaller than our standard box configuration. In the past, the minimum order quantity when ordering circulation type shaped charges was 50. Shaped charges, particularly circulators, have a limited shelf life, even when all precautions are taken to keep the charges in a humidity controlled environment. Many of our customers only use a few of these charges at a time and would leave the rest of the charges in the box unsealed and at the mercy of atmospheric conditions.

The new packaging for circulation charges and a select set of bi-wire charges, replaces the older box with a much smaller one that has a capacity of 20 charges. There are 2 layers in the box and each layer has 10 charges. This will reduce the amount of charges sitting in magazines that could be exposed to humidity. The box is also roughly half the size of our standard boxes, saving magazine space and reducing cardboard waste.

Because of recent project requests, Owen Engineering will soon be releasing the new limited quantity charge boxes. We work diligently to listen to our customers needs and complete their projects as soon as possible. If you need any more information on this article, please contact your local Owen Oil Tools representative.

- Matthew Clay
Shape Charge Development Manager

Tie Down Subs

The very nature of a perforating gun's shape makes it very difficult to stabilize for safe storage and transportation. The need for a simple part to help tie down loose guns is one of necessity. Once the gun is loaded, the need to maintain control of the gun is critical. Although current scalloped gun thread protectors provide this security, the subs did not have a vent to dissipate the charge gas off in the event of a fire. Should the gun be exposed to high heat, the charge gas off could generate enough pressure to act as a bomb. Therefore, Owen's Tie Down Subs contain a plastic cap in the center face of the sub, underneath the handle. This plastic cap acts as a pressure relief mechanism in the case of increased internal pressure. The relief mechanism has been specially designed to only open upon critical pressure variances. This ensures that the plastic cap will not allow any moisture to penetrate and harm the explosives loaded inside. The most important thing to remember with these new tie down subs, is that they are not designed to be used as lift subs.

- Jeff Wood
Mechanical Design Engineer

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Warning: Use of Owen equipment contrary to manufacturer's specifications or operating instructions may result in property damage, serious injury or fatality. If you are not trained in the handling and use of explosive devices, do not attempt to use or assemble any Owen perforating systems or Owen firing devices.

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