

A BETTER WAY TO CONTROL BPCR FOULING

By Darryl Hedges

Fouling is one of those nasty facts of life that we have to contend with as Black Powder Cartridge shooters. It's the natural by-product of every shot that we take. It starts with the burnt black powder residue left behind from the ignition of a fired BPC round. As our bullet travels down the barrel on its way to the target, its rapidly spinning motion causes the bullet to shed the lube from its lube grooves, which in turn mixes with the burnt black powder and coats the bore of the rifle with a damp, dark mixture. That's what we call "fouling".

Keeping the fouling in a barrel soft and moist is the reason why we use a blow tube after every shot. We strive to inject just the right amount of moisture from our lungs to combine with the black powder/lube mixture so that it won't dry out, become hard, and affect the next shot that we take.

Shooters since the beginning of the Black Powder Cartridge era, dating from the mid 1800s, have been searching for a way to minimize or eliminate the effect that fouling has on our shooting. Lube formulas of every conceivable type have been developed over the years with relatively good results. In fact, finding that magic combination of components to create the perfect lube that will be unaffected by heat or humidity and will work with any caliber and alloy combination has become the "Holy Grail" for many BPCR shooters.

I have to admit that I too have dabbled at developing a lube that will take the accuracy-reducing effect of fouling out of the picture to improve my own scores. Unfortunately, I haven't been able to improve on the work done by many others over the years.

The Flight of the Phoenix

However, recently I stumbled onto an idea for controlling the fouling in the barrel of a Black Powder Cartridge Rifle that I believe is far better than any lube alone could possibly do. The idea came to me while I was watching one of my favorite old-time movies — "The Flight of the Phoenix", a movie made in 1965 starring Jimmy Stewart and Richard Attenborough.

For those of you who are unfamiliar with the movie, it's about a small group of oil riggers who crash in the Sahara Desert aboard a twin engine, twin boom C-82 Packet cargo plane (later to become known as the C-119 Flying Boxcar). Stranded hundreds of miles from civilization with no radio communication and with a limited food and water supply, the group (led by one of the passengers who everyone believes is a real-life aeronautical engineer), set about dismantling and re-building what remains of the crashed aircraft and turning it into a smaller single engine, single boom monoplane. Little does anyone know that the so-called "engineer" actually designs model airplanes — not real ones.

Well, with the plane finally finished and ready to fly, Jimmy Stewart (the pilot of the ill-fated flight) must get the engine started and fly everyone to safety. In his possession he has seven (7) black powder “start cartridges”. These cartridges look like oversized shotgun shells. Stewart must insert these cartridges into a mechanism attached to the engine and fire them one at a time as needed to start the engine. The pressure from the exploding cartridge is supposed to generate enough internal pressure within the engine to turn it over and hopefully get it started.

Keep in mind that if they can’t get the engine started, they’re doomed — the food runs out, the water runs out, and they bake to death in the searing desert sun. And, they only have seven chances to get the engine started.

So, Jimmy Stewart inserts and fires the first cartridge. Black smoke shoots out of the exhaust pipes and the giant three-bladed prop spins and spins and spins — but no ignition. He then fires a second, third, and fourth cartridge. Each time the prop spins for a longer period of time. As it does, both the men in the movie and the viewing audience become more nervous as the tension mounts. But still no ignition.

Then, with the fifth cartridge in hand, Stewart does the unimaginable — in a gutsy move based upon his many years of dealing with balky engines, he fires a cartridge with the ignition off to “clear the cylinders”. Needless to say, the engineer responsible for the re-building of the plane nearly goes berserk. But with the cylinders now clear, Stewart fires the sixth round and the engine slowly, ever so slowly, comes to life. Of course there’s the requisite tension-building music in the background and the cast of characters clapping their hands and waving their arms in the hope that by doing so they can somehow “will” the engine to life.

Well, as you might expect, the engine finally does roar to life, everyone clambers aboard this odd-looking flying machine, and the Phoenix takes off and flies to safety. All’s well that ends well!

The Moment Of Inspiration

Now you’re probably asking yourself, “What does this movie have to do with BPCR shooting and controlling fouling?” Well, remember when Jimmy Stewart fired the fifth cartridge to “clear the cylinders”? That’s when it hit me — the fouling that interfered with the starting of the Phoenix’s engine was very similar to the fouling that interferes with our shooting.

So, why not do what Jimmy Stewart did — why not fire a simple blank or what I’ll call a “HedgeHog Cleaning Round” to blast away the built-up fouling in the barrel before it has time to cause problems? The round wouldn’t have to be complicated or require precise assembly (I said to myself) — just a cartridge, a primer, a reduced powder charge (say 20 to 30 grains of black powder), and some type of projectile to push the bulk of the fouling out of the barrel — like a few poly or cardboard wads stacked on top of one another.

To test my idea I decided to put together 10 rounds and try them at the range. Not only was I curious as to whether such a round would effectively “clean” the barrel, but I was even more interested in the effect that firing such a round would have on the accuracy of the next shot fired after using such a round. If using a HedgeHog Cleaning Round caused the point of impact of the next shot to be dramatically different, then the whole idea would be useless.



“This 1965 movie served as the inspiration for the HedgeHog Cleaning Round concept.”

Cleaning The Barrel During A Match Can Backfire

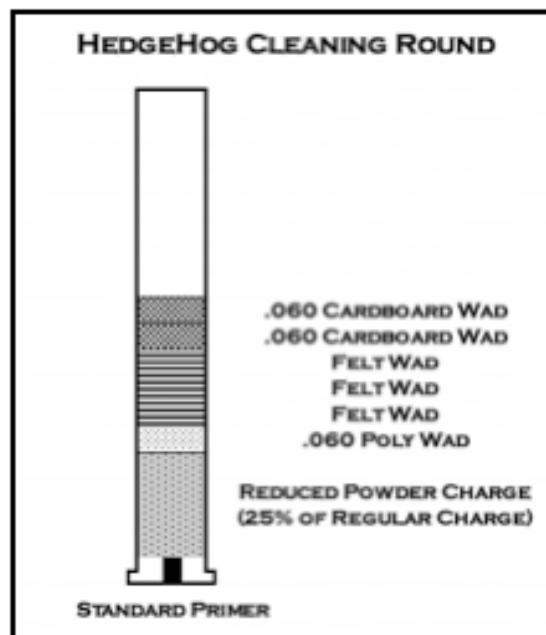
I was well aware of the disastrous results that could occur from cleaning a hot barrel during a match to remove built-up fouling. I learned that lesson the hard way at the 2004 NRA Regional Long Range BP Championships at Camp Perry. I partially cleaned my barrel after my first 8 shots on the last relay at 1,000 yards in the hope that it would help to maintain its accuracy for the remaining 7 rounds. My first shot after cleaning the barrel resulted in a “Miss”. Cleaning the barrel had changed the point of impact and sent the bullet whistling over the target. That “Miss” cost me 10 points and a chance to finish in the top 3.

Testing The New Concept

My tests were conducted using my primary Silhouette and Long Range rifle — a Browning BPCR Creedmore .45-90. In the initial test rounds that I assembled, I used 20 grains of Swiss 1 ½ powder in the .45-90 case. Since my standard target load consists of 90 grains of Swiss 1 ½, the amount of powder that I was using for this test round represented a little less than 25% of a standard load. I then inserted four .060 poly wads. The wads were not pushed down on top of the powder, but were left at the mouth of the case.

The rounds worked beautifully. After firing a HedgeHog Cleaning Round into a fouled barrel, 90 to 95% of the fouling was removed. Just a thin layer was left coating the bore. But ignition was erratic. Some rounds fired with a crisp “pop”, while others produced more of a “poof-like” sound. My shooting partner, George Liotta, suggested that perhaps since I had transported the rounds to the range in a cartridge case that held the rounds in an inverted, upside-down attitude, the powder was probably not sitting on top of the primer but rather was scattered throughout the inside of the case. George suggested tapping the cartridge on the shooting bench to make sure that the powder was sitting on top of the primer before placing the round in my rifle. That suggestion cured the erratic ignition problem.

Since those initial tests, I have changed the powder charge to 23 grains of Swiss 1 ½ powder, about 25% of the capacity of the regular match round that I am using (i.e. 90 grains x .25 = 22.5 grains). I am also experimenting with the configuration of the cleaning wad column. I now am placing a .060 poly wad on top of the powder charge to hold it in place, then three thick felt wads to act as a final “cleaning brush”, then two .060 cardboard wads. See the following diagram for an illustration of how the cartridge is configured.



“The HedgeHog Cleaning Round — Simple But Effective”

Another Opportunity to Experiment

It has been my experience that many BPCR shooters are tinkerers or cranks, always looking for a better way of doing something to improve their shooting results. Well, there is plenty of room for experimentation using this technique. For example, using different amounts of powder to power the round; varying the combination and placement of the wads in the case to see which combination produces the best results; placing a lube cookie or ball ahead of the base wad to add lube to the barrel; using a blow tube before and after the firing of the round; or determining when to use a HedgeHog Round during a string of shots in order to achieve maximum results.

That's one variable that you will have to determine for yourself. I have used a HedgeHog Cleaning Round after every 3 to 5 shots on target with excellent results. This has been more than adequate to keep the build-up of fouling to a minimum.

The preliminary testing that I have done with this concept has only been out to 100 yards. Although the results look very promising, I don't have concrete data as to its performance at longer ranges. If any of you would like to test this idea at longer ranges I would enjoy hearing about your results.

Always Check The Barrel After Using a HedgeHog

As with any cleaning method that you may use while you are shooting, whether it be with standard cleaning patches, a felt wad, rubber squeegee, Texas Bore Pigs, or a nylon or bronze brush, always visually check your barrel after firing a HedgeHog to make sure that there are no unburned powder granules left in the barrel or any wad material that could obstruct your next shot. If any debris is left behind, a simple puff of air through your blow tube should easily remove it from the barrel.

Will the use of this technique make lubing BPC bullets a thing of the past? The answer is NO. You'll probably still want to use the same lube that you are currently using now. But I can foresee the development of new lubes that no longer have to stand up to the rigors of a string of 10, 15, or more shots before their performance begins to drop-off. It's quite possible that new lubes will be developed that can perform superbly for only 5 shots.

What About Match Rules?

Now, you're probably shaking your head and asking "Is this technique legal according to current NRA and ASSRA rules?" To be honest, that was the first thing that crossed my mind. So, I consulted both the NRA and ASSRA rule books looking for any reference to cleaning the barrel during a match. Remember, the "HedgeHog" is a "bore cleaning" device. It is really no different than running a brush or patch through the barrel to clear away fouling. With this concept we're just using the power of a blank charge to push the patch (wads) through the barrel instead of a cleaning rod. Both the NRA and ASSRA allow "wiping or cleaning the barrel during a match" or "wiping the bore between shots".

Next, I called George Harris, NRA Match Director for Black Powder Championships and the man who is responsible for writing the NRA rulebook to discuss my idea with him. George and I had a very pleasant conversation about my proposed technique. George asked that I submit my proposal to him in writing so that he could take it up with the other members of the NRA's Black Powder Committee for discussion. The initial feedback that I have received from George has been very encouraging.

One thing that George Harris did mention is that if this technique were to be approved, it would be the responsibility of the shooter to inform his spotter/scorer when he or she was firing a HedgeHog Cleaning Round. Otherwise, the discharge of the rifle during a match would be considered a "Miss".

Finally, I called Dick Eesley, the Vice President and Chairman of the Rules Committee for the ASSRA to get his take on the idea. After explaining the concept to Dick, his initial reaction was that he saw absolutely no problem with using such rounds during a sanctioned ASSRA match. To gain formal ASSRA approval, I plan to submit a proposal concerning this concept to the ASSRA for full discussion among the members of the Rules committee.

This Could Change The Way You Shoot BPCR Forever

Think about it for a moment. If you are one of those shooters who carries a cleaning rod to the line with you when you're shooting a Silhouette or Long Range match, you'll now be able to leave that behind. For you Silhouette shooters, no more fumbling with a cleaning rod, patches, or brushes in the middle of your relay when time is of the essence; for you Long Range shooters, no more struggling to move your elevated cheekpiece out of the way or run your rear sight down so you can put a cleaning rod through the barrel. No more need to change your shooting position or leave the line to clean your rifle during your relay.

Simply hold up the HedgeHog Cleaning Round so your spotter can see it before you place it in the chamber, tell your spotter that you are firing a HedgeHog, and pull the trigger. After the round has done its job, look down the barrel to make sure there is no debris left behind, use your blow tube to remove any powder granules that may be in the barrel or to inject some moisture back into the bore, and you're ready to continue shooting for score. What could be simpler?

Opposition to the Idea

To test my idea in formal competition, I loaded 50 rounds of HedgeHog Cleaning Rounds and took them with me to Badger Barrel's semiannual Long Range BPCR Match at Lodi, Wisconsin, on May 7 and 8, 2005. Out of respect for Ernie Stallman and the contribution that he has made to our sport, and as the sponsor of the match at Lodi, on the Friday prior to the match I pulled him off to the side, described the HedgeHog Cleaning Round, and told him what I was hoping to try during the match. Ernie's immediate response was "No". We talked for about 30 minutes about his concerns, and I did not use the rounds as I had intended. I believe that Ernie had four major concerns about the HedgeHog — 1) Safety, 2) Tradition, 3) Complexity, and 4) Cheating.

In terms of safety, Ernie was concerned that a wad from a HedgeHog Cleaning Round might become lodged in the barrel, and a shooter firing a follow-up round *without first visually checking the barrel for obstructions* would destroy the barrel in the process. As the owner of Badger Barrels, I'm sure that he has seen plenty of his company's products destroyed by a variety of ill-conceived ideas in his years of making match quality barrels.

In terms of tradition, Ernie felt that since no one seems to have heard of this method being used during the Black Powder Cartridge era, it should not be allowed now. Well, there's a fine line surrounding this point. I believe that we could find numerous examples of items such as poly wads, Delrin cleaning rods, and other things that we commonly use today as part of the sport which were not used during the BPC period. In point of fact, we don't use the same target that was used in the old Creedmoor Long Range matches, the same scoring structure, or the same shooting position commonly in use at that time. So, where exactly do we draw the line on this issue of "Tradition"?

Concerning the issue of complexity, since the HedgeHog Cleaning Round lends itself to a wide variety of wad and component configuration possibilities, Ernie felt that this could just get out of hand — poly, cardboard, or felt wads, different amounts and grades of black powder, perhaps the inclusion of a lube cookie or some other type of lubricating or cleaning material, and so forth. The possibilities are endless.

And finally, Ernie said that he could foresee a new opportunity for cheating during a match. He felt that there would be those shooters who would be inclined to tell their spotter/scorer that the Miss they had just shot on the target was really a HedgeHog Cleaning Round, and that they had simply forgotten to tell the spotter/scorer that they were firing one to clean their barrel.

One shooter, whose primary objection was that the technique was not used during the BPC era, added another objection to the fire: "Who's going to pick-up all those wads out on the range?" Gosh, I never thought of that. I guess my reply should have been, "The same people who are picking up all of the wads and bullets off of the range now!"

To his credit, even though he was dead-set against the idea, Ernie was gracious enough to allow me to present the concept to the 60 or so assembled shooters at the match after the awards ceremony on Sunday. They listened politely and asked some good questions about how the round would be made and used. They seemed to fall into two camps — traditionalists opposed to the idea because it was not in the spirit of the traditional way of shooting BPCR, and a few who thought the idea was fine and should be allowed.

I had hoped to present the idea to everyone, let them take it home and try it for themselves, then reconvene at the September match at Lodi and vote on its use at that time. However, a secret written ballot was taken immediately after the open discussion, to either approve or disapprove the use of the HedgeHog in future Long Range matches at Lodi. The results were 38-5 against allowing the HedgeHog round in the future. So, at least for the moment, the use of a HedgeHog Cleaning Round in formal competition at the Winnequah Gun Club has been defeated.

Note: Please do not use this technique in any type of formal competition without securing the permission of the Match Director or sponsor first. They have final authority as to what is allowed and not allowed in their match, regardless of whose rules are being used for the match. Although I may have disagreed with the decision made at the Lodi match and was disappointed that I was not able to use the HedgeHog Cleaning Round for the first time in competition, I respected the right of the sponsor to disallow its use for whatever reason, and abided by that decision.

What Do You Think?

My hope is that my proposals to the NRA and ASSRA will open discussions on the concept with a full review and testing of my idea.

George Harris asked that you send him an e-mail at: Rifle@nrahq.org. He said that he and the other members of the NRA Black Powder Committee would welcome your comments about this proposed new way of cleaning the barrel during matches.

I would also like to hear from you about your feelings on this concept, the issues outlined in this article, and if you do construct and use the HedgeHog Cleaning Round at the range sometime, the way it performs in your gun. I would be especially interested in hearing from any of you who are history buffs and familiar with the writings and practices from the Black Powder Cartridge era. I'd like to know if anything of this nature was ever used by competitive Long Range shooters, buffalo hunters, or Schuetzen shooters during that time period.

Finally, if you are a qualified gunsmith or barrel maker, I would welcome your comments concerning the possibility of such a cartridge, as I've described it in this article, "ringing" the barrel of a Black Powder Cartridge Rifle.

You can reach me via e-mail at the web site that George Liotta and I developed specifically for both new and experienced Long Range Black Powder Cartridge shooters — LongRangeBPCR.com. Stop by sometime and take a look!

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