



HISTORY

Talking about secondary explosive initiators is one of our favorite topics and as part of this we have always been fascinated by their history. Who first invented them and how did they evolve into their present form?

Luis Alvarez, of vanishing dinosaurs fame, claims to have invented the Exploding Bridgewire (EBW) detonator as part of the Manhattan project in the early 1940's ("Alvarez - Adventures of a Physicist." p. 133). Researchers at Los Alamos were having difficulty obtaining the required simultaneity from blasting caps for the warhead implosion process. Alvarez's suggestion was to use a fast discharging capacitor to fire an ordinary blasting cap, thus obtaining simultaneity between detonators down to fractions of a microsecond. This worked very well and with his former student, Larry Johnson, the concept was expanded and the blasting cap's primary explosives were eventually replaced with secondary explosives such as PETN or RDX. In 1962, the concept was declassified and a patent was released for an Exploding Bridgewire Detonator in the name of Johnson giving the date of filing as November 8, 1944.

This is the best documented version we have been able to find so far although the Encyclopedia of Explosives (vol. 4, p. D807) states that A. F. Belyaev used exploding bridgewires to initiate PETN and RDX as early as 1938. Unfortunately, we haven't been able to find any additional information about this earlier work.

The history of EFl's is a lot more straight forward since we happened to be present at their birth (sound asleep in an adjoining airplane seat). In 1965, John Stroud of Lawrence Livermore National Laboratory was reading a report on the acceleration of thin plates by exploding foils ("Exploding Wires", vol. 2, p. 279, 1962) when he noted that the impact pressures produced by these "slappers" appeared to be sufficient to initiate high density, secondary explosives. A few fast experiments proved the concept worked and the slapper detonator was born. The first system application of the slapper was in the fuzing for the Air Force's demonstration program for a Hard Structure Munition which was conducted by the Lawrence Livermore National Lab in the early 1970's. The first production system was the fuzing for the Swedish RBS-15 anti-ship missile in the early 1980's.

Please go to page 2



Training

Feel uncomfortable with Exploding Bridgewire (EBW) dets? They have to be more complicated than Blasting Caps! What's wrong with Blasting Caps? I still have all my fingers!

If any or all of these thoughts have run through your mind, why not consider one of our training sessions. Visit our plant in northern California (a short drive from San Francisco, but you don't have to tell your boss that). We will spend about two hours with you, discussing the intricacies of EBWs and then turn you loose in our firing area. You can shoot to your heart's content until you feel comfortable with this new technology. The cost-nothing. Just schedule a time so we can make sure someone is here to work with you. We'll even give you a beautiful, suitable for framing, diploma and autographed copy of our catalog to impress all of your co-workers.

If the boss won't let you come to San Francisco, we can come to you. Just gather up half a dozen or so co-workers interested in EBWs and schedule a time. One of our people will show up with a very good (we think), one hour talk on detonators plus be available for detailed questions for a few more hours. Overseas may require a bit more negotiation with our boss, but we'll try to work it in, especially if its someplace exotic.

For Technical Contract and
Ordering Information, Contact:

We accept Visa, MasterCard
and American Express



Telephone (925) 866-0650

Fax (925) 866-0564

e-mail: rvarosh@risi-usa.com

