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AUTOPSY

# 6" White Elephant Pattern Shell

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| **Manufacturer:** | *U.S. Domestic.* |
| **Shell Weight:** | *1556g* |
| **Lift Charge:** | *79g 2FA black powder* |
| **Burst Charge:** | *169g 4FA + 615g 2-3FA* |
| **Inert Filler:** | *465g meal coated 1/4" beans* |
| **Pattern Stars:** | *45 1/4" dia. white round stars* |
| **Shell Type:** | *6" plastic* |
| **Rope:** | *5/8" dia, 32" long* |
| **Time Fuse:** | *Chinese time fuse, 5 sec delay time* |

**Figure 1:** Rope attached at equator to stabilize pattern orientation.

**Figure 2:** Fiber tape holds frayed rope end to shell casing.

**Figure 3:** Center punched cross match tied with cotton twine.

**Figure 4:** The elephant pattern embedded in 4FA BP within the time-fuse hemi.

**Operational Theory:**
An inherent problem with all pattern shells involves the random orientation of the break with respect to the viewing audience. With the shell rotating rapidly on all three axis, the chance of the shell breaking so that the viewer has the optimum perspective to see the pattern is pure luck.

One common solution to this problem is to shoot many pattern shells in a volley, thus increasing the odds that one of them will be seen in the proper orientation. Once seen, it then becomes easier to recognize the rotated patterns in the other shells.

A less frequently used method to help increase the odds of seeing the pattern in its correct orientation is the use of a rope fastened to the shell. This acts as a stabilizer similar to the way a rocket stick keeps rockets from rotating. The rope will keep the shell from

**Figure 5:** The other hemi is covered with thin, vented plastic prior to closing.

**Figure 6:** A mixture of inert, meal coated beans are mixed with 2FA and 3FA for the burst.

**Figure 7:** Styrofoam packing peanuts, wrapped in saran wrap, are grouped at the bottom of the non-fused hemi.

rotating in two out of the three spin axis, thus greatly increasing the odds of seeing the pattern correctly. The dreaded edge view is still possible, but much less frequent.

Perhaps the most difficult aspect of building pattern shells is the need to secure the stars used in the pattern from shifting during assembly and transport. A small deviation inside the shell becomes greatly magnified when burst into the air, and shifted stars in both the horizontal and vertical plane are easily noticed by the viewing audience.

Upon examination of this pattern shell, one can see several innovations. The basic construction involves a diluted burst filler of beans, lightly coated with meal, and a mixture of black powder ranging in grain size from 2FA to 3FA. Since most of a pattern shell is empty space with a very minimal amount of stars, it is necessary to use a weak break charge and dilute it with inert material to prevent over breaking the shell.

The time fuse hemi is filled almost to the top with the diluted break charge, then a bedding of 4FA is filled the rest of the way. To keep the 4FA from migrating down into the break charge beneath it, the BP filler must be thoroughly jostled so that it completely fills in the spaces between the beans. If the 4FA shifts down into the hemi during transport, the pattern will become distorted perpendicular to the viewing plane.

The desired pattern is then placed into this bedding using 1/4" round stars. While the stars move freely in loose 4F powder, compacting the powder will essentially lock the pattern in place. It is estimated that, upon placing the pattern, more 4F powder is filled over top of it such that it heaps above the rim of the shell.

Since grain powder and the beans are not compressible, a solution had to be found for allowing the over-filled hemi to be compressed when closed, thus keeping pressure on the 4FA pattern bedding so the stars will stay put. The clever solution arrived at was the use of styrofoam packing peanuts placed at the bottom of the second hemi prior to loading the break charge into it. The styrofoam allows the otherwise non-compressible break charge in the second hemi to compress when it is closed over the over filled pattern hemi.

Hats off to this American manufacturer for their ingenuity with pattern shells!



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