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Volume 2, Issue 8

AUTOPSY

4" Canister: Green w/strobe reports

Manufacturer:	*Lidu*
Shell Weight:	*617g*
Lift Charge:	*40g 3FA black powder*
Burst Charge 1:	*88g KP on Hulls, 8:1*
Burst Charge 2:	*30g granulated "dirty" flash*
Stars:	*1/2" dia. round stars*
Inserts:	*21 inserts, 1-3/8" long x 1/2" O.D. x 3/8" I.D.*
Shell Type:	*4" paper canister*
Time Fuse:	*Chinese time fuse, 4 sec delay time*

Figure 1: Lift charge contianed in paper liner surrounded by ground cotton seed.

Figure 2: Strip pasted can with slurry primed, dual piped time fuse.

Figure 3: Disassembled shell with all components.

Figure 4: Bottom cap removed (time fuse end) to reveal star compartment with granulated flash break.

Autopsy Report:

I fully expected that this shell would be very similar to the 5" Lidu canister shell that was examined back in April. This shell still employed the same method of packaging the lift as other Lidu canister shells, with a tissue bag holding the powder around the time fuses while the extra space was filled in with ground cotton seed (see Figure 1). This shell was also pasted using strips of paper instead of a rolled sheet as is common in the Italian method of canister shell construction. Unlike Lidu's ball shells, only about 3 or 4 layers of about 40 weight paper strips are used to paste in this shell.

While the 5" crosette canister shell made by this same manufacturer used a pair of cylindrical cups to form the inner case, this shell features a spacer between a similar set of cups that are used as end caps. A single turn of chipboard is rolled on a former,

Figure 5: Dark, granulated flash of moderate burning speed used to break the star portion of the shell.

Figure 6: Top cap removed reveals KP burst charge packed around inserts.

Figure 7: Inserts completely fill bottom compartment, with prime end randomly oriented.

Figure 8: Insert charge from left to right: clay, flash, clay, white strobe and prime.

then the central spacer is rolled on top of this until it is equal to the O.D. of the cup set (see Figure 3). The end caps can then slide over the chipboard sleeve and seat flush with the central spacer. The two seams at each end are then secured with a band of tape prior to pasting. This design allows the height of the shell to be adjusted for different contents while still using one size of 4" cups for all 4" shells. The case is similar in construction to mailing tubes, only the body is parallel wound and the two ends are punched in a press.

The shell contents were divided into two distinct compartments, separated by a chipboard disk with three passfire holes punched in it. A piece of tissue paper was placed behind this disk in order to prevent the contents of one compartment from migrating into the other. This disk can be seen at the center of Figure 3.

The compartment containing the stars, seen in Figure 4, was fully loaded with 1/2" stars and a partially granulated flash mixed in between them as the burst charge. This burst charge, shown in Figure 5, contained a wide range of particle size, from roughly 2FA all the way down to fine powder. This charge looked as though it may contain antimony, and burned slower than typical flash used in salutes.

The second compartment, shown in Figure 6 and 7, contained 21 inserts that filled most of the space. A burst charge of KP on rice hulls was packed around them, mostly above and below the inserts. Each insert was primed with a slurry prime dipped in 4FA on one end. The orientation of the primed end was random rather than directed to the center of the shell. With the time fuse protruding only about an inch into the opposite end of the shell, there appears to be a high degree of confidence that the shell will contain the fire long enough to get through the divider and reach the primed inserts located at the opposite end.

The construction of the inserts themselves is an interesting item for examination. The primed end ignites a white strobe composition that seems to be only moderately pressed on top of a fused clay bulkhead that encloses a flash charge between another clay plug. It would appear that the flash charge was pressed along with the clay plugs, but not as forcefully as a rocket would be. The fuse leading through the central plug, which is a piece of small diameter visco type fuse, also appears to have been pressed along with the plug itself, rather than inserted later. Due to a noticeable bulge in the center plug, it is my estimation that the plug and fuse were pressed together as the first charge. The flash and end plug were then lightly pressed into one end while the strobe comp was also lightly pressed into the other end. The distance on both sides of the center plug are equal, which would eliminate the need to orient the insert depending on which effect was being pressed.