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TECHNICAL NOTE 41: FIELD TESTING OF M-16 RIFLE MAGAZINES

Firearm magazines are more complex devices than they seem. The feed cycle of a self-loading rifle operates extremely quickly, and the relationship between the rifle, cartridge, and magazine provide many subtle opportunities for malfunctions. There is no way of measuring magazines to sort the good ones from the bad ones. Further, the paint-like finish of most magazines wears quickly, and doesn't provide an accurate indication of the reliability of the magazine. This Technical Note provides instructions for effective field testing of metal M-16 magazines.

MAGAZINE FUNCTION:

As the bolt strikes the cartridge and forces it forward, the cartridge is directed by several surfaces. The forward-moving bolt strikes the top cartridge in the magazine. The cartridge is forced forward and inward. It is guided during its travel out of the magazine by the feed lip and the guide rib (the large rib close to the front of the magazine) on the same side of the magazine as the cartridge. Forward motion forces the cartridge up the feed ramp of the barrel extension. The front of the cartridge tips up, and the rear of the cartridge tips down, pivoting on the front surface of the feed lip. This motion pushes down on all of the lower cartridges in the magazine.

SELECTION:

Most aluminum government and commercial 20 and 30 round magazines from rifle manufacturers are of high-quality manufacture. Government-surplus magazines marked Sanchez or Cooper should be avoided or trusted only after thorough testing. The floorplates of all M-16 magazines are interchangeable, and should not be considered proof of the original manufacturer.

Commercial steel magazines and plastic magazines from all sources are less desirable than aluminum magazines. Magazines of British manufacture for the L85A1 rifle are an embarrassment to that nation, and should not be trusted without thorough testing.

INSPECTION:

1. Use a new magazine of known high quality as a standard to compare to used magazines.
2. Inspect the used magazine for cracks or dents, especially in the feed lips. Some dents or bends can be carefully straightened.
3. Check the spring for "dipback." Dipback is a tendency for the rounded ends of the spring to bend down instead of up as they curve between the straight side sections. Look at the spring so that a straight section on the left side of the magazine is pointed straight into your eye, and would look like a period if it didn't have a curve in the way. That curve should look level or slope slightly upward to the right. If it curves slightly downward, the spring displays dipback and *may*

produce unreliable operation. Check all of the curves. Dipback is common, especially on early magazines, and is undesirable.

4. Check the top coil for proper position. The top coil is bent toward the inside to enter a hole in the follower. The turned-in end of the top section of coil should be level with or less than .070 below the straight section on the opposite side of the spring.

5. Green followers are preferred to black followers.

TESTING THE MAGAZINE:

Testing spring pressure. Place two cartridges in the magazine. Press the top round down about 1/8-inch. When released, the top round should return to full contact with the feed lips. If it fails this test and has a black follower, replace the follower with a green one and retest. Failure doesn't mean that the magazine won't work, but does mean that it should be tested for reliability.

Reliability test. This is *the* key test of the magazine. Test fire the magazine using 40 rounds in 10 cycles of 4 rounds each (this test should be conducted during normal practice so you don't waste the ammunition.)

1. Load 4 cartridges into the magazine.
2. Release the rifle's bolt carrier group so that it is in the forward, locked position. Insert the magazine into the rifle and charge the rifle by pulling the charging handle fully to the rear and releasing it.
3. Fire the four cartridges.
4. Repeat 9 more times.
5. Reject the magazine for tactical use if the rifle malfunctions in any of the 10 firing cycles. Reserve the magazine for practice until it proves reliable in actual use.

MONITORING AFTER THE TEST:

Every practice or training session is a magazine test. Use good ammunition and a rifle known to be reliable, and always mark the magazines on the bottom each time the rifle fails to feed. If only one or two magazines show marks, the magazines are probably the problem. If all of the magazines accumulate marks at about the same rate, the rifle is probably unreliable. Magazines that accumulate marks that can't be blamed on the rifle cannot be depended on in an emergency.