

Lt Aaron Springer
City of Rochester Police Dept Emergency Task Force
Rochester, NY 14624

Dear Lt. Springer,



This report is in regards to the incident regarding the blow up rifle, Colt sn# A0225253 with the LWRCI 10.5 inch upper receiver. My conclusion is that the incident was ammunition related.



Notice the bulge in the cartridge case caused by the rear of the cartridge case not being supported by the chamber. The bolt was unlocked at or near the peak of the pressure curve.



The failure of the cartridge case was the portion engaged by the extractor.



When the cartridge was fired, the pressure well exceeded the normal 55,000 psi, perhaps even doubled. This caused the port pressure to be so high that the operating rod struck the bolt carrier and began the unlocking process prior to the pressures dropping in the chamber. At this point the cartridge case slightly moved to the rear, causing the rear to be unsupported in the chamber with the pressures still extremely high. The cartridge case base ruptured causing the bolt face to crack, extractor to bend, bolt carrier top to crack right through to the cam track, cause the bottom of the carrier achieve structural failure and the magazine well of the lower receiver to flare out.



Notice the large portion of material missing from the bottom of the bolt carrier as well as the crack in the top, front of the bolt carrier right thorough the cam track.



Notice how the extractor is bent and the extractor spring and buffer are sticking out of the rear of the extractor. Observe the cracked breechface of the bolt.



The ejection port area of the receiver was pushed out as well as the ejection port cover and ejection port cover rod are bent. The magazine well of the lower receiver bulged out on the left side due to the over pressure gas escaping through the magazine well.

Examination of the cartridge case that was removed from the chambered showed signs of bulging just above the rim showing where the cartridge case was unsupported by the chamber. The primer was blown out. The portion of the cartridge case that failed was right where the extractor grabbed the rim. See photographs on page 1 for details.

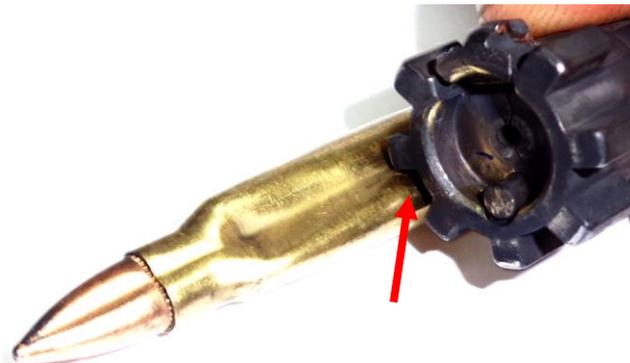


Other unfired cartridges were submitted for examination. These came from many different rifles on the line this day using the stated ammunition. These were all failures to feed from the magazine into the chamber. Some of these showed the projectile portion of the cartridge bent upward. Others showed straight dents/scrapes on the body of the cartridge case. These were caused by overgassing the operating system. The velocity of the bolt carrier was so fast that the magazine spring could not raise the shot column in time for the bolt lugs to catch the rim to feed the cartridge into the chamber. Instead, the bolt over rode the rim and as the shot column in the magazine rose up, the lug of the bolt caught the front of the case in the body behind the shoulder. The lug dug into the brass moving the

cartridge case slightly forward up onto the feed ramps when the bolt carrier group slammed into the top of the cartridge and bent projectile on the same angle as the feed ramp.



Notice how the lug of the bolt dug into the forward portion of the cartridge to the back side not being in the feeding position because the magazine spring could not lift the shot column fast enough for the lug to engage the rim to push the round into the chamber. Pushes the nose of the cartridge case partially into the feet ramps/barrel extension when the bolt carrier group fully moves forward bending the tip of the cartridge on the feed ramp.

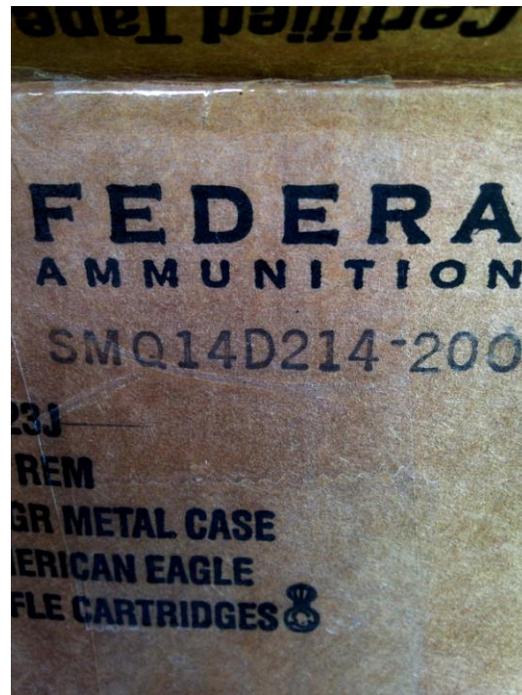


This cartridge did not move up in the magazine by the time the bolt lug met the rim. As the bolt over rode the rim the column rose enough to engage the bolt and dig into the body of the cartridge. This round remained in the magazine. This too is due to excessive cyclic rate.



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There were two lots of ammunition used that day. As of this moment it has not been determined which lot of ammunition has caused these failures. Below are photographs of the lot numbers (V59M056 and SMQ14D214-200) located on both of the boxes the ammunition was received in:



Both cases of ammunition are Federal, American Eagle (AE223J), 223 Remington caliber, 55 grain full metal jacket. Majority of the failures had nickel primers with blue primer sealant with a headstamp reading FC 14 223 REM. There were three with brass color primers with a head stamp .FC.223.REM. and all cartridges have staked primers. The round that caused the failure in the rifle was the nickel primer with headstamp FC 14 223 REM.

Yours Truly,

Christopher Bartocci
Small Arms Solutions, LLC