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-----Original Message-----
From: Shoemaker, Christopher D.
Sent: Tuesday, October 21, 2003 4:29 PM
To: Trull, John
Cc: Perniciaro, Stephen; Joy, Robert L.; Bunnell, Jim
Subject: FW: Problem with Rifle for Sports Afield Test.

John,
Please see Bob Joy's note below. I reviewed the assembly process today, we do not torque the take down screws. We use an air powered driver and each operator has his own technique of how tight he drives the takedown screw. They are trained to test the bolt and if the screw is interfering they back it off until it works freely, or in some cases may even grind down the bolt. The issue may be compounded by the tolerance stack ups between the receiver (bolt hole and OD), the stock (barrel channel and bottom inletting), the trigger guard and the screw length. It is also possible to have even used the wrong take down screw. The stock on this model does not have an aluminum bedding block so some (minimal) compression of the stock is possible if the screw is over tightened. The stock is made by ORC and we did experience some inletting issues after they modified the mold to eliminate a visual defect on the top rails. They produced a quantity of stocks to a deviation on the inletting dimensions until they had a chance to repair their molds. This deviation caused us to have to grind some take down screws to prevent them from protruding too far. It is possible that this stock was one produced to the deviation and the take down screw was ground improperly or not at all.

-----Original Message-----
From: Joy, Robert L.
Sent: Tuesday, October 21, 2003 7:38 AM
To: Perniciaro, Stephen
Cc: Shoemaker, Christopher D.
Subject: RE: Problem with Rifle for Sports Afield Test.

Steve / Chris,

RE: Takedown screw - We have a process specification of 35 in-lbs (Max) for takedown screw torque. A screw can bind the bolt lugs if it is the wrong screw (too long), the stock inletting is incorrect, the screw is over-torqued, or similar reasons. There are many opportunities in our process top catch this condition, if it exists. We will not know, however, if someone improperly re-torques the screws outside of the plant.

RE: Safety force - The safety always moves easily back and forth with the bolt open, or out of the rifle. This is true because little work is being done by the safety cam in lifting the sear when the bolt is removed. With the bolt in the action and closed down, the act of lifting the sear is also pushing back the firing pin against the compression of the firing pin spring. Thus, the sensation of higher safety force. When the rifles are function tested in our gallery, the safety is operated 3-times and operating effort is considered. At final inspection we control the most important attribute - sear lift. It is held between .008 and .018. Safety force is a product of sear lift. The higher the amount of lift, the higher the perceived safe operating force. Sear lift is a measure of the distance that the safety cam lifts the sear off the top of the trigger connector (more is better in terms of safety function.) If the safety operating force "feels" heavy, sear lift is probably in the .015 - .018 range.

Chris: Next step? We might audit some rifles to see where our sear lift is running. A few years ago we had trigger holes high in the triggers and sear lift was running around .020. The safeties did feel heavy and we brought things back into control by attacking the trigger process. Your call...

Bob

-----Original Message-----