Danner, Dale

From: Danner, Dale
Sent: Thursday, November 09, 2000 2:57 PM
To: Golemboski, Matt R.
Cc: Franz, Scott; Zajk, Joseph J; Diaz, Danny; Keeney, Mike
Subject: FW: 710 T & P
Importance: High

Matt,
Thought I would summarize our discussion today on paper. Pls let me know of any errors/omissions on my part.

1) Everyone is in agreement that the headspace gauges in Etown are incorrect. This item is no longer a T&P issue.

2) The bent trigger issue will be resolved by replacing all inserts in the remaining guns from the 200 gun T&P lot. R&D Test recommends that the old inserts be scrapped or at a minimum prior to using the old inserts that the trigger pivot and overtravel screw aspects of the insert be inspected for damage. Etown will perform a simple 83 experiment to determine trigger bend sensitivity.

3) The side-to-side trigger variation issue will be addressed using the 0.020 shim test method. This inspection will be performed on 100% of existing T&P product as well as 100% of new product built until it can be demonstrated that the stock deformation issues have been addressed.

4) Trigger and Sear return issues will be addressed as follows:
a) The adjustment screws will only be manipulated on a standalone insert and only at the comparator station. Following adjustment at the comparator station the screws will be cemented.
b) The Sear will be inspected for "free travel" at three different points in the process: the comparator station following adjustment, after the insert has been married to the receiver (Diaz bracket/screw installed), and finally when the barreled action is married to the stock.
c) The Trigger will be measured for correct/repeatable re-engagement at the comparator station. It will again be inspected visually following marriage of the insert to the receiver. R&D Test continues to recommend that Mayfield consider measuring this re-engagement issue at the comparator on barreled actions and tracking the results for a period of time to ensure "understanding" of the issues raised during the first pass T&P.

5) The Trigger Pull specification is now 4.0 to 5.5 lbs as confirmed via email from Bristol.

6) During the analysis of guns A-14 and A-26 it was determined that the receiver from gun A-14 was out of specification relative to placement of the Diaz screw hole. Mayfield must provide adequate assurance that the remaining T&P product has been examined/corrected toward this issue and that T&P product conforms to design print. The consensus belief is that receivers machined on the Bridgeport (initial process) are suspect. R&D Test has agreed that culling these receivers from the T&P sample and replacing them with product produced using the latest process will be acceptable. Mayfield agrees that product culled from existing T&P and other receivers processed using the Bridgeport method must be 100% inspected relative to hole placement prior to any use. R&D Test further recommends that a sample of product produced on the new process be evaluated for conformance to print.

7) FEA analysis of both the DAT and T&P designs of the bolt stop indicate that the new design introduced a small increase in stress to the part -- however probably not sufficient to account for the increased breakage. Material analysis of DAT and T&P product has shown a slight loss in properties on the T&P product but again not to a degree sufficient to cause the increased breakage. Keeney has an alternate design which will provide increased strength to the area in question. Mayfield and R&D Test agree to continue the T&P effort with the old design bolt stop with the understanding that both DAT and T&P exit will be contingent on a review of performance over all T&P tested product. It may be necessary for Mayfield to rework product to the new bolt stop design.

Please let me know ASAP if you have issues and
Regards,
Dale

From: Danner, Dale
Sent: Wednesday, November 08, 2000 1:14 PM
To: Golemboski, Matt R.
Cc: Zajk, Joseph J; Franz, Scott; Keeney, Mike
Subject: FW: 710 T & P
Importance: High

Matt,
Per our telecon earlier attached is the summary of issues and actions based on yesterday's visit by Franz/Keeney. I'd like to discuss each of these issues via telecon so Etown understands the specific actions you have taken to rework remaining product toward restarting T&P. Pls have a look and let me know what time works for you to discuss.
Thks,
Dale

From: Franz, Scott
Sent: Wednesday, November 08, 2000 1:06 PM
To: Danner, Dale
Subject: 710 T & P
Importance: High

On Tuesday Mike Keeney and myself visited Mayfield to jointly investigate the issues raised during Trial & Pilot testing. A total of seven guns were brought back. The gun and the reason for return are listed below.

GUN	SERIAL NO.	ISSUE
A-2	71001425	Headspace - Won't close on E-town's Min. Gauge
A-14	71001004	Fire Control - Follow Down
A-26	71001136	Fire Control - Follow Down and fire on bolt closing
A-5	71001267	Trigger location in stock
A-13	71001132	Trigger location in stock
A-18	71001439	Trigger location in stock
A-25	71001393	Trigger location in stock

It was noticed during T & P that the location of the trigger in the trigger guard varied considerably both side to side and front to back. Guns A-5, A-13, A-18 and A-25 were chosen to show the extremes of this trigger location variation.

During this trip the following was discovered:

1. Gun A-2 was examined first. The bolt did close on Mayfield's GO gauge as it should. E-town's headspace gauges were never updated after dimensional changes were made to the .30-06 cal. chamber. **This is no longer a T & P issue. E-town gauges will be updated.**

2. Trigger location front to back was investigated next. It was determined that the trigger was bent. The cause of this bending was isolated to the proof test fixture that remotely fires the gun. Mayfield has already made a change to this fixture and the current setup does not bend triggers. Most of the T & P product was tested in the proof test fixture before this change was made. As a result a high percentage of triggers are bent.

3. Side to side trigger variation was attributed to stock deformation. A change to the stock mold cooling system has been made. Stocks run with this hot manifold modification exhibit less sink and distortion.

4. Gun A-14 was examined. Trigger pull was in specification when checked. It was noticed that loosening and retightening the support bracket screw did bind the sear. A very slight movement of the fire control was detected when the screw was tightened. The location of the tapped hole in the receiver was checked and this was determined to be out of specification. The insert assembly was checked on the adjustment and inspection setup and it was determined that the trigger was not fully returning to the fully engaged position. The force required to rotate the trigger to the fired position measured low on this sample.

5. Gun A-26 was examined. Trigger pull on this gun was also in specification when checked. The sear was free to move in this gun and loosening and tightening the support bracket screw did not effect sear movement. No movement of the fire control could be detected when the screw was tightened. The insert was also checked on the adjustment and inspection setup. The trigger would also not fully return to the fully engaged position on this sample.

6. The metal side plates on both A-14 and A-26 were removed. On both samples it appeared that the trigger spring adjustment screw opening was distorted slightly on the bottom side of the hole. It also appeared that the screw may not of been located central to the opening. This resulted in less space for the trigger return spring on the bottom and it was theorized that this could result in binding of the spring during operation. This was not proven however.

7. A discussion followed focused on the procedure followed during T & P build. It was discovered that after insert assemblies were built and adjusted on the adjustment and inspection station that the insert assemblies were built into guns by various assemblers. After a gun is built it is checked for trigger pull and if measured out of specification the fire control adjustment screws are adjusted to bring trigger pull into specification. This is done by the assembler at the bench and he is only focused on trigger pull, not whether the fire control change he just made has effected any other parameter in the gun, like trigger return. This is the most probable cause of the fire control related malfunctions on both A-14 and A-26, misadjusted fire controls with inadequate inspections to catch this situation. An additional factor on gun A-14 may be the support bracket bias resulting in slight sear bind caused by the location of the threaded hole in the receiver being out of specification.

8. Bolt stop breakage was discussed. One of E-town's metallurgists is currently analyzing failed samples and destructively testing DAT and T & P samples in an attempt to understand the reason for these failures. No solution can be offered at this time.

During a wrap-up meeting in Mayfield all issues were listed along with the most probable cause. This was followed by a listing of actions required by Mayfield to correct these issues on existing T & P product so that a new sample could be selected for a second T & P test. The following proposed plan was offered:

- Mayfield will screen existing guns for stock sink and trigger location in the trigger bow opening and replace stocks as required. A .020" shim must go on both sides of the trigger between the trigger and stock opening. The trigger must be biased to the appropriate side before this check is made.

- Mayfield will build new insert assemblies using all new parts. The adjustment/inspection setup will be used to set all fire control settings (engagement, over travel and trigger return spring force. All assemblies will be inspected for adequate trigger return force to ensure that all triggers return to full engagement. In addition sears should be inspected to ensure that they are free to move both in and out of the stock (with bracket installed). T & P guns will be rebuilt using these new assemblies. The assemblers will be instructed to check trigger pull and then segregate product based on whether they are below, above or in specification. It should be mentioned that Mayfield has requested a new trigger pull specification of 4 to 5.5 lbs. Yield based on trigger pull will be tabulated by Mayfield and used to support their position on this issue. Any trigger pull specification change needs to have Marketing's approval prior to T & P test start.

- Mayfield will retest product in the modified shooting test booth to verify that the trigger bending has

been corrected.

- Mayfield needs to ensure that the support bracket does not bias the fire control insert in any way on all T & P product. This should include both inspection and dimensional verification that all characteristics that could effect this, like the location and orientation of the threaded hole in the receiver are in specification.