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June 24, 1982

TO: J. S. MARTIN
FROM: R. S. MURPHY *RSY*
SUBJECT: M/788 SAFETY DETENT STATUS

Testing to determine the existence of any adverse effects of black oxidized safety detent springs and plungers was completed on 6/23/82. From the test results, we determined that the colored components did not cause any problems. The results are as follows:

4 Gun Sample (2 - 22-250; 2 - .308)

	<u>Avg.</u>	<u>High Reading</u>	<u>Low Reading</u>
Safe On Force (Lbs.)	9.28	13.0	4.0
Safe Off Force (Lbs.)	5.21	8.0	4.0

2 Gun Sample (2 - .243)

Safe On Force (Lbs.)	12.62	16.0	5.0
Safe Off Force (Lbs.)	5.27	6.5	4.0

Observations:

• The fire controls used in the 4 Gun sample were built by Production on 10/7/81 using the new spring and 100° c'sink plunger. The safety assembly had the 100° c'sink as well. For this test, Research removed the detent spring and plunger and replaced them with identical black oxidized parts obtained from Production.

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Observations (cont'd.)

- Two of these fire controls were dry cycled to 10,000 rounds before this test.

- The 2 Gun sample was supplied by Marshall Hardy from the current .243 production run. The hard safety on force shown to exist in this sample has been occurring in production guns as well. I feel this problem is caused by a radius interference between the sear and safety lever and is not directly related to the detent system.

Perspective:

For the purpose of comparison, here are average safety on-off forces as measured by S. A. Panelli on 1/17/80.

<u>Model</u>	<u>600</u>	<u>700</u>	<u>788</u>
Safety On Force (Lbs.)	7.2	7.25	7.7
Safety Off Force (Lbs.)	7.8	6.3	2.2

Procedure:

Each rifle was:

Live Fired	1000 Rds.
Dry Cycled	2500 Rds.
Live Fired	1000 Rds.
Dry Cycled	2500 Rds.
Live Fired	500 Rds.
Dry Cycled	2500 Rds.

- Measurements taken after each live firing segment and after every 500 dry cycles included:

- Sear Lift
- Safety On Force
- Safety Off Force

- Safety function was checked after every 20 rounds of live firing.
- Various bullet weights and brands were used.

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Future Work:

- The 788 Owners Manual should be updated. In particular, Figure 1, the Exploded View and the Parts List should be changed. As per R. L. Sassone, these changes should be made at the next printing. According to George Jackson we have 20,000 manuals on hand and won't be ordering any until about January, '83.
- The interference problem causing hard safety on forces should be investigated.

RSM:lv