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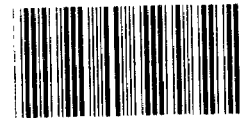
Testimony

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Quality and Safety Problems With the
Beretta M9 Handgun

Statement of
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Before the
Committee on Government Operations
Legislation and National Security Subcommittee
House of Representatives



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Mr. Chairman and Members of the Subcommittee:

I am pleased to be here today to discuss the results of our review of the military's standard sidearm program--the M9 9-mm handgun--manufactured by Beretta U.S.A. Corporation, a subsidiary of the Italian firm Beretta. You asked that we review (1) allegations about M9 safety and quality problems, (2) allegations that the Army attempted to cover up the problems, (3) similarities and differences between the M9 tested in 1984 and the weapon currently being acquired by the Army, and (4) the status of recompetition for award of a follow-on procurement contract.

Before describing the specific results of our review, I would like to briefly review the history of the 9-mm handgun program. Then I will discuss each of the Committee's specific requests.

HISTORY OF THE 9-MM PROGRAM

In order to reduce the proliferation of different types of handguns and ammunition in inventory, the Department of Defense, in 1980, determined that a pistol that used the NATO standard 9-mm ammunition could replace all .45- and .38-caliber handguns. Informal Air Force testing indicated that the Beretta 9-mm pistol was the top performer, and a recommendation to purchase it noncompetitively was nearly approved. According to the Army, the informal Air Force tests had not been scientifically controlled and

therefore could not be used to legally defend a sole-source procurement.

Since there was no formal requirement for a new 9-mm pistol until June 1981, a detailed set of joint service operational requirements was written and approved. The competition, which began in late 1981, was open to both foreign and U.S. firms. Four commercial gun producers, including one U.S. firm, Smith and Wesson, entered the competition. Although the goal was to select a commercially available handgun, the joint requirements proved to be too stringent. In February 1982, the procurement was cancelled because none of the candidates' pistols met all the mandatory requirements.

The issue of selecting a 9-mm handgun remained dormant until guidance from the House Appropriations Committee resulted in a Department of Defense directive for the Army to hold another competition. In November 1983, the Army asked prospective commercial gun producers, in a formal Request for Test Samples (RFTS), to submit 30 of their 9-mm pistols.

Eight companies, including two U.S. firms, submitted samples in January 1984. Testing began in February and was, for the most part, completed by August 1984. Four firms were found technically unacceptable, two withdrew, and two were found acceptable. Both technically acceptable firms were foreign producers.

By mid-November 1984, the overall evaluation of the two technically acceptable firms, SACO and Beretta, was complete and SACO was in the lead. On November 20, 1984, the Army issued a request for best and final offers. Beretta lowered its unit price, while SACO maintained its earlier price. The price change gave Beretta the lead, and on the basis of its higher score, Beretta was selected as the winner.

On April 10, 1985, the Army contracted with Beretta U.S.A. to buy 315,930 M9 9-mm handguns. The contract, with an estimated value of \$75 million, was later increased to 321,260 handguns with an estimated value of \$77.3 million. As of August 17, 1988, the Army had accepted delivery of 133,830 M9 handguns, or about 42 percent of the total number in the contract.

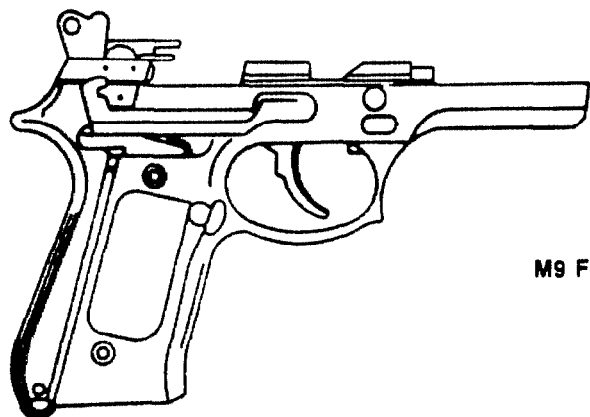
FRAME CRACK PROBLEM

In previous testimony before this Subcommittee, Army officials stated that they would not accept any handguns with frame cracks. These statements were made in connection with another competitor's weapon, which developed frame cracks during the 1984 testing process prior to award of the current contract to Beretta U.S.A.

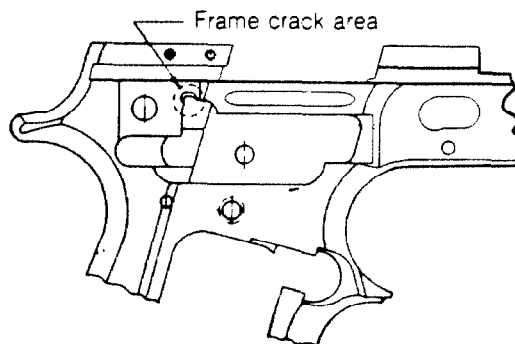
The Beretta M9 has also experienced frame cracks, and as a result, the Army rejected the December 1987 and January 1988

production lots totaling about 12,000 weapons. The figure below illustrates where the cracks occurred.

M9 Frame, Overall View



M9 Frame, Detail of Upper Frame, Right Side



According to Army officials, the frame cracks were cosmetic in nature and did not affect the M9's safety or reliability. Nevertheless, the contractual acceptance testing process does not allow for any cracked or broken frames.

Indications of frame cracks were first noticed during lot production testing of M9s manufactured in September and October 1987. At that time, the Defense Contract Administration Services representative at the Beretta plant recommended that the Army not accept the two lots totaling about 12,000 handguns. However, the M9 program office overruled the recommendation because there was no clear evidence that the frames were cracked.

Production lot testing of the November 1987 lot did not indicate any frame cracks. However, during December 1987 and January 1988 lot testing, frame crack indications reappeared. Based on these tests, the Army rejected the two production lots.

In February and March 1988, Beretta continued to produce 6,000 M9s a month but did not submit the lots for production testing. Thus, at the end of March there were about 24,000 M9s produced but not accepted by the Army.

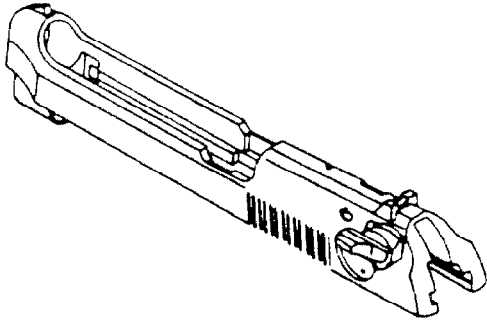
An engineering change proposal (ECP) to modify the manufacturing process to correct the frame crack problem was implemented by Beretta in April 1988. As of August 17, 1988, the

12,000 M9s handguns manufactured during December 1987 and January 1988 as well as those manufactured in February and March 1988 have been reworked, tested, and accepted by the Army. The 6,000 M9s manufactured in April 1988 were submitted to the government for acceptance in late August. A total of 591 of these weapons were manufactured before the ECP was implemented.

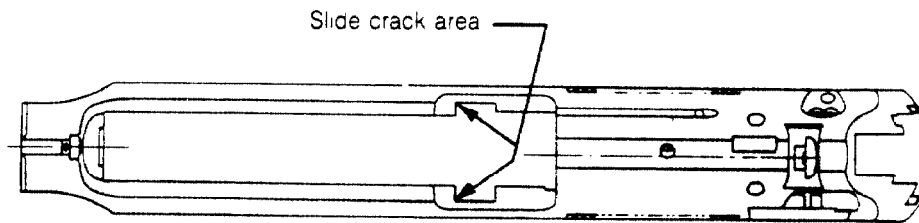
SLIDE FAILURE PROBLEM

The M9 has experienced several slide failures. The Army has determined that a fatigue crack located near the slide's locking lug slot can cause a catastrophic break in the slide when it reaches the full aft firing position. (See figure below.)

M9 Slide, Overall View



M9 Slide, Top View, Front to the Left



The Army has not determined what causes the metal fatigue. To date 14 failures have been reported: three involving Navy-owned handguns and 11 involving Army-owned handguns. The three Navy failures occurred under operational conditions, and the other 11 failures occurred during laboratory testing.

The slide failure problem is more serious than the frame crack problem. The slide assembly is expected to function without cracks or breaks for at least 7,000 rounds. As shown in the following table, most of the weapons met this requirement.

No.	Failure Data			Cracks Detected (Number of Rounds)			Failure Mode			
	Service	Model	Date	Special Failure Test	SEM or MPI	Visually	Number of Rounds	Unsafe	Injury	Ammunition
1	Navy	92SB	9.23.87	No	^a	^a	30,000 ^b	Yes	Yes	Various
2	Navy	M9	1.8.88	No	^a	^a	4,500 ^b	Yes	Yes	NATO
3	Army	M9	2.8.88	No	^c	^c	6,007 ^d	Yes	Yes	NATO
4	Army	M9	3.10.88	Yes	4,000	4,905	4,908	Yes	No ^e	NATO
5	Army	92SBF	3.14.88	Yes	9,000	16,400	17,408	Yes	No ^e	NATO
6	Army	92SBF	3.16.88	Yes	5,000	13,000	21,264	Yes	No ^e	NATO
7	Army	92SBF	3.17.88	Yes	11,000	17,108	24,656	Yes	No ^e	NATO
8	Army	M9	3.17.88	Yes	^c	^c	7,806	Yes	No ^e	NATO
9	Army	M9	5.23.88	Yes	8,500	16,000 ^d	21,942	Yes	No ^e	NATO
10	Army	M9	5.26.88	Yes	9,500	16,000 ^f	21,486	Yes	No ^e	NATO
11	Army	M9	6.22.88	Yes	11,000	^f	23,310	No	No ^e	NATO
12	Navy	M9	7.14.88	No	^c	^c	10,000 ^h	Yes	Yes	Various
13	Army	M9	7.14.88	Yes	10,000	^f	30,083	No	No ^e	NATO
14	Army	M9	7.18.88	Yes	13,000	^f	30,545	Yes	No ^e	NATO

^aSEM or MPI not used, no cracks seen visually

^bEstimated number

^cSEM, MPI, and visual inspection showed no cracks

^dMagnetic particle inspection at 6,000 rounds showed no cracks

^eSpecial failure test conducted with protective shield for shooter

^fRound count not recorded when visual cracks were seen

SEM—Scanning Electron Microscope

MPI—Magnetic Particle Inspection

M9—Military Beretta 9-mm sidearm

92SB and 92SBF—Commercial Beretta 9-mm pistol

What is of particular concern is the safety hazard encountered when failure does occur. The slide breaks into two parts and the rear part flies back at the shooter. Injuries resulting from four slide failures included face lacerations requiring stitches, a broken tooth, and a chest bruise. After the first three slide failures, all laboratory testing of the M9 was conducted with the shooter behind a protective shield.

Now I would like to briefly discuss the 14 failures using the preceding table as an illustration.

The first and second slide failures occurred in Navy operational units on September 23, 1987, and January 6, 1988, respectively. Little is known about the actual number of rounds fired, because there was no requirement to keep a record of the rounds fired or the type of ammunition that was used. Navy officials estimated that the first failure occurred after about 30,000 rounds and the second after about 4,500 rounds. It is believed that the first weapon was firing non-NATO standard ammunition. While the contract requires that the M9 be designed to fire NATO standard ammunition, the contract warranty is not breached by firing other than NATO standard ammunition.

Slide failure number 12, the third failure in an operational environment occurred on July 14, 1988, and involved a Navy-owned M9 firing NATO standard ammunition. The Navy estimated that about

10,000 rounds had been fired through the weapon even though the Navy had issued a safety message that recommended slide replacement after 3,000 rounds. According to Navy officials, the slide had not been replaced because the unit had been on an operational deployment and was unable to comply with the safety message. The slide was scheduled to be replaced on July 25, 1988.

Slide failure number 3, the first laboratory slide failure, occurred on February 8, 1988, and involved an Army M9 firing NATO standard M882 ammunition. This weapon was one of three M9 handguns being tested for problems other than slide failure. As part of the test, all three weapons had been inspected after 6,000 rounds and there were no indications of slide cracks. When the slide failure occurred at 6,007 rounds, the broken slide and the slides on the other two test weapons were removed for metallurgical evaluation. The evaluation showed that one of the unbroken slides also had fatigue cracks. This evaluation marks the beginning of an Army test program to determine why the slide failures occurred.

The Army replaced the slides on the three weapons and continued to fire them, using NATO standard ammunition. One of the replaced slides failed at 4,908 rounds, another failed at 21,942 rounds, and the third failed at 21,486 rounds. These are slide failures 4, 9, and 10 respectively.

Another group of weapons tested consisted of three Army-owned Beretta commercial (92 SBF) handguns and one M9. These are failures number 5, 6, 7, and 8 respectively. The slides on the three 92 SBFs failed at 17,408, 21,264, and 24,656 rounds and the slide on the M9 failed after 7,806 rounds. The weapons were using NATO standard ammunition.

The three commercial 92 SBFs were acquired by the Army prior to the beginning of M9 production and were tested to determine which part would fail first. The tests were conducted in 1985, and the first part to fail was a barrel. After the barrel failed, testing was suspended and the weapons were inspected using a magnetic particle inspection (MPI) process. The inspection showed slide cracks on all three weapons. However, since there had not been any slide failures up to then, the fact that the slides were cracked was of little concern. However, after the first three slide failures in late 1987 and early 1988, the Army decided to resume testing of the three weapons.

A final group of weapons involved three M9s that were part of an annual test to compare weapons produced against military specifications. These are failures 11, 13, and 14 on the chart. After the weapons fired 10,000 rounds, the slides were inspected using the MPI process. One slide was cracked. The Army decided to fire all three weapons until the slides failed. Slide failure occurred at the 23,310 round mark on one weapon, 30,083 on another

weapon, and 30,545 on the third weapon. Unlike previous slide failures, two of these failures occurred in a safe fashion. In the safe failures, the slides did not separate from the weapons.

The contractor believes that the failures resulted from firing non-NATO standard ammunition or NATO standard ammunition that had not been properly tested to ensure that it complied with NATO specifications. The contractor believes that such ammunition could exert enough pressure variations to damage the weapon. According to Army testing officials all the ammunition met NATO specifications and ammunition is not the primary cause of the slide failures.

While Army analysis of the failed slides has determined that metal fatigue is the primary cause of failure, exactly why this occurs still puzzles the Army.

We were told that until April 1988, all slide assemblies were manufactured in Italy and that all the failed slides were from that manufacturing source. Since April, the slides have been manufactured in the United States. Whether there was some anomaly in the overseas manufacturing process is an issue that is being considered by the Army. The Army has reviewed and evaluated the manufacturing process, the alloys, and the heat treating process used by the U.S. manufacturer but has not decided whether to review the Italian processes since that source is no longer used.

The Army's current focus is on ensuring that if a slide fails, the broken pieces will not fly back and injure the shooter. The Army is also pursuing ways to eliminate the cause of the metal fatigue that causes the slide to break. We were told by the program office that the Army plans to stop accepting delivery of M9s, after the April 1988 lot is tested, until the slide problem is resolved. They estimate that acceptance of M9s could resume sometime in January 1989.

NO INDICATIONS OF ARMY

ATTEMPTS TO COVER UP THE PROBLEMS

About 3 weeks after the first Army M9 slide failure occurred, the Army issued a safety message to all M9 users. Army officials explained that they had not responded to the two earlier slide failures on Navy weapons because of the uncertainties about the type of ammunition used in the weapons.

Before issuing the safety message on March 1, 1988, the M9 program office advised the Army Materiel Command, on February 18, 1988, of the slide failures and that an investigation of these incidents was underway. The safety message advised all military M9 users of the problem and of the ongoing investigation. The message further instructed the users to maintain a count of the

number of rounds fired and to replace the slides about every 3,000 rounds.

The Navy reacted to the Army's safety message by issuing its own slide failure engineering bulletins. The bulletins advised that M9s should be used only for operational and emergency requirements, and not for training or familiarization purposes. On March 22, 1988, the Navy lifted its restriction. On April 19, 1988, the Navy notified the Army that it would not accept delivery of any additional M9s until the slide failure problem had been resolved.

COMPARISON OF CURRENT M9 WITH
THE WEAPON TESTED IN 1984

We reviewed the 24 contract ECPs (engineering change proposals), waivers, and deviations to determine if these changes affected the gun's performance or configuration. Most of the changes involved corrections to drawing errors and changes in acceptance testing procedures. Some involved changes in design or specifications.

We identified three ECPs that might affect the M9's performance. These involved a change to the firing pin indent specification and changes to the targeting and accuracy requirements.

At our request, Underwriters Laboratories analyzed the three changes and concluded that the change in the firing pin indent specification would not affect the weapon's performance but that the change in the accuracy requirement was less stringent than initially prescribed. They stated the latter revision was somewhat offset by the change in the targeting requirements. The target profile was enlarged with no stray shots permitted. The initial requirement allowed certain out-of-pattern shots as long as the center of the shot pattern was no more than 10.2 centimeters from the point of aim.

Underwriters believed that the changes probably made it easier for the contractor to comply with contract specifications, but it reached no conclusion about the effect of these changes on the weapon's performance.

The Army Materiel Systems Analysis Activity issued a report in February 1988 that assessed the effects of contract waivers and ECPs on the M9's performance. The report concluded that (1) the M9 still meets Army requirements set forth in the 1984 Request for Test Samples and (2) contract changes have not materially altered the M9s characteristics or configuration or degraded its reliability, durability, accuracy, or dispersion (shot pattern).

ONGOING ARMY EFFORTS TO CONDUCT
COMPETITION FOR FOLLOW-ON 9-MM PROCUREMENT

The 1987 Continuing Appropriations Act directed the Army to hold a competition during fiscal year 1987 for the follow-on procurement of the 9-mm handgun in fiscal year 1988. In conducting the competition and follow-on procurement, the Army was directed to use the same performance specifications as used in the 1984 tests.

On September 30, 1987, the Army issued a Request for Test Samples. The request stated that the M9 would be exempted from retesting, because it has continued to meet all production and acceptance requirements. This decision raised concern with officials in the Office of the Secretary of Defense (OSD), because they believed that the M9, along with the other competitors' weapons, should be subjected to identical tests using the new U.S.-manufactured 9-mm NATO standard ammunition. Between September 1987 and April 1988, OSD officials continued to voice their concerns about the Army's lack of compliance with congressional direction and DOD policy. In fact, DOD withheld \$5.3 million of Army procurement funding for fiscal year 1988 in order to force compliance.

In response to a bid protest filed by Smith and Wesson with the General Accounting Office, we stated, on February 25, 1988,

that (1) Smith and Wesson should not be required to be retested on those elements that it passed in the earlier 1984 competition/testing or (2) if Smith and Wesson was going to be completely retested, then the Beretta M9 should also be retested. Two weeks later, on March 11, 1988, the Army asked us to reconsider our bid protest decision. On April 14, 1988, we affirmed our original decision.

After discussions between this Subcommittee, the Army, and OSD, the Army announced that the on-going competition for follow-on procurement of 9-mm handguns was being canceled and that a new competition, including testing of the M9 handgun, would be conducted. The Army's decision, which appeared in the April 28, 1988, Commerce Business Daily, advised that a Request for Test Samples would be issued on May 10, 1988, and a draft Request For Proposal 10 days later. Testing began in mid-August, and the Army expects to award the contract in the fall 1989.

As required by the 1987 Continuing Appropriations Act, the ongoing testing is being conducted using the same test specifications as the 1984 tests. The M9 with the failsafe mechanism is not a part of the current testing because it had not been developed at the closing date for test samples.