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613 Eastlake Drive
Columbia, MO 65203
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Department of the Army
Army Science Board
Office of the Assistant Secretary
Washington, DC 20310 - 0103

Subject: Report of the Ad Hoc Sub Group on the M9 Pistol Slide Failure Problem

The Ad Hoc Sub Group on the M9 pistol slide failure problem (Dr. James Durig, Dr. Tito Serafini and I; assisted by Mr. Martin Goland) met with representatives of the Army in the Pentagon on 22 February 1989. A list of attendees is presented in enclosure 1.

The panel reviewed the specifications and drawings for the pistol and the information and analyses generated by the government Red Team. In addition, several detailed briefings were given to the panel by Army representatives as can be seen from the agenda (enclosure 2).

As a result of these activities we have reached the following conclusions:

1. The root cause of the slide failure is almost certainly a materials problem not an ammunition problem.

2. The basic materials problem is a lack of fracture toughness which we suspect is caused by improper heat treatment but minor constituent compositions and sulphide inclusion morphology might also be contributors. To further reduce this residual uncertainty we have requested that the Army conduct additional tests on several different material lots at temperatures above, below and at those now specified to attempt to reproduce the slide failure mechanisms. We believe that, if these tests reproduce the failure modes, that the cause will be unambiguously determined.

3. The panel concurs with the Army representatives that the present material may not be the best choice from the standpoint of annealing for maximum fracture toughness and recommends that consideration be given to a different material on future procurements, even if the heat treatment modifications to the current production is successful.

4. We concur with the Army that a slide capture mechanism should be incorporated into the pistol design and believe that the hammer pin modification along with a clearance slot in the slide is a reasonable approach. We do

think some further assessment, on the probability that this modification will provide the desired degree of safety and on whether slight modifications to the receiver rails to increase their strength and to reduce the sharp corner between the rail and the body, is desirable.

5. We also concur that increasing the radius of the locking block slot is a prudent modification because this will certainly reduce the stress concentration at this critical point. The slight increase required in the left slide rail thickness seems to be an acceptable penalty to pay for this approach.

5. Even after these 'fixes' are made it will be necessary to inspect the slides at some prescibed interval based upon the number of rounds fired with the slide. For this reason and for an assist in case of some future problem of a similar type, it would seem prudent for the Army to incorporate an identifying number into the slide part number so that individual slides could be tracked through both their manufacture and use, providing that this step would not incur a prohibitive cost penalty.

The panel is unanimous in its belief that the Army investigation has been carried out in a truly professional and competent manner. The personnel involved deserve special commendation for their efforts.

For the panel,

William M. Hubbard

William M. Hubbard

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ARMY SCIENCE BOARD AD-HOC SUB GROUP

ON

M9 SLIDE FAILURE INVESTIGATION

22 FEBRUARY 1989

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BRIEFING TO ARMY SCIENCE BOARD AD HOC SUB GROUP
ON M9 SLIDE FAILURE PROBLEMS

FEBRUARY 22, 1989

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o	AMMUNITION BACKGROUND	James W. Hettel	0840-0900
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	- Metallurgical Evaluation	Dr. Karl Lukens	
	- Fracture Mechanics Evaluation	John H. Underwood	

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o CORRECTIVE ACTIONS		1035-1145
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- Heat Treatment In-Process Controls	Vincent Minetti	
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BRIEFING TO ARMY SCIENCE BOARD

AD HOC SUB GROUP ON M9 PISTOL SLIDE FAILURE PROBLEMS

22 FEB 89

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