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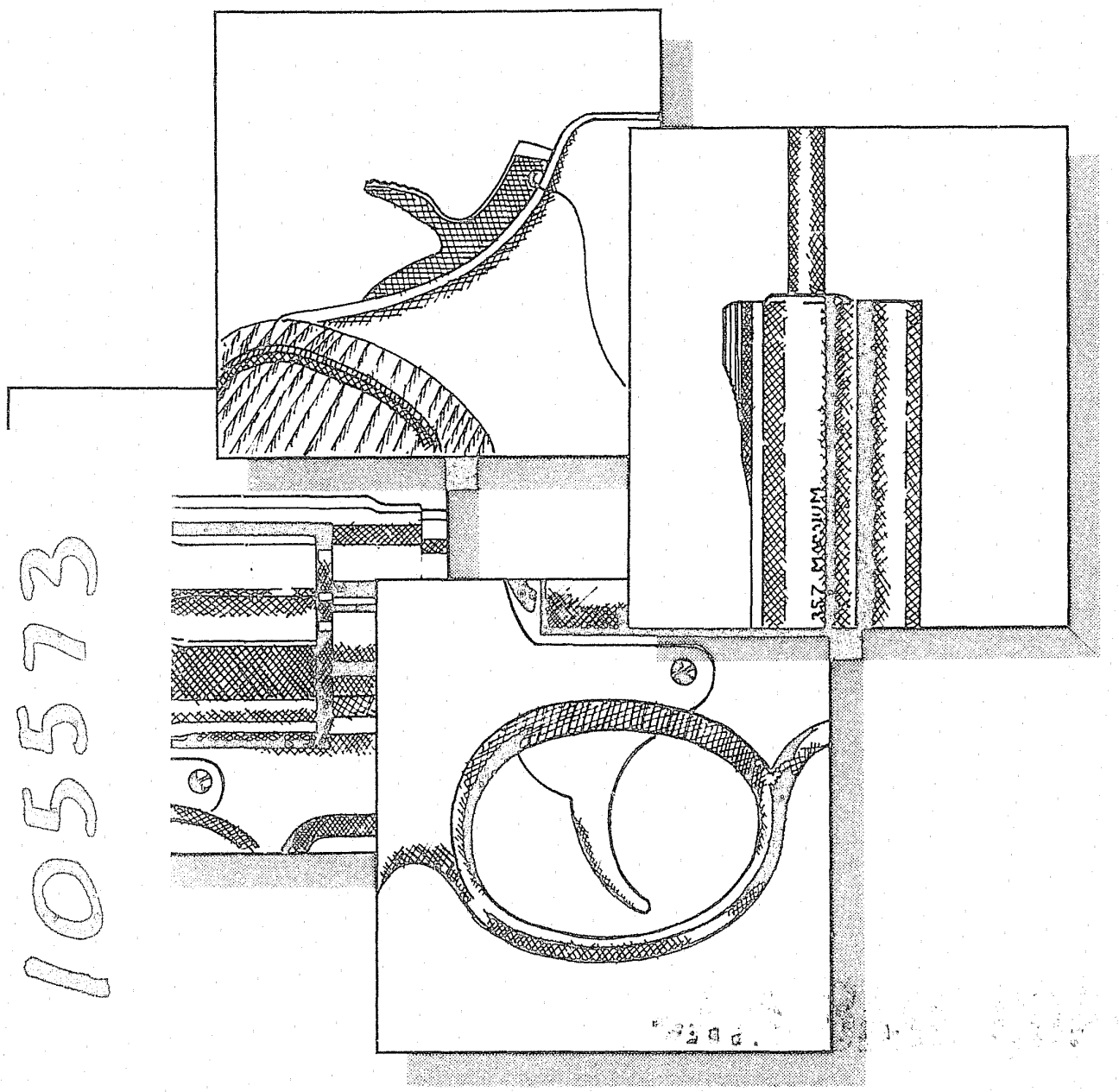
TECHNOLOGY ASSESSMENT PROGRAM

Equipment Performance Report:
.38 & .357 Caliber Revolvers Test Results



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Equipment Performance Report:
.38- and .357-Caliber Revolver Test Results

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National Institute of Justice

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About the Technology Assessment Program

The Technology Assessment Program (TAP) is an applied research project of the National Institute of Justice (NIJ). TAP develops minimum performance standards for law enforcement equipment and tests equipment based on these standards.

To accomplish program tasks, NIJ coordinates the activities of two organizations: the TAP Information Center (TAPIC) and the Law Enforcement Standards Laboratory (LESL) of the National Bureau of Standards. LESL prepares equipment standards, reports, and guides; TAPIC coordinates testing of law enforcement equipment by independent laboratories and publishes the test results. LESL, TAPIC, and the National Institute support one another in accomplishing the program tasks and goals.

TAP's major tasks and goals are:

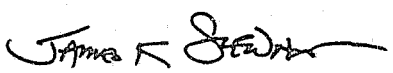
Coordination of the TAP Advisory Council. Composed of nationally recognized professionals from Federal, State, and local criminal justice agencies, the Advisory Council helps the National Institute set priorities for developing new equipment standards and for testing available products.

Coordination of equipment testing. TAPIC develops Requests for Proposals to select testing laboratories, evaluates proposals with assistance from LESL, selects laboratories, and monitors the testing activities.

Compilation and dissemination of test results. TAPIC compiles and analyzes the test results and after review by NIJ and LESL publishes the results in the TAP Alert and Equipment Performance Reports such as this one.

Dissemination of Information. TAP educates the criminal justice community about its resources and services in a number of ways. Staff prepare articles for criminal justice periodicals, develop exhibits, make presentations at major criminal justice conferences, and serve as a clearinghouse of information about equipment and technology.

For more information or to add your name to TAPIC's mailing list, call toll free 800-24-TAPIC. (In Maryland and the Metropolitan Washington, D.C., area call 301-251-5060.)



James K. Stewart
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Executive Summary

Today's law enforcement executives face rising crime rates, increasing public demand for police services, and, at the same time, face the pressure of dwindling resources. Just as research and experimentation have revealed better alternatives to traditional policing methods, National Institute of Justice (NIJ) research also has led to improved ways of selecting law enforcement equipment. Ineffective equipment can hamper police operations and pose a threat to officer safety. In addition, the costs associated with maintenance and replacement of inferior equipment could be astronomical.

One of the most important items of equipment a police officer carries is a service weapon. A properly functioning weapon can be the difference between life and death. This report describes in detail the results of testing 22 different models of revolvers against the minimum performance requirements established by NIJ Standard-0109.00 for .38- and .357-caliber revolvers. The standard describes the parameters that are critical to the safety and reliability of service weapons.

None of the 22 models of revolvers tested complied with every requirement of the standard. Several models, however, did comply with the more critical requirements such as drop safety, hammer safety, and firing. In no case did the manufacturer provide a certificate of compliance with the standard as required, and the user information for the majority of the models did not identify acceptable ammunition for use with the revolver.

Table 1 presents an overall summary of the test results for the five primary requirements. The primary requirement that every revolver failed to comply with was the functional requirement. Table 2 identifies the specific functional requirements that individual revolvers failed to meet. It should be noted that the requirements of the NIJ standard are stringent, for they represent the level of performance that should be demanded for a revolver that is fully capable of service use (i.e. a combat-ready revolver).

No attempt has been made to rank revolvers according to their test results; rather, TAP recommends that law enforcement agencies base their purchase decisions on the extent that failure to comply with a specific requirement limits the revolver's ability to meet an agency's individual needs. TAP further recommends that agencies closely scrutinize the results of the firing, drop safety, and hammer safety requirements before purchasing revolvers for their officers.

The test results indicate that none of the revolvers were ready for police use right out of the box. Purchasers who are interested in obtaining a combat-ready revolver should stipulate in their purchase order that the weapon must comply with the requirements of NIJ Standard-0109.00, .38- and .357-Caliber Revolvers, July 1983.

Even then, each revolver should be examined by a qualified armorer and judged to be combat ready before it is issued to an officer.

We encourage you to take the time to read the entire report on revolver testing and call the TAP Information Center if you have any questions concerning the test results.

Table 1

Summary of Revolver Test Results

C = Complies with the requirement of the standard
N = Does not comply with the requirement of the standard

Manufacturer	Model	Caliber	Dimensional	Functional[a]	Firing	Drop safety	Hammer safety
Charter Arms	13820	.38	N	N (7)	N	N	C
	63521B[b]	.357	N	N (7)	N	*	*
	63542B	.357	C	N (7)	N	N	N
	73820P	.38	N	N (6)	N	N	C
Sturm Ruger	108[b]	.38	C	N (5)	C	N	C
	208[b]	.38	C	N (2)	C	N	N
	707[b]	.357	C	N (2)	C	N	C
	717[b]	.357	C	N (3)	N	C	N
	737[b]	.357	C	N (3)	N	N	C
	GP100[b]	.357	C	N (6)	C	N	N
Smith & Wesson	10[b]	.38	C	N (7)	N	C	C
	13[b]	.38	N	N (2)	C	C	C
	13[b]	.357	C	N (3)	C	C	C
	15[b]	.38	C	N (4)	C	C	C
	19[b]	.357	C	N (4)	N	C	C
	36[b]	.38	N	N (3)	C	C	C
	49[b]	.38	N	N (5)	C	N	C
	60	.38	N	N (4)	N	N	N
	64[b]	.38	C	N (4)	C	C	C
	586[b]	.357	N	N (2)	C	C	C
	649	.38	C	N (7)	N	C	C
	686[b]	.357	N	N (4)	N	C	C

[a]Tests of 25 functional parameters were conducted; numbers in parentheses are the number of characteristics of the functional requirement that did not comply with requirements.

[b]Failed to state acceptability of +P ammunition in instructions.

* No test was performed.

Table 2

Functional Requirements Revolvers Failed To Comply With*

Manufacturer	Model	Caliber	Action		Barrel/cylinder ejection							Other requirement				
			A	B	C	D	E	F	G	H	I	J	K	L	M	N
Charter Arms	13820	.38	x	x		x	x		x	x		x				
	63521B	.357			x	x	x	x		x	x			x		
	63542B	.357		x		x	x	x	x				x		x	
	73820P	.38		x	x	x	x		x			x				
Sturm Ruger	108	.38			x	x	x	x								x
	208	.38				x	x									
	707	.357				x	x									
	717	.357				x	x	x								
	737	.357				x	x					x				
	GP100	.357		x	x	x	x							x	x	
Smith & Wesson	10	.38		x	x	x	x	x	x	x						
	13	.38				x	x									
	13	.357				x	x					x				
	15	.38				x	x	x	x							
	19	.357				x	x	x								x
	36	.38				x	x		x							
	49	.38				x	x	x							x	x
	60	.38				x		x	x					x		
	64	.38		x		x	x	x								
	586	.357				x	x									
	649	.38		x	x	x	x	x	x				x			
	686	.357				x	x	x	x							

* Table does not contain those requirements that all revolvers complied with

x - Indicates that the weapon does not comply with the requirement of the standard

A - Single action operation not smooth
B - Double action operation not smooth
C - Barrel/cylinder gap misalignment, firing position
D - Cylinder misalignment--extreme clockwise position
E - Cylinder misalignment--extreme counterclockwise position
F - Barrel/cylinder gap at forward extreme
G - Barrel/cylinder gap at backward extreme
H - Cylinder binds when opened or closed
I - Rotation mechanism not smooth
J - Ejection not smooth
K - Cylinder support not firmly tightened
L - Single action trigger pull either excessive or light
M - Double action trigger pull excessive
N - Visual inspection unsatisfactory (Has at least one of the following: insufficient hammer overtravel, burr on faceplate, burred screws.)

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Introduction

Police officers very rarely have reason to use their weapons in defense of their lives or the lives of others. But on those critical occasions when an officer does use a weapon, it must be in perfect operating order.

The Technology Assessment Program Advisory Council, in recognition of the extraordinarily important role that handguns play in law enforcement, recommended that NIJ establish performance standards for revolvers and pistols and that handguns be tested against those standards. The first of two handgun standards, NIJ Standard-0109.00, .38- and .357-Caliber Revolvers[1] was issued as a voluntary national standard in July 1983. This Equipment Performance Report presents the results of testing 22 revolvers according to the requirements of that standard. All 22 models were provided directly by the manufacturer.

NIJ standards are stringent. They establish minimum levels of performance that determine the safety and reliability of the revolver and its suitability for service use.[2] A revolver that fully complies with the requirements of the standard is truely combat ready. Many large police departments have their revolvers examined by an armorer and modified or adjusted to assure combat-ready performance. Regrettably many departments, particularly the smaller ones, do not possess or have access to this capability.

NIJ Standard-0109.00 establishes 31 separate parameters each revolver must comply with in addition to having proper user information. Each parameter is evaluated through visual inspection, operational tests, and dimensional measurements. Two revolvers of each model are tested. In addition, 600 rounds of ammunition are fired to evaluate performance and the revolvers are subjected to actual and simulated drop tests.

None of the revolvers that were tested complied with all of the minimum performance requirements of the standard. Some, however, performed better overall than others. An overall comparison of the performance of the 22 different models of revolvers is presented in tables 1 and 2.

Readers should review the test results with an eye toward which requirements are most critical to their particular needs. A department may consider noncompliance with one or another of the functional requirements insignificant if the revolver can be easily adjusted to conform to the standard and the department has the personnel to do so. Noncompliance with other parameters could, however, require major rework or modifications requiring the service of a skilled gunsmith to achieve an acceptable level of performance. Thus, one agency's critical need may be unnecessary to another agency. Some requirements of the NIJ standard, however, such as the drop safety, hammer safety, or firing requirements, should be scrutinized universally because they are essential to the basic performance and safety of the revolver.

The most important warning that TAP can offer as a result of this test program is that agencies should not assume that a weapon is ready for police service until it has been inspected by an armorer. Even though each revolver that was tested was donated directly by its manufacturer,

[1] NIJ issued a companion standard, NIJ Standard-0112.00 for 9mm and .45-Caliber Autoloading Pistols, in April 1986.

[2] Appendix D, Commentary--NIJ Standard-0109.00, contains a discussion of the basis for the requirements included in the standard and the criticality of those requirements.

not one was totally combat ready. TAP therefore encourages all departments that purchase revolvers for police use to stipulate in their purchase orders that the weapons must comply with the requirements of NIJ Standard-0109.00, .38- and .357-Caliber Revolvers, July 1983.

TAP does not endorse particular products, and no attempt is made to compare the performance of one model of revolver with another, or to rank the revolvers according to the test results. However, because Equipment Performance Reports are the product of carefully controlled tests and critical analysis of the data, we believe that the results will help law enforcement agencies identify those revolvers that most closely meet their needs.

The Test Program

According to the TAP equipment testing program procedures (discussed in Appendix E), TAPIC solicited bids to test revolvers from independent testing laboratories. Two laboratories were selected based on their proposal scores: H.P. White Laboratories in Street, Maryland, and Denver Research Institute in Denver, Colorado.

One of the first steps in the testing procedure involved a review of all models of revolvers that were available to police. After LESL and TAPIC identified revolvers to be included in the testing, TAPIC contacted four manufacturers to invite their participation in the program. Three manufacturers sent TAPIC a total of 22 models of revolvers for testing.[3] The models are identified in Tables 3 and 4. The revolvers were then distributed equally between the two laboratories.

Staff members from TAPIC, LESL, and the National Bureau of Standards Laboratory Accreditation Program attended preliminary testing to make sure the laboratories were staffed appropriately, had the correct equipment, and followed the procedures spelled out in NIJ Standard-0109.00. For preliminary tests, each laboratory tested one model. After TAP reviewed and approved the preliminary testing results, the laboratories began testing the remaining 20 models. Staff members from TAPIC and LESL visited the labs periodically during the testing.

Once the testing was completed, LESL staff members assisted TAPIC in the analysis of the data and the compilation of results that are presented in this Equipment Performance Report.

Table 3

.38-Caliber Revolvers Tested

Manufacturer	Model	Material
Charter Arms	13820 Undercover	Carbon Steel
Charter Arms	73720 P Undercover	Stainless Steel
Sturm Ruger	108 Police Service Six	Carbon Steel
Sturm Ruger	208 Speed Six	Carbon Steel
Smith & Wesson	10 Military and Police	Carbon Steel
Smith & Wesson	13 Military and Police	Carbon Steel
Smith & Wesson	15 Combat Masterpiece	Carbon Steel
Smith & Wesson	36 Chief's Special	Carbon Steel
Smith & Wesson	49 Body Guard	Carbon Steel
Smith & Wesson	60 Chief's Special	Stainless Steel
Smith & Wesson	64 Military and Police	Stainless Steel
Smith & Wesson	649 Bodyguard	Stainless Steel

[3]Colt did not participate in the testing program.

Table 4

.357-Caliber Revolvers Tested

Manufacturer	Model	Material
Charter Arms	63521B Bulldog Tracker	Carbon Steel
Charter Arms	63542B Bulldog Tracker	Carbon Steel
Sturm Ruger	707 Police Service Six	Stainless Steel
Sturm Ruger	717 Security Six	Stainless Steel
Sturm Ruger	737 Speed Six	Stainless Steel
Sturm Ruger	GP 100	Carbon Steel
Smith & Wesson	13 Military and Police	Carbon Steel
Smith & Wesson	19 Combat Magnum	Carbon Steel
Smith & Wesson	586 Distinguished Combat Magnum	Carbon Steel
Smith & Wesson	686 Distinguished Combat Magnum	Stainless Steel

Minimum Performance Requirements and Methods of Testing

NIJ Standard-0109.00, .38- and .357-Caliber Revolvers, July 1983, establishes requirements and methods of testing for six broad categories of revolver performance. The discussion that follows summarizes the specific requirements and briefly describes the manner in which compliance is tested or determined. TAPIC will gladly provide a copy of the standard upon request.

1. User Information

The standard requires that the manufacturer provide six items of user information with each revolver: (a) field disassembly and assembly instructions; (b) a statement as to the acceptability of using PLUS-P ammunition in the revolver; (c) a parts list; (d) ordering instructions for spare or replacement parts; (e) cleaning instructions; and (f) certification of compliance with this standard.

Compliance is determined by examining the information provided with each revolver to determine if all items are included and if the documentation is suitable for its intended purpose.

2. Dimensional Requirements

(a) The barrel/cylinder gap shall be not less than .004 inches nor more than .008 inches.

Compliance is determined by measuring the space between the rear of the barrel and the front surface of the cylinder with a feeler gage.

(b) The barrel bore shall be not less than .346 inches nor more than .350 inches.

Compliance is determined by measuring the diameter of the barrel bore with a caliper/micrometer or other suitable method.

(c) The headspace shall be not less than .060 inches nor more than .074 inches.

Compliance is determined by inserting a headspace gage into the chamber at the breach end, measuring the distance between the gage and the breech face with a feeler gage and adding the measured value to the known thickness of the gage rim.

3. Functional Requirements

(a) The action shall operate smoothly in both single and double action modes.

Compliance is by observation of evidence of grittiness, hesitation, or nonuniformity of pressure required to operate the mechanism.

(b) The cylinder and barrel shall be aligned when the hammer is in the fired position.

Compliance with this requirement is determined by operating the firing mechanism and, with the trigger held fully back, inserting a ranging rod through the muzzle into the chamber. The ranging rod should enter the chamber freely without catching on the edge of the chamber wall. This test is conducted for each chamber.

(c) The cylinder shall rotate freely in the frame without binding.

Compliance is determined by operating the cylinder and observing its movement.

(d) The cylinder shall open and close without binding.

Compliance is determined by operating the cylinder and observing its movement.

(e) It shall not be possible to open the cylinder when the hammer is in the cocked position.

Compliance is determined by cocking the hammer and attempting to open the cylinder.

(f) The cylinder rotation action shall operate smoothly.

Compliance is determined by operating the revolver and observing its movement.

(e) The mechanism shall eject all cartridges without hesitation.

Compliance is determined by operating the ejection mechanism and observing its action.

(f) The cylinder support shall be tightly assembled and all moveable parts shall slide freely.

Compliance is determined by physical inspection and operation of movable parts.

(g) The hammer shall operate smoothly and when fully cocked shall support a load of 10.23 lbs.

Compliance is determined by operating the hammer and applying the required load in the cocked position.

(h) The single action trigger pull shall be not less than 3.4 lbs. nor more than 5 lbs.; the double action trigger pull shall be not more than 13.2 lbs; and the trigger must return to the forward position when pulled to the rear and released without binding or sticking.

Compliance is determined by measuring the trigger pull force in both modes and operating the trigger.

(i) There shall be no interference or binding between the hammer, firing pin, and frame; the hammer shall have sufficient over-travel to provide full cocked position; the mainspring shall be uniform and free of kinks; there shall be no loose shavings present; the revolver shall be free of missing or deformed screws; and the revolver shall be free of rust spots and burrs.

Compliance is determined through visual inspection.

(j) The revolver shall have one or more safety features and they shall operate as intended.

Compliance is determined by operating the safety features and observing their operation.

4. Firing Requirement

The revolver shall fire 100 rounds of ammunition in single action and 500 rounds in double action with no structural or mechanical failure and no more than one misfire. The revolver shall have no more than one parameter falling out of the specified range during firing (headspace, barrel/cylinder gap, trigger pull, and barrel/cylinder alignment).

Compliance is determined by firing a total of 600 rounds of ammunition. The revolver is allowed to cool after each 50 rounds and cleaned in accordance with manufacturer's instructions after each 100 rounds. The four required parameters are also measured after each 100 rounds. Any loose parts or malfunctions are observed and recorded.

5. Drop Safety

The revolver shall not fire and the primer shall be free of indentation after being drop tested.

Compliance is determined by dropping the revolver onto a steel plate from a height of 39.37 inches (1 meter). The revolver is loaded with empty cases with a primer installed. The revolver is dropped from the normal firing position, upside down, on each side, on the muzzle, and on the grip with the muzzle vertical. After each drop, it is noted if the revolver fires and the primer is examined for evidence of indentation. One of the two

test revolvers is subjected to this test and the other test revolver is subjected to the hammer safety test.

6. Hammer Safety

The revolver shall not fire and the primer shall be free of indentation when the hammer is impacted by an impactor of the same weight as the loaded revolver.

Compliance is determined by firmly attaching the revolver to a stand with the barrel vertical and pointing down and the hammer in the double action at rest position, trigger forward. An impactor of the same weight as the loaded revolver is dropped from a height of 39.37 inches (1 meter), so it hits the hammer. After each drop it is noted if the revolver fires and the primer is examined for evidence of indentation. The cylinder is rotated to the next chamber and the impact to the hammer is repeated until all chambers have been tested. Revolvers that are not drop tested are subjected to this hammer safety test.

Test Results

To meet all the requirements of the NIJ Standard-0109.00 for .38- and .357-caliber revolvers, two samples of a model must meet the user, dimensional, functional, and firing requirements of the standard; one of the samples must pass the drop safety requirement; and the other sample must pass the hammer safety requirement.

TAP's evaluation of the 22 models submitted by manufacturers for testing according to NIJ Standard-0109.00 revealed that none of the models tested complied with all the requirements of the standard.

1. User Information

Of the 22 models tested, none passed the user information requirement because the manufacturer did not provide certification of compliance with the standard. Also, most of the revolvers failed this requirement because the manufacturer did not include a statement concerning the acceptability of +P ammunition.

2. Dimensional Requirements

Just over half the revolvers (13 of 22) passed the dimensional requirements of the standard. Most of the revolvers that failed this requirement did so because the barrel cylinder gap or barrel bore diameter did not meet the dimensions required by the standard.

3. Functional Requirements

All 22 revolver models failed the functional requirements of the standard because of cylinder assembly problems. In addition, many revolvers did not comply with other functional requirements.

4. Firing Requirement

Half of the revolvers tested (11 of 22) were capable of firing the required 600 rounds of ammunition without failures described in the standard.

5. and 6. Drop and Hammer Safety Requirements

Half the revolvers tested (11 of 22) passed the drop safety requirement and almost two-thirds (16 of 22) passed the hammer safety requirement. The frame of one revolver model broke during the firing test, thus excluding the model from the drop safety and hammer safety tests.

The detailed test results for revolvers manufactured by Charter Arms are presented in Appendix A, those manufactured by Sturm Ruger in Appendix B, and Appendix C presents the test results for revolvers manufactured by Smith & Wesson. In each case, test results appear in the same order that they appear in Table 1--Summary of Test Results.

The test results for each revolver model include a cover sheet that provides full manufacturer designation, the characteristics of the model including empty weight, an explanation of any footnotes on the data sheets, and an overall summary of the test results. The cover sheet is followed by a data sheet for each of the two revolver samples that were tested. In those instances in which the revolver did not comply with the requirement of the standard, the noncomplying parameter is identified by an asterisk (*).

For completeness of result presentation, certain of the test results are footnoted and a detailed comment for that footnote is found on the cover sheet for that revolver model.

For the trigger pull, numbers were rounded to the nearest tenth of a pound except when rounding caused ambiguities. The weight of the weapon was rounded to the nearest tenth of an ounce.

APPENDIX A: Results for Charter Arms Revolvers

Charter Arms, Model 13820 (Undercover)
.38 Special Caliber, 2-inch barrel, single/double action revolver
(5 round cylinder capacity, carbon steel construction;
weight 15.8 oz. unloaded)

TEST DATA

Revolvers: Serial Numbers (SN) 942807 and 942856

Results: The revolver satisfied the Hammer Safety Requirements of the standard. The revolver failed to comply with the User, Dimensional, Functional, Firing, and Drop Requirements of the standard.

Footnotes: [1]SN 942807 - During the ejection test the case heads hit the cylinder stop pin.

[2]SN 942807 - During the firing test, at the end of firing 400 rounds, it was discovered that the frame assembly screw was loose and had to be tightened. At the end of firing 400 rounds it was also discovered that the side plates began spreading.

[3]SN 942856 - During the ejection test, the trigger remained to the rear after firing the first round. The trigger was returned manually. The case heads also lightly hit the cylinder stop pin.

[4]SN 942856 - During the drop test, after the fifth drop (on side, barrel horizontal), the revolver could not be cocked single action or fired double action.

[5]SN 942856 - During the firing test the ejection from 2 chambers was difficult throughout the 600 round test. The cylinder overrode the cylinder stop spud during ejection of rounds 41 through 45. After firing round number 175, a burr prevented the ejector rod from automatically seating, disabling the cylinder latch. The ejector rod was seated manually for the remainder of the test. The hammer screw was loose and had to be tightened at the end of firing 300, 500, and 600 rounds. The side plates began spreading at the end of firing 400 rounds. After 545 firings the ejector rod head was loose and had to be tightened.

Charter Arms Model 13820 (Undercover), Serial Number 942807

Test Results

User Information: Did not include a statement concerning the certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .009*-.010* in. b) Bore diameter .349 in. c) Headspace range .065-.065 in.

Functional Requirements:

Action: Single and double actions were hesitant.*

Cylinder Alignment in Fired Position: All 5 chambers aligned.

Cylinder Assembly: a) 1 chamber was out of alignment at clockwise extreme of cylinder rotation;* all 5 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .005-.006 in.; cylinder gap at backward extreme: .007-.008 in. c) Rotated freely in frame. d) Did not open and close without binding.* e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection[1]: Did not eject all cartridges without hesitation.*

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 4.4 lb. single action (SA), 12.5 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement: See data sheet for SN 942856.

Hammer Safety Requirement (impactor dropped from a height of 37.4 in. hitting the hammer in a position over the cylinder): a) No fired primers. b) No primer indents.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[2]
0	.065/.065	.009*/.010*	0	4.4/12.5	N/A
100	.065/.065	.010*/.010*	0	3.8/12.0	None
200	.065/.066	.009*/.010*	1*	3.9/14.3*	None
300	.065/.066	.009*/.010*	0	3.9/13.7*	None
400	.065/.066	.009*/.010*	0	3.8/16.0*	Structural failure*
500	.065/.066	.009*/.010*	0	3.9/13.4*	None
600	.065/.066	.009*/.010*	0	3.9/15.3*	None

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Charter Arms Model 13820 (Undercover), Serial Number 942856

Test Results

User Information: Did not include a statement concerning the certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .011*-.012* in. b) Bore diameter .350 in. c) Headspace range .066-.066 in.

Functional Requirements:

Action: Single and double actions were hesitant.*

Cylinder Alignment in Fired Position: All 5 chambers aligned.

Cylinder Assembly: a) 2 chambers were out of alignment at clockwise extreme of cylinder rotation;* 3 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .006-.006 in.; cylinder gap at backward extreme: .011*-.012* in. c) Rotated freely in frame. d) Did not open and close without binding.* e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection:[3] Did not eject all cartridges without hesitation.*

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 4.4 lb. single action (SA), 11.5 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement[4] (6 drops from a height of 39.4 in., 6 cardinal orientations): a) No fired primers. b) 2 primer indents.*

Hammer Safety Requirement: See data sheet for SN 942807.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[5]
0	.066/.066	.011*-.012*	0	4.4/11.5	N/A
100	.066/.066	.012*-.012*	2*	4.1/13.5*	Mechanical malfunction*
200	.066/.067	.012*-.012*	2*	3.9/11.7	Structural malfunction*
300	.066/.067	.012*-.012*	2*	3.8/11.4	None
400	.066/.067	.012*-.012*	1*	3.9/11.4	Structural malfunction*
500	.066/.068	.012*-.012*	1*	3.9/11.4	None
600	.067/.068	.012*-.013*	1*	3.9/11.5	None

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Charter Arms Model 63521B (Bulldog Tracker)
.357 Magnum Caliber, 2.5-inch barrel, single/double action revolver
(5 round cylinder capacity, carbon steel construction;
weight 21.2 oz. unloaded)

TEST DATA

Revolvers:	Serial Numbers (SN) 727526 and 835043
Results:	The revolver failed to comply with the User, Dimensional, Functional, and Firing Requirements of the standard. The Drop and Hammer Safety tests were not performed because both revolvers' grip frames broke during the firing test.
Footnotes:	[1]SN 727526 - During the firing test there was a misfire at rounds 27 and 42 attributable to shallow primer indents. After firing round 43, the grip frame broke terminating the test.
	[2]SN 835043 - During the firing test the grip frame broke at round 87. The test was terminated.

Charter Arms Model 63521B (Bulldog Tracker), Serial Number 727526

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .001*-.001* in. b) Bore diameter .350 in. c) Headspace range .066-.067 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All chambers aligned.

Cylinder Assembly: a) All 5 chambers were out of alignment at clockwise extreme of cylinder rotation;* all 5 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: 0;* cylinder gap at backward extreme: .006-.007 in. c) Rotated freely in frame. d) Opened and closed without binding. 3) Did not open with hammer cocked. f) Rotation mechanism did not operate smoothly (rubbed on cylinder stud).*

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 3.38* lb. single action (SA), 12.1 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement: Test not performed.

Hammer Safety Requirement: Test not performed.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[1]
0	.066/.067	.001*/.001*	0	3.38*/12.1	N/A
100	—	--	-	--	2 misfires*/ structural failure*

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Charter Arms Model 63521B (Bulldog Tracker), Serial Number 835043

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .004-.005 in. b) Bore diameter .350 in. c) Headspace range .060-.060 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: 1 chamber misaligned.*

Cylinder Assembly: a) All 5 chambers were out of alignment at clockwise extreme of cylinder rotation;* all 5 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .001*-.002* in.; cylinder gap at backward extreme: .005-.006 in. c) Rotated freely in frame. d) Did not open and close without binding.* e) Did not open with hammer cocked. f) Rotation mechanism did not operate smoothly (rubbed on cylinder stud).*

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 3.6 lb. single action (SA), 11.9 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement: Test not performed.

Hammer Safety Requirement: Test not performed.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[2]
0	.060/.060	.004/.005	1*	3.6/11.9	N/A
100	--	--	-	--	Structural failure*

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Charter Arms, Model 63542B (Bulldog Tracker)
.357 Magnum Caliber, 4-inch barrel, single/double action revolver
(5 round cylinder capacity, carbon steel construction;
weight 24.0 oz. unloaded)

TEST DATA

Revolvers: Serial Numbers (SN) 835121 and 917145

Results: The revolver satisfied the Dimensional Requirements of the standard. The revolver failed to comply with the User, Functional, Firing, Drop, and Hammer Safety Requirements.

Footnotes: [1]SN 835121 - During the drop test after the fifth drop (i.e., on side, barrel horizontal), the cylinder release would not operate. The cylinder had to be opened with a mallet and punch.

[2]SN 835121 - During the firing test, the cylinder overrode the cylinder stud continually during the 600 round firing test. The right rear sight windage screw was loose and had to be tightened at the end of firing 200, 300, 400, 500, and 600 rounds. The hammer screw was loose at the end of firing 600 rounds and was tightened.

[3]SN 917145 - During the firing test, at round 195 the cylinder overrode the cylinder stud and continued to do so throughout the 600 round firing test. At the end of firing 300 rounds, the rear portion of the gun frame assembly began spreading, loosening the grip frame. After firing round 545 the ejection rod was binding requiring the cases to be extracted manually.

The right rear sight windage screw was loose and had to be tightened at the end of firing each 100 rounds. At round 127 the screw fell out and the rear sight had to be reassembled. At round 188 the trigger pin was loose and was reseated. At round 300 the hammer screw was loose and had to be tightened continually through the remainder of the test.

Charter Arms Model 63542B (Bulldog Tracker), Serial Number 835121

Test Results

User Information: Did not include a statement concerning the certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .004-.004 in. b) Bore diameter .349 in. c) Headspace range .068-.070 in.

Functional Requirements:

Action: Single action operated smoothly. Double action hesitated.*

Cylinder Alignment in Fired Position: All 5 chambers aligned.

Cylinder Assembly: a) 4 chambers were out of alignment at clockwise extreme of cylinder rotation;* all 5 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .002*-.003* in.; cylinder gap at backward extreme: .008-.009* in. c) Rotated freely in frame. d) Open and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Cylinder was loose horizontally; closed and loose in all planes when open.* Moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 4.4 lb. single action (SA), 11.9 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement[1] (6 drops from a height of 39.4 in., 6 cardinal orientations): a) No fired primers. b) 1 primer indent.*

Hammer Safety Requirement: See data sheet for SN 917145.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[2]
0	.068/.070	.004-.004	0	4.4/11.9	N/A
100	.068/.070	.004-.004	0	3.9/11.9	Mechanical failure*
200	.068/.070	.004-.005	1*	3.6/11.9	Mechanical failure*
300	.068/.070	.004-.005	0	3.4/11.9	Mechanical failure*
400	.068/.070	.004-.005	0	3.6/11.6	Mechanical failure*
500	.068/.069	.005-.005	0	3.8/10.9	Mechanical failure*
600	.068/.070	.005-.005	0	3.8/10.6	Mechanical failure*

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Charter Arms Model 63542B (Bulldog Tracker), Serial Number 917145

Test Results

User Information: Did not include a statement concerning the certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .007-.007 in. b) Bore diameter .350 in. c) Headspace range .063-.065 in.

Functional Requirements:

Action: Single action operated smoothly. Double action hesitated.*

Cylinder Alignment in Fired Position: All 5 chambers aligned.

Cylinder Assembly: a) All 5 chambers were out of alignment at clockwise extreme of cylinder rotation;* all 5 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .003*-.004 in.; cylinder gap at backward extreme: .007-.009* in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Cylinder was loose horizontally; closed and loose in all planes when open.* Moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 4.9 lb. single action (SA), 14.6* lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement: See data sheet for SN 835121.

Hammer Safety Requirement (impactor dropped from a height of 37.4 in. hitting the hammer in a position over the cylinder): a) No fired primers. b) 1 primer indent.*

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[3]
0	.063/.065	.007/.007	0	4.9/14.6*	N/A
100	.064/.066	.007/.007	0	3.9/11.6	None
200	.064/.066	.007/.007	2*	3.9/11.2	Mechanical failure*
300	.064/.066	.007/.008	1*	3.9/11.2	Mechanical/structural failure*
400	.064/.066	.008/.008	2*	4.3/10.9	Mechanical/structural failure*
500	.064/.066	.008/.008	0	4.1/10.9	Mechanical/structural failure*
600	.064/.066	.008/.008	2*	3.8/11.2	Mechanical/structural failure*

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Charter Arms Model 73820P (Undercover)
.38 Special Caliber, 2-inch barrel, single/double action revolver
(5 round cylinder capacity, stainless steel construction;
weight 17.3 oz. unloaded)

TEST DATA

Revolvers: Serial Numbers (SN) 819383 and 820426

Results: The revolver satisfied the Hammer Safety Requirements of the standard. The revolver failed to comply with the User, Dimensional, Functional, Firing, and Drop Safety Requirements of the standard.

Footnotes: [1]SN 819383 - During the dimensional test the headspace gage would not seat on one chamber due to chamber/ejector rod interference.

[2]SN 819383 - During the firing test, the cover plate screws were loose at the end of firing 100, 200, 300, 400, 500, and 600 rounds. The cylinder support screw was loose at the end of firing 100, 400, 500, and 600 rounds. The 144th round misfired, and this was attributable to a shallow primer indent. The laboratory determined that the ejector was not the correct size for one chamber.

[3]SN 820426 - During the drop test, after the fifth drop (on side barrel horizontal drop), the cylinder would no longer lock due to a bent ejector rod.

Charter Arms Model 73820P (Undercover), Serial Number 819383

Test Results

User Information: Did not include a statement concerning the certification of compliance with this standard.*

Dimensional Requirements:[1] a) Barrel/cylinder gap .007-.008 in. b) Bore diameter .350 in. c) Headspace range .060-.063 in. for four chambers only.*

Functional Requirements:

Action: Single action operated smoothly. Double action was hesitant and nonuniformity of pressure was required to operate the action.*

Cylinder Alignment at Fired Position: 3 chambers misaligned.*

Cylinder Assembly: a) All 5 chambers were out of alignment at clockwise extreme of cylinder rotation;* 1 chamber was out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .004-.006 in.; cylinder gap at backward extreme: .009*-.010* in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Did not eject all cartridges without hesitation.*

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 4.2 lb. single action (SA), 11.2 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement: See data sheet for SN 820426.

Hammer Safety Requirement (impactor dropped from a height of 37.4 in. hitting the hammer in a position over the cylinder): a) No fired primers. b) No primer indents.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[2]
0	.060/.063	.007-.008	3*	4.2/11.2	N/A
100	.062/.064	.006-.007	3*	4.1/11.6	None
200	.062/.064	.006-.007	3*	4.1/10.9	1 misfire*
300	.062/.064	.007-.008	3*	4.1/11.1	None
400	.063/.065	.006-.007	2*	4.1/11.1	None
500	.062/.064	.005-.008	4*	4.1/11.1	None
600	.063/.065	.006-.007	1*	4.1/10.4	None

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Charter Arms Model 73820P (Undercover), Serial Number 820426

Test Results

User Information: Did not include a statement concerning the certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .004-.007 in. b) Bore diameter .349 in. c) Headspace range .060-.063 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: 4 chambers misaligned.*

Cylinder Assembly: a) All 5 chambers were out of alignment at clockwise extreme of cylinder rotation;* all 5 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .004-.007 in.; cylinder gap at backward extreme: .006-.010* in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 3.6 lb. single action (SA), 11.9 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement[3] (6 drops from a height of 39.4 in., 6 cardinal orientations): a) No fired primers. b) 2 primer indents.*

Hammer Safety Requirement: See data sheet for SN 819383.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction
0	.060/.063	.004/.007	4*	3.6/11.9	N/A
100	.061/.064	.005/.008	0	3.9/11.9	None
200	.061/.064	.008/.008	0	3.9/11.9	None
300	.062/.064	.007/.009*	0	3.9/11.9	None
400	.061/.064	.007/.010*	0	3.9/11.6	None
500	.060/.064	.006/.009*	3*	3.6/11.1	None
600	.062/.065	.005/.005	5*	3.6/11.1	None

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

APPENDIX B: Results for Sturm Ruger Revolvers

Sturm Ruger Model 108 (Police Service Six)
.38 Special Caliber, 4-inch barrel, single/double action revolver
(6 round cylinder capacity, carbon steel construction;
weight 36.1 oz. unloaded)

TEST DATA

Revolvers:	Serial Numbers (SN) 160-35376 and 160-35380
Results:	The revolver satisfied the Dimensional, Firing, and Hammer Safety Requirements of the standard. The revolver failed to comply with the User, Functional, and Drop Requirements of the standard.
Footnotes:	[1]SN 160-35380 - During the firing test, round number 493 misfired (single action). There was an indent off the primer on case rim.

Sturm Ruger Model 108 (Police Service Six), Serial Number 160-35376

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .006-.007 in. b) Bore diameter .349 in. c) Headspace range .060-.060 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: 2 chambers were out of alignment.*

Cylinder Assembly: a) 4 chambers were out of alignment at clockwise extreme of cylinder rotation;* 5 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .003*-.004 in.; cylinder gap at backward extreme: .004-.006 in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 4.2 lb. single action (SA), 11.2 lb. double action (DA).

Visual Inspection: Insufficient hammer over travel.*

Safety Features: Were present and functioned properly.

Drop Requirement: See data sheet for SN 160-35380.

Hammer Safety Requirement (impactor dropped from a height of 37.4 in. hitting the hammer in a position over the cylinder): a) No fired primers. b) No primer indents.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction
0	.060/.060	.006/.007	2*	4.2/11.2	N/A
100	.061/.062	.006/.007	0	4.1/11.1	None
200	.061/.062	.007/.007	0	4.0/11.3	None
300	.061/.062	.006/.008	0	3.9/11.1	None
400	.061/.062	.007/.007	0	4.0/11.4	None
500	.061/.062	.007/.007	0	3.9/11.1	None
600	.062/.063	.007/.008	4*	3.7/11.1	None

*Not in compliance with requirements of NIJ Standard-0109.00.

Sturm Ruger Model 108 (Police Service Six), Serial Number 160-35380

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .005-.006 in. b) Bore diameter .349 in. c) Headspace range .060-.061 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All 6 chambers aligned.

Cylinder Assembly: a) All 6 chambers were out of alignment at clockwise extreme of cylinder rotation;* all 6 chambers were aligned at counterclockwise extreme of cylinder rotation. b) Cylinder gap at forward extreme: .003*-.005 in.; cylinder gap at backward extreme: .004-.006 in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 4.2 lb. single action (SA), 10.4 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement (6 drops from a height of 39.4 in., 6 cardinal orientations): a) No fired primers. b) 1 primer indent.*

Hammer Safety Requirement: See data sheet for SN 160-35376.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[1]
0	.060/.061	.005/.006	0	4.2/10.4	N/A
100	.060/.062	.006/.007	0	4.6/10.9	None
200	.061/.062	.006/.007	0	3.9/10.9	None
300	.062/.062	.006/.006	0	4.9/10.6	None
400	.062/.062	.006/.007	0	3.9/10.6	None
500	.062/.062	.006/.007	0	3.9/10.9	1 misfire*
600	.062/.063	.005/.007	1*	3.9/10.9	None

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Sturm Ruger Model 208 (Speed Six)
.38 Special Caliber, 2 3/4-inch barrel, single/double action revolver
(6 round cylinder capacity, carbon steel construction;
weight 35.3 oz. unloaded)

TEST DATA

Revolvers:	Serial Numbers (SN) 160-93934 and 161-81307
Results:	The revolver satisfied the Dimensional and Firing Requirements of the standard. The revolver failed to comply with the User, Functional, Drop, and Hammer Safety Requirements of the standard.
Footnotes:	None.

Sturm Ruger Model 208 (Speed Six), Serial Number 160-93934

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .006-.006 in. b) Bore diameter .347 in. c) Headspace range .062-.063 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All 6 chambers aligned.

Cylinder Assembly: a) 3 chambers were out of alignment at clockwise extreme of cylinder rotation;* all 6 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .005-.006 in.; cylinder gap at backward extreme: .006-.006 in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 4.1 lb. single action (SA), 12.2 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement: See data sheet for SN 161-81307.

Hammer Safety Requirement (impactor dropped from a height of 37.4 in. hitting the hammer in a position over the cylinder): a) No fired primers. b) 1 primer indent.*

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction
0	.062/.063	.006/.006	0	4.1/12.2	N/A
100	.062/.063	.006/.006	0	4.1/11.6	None
200	.062/.063	.006/.006	0	4.1/11.2	None
300	.063/.064	.006/.006	0	4.4/11.4	None
400	.063/.064	.006/.006	0	4.4/12.0	None
500	.063/.064	.006/.007	0	4.4/12.9	None
600	.063/.064	.006/.007	0	4.4/12.4	None

*Not in compliance with requirements of NIJ Standard-0109.00.

Sturm Ruger Model 208 (Speed Six), Serial Number 161-81307

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .006-006 in. b) Bore diameter .347 in. c) Headspace range .062-.062 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All 6 chambers aligned.

Cylinder Assembly: a) 5 chambers were out of alignment at clockwise extreme of cylinder rotation;* 1 chamber was out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .005-.005 in.; cylinder gap at backward extreme: .007-.008 in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 4.4 lb. single action (SA), 11.0 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement (6 drops from a height of 39.4 in., 6 cardinal orientations): a) No fired primers. b) 1 primer indent.*

Hammer Safety Requirement: See data sheet for SN 160-93934.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction
0	.062/.062	.006/.006	0	4.4/11.0	N/A
100	.062/.063	.007/.007	0	4.1/10.7	None
200	.062/.063	.007/.007	0	4.1/10.5	None
300	.063/.063	.007/.007	0	4.1/10.4	None
400	.063/.064	.007/.007	0	4.1/10.4	None
500	.063/.064	.007/.007	0	3.9/11.5	None
600	.063/.064	.007/.007	0	4.4/10.9	None

*Not in compliance with requirements of NIJ Standard-0109.00.

Sturm Ruger Model 707 (Police Service Six)
.357 Magnum Caliber, 4-inch barrel, single/double action revolver
(6 round cylinder capacity, stainless steel construction;
weight 37.8 oz. unloaded)

TEST DATA

Revolvers: Serial Numbers (SN) 159-79905 and 159-96475

Results: The revolver satisfied the Dimensional, Firing, and Hammer Safety Requirements of the standard. The revolver failed to comply with the User, Functional, and Drop Requirements of the standard.

Footnotes: [1]SN 159-79905 - During the firing test, it was noted that the breech face was not parallel to the backface of the cylinder. Headspace, therefore, was not uniform. The gap at the lower edge of the cartridge rim was approximately .010 inches greater than at the upper edge.

Sturm Ruger Model 707 (Police Service Six), Serial Number 159-79905

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .006-.007 in. b) Bore diameter .346 in. c) Headspace range .061-.062 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All 6 chambers aligned.

Cylinder Assembly: a) All 6 chambers were out of alignment at clockwise extreme of cylinder rotation;* 2 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .005-.006 in.; cylinder gap at backward extreme: .006-.007 in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 3.9 lb. single action (SA), 10.9 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement (6 drops from a height of 39.4 in., 6 cardinal orientations): a) No fired primers. b) 1 primer indent.*

Hammer Safety Requirement: See data sheet for SN 159-96475.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[1]
0	.061/.062	.006/.007	0	3.9/10.9	N/A
100	.062/.062	.006/.007	0	4.1/11.4	None
200	.062/.063	.005/.006	0	3.8/12.7	None
300	.063/.063	.006/.007	0	3.8/11.2	None
400	.063/.063	.007/.007	0	4.1/10.9	None
500	.063/.063	.007/.007	0	3.9/10.6	None
600	.063/.064	.007/.007	0	3.8/10.6	None

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Sturm Ruger Model 707 (Police Service Six), Serial Number 159-96475

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .006-.007 in. b) Bore diameter .346 in. c) Headspace range .061-.062 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All 6 chambers aligned.

Cylinder Assembly: a) 5 chambers were out of alignment at clockwise extreme of cylinder rotation;* 2 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .005-.007 in.; cylinder gap at backward extreme: .006-.007 in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 4.1 lb. single action (SA), 12.9 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement: See data sheet for SN 159-79905.

Hammer Safety Requirement (impactor dropped from a height of 37.4 in. hitting the hammer in a position over the cylinder): a) No fired primers. b) No primer indents.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction
0	.061/.062	.006/.007	0	4.1/12.9	N/A
100	.062/.062	.006/.007	0	4.1/12.7	None
200	.062/.062	.006/.007	0	4.1/13.2	None
300	.062/.062	.006/.007	0	4.1/13.2	None
400	.062/.062	.006/.007	0	4.1/13.2	None
500	.062/.062	.007/.008	0	4.1/13.2	None
600	.062/.062	.007/.008	0	4.1/12.6	None

*Not in compliance with requirements of NIJ Standard-0109.00.

Sturm Ruger Model 717 (Security Six)
.357 Magnum Caliber, 4-inch barrel, single/double action revolver
(6 round cylinder capacity, stainless steel construction;
weight 38.6 oz. unloaded)

TEST DATA

Revolvers:	Serial Numbers (SN) 162-11518 and 162-11150
Results:	The revolver passed the Dimensional and Drop Safety Requirements of the standard. The revolver failed to comply with the User, Functional, Firing, and Hammer Safety Requirements of the standard.
Footnotes:	[1]SN 162-11518 - During the fifth drop of the Drop Requirement (on side, barrel horizontal), the ejector rod broke at the breech face. The cylinder lock did not function; the cylinder locked into the frame. On the sixth drop (on opposite side, barrel horizontal) the hammer and trigger did not function.
	[2]SN 162-11518 - During the Firing Test the rear sight pivot pin (P/N MR-56) was loose after 400 rounds.

Sturm Ruger Model 717 (Security Six), Serial Number 162-11518

Test Results

User Information: Did not include a a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .004-.006 in. b) Bore diameter .349 in. c) Headspace range .060-.061 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All 6 chambers were aligned.

Cylinder Assembly: a) 4 chambers were out of alignment at clockwise extreme of cylinder rotation;* 4 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .003*-.005; cylinder gap at backward extreme: .004-.007. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 4.4 lb. single action (SA), 12.9 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement[1] (6 drops from a height of 39.4 in., 6 cardinal orientations): a) No fired primers. b) No primer indents.

Hammer Safety Requirement: See data sheet for SN 162-11150.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[2]
0	.060/.061	.004/.006	0	4.4/12.9	N/A
100	.060/.061	.004/.006	0	4.4/12.9	None
200	.061/.062	.005/.007	0	4.4/13.1	None
300	.061/.062	.004/.006	1*	4.4/12.9	None
400	.060/.062	.004/.006	0	4.7/12.9	None
500	.061/.063	.005/.006	0	4.4/12.6	None
600	.062/.063	.005/.007	3*	4.4/12.6	None

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Sturm Ruger Model 717 (Speed Six), Serial Number 162-11150

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .004-.005 in. b) Bore diameter .349 in. c) Headspace range .060-.063 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All 6 chambers were aligned.

Cylinder Assembly: a) 4 chambers were out of alignment at clockwise extreme of cylinder rotation;* All 6 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .002*-.003* in.; cylinder gap at backward extreme: .004-.005 in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 4.4 lb. single action (SA), 12.8 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement: See data sheet for SN 162-11518.

Hammer Safety Requirement (impactor dropped from height of 37.4 in hitting hammer in position over cylinder): No fired primers. b) 2 primer indents.*

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction
0	.060/.063	.004/.005	0	4.4/12.8	N/A
100	.062/.064	.003*/.005	0	4.1/13.1	None
200	.062/.064	.003*/.005	0	4.2/13.1	None
300	.063/.064	.003*/.005	0	4.2.13.2	None
400	.063/.064	.003*/.004	0	4.1/13.0	None
500	.063/.065	.003*/.004	0	4.4/13.4*	None
600	.063/.064	.003*/.005	0	4.4/12.9	None

*Not in compliance with requirements of NIJ Standard-0109.00

Sturm Ruger Model 737 (Speed Six)
.357 Magnum Caliber, 2-3/4-inch barrel, single/double action revolver
(6 round cylinder capacity, stainless steel construction;
weight 35.2 oz. unloaded)

TEST DATA

Revolvers:	Serial Numbers (SN) 160-96979 and 161-55841
Results:	The revolver passed the Dimensional and Hammer Safety Requirements of the standard. The revolver failed to comply with the User, Functional, Firing, and Drop Requirements of the standard.
Footnotes:	[1]SN 161-55841 - During the first 100 rounds of the firing test, the trigger remained in "fired" position 10 times; between the 200th and 300th, one time; between the 300th and 400th, 3 times; and between the 400th and 500th, 3 times. Each time the trigger was returned manually. A sticking plunger caused pawl (P/N KE-7) to remain in "fired" position jamming trigger (P/N KE-39). After firing round 303, the trigger jammed forward; the gun was disassembled and a burr removed from the hole into which the Pawl Plunger (P/N KE-51) fits. There was no recurrence of the trigger jamming forward.

Sturm Ruger Model 737 (Speed Six), Serial Number 160-96979

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .006-.007 in. b) Bore diameter .347 in. c) Headspace range .065-.066 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All 6 chambers were aligned.

Cylinder Assembly: a) 4 chambers were out of alignment at clockwise extreme of cylinder rotation*; all 6 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .005-.006; cylinder gap at backward extreme: .006-.007. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 3.6 lb. single action (SA), 11.7 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement: See data sheet for SN 161-55841.

Hammer Safety Requirement (impactor dropped from a height of 37.4 in. hitting the hammer in a position over the cylinder): a) No fired primers. b) No primer indents.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction
0	.065/.066	.006/.007	0	3.6/11.7	N/A
100	.065/.066	.006/.007	0	3.9/11.2	None
200	.065/.066	.006/.007	0	4.1/11.2	None
300	.066/.066	.006/.007	0	4.1/11.2	None
400	.066/.066	.006/.007	0	3.9/12.2	None
500	.066/.066	.007/.008	0	3.9/11.9	None
600	.066/.066	.007/.008	0	3.9/12.2	None

*Not in compliance with requirements of NIJ Standard-0109.00.

Sturm Ruger Model 737 (Speed Six), Serial Number 161-55841

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .006-.006 in. b) Bore diameter .347 in. c) Headspace range .064-.065 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All 6 chambers were aligned.

Cylinder Assembly: a) 3 chambers were out of alignment at clockwise extreme of cylinder rotation;* 2 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .005-.006; cylinder gap at backward extreme: .006-.007. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Two cartridges did not eject without sticking.*

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 4.4 lb. single action (SA), 11.2 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement (6 drops from a height of 39.4 in., 6 cardinal orientations): a) No fired primers. b) 1 primer ident.*

Hammer Safety Requirement: See data sheet for SN 160-96979.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[1]
0	.064/.065	.006/.006	0	4.4/11.2	N/A
100	.064/.065	.006/.007	0	4.1/11.4	10 Mechanical Failures*
200	.064/.065	.006/.007	0	4.1/12.2	None
300	.064/.065	.006/.007	0	4.4/12.4	1 Mechanical Failure*
400	.064/.065	.006/.007	0	4.7/14.4*	4 Mechanical Failures*
500	.064/.065	.006/.007	0	4.1/12.2	3 Mechanical Failures*
600	.064/.065	.006/.007	0	4.4/12.0	None

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Sturm Ruger Model GP100
.357 Magnum Caliber, 4-inch barrel, single and double action revolver
(6 round cylinder capacity, carbon steel construction;
weight 40.5 oz. unloaded)

TEST DATA

Revolvers:	Serial Numbers (SN) 170-03797 and 170-03838
Results:	The revolver satisfied the Dimensional and Firing Requirements of the standard. The revolver failed to comply with the User, Functional, Drop, and Hammer Safety Requirements of the standard.
Footnotes:	None.

Sturm Ruger Model GP100, Serial Number 170-03797

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .005-.006 in. b) Bore diameter .349 in. c) Headspace range .060-.060 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: 1 chamber out of alignment.*

Cylinder Assembly: a) 4 chambers were out of alignment at clockwise extreme of cylinder rotation;* all 6 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .004-.005 in.; cylinder gap at backward extreme: .005-.006 in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 4.9 lb. single action (SA), 13.4* lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement: See data sheet for SN 170-03838.

Hammer Safety Requirement (impactor dropped from a height of 37.4 in. hitting the hammer in a position over the cylinder): a) No fired primers. b) 2 primer indents.*

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction
0	.060/.060	.005/.006	1*	4.9/13.4*	N/A
100	.060/.061	.005/.005	0	3.9/12.6	None
200	.060/.061	.005/.006	0	3.9/12.9	None
300	.060/.061	.006/.006	0	3.9/12.6	None
400	.060/.060	.006/.007	0	3.9/12.9	None
500	.060/.061	.006/.007	0	3.9/12.9	None
600	.060/.061	.007/.007	0	3.9/13.1	None

*Not in compliance with requirements of NIJ Standard-0109.00.

Sturm Ruger Model GP100, Serial Number 170-03838

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .006-.007 in. b) Bore diameter .348 in. c) Headspace range .060-.062 in.

Functional Requirements:

Action: Single action operated smoothly. Double action was hesitant.*

Cylinder Alignment in Fired Position: All 6 chambers aligned.

Cylinder Assembly: a) All 6 chambers were aligned at clockwise extreme of cylinder rotation; all 6 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .006-.006 in.; cylinder gap at backward extreme: .006-.008 in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 5.9 lb.* single action (SA), 13.9 lb.* double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement (6 drops from a height of 39.4 in., 6 cardinal orientations): a) No fired primers. b) 1 primer indent.*

Hammer Safety Requirement: See data sheet for SN 170-03797.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction
0	.060/.062	.006/.007	0	5.9*/13.9*	N/A
100	.061/.062	.007/.007	0	4.4/14.1*	None
200	.062/.062	.006/.007	0	3.6/14.1*	None
300	.062/.062	.006/.006	0	3.9/14.6*	None
400	.062/.062	.006/.007	0	3.6/14.1*	None
500	.061/.062	.006/.007	0	3.6/14.6*	None
600	.060/.062	.005/.006	0	3.6/13.8*	None

*Not in compliance with requirements of NIJ Standard-0109.00.

APPENDIX C: Results for Smith & Wesson Revolvers

Smith & Wesson Model 10 (Military and Police)
.38 Special Caliber, 4-inch barrel, single/double action revolver
(6 round cylinder capacity, carbon steel construction;
weight 33.6 oz. unloaded)

TEST DATA

Revolvers: Serial Numbers (SN) AJT 5851 and AJW 6282

Results: The revolver satisfied the Dimensional, Drop, and Hammer Safety Requirements of the standard. The revolver failed to comply with the User, Functional, and Firing Requirements of the standard.

Footnotes: [1]AJT 5851 and AJW 6282 - During the functional test only the minimum barrel cylinder gap was measured at the forward extreme of longitudinal travel of the cylinder. Only the maximum barrel/cylinder gap was measured at the backward extreme of longitudinal travel of the cylinder.

[2]SN AJT 5851 - During the firing test, after firing 400 rounds which produced 6 misfires, the firing pin was inspected and its tip was noted to have been flattened. Since this defect may have been caused by technician error--firing into the base of the range rod during the initial inspection--the firing pin was replaced and the 600 round firing test repeated. During the 600 round retest only 1 malfunction occurred; round 358 failed to fire.

[3]SN AJW 6282 - During the hammer safety test the second drop broke the hammer spur.

[4]SN AJW 6282 - During the firing test the extractor rod loosened and caused the cylinder to bind upon opening; the rod was tightened after 400 rounds and the test continued.

Smith & Wesson Model 10 (Military and Police), Serial Number AJT 5851

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .006-.006 in. b) Bore diameter .346 in. c) Headspace range .062-.064 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: 1 chamber misaligned.*

Cylinder Assembly[1]: a) 1 chamber was out of alignment at clockwise extreme of cylinder rotation;* 1 chamber was out of alignment at counter clockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .003* in.; cylinder gap at backward extreme: .006 in. c) Rotated freely in frame. d) Binds during opening and closing.* e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 3.9 lb. single action (SA), 12.2 lb. double action (DA).

Visual Inspection: Satisfactory, except that mainspring was not properly seated; this was corrected prior to testing.

Safety Features: Were present and functioned properly.

Drop Requirement (6 drops from a height of 39.4 in., 6 cardinal orientations): a) No fired primers. b) No primer indents.

Hammer Safety Requirement: See data sheet for SN AJW 6282.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[2]
0	.062/.064	.006/.006	1*	3.7/12.1	N/A
100	.062/.064	.002*/003*	2*	4.3/12.0	5 misfires*
200	.062/.065	.003*/005	0	4.2/9.8	None
300	.062/.065	.005/.006	1*	3.5/9.2	None
400	.065/.066	.005/.007	1*	4.0/10.0	1 misfire*
500	.064/.066	.008/.009*	2*	3.7/9.6	1 misfire*
600	.064/.066	.008/.009*	2*	3.7/9.9	2 misfires*

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Smith & Wesson Model 10 (Military and Police), Serial Number AJW 6282

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .007-.007 in. b) Bore diameter .346 in. c) Headspace range .061-.063 in.

Functional Requirements:

Action: Single action operated smoothly. Double action was hesitant.*

Cylinder Alignment in Fired Position: 2 chambers misaligned.*

Cylinder Assembly[1]: a) 3 chambers were out of alignment at clockwise extreme of cylinder rotation;* 2 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Barrel/cylinder gap at forward extreme: .002* in; cylinder gap at backward extreme: .007 in. c) Rotated freely in frame. d) Binds during opening and closing.* e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 4.5 lb. single action (SA), 11.8 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement: See data sheet for SN AJT 5851.

Hammer Safety Requirement[3] impactor dropped from a height of 37.4 in. hitting the hammer in a position over the cylinder): a) No fired primers. b) No primer indents.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[4]
0	.061/.063	.007/.007	2*	4.5/11.8	N/A
100	.061/.064	.005/.007	0	4.7/11.0	None
200	.061/.064	.002*/.005	0	4.2/11.4	None
300	.062/.065	.004/.006	2*	4.2/11.1	None
400	.062/.064	.005/.007	1*	4.2/11.0	Mechanical failure during rounds 392, 398, 400*
500	.062/.064	.005/.007	1*	4.8/11.1	None
600	.062/.064	.005/.007	2*	4.7/11.1	None

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Smith & Wesson Model 13 (Military and Police)
.38 Special Caliber, 4-inch barrel, single/double action revolver
(6 round cylinder capacity, carbon steel construction;
weight 34 oz. unloaded)

TEST DATA

Revolvers: Serial Numbers (SN) AJH 6159 and AJY 3630

Results: The revolver satisfied the Firing, Drop, and Hammer Safety Requirements of the standard. The revolver failed to comply with the User, Dimensional, and Functional Requirements of the standard.

Footnotes: [1]SN AJY 3630 - During the drop test, the cylinder was hard to open and close after the fifth drop.

[2]SN AJY 3630 - During the firing test the side plate screws were loose at the end of firing 300 and 400 rounds.

Smith & Wesson Model 13 (Military and Police), Serial Number AJH 6159

Test Results

User Information: Did not include a statement concerning acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .006-.006 in. b) Bore diameter .345 in.* c) Headspace range .065-.066 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All chambers aligned.

Cylinder Assembly: a) 3 chambers were out of alignment at clockwise extreme of cylinder rotation;* All 6 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .006-.007 in.; cylinder gap at backward extreme: .006-.007 in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 4.4 lb. single action (SA), 11.4 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement: See data sheet for SN AJY 3630.

Hammer Safety Requirement (impactor dropped from a height of 37.4 in. hitting the hammer in a position over the cylinder): a) No fired primers. b) No primer indents.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction
0	.065/.066	.006/.006	0	4.4/11.4	N/A
100	.065/.066	.006/.006	0	3.9/11.0	None
200	.066/.066	.006/.006	0	3.9/11.4	None
300	.066/.067	.006/.006	0	3.9/11.5	None
400	.066/.067	.006/.007	0	4.1/11.3	None
500	.066/.067	.006/.007	0	3.9/11.0	None
600	.066/.067	.006/.007	0	4.4/11.5	None

*Not in compliance with requirements of NIJ Standard-0109.00.

Smith & Wesson Model 13 (Military and Police), Serial Number AJY 3630

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .006-.007 in. b) Bore diameter .346 in. c) Headspace range .061-.062 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All chambers aligned.

Cylinder Assembly: a) 3 chambers were out of alignment at clockwise extreme of cylinder rotation;* 4 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .006-.007 in.; cylinder gap at backward extreme: .007-.007 in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 4 lb. single action (SA), 10.5 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement[1] (6 drops from a height of 39.4 in., 6 cardinal orientations): a) No fired primers. b) No primer indents.

Hammer Safety Requirement: See data sheet for SN AJH 6159.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[2]
0	.061/.062	.006/.007	0	4.0/10.5	N/A
100	.062/.062	.007/.007	0	4.1/10.4	None
200	.062/.063	.007/.007	0	3.9/10.4	None
300	.062/.063	.007/.007	0	4.1/11.0	None
400	.062/.062	.007/.008	0	4.1/10.5	None
500	.062/.063	.007/.008	0	4.0/10.5	None
600	.062/.063	.007/.008	0	4.4/10.5	None

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Smith & Wesson Model 13 (Military and Police)
.357 Magnum Caliber, 4-inch barrel, single/double action revolver
(6 round cylinder capacity, carbon steel construction;
weight 34 oz. unloaded)

TEST DATA

Revolvers: Serial Numbers (SN) AJY 4075 and AJS 1890

Results: The revolver satisfied the Dimensional, Firing, Drop, and Hammer Safety Requirements of the standard. The revolver failed to comply with the User and Functional Requirements of the standard.

Footnotes: [1]SN AJY 4075 - During the drop test, the third drop broke the hammer spur. After the fourth drop the cylinder bound during rotation.

[2]SN AJY 4075 and AJS 1890 - During the firing test the thumbpiece nut was loose after firing 100 rounds and at each 100 round firing interval thereafter. The nut was tightened after each 100 rounds.

[3]SN AJS 1890 - During the hammer safety test, the first drop broke the hammer spur.

Smith & Wesson Model 13 (Military and Police), Serial Number AJY 4075

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .007-.008 in. b) Bore diameter .346 in. c) Headspace range .062-.062 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All chambers aligned.

Cylinder Assembly: a) 5 of 6 chambers were out of alignment at clockwise extreme of cylinder rotation;* 5 of 6 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .007-.007 in.; cylinder gap at backward extreme: .007-.008 in. c) Rotated freely in frame. d) opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Was sticking slightly.*

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 4 lb. single action (SA), 11 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement[1] (6 drops from a height of 39.4 in., 6 cardinal orientations): a) No fired primers. b) No primer indents.

Hammer Safety Requirement: See data sheet for SN AJS 1890.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[2]
0	.062/.062	.007/.008	0	4.0/11.0	N/A
100	.062/.063	.007/.008	0	4.4/11.4	None
200	.063/.063	.008/.008	0	4.1/11.4	None
300	.063/.064	.008/.008	0	4.1/11.7	None
400	.064/.065	.008/.009*	0	4.6/12.0	None
500	.064/.065	.008/.009*	0	4.1/11.2	None
600	.064/.065	.008/.009*	0	4.1/11.4	None

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Smith & Wesson Model 13 (Military and Police), Serial Number AJS 1890

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .005-.006 in. b) Bore diameter .346 in. c) Headspace range .063-.065 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All chambers aligned.

Cylinder Assembly: a) All 6 chambers were out of alignment at clockwise extreme of cylinder rotation;* 1 chamber was out of alignment during counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .005-.006 in.; cylinder gap at backward extreme: .006-.007 in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 4.9 lb. single action (SA), 12.2 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement: See data sheet for SN AJY 4075.

Hammer Safety Requirement[3] (impactor dropped from a height of 37.4 in. hitting the hammer in a position over the cylinder): a) No fired primers. b) No primer indents.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[2]
0	.063/.065	.005/.006	0	4.9/12.2	N/A
100	.063/.065	.006/.007	0	4.1/11.2	None
200	.064/.066	.006/.007	0	4.4/11.9	None
300	.064/.066	.007/.007	0	4.6/11.9	None
400	.064/.066	.007/.007	2*	4.4/11.5	None
500	.065/.066	.007/.008	2*	4.4/11.5	None
600	.065/.066	.007/.008	2*	4.1/11.7	None

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Smith and Wesson Model 15 (Combat Masterpiece)
.38 Special Caliber, 4-inch barrel, single/double action revolver
(6 round cylinder capacity, carbon steel construction;
weight 31.9 oz. unloaded)

TEST DATA

Revolvers:	Serial Numbers (SN) AJH 0598 and AJL 7138
Results:	The revolver satisfied the Dimensional, Firing, Drop, and Hammer Safety Requirements of the standard. The revolver failed to comply with the User Information and Functional Requirements of the standard.
Footnotes:	[1]SN AJL 7138 - During the hammer safety test the hammer spur broke off after the second drop.

Smith & Wesson Model 15 (Combat Masterpiece), Serial Number AJH 0598

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .005-.008 in.; b) Bore diameter .347 in. c) Headspace range .060-.062 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All chambers aligned.

Cylinder Assembly: a) All 6 chambers were out of alignment at clockwise extreme of cylinder rotation;* 2 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .005-.007 in.; cylinder gap at backward extreme: .007-.009* in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 3.9 lb. single action (SA), 10.9 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement (6 drops from a height of 39.4 in., 6 cardinal orientations): a) No fired primers. b) No primer indents.

Hammer Safety Requirement: See data sheet for SN AJL 7138.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction
0	.060/.062	.005/.008	0	3.9/10.9	N/A
100	.060/.063	.004/.008	0	4.1/11.4	None
200	.060/.063	.005/.007	0	4.1/10.9	None
300	.060/.063	.004/.007	0	4.0/11.4	None
400	.061/.064	.004/.007	0	3.9/10.9	None
500	.061/.064	.005/.007	0	3.9/10.6	None
600	.060/.063	.004/.007	0	3.9/10.9	None

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Smith and Wesson Model 15 (Combat Masterpiece), Serial Number AJL 7138

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .005-.007 in.; b) Bore diameter .347 in. c) Headspace range .061-.062 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All chambers aligned.

Cylinder Assembly: a) all 6 chambers were out of alignment at clockwise extreme of cylinder rotation;* 4 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .003*-.005 in.; cylinder gap at backward extreme: .005-.007 in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 3.9 lb. single action (SA), 11.4 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement: See data sheet for SN AJH 0598.

Hammer Safety Requirement[1] (impactor dropped from a height of 37.4 in. hitting the hammer in a position over the cylinder): a) No fired primers. b) No primer indents.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction
0	.061/.062	.005/.007	0	3.9/11.4	N/A
100	.061/.063	.006/.007	0	3.9/11.4	None
200	.061/.063	.005/.006	0	4.4/11.4	None
300	.061/.063	.005/.007	0	4.4/11.4	None
400	.061/.063	.005/.007	0	4.4/11.4	None
500	.062/.064	.006/.007	0	4.4/10.9	None
600	.062/.064	.006/.007	0	4.4/10.9	None

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Smith and Wesson Model 19 (Combat Magnum)
.357 Magnum Caliber, 4-inch barrel, single/double action revolver
(6 round cylinder capacity, carbon steel construction;
weight 37.5 oz. unloaded)

TEST DATA

Revolvers: Serial Number (SN) AJS 9574 and AJU 8864

Results: The revolver satisfied the Dimensional, Drop, and Hammer Safety Requirements of the standard. The revolver failed to comply with the User, Functional, and Firing Requirements of the standard.

Footnotes: [1]AJS 9574 - During the hammer safety test the hammer spur broke off after the second drop.

[2]AJS 9574 - During the 600 round firing test there were 188 misfires attributable to shallow primer indentations. In addition, the trigger didn't return during the firing of 4 rounds.

[3]AJU 8864 - During the 600 round firing test there were 42 misfires attributable to shallow primer indentations. Some rubbing was noted on the faceplate by the trigger assembly. A loose thumbpiece screw was noted at the end of firing 500 rounds.

Smith and Wesson Model 19 (Combat Magnum), Serial Number AJS 9574

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .006-.008 in.; b) Bore diameter .350 in. c) Headspace range .060-.061 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All chambers aligned.

Cylinder Assembly: a) 2 chambers were out of alignment at clockwise extreme of cylinder rotation;* All 6 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .006-.006 in.; cylinder gap at backward extreme: .007-.008 in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 3.9 lb. single action (SA), 10.9 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement: See data sheet for SN AJU 8864.

Hammer Safety Requirement[1] (impactor dropped from a height of 37.4 in. hitting the hammer in a position over the cylinder): a) No fired primers. b) No primer indents.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[2]
0	.060/.061	.006/.008	0	3.9/10.9	N/A
100	.060/.061	.006/.007	0	3.9/10.9	None
200	.061/.061	.006/.007	0	3.9/11.1	6 misfires*
300	.060/.060	.005/.006	3*	5.9*/10.1	23 misfires* 4 mechanical failures*
400	.060/.061	.005/.006	3*	5.9*/9.9	37 misfires*
500	.060/.061	.005/.006	1*	5.9*/9.6	60 misfires*
600	.061/.062	.006/.007	2*	5.9*/9.6	62 misfires*

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Smith and Wesson Model 19 (Combat Magnum), Serial Number AJU 8864

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .006-.006 in.; b) Bore diameter .349 in. c) Headspace range .061-.062 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All chambers aligned.

Cylinder Assembly: a) 5 chambers were out of alignment at clockwise extreme of cylinder rotation;* 2 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .002*-.003* in.; cylinder gap at backward extreme: .006-.007 in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 3.6 lb. single action (SA), 11.1 lb. double action (DA).

Visual Inspection: A burr was observed on the sideplate.*

Safety Features: Were present and functioned properly.

Drop Requirement (6 drops from a height of 39.4 in., 6 cardinal orientations): a) No fired primers. b) No primer indents.

Hammer Safety Requirement: See data sheet for SN AJS 9574.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[3]
0	.061/.062	.006/.006	0	3.6/11.1	N/A
100	.063/.066	.006/.007	0	3.6/10.9	9 misfires*
200	.061/.063	.007/.008	0	3.9/10.9	9 misfires*
300	.061/.065	.008/.009*	0	3.9/10.9	6 misfires*
400	.061/.063	.007/.008	0	3.9/10.9	4 misfires*
500	.062/.064	.004/.005	0	3.9/10.4	4 misfires*
600	.062/.064	.005/.006	0	3.9/10.4	10 misfires*

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Smith & Wesson Model 36 (Chief's Special)
.38 Special Caliber, 2-inch barrel, single/double action revolver
(5 round cylinder capacity, carbon steel construction;
weight 19.4 oz. unloaded)

TEST DATA

Revolvers:	Serial Numbers (SN) ANA 0578 and ALD 1515
Results:	The revolver satisfied the Firing, Drop, and Hammer Safety Requirements of the standard. The revolver failed to comply with the User, Dimensional, and Functional Requirements of the standard.
Footnotes:	[1]SN ANA 0578 - During the firing test the thumbpiece nut was loose after firing 200, 300, 400, and 500 rounds and had to be tightened.
	[2]SN ALD 1515 - During the firing test the thumbpiece nut was loose after firing 300 rounds and had to be tightened.

Smith & Wesson Model 36 (Chief's Special), Serial Number ANA 0578

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .007-.008 in. b) Bore diameter .345 in.* c) Headspace range .065-.067 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All chambers aligned.

Cylinder Assembly: a) All 5 chambers were aligned at clockwise extreme of cylinder rotation; all 5 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .006-.008 in.; cylinder gap at backward extreme: .007-.009* in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 3.6 lb. single action (SA), 12.2 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement: See data sheet for SN ALD 1515.

Hammer Safety Requirement (impactor dropped from a height of 37.4 in. hitting the hammer in a position over the cylinder): a) No fired primers. b) No primer indents.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[1]
0	.065/.067	.007/.008	0	3.6/12.2	N/A
100	.066/.067	.007/.008	0	3.9/13.2	None
200	.066/.067	.007/.008	0	3.9/13.2	None
300	.066/.067	.007/.008	0	3.9/12.8	None
400	.066/.067	.007/.008	0	3.6/12.1	None
500	.066/.067	.007/.008	0	3.6/12.7	None
600	.066/.067	.007/.009*	0	3.6/12.4	None

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Smith & Wesson Model 36 (Chief's Special), Serial Number ALD 1515

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .006-.006 in. b) Bore diameter .346 in. c) Headspace range .065-.069 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All chambers aligned.

Cylinder Assembly: a) 4 chambers were out of alignment at clockwise extreme of cylinder rotation;* all 5 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .004-.004 in.; cylinder gap at backward extreme: .006-.007 in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 4.1 lb. single action (SA), 13.0 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement (6 drops from a height of 39.4 in., 6 cardinal orientations): a) No fired primers. b) No primer indents.

Hammer Safety Requirement: See data sheet for SN ANA 0578.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[2]
0	.065/.069	.006/.006	0	4.1/13.0	N/A
100	.066/.069	.006/.006	0	3.6/12.6	None
200	.067/.070	.006/.006	1*	3.9/13.2	None
300	.067/.070	.006/.007	0	3.6/13.2	None
400	.067/.070	.007/.007	0	3.6/12.8	None
500	.067/.070	.007/.007	1*	3.4/12.4	None
600	.067/.071	.007/.008	0	3.6/12.4	None

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Smith & Wesson Model 49 (Bodyguard)
.38 Special Caliber, 2-inch barrel, single/double action revolver
(5 round cylinder capacity, carbon steel construction;
weight 20.3 oz. unloaded)

TEST DATA

Revolvers:	Serial Numbers (SN) ANB 9753 and ANB 9879
Results:	The revolver satisfied the Firing and Hammer Safety Requirements of the standard. The revolver failed to comply with the User, Dimensional, Functional, and Drop Requirements of the standard.
Footnotes:	[1]SN ANB 9753 - During the firing test the thumbpiece nut was loose at the end of firing 100, 200, and 300 rounds and had to be tightened.

Smith & Wesson Model 49 (Bodyguard), Serial Number ANB 9753

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .004-.004 in. b) Bore diameter .345 in.* c) Headspace range .066-.068 in.

Functional Requirements:

Action: Single and double action operated smoothly.

Cylinder Alignment in Fired Position: All chambers aligned.

Cylinder Assembly: a) All 5 chambers were out of alignment at clockwise extreme of cylinder rotation;* 1 chambers was out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .003*-.005 in.; cylinder gap at backward extreme: .006-.008 in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 3.6 lb. single action (SA), 13.1 lb. double action (DA).

Visual Inspection: Side plate screws burred.*

Safety Features: Were present and functioned properly.

Drop Requirement: See data sheet for ANB 9879.

Hammer Safety Requirement (impactor dropped from a height of 37.4 in. hitting the hammer in a position over the cylinder): a) No fired primer. b) No primer indents.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[1]
0	.066/.068	.004/.004	0	3.6/13.1	N/A
100	.066/.068	.005/.005	0	3.6/13.8*	None
200	.066/.068	.005/.006	0	3.6/13.2	None
300	.066/.069	.005/.006	0	3.4/12.9	None
400	.066/.068	.005/.006	0	3.8/12.7	None
500	.067/.069	.005/.006	0	3.6/12.7	None
600	.067/.069	.005/.006	0	3.6/12.9	None

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Smith & Wesson Model 49 (Bodyguard), Serial Number ANB 9879

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .006-.006 in. b) Bore diameter .345 in.* c) Headspace range .065-.066 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All chambers aligned.

Cylinder Assembly: a) All 5 chambers were aligned at clockwise extreme of cylinder rotation; all 5 chambers were aligned at counterclockwise extreme of cylinder rotation. b) Cylinder gap at forward extreme: .005-.006 in.; cylinder gap at backward extreme: .007-.008 in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 4.1 lb. single action (SA), 14.4* lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement (6 drops from a height of 39.4 in., 6 cardinal orientations): a) No fired primers. b) 1 primer indent.*

Hammer Safety Requirement: See data sheet for ANB 9753.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction
0	.065/.066	.006/.006	0	4.1/14.4*	N/A
100	.066/.066	.006/.006	0	4.4/14.0*	None
200	.066/.067	.006/.006	0	4.1/13.4*	None
300	.066/.067	.006/.006	0	3.9/13.4*	None
400	.066/.067	.006/.006	0	4.1/13.2	None
500	.066/.068	.006/.006	0	3.8/13.2	None
600	.066/.068	.006/.006	0	3.8/12.6	None

*Not in compliance with requirements of NIJ Standard-0109.00.

Smith & Wesson Model 60 (Chief's Special)
.38 Special Caliber, 2-inch barrel, single/double action revolver
(5 round cylinder capacity, stainless steel construction;
weight 19.2 oz. unloaded)

TEST DATA

Revolvers: Serial Numbers (SN) ALA 8327 and ALA 8947

Results: The revolver failed to comply with the User, Dimensional, Functional, Firing, Drop, and Hammer Safety Requirements of the standard.

Footnotes: [1]SN ALA 8327 - During the drop test the cylinder would not open.

[2]SN ALA 8327 - During the firing test the thumbpiece nut was loose after the 600th round had been fired.

[3]SN ALA 8947 - During the firing test the sideplate screws were loose at the end of firing 200, 300, 400, 500, and 600 rounds. The thumbpiece nut was also loose at the end of firing 300, 400, 500, and 600 rounds.

Smith & Wesson Model 60 (Chief's Special), Serial Number ALA 8327

Test Results

User Information: Did not include a statement concerning certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .003*-.004 in. b) Bore diameter .348 in. c) Headspace range .064-.065 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All chambers aligned.

Cylinder Assembly: a) All 5 chambers were out of alignment at clockwise extreme of cylinder rotation;* all 5 chambers were aligned at counterclockwise extreme of cylinder rotation. b) Cylinder gap at forward extreme: .001*-.001* in.; cylinder gap at backward extreme: .003*-.004 in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 3.9 lb. single action (SA), 13.1 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement[1] (6 drops from a height of 39.4 in., 6 cardinal orientations): a) No fired primers. b) 2 primer indents.*

Hammer Safety Requirement: See data sheet for SN ALA 8947.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[2]
0	.064/.065	.003*/.004	0	3.9/13.1	N/A
100	.066/.067	.002*/.002*	0	3.6/13.9*	None
200	.066/.068	.002*/.002*	0	3.6/13.9*	None
300	.067/.068	.002*/.003*	0	3.6/13.6*	None
400	.067/.068	.002*/.002*	0	3.5/13.6*	None
500	.067/.068	.002*/.002*	0	3.5/13.7*	None
600	.066/.067	.002*/.002*	0	3.5/13.6*	None

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Smith & Wesson Model 60 (Chief's Special), Serial Number ALA 8947

Test Results

User Information: Did not include a statement concerning certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .006-.007 in. b) Bore diameter .349 in. c) Headspace range .061-.062 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All chambers aligned.

Cylinder Assembly: a) All 5 chambers were out of alignment at clockwise extreme of cylinder rotation;* all 5 chambers were aligned at counterclockwise extreme of cylinder rotation. b) Cylinder gap at forward extreme: .005-.007 in.; cylinder gap at backward extreme: .006-.008 in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 3.38* lb. single action (SA), 13.1 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement: See data sheet for SN ALA 8327.

Hammer Safety Requirement (impactor dropped from a height of 37.4 in. hitting the hammer in a position over the cylinder): a) No fired primers. b) 1 primer indent.*

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[3]
0	.061/.062	.006/.007	0	3.38*/13.1	N/A
100	.060/.063	.006/.008	0	3.1*/12.7	None
200	.060/.064	.005/.008	0	3.1*/12.6	None
300	.061/.064	.005/.007	0	3.1*/12.6	None
400	.061/.064	.007/.008	0	3.1*/12.6	None
500	.062/.064	.006/.009*	0	3.1*/12.6	None
600	.062/.064	.004/.007	0	3.38*/12.6	None

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Smith & Wesson Model 64 (Military and Police)
.38 Special Caliber, 4-inch barrel, single/double action revolver
(6 round cylinder capacity, stainless steel construction;
weight 33.6 oz. unloaded)

TEST DATA

Revolvers:	Serial Numbers (SN) AJT 0450 and AJT 0458
Results:	The revolver satisfied the Dimensional, Firing, Drop, and Hammer Safety Requirements of the standard. The revolver failed to comply with the User and Functional Requirements of the standard.
Footnotes:	None.

Smith & Wesson Model 64 (Military and Police), Serial Number AJT 0450

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .005-.005 in. b) Bore diameter .348 in. c) Headspace range .060-.060 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All chambers aligned.

Cylinder Assembly: a) All 6 chambers were out of alignment at clockwise extreme of cylinder rotation;* all 6 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .005-.005 in.; cylinder gap at backward extreme: .006-.006 in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 4.5 lb. single action (SA), 11.3 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement: See data sheet for SN AJT 0458.

Hammer Safety Requirement (impactor dropped from a height of 37.4 in. hitting the hammer in a position over the cylinder): a) No fired primers. b) No primer indents.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction
0	.060/.060	.005/.005	0	4.5/11.2	N/A
100	.060/.060	.005/.006	0	4.4/11.9	None
200	.060/.060	.005/.006	0	3.9/12.2	None
300	.060/.060	.005/.006	0	4.4/12.2	None
400	.060/.062	.005/.006	0	4.4/12.4	None
500	.060/.062	.005/.006	0	4.4/12.4	None
600	.060/.062	.005/.006	0	4.4/12.4	None

*Not in compliance with requirements of NIJ Standard-0109.00.

Smith & Wesson Model 64 (Military and Police), Serial Number AJT 0458

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .005-.006 in. b) Bore diameter .349 in. c) Headspace range .061-.061 in.

Functional Requirements:

Action: Single action operated smoothly. Double action was hesitant.*

Cylinder Alignment in Fired Position: All chambers aligned.

Cylinder Assembly: a) 5 chambers were out of alignment at clockwise extreme of cylinder rotation;* 2 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .003*-.003* in.; cylinder gap at backward extreme: .005-.005 in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 4.4 lb. single action (SA), 11.4 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement (6 drops from a height of 39.4 in., 6 cardinal orientations): a) No fired primers. b) No primer indents.

Hammer Safety Requirement: See data sheet for SN AJT 0450.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction
0	.061/.061	.005/.006	0	4.4/11.4	N/A
100	.060/.060	.004/.005	0	3.9/11.2	None
200	.060/.061	.005/.006	0	3.9/11.2	None
300	.060/.061	.006/.007	0	3.9/10.7	None
400	.060/.060	.006/.007	0	3.9/10.7	None
500	.060/.060	.007/.008	0	3.9/11.2	None
600	.060/.060	.007/.008	0	3.9/11.2	None

*Not in compliance with requirements of NIJ Standard-0109.00.

Smith & Wesson Model 586 (Distinguished Combat Magnum)
.357 Magnum Caliber, 4-inch barrel, single/double action revolver
(6 round cylinder capacity,, carbon steel construction
weight 41.5 oz. unloaded)

TEST DATA

Revolvers: Serial Numbers (SN) AJU 6469 and AJY 5399)

Results: The revolver satisfied the Firing, Drop, and Hammer Safety Requirements of the standard. The revolver failed to comply with the User, Dimensional, and Functional Requirements of the standard.

Footnotes: [1]SN AJU 6469 - During the drop test the cylinder opened when the revolver was dropped on its muzzle.

[2]SN AJU 6469 - During the firing test, the primer cup expanded into the firing pin hole in the hammer nose bushing during the first 100 rounds and during the second 100 rounds. This caused the gun to jam. Examination of the gun subsequent to the firing test indicated that these jams were not the fault of the gun. After the 200th and 300th rounds, the thumbpiece nut was loose and had to be tightened, and after 400 rounds the rear sight windage screw was loose and had to be tightened.

[3]SN AJY 5399 - During the hammer safety test the hammer spur broke off during the second drop.

[4]SN AJY 5399 - During the firing test the thumbpiece nut loosened after firing 300 rounds. It was tightened and the test continued.

Smith & Wesson Model 586 (Distinguished Combat Magnum),
Serial Number AJU 6469

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .006-.007 in. b) Bore diameter .345 in.* c) Headspace range .063-.064 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All chambers aligned.

Cylinder Assembly: a) 4 chambers were out of alignment at clockwise extreme of cylinder rotation;* 5 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .004-.006 in.; cylinder gap at backward extreme: .006-.007 in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 4.6 lb. single action (SA), 10.6 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirements:[1] (6 drops from a height of 39.4 in., 6 cardinal orientations): a) No fired primers. b) No primer indents.

Hammer Safety Requirements: See data sheet for SN AJY 5399.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[2]
0	.063/.064	.006/.007	0	4.6/10.6	N/A
100	.063/.064	.006/.007	0	4.6/10.4	None
200	.064/.065	.007/.008	0	4.1/10.4	None
300	.064/.065	.007/.008	0	4.6/10.9	None
400	.064/.065	.007/.008	0	4.3/10.4	None
500	.064/.065	.007/.008	0	4.8/10.9	None
600	.066/.067	.008/.008	0	4.6/10.4	None

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Smith & Wesson Model 586 (Distinguished Combat Magnum),
Serial Number AJY 5399

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .006-.006 in. b) Bore diameter .346 in. c) Headspace range .062-.062 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All chambers aligned.

Cylinder Assembly: a) 3 chambers were out of alignment at clockwise extreme of cylinder rotation;* 5 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .004-.005 in.; cylinder gap at backward extreme: .006-.007 in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 4.1 lb. single action (SA), 11.6 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement: See data sheet for SN AJU 6469.

Hammer Safety Requirement[3] (impactor dropped from a height of 37.4 in. hitting the hammer in a position over the cylinder): a) No fired primers. b) No primer indents.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[4]
0	.062/.062	.006/.006	0	4.1/11.6	N/A
100	.062/.062	.006/.007	0	4.1/11.2	None
200	.062/.063	.006/.007	0	3.9/11.2	None
300	.062/.063	.006/.007	0	4.3/11.1	None
400	.063/.064	.006/.007	0	4.3/11.2	None
500	.064/.065	.006/.007	0	4.1/11.1	None
600	.065/.065	.006/.007	0	4.4/11.6	None

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Smith & Wesson Model 649 (Bodyguard)
.38 Special Caliber, 2-inch barrel, single/double action revolver
(5 round cylinder capacity, stainless steel construction;
weight 20.1 oz. unloaded)

TEST DATA

Revolvers:	Serial Numbers (SN) AHL 2627 and ALW 3932
Results:	The revolver satisfied the Dimensional, Drop, and Hammer Safety Requirements of the standard. The revolver failed to comply with the User, Functional, and Firing Requirements of the Standard.
Footnotes:	[1]SN AHL 2627 - During the firing test the side plate screw was loose after the first 100 round firing sequence. The thumbpiece nut was loose at the end of firing 500 and 600 rounds. The thumbpiece on this revolver was more difficult to release than normally encountered on other Smith & Wesson revolvers.

Smith & Wesson Model 649 (Bodyguard), Serial Number AHL 2627

Test Results

User Information: Did not include a statement concerning the certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .005-.007 in. b) Bore diameter .348 in. c) Headspace range .063-.068 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All 5 chambers misaligned.*

Cylinder Assembly: a) All 5 chambers were out of alignment at clockwise extreme of cylinder rotation;* 3 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .001*-.003* in.; cylinder gap at backward extreme: .006-.010* in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Exhibited excessive longitudinal travel;* moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 3.6 lb. single action (SA), 12.6 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement: See data sheet for SN ALW 3932.

Hammer Safety Requirement (impactor dropped from a height of 37.4 in. hitting the hammer in a position over the cylinder): a) No fired primers. b) No primer indents.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[1]
0	.063/.068	.005/.007	5*	3.6/12.6	N/A
100	.065/.069	.008/.010*	0	3.5/12.1	None
200	.065/.069	.007/.009*	1*	3.6/12.5	None
300	.065/.070	.006/.009*	2*	3.6/12.4	None
400	.066/.069	.007/.009*	0	3.7/12.4	None
500	.066/.070	.008/.010*	2*	3.6/12.4	None
600	.066/.070	.007/.010*	0	3.6/12.4	None

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Smith & Wesson Model 649 (Bodyguard), Serial Number ALW 3932

Test Results

User Information: Did not include statement concerning the certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .006-.007 in. b) Bore diameter .347 in. c) Headspace range .063-.066 in.

Functional Requirements:

Action: Single action operated smoothly. Double action was hesitant.*

Cylinder Alignment in Fired Position: All chambers aligned.

Cylinder Assembly: a) All 5 chambers were out of alignment at clockwise extreme of cylinder rotation;* all 5 chambers were aligned at counterclockwise extreme of cylinder rotation. b) Cylinder gap at forward extreme: .003*-.004 in.; cylinder gap at backward extreme: .006-.007 in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 3.9 lb. single action (SA), 12.9 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement (6 drops from a height of 39.4 in., 6 cardinal orientations): a) No fired primers. b) No primer indents.

Hammer Safety Requirement: See data sheet for SN AHL 2627.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction
0	.063/.066	.006/.007	0	3.9/12.9	N/A
100	.064/.067	.006/.008	0	4.1/12.1	None
200	.064/.067	.006/.007	0	4.0/12.1	None
300	.064/.067	.006/.007	0	4.1/12.1	None
400	.065/.068	.006/.008	0	3.9/11.9	None
500	.065/.068	.006/.007	0	3.9/12.1	None
600	.065/.067	.007/.008	0	3.38*/12.1	None

*Not in compliance with requirements of NIJ Standard-0109.00.

Smith & Wesson Model 686 (Distinguished Combat Magnum)
.357 Magnum Caliber, 4-inch barrel, single/double action revolver
(6 round cylinder capacity, stainless steel construction;
weight 40.6 oz. unloaded)

TEST DATA

Revolvers:	Serial Numbers (SN) AJM 5745 and AJV 6056
Results:	The revolver satisfied the Drop and Hammer Safety Requirements of the standard. The revolver failed to comply with the User, Dimensional, Functional, and Firing Requirements of the standard.
Footnotes:	[1]SN AJM 5745 - During the firing test there was a misfire at rounds 124 and 588 attributable to shallow primer indents. The thumbpiece nut was loose at the end of firing 400 rounds.

Smith & Wesson Model 686 (Distinguished Combat Magnum),
Serial Number AJM 5745

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .002*-.003* in. b) Bore diameter .350 in. c) Headspace range .061-.061 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All 6 chambers aligned.

Cylinder Assembly: a) All 6 chambers were out of alignment at clockwise extreme of cylinder rotation;* all 6 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .001*-.002* in.; cylinder gap at backward extreme: .003*-.003* in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 4.1 lb. single action (SA), 12.1 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement (6 drops from a height of 39.4 in., 6 cardinal orientations): a) No fired primers. b) No primer indents.

Hammer Safety Requirement: See data sheet for SN AJV 6056.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction[1]
0	.061/.061	.002*/.003*	0	4.1/12.1	N/A
100	.063/.064	.002*/.004	2*	4.1/11.6	None
200	.063/.064	.003*/.004	2*	3.9/11.6	1 misfire*
300	.063/.064	.004/.004	1*	3.9/11.6	None
400	.063/.064	.003*/.004	0	3.9/11.9	None
500	.063/.064	.003*/.004	1*	3.9/11.9	None
600	.063/.064	.003*/.004	1*	3.6/11.9	1 misfire*

*Not in compliance with requirements of NIJ Standard-0109.00.
Note: Footnotes are on the cover page.

Smith & Wesson Model 686 (Distinguished Combat Magnum),
Serial Number AJV 6056

Test Results

User Information: Did not include a statement concerning the acceptability of using +P ammunition and certification of compliance with this standard.*

Dimensional Requirements: a) Barrel/cylinder gap .003*-.004 in. b) Bore diameter .349 in. c) Headspace range .060-.060 in.

Functional Requirements:

Action: Single and double actions operated smoothly.

Cylinder Alignment in Fired Position: All 6 chambers aligned.

Cylinder Assembly: a) 3 chambers were out of alignment at clockwise extreme of cylinder rotation;* all 6 chambers were out of alignment at counterclockwise extreme of cylinder rotation.* b) Cylinder gap at forward extreme: .002*-.003* in.; cylinder gap at backward extreme: .003*-.004 in. c) Rotated freely in frame. d) Opened and closed without binding. e) Did not open with hammer cocked. f) Rotation mechanism operated smoothly.

Ejection: Ejected all cartridges without hesitation.

Cylinder Support: Was tightly assembled and moveable parts slid freely.

Hammer: Hammer operated smoothly and resisted 10.23 lb. force without firing.

Trigger Pull: 3.6 lb. single action (SA), 11.6 lb. double action (DA).

Visual Inspection: Satisfactory.

Safety Features: Were present and functioned properly.

Drop Requirement: See data sheet for SN AJM 5745.

Hammer Safety Requirement (impactor dropped from a height of 37.4 in. hitting the hammer in a position over the cylinder): a) No fired primers. b) No primer indents.

Firing Test:

Rounds fired	Head space range (min/max)	Cylinder gap range (min/max)	Chambers misaligned	Trigger pull SA/DA (average)	Malfunction
0	.060/.060	.003*/.004	0	3.6/11.6	N/A
100	.060/.060	.003*/.004	0	3.38*/11.6	None
200	.060/.061	.003*/.004	0	3.9/11.6	None
300	.061/.061	.003*/.004	0	3.38*/11.4	None
400	.061/.061	.002*/.003*	0	3.6/11.9	None
500	.061/.061	.002*/.003*	0	3.9/11.9	None
600	.061/.061	.002*/.003*	0	3.9/11.9	None

*Not in compliance with requirements of NIJ Standard-0109.00.

APPENDIX D: Commentary—NIJ Standard-0109.00

NIJ Standard-0109.00, .38- and .357-Caliber Revolvers, July 1983, establishes minimum performance standards for "combat ready" police revolvers. In this Appendix each of the requirements in NIJ Standard-0109.00 are discussed in terms of the purpose of the parameter and how the value limits were set. The firearms industry does have specifications covering some of the parameters of firearms and ammunition. These specifications are maintained by the Sporting Arms and Ammunition Manufacturer's Institute, Inc. (SAAMI, pronounced "Sammy"). Subject to laboratory verification, the SAAMI value for certain parameters were used if appropriate.

User Information

The majority of the requirement is self-explanatory; however, two items require some expansion. The first is a statement regarding the use of +P ammunition. SAAMI recognizes standard pressure ammunition and +P pressure ammunition for some cartridges. Since ammunition designated +P has higher pressures than standard ammunition in a given cartridge, its use may cause problems in some firearms. Therefore, an explicit statement on the use of +P ammunition in a particular revolver model should be made by the manufacturer. (Note: Other pressure designations, such as +P+, are not defined by SAAMI. Such loadings are used totally at the shooter's risk and usually both the ammunition manufacturer and the firearm manufacturers disavow all liability.)

The second item that needs explanation is the certification by the revolver manufacturer that the revolver model complies with the standard. The main purpose of this requirement is to assure that the purchasing entity and the revolver manufacturer agree that the standard does indeed apply to the item purchased and forms the basis for rejecting a particular revolver or the entire purchase lot if the revolvers are found to not meet the standard.

Dimensional Requirements

Barrel/Cylinder Gap. In a target revolver, a very small barrel/cylinder gap is desirable. The smaller the gap, the more efficient the transfer of gas pressure in the cartridge to the muzzle velocity of the bullet. However, in a combat revolver, if the gap is too small, the revolver will jam easily due to a variety of conditions that can occur. By experience it has been found that gaps from four thousandths to eight thousandths of an inch (.004"-.008") strike a reasonable compromise between cartridge efficiency and continued revolver operation under police conditions.

Barrel Bore Diameter. This requirement is the SAAMI specification. It assures that the correct barrel has been fitted to the revolver.

Headspace. This requirement is the SAAMI specification for .38 Special chambers. The SAAMI specification for .357 Magnum falls inside the range given so the same range can be used for both revolvers in this standard.

Functional Requirements

Action. For best accuracy, the shooter should feel that the action of the revolver is smooth and without hesitations.

Barrel and Cylinder Alignment. A revolver for police service generally has five or six chambers in the cylinder. It is expected that each hole lines up with the barrel bore each time the action is operated. In a sporting firearm misalignment may not cause a problem, but

in a police revolver misalignment will affect accuracy and could pose a hazard to innocent persons near the officer.

Cylinder Assembly. All mechanical systems with moving parts must have some clearance between the parts or they cannot move relative to each other. When the parts of a revolver are manufactured, it is impossible to make the dimensions of each identical. The dimensions of each part, then, vary with a plus or minus tolerance from the nominal dimensions. As a consequence, three conditions can occur when a revolver is assembled. The tolerances can all add together in the same direction resulting in (1) a loose fit or (2) a revolver that will not fit together or work easily. Finally, some of the tolerances can add and others subtract, which results in (3) a revolver that "feels tight" and works extremely smoothly. The six items in the cylinder assembly section ensure that the revolver is in the range of being loose enough to work but not so loose that it is likely to fail or become a hazard to the officer or bystanders.

Ejection. This requirement ensures that the internal parts of the cylinder move freely without being so loose that they become misaligned and bind. Quick, smooth ejection of spent cartridges is important for police use.

Cylinder Support. This requirement again checks a portion of the tolerance stack-up or fit of a revolver.

Hammer. When the internal parts of trigger and hammer fit correctly, the hammer will come to single action full cock and stay there until the trigger is actuated. This parameter, generally called "push off," verifies that the single action cocking surfaces mate properly and that the hammer will not release prematurely. Laboratory experiments with an experienced armorer showed that approximately 10 lbs. was a reasonable load to verify that the cocking surfaces are mated properly.

Trigger. There are two trigger pulls to consider, single and double action. If a trigger pull is too light it represents a safety hazard; if it is too heavy the revolver may be too hard to shoot accurately or the heavy pull may indicate that there are problems in the revolver action. Laboratory tests of single action trigger pull established that a range of 3.4 to 5 lbs. is reasonable to assure ease of operation without sacrificing safety, and allows latitude for design and manufacturing. Further, for single action trigger pulls, 3.4 lbs. is greater than the loaded weight of most police service revolvers giving some measure of safety against unintentional discharge under stress. For double action trigger pulls, again from laboratory and field experience, more than 13.2 lbs. is a difficult trigger pull for most shooters to maintain accuracy. If the double action trigger pull is too light it can lead to misfires. In the laboratory, no single value was found for this misfire condition so the protection from it was left for the firing test.

Visual Inspection

The six items in the Visual Inspection Requirements are not measurements but any item may affect either the performance or the appearance of the revolver.

Safety Features

Revolver manufacturers include in their design features parts that give some degree of safety to the revolver. Without passing judgment on the effectiveness of the safety features, this requirement stipulates that the safety features shall be present. In other words, all of the parts intended in the design must be in the revolver and they must work in the way the manufacturer says they work.

Firing Requirement

The firing requirement examines the revolver's ability to fire factory ammunition reliably and checks if the act of firing a reasonable amount of ammunition will cause the revolver to "loosenup" to

the point that it is not combat ready. During the firing test four major parameters of the revolver are measured: headspace, barrel/cylinder gap, trigger pull, and barrel/cylinder alignment. The revolver is judged to have failed the test if any two of the four major parameters measured fall outside the combat ready range. The revolver has also failed the test if there are any structural or mechanical failures or more than one misfire not traceable to poor ammunition.

Now, how many rounds represent a reasonable amount of ammunition? It is not expected that any two people will agree on a single number. In advance of laboratory research, discussions were held with numerous gunsmiths/armorers. There was general agreement that most problems resulting from firing tended to become apparent during the first 200 or so rounds. This was verified through laboratory tests, and the final 600-round firing test was established to ensure identification of all firing problems. The choice of the number of test rounds is also consistent with minimum projected firearm use. Revolver qualification courses vary, but 60 rounds per qualification is about average. If an officer qualifies once per year, practices once per qualification, and does no other shooting, a 600-round test represents 5 years of wear. If the revolver is fired more often, the firing test represents an even shorter period of time.

Drop Safety Requirement

Police service weapons will be dropped from time to time and when they are it is necessary that they not discharge. Generally they will fall as they are being drawn from a holster or being returned to a holster. It is expected that when a service weapon falls it will be with the hammer down since most departments teach double action revolver shooting. In addition, police officers are generally standing on hard surfaces such as roads, walkways, and inside buildings when a revolver falls. Therefore, the revolver in this test requirement is dropped from a height of 39.37 inches (1 meter) onto a steel plate.

Hammer Safety Requirement

This requirement is a special case of the drop safety requirement. Laboratory experiments showed that occasionally a revolver would fall directly on the hammer but in testing it was difficult to drop a revolver reliably so that it always landed on the hammer. The test associated with this requirement holds the revolver stationary and drops a weight equal to the weight of the loaded revolver onto the hammer.

Criticality of Requirements

A requirement that may be critical to one police department may not be as important to another department. Some revolver problems are easier to fix than others. Further, many parameters interrelate so that fixing one problem may cause another parameter to move the revolver away from being combat ready. Almost all non-combat ready revolvers can be made combat ready by proper adjustment. The type of work expected from armorers, gunsmiths, and manufacturers will be defined below. Revolver parameters are discussed in terms of which of these three types of people must bring the parameter within tolerance. For those departments that do not have armorers or gunsmiths, every parameter is basically critical. For those departments that do have armorers, the department must decide if it wants a portion of the armorer's time used adjusting "brand new guns right from the box."

Armorer--An armorer installs new parts in a revolver adjusting the parts with small hand tools (files, stones, hammers, etc.) at those places on the part designated by the manufacture as adjustment locations.

Gunsmith--A gunsmith in addition to the work of an armorer uses machine tools (drill presses, lathes, milling machines, etc.) to alter premanufactured parts so that they fit a particular revolver.

Manufacturer--A manufacturer uses many different types of equipment to design and create a revolver from basic raw materials.

Table D-1 lists the revolver requirements defined in NIJ Standard-0109.00. An attempt has been made to indicate the lowest level, closest to the police department, at which the parameter can be adjusted. If more than one level is indicated, then the problem has more than one facet. For example, if the barrel/cylinder gap is too small the barrel can be filed by an armorer to make it larger. But if the barrel/cylinder gap is too large, a gunsmith must reset the barrel (requiring a lathe) to make the gap smaller. If the gunsmith level is skipped that means the solution is simple or very complex, for example barrel/cylinder alignment. If all the parts are properly manufactured and only a rotational problem occurs, an armorer can usually fix the problem. On the other hand, if one or more of the cylinder chambers are not cut in the correct places on the cylinder the manufacturer needs to fit a new cylinder to the frame (this is a major correction).

Table D-1

The Person Who Can Most Easily Adjust Revolvers to Meet the NIJ Standard

Requirement	Armorer	Gunsmith	Manufacturer
User Information			x
Barrel/Cylinder Gap	x	x	
Barrel Bore Diameter		x	x
Headspace	x		x
Action	x	x	
Barrel/Cylinder Alignment	x		x
Cylinder Assembly	x		
Ejection	x		
Cylinder Support	x		
Hammer	x		
Trigger	x		
Visual Inspection Items	x	x	x
Safety Features	x		
Drop Safety Requirement			x
Hammer Safety Requirement			x

APPENDIX E: Testing Program Procedures

The National Institute of Justice (NIJ) Technology Assessment Program Advisory Council (TAPAC) was originally established to recommend research priorities consistent with the "real time" needs of the law enforcement community. Based on the recommendations of the Advisory Council, NIJ subsequently established an equipment testing program to evaluate equipment in accordance with the performance standards that NIJ issues for voluntary national use and to publish the test results as Equipment Performance Reports.

Each year, the Advisory Council gives NIJ its recommendations for testing equipment. The recommendations are given in priority order according to overall interest and importance to State and local law enforcement agencies. Funding considerations normally limit the scope of testing programs to two items of equipment, which NIJ selects from the Advisory Council recommendations.

The testing program is complex, involving NIJ, the Technology Assessment Program Information Center (TAPIC), two organizations of the Department of Commerce National Bureau of Standards (NBS), and independent testing laboratories. The result of the testing program is the availability of valid, unbiased test results that assist law enforcement agencies in selecting and procuring equipment suitable for their needs. Moreover, the program is structured so that manufacturers can continue to have their products tested according to the NIJ standard and the results disseminated to users as new products are tested.

Following the decision to test an item of equipment, TAPIC and LESL identify manufacturers and the specific models that are available. The TAPIC staff then contacts the manufacturers to invite them to participate in the program. When TAPIC knows the number of models to be tested, LESL and NIJ assist TAPIC in developing a Request for Proposal (RFP) to solicit bids from independent testing laboratories. The NBS Laboratory Accreditation Program staff develop a laboratory questionnaire to assist in the initial evaluation of the testing laboratory capabilities, which is used as part of the RFP. A laboratory that is captive to a manufacturer or derives a major portion of its income from such a manufacturer is prohibited from bidding on the testing effort.

TAPIC seeks to award contracts to two independent testing laboratories. Since equipment manufacturers are found in all geographic locations, TAPIC makes every effort to select one laboratory east of the Mississippi and one west of the Mississippi. Manufacturers are permitted to have their products tested at their own expense after the TAP test program, and manufacturers may wish to use the laboratory closer to their plant. Two laboratories also allow manufacturers to obtain competitive bids, and should one laboratory withdraw from the program, the other is still available.

When the responses to the RFP are received, LESL, TAPIC, and the NBS Laboratory Accreditation Program staff evaluate each proposal independently and rate it according to the scoring criteria specified in the RFP. A final rank is then established, and TAPIC recommends to NIJ two laboratories for contact award.

Each laboratory awarded a contract is required to demonstrate its competence and ability to properly conduct tests in accordance with the NIJ standard. This is accomplished through an onsite inspection by representatives of TAPIC, LESL, and the NBS Laboratory Accreditation Program staff. During the in-

spection, a single item of equipment is tested, and the staff evaluate all the factors associated with laboratory competence. Once a laboratory has been found fully capable to conduct tests in accordance with the NIJ standard and its test report found adequate, it becomes a TAPIC approved independent laboratory for future tests of that item of equipment. Should a laboratory not be competent, it is eliminated from the program and another laboratory is awarded a contract and also subjected to full evaluation.

Approved laboratories are authorized to proceed with the remaining or "main quantity" testing. Representatives of TAPIC and LESL periodically visit the laboratories during the final testing.

After TAPIC has received the final test reports, LESL and TAPIC staff analyze and interpret the results to ensure accuracy and validity. Data are reviewed with the laboratories to resolve any ambiguities prior to preparation of the Equipment Performance Report.

Manufacturers are encouraged to test additional items of equipment after the NIJ Equipment Performance Report is published. Such testing must be accomplished according to NIJ standards, by a TAPIC-approved laboratory, and subject to TAPIC administrative controls. TAPIC issues supplements to the Equipment Performance Report as new equipment is found to conform to NIJ standards.