AN ANNOTATED BIBLIOGRAPHY

of

M16A1 RIFLE SYSTEM TESTS

AN ANNOTATED BIBLIOGRAPHY

of

M16A1 RIFLE SYSTEM TESTS

Prepared by: Office, Chief of Staff, Army
Office of the Assistant Vice
Chief of Staff
Office of the Director Weapon
Systems Analysis
Washington, D. C., 20310

15 April 1968

An Annotated Bibliography

of

M16A1 Rifle System Tests

Introduction

In the 1950's the U.S. Army Ordnance Corps initiated developmental consideration of a light weight, high velocity rifle or carbine. These considerations led to the development and production of the M16 - M16A1 rifle and ammunition system. Over 250 tests constitute the developmental effort which has produced the current M16A1 system.

This report consists of a bibliography of M16A1 system tests, both formal and informal, that had been identified by the Office of the Director of Weapon Systems Analysis, Office of the Chief of Staff, U.S. Army, as of 1 April 1968. The dates given are generally the dates of the report, memorandum, or message which cite the test data.

The annotations state the test purpose and furnish an abstract of the test. Only significant results are given. Where available, project and report numbers have been included. The entries are arranged first by sponsoring agency and then chronologically.

INDEX TO ANNOTATED BIBLIOGRAPHY

INDEX TO ANNOTATED BIBLIOGRAPHY (Cont'd)

INDEX TO ANNOTATED BIBLIOGRAPHY(Cont'd)

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
TECOM (D&PS)	22 Apr 54	Preliminary Investigation of a Caliber .22 High Velocity Cartridge for Lightweight Rifles.	To design a high velocity caliber .22 rifle cartridge, fabricate proof weapons and equipment for producing and testing the ammunition, adapt a lightweight automatic rifle to the caliber .22, make a preliminary investigation of interior, exterior, and terminal ballistics of the cartridge, and evaluate briefly the performance of the ammunition in the lightweight automatic rifle.
TECOM (D&PS)	25 May 55	Investigation of Experimental Caliber .22 Carbine Ammunition and Modified M2 Carbines. Project TS1-2.	To design a suitable military bullet for employment in an experimental caliber .22 carbine cartridge, procure ammunition employing the bullet designed, evaluate performance of the ammunition, and assemble and test modified M2 carbines adapted to the experimental cartridge. Results are contained in 33d report on Project TS1-2.
TECOM (D&PS)	22 Dec 55	Investigation of an Experimental Caliber .22 High Velocity Bullet for Rifles. Project TS1-2.	To investigate some interior, exterior, and terminal-ballistic properties of ammunition employing an experimental caliber .22 rifle bullet designed by D&PS. Results are contained in 35th report on Project TS1-2.
USAIB	6 Nov 57	Firing Demonstration Winchester Military Rifle for Caliber .224 Winchester Ammunition.	To observe an experimental lightweight rifle developed by Winchester for military use. Demonstration included penetration effects of caliber .224 Winchester ammunition on standard steel helmets.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
USAIB	27 May 58	Evaluation of Small Caliber High Velocity Rifles--Armalite AR15. Project 2787 DA Project 502-08-006	To determine the potential of the AR15 small caliber high velocity rifle as a replacement for the M14 and M15 rifles. The AR15 was recommended as a potential replacement for these rifles but development should be expedited to provide for a 5.56mm cartridge having greater resistance to bullet disintegration and better penetration characteristics. Subtests were made for physical characteristics, ease of disassembly and assembly, organizational maintenance, accuracy in both semiautomatic and automatic modes, transition firing, functioning under simulated combat conditions and adverse conditions, penetration, sights, position-disclosing effects, and comparison with military characteristics.
USAIB	14 Jul 58	Evaluation of Small Caliber High Velocity Rifles--Winchester. Project 2787 DA Project 502-08-006.	To determine the potential of the Winchester small caliber, high velocity rifle to replace the M14 and M15 rifles.
USAIB	13 Aug 58	Evaluation of Small Caliber High Velocity Rifles--Armalite AR15. Project 2787 DA Project Supplemental report 502-08-006.	To duplicate the USAIB rain tests on the damaged AR15 rifles.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
TECOM (D&PS)	3 Feb 59	Test of Rifle, Caliber .22, AR15; Rifle, Lightweight Military, Caliber .224; and Pertinent Ammunition. OCO Project TS2-2015. DA Project 5802-08-006.	To subject the test rifles and ammunition to the standard light automatic rifle test. The AR15 rifle has the advantage of lightweight, light recoil, favorable handling characteristics, convenient assembly and disassembly, and good endurance. It has a deficient magazine and poor accuracy characteristics because of the short-sight radius and heavy trigger pull. The ammunition has the advantages of lightweight and light recoil, but a high level of case casualties indicates a need for further development. Subtests included physical examination, test for ease of disassembly and assembly, accuracy, endurance, flash, firing unlubricated, functioning under conditions of extreme cold, dust, mud, and rain, and cook-off.
TECOM (USAATB)	17 Apr 59	Evaluation of Small Caliber High Velocity Rifles. Project 2787. DA Project 502-08-006.	To determine the potential of the small caliber, high velocity AR15 as a replacement for the M14 and M15 rifles under Arctic winter conditions. The AR15 was found adequate pending modification to correct identified deficiencies. The report recommended that no further consideration be given the caliber .224 cartridge for use under Arctic winter conditions. Included were subtests for ease of disassembly and assembly, ease of maintenance, functioning, known distance firing, transition firing, combat firing, firing under adverse conditions, feed system, sights, reliability, penetration, and position-disclosing effects.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
TECOM (D&PS)	Nov 60	Test of Rifle, Caliber .223, AR15. Project TS1-2/265.	To subject 3 rifles to the light automatic rifle test and to subject 2 rifles to additional accuracy tests. The weapons tested were mass-produced models and incorporated various minor changes from the experimental rifles reported on in 1959. Results are contained in D&PS Report 96.
TECOM (D&PS)	Dec 62	Comparative Evaluation of AR15 and M14 Rifles.	To conduct comparative engineering-type tests. Results are contained in DPS Report 799.
TECOM (USAIB)	7 Dec 62	Comparative Evaluation of AR15 and M14 Rifles. Project 3008.	To compare under temperate environmental conditions the AR15 and M14 rifles in the rifle, automatic rifle, and sub-machine gun roles. The Infantry Board concluded that no consideration should be given to the adoption of the AR15 until all of its noted deficiencies have been corrected, at which time the rifle would be suitable for employment in the sub-machine gun and special operations roles. The M14 rifle should be retained as the basic infantry rifle.
TECOM	12 Dec 62	Comparative Evaluation of U.S. Army Rifle 7.62mm, M14; Armalite Rifle Caliber .223, AR15; Soviet Assault Rifle AK47.	To evaluate continued improvements in the high velocity, small caliber AR15 rifle in comparison with tests of the M14 and AK47 rifles.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
TECOM (USAATB)	12 Dec 62	Comparative Evaluation of AR15, M14, and AK47 Rifles and M79 Grenade Launchers. Project ATB 33-001	The M14 and AR15 rifles were equal with respect to ease of disassembly and assembly, known distance semiautomatic accuracy, field firing, penetration of armor vests, functioning under adverse conditions, position-disclosing effects, reliability, and maintenance. The M14 was superior with respect to penetration of wood panels and steel helmets, and durability. The AR15 was superior with respect to weight and automatic accuracy.
TECOM (D&PS)	18 Dec 62	Firing Record S-46415: Dispersion of Bullets Fired Automatically From AR15 and M14 Rifles Held at the Hip.	Ten three-round groups were fired from the AR15 and M14 rifles at a range of 25 yards with rifles held at the hip. The results from both weapons were reported as being satisfactory.
TECOM (D&PS)	20 Dec 62	Firing Record: Engineering Test on Interchangeablility of Rifles, Caliber .223, AR15.	Each of five rifles was fired 100 rounds. Each rifle was then completely disassembled. Rifles were reassembled by selecting parts in a random manner, except that major parts from the same rifle were not put together in the reassembled rifles. The rifles were then fired 100 rounds each. The functional firing after disassembling and reassembling was reported as satisfactory.
TECOM (USAATB)	25 Jan 63	Evaluation of Bullet Stability in the AR15 Rifle. Project ATB 33-001	To record mean radius and shot group data as a function of range at ambient firing temperatures 9^{o} to 12^{o} and 21^{o} to 31^{o}F.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
TECOM (D&PS)	20 Mar 63	Firing Record S46425: Feasibility Test of a Special Muzzle Attachment.	As noted in the title.
TECOM (D&PS)	Apr 63	Evaluation Test of the Rate of Rifle Twist in Rifle, Caliber .223, AR15. DA Project 5020-804-601.	To subject 4 AR15 rifles, 2 having a 1-in-14 barrel twist rate and 2 having a 1-in-12 barrel twist rate, to accuracy, bullet stability, and endurance tests. Long-range accuracy and bullet stability of the AR15 with the 1-in-12 twist rate were superior to those of the rifle with the 1-in-14 twist rate. Results are contained in D&PS Report 880.
TECOM (USAIB)	1 Aug 63	Test of Bolt Assit Device on AR15 Rifle	To conduct a static evaluation of the modified charging handle (using dummy ammunition).
TECOM (USAIB)	30 Aug 63	Product Improvement Test of Armalite AR15 Rifle. TECOM Project 8-3-0030-07-F	To evaluate AR15 rifles modified by the addition of bolt closure assist device and aluminum magazines of a new configuration.
TECOM (USAIB)	14 Oct 63	Product Improvement Test of Armalite AR15 Rifle. TECOM Project 8-3-0030-07-F	To determine the suitability of the side-mounted bolt assist device on the AR15 rifle.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
TECOM (D&PS)	Nov 63	Product Improvement Test of Bolt Assist Devices for Rifle, Caliber .223, AR15. TECOM Project 8-3-0030-06-F	To evaluate AR15 rifle, both standard rifle and one equipped with bolt assist devices, for safety, effectiveness of the charging handle bolt assist device in chambering and bolt extraction operations and of the plunger-type device in bolt-closing operations under adverse conditions. Results are contained in DPS Report 1120.
TECOM (USAIB)	4 Dec 63	Product Improvement Test of XM16 Rifles. Project 3008C TECOM Project 8-3-0030-09-F	To determine the adequacy of XM16 product improvements--side-mounted bolt assist device, larger charging handle, and a modified firing pin designed to prevent inadvertent firing. These modifications were found adequate and recommend for adoption.
TECOM (USAIB)	6 Jan 64	Military Potential Test of Pointing Devices for M16 Rifles. Project 3008D TECOM Project 8-3-0030-10-F	To determine the military potential of two different types of pointing devices for attachment to M16 rifle. Both types are designed to be attached to the top of the carrying handle.
TECOM (USAIB)	26 Mar 64	Military Potential Test of Muzzle Compensators for M16 Rifle. Project 3064 TECOM Project 8-4-0200-01-F	To determine the military potential of muzzle compensators fabricated by Springfield Armory and to provide a basis for selection of a single type of muzzle brake compensator for use with the M16 rifle.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
TECOM (D&PS)	Apr 64	Product Improvement Test of Modified AR15 Rifles. TECOM Project 8-3-0030-08-F.	To evaluate 5 AR15 rifles which incorporated the following modifications: the charging handle grip enlarged, the bolt closure-device plunger-head area increased, and three firing pins with inertia retarding devices. Results are contained in DPS Report 1276.
TECOM (D&PS)	10 Apr 64	Firing Record Engineer Design Test of Alternate Propellants for Use in Cartridge, 5.56mm, Ball, M193. TECOM Project 8-4-0210-01-C	To conduct a series of ballistic tests, employing four lots of 5.56mm ammunition loaded with various types of propellant.
TECOM (USAIB)	22 May 64	Product Improvement Test: Air Delivery Characteristics of XM16E1 Rifle. TECOM Project 8-4-0020-04-F	To determine suitable means for attachment of M16 rifle to the parachutist.
TECOM (USAIB)	3 Sep 64	Final Report of Service Test of Cartridge, Tracer, 5.56mm, XM196. Project 3068 TECOM Project 8-4-0210-03-C	To determine the suitability of the XM196 5.56mm tracer cartridge for use with the M16 and XM16E1 rifle under temperate climatic conditions. To determine the overall suitability to the XM196 cartridge as compared to the M62 7.62mm tracer cartridge. The service test found the XM196 cartridge suitable for use with the M16 and XM16E1.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
TECOM (D&PS)	Oct 64	Final Report of Comparison Test of Rifle, 5.56mm, M16. TECOM Project 8-4-0230-01F	To determine whether production-line samples of M16 rifles would comply with performance specifications; to detect any design, manufacturing, or inspection deficiencies; and to determine the accuracy and the ability of the rifle to function when subjected to automatic fire roles and under various adverse conditions. Results are contained in DPS Report 1471.
TECOM (USAIB)	2 Nov 64	Military Potential Test of Rifle, 5.56mm, AR18. Project 3073 TECOM Project 8-4-0110-02A	To determine the military potential of the AR18 rifle for Army use using the XM16E1 rifle as a control weapon. The weapons were compared on the basis of the following characteristics: transportability, pointed fire accuracy, parachutist delivery, reliability, durability, automatic and semiautomatic firing accuracy, bayonet employment, ease of maintenance, and physical characteristics.
TECOM (D&PS)	Jan 65	Final Report of Comparison Test of Rifle, 5.56mm, XM16E1. TECOM Project 8-4-0230-02F	To provide an evaluation of 5 production XM16E1 rifles to assure that they conform to the technical requirements of the purchase description and to detect any design, manufacturing, or inspection deficiencies that would adversely affect the operation of the rifles. Results are contained in DPS Report 1541.
TECOM	14 Jan 65	Engineering and Service Test of 5.56mm Blank Cartridge and BFA for XM16E1 Rifle. TECOM Projects 8-4-0250-01C, 8-4-0250-02C	To determine the suitability of the 5.56mm blank cartridge and blank firing attachment for the XM16E1 rifle.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
TECOM (USAIB)	May 65	Test of AR18 Rifle.	To evaluate the 5.56mm AR18, using the XM16E1 as a control.
TECOM (D&PS)	28 May 65	Firing Record: Mil Potential Test of AR18 Rifle, Sound Intensity Phase (Supplement to Final Report of Military Potential Test of Rifle 5.56mm, AR18 Rpt No DPS 1514, Dec 1964). TECOM Project 8-4-0110-01A	The sound intensity phase of the military potential test of the AR18 Rifle was repeated using more sensitive instrumentation. The XM16E1 Rifle was used as a control, one rifle of each type was subjected to the sound intensity test. The higher sound levels recorded with the equipment used in this test would indicate that some hearing risk to unprotected shooters or adjacent personnel may exist in firing either the AR18 or XM16E1 rifle.
TECOM (D&PS)	Jun 65	Engineering Test of Cartridge, 5.56mm, Tracer, XM196. TECOM Project 8-4-0210-02C	To determine cartridge physical dimensions, accuracy, tracer performance, cook-off, vibration effects, brush deflection, erosion, penetration (pine board, steel helmet, and armored vest), and gun functioning. Results are contained in D&PS Report 1687.
TECOM (USAIB)	7 Jun 65	Service Test of Tactical Packaging of 5.56mm Ammunition. Project 3105 TECOM Project 8-4-0210-06	To determine the suitability of the 5.56mm ammunition packaging for Army use under simulated combat conditions.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
TECOM (USAATC)	20 Jul 65	Military Potential Test of Stoner 63 Weapons System Under Artic Winter Conditions. TECOM Project 8-4-0100-05	To determine the performance, accuracy, dispersion, terminal ballistic properties, penetration capabilities, reliability, and ease of maintenance of the Stoner Assault Rifle in the lower extremes of intermediate climatic conditions and in cold and extreme cold climatic conditions in comparison with the M16. Early in the test lubrication problems at below zero temperatures were encountered with test weapons. The test weapons did not perform satisfactorily when fired lubricated or unlubricated, whereas the M16 did perform satisfactorily when fired unlubricated.
TECOM	Aug 65	Engineer Test of Tactical Packaging for 5.56mm Ammunition. Project 8-4-0210-05	To determine the suitability of the proposed 5.56mm ammunition packaging for Army use.
TECOM (USAATC)	23 Aug 65 (18 May 65)	Final Report of Service Test of Cartridge, Tracer, 5.56mm XM196 under Arctic Winter Conditions. TECOM Project 8-4-0210-04C	To determine the suitability of the XM196 cartridge for use with the XM16E1 rifle under arctic winter conditions. One deficiency was encountered in that the reliability of tracer ignition was dependent upon temperature at all ambient air temperatures tested, with the reliability decreasing as the temperature decreased. It was, therefore, concluded that the XM196 tracer cartridge was unsuitable for use under arctic winter conditions until the deficiency could be corrected.
TECOM (USAIB)	26 Nov 65	Check Test for Tactical Packaging of 5.56mm Ammunition. Project 3105A TECOM Project 8-4-0210-10	To reevaluate tactical packaging modified to meet the deficiency identified 7 Jun 65 in the USAIB service test.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
TECOM (USAIB)	Dec 65	SAWS Service Test. TECOM 8-5-0400-04	To measure weapons performance against user standards; to provide, through BRL, data resulting from tests for use in parametric design/operational effectiveness/cost analysis studies to be conducted by USACDC and to develop sufficiently comprehensive data as appropriate; and to provide a basis for choice if type classification is desired. Subtests were conducted for physical characteristics, training, rate of fire, sights, magazines, ammunition and packaging, defects, assault, mounts, record and transition firing, signature characteristics, pointed fire accuracy, portability and aerial delivery, accessories and training aids, maintenance, durability and reliability, versatility of weapon design, safety, human factors engineering and value analysis. There were no significant differences between the SAWS weapons except in reliability. The current standard weapons were the most reliable.
TECOM (D&PS)	Dec65 (and Mar 66)	SAWS Engineering Test TECOM 8-5-0400-03	To determine the technical properties, performance, capabilities, and limitations of each of the candidate weapons and systems, in comparison with those of the 5.56mm and 7.62mm small arms weapons currently in Army use. To determine the degree to which the standard weapons fulfill user requirements. To provide BRL with appropriate data for use in parametric design studies to be conducted by USACDC. To provide, if appropriate, a basis for type classification action. Results of partial report are in DPS Report 1851. Results of final report are in DPS Report 1970.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
TECOM (Armor Bd)	13Dec65	SAWS Service Test TECOM 8-5-0400-05	To determine the handling and transportability characteristics and suitability for use of individual weapons designed specifically for combat crew members.
TECOM	Jan66	Analysis of Results of SAWS Engineering and Service Tests TECOM 8-5-0400-03 through 06	M14 and M16 rifles are considered the most suitable for Army use of any of the rifles tested. In the event that a choice must be made between the M16 and M14, this choice should be based upon user requirements and the relative weight which the user (chooses to) assigns to the various performance factors.
TECOM (USAIB)	7Jan66	Engineer Design Test of Muzzle Brake Compensators for XM16E1 Rifle TECOM 8-5-0400-10	To conduct an engineering design test of muzzle brake compensators designed by HEL and Springfield Armory.
TECOM (AVN Bd)	14Jan66	Limited Service Test of SAWS for Use as Individual Weapons by Army Aircraft Crew Members TECOM PN 8-5-0400-06	To determine suitability of candidate small arms for use by aircraft crew members as individual weapons.
TECOM	26Jan66	Engineer Design Test of Muzzle Brake Compensators for XM16E1 Rifle	Forwards analysis of 7 Jan 66 USAIB report. Tests conducted were on physical characteristics, quick fire, portability, transportability, aerial delivery, position-disclosing effects, durability and maintenance, and bayonets. Neither of the muzzle brake designs showed a significant increase in effectiveness.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
TECOM (USAIB)	12 Apr 66	Product Improvement Test of Cleaning Rods and Brushes for the XM16E1 Rifle. Project 3151 TECOM Project 8-6-0200-01	To determine and compare the relative suitability of the M11E1 and M11 cleaning rods and the original and modified bore cleaning and chamber cleaning brushes.
TECOM (USAATC)	12 Apr 66	Check Test of Cartridge Tracer, 5.56mm, XM196, Under Arctic Winter Conditions. TECOM Project 8-4-0210-09	To check the improved reliability of tracer ignition. Test report found the cartridge suitable for use under all climatic extremes, including extreme cold.
TECOM (D&PS)	21 Apr 66	Firing Record: Engineer Design Test of Muzzle Brake Compensators, XM16E1. TECOM Project 8-5-0400-09	To evaluate muzzle brake compensator designs by Springfield Armory and HEL for use on the XM16E1 rifle to reduce muzzle climb and decrease dispersion of short bursts i automatic fire.
TECOM (D&PS)	19 May 66	Firing Record: NR S-46530 Engineer Design Test of Cartridge, 5.56mm, Ball, M193 (Evaluation of Improved and/or Alternate Propellants. TECOM Project 8-6-0210-01	To ascertain the characteristics of DuPont and Hercules proposed alternate propellants in comparison with standard ball propellant.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
TECOM (USAIB)	28 Jun 66	Check Test of Chamber Cleaning Brushes for XM16E1 Rifle. Project 3151A TECOM Project 8-6-0200-07	To check on the correction made in the chamber cleaning brushes after the previous test, which noted lack of durability. The brush was found suitable.
TECOM (D&PS)	Aug 66	Engineering Test of Tactical Packaging for 5.56mm Ammunition. TECOM Project 8-4-0210-05	To determine the suitability of the 5.56mm tactical ammunition packaging for Army use with the XM16E1 rifle. Results are contained in D&PS Report 2100.
TECOM (D&PS)	Dec 66	Engineer Design Test of Modified Flash Suppressor for 5.56mm CAR15 Submachine Gun. TECOM Project 8-6-0200-06	To determine the performance characteristics of the coordinate suppressor with respect to safety, muzzle flash and noise suppression, effect on accuracy of the CAR15 submachine gun, and durability of the suppressor under conditions of sustained fire. Results are contained in D&PS Report 2215.
TECOM (USAIB)	10 Apr 67	Product Improvement Test for 30-Round Magazine and Redesigned Handguard for M16/XM16E1 Rifle and Colt Submachine Gun. Project 3159 TECOM Project 8-6-0200-03	To determine the suitability of the test magazine and pouch for Army use with the M16. To determine whether the test handguard is equal to or better than the control handguard in design and durability.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
TECOM (USAATC)	25 May 67	Engineer Design Test of Preservative Lubricants for Small Arms Weapons Under Arctic Winter and Spring Breakup Conditions. TECOM Project 8-7-6510-04	To determine lubricant suitability under subject conditions, testing was conducted in ambient temperatures from -1°F to -59°F and 32°F to 44°F. To determine the functional suitability, ease of application, and compatibility of the test lubricants which were MIL-L-14107, MIL-L-46010A, and experimental lubricants A and B.
TECOM (D&PS)	Jun 67	Military Potential Test of Weapon Lubricants Employed in 5.56mm M16 Rifle. TECOM Project 8-5-0060-02	To evaluate test lubricants by supplementing the laboratory data acquired by Rock Island Arsenal early in 1966 and to investigate weapon reliability with the test lubricants under real life conditions. To provide a sound basis for correlating laboratory data and full-scale performance parameters. To establish a clear basis for decision as to whether or not a lubricant of the Dri-Slide type has sufficient merit to justify the development of a military specification. Results are contained in D&PS Report 2417.
TECOM (D&PS)	Jul 67	Product Improvement Test of Submachine gun, 5.56mm, XM177E2. TECOM Project 8-7-0220-01	Plan of test to evaluate the physical and technical characteristics of the XM177E2, to evaluate weapon performance when using both extruded and spherical grain propellants loaded in both ball and tracer cartridges; and to evaluate test results regarding suitability of the M16A1 rifle.
TECOM (D&PS)	Aug 67	Military Potential Test of Lubricant for M16A1 Rifle (Supplement to Jun 67 Test). TECOM Project 8-5-0060-02	To evaluate the compatibility of MIL-L-46000A lubricant with the M16A1 rifle while firing tracer ammunition. To investigate the effects on rifle function of storing the rifle in a hot, humid environment with a saltwater-dipped round of ammunition in the chamber. Results are contained in D&PS Report 2494.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
TECOM (D&PS)	28 Aug 67	Product Improvement Test of Modified Handguard and Handguard Cap for M16A1 Rifle. TECOM Project 8-6-0200-02	To determine the durability of the handguard when subjected to extreme temperatures; to determine the material compatibility of the handguard to various standard and nonstandard solvents and lubricants, and to determine the thermol dissipation characteristics of the handguard during and immediately after rifle firing.
TECOM (USAIB)	1 Sep 67 (Test Plan)	Military Potential Test of Small Arms Sights for M14 and M16A1 Rifles. TECOM Project 8-8-0810-02	This is a proposed letter plan for a military potential test to evaluate the combat effectiveness of the luminous iron and optical type of candidate sights in comparison with standard iron sights on the M14 and M16A1 rifles under both day and low light level conditions, when the target is visible to the unaided eye.
TECOM (D&PS)	Oct 67	Engineer Design Test of Magazine, 20-Round, Disposable, for M16A1 Rifle. TECOM Projece 8-7-0200-03	To provide a basis for selection of one or more designs for further tests after necessary design improvements were made; to compare the durability and reliability of test magazines with that of the standard 20-round aluminum magazine for purposes of selection and limited production procurement of a disposable-type magazine if proven usable. Results are contained in D&PS Report 2536.
TECOM (D&PS)	26 Oct 67	Safety Evaluation for Blank Firing Attachments for Use with the 5.56mm M16 Rifle. TECOM Project 8-8-0250-03	To evaluate test BFA's with respect to safety hazards.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
TECOM (USAIB)	Nov 67 (Test Plan)	Product Improvement Test of Gilding Metal Clad Steel Jackets for 5.56mm Projectiles. TECOM Project 8-7-0211-02	This is a draft plan for product improvement test.
TECOM (USAATC)	2 Nov 67 (Test Plan)	Service Test for Lubricants for M14 and M16A1 Rifles Under Arctic Winter Conditions.	Plan of test to evaluate lubricants when applied to weapons that are operated and maintained under Arctic field conditions and to evaluate the performance of weapons operated without lubricant and with minimum maintenance under Arctic winter conditions.
TECOM	12 Dec 67	Product Improvement Test of Redesigned Buffer for M16A1 Rifle. TECOM Project 8-7-0230-04	To compare cyclic rates of fire using the old and new buffers. Accomplished by firing four different types of 5.56mm ammunition, both extruded grain and ball propellants with both tracer and ball projectiles. Sensitivities of the weapons to these conditions were demonstrated. Results are contained in D&PS Report 2662.
TECOM (D&PS)	20 Dec 67	Initial Production Test of Chrome Plated Chambers and M16A1 Rifles. TECOM Project 8-8-0200-07	To determine the relative performance levels for chrome plated and nonchrome plated chambers under selected adverse conditions and extended firings at 60 $\pm$ 10°F.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
WECOM	20 Mar 64	Evaluation of Sierra Configuration Caliber .223 Bullet	To determine the stability factor of Sierra bullets fired from the AR15 rifle with twist rates of one in fourteen and one in twelve inches.
PMRS	30 Nov 65	Bolt Carriers for 5.56mm Rifle M16 and XM16E1	To provide life expectance data on subject bolt carriers and to compare the Parco Lubrite and electrolize finishes.
PMRS	17 Feb 66	Troop Reaction Reports on the XM16E1 Rifle	To provide a final analysis of field commanders' reports covering the period from 1 November 1964 through 31 October 1965. These reports included general troop reaction, accuracy, reliability, durability, maintainability, tactical employment, automatic fire capability, penetration, BOI, 2- and 3- shot burst control device, bipod, bayonet, bolt forward assist, and produce improvement considerations.
WECOM	Aug 66	Evaluation of Dri-Slide as a Lubricant For Small Arms Weapons	To determine whether the properties and uses of Dri-Slide as described and claimed by Dri-Slide, Inc., are valid. To determine whether Dri-Slide is inferior, equal, or superior to small arms lubricants authorized for use. The report concludes that not all claims for Dri-Slide are correct. Concerning properties of friction, ability to support load, wear, corrosion protection, and lubrication under normal, dusty, and sandy environments, Dri-Slide was equal to VV-L-800 for load and friction, inferior in wear and corrosion protection, equal under normal and dusty conditions, superior under a sandy environment. Results are contained in Technical Report 66-2397.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
PMRS	15 Nov 66	Fouling Test for 5.56mm Ammunition in M16 and M16A1 Rifles	To report on the development of quantitative criteria for the degree of fouling deposited in the gas tube of the M16 and M16A1 rifles.
PMRS	17 Apr 67	Visibility of 7.62mm and 5.56mm Tracers	To investigate and comment on the problem of tracer visibility.
WECOM	Jul 67	Military Potential Test of Lubricants Employed in 5.56mm M16 Rifle	See June 1967 TECOM document above.
WECOM	8 Aug 67	Ruptured Cartridge	To evaluate ruptured cartridge case problems possibly resulting from water trapped in the barrel bore.
PMRS	16 Aug 67	Gilding Metal Fouling in M16 and M16A1 Rifle Barrels	To report and comment on the accumulation of gilding metal fouling following extensive firing of straight tracer ammunition.
PMRS	30 Sep 66	Performance of 5.56mm Ammunition Systems	To report on weapons system reliability at Fort Carson, Colorado.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
SA	29 Jun 59	Water Drainage Characteristics of Caliber .22/06 and 7.62mm Barrels. ORO Project TS2-2015 DA Project 502-08-006	To evaluate the drainage characteristics of the test barrels and to determine the effect of temperature, metal finish, and supplementary finish on these characteristics. The caliber .22 barrels were more difficult to fill when immersed in water but drained less well when a cartridge was in the chamber. Results are contained in Technical Report 1-7015.
SA	15 Mar 63	Engineering Evaluation of AR15.	To perform a modified weapon performance test on six weapons and six magazines in order to confirm malfunctions observed in previous tests of the AR15. Results are contained in Report P&CO-L-4526.
SA	Mar 63	5.56mm Projectile and Charge Weights	To obtain data on the projectile and charge weights of the Remington 5.56mm cartridge.
SA	Apr 63	Evaluation of Aluminum and Steel Magazines.	To compare weapon performance obtained using the two kinds of magazines. High speed movie results showed better performance was obtained with the aluminum magazines.
SA	Jun 63	Kinematic function and Feeding Analysis.	To evaluate AR15 performance using high speed movies of functioning and feeding.
SA	Jun 63	Firing Pin Indent.	To determine the firing pin indent on a unified cartridge in automatic fire.
SA	Jun 63 Jul 63	Bullet Seat Examination.	To determine the effect on accuracy, velocity, and functioning of advancing the bullet seat in the AR15 chamber.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
SA	Jun 63 Sep 63	Flash Suppressor Design.	To evaluate an experimental model flash suppressor by means of flash photos. Found the five prong suppressor better than the three-prong one, and recommended modification.
SA	Sep 63	Evaluation of Bolt Closure Devices.	To determine the effectiveness of the proposed SA and Colt's bolt closure device. The SA model has a 600 round life, and was of no use if the bolt was 3/16" out of battery. The Colt's model was effective. Tests were conducted under normal, dust, dry, muddy water, and cold conditions.
SA	Oct 63	Firing Pin Evaluation.	To evaluate proposed experimental AR15 firing pins. The SA design was found to be no good. One Colt design was adequate, another marginal.
SA	Dec 63	Test of Firing Pin Devices, Charging Handle, and Bolt Closure Device.	To evaluate AR15 modifications for firing pin indent and with respect to functioning and endurance. The recommendation was to use the original primer (no fire at 6 inch ounces, all fire at 36 inch ounces) if Colt's #1 firing pin design were to be accepted.
SA	9 Dec 63	Test of Firing Pin, Charging Handle, and Bolt Closure Device for Rifle, 5.56mm, M16 (AR15).	To evaluate (1) three firing pin devices designed to prevent primer contact during bolt closure, (2) "T" type charging handle assemblies, (3) Colt bolt closure device.
SA	19 Aug 64	First Memo Report: Inadvertent Fire Problem Rifle, 5.56mm, XM16E1.	To provide a linear (compression) spring for the Colt lightweight firing pin.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
SA	22 Sep 64	Second Memo Report: Investigation of Weapon Chamber Configuration Headspace, and Bullet Seat Depth Rifle, 5.56mm, XM16E1.	To assess the effects of increasing projectile free run by weapon-firing tests. The effect of change in headspace and free run on accuracy was very small, but the effect on velocity was significant.
SA	8 Dec 64	Third Memo Report: Muzzle Device Development Rifle, 5.56mm, XM16E1.	To develop a muzzle device for improved weapon controllability in automatic and burst fire from certain (or as preferred, from all) firing positions.
SA	Nov 64 Mar 65 Jun 65	Magazine filler Devices.	To evaluate the proposed 10 round clip and magazine filler device for 5.56mm ammunition with respect to stripping force, round retention, and the effect of being dropped.
SA	Jun 65	Muzzle Devices.	To evaluate proposed muzzle devices with respect to accuracy, flash, recoil, and sound.
SA	Dec 65	Ruptured Cartridge Case Extractor.	To compare two proposed designs of ruptured cartridge case extractors and to select one for immediate use.
SA	Jan 66	Barrel Erosion Study of Rifles, 5.56mm, M16 and XM16E1.	To determine the barrel bore service life of the XM16E1 rifle by firing 12 rifles to the end of their barrel bore service life and taking periodic barrel bore measurements to determine components to be revised in order to reduce the breakage and malfunction rates and to improve reliabilit To determine the malfunction rate and the peculiarities of the weapon resulting from extended firing. To test the M11 cleaning rod and the 11010021 bore brush for durability. Results are contained in Technical Report 11-5000.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
SA	26 Apr 66	Effectiveness of Small Arms Projectiles Against Aircraft.	To evaluate as part of the SAWS Study effectiveness data for various spin-stabilized ball projectiles against relatively low-, slow-flying aircraft.
SA	Jul 66	Test of Handguards.	To evaluate the material and configuration of modified XM16E1 handguards proposed by Colt's. Test items were found to be unacceptable.
SA	20 Dec 66	Buffer for 5.56mm, XM16E1 Rifle.	To evaluate four buffer types proposed by Colt in comparison with the standard buffer.
SA	30 Jun 67	Erosion Test on 5.56mm Rifle Barrels Small Arms Weapon Systems Study.	To record results of erosion tests on 5.56mm rifle barrels fabricated from AISI/SAE 4150 and chromium-molybdenum-vanadium steels with and without chromium plated bores. Results are contained in Technical Report 1-7024.
SA	Sep 67	Comparison of new and reconditioned M16A1 Rifle Barrels.	To collect data for PM-RS, comparing the performance of new and reconditioned M16A1 Rifle Barrels.
SA	Dec 67	M16A1 Barrel Life.	To collect data for PM-RS, providing information on M16A1 barrel life, when firing M193 cartridges loaded with IMR 8208 propellant.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
MUCOM	16 Jan 63	Discussion of Small Caliber Rifle Test Results	To take action on major deficiencies detected in small caliber rifle evaluation tests, in particular debulleting and blown primers when moisture is in the bore.
MUCOM	3 Mar 63	Remington Velocity and Pressure Data Summary	To correct interior ballistic data on test barrels with the S.A.A.M.I. chamber, the Colt AR15 rifle chamber and a modified Colt AR15 chamber.
FA	21 Mar 63	.223 Ammunition/AR15 Rifle-Premature Firing	To evaluate an experimental sample lot of less sensitive primers.
FA	25 Mar 63	Measurements of Bullet Profile of .223 Ammunition	To obtain data required in connection with study of dimensional compatibility of .223 ammunition and AR15 rifle chambers.
FA	4 Apr 63	First Memo Report: Investigation of Firing Pin Energy and Primer Sensitivity	To assist in investigation of certain malfunctions of the subject system which have occurred occasionally in various trials by using forces.
FA	21 May 63	Tests of USAF Samples of .223 Ammunition	To collect velocity and chamber pressure data on 5.56mm ammunition samples obtained from USAF.
FA	17 Jun 63	Second Memo Report: Investigation of Test Weapon Chamber Configuration	To evaluate and compare the configurations of the chamber designed for the AR15 rifle and the chamber of the test weapon used for ammunition evaluation.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
FA	18 Jun 63	Third Memo Report: Investigation of Bullet Configuration	To establish the relative merits of the two types of bullets for which samples were available and to observe the effect of differences in bullet shape upon the principal exterior-ballistic properties of these bullets. The two bullet types were government-procured Remington bullets procured between September 1962 and April 1963, and USAF bullets procured from the Sierra Company.
FA	19 Jun 63	Fourth Memo Report: Investigation of Gas Port Pressures in .223 Ammunition	To determine the reliance of proper weapon-functioning upon satisfactory levels of gas port pressure and to examine the question of lot-to-lot variability in port pressure when firing ammunition from available samples. As part of the test effort, it was necessary to design a gage of radial copper-crusher type in order to measure the port pressure.
FA	28 Jun 63	Firing Pin Energy to Coordinate FA Measurement of Available and Unintentional Firing Pin Energies With Hill AFB Data	The 8 July 1963 test used test fixtures and copper cylinders from both FA and Hill AFB in an effort to resolve differences between measurements.
FA	16 Sep 63	Fifth Memo Report: Investigation of Plate-Penetration Characteristics of .223 Ball Bullets	To confirm the practicability of the MIL-C-46381 penetration requirement prior to its promulgation in MIL-C-9963B and to define plate penetration characteristics of several types of 5.56mm ball projectiles.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
FA	Oct 63	Sixth Memo Report: Accuracy Tests of Selected Lots of 5.56mm Ball Cartridges	To ascertain which lots are suitable for the accuracy phase of rifle acceptance testing according to the criteria ammunition having approximately average accuracy characteristics is to be used for rifle acceptance so that gross changes in results of rifle tests can be avoided whenever new ammunition lots come into use for rifle acceptance. Test data substantiated the previous belief that the average accuracy for production to date has been about 1.2 inches mean radius at 200 yards and that a bracket of 1.1 to 1.3 inches mean radius would serve to define ammunition of average accuracy for weapons testing.
FA	Oct 63	Seventh Memo Report: Primer Sensitivity Tests of Selected Lots of 5.56mm Ball Cartridges	To evaluate the sensitivity of several lots of commerci cal. .223 ammunition which had been reported by the Air Force as having inadvertent fire problems.
FA	10 Dec 63	Eighth Memo Report: Investigation of AR15 Weapon Malfunctions When Using Certain Lots of 5.56mm Ball Cartridges	To investigate the problem defined by Colt as excessive accumulation of fouling on the bolt assembly during a 6,000-round endurance test for acceptance of Air Force procurement. The primer composition of one lot of ammunition that had caused a fouling problem was identified as a possible cause of the difficulty.
FA	15 Jan 64	Accuracy Test of 5.56mm Ammunition Lot RA5027	To establish the typical accuracy of the subject ammunition lot.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
FA	12 Feb 64	Primer Sensitivity Tests, 5.56mm	To determine the firing pin energy of the Caliber .30 carbine M1 as part of the general investigation of the M16 inadvertent fire-primer sensitivity problem.
FA	6 Apr 64	5.56mm Cartridge Program	To establish and record the sidewall hardness and grain structure of current 5.56mm cartridge production.
FA	17 Apr 64	Proposed Fouling Requirement for 5.56mm M193 Ball Cartridges	FA MFR reports on various tests and analyses of weapons-fouling associated with primer composition.
FA	19 May 64	Ninth Memo Report: Comparison of of Military and Commercial Drawings of 5.56mm Test Weapon Chambers	To record and explain the differences which are apparent in comparison of the two drawings.
FA	15 May 64	Tenth Memo Report: Investigation of Alternate Propellants for Use in 5.56mm M193 Ball Ammunition	To evaluate the accuracy characteristics of 500,000 M193 cartridges recently manufactured by Olin.
FA	12 Jun 64	Case Casualties in 5.56mm Cartridges	To assemble data regarding Army experience with the AR15 rifle as regards case casualties.
FA	12 Jun 64	Eleventh Memo Report: Investigation of Port Pressure Limits	To develop a number of special ammunition samples which would be suitable for use in tests to investigate the tolerable port pressure limits of the M16 service rifle.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
FA	25 Sep 64	Twelfth Memo Report: Measurement of Cartridge Case Hardness Patterns	To provide a degree of interim standardization of equipment and procedures for hardness measurements and to begin acquisition of data which will provide a background and basis of comparison for case hardness measurements which may be required in the future on 5.56mm ammunition.
FA	Sep 64	Solid Propellants for Small Arms Ammunition	To ascertain the status of the small arms propellant field to delineate its problem areas, and to indicate the path that research and development in this field should follow to meet the future needs of small arms ammunition.
MUCOM	16 Oct 64	Investigation of 5.56mm Armor Piercing Cartridges	To evaluate the requirement for developing a 5.56mm cartridge optimized for penetration characteristics.
FA	17 May 65	Thirteenth Memo Report: Study of Current Port Pressure Acceptance Criteria for 5.56mm Ammunition	To evaluate the meaningfulness of the current port pressure requirements. The report stated that they were reasonable in that they were compatible with cartridge designs and other interior ballistic parameters and that they were efficacious.
FA	Jun 65	Fourteenth Memo Report: Study of Current Primer-Sensitivity Criteria for 5.56mm Ammunition	To evaluate subject criteria. The report recommended that consideration be given the urgent requirement for timely and effective modification of the M16 to reduce the kinetic energy of the firing pin upon bolt closure and thereby permit the relaxation of primer sensitivity requirements.
FA	15 Aug 65	Limited Evaluation of 68-grain 5.56mm Bullets	To evaluate the M193 and 68-grain Sierra and Federal Bullet with respect to ballistic performance characteristics in an effort to improve the performance of the M16 rifle system.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
FA	22 Sep 65	Excessive Fouling of 5.56mm, Ball, M193 Cartridge Lots	To analyze the primer comparison of cartridge lot WCC6051. Subject lot was found to contain antimony sulfide.
FA	Feb 66	A Test of Cartridge 5.56mm, Ball, M193, Lots RA5074 and WCC-6089 in Rifles, 5.56mm XM16E1 and AR15	To determine the effect of propellant types on the functioning and reliability of XM16E1 Rifles. 12,000 rounds were fired from each of four weapons. This test was directed by the PM-RS in November 1965 as a result of preliminary functioning and reliability problems reported in the SAWS evaluation. Results are contained in Report A400-66-01.
FA	Apr 66	Fifteenth Memo Report: Investigation of Alternate Propellants for Use in 5.56mm Ball and Tracer Ammunition	To evaluate samples of approximately 20,000 cartridges, each containing IMR 8208M, HPC 11, and WC 846 propellants. Subtests included velocity and pressure tests, muzzle flash, smoke, noise-sound pressure level, function and casualty, fouling, barrel erosion, cyclic rate, gas tube fouling, propellant alternation, and modified fouling test.
FA	May 66	Test of Cartridge 5.56mm, Ball, M193, Lots RA 5074, RA 5089, RA 5147, WCC 6000, WCC 6089 in Two XM16E1 Rifles	To determine whether severe climate conditions and a lack of cleaning of the XM16E1 rifles would cause failures to extract.
FA	26 May 66	Difficult Extraction in 5.56mm XM16E1 Rifle	To investigate failures to extract the expended case from the M16A1 rifle.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
MUCOM	3 Jun 66	Flash Characteristics of Small Arms Ammunition	To evaluate the actual flash produced by small arms and also the many subjective variables associated with the position of the observer and the conditions of the observation.
FA	17 Jun 66	Difficult Extraction in 5.56mm XM16E1 Rifle	To study the relationships among rim thickness, rim shears, and weapon cleanliness as they affect cartridge extraction. No rim deformation was observed. To determine the relative extraction effort in XM16E1 rifle of 5.56mm cartridge manufactured by three commercial producers; to determine whether cartridges tend to seize in chambers of XM16E1 rifles after environmental storage.
FA	1 Mar 67	Fouling test, 5.56mm Cartridges	To determine the number of stoppages due to fouling in firing 1,000 rounds of ball and tracer ammunition when loaded with ball and extruded grain propellants.
FA	2 Mar 67	Fouling test for 5.56mm Tracer Cartridge Lot LC-12026	To determine the failure to function rate due to fouling of ammunition lot containing IMR 8208M. Four malfunctions were reported: three failures of the bolt to close and one light strike.
FA	6 Apr 67	5.56mm Fouling Tests	To conduct a chemical analysis on the residue removed from various parts of the rifle after firing.
FA	Jun 67	Small Arms Systems Simulation	To describe work at Frankford Arsenal directed toward the utilization of simulation procedures in the small arms field, and their relationship to the scientific approach to designing, evaluating, and testing ammunition.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
FA	28 Jun 67	Use of New Buffer for M16A1 Rifle in Tests of 5.56mm Ammunition	To compare the cyclic rate data with ball propellant in ammunition acceptance tests using rifles with and without the new buffer.
FA	Jul 67	Fouling Tests Investigation of 5.56mm Ammunition and Weapon System	To identify the cause of excessive fouling accumulation on the bolt group of the M16A1 Rifle. This investigation consisted of monthly 1,000 round fouling tests and chemical analysis of the propellant residue.
FA	25 Aug 67	Lethality Evaluation of 5.56mm and 7.62mm Tracer Bullets	To verify the estimate that the 5.56mm tracer bullet should be essentially as lethal as the 5.56mm ball bullet for rifle ranges to 400 meters.
MUCOM	22 Sep 67	Malfunction Investigation of Lot FC 1830, Cartridge, 5.56mm ball, M193	To investigate causes of malfunctions reported at Fort Ord, California, with subject lot.
FA	4 Oct 67	High Temperature Studies of Ball Propellant	To evaluate the effect of high temperature storage conditions upon the ballistic and chemical properties of small arms propellants using analytical rather than experimental methods to estimate storage stability in 5.56mm ammunition from data previously available on storage of 7.62mm ammunition.
MUCOM	9 Oct 67	Extraction Difficulty with 5.56mm Ammunition Containing Ball Propellant	To evaluate a U.K. reported phenomenon involving the use of WC846 propellant in a weapon similar to the 5.56mm M16 and M16A1 rifles.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
BRL	Mar 52	Effectiveness Study of the Infantry Rifle	To study the probability of hitting and of wounding for a family of rifles. The rifles were compared on the basis of the single shot probability and the expected number of kills for a given total weight of rifle and ammunition. Some experimental data on a commercial caliber .220 rifle were included.
BRL	Apr 58	Comparison of Proposed Small Arms Weapon Systems	To compare proposed caliber .22 single ball and proposed caliber .30 duplex and AP rifle and ammunition combination in an attempt to determine significant difference between weapon systems. The comparison is based on the expected number of targets killed for ranges out to 400 yards for a fixed weight for rifle and ammunition.
BRL	Oct 61	Study of Parameters that Affect the Accuracy of Automatic Rifles	To determine ways to improve the accuracy of automatic fire. Results are contained in Technical Note 1428.
BRL	Dec 62	Comparative Effectiveness Evaluation of the M14 and Other Rifle Concepts	To compare weapon system effectiveness for the M14, AR15, M2 Carbine, AK47 and flechette rifles on the basis of probability of incapacitation per trigger pull, the maximum number of casualties per combat load and the maximum number of casualties per unit of time for semi-automatic and automatic fire. To take into consideration BRL efforts in the areas of wound ballistics, drag stability, and weapon systems effectiveness of these weapons. Results are contained in Technical Note 1482.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
BRL	Oct 63	An Effectiveness Evaluation of the AR15 Rifle with a Muzzle Attachment and Comparison with Other Rifle Concepts	To generate test data on dispersion and the subsequent antipersonnel effectiveness of the AR15 with a muzzle brake and compensator attachment when shoulder-fired in two- or three-round bursts. To present data for the AR15 on the effect of barrel twist rate, temperature, and air density on round-to-round projectile dispersion and the effect of barrel twist rate on P_{HK} value for temperatures between 20°F and 50°F and semiautomatic hit probabilities. Results are contained in Memorandum Report 1512.
BRL	25 Aug 64	M16 Tracer Projectile Project	To determine the stability characteristics of the M16 tracer projectile by firing two rounds in the BRL small free flight range and analyzing the yawing motion. The stability values obtained were slightly higher than those for the standard projectile.
BRL	2 Feb 65	A Kinematic Evaluation of the AR18 Rifle Caliber .223	To obtain a kinematic evaluation of the weapon. To compare functioning of a lubricated and an unlubricated rifle and to determine velocities, accelerations, and acceleration forces during the firing cycle. To discuss malfunctions and causes and to provide recommendations for improvement. Results are contained in Memorandum Report 1635.
BRL	Aug 65	Terminal Ballistic Evaluation of the XM144 Flechette, the 5.56mm, M193 Ball Bullet, and the 7.62mm, M80 Ball Bullet	To determine penetration characteristics into various target materials.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
BRL	Jun 66	The Aerodynamic Properties of a Caliber .223 Remington Bullet Used in M16 Rifle	To evaluate the aerodynamic performance of the Remington bullet and to present the computed yawing histories over a wide temperature range, 9-65°F to +125°F. The Remington bullet is gyroscopically unstable when fired at cold temperatures from a 1:14 inch twist barrel. No aerodynamic differences were observed from rounds launched from the 1:12 and the 1:14 inch twist barrels. Climatic chamber tests at Eglin AFB were compatible with the computed curves of the various test conditions using aerodynamic data. Results are contained in Memorandum Report 1758.
BRL	Mar 67	Pressure Measurements: Caliber 5.6mm Cartridge	To measure chamber pressures produced by an experimental 5.6mm cartridge. Muzzle and recoil velocity measurements were taken to aid in the assessment of the pressure measurements.
BRL	Jul 67	The Effect of Configuration Changes on Drag and Stability for a family of 55 grain Caliber .223 Bullets	To re-evaluate the decision on the twist for the M16 rifle and to design a projectile such that its gyroscopic stability, when fired from a 12-inch twist, would be the same as that of the M193 cartridge, fired from a 14-inch twist (working paper report).
BRL	21 Sep 67	Evaluation of Tracer Ammunition	To provide, as a result of recent Vietnam battlefield experiences, lethality evaluation of the tracer cartridge.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
MUCOM	10 Oct 67	Firing of Ball Propellant M196 Cartridges in XM177E2 Submachine Gun	To evaluate excessive yaw and ballistics dispersion of tracer ammunition loaded with ball propellant in the submachine gun.
FA	20 Oct 67	Metal Fouling of Gilded Metal (GM) vs Gilded Metal Clad Steel (CGCS) 5.56mm M196 Tracer Bullets	To study and evaluate metal fouling in M16A1 rifles obtained when rifles are subjected to firing cartridges with GM or GMCS bullets and with IMR or ball propellant and with cartridges and test weapons under SEA conditions.
FA	22 Nov 67	1,000-Round Fouling Test	To increase the accumulation of function and casualty test data for 5.56mm ammunition. Each lot of ammunition produced will have 1,000 rounds fired for information purposes only for fouling using the lubrication and test plan used for rifle reliability testing.
FA	22 Nov 67	High Temperature-High Humidity Fouling Tests	To test 3,000 rounds each of ball and IMR loaded tracer ammunition under conditions of high humidity and high temperature over a period of 10 days and then to repeat the cycle.
FA	29 Nov 67	High Temperature Test of 5.56mm Tracer Ammunition	To determine bullet breakup and tracer ignition characteristics of IMR and ball loaded tracer cartridge stored and fired at high temperatures.
FA	1 Dec 67	Weight of Bolt Test	To compare fouling residue resulting from the use of WC 846 and IMR 4475 propellant by determining the weight increase of the bolt and bolt carrier after firing 200 rounds with the WC846 and 100 rounds with IMR 4475.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
BRL	Dec 67	Effectiveness Comparison of 1:12 and 1:14 Inch Barrel Twist Rates for M16A1 Rifle	To develop hit probability and incapacitation probability per trigger pull for the M16A1 rifle with the two barrel twist rates under consideration as a function of range, temperature, aiming error, and casualty criteria. Aspects of performance such as round-to-round dispersion, exterior ballistic flight characteristics (striking velocity and yaw, stability factor, etc.) and wound ballistic assessment are based on test-firing data. The two twist rates have nearly equivalent P_{HK} values and the 1:12 twist yields equivalent, nearly equivalent, or significantly higher P_{HK} values for all ranges, temperatures, and aiming errors as compared to the 1:14 twist.
BRL	Feb 68	Parametric Bullet Design Study	To develop performance data such as sound-to-sound dispersion, exterior ballistic flight characteristics (sticking velocity and yaw, stability factor, etc.) and wound ballistic assessment based on analysis of design parameters for 5.56mm bullets.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
CRDL	Dec 54	Wound Ballistics Assessment of the .30 Cal M1 Carbine and An Experimental .22 Cal Carbine	To compare the wounding powers of the caliber .30 M1 ball, and an experimental caliber .22 ball, carbine cartridge.
CWL	May 60	A Provisional Casualty Criterion for Fragments and Projectiles	To estimate the incapacitating effectiveness of sing missiles at various ranges.
CRDL	22 Nov 62	Wound Ballistics Assessment of the M14, AR15, and AK47 Rifles	Close agreement between theoretical effects based on the methods used and the actual effects occurring from accidents with weapons indicates validity of the procedures.
CRDL	Jan 63	Wound Ballistics Assessment of the M14, AR15, and AK47 Rifles: Supplement, the AR15 with 1-in-12 inch Rifling Twist	To assess the wound ballistics of the AR15 with a 1-in-12 inch rifling twist and to compare these data with those for the AR15 with a 1-in-14 inch twist.
CRDL	Mar 64	Wound Ballistics Assessment of M14, AR15, and Soviet AK47 Rifles	Wound ballistics assessment was performed with the M14 rifle, the AR15 rifle with both the 1-in-14 and 1-in-12 inch rifle twist firing the caliber .223 Remingto bullet, Soviet AK47 rifle, and the AR15 rifle firing the modified caliber .223 Remington bullet with a 1-in-14 inch twist rate. Results are contained in Report 3204.
CRDL	10 Oct 67	Gelatin Studies with 5.56mm M196 Tracer Ammunition	To evaluate M196 tracer bullets for stability in soft targets and wound cavities.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
HEL	Mar 64	Effects of Rifle Configuration on Quick Fire Accuracy	To show the effects of differences of configuration, weight and weight distribution of three rifles when employed against short-range (20-60 meters) targets which were exposed for short durations (about 2 seconds). Results are contained in Technical Memorandum 6-64.
HEL	Aug 64	High-Intensity Impulse Noise: A Major Problem	To describe the impulse sound pressure level problem created by modern fire power and to present techniques for partially attenuating these levels at crew positions. To discuss the effect of high-intensity noise on hearing.
HEL	Jan 65	Auditory and Acoustical Evaluation of Several Shoulder Rifles	To present the results of the acoustical measurements and auditory tests made for the small arms program and to relate the acoustical measurements of weapon noise to the results of the auditory tests.
HEL	May 66	The Effects of Stress in the Performance of Riflemen	To present two studies on how riflemen performed under stress. Two techniques of firing (aiming and pointing) and two types of weapons (M14 and M16) were compared with and without stress.
HEL	Aug 66	Small Arms Use in Vietnam; Preliminary Results	To determine how small arms are used in Vietnam. This report gives preliminary results from a sample of 121 combat troops. Results are contained in Technical Note 5-66.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
CDEC	30 May 59	Rifle Squad Armed With A Lightweight, High Velocity Rifle	To determine the most effective squad size, the most desirable rifle system, the best fire technique to be used, and the optimum combination of these factors for various sized squads firing the M14 rifle, the Winchester lightweight rifle (caliber .224) and the Armalite lightweight rifle (caliber .222).
CDC	20 Dec 62	Rifle Evaluation Study	To evaluate the employment of small arms to determine the desired rifle military characteristics. To assess the M14, AR15, AK47, and SPIW to determine the preferable weapon in meeting the desired military characteristics. To make recommendations on the retention of the M14, adoption of the AR15, and the development of the AK47 and SPIW type weapons.
CDC	20 Feb 63	Re-evaluation of A Rifle Comparison	To analyze field test data comparing the AR15 and M14. Testing was conducted at six test sites in the United States, Caribbean, and Europe. Test measures on rifle stoppages, ease of maintenance and training, hit probability, and fire distribution are presented on a comparative basis. Results are contained in CORG Staff Paper 170.
CDC	19 Sep 63	AR15 Modifications	To establish a CDC position regarding bolt closure device and reduction of inadvertent firing modifications to the M16.
CDCEC	10 May 66	SAWS Field Experiment	To assist in the evaluation of designated candidate small arms weapon systems as part of the Army-wide SAWS study.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
CDCIA	3 Jun 66	SAWS Troop Acceptability Test	To develop implications of user acceptance of the candidate weapons system available in hardware form, together with the impact each weapons system produces on training.
CDCIA	15 Jul 66	SAWS Study	To conduct a comprehensive evaluation of small arms to determine whether any small arms weapon system or systems provide a degree of superiority over current Army small arms weapon systems sufficient to warrant acquisition by the U.S. Army and to determine the specific impacts of adoption of individual candidate weapons systems.
CDCEC	3 Nov 67	IRUS 70-75 Field Experimentation	To provide data that would assist in the determination of the doctrine of employment and detailed organization of Army small infantry units during the 65-75 time period. To collect and report on reliability data obtained in the experimentation.
CDCIA	17 Nov 67	Cleaning Kit, M16A1 Rifle	To report the CDCIA position on a carrier for M16A1 rifle.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
USAIS	20 Dec 62	Rifle Evaluation (Evaluation Exercise)	To compare the hit distribution and hit capabilities of platoons armed with the AR15, modified M14 and USAIB M14 rifles as a function of a squad size of 11 and 6 men.
DCSOPS	9 Jan 63	A Comparative Evaluation of U.S. Army Rifle 7.62mm M14; Armalite Rifle Caliber .223, AR15; Soviet Assault Rifle AK47	To assess the comparative merits of the three rifles and to recommend an Army position on the acceptable weapon(s) in the Army rifle program.
USAIS	30 Jun 63	Evaluation of Experience Data Gained in Training with AR15 Rifle	To report on marksmanship training with the AR15 rifle in semiautomatic and automatic firing techniques for parachuting from Army and Air Forces aircraft with the AR15 rifle and maintenance factors pertaining to the AR15 rifle.
101st Abn Division	17 Apr 64	Troop Test of M16 Rifle	To evaluate the M16 rifle for reliability and suitability when used by combat units. Subtests included parachute jumps, zero and record fire, penetration tests, bayonet course, infiltration course, major tactical exercises, user maintenance, and reliability.
173d Abn Brigade	10 Mar 66	Deficiencies in M16 Rifle	To report on M16 reliability problems and other deficiencies experienced by combat personnel in Vietnam.
USATC (Ft. Jackson)	Jun 66	SAWS Troop Training Test	To compare candidate small arms systems on the basis of training program required and their reception by trainees.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
USAIS	8 Aug 66	Enfield Blank Firing Attachment, 5.56mm	To evaluate subject BFA for semiautomatic and automatic firing, effective muzzle blast and flash and rifle condition upon completion of firing.
101st Abn and 1st Inf Divs	12 Apr 67	M16 Rifle Information	To forward reports of copper fouling and corrosive deposits associated with the use of 5.56mm tracer ammunition in Vietnam.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
Lackland AFB	9 Aug 60	Evaluation of the Colt-Armalite AR15 Automatic Rifle Caliber .223.	To conduct a comprehensive evaluation of the AR15 for USAF suitability at the direction of the Vice Chief of Staff, USAF.
Lackland AFB	22 Sep 60	Helmet Penetration Test.	To determine the penetration ability of .223 cartridge fired from the AR15 at steel helmets. Penetration of one side of the helmet achieved at range out to and including 600 yds.
Hill AFB	Apr 62	Caliber .223 Ammunition (Remington) For Colt AR15 Rifle.	To evaluate the effectiveness of the caliber .223 round developed by Remington when used in the AR15. Findings were not for accuracy but only for penetration, deflection and bullet stability.
Eglin AFB	Jan 63	Exterior Ballistics of the AR15 Rifle.	To provide information to serve as a basis for certain design decisions involving the AR15 Rifle. Bullet stability, lethality, penetration, and deflection were subjects of the physical testing conducted. In addition bullet shape and muzzle velocity with regard to stability discussed. This test was the basis of the USAF preference for the 1-in-12 barrel twist.
Hill AFB	Feb 63	Preliminary Production Test of 5.64mm Ammunition.	To conduct various tests on 5.64mm ammunition in accordance with specification MIL-C-9963 (USAF).
Eglin AFB	25 Mar 63	Field Test AR15 Rifle.	To pinpoint any malfunctions of the AR15 under normal training situations and to determine the cause.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
Eglin AFB	3 Apr 63	5.64mm Ammunition Specification Data.	To investigate problems associated with reduced loads of powder in the caliber .223 ammunition. Test rounds were hand loaded with 0, 5, and 10 grains of propellant to test for bullets remaining in the bore.
Hill AFB	31 May 63	Firing Pin Energy, AR15 Rifle.	To determine firing pin energies when the rifles were clean and test conditions maximized available energy. Data at variance with similar Frankford Arsenal tests.
Lackland AFB	19 Jun 63	Modification of AR15 for Night Firing. Project 137-63	To evaluate the possible advantages of modification of the rear sight base (carrying handle) of the AR15. This modification provides a flat ramp for the intended purpose of facilitating night firing.
Eglin AFB	9 Jul 63	Environmental Test of AR15 Rifle (Test No. 2).	To determine and evaluate the stability of projectiles fired from the AR15 at various ranges by conducting firing tests at temperatures of 125°F, 0°F, and -65°F, to determine maximum yaw as a function of range, temperature (air density) and twist rate.
Lackland AFB	23 Jul 63	AR15 Accuracy Tests-300 meters. Project 179-63	To evaluate the accuracy potential of the AR15 with present lots of ammunition.
Lackland AFB	2 Aug 63	AR15 Accuracy Tests-100 yd Test Tunnel. Project 204-63	To record firing data on the AR15 Rifle for the use of the inter-service technical committee on the AR15 in determining accuracy specifications for the 5.56mm weapon/ ammunition system.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
Hill AFB	7 Aug 63	Test Findings of Port Pressure in AR15 Rifle.	To determine the port pressure of the AR15 in order that it may be specified in the ammunition contract.
Lackland AFB	19 Aug 63	Primer Sensitivity Tests.	To report on accidental firing rates with selected lots of Remington 5.56mm ammunition.
Lackland AFB	23 Aug 63	Test of Manual Charging Device on AR15.	To compare AR15 functioning with and without the manual charging device.
Lackland AFB	27 Aug 63	Ammunition Test of Remington Lot B-10 (5.56mm). Project 235-63	To evaluate ammunition lot Remington B-10 to determine rate of dropped primers, partially blown primers, and leaky primers.
Hill AFB	15 Oct 63	Memorandum Report On Primer Sensitivity of .223 Caliber Cartridge.	To report on the maximum energy delivered to the primer by the "floating" firing pin of the AR15.
Hill AFB	5 Dec 63	Memorandum Report On Evaluation of AR15 Rifle Modification: Firing Pin Restraint Devices.	To evaluate, in conjunction with function and casualty testing of the preproduction sample, two modifications to the AR15 Rifle designed to eliminate inadvertent fire due to oversensitive primers.
Lackland AFB	6 Dec 63	Evaluation of M16 Modification: Firing Pin Restraining Devices.	To evaluate two mechanical designs developed by Colts to reduce firing pin energy on bolt closure in the M16 Rifle.
Hill AFB	Dec 64	Test of Compatibility of Standard M1 Rifle Grenades and M16 Rifle.	To determine among other things ability of the rifle to withstand repeated grenade launchings.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
Lackland AFB	65	Barrel Erosion Gage for M16 Rifle. Project 328-65	To determine suitability of barrel-erosion gage provided for small arms for possible USAF acceptance.
Lackland AFB	Dec 65	Evaluation of M16 Flash Suppressor. Project 362-65	To compare the current production version with a new closed ring type of M16 flash suppressor with respect to accuracy, impact shift, flash hiding capability, operation in rain, noise level and effects on grenade launcher capabilities.
Lackland AFB	Feb 66	Pull-thru Cleaning Equipment for M16 Rifles. Project 32-66E	To determine suitability of pull-thru cleaning equipment for USAF acceptance. Test equipment was not recommended for USAF acceptance. Test report did recommend that a trap door stock be designed for the M16 Rifle for the purpose of storing a short sectional brass cleaning rod and that additional cleaning equipment be stored in the pistol grip.
Lackland AFB	Feb 66	Neoprene Pistol Grip Covers for M16 Rifle. Project 32-66C	To determine suitability for USAF acceptance. Recommended for Air Force acceptance.
Lackland AFB	Feb 66	Snap-Shut Pistol Grip Covers for M16 Rifle. Project 32-66D	To determine suitability for USAF acceptance. Was not recommended for acceptance.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
Lackland AFB	Feb 66	Shot-Peened Bolt Assembly, M16 Rifle. Project 32-66A	To determine suitability of shot-peened bolts for USAF acceptance. Reported three times as many malfunctions overall in test weapons than in the control weapons.
Lackland AFB	Feb 66	New Design Action Spring Guide Assembly, M16 Rifle. Project 32-66B	To determine acceptability of the new design action spring guide assembly for the M16. Five weapons with the new buffer and five without were tested 10,000 rounds each. The new buffer assembly proved acceptable for Air Force use and should reduce internal parts breakage considerably.
Lackland AFB	May 66	Evaluation of Dri-Slide Lubricant. Project 760-66	To test the lubricating qualities of Dri-Slide lubricant as compared to oil, general purpose, special. The report concluded that the Air Force should substitute Dri-Slide lubricant for general purpose oil.
Lackland AFB	Jun 66	Evaluation of New Hand Guard for the M16 Rifle. Project 176-66	To determine suitability for Air Force use of newly designed hand guards for the M16 Rifle. Five newly designed hand guards were evaluated and found to be unaccepted in their then present form for Air Force adoption.
Lackland AFB	Jun 66	Evaluation of 30-Round Magazine, for the M16 Rifle. Project 175-66	To evaluate at Colt's request the 30 rd capacity magazine for the M16. No malfunctions were attributed to the 30 rd magazines, but all malfunctions that could possibly be caused by faulty magazines were corrected upon replacement of the action spring guide assemblies.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
Hurlburt Field	2 Sep 66	Test of 30 Round Magazine.	To evaluate the 30 round magazine utilizing student firers and instructor personnel. 400 rounds were fired from each of 44 magazines. Reported deficiencies were failures of the bolt to remain to the rear after the last round was fired and failures to feed.
Lackland AFB	Jan 67	Evaluation of Essentialube (Cleaner/ Lubricant). Project 30-67	To test for cleaning and lubricating qualities of Essentialube as compared to standard issue solvents and lubricants. Recommended for Air Force adoption.
Lackland AFB	Feb 67	Test IMR 8208M and WC846 Powder in M193 5.56 Cartridges. Project 33-67	To test the suitability of .223 cartridges loaded with IMR 8208M and WC846 for Air Force use. Recommends WC846 powder be adopted for Air Force use.
Lackland AFB	Mar 67	Evaluate GAU-5/A (SM177E1) 5.56mm Submachine Gun. Project 79-67	To determine the suitability of GAU-5/A 5.56mm submachine gun for Air Force use. The present configuration was not recommended for Air Force use. The new style hand guard slip-ring should be standardized for use on the M16 Rifle.
Lackland AFB	4 Apr 67	Test of M16 Rifle Barrels With Chrome Plated Chambers. Project 38-67	To test six M16 chrome plated chamber barrels for suitability, for reduction of rusting problems and for adverse functioning effects.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
Lackland AFB	Jun 67	Ballistics Test of Various 5.56mm Cartridges through 1 Turn in 7" twist Rate Barrels.	To establish and compare the actual accuracy, trajectory, velocity, and yaw characteristics, jacket stripping tendency, and penetration of pine boards and steel helmets at ranges up to and including 1,000 yds or various barrels and cartridges (including 68 and 77 grain projectiles).

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
USMC	Mar 63	Comparative Evaluation of the M14 and AR15 Rifles	To conduct a thorough comparative evaluation of the AR15, M14, and M14(M) and USAIB modified M14 rifles in order to determine which rifle best suits USMC requirements for a standard rifle. Rifles were compared on the basis of the mechanical and marksmanship training required for a Marine to become proficient in the use of the rifle, marksmanship performance, combat fire effectiveness, and operational reliability.
USN	11 Apr 63	Malfunctions of Colt Armalite AR Automatic Rifle	To evaluate the AR15 for Seal Team use. Reports on malfunction experiences with 66 rifles, both on rifle ranges and under simulated combat conditions.
USMC	21 Aug 63	Evaluation of Modified AR15 Rifles	To determine if any improvement had been made in their night firing and pointing characteristics. No difference in these characteristics was reported between modified and unmodified weapons.
USMC	29 Jun 65	Evaluation of Flight Crew Weapons for Transport Helicopters Project 70-63-04	To evaluate the mounted M60 machine gun, Stoner 63 Weapons System, M14, M14E1, and M16 rifles on a comparison basis to determine suitability for adoption as armament for the helicopter crew.
USMC	31 May 66	Dri-Slide Lubricant; Final Report	To determine the suitability of Dri-Slide as a lubricant for infantry weapons. Test report recommended that Dri-Slide be considered suitable for USMC use; that it be purchased and issued ASAP to Marine Corps units operating in sandy areas.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
USMC	1967	Automatic Weapons Lubricant MIL-L-46000A Project 44-67-03	To evaluate and determine the suitability of MIL-L-46000A as a lubricant for small arms. MIL-L-46000A was recommended for USMC use as a general purpose small arms lubricant in sandy areas. Discontinuance of use of VV-L-800 lubricant was recommended.
USMC/ WSEG	Jan 68	M16A1 Rifle System	To measure the operational reliability of the M16 rifle system currently used by maneuver battalions in VN and under environmental conditions that simulate as closely as possible those existing in VN. (Panama test).

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
ARPA	20 Aug 62	Field Test Report, AR15 Armalite Rifle	To determine if the AR15 Rifle is compatible with the small stature, body configuration, and light weight of the Vietnamese soldier and to evaluate the weapon under actual combat conditions in Vietnam. Report recommended that the AR15 be considered for adoption as the basic weapon for all RVNAF with a view toward improving effectiveness and simplifying training and weapon logistics systems.
USMC/ WSEG	Jan 68	M16A1 Rifle System	To measure the operational reliability of the M16 rifle system currently used by maneuver battalions in Vietnam and under environmental conditions that simulate as closely as possible those existing in Vietnam (Panama Test). Same test as the Jan 68 USMC item above.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
COLT'S	27 Apr 64	AR15 Butt-stock Assembly: Impact Tests	To evaluate the impact strength of butt-stock assemblies in which the butt material was a phenolic resin reinforced with glass fiber.
COLT'S	5 May 64	AR15 Bolt Catch Study	To study recent problems with bolt catch failure reported during endurance tests using high speed movie films. Test provides kinematic analysis of weapon action.
COLT'S	11 Jun 65	Comparison Test of Ammunition	To establish cyclic rates for two lots of Remington ammunition containing ball propellant compared with one lot of Remington ammunition containing DuPont propellant. DuPont propellant resulted in significantly lower cyclic rate.
COLT'S	1 Jul 65	Tactical Weapon Usage Evaluation	To investigate the problems with the breakages of butt-stocks and handguards for the XM16E1 rifles and to discover any problem areas for the M16's issued to the 101st Airborne Division.
COLT'S	8 Nov 65	First Partial Report: Effect of Ammunition Variables on Acceptance Testing of XM16E1 Rifles	To ascertain the magnitude of the variation in cyclic rates.
COLT'S	19 Jan 66	Second Partial Report: Effect of Ammunition Variables on Acceptance Testing of XM16E1 Rifles	To establish whether the port pressure of 5.56mm ammunition depends importantly on the position of the propellant in the cartridge case either with extruded propellant or with ball propellant. The observed dependence of ballistic levels on powder position in the cartridge case does not explain the typically higher cyclic rate of fire obtained with ball-propellant ammunition.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
COLT'S	unknown	Study of Long-Range Ammunition for 5.56mm Weapon Systems	To report on the 5.56mm 68-grain Sierra and Federal Bullets.
COLT'S	3 Mar 66	Experimental Propellants EX8208-4 and HPC11	To determine cyclic rate of velocity with test propellants using 10 new M16 rifles from current production and standard and experimental buffers.
COLT'S	23 Mar 66	Test of Experimental Propellants for 5.56mm M193 ball ammunition in M16 Rifles	To carry out tests on 5.56mm ball ammunition containing samples of two experimental propellants.
COLT'S	28 Mar 66	Effect of Ammunition Variables on Acceptance Testing of M16 and M16E1 Rifles	To evaluate the performance of an experimental buffer to reduce the excessively high cyclic rates encountered with some lots of ammunition loaded with ball propellant.
COLT'S	16 Jul 65	Noise Suppressor of AR15 Submachine Gun	To further the development and noise level reduction for the Colt AR15 submachine gun.
COLT'S	10 Nov 65	Wear Resistance of Various Finishes Applied to AR15 Bolt Carriers	To ascertain whether cost reductions might be achieved by the use of less expensive surface treatments and/or materials of lower cost or better machineability and to determine the wear resistance of experimental surface treatments.
COLT'S	30 Dec 66	Noise Suppressor-AR15 Submachine Gun	To study the effect of the noise-flash suppressors causing the center of impact to deviate from the line of sight and to establish the accuracy degradation with the current flash suppressor.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
COLT'S	16 Jan 67	Delrin Charging Handle Latch	To evaluate proposed new charging handle latch for durability.
COLT'S	16 May 67	Cyclic Rate Evaluation of IMR and Ball Propellants	To determine whether or not IMR 8208M and WC846 propellants produce different cyclic rates in new production weapons. A definite difference of cyclic rates between the two propellants was noted. There were no malfunctions.
DUPONT	18 Jan 68	Interior Ballistic Data	To establish velocity and chamber variations as a function of charge weight for IMR 4475, 8136, and 8208M propellants.
Cornell Aeronautical Laboratory	Jun 65	Ballistic Behavior of Projectiles in Vegetation (Project FIBRE)	To evaluate behavior of bullets in foliage set up in and beyond the foliage.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
UK	Nov 63	Evaluation of AR15	To evaluate the Colt Armalite AR15 rifle.
FRG	16 Dec 64	Effectiveness and Dispersion Pattern Firings with Small Arms Ammunition for Formation of Cavities and Against Steel Helmets, Body-Protections	To compare performances of U.S. 5.56mm cartridge with IWK 5.56mm cartridge (77-grain) and NATO 7.62mm cartridge.
UK	Feb 66	Colt CGL4, 40mm Grenade Launcher Evaluation	To evaluate the effects on AR15 Rifle point target performance when the Colt 40mm Grenade Launcher is attached. Accuracy of the rifle was not materially affected by attachment of the Grenade Launcher.
UK	22 Feb 67	Comparison Between the Behavior of the Remington 5.56mm AR15 and the 7.62mm SLR Bullets in Foliage	To compare the bullets of the AR15 and the SLR with respect to deflection by foliage, breakup of rounds, and residual energy after penetrating foliage.
UK	Mar 67	Behavior of Bullets in Foliage: A Comparison Between the Results of a Jungle Warfare School Trial and Those from Project FIBRE	To compare the two experimental projects on behavior of bullets on foliage. These projects had tackled the problem in classically different ways so that it was of unusual interest to compare them. The results were found to be compatible. The degradation of lethality caused by foliage was reported similar for the two calibers but neither experiment was designed to measure this. Hardly any difference between the two calibers in terms of foliage deflection.

AGENCY	REPORT DATE	TITLE OF TEST	TEST OBJECTIVE AND ABSTRACT
UK	7 Oct 64	Armalite Rifle; Wound Ballistics Trials	To examine the wounding effects of the Armalite Rifle in comparison with those of the F.N. rifle under controlled laboratory conditions at 15 and 100 yd ranges using gelatine tissue models and a standard wound path in anaesthetised sheep. There are indications that the AR15 is not effective with a 1-in-14 twist barrel than with a 1-in-12 twist barrel; the difference being very small with the Remington round but more marked with the Norma round.