



Smithsonian Institution Archives

Twentieth Century Small Arms Development
Videohistory Collection, 1988-1990

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Collection Overview

Repository:	Smithsonian Institution Archives, Washington, D.C., osiaref@si.edu
Title:	Twentieth Century Small Arms Development Videohistory Collection
Identifier:	Record Unit 9532
Date:	1988-1990
Extent:	14 videotapes (Reference copies). 20 digital .wmv files and .rm files (Reference copies).
Creator::	
Language:	English

Administrative Information

Preferred Citation

Smithsonian Institution Archives, Record Unit 9532, Twentieth Century Small Arms Development Videohistory Collection

Historical Note

Technological and organizational developments have changed the way military small arms are designed in the second half of the twentieth century. The use of alloys and composite materials require more specialized knowledge than one individual can master, and bureaucratized weapon procurement policies require a corporate group to finance and represent innovative weapon concepts. Consequently, it has become almost impossible for one man to design, build, and market a new small arm.

Introduction

The Smithsonian Videohistory Program, funded by the Alfred P. Sloan Foundation from 1986 until 1992, used video in historical research. Additional collections have been added since the grant project ended. Videohistory uses the video camera as a historical research tool to record moving visual information. Video works best in historical research when recording people at work in environments, explaining artifacts, demonstrating process, or in group discussion. The experimental program recorded projects that reflected the Institution's concern with the conduct of contemporary science and technology.

Smithsonian historians participated in the program to document visual aspects of their on-going historical research. Projects covered topics in the physical and biological sciences as well as in technological design and manufacture. To capture site, process, and interaction most effectively, projects were taped in offices, factories, quarries, laboratories, observatories, and museums. Resulting footage was duplicated, transcribed, and deposited in the Smithsonian Institution Archives for scholarship, education, and exhibition. The collection is open to qualified researchers.

Descriptive Entry

Dr. Edward C. Ezell, curator for the Armed Forces Division of the Smithsonian's National Museum of American History (NMAH), recorded twelve interviews with two of the last solo designers. Eugene M. Stoner of the United States and Mikhail T. Kalashnikov of the former Soviet Union are responsible for the M16 and AK47 automatic rifles, two of the most popular firearms in the world since 1945. Ezell was interested in the process by which the men developed and produced their designs and in their experiences with their respective military bureaucracies. The interviewees detailed how they became involved in small arms design and how their weapons improved on those already in service. The sessions also documented visually the evolution of the design of the rifles, and the composition and assembly of their components. The interviews were recorded in Port Clinton, Ohio; Leningrad and Moscow, Soviet Union; and Star Tannery, Virginia, between April 1988 and May 1990, and are organized into three series.

This collection consists of thirteen interview sessions, totaling approximately 18:40 hours of recordings, and 214 pages of transcript.

All sessions were shot professionally and are available to researchers on VHS cassette. All Sessions have been transcribed and translated into English; pertinent visual information has been summarized and keyed to a time code.

Names and Subject Terms

This collection is indexed in the online catalog of the Smithsonian Institution under the following terms:

Subjects:

- AK-47 rifle
- AR-15 rifle
- Engineering
- Interviews
- M-16 rifle
- Military history
- Oral history
- PK machine gun
- RPK-74 machine gun
- Science -- History
- Technology -- History

Types of Materials:

- Transcripts
- Videotapes

Names:

- ARES Incorporated
- Ezell, Edward Clinton, interviewer
- Kalashnikov, M. T. (Mikhail Timofeevich), 1919-2013
- Stoner, Eugene M., 1922-1997

Geographic Names:

- Soviet Union

Container Listing

Series 1: Stoner

Series 1 contains Sessions One through Six with Eugene Stoner. Stoner discussed his career and philosophy of small arms design, the development of the M16, the Stoner 63 weapon system, the ARES Light Machine Gun, the Advance Individual Weapon System, and his work on medium and heavy cannon since the mid-1970s. Ezell complemented the interviews with extensive visual documentation of the weapons discussed. Sessions were recorded at the offices, shop floor, and grounds of ARES Incorporated in Port Clinton, Ohio, in April 1988.

Stoner was born in Gasport, Indiana, in 1922. After graduating from high school in Long Beach, California, he installed armament equipment for Vega Aircraft Company. During World War II he enlisted in the Aviation Ordnance section of the U.S. Marine Corps. In late 1945 he began working in the machine shop for Whittaker, an aircraft equipment company, and ultimately became a Design Engineer. In the mid-1950s Stoner was hired as the Chief of Engineering for the ArmaLite Division of the Fairchild Engine and Aircraft Corporation where he developed the prototypes for the M16 automatic rifle. Since then he has developed over one hundred patents in the ordnance field for four companies, including ARES Incorporated, which he co-founded in 1971. Having retired from ARES in 1989, Stoner continues to consult with company engineers on design and fabrication innovations.

Interviews

Interviews

Session 1: April 19, 1988

Interviews

At ARES, Inc., Port Clinton, Ohio, featured Eugene Stoner describing his career in small arms design, c. 1950-1975, including: his engineering training, and association with ArmaLite; AR10 and AR15 automatic rifles as prototypes of M16; resistance to the M16 by the Ordnance Corps and the Army; concept behind and components of Stoner 63 weapon system; concept behind and components of ARES Light Machine Gun; engineering requirements and trends in small arms design; individual creativity in weapon design. Visual documentation included: AR10, AR15, M16/A-1, M16/A-2 automatic rifles; Stoner 63 weapon system; ARES Light Machine Gun.

Interviews

Transcript, pages 1-57, of videotape recording, 2 hours, 40 minutes.

Interviews

Video Recording of Interview: Total Recording time: 2 hours, 40 minutes

Note:

- Original Masters: 8 Beta videotapes
- Preservation Masters: 8 Motion jpeg 2000 and 8 mpeg digital files
- Dubbing Masters: 3 U-matic videotapes
- Reference Copies: 2 VHS videotapes, 8 Windows Media Video and 8 Real Media digital files

Interviews

Session 2: April 20, 1988 At ARES, Inc., featured Stoner discussing the formation and designs of ARES, c. 1972-1988, including: research on rates of fire for small arms; ARES's origins in 1972; development of an

externally powered machine gun; development and components of Light Machine Gun; Stoner's and the U.S. government's approach to weapon development; shortcomings in training of American engineers; telescoped ammunition; Advanced Individual Weapon System (AIWS); comparison of traditional weapon testing and combat conditions. Visual documentation included: ARES Light Machine Gun and components; small arms telescoped ammunition; diagram of AIWS prototype.

- Interviews Transcript, 1-40 pages, of videotape recording. 1 hour, 40 minutes.
- Interviews Video Recording of Interview: Total Recording Time: 1 hours, 40 minutes.
Note:
 - Original Masters: 5 Beta videotapes
 - Preservation Masters: 5 Motion jpeg 2000 and 5 mpeg digital files
 - Dubbing Masters: 2 U-matic videotapes
 - Reference Copies: 1 VHS videotape, 5 Windows Media Video and 5 Real Media digital files
- Interviews **Session 3: April 20, 1988**
- Interviews On the proving grounds of ARES, featured Stoner and Ezell firing and discussing, Stoner's Light Machine Gun and the M16/A-2 automatic rifle, including: LMG's and M16's recoil and rate of fire; ARES' facilities for testing weaponry. Visual documentation included: LMG and M16/A-2 in operation.
- Interviews Transcript, 1-5 pages, of videotape recording, 20 minutes.
- Interviews Video Recording of Interview: Total Recording Time: 20 Minutes
Note:
 - Original Masters: 1 Beta videotape
 - Preservation Masters: 1 Motion jpeg 2000 and 1 mpeg digital files
 - Dubbing Masters: 1 U-matic videotape
 - Reference Copies: 1 VHS videotape, 1 Windows Media Video and 1 Real Media digital files
- Interviews **Session 4: April 20, 1988**
- Interviews At ARES, Inc., featured Ezell narrating visual documentation of Stoner's recent weapon design work, including: diagrams and photographs of 35-mm, 75-mm and 90-mm cannons; 20- to 105-mm telescoped ammunition.
- Interviews Transcript 1-3 pages, of videotape recording 20 minutes.
- Interviews Video Recording of Interview: Total Recording Time: 20 minutes.
Note:
 - Original Masters: 1 Beta videotape

- Preservation Masters: 1 Motion jpeg 2000 and 1 mpeg digital files
- Dubbing Masters: 1 U-matic videotape
- Reference Copies: 1 VHS videotape, 1 Windows Media Video and 1 Real Media digital files

Interviews

Session 5: April 21, 1988

Interviews

On the factory floor at ARES, featured Stoner discussing the various medium and heavy cannon ARES has developed, c. 1975-1988, including: 35- and 75-mm automatic cannons; differences in small arms and cannon design; innovations in Stoner's ordnance and ammunition designs; interaction of physical laws, military clientele, and the budget. Visual documentation included: 35- and 75-mm cannons and components; telescoped cannon ammunition.

Interviews

Transcript, 1-21 pages, of videotape recording, 1 hour.

Interviews

Video Recording of Interview: Total Recording Time: 48 minutes

Note:

- Original Masters: 3 Beta videotapes
- Preservation Masters: 3 Motion jpeg 2000 and 3 mpeg digital files
- Dubbing Masters: 1 U-matic videotape
- Reference Copies: 1 VHS videotape, 3 Windows Media Video and 3 Real Media digital files

Interviews

Session 6: April 21, 1988

Interviews

On the factory floor and grounds of ARES, consisted of unnarrated visual documentation, including: 155-mm cannon; grounds and landscape seen from ARES observation tower; numeric-controlled machine tools in operation.

Interviews

Transcript 1-3 pages, of videotape recording, 40 minutes.

Interviews

Video Recording of Interview: Total Recording Time: 30 minutes

Note:

- Original Masters: 2 Beta videotapes
- Preservation Masters: 2 Motion jpeg 2000 and 2 mpeg digital files
- Dubbing Masters: 1 U-matic videotape
- Reference Copies: 1 VHS videotape, 2 Windows Media Video and 2 Real Media digital files

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Series 2: Kalashnikov

Series 2 contains Sessions Seven through Eleven with Mikhail Kalashnikov. Kalashnikov discussed his career and philosophy of small arms design; his first weapon, the submachine gun PPK42; the development of the AK47; and the Kalashnikov weapon system based on the AK74. Ezell complemented the interviews with extensive visual documentation of weapons discussed. Sessions were recorded at the House of Optics and VYSTREL firing range in Moscow, and the Museum of Artillery, Engineering, and Signal Corps in Leningrad in July 1989.

Kalashnikov was born in Kurya, one hundred and fifty kilometers northeast of Semipalatinsk, in the Altai region of Kazakhstan, in 1919. He finished secondary school in 1936 and began serving in the Soviet Army in 1938, where he worked on tank engineering design until the German invasion in June 1941. After suffering a wound that September, Kalashnikov took up small arms design during his convalescence, concentrating on automatic weapons. In 1949, the Army accepted his AK47 automatic rifle after five years of development. Kalashnikov continued to develop the "Avtomat Kalashnikova" into a weapon system at the Izhevsk Machine Factory in what is now Ustinov. He continues to work there as Senior Manager, and has held a deputy position in the Supreme Soviet since 1966.

Interviews

Interviews

Session 7: July 11, 1989

Interviews

In the Conference Room of the House of Optics in Moscow, U.S.S.R., featured Kalashnikov describing his career in small arms design, c. 1942-1989, including: engineering background; first weapon, the PPK42 submachine gun; design philosophy; competition with other design bureaus, and acceptance of AK47 automatic rifle by armed forces; interchangeability of Soviet small arms; Kalashnikov weapon system's triumph over rivals and their reaction; smaller caliber AK74 automatic rifle; Soviet approach to task of small arm design; influence of 1943 rifle cartridge on weapon design. Visual documentation included: photographs of Kalashnikov and family in the 1950s; Kalashnikov and design teams in 1960s.

Interviews

Transcript 1-18 pages, of videotape recording, 2 hours, 20 minutes.

Interviews

Video Recording of Interview: Total Recording Time: 2 hours, 20 minutes

Note:

- Original Masters: 7 Beta videotapes
- Preservation Masters: 7 Motion jpeg 2000 and 7 mpeg digital files
- Dubbing Masters: 3 U-matic videotapes
- Reference Copies: 2 VHS videotapes, 7 Windows Media Video and 7 Real Media digital files

Interviews

Session 8: July 12, 1989

Interviews

On the firing range of the First High Officer's Course VYSTREL outside Moscow, featured Kalashnikov describing the mechanics of his weapon system, c. 1959-1974, including: AKM and AK74 automatic rifles; difficulties in scaling down caliber of AKM; interchangeability of AK74 and RPK74 light

machine gun; sturdier construction of infantry version of PKM machine gun; emphasis on simplicity of construction. Visual documentation included: AK74, AKM and RPK weapons; AK74, RPK74 and PKM weapons in operation; weapon training laboratory.

- Interviews Transcript, 1-11 pages of videotape recording, 1 hour 40 minutes.
- Interviews Video Recording of Interview: Total Time Recording: 1 hour, 40 minutes
Note:
- Original Masters: 5 Beta videotapes
 - Preservation Masters: 5 Motion jpeg 2000 and 5 mpeg digital files
 - Dubbing Masters: 2 U-matic videotapes
 - Reference Copies: 1 VHS videotape, 5 Windows Media Video and 5 Real Media digital files
- Interviews **Session 9: July 13, 1989**
- Interviews At the House of Optics in Moscow, featured Kalashnikov explaining his theory and practice of small arms design, c. 1943-1974, including: influence of Dragunov SVD sniper rifle; need for specialists to work with designer; replacement of wooden parts with plastic in AK74 automatic rifle; conflict between trends in infantry battle tactics and small arms research and development; expenses of weapon modification and conversion; field test of weapons and need for creativity in system improvements.
- Interviews Transcript, 1-9 pages, of videotape recording, 1 hour, 20 minutes.
- Interviews Video Recording of Interview: Total Recording Time: 1 hour, 20 minutes
Note:
- Original Masters: 4 Beta videotapes
 - Preservation Masters: 4 Motion jpeg 2000 and 4 mpeg digital files
 - Dubbing Masters: 2 U-matic videotapes
 - Reference Copies: 1 VHS videotape, 4 Windows Media Video and 4 Real Media digital files
- Interviews **Session 10: July 13, 1989**
- Interviews At the Military Historical Order of the Red Star, Museum of Artillery, Engineering, and Signal Corps, featured Kalashnikov explaining the mechanics of his weapons, c. 1942-1974, including: 1942 PPK submachine gun; 1947 "baby Kalashnikov" automatic rifle; 1944 experimental carbine; AK46 models of automatic rifle; AK47 automatic rifle as modification of AK46; AK74 automatic rifle. Visual documentation included: weapons listed above, with components; 1943 light machine gun.
- Interviews Transcript: 1-17 pages, of videotape recording, 1 hour, 40 minutes.

- Interviews Video Recording of Interview: Total Recording Time: 1 hour, 40 minutes
Note: • Original Masters: 5 Beta videotapes
 • Preservation Masters: 5 Motion jpeg 2000 and 5 mpeg digital files
 • Dubbing Masters: 2 U-matic videotapes
 • Reference Copies: 1 VHS videotape, 5 Windows Media Video and 5 Real Media digital files
- Interviews **Session 11: July 17, 1989**
- Interviews At the Museum of Artillery, Engineering, and Signal Corps, Leningrad, U.S.S.R., featured curator Yuri A. Natsvaladze narrating over visual documentation of various Kalashnikov weapons, including: 1942 and 1947 PPK submachine guns; AK46 automatic rifle, nos. 1 and 2; 1947 and 1948 prototypes of AK47 automatic rifle; first production model and five 1950's versions of AK47; first production model and two later versions of AKM47 automatic rifle; field-test and shortened models of AK74 automatic rifle; series of bayonets.
- Interviews Transcript, 6 pages of videotape recording, 1 hour, 20 minutes.
- Interviews Video Recording of Interview: Total Recording Time: 1 hour, 20 minutes
Note: • Original Masters: 4 Beta videotapes
 • Preservation Masters: 4 Motion jpeg 2000 and 4 mpeg digital files
 • Dubbing Masters: 2 U-matic videotapes
 • Reference Copies: 1 VHS videotape, 4 Windows Media Video and 4 Real Media digital files

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Series 3: Star Tannery

Series 3 contains one session with Eugene Stoner and Mikhail Kalashnikov. They compared experiences in developing the M16 and AK47 rifles. Ezell complemented the interview with visual documentation of each designer field stripping his automatic rifle. The session was recorded at the firing range of the Northern Virginia Rod and Gun Club (NORVA) in Star Tannery, Virginia in May 1990.

Interviews

Interviews

Session 12: May 20, 1990

Interviews

At the NORVA firing range, Star Tannery, Virginia, featured Stoner and Kalashnikov comparing their automatic rifles, including: Stoner's innovations with AR15 prototype; titanium as engineering material; conflict between ammunition and weapon designers; differences between forging and casting; difficulties of meeting military specifications; development of AK47. Visual documentation included: field stripping of AR15 and AK47.

Interviews

Transcript, 24 pages, of videotape recording, 2 hours, 20 minutes.

Interviews

Video Recording of Interview: Total Recording Time: 2 hours, 20 minutes

Note:

- Original Masters: 7 Beta videotapes
- Preservation Masters: 7 Motion jpeg 2000 and 7 mpeg digital files
- Dubbing Masters: 3 U-matic videotapes
- Reference Copies: 2 VHS videotapes, 7 Windows Media Video and 7 Real Media digital files

Interviews

Session 13: May 21, 1990

Interviews

At the NORVA firing range, Star Tannery, Virginia, featured Stoner and Kalashnikov firing various weapons.

Interviews

Transcript: no transcription of videotape recording, 1 hours, 20 minutes.

Interviews

Video Recording of Interview: Total Recording Time: 1 hour 20 minutes

Note:

- Original Masters: 4 Beta videotapes
- Preservation Masters: 4 Motion jpeg 2000 and 4 mpeg digital files
- Dubbing Masters: 2 U-matic videotapes
- Reference Copies: 4 Windows Media Video and 4 Real Media digital files

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