WPAFB Electronic FOIA Reading Room (EFRR) Document Identification

WPAFB FOIA Control Number: 20 09-00964-F-NL

Month/Year of Posting to WP EFRR: 07/09

Requested Records: History Reports

Subject: R&D Info Rpt 515-132084
Missile Logistics, 1951-1959; Historical Study No. 328"

Final Official Response Date: 30 July 09

The attached records are:

- [X] Fully Releasable
- [ ] Partially Releasable
- [ ] Fully Denied

Organization/Office Symbol: AFMC/HO

Notes:

- [ ] If this is a partial denial, attach a copy of the signed Initial Denial Authority (IDA) Response Letter.
- [ ] FOIA request for "releasable portions" or "clearly releasable portions" (therefore, the records have been sanitized and no denial letter is necessary)

2129th HM, Historical Office

31 AUGUST 19

[redacted]

RESEARCH and DEVELOPMENT

INFORMATION REPORT

[redacted]

WRIGHT AIR DEVELOPMENT CENTER

Air Research and Development Command

[redacted]

51S-132084-1

Air Force-WPAFB-(A)-O-28 SEPT 51 285

[redacted]

SECRET

AUTHORITY: CG WADC
By: JACK ROESSELL
Lt Col, USAF
DATE: AUG 28 1951

WEAPONS SYSTEMS DIVISION
RESEARCH AND DEVELOPMENT PROJECT INFORMATION REPORT

SECRET
(Security classification of this sheet)

Date Submitted 28 August 1951

Title (in straight reading style):

BELL Air-to-Surface Missile, XASM-A-2, RASCAL (Confidential)

MX-776

R.D.O.: R-448-48	T.I.: 2003-111	Priority: 1-A	Est. Completion Date: July 1954

Prime Contractor(s): Bell Aircraft Corporation, Niagara Falls, New York

Purpose:

Research and development of an air launched guided missile for the destruction of strategic surface targets. Project includes development of (a) MX-776A, a 50 mile supersonic research test vehicle. (b) A supersonic 100 mile range ASM capable of carrying all types of warheads weighing between 3000 and 5000 pounds.

Aircraft for which required: RASCAL

(Report progress and status peculiar to individual aircraft on separate form)

This Month—Current overall project STATUS: (a) The RTV-A-4 "Shrike" missile is being flight tested at Holloman AFB with a total of eleven (11) hot missiles launched to date. (b) The first Rascal glide missile is at Holloman AFB and will be launched approximately 17 September 1951.

PROGRESS since last report (if activity is reported, interpret significance):

The last report on this project was dated 26 July 1951.

A study of recovered parts of missile 1112 indicates that malfunction probably resulted due to electrical failure in pitch d-c amplifier or valve.

Missile 1214 (renumbered, formerly 1314) has been delivered to Holloman AFB. Missile 1313 (thirteenth to be fired, thirteenth fabricated) is being re-instrumented to check missile servo components and is scheduled for transport to Holloman AFB 29 August 1951.

Cutback in the available funds for fiscal 1952 required re-assessment of various phases of RASCAL/SHRIKE program. Shrike was reduced from 30 to 13 acid-gasoline missiles, 3 of which will be supersonic test vehicles for chemical warhead tests by Army Chemical Center.

Mr. Marcum from Development Planning under the Directorate of R&D, visited Bell Aircraft to review the guidance system. He commented that Bell was doing a competent job of developing the system but that an operational date of July 1954 was not realistic. He felt that R&D could be completed as scheduled, namely September 1953.

Security classification of information under This Month [redacted]

Major H. D. Hughes (Project Engineer) 2-9117 (Telephone) Guided Missiles Section (Laboratory)

(For instructions, see EDOL No. 11-2)

[redacted]
(Security classification of this sheet)

[redacted]

[redacted]

30 JUNE 1951

RESEARCH and DEVELOPMENT

INFORMATION REPORT

[redacted]

WRIGHT AIR DEVELOPMENT CENTER

Air Research and Development Command

51S-100517

[redacted]

Air Force-WPAFB-(A)-O-27 JUL 51 275

[redacted]

SECRET

AUTHORITY: CG WPAFC
JOHN ROESSELL
By: Lt USAF
DATE: AUG 28 1951

WEAPONS SYSTEMS DIVISION
RESEARCH AND DEVELOPMENT PROJECT INFORMATION REPORT

[redacted]
(Security classification of this sheet)

Date Submitted 28 August 1951

Title (in straight reading style):

BELL Air-to-Surface Missile, XASM-A-2, RASCAL (Confidential)

MX-776

R.D.O.: R-148-48	T.I.: 2003-111	Priority: 1-A	Est. Completion Date: July 1954

Prime Contractor(s): Bell Aircraft Corporation, Niagara Falls, New York

Purpose:

Research and development of an air launched guided missile for the destruction of strategic surface targets. Project includes development of (a) MX-776A, a 50 mile supersonic research test vehicle. (b) A supersonic 100 mile range ASM capable of carrying all types of warheads weighing between 3000 and 5000 pounds.

Aircraft for which required: RASCAL

(Report progress and status peculiar to individual aircraft on separate form)

This Month—Current overall project STATUS: (a) The RTV-A-4 "Shrike" missile is being flight tested at Holloman AFB with a total of eleven (11) hot missiles launched to date. (b) The first Rascal glide missile is at Holloman AFB and will be launched approximately 17 September 1951.

PROGRESS since last report (if activity is reported, interpret significance):

The last report on this project was dated 26 July 1951.

A study of recovered parts of missile 1112 indicates that malfunction probably resulted due to electrical failure in pitch d-c amplifier or valve.

Missile 1214 (renumbered, formerly 1314) has been delivered to Holloman AFB. Missile 1313 (thirteenth to be fired, thirteenth fabricated) is being re-instrumented to check missile servo components and is scheduled for transport to Holloman AFB 29 August 1951.

Cutback in the available funds for fiscal 1952 required re-assessment of various phases of RASCAL/SHRIKE program. Shrike was reduced from 30 to 13 acid-gasoline missiles, 3 of which will be supersonic test vehicles for chemical warhead tests by Army Chemical Center.

Mr. Marcum from Development Planning under the Directorate of R&D, visited Bell Aircraft to review the guidance system. He commented that Bell was doing a competent job of developing the system but that an operational date of July 1954 was not realistic. He felt that R&D could be completed as scheduled, namely September 1953.

Security classification of information under This Month [redacted]

Major H. D. Hughes (Project Engineer) 2-9117 (Telephone) Guided Missiles Section (Laboratory)

(For instructions see EDOI No. 11-2)

[redacted]
(Security classification of this sheet)

[redacted]

MCGEHM

,34

[redacted]

31 October 1951

RESEARCH and DEVELOPMENT

INFORMATION REPORT

[redacted]

WRIGHT AIR DEVELOPMENT CENTER

Air Research and Development Command

Security Information

Air Force-WPAFB (A)-O-30 NOV 51 285

[redacted]

51S-162760,
#126

[redacted]

WRIGHT AIR DEVELOPMENT CENTER
WEAPONS SYSTEMS DIVISION
Project Information Report

Title: (Confidential) BELL Air-to-Surface Missile, XASM-A-2, RASCAL MX-776

R.D.O.: 448-48 T.D 2003-111 Priority: 1-A Est. Completion Date: July 1954

Prime Contractor(s):
Bell Aircraft Corporation, Niagara Falls, New York

Purpose:

Research and development of an air launched guided missile for the destruction of strategic surface targets. Project includes development of (a) MX-776A, a 50-mile supersonic research test vehicle. (b) A supersonic 100 mile range ASM capable of carrying all types of warheads weighing between 3000 and 5000 pounds.

Aircraft for which required: RASCAL

This Month—Current overall project STATUS:

(a) The RTV-A-4 "Shrike" missile is being flight tested at Holloman AFB with a total of (14) hot missiles launched to date. (b) The second Rascal glide missile will be launched 7 November 1951.

PROGRESS since last report:

The last report on this project was dated 1 October 1951.

The RTV-A-4 Shrike missile #1415 was fired and was quite successful. The missile was launched at 30,000 ft. from the B-50 launch aircraft. The programming was normal with the booster motor operating for 30 seconds and a total flight time of 213 seconds attained. The maximum speed of the missile was Mach 1.8 and a total range of 45 statute miles resulted.

Shrike missiles 1507 and 1607 are being made ready for shipment to Holloman AFB, the former about 1 November 1951.

The lack of Kearfott gyros is causing a minimum of three (3) months delay in Shrike missile firings of 1904 and subsequent.

The first of the three (3) Shrike chemical warhead test vehicles will be launched in April 1952 at Holloman AFB.

The parachute recovery system is being reworked in the second Rascal glide missile. Movies of the first glide missile test indicate aft section of missile would not tumble and would not decelerate after destruction. Destruction sequence is being revised in an effort to introduce instability which in turn will slow the missile sections down before parachutes are deployed.

A warhead and fuze conference was held at the Ballistic Research Laboratories on 23 and 24 October 1951 to review warhead and fuze problems on Rascal missile. Overall planning and technical details of the various warheads were discussed. Tactical B-50 launch airplane formal mock-up will be held 5, 6 December 1951.

Security classification of information under This Month: [redacted]

(Project Engineer)	(Telephone)	(Laboratory)
Major H. D. Hughes	48 2-0218	Guided Missiles Section

[redacted]

-631

30 NOVEMBER 1951

[redacted]

RESEARCH and DEVELOPMENT

INFORMATION REPORT

[redacted]

Security Information

[redacted]

WRIGHT AIR DEVELOPMENT CENTER

Air Research and Development Command

[redacted]

51S-181210

11/26

WRIGHT AIR DEVELOPMENT CENTER
WEAPONS SYSTEMS DIVISION
Project Information Report

Title: (Confidential) BELL Air-to-Surface Missile, XASM-A-2, RASCAL MX- 776

R.D.O. 448-48 P.D 2003-111 Priority: 1-A Est. Completion Date: July 1954

Prime Contractor(s):

Bell Aircraft Corporation, Niagara Falls, New York

Purpose:

Research and development of an air launched guided missile for the destruction of strategic surface targets. Project includes development of (a) MX-776A, a 50-mile supersonic research test vehicle. (b) A supersonic 100 mile range ASM capable of carrying all types of warheads weighing between 3000 and 5000 pounds.

Aircraft for which required: RASCAL

This Month—Current overall project STATUS:

(a) The RTV-A-4 "Shrike" missile is being flight tested at Holloman AFB with a total of fourteen (14) hot missiles launched to date. (b) The second Rascal glide missile will be launched approximately the first week in December.

PROGRESS since last report:

The last report on this project was dated 26 October 1951.

The RTV-A-4 "Shrike" missile #1516 will be fired approximately 3 December 1951. The delay in the firing date was caused by launch aircraft (B-50) fuel leak.

Shrike missile #1607 is being made ready for shipment to Holloman AFB, with delivery scheduled approximately 15 December. This missile will have the first acid-gasoline propulsion system with the same thrust ratings as previous Shrike missile.

Bell Aircraft presented the latest concepts that were being entertained at Bell Aircraft Corporation concerning a simplified non-emanating secondary guidance system for the Rascal missile. In essence, it consists of a stable auto-pilot into which will be fed range information. Accuracy will be of the order of two miles for a typical Rascal flight. Meanwhile, it is proposed to continue a study of inertial systems and their possible application to the Rascal problem.

The Bell Aircraft Corporation was requested to clearly define the impact of the decreased gyroscope allocation on the Rascal/Shrike program. In conjunction with gyro procurement, it was suggested by Bell Aircraft that the Arma Company be investigated as being a possible future source of precise gyroscopes for Rascal. These gyros are of a liquid flotation type and are stated to have a precession rate of 1 degree per hour. Since present type Kearfott gyros are unsatisfactory, this suggestion has merit. (Continued)

Security classification of information under This Month: [redacted]

(Project Engineer)	(Telephone)	(Laboratory)
Major J. W. McKinley	2-0218	Guided Missiles Section

The modified parachute recovery system is presently being installed in the second glide missile.

The various warhead agencies have been requested to submit their detailed requirements in regard to flight testing. As soon as this information is received, the warhead testing will be dovetailed into the present flight test program.

The second turbine pump (Serial No. 2X) was delivered to Bell Aircraft 19 November 1951. This unit is not a fully engineered prototype but can be used for development testing for both cruise and boost conditions. Approximately forty-five (45) cruise condition runs have been completed on nitrogen driven turbine at AF Plant No. 38.

Representatives of Strategic Air Command reviewed tactical carrier mock-up at Bell Aircraft 2 November. The comments made by Strategic Air Command were very helpful in furthering Bell Aircraft's understanding of operational and service requirements.

The formal mock-up for the tactical DB-50D launch airplane will be held 5 and 6 December 1951 at Bell Aircraft Corporation.

[redacted]

28 FEBRUARY 1951

RESEARCH and DEVELOPMENT

INFORMATION REPORT

[redacted]

ENGINEERING DIVISION

Air Materiel Command

51S-36820-1

[redacted]

RASCAL Missile and Associated Projects

TITLE: RASCAL Offensive Missile (MX-776)
EO: (R)48-48 TI: None PRIORITY: 1-A EST. COMPLETION: (a)October 1952 (b) 1956
PRIME CONTRACTOR: Bell Aircraft, Niagara Falls, New York
PURPOSE: To develop (a) a 50-mile range supersonic air-to-surface missile test vehicle which may be converted to a tactical weapon; (b) a supersonic 100 - 150 mile range air-to-surface missile to carry an atomic warhead.

THIS MONTH: The sixth hot "Shrike" (Serial No. 0608) fired 7 February 1951 at Holloman AFB was launched at 27,000 feet, and climbed at approximately 40,000 feet. A maximum velocity of M=1.47 (approximately 1000 mph) was attained at this altitude. Full parachute recovery of the instrumentation cannister was affected at a range of 48 statute miles from the point of launch. This was the first programmed flight for "Shrike." It was maneuvered through approximately 5 degrees in pitch and in yaw and then a combination of pitch and yaw. The missile was completely roll stabilized in these maneuvers through the speed range of M=0.42 to M=1.47.

The seventh hot "Shrike" was fired on 16 February 1951 as scheduled. The performance was similar to the one fired the previous week. The maximum altitude achieved was somewhat less but the range was approximately 50 statute miles. Even though full control in both pitch and yaw, and in combination of the two was effected, the missile was roll stabilized. A noteworthy feature of this flight was that a large extraneous pitch signal was given the missile which was not programmed. In spite of this extraneous pitch signal, the missile recovered stability. ([redacted] - Maj Hughes, 2-0218)

Rocket Engines (MX-776)

Shrike (development missile):

Bell has completed the final design of the regeneratively-cooled 4500-pound thrus (take-off boost) chamber except for enlarging the central fuel injector manifold improve cooling.

Bell has made fourteen successful runs with the 1500-pound thrust (cruising) chamber.

Bell has constructed a wooden mock-up and is expected to complete the development engine during April 1951.

A satisfactory XLR65-BA-1E liquid rocket engine for initial developmental firing the Shrike missile is expected to be available in November 1951.

Rascal (tactical missile):

Construction of an experimental XLR67-BA-1 liquid (WFNA-JP-3) rocket engine for developmental tests is expected to be completed by Bell in June 1951. This powe plant will utilize three 4000-pound thrust chambers for an approximately one-min boost period; after which one 4000-pound thrust chamber will maintain cruise pow

TITLE: BOMARC (MX-1599)
EO: (R)448-83 TI: None PRIORITY: 1-B EST. COMPLETION: January 1956
PRIME CONTRACTOR: Boeing Airplane Company
PURPOSE: To develop a complete defensive system using a long range surface-to-air missile for destruction of targets operating below 100,000 feet at speeds up to Mach 2.8.

THIS MONTH: Boeing requirements for moving the BOMARC flight test program to LRPG have been submitted to LRPG and Boeing is preparing to move equipment and personnel to LRPG with a minimum delay as directed by DCS/D. Boeing is rewriting the proposal and will submit it with a complete breakdown of funds.

A Purchase Request is being prepared for $100,000.00 to cover supersonic wind tunnel test time in the MIT tunnel. Arrangements have been made between Boeing and MIT to commence the testing on 27 February 1951 pending execution of the contract by AMC. A letter contract will be issued to cover this work until a definitive contract is signed. [redacted] - Mr. Ginsberg, 2-5168)

[redacted]

Fuel Servicing Equipment (EO: (R)657-356)

Fram has started an engineering study prior to development of a nitric acid filter capable of 5 micron filtration. The experimental filter is expected to be delivered in June 1951 for evaluation.

A contract has been negotiated with the Wiggins Oil Tool Corporation for the procurement of four quick disconnect couplings to be used with the stainless steel nitric acid servicing hose. Delivery for qualification tests is expected in May 1951. (UNCLASSIFIED - Mr. Shephard, 2-3242, Equipment Laboratory)

Training Equipment

Information copies of exhibits covering training equipment for the "RASCAL" missile have been forwarded to AF Hq. A letter is being prepared authorizing Bell to begin development of trainers. ([redacted] - Mr. Baker, 2-7216, Equipment Laboratory)

[redacted]

1 CGEHM

R1-5182-

31 JULY 1951

[redacted]

RESEARCH and DEVELOPMENT

INFORMATION REPORT

[redacted]

WRIGHT AIR DEVELOPMENT CENTER

Air Research and Development Command

[redacted]

51S-115706-128

[redacted]

SECRET

SECRET
Air Force-WPAFB-L-14 MAR 51 12M

AUTHORITY: CG WI
BY: Lt. Col. USAF
DATE: 7-26-51

WEAPONS SYSTEMS DIVISION

RESEARCH AND DEVELOPMENT PROJECT INFORMATION REPORT

[redacted] Date Submitted 26 July 1951

(Security classification of this sheet)

Title (in straight reading style):

BELL Air-to-Surface Missile, XASM-A-2, RASCAL (Conf) MX-776

R.D.O.: R-448-48 | T.I.: 2003-111 | Priority: 1-A | Est. Completion Date: July 1954

Prime Contractor(s):

Bell Aircraft Corporation, Niagara Falls, New York

Purpose:

Research and development of an air launched guided missile for the destruction of strategic surface targets. Project includes development of (a) MX-776A, a 50 mile supersonic research test vehicle. (b) A supersonic 100 mile range ASM capable of cafrying all types of warheads weighing between 3000 and 5000 pounds.

Aircraft for which required: RASCAL

(Report progess and status peculiar to individual aircraft on separate form)

This Month—Current overall project STATUS: (a) The RTV-A-4 "Shrike" missile is being flight tested at Holloman AFB with a total of eleven (11) hot missiles launched to date. (b) The first Rascal glide missile is at Holloman AFB and will be launched late in August 1951.

—PROGRESS since last report (if activity is reported, interpret significance):

The last report on this project was dated 25 June 1951.

RTV-A-4 missile number 1112 was fired at Holloman AFB on 10 July 1951. The missile was launched at 27,000 feet from the B-50. Ninety seconds of planned programming was completed successfully using pitch programming. When the pitch programming was completed, a new programming was initiated at which time the missile became unstable. The missile executed a dive to 10,000 feet at which point the aneroid activated destructor blew the missile into three pieces and the center or instrumentation section was recovered by parachute. The total range achieved was approximately thirty (30) miles. It has been established that the instability in pitch resulted from pitch servo malfunction. This could have been caused by electrical failure in d-c stage of amplifier or in actuator valve causing elevator to travel to extreme limits for extended periods.

The Shrike launching B-50 is undergoing major inspection and will be out of commission until the first part of August 1951.

Shrike missile number 1213 (twelfth to be fired, thirteenth fabricated) will

(Cont'd)

Security classification of information under This Month SECRET

Major H. D. Hughes (Project Engineer) | 2-0218 (Telephone) | Guided Missiles Sectio (Laboratory)

(For instructions see EDOI No. 11-2)

SECRET

(Security classification of this sheet)

[redacted]

[redacted]

30 SEPTEMBER 1951

RESEARCH and DEVELOPMENT

INFORMATION REPORT

[redacted]

WRIGHT AIR DEVELOPMENT CENTER

Air Research and Development Command

[redacted]

Air Force-WPAFB-(A)-O-19 OCT 51 285

[redacted]

(Security classification of this sheet)

[redacted]

WRIGHT AIR DEVELOPMENT CENTER AUTHORITY: eg Wadc

Project Information Report By: JACK LEET

DATE: Lt. Col., USAF

WEAPONS SYSTEMS DIVISION MX-776 Date Submitted 1 October 1951

Title:

BELL Air-to-Surface Missile, XASM-A-2, RASCAL (Confidential)

R.D.O. 448-48 T.D.: 2003-111 Priority: 1-A Est. Completion Date: July 1954

Prime Contractor(s):

Bell Aircraft Corporation, Niagara Falls, New York

Purpose:

Research and development of an air launched guided missile for the destruction of strategic surface targets. Project includes development of (a) MX-776A, a 50-mile supersonic research test vehicle. (b) A supersonic 100 mile range ASM capable of carrying all types of warheads weighing between 3000 and 5000 pounds.

Aircraft for which required: RASCAL

This Month—Current over-all project STATUS:

(a) The RTV-A-4 "Shrike" missile is being flight tested at Holloman AFB with a total of thirteen (13) hot missiles launched to date. (b) The first Rascal glide missile has been launched at Holloman AFB.

—PROGRESS since last report:

The last report on this project was dated 28 August 1951.

The RTV-A-4 "Shrike" missile numbers 1214 and 1313 were fired and were considered to be the most successful firings to date.

Missile 1214 followed the planned flight program satisfactorily but the parachute recovery system did not function properly. Missile 1313 was entirely satisfactory.

The first glide missile was successfully launched on 27 September 1951 at Holloman AFB. The RASCAL was roll stabilized throughout the flight. The missile separated at the proper altitude, however, the parachute recovery system malfunctioned resulting in a complete destruction of the missile and all its equipment. Telemetering was good and continued to function all the way to the ground. Camera coverage was quite complete. However, the films have not yet been developed.

There will be one more glide missile launched before the first actual firing which is scheduled just after the first of the year.

Security classification of information under This Month CONFIDENTIAL

Major H. D. Hughes (Project Engineer) 2-0218 141 (Telephone) Guided Missiles Section (Laboratory)

[redacted]

(Security classification of this sheet) (Security Identification No.)

[redacted]