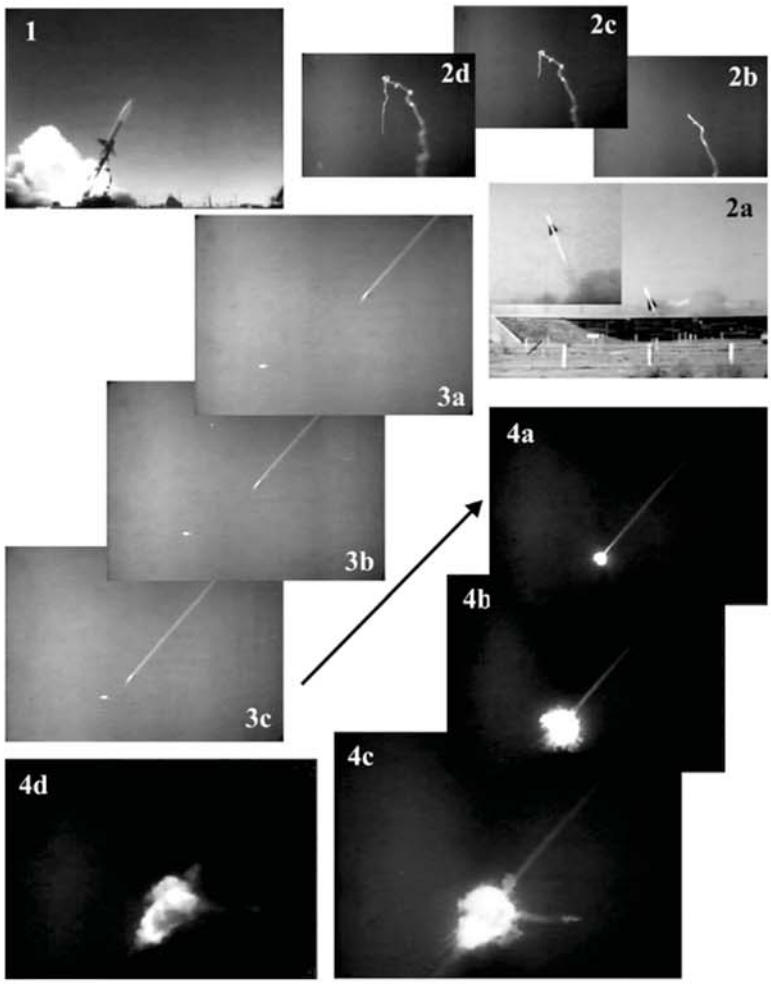


Fig. A.3 A Hawk missile successfully intercepts the unguided rocket Honest John on 25 January 1960 at White Sands Missile Range: (1) launch of Honest John; (2a,b,c,d) launch and contrails of Hawk; (3a,b,c) final approach to the target; (4a,b) intercept; (4c,d) fragments of Honest John continue on its initial trajectory. Frames from the U.S. Army's motion picture *The Big Picture. Tularosa Frontier*; original film courtesy of National Archives and Records Administration and White Sands Missile Range Archives. Frames identification, interpretation, and processing by Mike Gruntman.

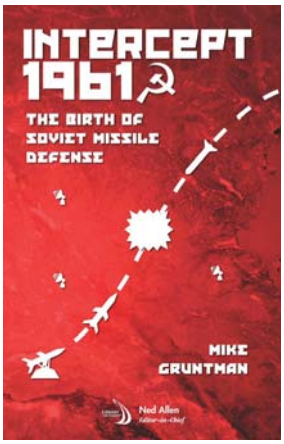
entire hemisphere surrounding a radar position, detect the objects in that space, remember their past positions, and predict where the objects would next be in three dimensions—all automatically, beginning with initial detection."[14]

M. Gruntman,
First Intercept. The Birth of Soviet Missile Defense,
AIAA, Reston, Va., 2015 p. 259

[14]Bell Laboratories, 1975, p. I-24.

Intercept 1961

The Birth of Soviet Missile Defense



Mike Gruntman

American Institute of Aeronautics and Astronautics (AIAA), Reston, Va., 2015
ISBN 978-1-62410-349-0 (print); ISBN 978-1-62410-350-6 (.pdf – at http://arc.aiaa.org)
330 pages with 120+ figures and 200+ references
Index: 950+ entries, including 150+individuals

More than 50 years ago, pioneering scientists and engineers in the Soviet Union and the United States searched for a technical means of defense against ballistic missiles. This book tells the little-known story of the earliest breakthroughs which paved the way for the emergence of a powerful missile defense complex in the Soviet Union, a major factor in the Cold War.

On March 4, 1961, a Soviet guided missile performed the first nonnuclear intercept of an intermediate range ballistic missile (SS-4) at the Saryshagan test site in the Kazakhstan desert when it destroyed an approaching warhead. This spectacular and most consequential achievement followed earlier intercepts by the United States Army of several shorter range missiles at White Sands.

The new field led to the emergence of monitoring space objects in orbit, ballistic missile early warning, and antisatellite weapons. The first operational Soviet missile defense system A-35 was deployed in 1970s to protect Moscow; its successor remaining active today.

Intercept 1961 focuses on the events that led to the first nonnuclear intercepts of long-range ballistic missile warheads in 1961. It introduces leading participants, now largely forgotten or unknown, and contains many technical characteristics of early air and missile defense systems, rarely found even in highly specialized publications. The latter details are not overwhelming, and anyone interested in rocketry, space, and radar will navigate through the book without difficulty.

Abundant literature on rocketry, ballistic missiles, satellites, and space exploration fills bookshelves. At the same time, very little is known about missile defense and first intercepts. The book fills this gap.

Intercept 1961 is especially relevant today as the United States and other countries continue facing the eternal “protect-or-avenge” dilemma when balancing retaliatory offensive capabilities against defensive protection. In an age of unstable governments, spreading weapons of mass destruction, and radical ideologies and terrorism, this historical background is critical for informed policy formulation, threat evaluation, defense planning, and counteracting the proliferation of weapons and sensitive technologies.

The book is a must read for students of history, scientists and engineers, analysts, and specialists in international relations and national security.

About the author. Dr. Mike Gruntman is professor of astronautics at the University of Southern California (USC). His life journey took him from a child growing on the Tyuratam (Baikonur) missile and space launch base during the late 1950s and early 1960s to an accomplished space physicist to the founder of a major space engineering education program, today a nationally recognized astronautical engineering department at USC. Mike is actively involved in R&D programs in space science and space technology and has authored and co-authored nearly 300 publications, including *Blazing the Trail: The Early History of Spacecraft and Rocketry* (AIAA, 2004), which won the International Academy of Astronautics’ award.

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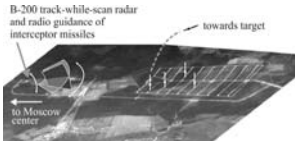

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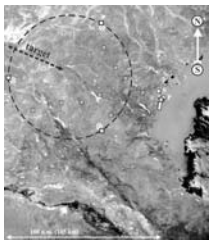

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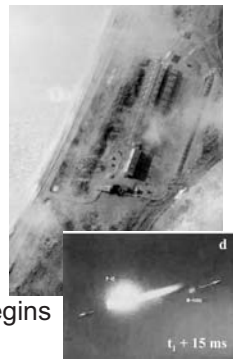

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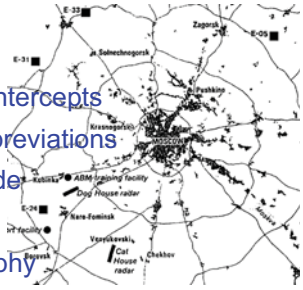

Appendix A. First U.S. Missile Intercepts
Appendix B. Acronyms and Abbreviations
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The book has more than 120 figures, including a number of photographs never published outside Russia. Many U.S. reconnaissance photographs appear for the first time ever (in open literature).

Selected bibliography includes more than 200 entries. Many referred to publications appeared in limited editions and are not widely known. The language barrier also often restricts their use. In addition, declassified U.S. government documents and reconnaissance imagery are not always conveniently accessible.

Book web site: http://astronauticsnow.com/intercept1961