

**Peebles, Curtis.** *The Corona Project: American's First Spy Satellites.* Annapolis, MD: Naval Institute Press, 1997.

"The person who succeeds will be the person with the best information."

-Disraeli

At the height of the Cold War, as the world seemed ready to head back down the road toward barbarism and war, the American government was faced with a nightmare. With the growing threat of Soviet nuclear weapons being delivered by advanced strategic bombers, the US found itself at a great disadvantage. Unable to observe vast tracts of Soviet territory, the CIA was forced to guess about both Soviet intentions and military capabilities. To clarify the situation and to provide a permanent means of gathering intelligence on the Soviet Union, President Eisenhower authorized the development of a photographic reconnaissance satellite as a means of gaining photographic intelligence of the USSR. Originally identified as WS-117L, the program to produce the first spy satellites was highly classified. By the end of 1961, this program produced three separate satellite designs. One was a failure, one a quiet success and the last a dramatic example of ingenuity and technological prowess. Known as CORONA, this satellite was the foundation of American spy satellite designs through the end of 1972.

Curtis Peebles has attempted to produce a detailed history of the CORONA project. From Lt Col Richard S. Leghorn's first clear calls for a means of gaining strategic reconnaissance of the USSR to prevent a nuclear Pearl Harbor in the late 1940s through the declassification of the CORONA satellite and its display in the Smithsonian, Peebles traces the history of this important program. For Peebles, this is a dramatic success story. The engineers who created the CORONA satellite, and those in the military who launched it and recovered the nose cones that contained the photographic film of the USSR, were faced with an almost impossible challenge. Pioneers in their own right, they had to face and solve a large number of technical challenges just to launch the satellite, let alone recover and process the film. Faced with failure after heartbreaking failure, they persevered and eventually overcame the numerous problems they faced. Unfortunately they are the unsung heroes for Peebles because the secrecy that surrounded the entire military satellite program prevented the world from knowing how successful they were. It is only now with the released documentary evidence that the truth can be revealed.

Tracing this program is truly an epic undertaking of its own right. Peebles starts with the early 1946 RAND studies and the immediate post war ideas on reconnaissance as put forward by Leghorn during the Bikini Atoll nuclear tests through to the actual development of the Corona system. Every success and failure, and there were many of the latter in the early years, is detailed in this 351 page work (appendix and index included). Peebles also includes a detailed appendix which includes specifics of camera design throughout the course of the CORONA satellites and a detailed list of every launch, the component parts involved and the results and highlights of that particular mission. This alone makes the book a valued addition to any historical collection on space history.

Organized chronologically, Peebles presents his material in an easy to read style. His first chapter provides the detailed ground work for his account of the CORONA program. This chapter also provides the reader with some of the daunting technical challenges faced by the engineers of the program, an understanding of some of the Soviet advances and most importantly for the rest of the book, the origins of the CORONA, return film satellite. Chapters 2 and 3 take the reader through the final impetus that created CORONA from the affects of Sputnik and the decision to take the development of CORONA away from the Air Force who was failing to produce the SAMOS reconnaissance satellite from WS-117L in a timely manner to the CIA and the final design elements of CORONA. Chapter 3 begins the detailed discussion of the numerous problems faced by the engineering team that produced CORONA during the difficult first attempts to launch the satellite. Chapters 4 to 6 discuss the first set of films recovered from the CORONA satellites, the information that they revealed and how the system for handling it was created. The influence of the Kennedy administration and the decision to increase security as revealed in these chapters is an interesting counter balance to Peebles continued discussion of each mission, its success or failure and the continuing evolution of the CORONA cameras.

Chapters 6 to 9 detail the CORONA system at the height of its capability. Peebles gives the reader an indication of how the satellite design evolved. As the design changed, the information that it provided improved as well, contributing more detailed information on the Soviet Union than had ever been known before. He also discusses photographic interpretation and some case studies of the art. Chapters 10 and 11 present the CORONA program in its twilight and attempt to put it into historical perspective for us.

Despite the impressive scope of this book, and the wealth of information that it provides to the reader, Peebles does not succeed in presenting a clear and well argued discussion of CORONA let alone the military space program. His presentation of the technical materials is inconsistent. Occasionally, he is able to describe the specifications of equipment like camera lenses (p. 15) in a readable and understandable fashion. Unfortunately, for every example of this there are others of his failing to do so. His discussion (pp. 28-29) of RAND's concept of spin stabilizing the satellite and how this allowed the camera to take a panoramic photograph leaves a great deal to be desired. Even worse, his discussion of the relationship between CORONA and WS-117L is as confused as most of the early (pre-declassification) works on the subject of military satellites. In a nut shell, the original satellite program proposed by RAND and put into development by the Air Force (WS-117L) was designed to relay the imagery from space via a radio link with special ground installations. In essence then the satellite could stay in orbit longer and provide something like "real time" capability. The CORONA satellite was designed to provide imagery in a different way, by returning the film to earth in a capsule that was recovered and then developed. The question many have tried to answer revolves around whether or not CORONA was originally part of WS-117L and if not how it came to be. Peebles presents the reader with two separate stories. First he goes out of his way to tell the reader that CORONA was not part of the program (pp. 16, 26) yet later he argues that the CORONA satellite was part of WS-117L and was "split off" after it became clear that an interim satellite was needed due to the slow progress of the WS-

117L program and the Soviet launch of Sputnik (p. 43). So which is it? Peebles seems unsure.

Peebles' account of the military satellite program has another resounding flaw as well. In terms of the documentary support of his argument, there is a lack of evidence in some important areas. When discussing some highly complicated material like the above mentioned spin stabilization idea (pp. 28-29) he fails to provide any citation for where the information came from. This is especially trying for the highly technical information which plays such an important role in this story. There is no indication where the information came from, leading the reader to wonder. This lack of citation on very technical and detailed materials is confusing to say the least but often duplicated in his anecdotal evidence. Early in chapter 1, Peebles discusses an aerial simulation designed to prove that satellite photographs would be useless. The test demonstrated to Amrom Katz (among others) that the photographs would reveal a great deal of information (p. 10). Again, there is no source for this test or the response of those who saw the results. It is clear he had to get this information from some source. This pattern is carried over to other areas, such as his discussion of the preliminary design work done by Lockheed. (p. 46) This lack of citation over some critical materials is frustrating and confusing. Other authors in the field seem able to give detailed accounts of the sources for their arguments. This is an important aspect of the historian's profession. The spotty references makes the reader question the over-all value of the material in this work.

The development of the first military satellites in the US is an important and challenging vista opening up in the historical landscape. The recent declassification of materials relating to this area (a process that is still ongoing) means that a wealth of new information is becoming available. Although some authors are taking advantage of this situation, this book seems to be less successful in this area. It does provide some important information to the reader, unfortunately the reader must be cautious about the information that the book bestows. There are some serious limitations to the information provided. Maybe that will be its greatest success. If it provides only a partial understanding of the CORONA program's development process, then perhaps it will encourage others to fill in the gaps in this work.

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