November/December 2004, Volume 60, Number 6, pp. 74-75



When the November/December 2004 issue was published, the Doomsday Clock remained at 7 minutes to midnight, where it had been since February 27, 2002 when the United States rejects a series of arms control treaties and announces it will withdraw from the Anti-Ballistic Missile Treaty. Terrorists seek to acquire and use nuclear and biological weapons.

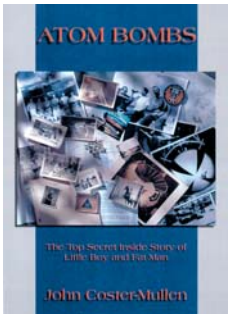
# Details

***Atom Bombs: The Top Secret Inside Story of Little Boy and Fat Man***
By John Coster-Mullen
Self-published, 2004
359 pages; $45.00

*Reviewed by Robert S. Norris*

THE LITERATURE ON THE MANHATTAN Project is vast, but there is always room for interesting new research that deepens our understanding of perhaps the most important event of the twentieth century, the atomic bombing of Japan. John Coster-Mullen has proven that with his book *Atom Bombs: The Top Secret Inside Story of Little Boy and Fat Man*. For many years, Coster-Mullen has been printing his manuscript at Kinko's (adding to and revising it along the way) and selling spiral-bound copies at conferences or over the internet. It is most unfortunate that a publisher has not yet been found for this important book. (*Atom Bombs* can also be ordered directly from the author at coster@execpc.com.)

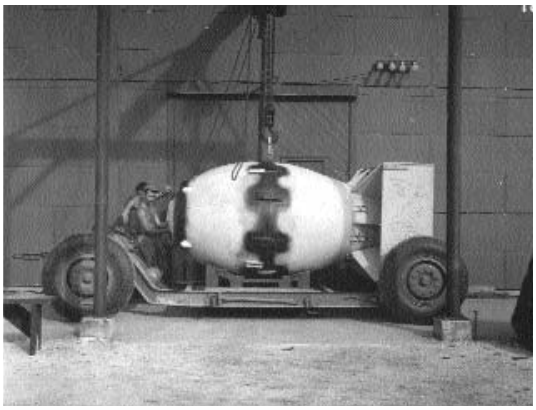
Coster-Mullen's research approach to the material focuses on a detailed explication of how the two bombs were built. He has sought to recreate the exact dimensions and configurations, internally and externally, of the Little Boy and Fat Man bombs—something that has not before been accomplished on this scale.

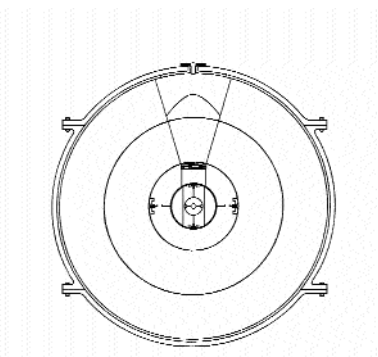



Armed with calipers and a tape measure, Coster-Mullen climbed over mock Little Boy and Fat Man bombs on display at various museums, measuring every aspect that he could, often taking pictures. He supplemented this fieldwork by closely examining key documents and photographs in the National Archives and elsewhere and by interviewing more than 150 scientists, engineers, and other central participants who worked on the bomb. By attending several reunions of the 509th Composite Group, Coster-Mullen discovered a bevy of valuable primary sources. Among others, Coster-Mullen interviewed six of the 12-man *Enola Gay* crew (which dropped Little Boy on Hiroshima), eight of the 13-man *Bockscar* crew (which dropped Fat Man on Nagasaki), and 10 members of Project Alberta (the scientific team sent from Los Alamos to Tinian Island). The 509th reunions have also been instrumental in stimulating several other books by scholars and 509th veterans that deserve wider readership, including Richard H. Campbell's *They Were Called Silverplate*, Robert Krauss's *Wendover Memories*, and Harlow W. Russ's *Project Alberta*.

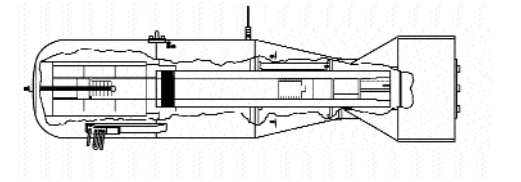
After opening *Atom Bombs* with some preliminary history, Coster-Mullen gets down to business, describing in explicit detail the Little Boy bomb and the Hiroshima mission. Nothing else in the Manhattan Project literature comes close to his exacting breakdown of the bomb's parts. Coster-Mullen describes the size, weight, and composition of many of Little Boy's components, including the nose section and its target case; the uranium 235 target rings and tamper; the arming and fuzing system; the forged steel 6.5-inch diameter gun barrel through which the uranium 235 projec-

Fat Man outside the assembly building on Tinian; a cross section by Coster-Mullen of the bomb's implosion sphere. One set of the 32 lenses, inner charges, and detonators is depicted.





NATIONAL ARCHIVES; JOHN COSTER-MULLEN (DIAGRAM)



Little Boy in the loading pit under the Enola Gay; a cross section of the bomb's major mechanical components.

NATIONAL ARCHIVES; JOHN COSTER-MULLEN (DIAGRAM)

tile was fired at the target rings; and the tail section—to cite just a few. This degree of technical detail might not be everyone's cup of tea, but by looking closely at the separate pieces and showing how they fit together, Coster-Mullen lets the reader watch over the shoulder of those who assembled the bomb.

Coster-Mullen gives close attention to the chronology, people, and places surrounding the construction and the use of the bombs, giving long overdue credit to many unsung heroes for their contributions. Los Alamos, New Mexico; Wendover Field, Utah; and Tinian Island in the Pacific—where the bombs were either designed, fabricated, test-dropped, or assembled for use—are the main locales in Coster-Mullen's account. By the end of July 1945, Little Boy was ready at Tinian's North Field. On August 5, the bomb was loaded aboard the *Enola Gay*, the crew was briefed, and in the early morning hours of August 6, the plane took off.

Coster-Mullen's careful reconstruction illuminates the activities that went on aboard the *Enola Gay* that made the mission a success, such as how Capt. William "Deak" Parsons loaded the four cordite powder bags that would propel the projectile down the bomb's gun barrel, or when Col. Paul W. Tibbets turned over control of the plane to bombardier Maj. Thomas W. Ferebee, who released Little Boy.

The Fat Man bomb was a more complicated design than Little Boy, and Coster-Mullen devotes 26 pages to the many problems that the scientists needed to overcome to make it work. This perspective is absent in some Manhattan Project books whose authors aren't well versed in the technical details—not a problem for Coster-Mullen. For example, he discusses how the scientists solved the challenge of focusing the high explosives inward to crush the plutonium core to criticality. They had to determine the optimal shapes of the lenses to maximize the force, what the lenses should be made of, how they should be cast, and how they would fit together. They also had to figure out how to make all of the high-explosive lenses detonate simultaneously—within a millionth of a second of one another—so there would be uniform inward compression. Coster-Mullen traces how they did it and who deserves the credit. On the afternoon of August 8, 1945, Fat Man was raised into the bomb bay of the *Bockscar*, ready to go.

Unlike the Hiroshima mission, which was nearly flawless, almost nothing during the Nagasaki mission went according to plan. Among the 509th veterans, many of whom Coster-Mullen quotes, there are still sharp differences of opinion about the near mishaps and who was responsible. For example, *Bockscar* jeopardized the mission by waiting for more than 40 minutes for the photo plane to show up at the rendezvous point and by taking more than one bomb run over cloud-covered Kokura.

The main text of *Atom Bombs* is supported by 32 pages of valuable endnotes, as well as several appendices listing such things as the Hiroshima and Nagasaki plane crews. Another appendix lists the 15 specially modified B-29s that were on Tinian Island as part of the 393rd Bombardment Squadron: Nine participated in either the Hiroshima or Nagasaki missions; four participated in both. As Coster-Mullen outlines, the *Enola Gay* was the Kokura weather plane on the Nagasaki mission, and the *Great Artiste* was the instrument plane on both missions. Before the Hiroshima and Nagasaki bombings, 509th Composite Group aircraft practiced bombing Japanese cities with mock Fat Man bombs, nicknamed "Pumpkins," on 16 special missions.

The book includes 100 pages of photographs and diagrams and another 100 pages of primary documents from the National Archives, Los Alamos, and the air force. A few of the photographs are familiar, but Coster-Mullen has unearthed some remarkable photos from Los Alamos and the National Archives, for example, one in which Little Boy sits on a transport carriage in a loading bay under the *Enola Gay* (see photo above). Coster-Mullen includes several original, high-quality close-up photographs that he shot of display bombs, as well as new photos of other components like the "handlebar" detonator.

*Atom Bombs* fills an important gap in the literature about the making of the atomic bomb and deserves a prominent place on the shelf of books about the Manhattan Project. ⚛

---

*Robert S. Norris is author of* Racing for the Bomb: General Leslie R. Groves, the Manhattan Project's Indispensable Man *(2002).*