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Oscar Seborer: Father of the Soviet Atomic Bomb?

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Seventy-five years after the end of World War II, atomic spies continue to captivate and revolt the American public. Theodore "Ted" Hall, Klaus Fuchs, and David Greenglass all committed espionage at Los Alamos during the war. It has also been conjectured that there was an unidentified spy known only by the code-name PERSEUS, but there is a growing consensus among scholars that PERSEUS never existed. However, in September 2019, historians Harvey Klehr and John Earl Haynes unmasked a fourth Los Alamos spy code-named GODSEND. His name: Oscar Seborer. When the New York Times reported the story of Seborer's treachery in November 2019, almost nothing was known about his work at the Laboratory.[1] However, recently discovered documents in the National Security Research Center (NSRC) at Los Alamos National Laboratory (LANL) offer some clues as to what GODSEND may have stolen for for Stalin.

Who was Oscar Seborer and why did he commit espionage? Seborer was born in New York City in 1921 to Polish immigrants. While at Cornell University, Seborer's older brother Max met a communist named Isidore "Gibby" Needleman; in subsequent years, the younger Seborer passed along weapons research secrets to Needleman, who in turn ensured they were smuggled out of the country.[2] Little is known of Seborer's early life, but he clearly developed strong communist sympathies. It's clear, as we shall later see, his belief in Soviet-style socialism motivated him to betray his country.

When America was drawn into the war by the Japanese attack on Pearl Harbor, Seborer was studying electrical engineering at Ohio State University. He joined the Army in October 1942 and, because of his academic training, was assigned to the Manhattan Project's Special Engineering Detachment (SED). Originally assigned to Oak Ridge, Seborer was transferred to Los Alamos in late 1944.[3] His first day at Project Y, the Laboratory's code-name, was December 21st.[4]

What did Oscar Seborer know and what did he steal? It is possible to deduce the type of information Seborer would have had access to based on his military rank and by exploring the work of his groups. When Seborer arrived at the Laboratory he was a Private First Class who served as a Physics Laboratory Assistant. He was promoted to Technician Fifth Grade (T/5; Corporal) effective April 1, 1945 and, only a few months later, was promoted to Technician Fourth Grade (T/4; Sergeant).[5]

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[1] William J. Broad, "Fourth Spy Unearthed in U.S. Atomic Bomb Project," New York Times (November 23, 2019).
[2] Harvey Klehr and John Earl Haynes, "On the Trail of a Fourth Soviet Spy at Los Alamos," Studies in Intelligence, Vol. 63, No. 3 (September 2019), 4.
[3] Ibid., 5.
[4] Memo Title, NSRC collection A-1984-019, Box 62, Folder 7.
[5] Memo Title, NSRC collection A-1984-019, Box 44, Folder 23 and 1945 Phone Directory (also see documents in map cabinet).

It's interesting to consider that Seborer, who had been a Private for nearly two-and-half years, received two promotions in less than six months at Project Y.

Every job at wartime Los Alamos was important, but not every job required access to significant amounts of classified information. Compartmentalization was the official policy of the Laboratory: employees who were not members of the scientific staff were only given access to information needed to complete assigned tasks. Members of the scientific staff were given broader access, but there is no evidence to suggest Seborer was considered a staff member: by policy, he would have been given access only to the information required to do his job. Being a thief, it's likely Seborer would have attempted to gain access to additional information, but he would have been greatly hampered by security measures.

During his initial wartime employment at Los Alamos, Seborer was formally assigned to the Explosives Division (X). His Division Leader, George Kistiakowsky, was a Ukrainian by birth who fought against the Bolsheviks in the Russian Civil War. Kistiakowsky's Division was responsible for preparing the implosion bomb's high explosives (HE) assembly. The relatively complex organizational structure of X included several groups with subsections. Kenneth Bainbridge, a Harvard physicist with substantial electrical engineering experience, led Seborer's group: X-2. X-2, which had "complete jurisdiction of and responsibility for the engineering and construction of detonators for the gadget" in late 1944, was divided into three sections. Among these sections was Seborer's home organization: Test Measurements (X-2C).[6] Section 2C was led by Lewis Fussell and tasked with developing electronics for diagnostics and detonator firing circuits; a natural fit for Private Seborer, who had some university training in electrical engineering.

When Seborer arrived in Los Alamos, progress was being made in the detonator program after months of struggle. In March 1945, the month before Seborer's promotion to T/5, Bainbridge was made Test Director for Trinity and X-2C became an independent group: Detonating Circuit (X-5). It's worth noting the detonating circuit (or "X-Unit") was the electronic component that caused the detonators to ignite simultaneously: the detonating circuits were not the actual detonators. The detonators were developed in the Weapons Physics, aka "Gadget," Division (G) under the supervision of future Nobel Laureate Luis Alvarez.

As the spring progressed, work shifted from research and development to detonator manufacturing and testing. Seborer was loaned to the Research Division's D-D Source Group (R-3) from April 9th to May 14; his temporary Group Leader was John Manley, a close friend of Oppenheimer's.[7] R-3's charter task was exploring the nuclei of various elements, but starting in April Manley's group was tasked with measuring the Trinity test.[8] On May 7th, Los Alamos performed a rehearsal for Trinity known as the 100-ton test. The test was the largest, measured explosives experiment in history, but it would only hold that title for a little over a month; the results indicated problems with diagnostics and revealed that Trinity's fallout would

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[6] Lillian Hoddeson et al., Critical Assembly: A Technical History of Los Alamos during the Oppenheimer Years, 1943-1945 (Cambridge: Cambridge University Press, 1993), 305 and Memo Title, NSRC collection A-1984-019, Box 62, Folder 7.

[7] Manley to Fussell, April 18, 1945, NSRC collection A-1984-019, Box 42, Folder 17.

[8] Critical Assembly, 313.

be far more substantial than previously anticipated. There's no reason to doubt Seborer witnessed the experiment.

Fussell wrote to Bainbridge the day of the 100-ton test, "I wish to ask that two of the six men now on loan be sent back to us immediately on completion of the 100-ton shot." He continued, "The two men we need most urgently are S/Sgt. W.J. Breiter and T/5 O. Seborer." According to the memo, Seborer and the other SEDs on loan to Trinity requested to be involved in the Destination Program, the effort to prepare for the atomic bombings of Japan.[9] Fussell apparently got Seborer back, but not for long. On May 19th Bainbridge wrote to Fussell, "Manley and I would greatly appreciate having Seborer return to Manley's group on or before June 15, as he will be extremely valuable to Manley."[10] It's currently unknown if Seborer's request to join the Destination Program was approved, but one thing is certain: Oscar Seborer was very much in demand in the final months of the war.

After the war, Seborer was transferred to the Ordnance Division (Z). Z was constituted in July 1945 and tasked with improving existing designs as well as assembling and stockpiling nuclear weapons; Z inherited many functions of the Destination Program. X-5 essentially became Z-3 (Firing Circuits) and Fussell continued to lead the group.

To date, there is no evidence revealing what, specifically, Seborer stole. His work at Oak Ridge remains a complete mystery. As a low-ranking Physics Laboratory Assistant at Los Alamos who was almost certainly not considered a member of the scientific staff, the information Seborer had access to would have been limited to what his groups were working on. Most notably, this would have included information pertaining to the implosion bomb's detonating circuit, a knowledge of diagnostic measurement techniques and, because of his possible work with the Destination Program and transfer to Z Division, some familiarity with weapons assembly processes. Even though he was in X for several months, it's doubtful Seborer would have had access to information pertaining to the chemistry of HE compounds, the development of HE lens systems or other critical HE-related information. Seborer was clearly valued by his superiors, but his role, like the important roles of so many other soldiers, was limited in scope. It would have been very challenging for him to access important documents in other groups and likely impossible for Seborer to obtain critical design records created in other divisions.

How useful was the information Seborer *might* have stolen? After the New York Times article was published in November 2019, NSRC archivists located a set of documents pertaining to Seborer, had them declassified and provided them to the newspaper. On January 27, 2020 the Times published a second article titled, "Fourth Spy at Los Alamos Knew A-Bomb's Inner Secrets," and included links to the scanned documents. The story alleged Seborer's "knowledge most likely surpassed that of the three previously known Soviet spies at Los Alamos, and played a crucial role in Moscow's ability to quickly replicate the complex device."[11] That is a significant claim, but does it hold-up under scrutiny?

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[9] Fussell to Bainbridge, May 7, 1945, NSRC collection A-1984-019, Box 42, Folder 17.
[10] Bainbridge to Fussell, May 19, 1945, NSRC collection A-1984-019, Box 4, Folder 8.
[11] William J. Broad, "Fourth Spy at Los Alamos Knew A-Bomb's Inner Secrets," New York Times (January 27, 2020).

Unfortunately, the declassified records were not interpreted properly in the Times article; there was no analysis. The story of the documents begins on September 17, 1956 when the Chief of the Security Branch of the Atomic Energy Commission's (AEC) Los Alamos Area Office, Donald P. Dickason, wrote to the head of security at the Laboratory, Assistant Director Ralph Carlisle Smith. The FBI had discovered Oscar Seborer was most likely a spy and asked the AEC to validate several statements made in a bureau report pertaining to operations at wartime Los Alamos; they hoped to scale the potential security breach. Among other things, the FBI wanted to know about the work of X and Z Divisions, the job duties of an "electronic technician," and if "safes were left open during working hours so that classified material could be readily available."[12]

When Dickason received the FBI statements, he asked Smith investigate. Ralph Carlisle Smith was the ideal person to explore the matter: he was a Project Y veteran who had prepared several classified weapons patents and had co-authored an official history of wartime technical work.[13] Smith's frustration is clear in his reply to Dickason. For instance, Smith was never given a complete copy of the FBI's report to evaluate; only fragments with no context. He argued, "Any statement taken out of context might appear to be inaccurate even though the full statement might be correct." Dutifully, however, Smith addressed the FBI's statements as requested. He noted the bureau's summary of X Division's work was incomplete, corrected technical errors and described some of the FBI's statements as "a little obscure" and "somewhat misleading." Smith concluded his letter, "I do not personally recall Mr. Seborer nor do I know whether or not he had access to the information described in [Dickason's letter]."

However, Smith also verified several critical points. For instance, he confirmed Seborer was a "military technician" who worked in X and Z Divisions. Regarding open safes, Smith verified that, per Laboratory policy, safes could "be left open so long as the contents are under the surveillance of one authorized to have access to those records." In response to the FBI's suggestion that "Seborer could have been able to determine the physical mechanics of the atomic bomb," Smith wrote: "I believe that an individual with even a limited knowledge of nuclear physics would be able to deduce from the information available in Z Division that the implosion assembly compresses the fissionable material from a subcritical to an explosively supercritical condition."[14]

Does the exchange between Dickason and Smith make Seborer's otherwise "mundane" tale "one of history's most damaging" cases of espionage?[15] The known evidence doesn't support that conclusion. Atomic bombs are loaded with intricate secrets. Seborer would have had access to some of those secrets, such as the design of the detonating circuit, but only a very small fraction of them. For example,

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[12] Donald P. Dickason to Ralph Carlisle Smith, September 17, 1956, NSRC collection A-1999-019, box --, folder --. Most of the wartime memos pertaining to Seborer cited previously were originally declassified March 1, 1956; presumably, they were located and reviewed at the behest of the FBI.
[13] David Hawkins, Edith C. Truslow and Ralph Carlisle Smith, Manhattan District History: Project Y, The Los Alamos Story (Los Alamos: Los Alamos Scientific Laboratory, 1947).
[14] Ralph Carlisle Smith to Donald P. Dickason, September 18, 1956, NSRC collection A-1999-019, box --, folder --.
[15] New York Times, January 27, 2020.

Seborer would have known nothing about enriching uranium or producing plutonium; he would not have known much, if anything, about weapons physics. The largest division at the Laboratory was, by far, Chemistry and Metallurgy (CM); it's difficult to imagine Seborer was in a position to acquire any meaningful information pertaining to those crucial fields. So, did the information Oscar Seborer stole *surpass that of the three previously known Soviet spies at Los Alamos*? Was he the true father of the Soviet atomic bomb? No. But what role *might* the information he provided have played in the development of the Soviet atomic bomb?

In looking for a comparable case of espionage, one need not look far afield. Like Seborer, David Greenglass was a native of New York City who served as a T/4 in X Division. As a "semi-skilled" machinist, Greenglass was familiar with the shapes of the imploding bomb's HE charges and the process for casting them.[16] The information Greenglass and Seborer had access to, though quite different in nature, was roughly on par in terms of value: doubtlessly of interest, but limited in scope.

The discovery of Oscar Seborer's espionage is an immense addition to the historiography of the atomic spies, but it does not change the reigning narrative: Klaus Fuchs was the most devastating spy to betray the Manhattan Project. Unlike Hall, Greenglass or Seborer, Fuchs was a senior theoretical physicist. Before coming to the United States, he played an important part in the British weapons program. Because he was a member of the scientific staff at Los Alamos, he was able to attend cross-divisional technical meetings and had at least some knowledge pertaining to the work of every major Laboratory organization. The Times article claims Seborer "had an intimate understanding of the bomb's inner workings" but, at best, he only would have had an *intimate understanding* of a few electronic components. It was Fuchs who had a thorough knowledge of the implosion system's *inner workings*. Seborer *may* have known the basic theory of implosion, as Smith alluded to, but Fuchs was one of the very few who thoroughly understood the hydrodynamic processes that made it possible. Seborer's peers included his fellow SEDs; Fuchs' peers included his mentor, Rudolf Peierls, Hungarian mathematician John von Neumann, and future Nobel Laureate Hans Bethe.[17]

Arguably, the most difficult challenge of manufacturing an atomic bomb is producing fissionable material. Oak Ridge was responsible for enriching uranium and, like Seborer, Fuchs had worked there before coming to Los Alamos. Unlike Private Seborer, however, we know exactly what Fuchs did there. As a consultant to the Kellex Corporation, Fuchs played a part in designing the gaseous diffusion plant. He explains, "I developed the theory of the control system of such a plant, which was further amplified by the research group of Kellex and applied to the operation of the diffusion plant." He also provided suggestions for improving the plant's efficiency before coming to Los Alamos.[18] Fuchs was near-unique among senior researchers in that he had intricate knowledge of both weapons design and materials production.

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[16] Add reference for Greenglass' rank. In January 1945, 15 of X-4's SEDs were "skilled;" 7, like Greenglass, were "semi-skilled."

[17] Fuchs independently authored many Los Alamos reports and co-authored multiple reports with Bethe, his Division Leader. Seborer did not produce any Los Alamos reports.

[18] Klaus Fuchs, MD-H-1 Form for Klaus Fuchs, June 27, 1945, NSRC collection A-1984-019, box --, folder --.

Fuchs was also, undoubtedly, a genius. It's clear Oscar Seborer was quite intelligent and highly-thought of by his managers, but Fuchs was intellectually gifted. Rolf Landshoff, a German-born physicist who worked at Los Alamos during the war, once quoted an East German colleague as saying: "I have never before known a person who possesses such a marvelous ability to think in abstract terms," but he continued, "who is at the same time so helpless when it comes to either observe or evaluate reality."[19] That, in short, was Klaus Fuchs.

There is no denying Fuchs' decisive contribution to the Soviet weapons program. After the Cold War ended Yuli Khariton, one of the most senior Soviet scientists, wrote: " The whole Soviet people should be deeply grateful to Klaus Fuchs for the vast amount of information he provided Soviet physicists." Khariton even went further, suggesting Fuchs be given a medal.[20] Perhaps Khariton failed to mention Seborer because the latter had still not been publicly identified, but the reality is that the information Oscar Seborer had access to, when juxtaposed to Fuchs' contribution, was merely supplemental. There is no evidence to support the New York Times' claim that Seborer's espionage "played a crucial role in Moscow's ability to quickly replicate the complex device." There is abundant evidence, however, demonstrating that Fuchs' espionage did.

Why wasn't Seborer arrested and tried for espionage if the FBI believed he was a spy? Fuchs (CHARLES) and Greenglass (KALIBR) confessed to committing espionage and were each imprisoned for nearly a decade; they died in 1988 and 2014, respectively. Ted Hall escaped prosecution, but cryptically admitted his guilt in 1997. Two years earlier, the Venona Program's top secret decrypted Soviet cables were released: they clearly implied Hall, who died in 1999, was a spy code-named MLAD.[21] Unlike Fuchs, Hall and Greenglass, Seborer was never publicly acknowledged as a spy during his long life.

Though he was never convicted of espionage, the evidence of Oscar Seborer's guilt is cumulatively very convincing. On multiple occasions, Gibby Needleman informed his trusted communist comrade, Jack Childs, that Seborer was a spy: the problem for Needleman and Seborer was that Childs was an FBI informant.[22] In a conversation between the two that the FBI secretly recorded, Needleman told Childs: "Listen carefully. Oscar was in New Mexico-you know what I mean-I won't draw you a diagram."[23] There's more evidence as well. Journalist Alexander Vassiliev, who was given access to KGB archival material, kept multiple notebooks recording his research discoveries. The notebooks identify MLAD as Hall and KALIBR as Greenglass; they identify GODSEND as an asset at Los Alamos, but do not reveal his name. The Venona decrypts do not provide information pertaining to this particular

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[19] Rolf Landshoff to Carson Mark, March 21, 1962, NSRC collection A-1999-019, box --, folder --. Mark served as the head of the Los Alamos Theoretical Division from 19-- to 19--. Fuchs immigrated to East Germany after his release from prison in Britain. There, he was made Deputy Director of the Central Institute for Nuclear Research in Rossendorf.

[20] Yu. B. Khariton and Yu. N. Smirnov, Myths and Realities of the Soviet Atomic Bomb Program (Arzamas-16: All-Russian Scientific Research Institute of Experimental Physics), 4.

[21] Joseph Albright and Marcia Kunstel, "The Boy Who Gave Away the Bomb," The New York Times Magazine (September 14, 1997, Section 6), 70.

[22] The story of Jack Childs will be discussed in an upcoming article by Haynes and Klehr, "Protecting FBI Informants: The Case of Morris and Jack Childs."

[23] Haynes and Klehr, 3.

spy ring, known as "Relative's Group," but the Vassiliev notebooks confirm the group included three brothers (almost certainly Max, Stuart, and Oscar Seborer) and a woman (likely Stuart's wife Miriam) who were managed by an Amtorg Trading Corporation attorney (Needleman).[24]

So why wasn't Oscar Seborer arrested and tried for espionage? A few months after Julius and Ethel Rosenberg were sentenced to death for espionage, Oscar Seborer, his brother Stuart, Stuart's wife Miriam and Miriam's mother Anna quietly left the United States. The group casually travelled to various European countries and even went to Israel to visit Stuart and Oscar's parents, who had also left the US.[25] Ultimately, they immigrated to the Soviet Union. Stuart later divorced Miriam and married a Russian woman; Oscar married a Russian as well. Haynes and Klehr report both brothers were allowed to join the Communist Party of the Soviet Union and Oscar was even awarded the Order of the Red Star in 1964; a fairly common distinction, but a distinction nonetheless.[26] In short, Oscar Seborer was never prosecuted because he became a Soviet citizen before the FBI discovered he was a spy.

And what about Needleman? Why wasn't he prosecuted? Harvey Klehr explains: "The major reason that Needleman wasn't prosecuted was that it would have exposed Jack Childs. Virtually everything the FBI knew about Seborer, it got from Needleman's conversations with Jack. That was why it hesitated to launch a full-press investigation of Oscar and why it let Needleman skate." Klehr also speculates it's likely the FBI did not obtain a warrant before monitoring Needleman, thus the recorded evidence would not have been admissible in court.[27] Needleman died in 1975, having never served a day in prison; Jack Childs died in 1980, having never been exposed as an FBI informant.

On April 23, 2015 Oscar Seborer died in Moscow; Stuart attended the funeral.[28] Nearly five years later, Haynes and Klehr were given an award by the Central Intelligence Agency for finally unmasking him. Seborer now joins the ranks of Hall, Fuchs and Greenglass: traitors who were entrusted with some of the nation's most sensitive secrets and chose to share them with one of history's most prolific mass murderers, Joseph Stalin. Seborer may not have provided the most useful information to the Soviet nuclear weapons program, but his name will forever be remembered with contempt nonetheless.

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[24] Ibid., 10-11. Amtorg was a company that traded Soviet exports. In addition to Needleman, Amtorg also employed the notorious spy Morris Cohen.
[25] Ibid., 6-7.
[26] Ibid., 10.
[27] Personal communication with the author, 3/31/2020.
[28] Haynes and Klehr, 12.