tificially enriched with its active isotope beyond the proportion corresponding to its natural distribution in cadmium. The isotope of cadmium to be used in each instance depends upon the neutron energy employed. The choice is made by observing which gives the greatest effect.

The accompanying drawing is a diagrammatic representation of an embodiment of the invention. The neutron beam 2 emitted by the neutron source 1 passes through the investigated substance or body 3. The emerging neutrons 4 impinge upon the neutron reactive layer 5 which is enriched with the effective sort of isotopes beyond the proportion corresponding to its natural distribution in the respective elements. In this layer 5 the neutrons liberate charged particles or gamma rays which energize the adjacent layer 6 which consists of fluorescent or photo-sensitive material thus producing a visible or photographic image of the investigated substance or body 3.

We claim:

1. In a method of obtaining an image of an object by directing a beam of neutrons upon the object, causing the emergent beam of neutrons to impinge upon a layer comprising an element which reacts with neutrons to produce radiation, and forming a visible image of said object by means of the resulting radiation, the improvement which consists in using a neutron-reactive layer in which the neutron-reactive element thereof has been enriched with a neutron-reactive isotope of said element in an amount greater than the proportion of its natural distribution in said element.

2. In a method of obtaining an image of an object by directing a beam of neutrons upon the object, causing the emergent beam of neutrons to impinge upon a layer comprising an element which reacts with neutrons to produce radiation, and forming a visible image of said object by means of the resulting radiation, the improvement which consists in using a neutron-reactive layer in which the neutron-reactive element thereof has been enriched with a neutron-reactive isotope of said element in an amount greater than the proportion of its natural distribution in said element and in which the neutron-reactive isotope-enriched element is contained in said layer in the form of an emulsion.

3. In a method of obtaining an image of an object by directing a beam of neutrons upon the object, causing the emergent beam of neutrons to impinge upon a layer comprising an element which reacts with neutrons to produce radiation of charged particles, and forming a visible image of said object by means of the resulting radiation, the improvement which consists in using a neutron-reactive layer in which the neutron-reactive element thereof has been enriched with a neutron-reactive isotope of said element in an amount greater than the proportion of its natural distribution in said element.

4. The invention defined in claim 3, in which lithium which has been enriched with Li_3^6 beyond the proportion of its natural distribution in lithium constitutes the neutron-reactive element employed.

5. The invention defined in claim 3, in which boron which has been enriched with B_5^{10} beyond the proportion of its natural distribution in boron constitutes the neutron-reactive element employed.

6. A device for forming an image of the distribution of the intensity of a beam of neutrons, which comprises a layer containing an element which reacts with neutrons to produce radiation, said element having been enriched with a neutron-reactive isotope of said element in an amount greater than the proportion of its natural distribution in said element, and a substance sensitive to emitted radiation.

7. A device for forming an image of the distribution of the intensity of a beam of neutrons, which comprises a layer containing an element which reacts with neutrons to produce radiation, said element having been enriched with a neutron-reactive isotope of said element in an amount greater than the proportion of its natural distribution in said element, and a layer containing a substance sensitive to emitted radiation.

8. A device for forming an image of the distribution of the intensity of a beam of neutrons, which comprises a layer containing an element which reacts with neutrons to produce radiation, said element having been enriched with a neutron-reactive isotope of said element in an amount greater than the proportion of its natural distribution in said element, and a layer comprising fluorescent material sensitive to emitted radiation.

9. A device for forming an image of the distribution of the intensity of a beam of neutrons, which comprises a layer containing an element which reacts with neutrons to produce radiation, said element having been enriched with a neutron-reactive isotope of said element in an amount greater than the proportion of its natural distribution in said element, and a layer comprising photosensitive material sensitive to emitted radiation.

10. A device for forming an image of the distribution of the intensity of a beam of neutrons, which comprises a layer containing an element which reacts with neutrons to produce radiation of charged particles, said element having been enriched with a neutron-reactive isotope of said element in an amount greater than the proportion of its natural distribution in said element, and a substance sensitive to emitted radiation.

11. The device defined in claim 10, in which the neutron-reactive element is lithium which has been enriched with Li_3^6 beyond the proportion of its natural distribution in lithium.

12. The device defined in claim 10, in which the neutron-reactive element is boron which has been enriched with B_5^{10} beyond the proportion of its natural distribution in boron.

13. The device defined in claim 6, in which the neutron-reactive isotope-enriched element is contained in said neutron-reactive layer in the form of an emulsion.

14. A method of obtaining an image as defined in claim 1 in which the radiation is gamma radiation.

15. A method as defined in claim 1 in which the element is cadmium.

16. A device as defined in claim 6 in which the radiation is gamma radiation.

17. A device as defined in claim 6 in which the element is cadmium.

HARTMUT ISRAEL KALLMANN.
ERNST KUHN.

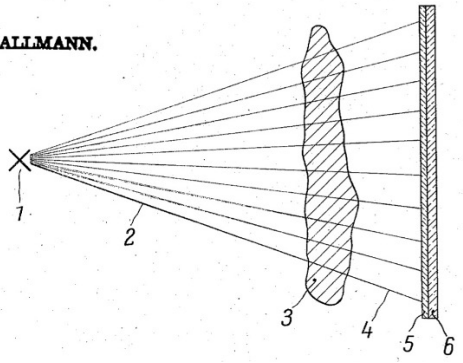

Figure D.611: Hartmut Kallmann and Ernst Kuhn, AEG and I.G. Farben. U.S. Patent 2,288,717. Method for Investigation of Substances with the Aid of Neutrons. Filed 10 March 1939. Issued 7 July 1942.

[NARA RG 77, Entry UD-22A, Box 171, Folder 32.7003-2 GERMANY: US Wartime Positive Int. (July–Oct. 44)]

C.S.D.I.C. (U.K.)
S.I.R. 1096

THIS REPORT IS SECRET

Report on information obtained from PW KP/126263 Gren CHRIST,
Fest Inf Bn 1408, captured at
ECHINGHEN nr BOULOGNE 19 Sep 44

NOTES ON ALLGEMEINE ELEKTRICITÄTS GESELLSCHAFT (AEG) HENNIGSDORF NEAR BERLIN, AND THE FOREIGN WORKERS' COLONY

PREAMBLE

1. PW is 40 years old and has been with the German Army for three months only. He was born in CZECHOSLOVAKIA and served with the Czech Army during 1924 and 1925. Shortly after the annexation of the SUDETENLAND PW was ordered to GERMANY and was employed in the lacquer factory of the AEG HENNIGSDORF near BERLIN. Late Feb 41 he was taken from the factory to occupy a post as an interpreter and supervisor among the Czechs in the newly-established Foreign Workers' Camp of the AEG, HENNIGSDORF. From that date until Jul 44 PW has been an active and observant official of this camp. He is very cooperative and the information is considered reliable.

I. NOTES ON AEG AND EMPLOYEES

2. The AEG plant in question is located at the Southern outskirts of HENNIGSDORF (GSGS 4414. 3345/7061 and 7062). (Popl. approx. 18,000). This plant is one of ten or eleven branches of the AEG in BERLIN and ever since PW can remember new buildings have been added, and today the plant comprises an estimated area of 800 x 400 m.

TAILPIECE

62. A 2-storey ordinary wooden barrack hut 8 x 8 m has been seen by PW, and on two occasions he had the opportunity of entering the building and talking to the electrician who takes care of the equipment. This electrician did not talk of the purposes of the station, and PW believed that it was most secret, but did mention several times that a voltage of one million must be reached before great results could be expected. By the end of Jun 44 they had come up from 120000 to 420000 volts.

63. Once or twice a week two professors and an engineer arrived at the station and during each visit PW saw the four 1½ inch cables from the building to the steel mast approx 80 m away begin to glow in various colours, usually, however, changing from bluish to green, accompanied by a low hum of great intensity. The visitors stayed for 1½ to 2 hours, the test itself lasting approx 15 mins. Shortly after a test PW went to see his friend, the electrician, and heard him say that each test cost RM 24 in electricity alone. Then PW watched him cleaning spherical containers, removing heavy metal bars from each one and putting them into troughs of acid. Each container had a mirror fixed on top which stood at an angle of 45° and which turned through 90° the line of sight from a telescope some 10 feet away to the small mica covered opening at the top of each container.

64. There were four such spherical containers of different sizes and PW states that he observed that the smallest one, approx 1 m in diameter, was used that day in Jun 44. The size of the others ranged between approx 1 m to 2 m in diameter but otherwise they were identical. The cables leading from an amplifier to each one of the spheres were about the same size but the cables leading from the spheres to heavy insulator and apparently farther to the steel mast were considerably heavier from the 2 m sphere than from the 1 m sphere.

65. Upon being prompted PW suddenly remembered that the electrician at the station had used the terms cyclotron and atom splitting.

Information received in ALSOS Mission by Dr.
W. F. Colby from Scientific Branch, MIS 11-11-44

Major Smith

[See document photo on p. 4304.]

C.S.D.I.C.(U.K.)
S.I.R. 1095

THIS REPORT IS SECRET

Report on information obtained from PW KP/126263 Gren CHRIST, Fest Inf Bn 1408, captured at ECHINGHEN nr BOULOGNE 19 Sep 44

NOTES ON ALLGEMEINE ELEKTRIZITATS GESELLSCHAFT (AEG) HENNIGSDORF NEAR BERLIN, AND THE FOREIGN WORKERS' COLONY

PREAMBLE

1. PW is 40 years old and has been with the German Army for three months only. He was born in CZECHOSLOVAKIA and served with the CZech Army during 1924 and 1925. Shortly after the annexation of the SUDETENLAND PW was ordered to GERMANY and was employed in the lacquer factory of the AEG HENNIGSDORF near BERLIN. Late Feb 41 he was taken from the factory to occupy a post as an interpreter and supervisor among the Czechs in the newly-established Foreign Workers' Camp of the AEG, HENNIGSDORF. From that date until Jul 44 PW has been an active and observant official of this camp. He is very cooperative and the information is considered reliable.

I. NOTES ON AEG AND EMPLOYEES

LOCATION 2. The AEG plant in question is located at the Southern outskirts of HENNIGSDORF (GSGS 4414. 3345/7061 and 7062). (Pop approx. 18,000). This plant is one of ten or eleven branches of the AEG in BERLIN and ever since PW can remember new buildings have been added, and today the plant comprises an estimated area of 800 x 400 m.

TAILPIECE

EXPERIMENTAL STATION GSGS 4414/3345: 69826018

62. A 2-storey ordinary wooden barrack hut 8 x 8 m has been seen by PW, and on two occasions he had the opportunity of entering the building and talking to the electrician who takes care of the equipment. This electrician did not talk of the purposes of the station, and PW believed that it was most secret, but did mention several times that a voltage of one million must be reached before great results could be expected. By the end of Jun 44 they had come up from 120000 to 420000 volts.

63. Once or twice a week two professors and an engineer arrived at the station and during each visit PW saw the four 1½ inch cables from the building to the steel mast approx 80 m away begin to glow in various colours, usually, however, changing from bluish to green, accompanied by a low hum of great intensity. The visitors stayed for 1½ to 2 hours, the test itself lasting approx 15 mins. Shortly after a test PW went to see his friend, the electrician, and heard him say that each test cost RM 24 in electricity alone. Then PW watched him cleaning spherical containers, removing heavy metal bars from each one and putting them into troughs of acid. Each container had a mirror fixed on top which stood at an angle of 45° and which turned through 90° the line of sight from a telescope some 10 feet away to the small mica covered opening at the top of each container.

64. There were four such spherical containers of different sizes and PW states that he observed that the smallest one, approx 1 m in diameter, was used that day in Jun 44. The size of the others ranged between approx 1 m to 2 m in diameter but otherwise they were identical. The cables leading from an amplifier to each one of the spheres were about the same size but the cables leading from the spheres to heavy insulator and apparently farther to the steel mast were considerably heavier from the 2 m sphere than from the 1 m sphere.

65. Upon being prompted PW suddenly remembered that the electrician at the station had used the terms cyclone and atom splitting.

Information received in ALSOS Mission by Dr. W. F. Colby from Scientific Branch, MIS 11-11-44

Major Smith

Figure D.612: C.S.D.I.C. (U.K.) S.I.R. 1095 [NARA RG 77, Entry UD-22A, Box 171, Folder 32.7003-2 GERMANY: US Wartime Positive Int. (July–Oct. 44)]

G-367. Wolfgang Ferrant. Proposal for a New Method of Releasing Nuclear Energy by a Beam of Heavy Particles. 1945. pp. 13, 21, 23–24, 35.

Unfortunately it was not possible to make use of the correct density figure for Li D in making the computation ($\rho = 1$ was merely estimated); because my books, photostats, and notes were left behind, in part, in Dresden, together with my laboratory (13–14 February) where they were burned, and in part this material was left behind in the Russian Zone. [...]

1. Suitable Substances

Our purpose was to produce, within an extensive reaction area which contains a very large number of atoms capable of reacting, a temperature or an almost entirely uncoordinated heat motion, such as prevails on the stars. At the same time, the density of the reacting material should be as great as possible.

Under these circumstances atomic reactions will occur[...]

The decision in this matter involves an additional demand we must make upon the reacting mass: the demand that this mass should be ionizable in its totality with the lowest possible expenditure of energy.

2. THE PROBLEM OF KEEPING THE WORK OF IONIZATION AT A MINIMUM

However, the choice is in fact restricted to lithium, the latter being a substance which does not carry more than three enveloping electrons. Moreover, the lithium readily combines with heavy hydrogen to form a hydride: LiD. The compound, that is the lithium D hydride, contains a total of only four electrons, so that the total work of ionization is, at worst, only a small amount.

All aside from other considerations, lithium D hydride is well suited as the choice of substance both for the "large particles" and for the recipient substance, not only because heavy hydrogen participates in the atomic reaction, but also because the lithium, likewise, participates. The following reactions are to be anticipated: ${}^{2}_{1}\mathrm{D(d,n)}{}^{3}_{2}\mathrm{He}$; ${}^{2}_{1}\mathrm{D(d,p)}{}^{3}_{1}\mathrm{H}$ and ${}^{6}_{3}\mathrm{Li(d,p)}{}^{7}_{3}\mathrm{Li}$; ${}^{6}_{3}\mathrm{Li(d,}\alpha\mathrm{)}{}^{4}_{2}\mathrm{He}$; ${}^{7}_{3}\mathrm{Li(d,n)}{}^{4}_{2}\mathrm{He}$.

There occurs in the reaction area a formation of charged particles α, p, but also a formation of neutrons that can easily split off. Our method, therefore, results directly in the creation of a source of neutrons of greatest intensity.

This method, consequently, has nothing to do, directly, with the splitting of the uranium atom.

Advantage will be taken, of course, of Hahn's discovery; especially when the purpose is to obtain pure energy, and not merely to obtain neutrons and an incidental supply of energy.

If the purpose is to obtain energy alone, the neutrons formed will be utilized in splitting the uranium atom; and in that manner extraordinary amounts of energy will be liberated, as a first product, by way of the neutrons.

The lithium-D-hydride, recipient, therefore, will be surrounded by a coat of uranium.

Quite possibly a special advantage could be obtained by adding a quantity of uranium D compound to the "large particles" and to the recipient mass; because in this manner a considerable amount of energy will be given off by uranium fragments located within the reaction area, and this state of affairs might possibly result in further increases of temperature within the reaction area. [...]

4. SELF HEATING

Under this subject it will be necessary to distinguish between two types of cases: Self heating of the reaction area, and self heating in the reaction field outside the reaction area proper.

1) If a very great number of atomic reactions comes about within the reaction area itself, the particles charged as a result of these reactions (α, p) will produce heat within the reaction area, increasing the latter's temperature until the entire material within the reaction area is consumed.

2) The alpha rays and protons of high energy resulting from the atomic reactions will pass through the reaction area, penetrating to the latter's "wall;" and they will penetrate much more deeply than the D and Li atoms, since the alpha rays and protons are much richer in energy.

If the alpha, p particles occur in such large numbers about the environs of the reaction area become ionized and heated, there will be formed an external reaction zone within which atomic reactions may likewise occur. Finally, the outer reaction zone will assume such dimensions that even the alpha rays and protons forming the reactions no longer leave that zone, and are compelled by the magnetic field to move along circular paths.

If an external reaction zone of this nature is developed, there will result an explosion of the entire LiD mass, since the external reaction zone is capable of enlarging itself on the strength of its own energy production.

[See document photos on pp. 4308–4312.

Wolfgang Ferrant wrote this report after the war, apparently at the behest of the U.S. Alsos Mission. The report seems to have been based on wartime work that Ferrant conducted, participated in, or was aware of, and he complained in this report that he did not have access to any wartime documents in order to more accurately reconstruct the scientific details.

In writing this report, Ferrant appears to have censored himself and/or to have been censored by U.S. officials. The report primarily focused on proposed methods for controlled fusion reactors using magnetic confinement, and it was amazingly prescient on that topic. However, the report also touched on applications to nuclear explosives, and its insights in that direction were extraordinary. Specifically, the report described:

- Using lithium deuteride as a storable solid fusion fuel with excellent physics properties.

- Harnessing a number of fusion reactions that can occur within the lithium deuteride fuel. Ferrant omitted the ${}^{6}_{3}\mathrm{Li}(\mathrm{n},\alpha){}^{3}_{1}\mathrm{H}$ reaction from his list, likely either because he wrote this report without access to any wartime papers or because he was censored or self-censored. Nonetheless, two of his research colleagues at AEG, Hartmut Kallmann and Ernst Kuhn, filed a patent featuring that reaction in 1939 (p. 4298), so the reaction would have been known to Ferrant.

- Initiating fusion reactions in the lithium deuteride by creating sufficiently high initial temperatures, pressures, and densities in the fuel.

- Creating an explosive chain reaction in which fusion reactions within a small region of the lithium deuteride produce enough radiation, heat, and pressure to induce fusion reactions in surrounding regions of the lithium deuteride.

- Producing large amounts of high-energy fusion neutrons from reactions in the lithium deuteride.

- Surrounding the lithium deuteride with a layer of uranium that would absorb the fusion neutrons, undergo fission reactions, and greatly increase the total energy that is released.

- Utilizing the fission reactions in the uranium to increase the heat and pressure and therefore the fusion reaction rate in the lithium deuteride.

All of these details are directly relevant for producing a hydrogen bomb. Ferrant's report demonstrates that all of these details were known and being actively utilized in wartime Germany.

What exactly did Ferrant work on throughout the war?

During the early part of the war, he worked at AEG in Berlin, alongside Hartmut Kallmann and Ernst Kuhn.

In this report, he mentioned working at a nuclear laboratory in Dresden. (There was at least one independent report of a nuclear laboratory in Dresden, which was apparently part of a secret Reichspost/SS collaboration on nuclear weapons—see p. 4507.) Ferrant referred to the U.S./U.K. firebombing of Dresden on 13–14 February 1945.

In this report, Ferrant also referenced a letter he had written in Linz in September 1945, so he apparently was working in Austria at the end of the war, or had connections there earlier in the war too. With whom did he work in Austria? AEG had its own "Bauleitung" (construction directorate) at St. Georgen/Gusen near Linz, and St. Georgen appears to have been involved in nuclear work (p. 3874). Did Ferrant work or visit there during the war?

Did Ferrant tell U.S. officials anything that is not in this report? Did he write an uncensored, more highly classified version of this report, or divulge more details in classified interrogations?

After the war, where did Ferrant work, and what did he work on?

Can additional information be located in archives, and declassified if necessary?]

E-1040
German
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For distance ranges in the lithium D hydride, corresponding equations will be found simply by computing the density[1] in inverse proportion.

Distance ranges in Lithium D hydride

$$R_\alpha = 1.16 \cdot 10^{-30} v_\alpha^3$$
$$R_D = 2.395 \cdot 10^{-30} v_D^3$$
$$R_{Li} = 1.03 \cdot 10^{-30} v_{Li}^3$$

$\rho = 1$

---

[1] Unfortunately it was not possible to make use of the correct density figure for Li D in making the computation ($\rho = 1$ was merely estimated); because my books, photostats, and notes were left behind, in part, in Dresden, together with my laboratory (13-14 February) where they were burned, and in part this material was left behind in the Russian Zone. I do remember taking notes from an old publication where a compound richer in hydrogen is described, that is, richer in hydrogen than Li H. A compound of this type, of course, would be better suited for our method. I was unable to obtain here the literature on that subject.

For D atoms and Li atoms derived from a large particle which has a velocity of $v_T = 1{,}03.10^8 \text{ cm/s}$, ($F_T = 10^8 \text{ volt/cm}$, V = 100 volts U = 20 MV) we get the following equations for:

The Distance range of D atoms and Li atoms in Lithium D hydride

$$R_D = 2.62 \cdot 10^{-6} \text{ cm}$$
$$R_{Li} = 1{,}13 \cdot 10^{-6} \text{ cm}$$

(By way of comparison we would obtain for the distance range of Ra C^1_α particles in Li D hydride: $8.28 \cdot 10^{-3}$ cm)

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Figure D.613: Excerpts from Wolfgang Ferrant's report G-367 (1945), revealing advanced scientific knowledge of details that are directly applicable to H-bombs [Deutsches Museum Archive FA 002/700].

Deutsches Museum Archive. FA 002/700. Wolfgang Ferrant, G-367, 1945.

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SECRET

tubes H'_1 H'_2 H'_3 ... The first of these cascade is operated with a frequency of v, and the second with a frequency of 2v. Under this procedure, the higher frequency is produced from the lower by means of frequency-doubling, so that the two cascades vibrate in dependency on one another. The frequency-doubling and the coupling of the cascades is effected in the usual, familiar manner.

V. THE TYPES OF ATOMIC PROCESS

1. Suitable Substances

Our purpose was to produce, within an extensive reaction area which contains a very large number of atoms capable of reacting, a temperature or an almost entirely uncoordinated heat motion, such as prevails on the stars. At the same time, the density of the reacting material should be as great as possible.

Under these circumstances atomic reactions will occur; and these reactions will enjoy the advantage of optimum exploitation of the energies present, since there is no possibility of energy losses from the thrusting atoms, due to the fact that all of the atoms present have as an average the same kinetic energy. Consequently it cannot happen that any of the thrusting atoms of great energy collide continually with particles possessed of lower energy, thus constantly losing energy even if no atomic reactions occur. If the mass within the reaction area is ionized, the thrusting atoms, again, are no longer capable of giving off ionization energy.

Formation of an ionized reaction area presupposes the existence of a fairly large area containing a great number of atoms which likewise are in a condition of thermic movement.

It is worth mentioning, briefly, and by way of contrast, how unfavorable conditions are when the ordinary experimental arrangement is adopted. Thus if α particles, deuterons, or protons are greatly accelerated, and these rays are

Figure D.614: Excerpts from Wolfgang Ferrant's report G-367 (1945), revealing advanced scientific knowledge of details that are directly applicable to H-bombs [Deutsches Museum Archive FA 002/700].

Deutsches Museum Archive. FA 002/700. Wolfgang Ferrant, G-367, 1945.

E-1040
German
SECRET

The decision in this matter involves an additional demand we must make upon the reacting mass: the demand that this mass should be ionizable in its totality with the lowest possible expenditure of energy.

2. THE PROBLEM OF KEEPING THE WORK OF IONIZATION AT A MINIMUM

However, the choice is in fact restricted to lithium, the latter being a substance which does not carry more than three enveloping electrons. Moreover, the lithium readily combines with heavy hydrogen to form a hydride: LiD. The compound, that is the lithium D hydride, contains a total of only four electrons, so that the total work of ionization is, at worst, only of small amount.

All aside from other considerations, lithium D hydride is well suited as the choice of substance both for the "large particles" and for the recipient substance, not only because the heavy hydrogen participates in the atomic reaction, but also because the lithium, likewise, participates. The following reactions are to be anticipated: ${}_1{}^2D(d,\alpha){}_2{}^3He$; ${}_1{}^2D(d,p){}_1{}^3H$ and ${}_3{}^6Li(d,\alpha){}_3{}^7Li$; ${}_3{}^6Li(\alpha,\alpha){}_2{}^4He$; ${}_3{}^7Li(d,\alpha){}_2{}^4He$.

There occurs in the reaction area a formation of charged particles α, p, but also a formation of neutrons that can easily split off. Our method, therefore, results directly in the creation of a source of neutrons of greatest intensity.

This method, consequently, has nothing to do, directly, with the splitting of the uranium atom.

Advantage will be taken, of course, of Hahn's discovery; especially when the purpose is to obtain pure energy, and not merely to obtain neutrons and an incidental supply of energy.

If the purpose is to obtain energy alone, the neutrons formed will be utilized in splitting the uranium atom; and in that manner extraordinary amounts of energy will be liberated, as a first product, by way of the neutrons.

Figure D.615: Excerpts from Wolfgang Ferrant's report G-367 (1945), revealing advanced scientific knowledge of details that are directly applicable to H-bombs [Deutsches Museum Archive FA 002/700].

Deutsches Museum Archive. FA 002/700. Wolfgang Ferrant, G-367, 1945.

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The lithium-D-hydride, recipient, therefore, will be surrounded by a coat of uranium.

Quite possibly a special advantage could be obtained by adding a quantity of uranium D compound to the "large particles" and to the recipient mass; because in this manner a considerable amount of energy will be given off by uranium fragments xxx located within the reaction area, and this state of affairs might possibly result in further increases of temperature within the reaction area. Of course, a tremendous energy is required to obtain complete ionization of the uranium atom. Unfortunately I am unable correctly to estimate at this time whether an admixture of uranium would in the end be profitable or not. 1) Because it might happen that the energies to be expended in complete ionization of the uranium admixture are of such magnitude that temperatures in the reaction area would drop to a point where the reaction could not xxxxxx get under way.

1) To make such forecast, it would be necessary to have on hand the requisite tables and numerical data, such as could be obtained, for instance, from the tables of nuclear physics. But these tables are no longer obtainable. This defect, I hope, will not prove highly detrimental, however, so far as the basic ideas for our method are concerned.

VI LOCALIZATION OF THE ENERGY

1. Extent of the Ionized Areas; Walls of the Reaction Area.

It is of the very essence of our method to concentrate the energy upon a small, but not too small area; and this purpose is achieved by making use of the "large particles."

Now the question arises whether a completely ionized reaction area is in any way stable.

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Figure D.616: Excerpts from Wolfgang Ferrant's report G-367 (1945), revealing advanced scientific knowledge of details that are directly applicable to H-bombs [Deutsches Museum Archive FA 002/700].

Deutsches Museum Archive. FA 002/700. Wolfgang Ferrant, G-367, 1945.

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Moreover, the path radii obtained are smaller than the reaction area, so that the localization of energy is actually effected.

4. SELF HEATING

Under this subject it will be necessary to distinguish between two types of cases: Self heating of the reaction area, and self heating in the reaction field outside the reaction area proper.

1) If a very great number of atomic reactions comes about within the reaction area itself, the particles charged as a result of these reactions (α, p) will produce heat within the reaction area, increasing the latter's temperature until the entire material within the reaction area is consumed.

2) The alpha rays and protons of high energy resulting from the atomic reactions will pass through the reaction area, penetrating to the latter's "wall;" and they will penetrate much more deeply than the D and Li atoms, since the alpha rays and protons are much richer in energy.

If the alpha,p particles occur in such large numbers about the environs of the reaction area become ionized and heated, there will be formed an external reaction zone within which atomic reactions may likewise occur. Finally, the outer reaction zone will assume such dimensions that even the alpha rays and protons forming the reactions no longer leave that zone, and are compelled by the magnetic field to move along circular paths. 1)

If an external reaction zone of this nature is developed, there will result an explosion of the entire Li D mass, since the external reaction zone is capable of enlarging itself on the strength of its own energy production.

1) Always understood in large quantities, since particles moving in the direction of the magnetic field strength are capable of leaving the reaction area.

SECRET

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Figure D.617: Excerpts from Wolfgang Ferrant's report G-367 (1945), revealing advanced scientific knowledge of details that are directly applicable to H-bombs [Deutsches Museum Archive FA 002/700].

G-76. G. von Droste. The Absorption Cross Section of Boron and Lithium for Thermal Neutrons. 1941.

Boron absorption cross section = 545 barns. Lithium = 55.6 barns.

G-298. Karl G. Zimmer and Otto Peter. Radiobiological Investigations with Fast Neutrons. 1944.

Biological effects were compared with 180 kV x-ray and Li + D fast neutron total body irradiations on blood, haemopoietic organs and male gonads of rats. Fast neutrons cause noticeable radiation injuries with much smaller dosages than x rays. Effects of intensity of radiation could not be detected in the range of fast neutrons investigated. Secondary radiation injuries in the blood were found for prolonged periods after radiation and speedy recovery after irradiation with neutrons cannot be expected. Urgency of further investigations and determinations of tolerance dosages are emphasized in the interest of personnel working in nuclear physics installations.

G-387. Siemens & Halske Corporation. Cost Estimates for the 1000 kV Neutron Generator for the University of Vienna. 1941–1942.

Blueprints, photographs, and cost estimates for a neutron generator for the Institute of Radioactivity Research of the University of Vienna are included in this report.

Research Work Undertaken by the German Universities and Technical High Schools for the Bevollmaechtigter fuer Hochfrequenztechnik; Independent Research on Associated Subjects [CIOS XXXI-2 p. 74]

[...]

II. PROF. SIZOO of the VRIJE UNIVERSITEIT AMSTERDAM supplied the following information regarding BÖTTCHER:

BÖTTCHER'S early work was on light alloys and he had been making X ray investigations. PROF. VON STOKAR, the former German head of Education in APELDOORN had told Prof. SIZOO that BÖTTCHER was working in Holland because a very important institute in Germany had been bombed (thought to be an S.S. institute) and BÖTTCHER apparently had great plans for rebuilding this institute in Doetinchem. STOKAR also said that BÖTTCHER was working under the auspices of a research organization controlled by GÖRING. When asked about the nature of the work, STOKAR would give very little information but did say to Prof. SIZOO "Das hängt mit neuem Waffen zusammen" (It has to do with new weapons). When asked by Prof. SIZOO why his Neutron generator must be taken by BÖTTCHER, STOKAR had inferred that the Germans were getting as many of these generators as they could; he also said that the installation of Prof. JOLIOT in PARIS (Mme. Curie Laboratory) was being used by the Germans, mentioned installations in COLOGNE and BERLIN and also said that two Neutron generators working with 1,000,000 Volts had been made in HAMBURG (MÜLLER factory) but one of them had been destroyed. Prof. SIZOO was impressed by the fact that STOKAR—a classical scholar—should know so much about the distribution of these equipments in Europe, and concluded that the S.S. placed high importance on obtaining Neutron generators.

[...] It was suggested by Prof. SIZOO that information regarding the attitude of the S.S. to the subject generally and also further information on what has been done in producing NEUTRON and CYCLOTRON generators could be obtained from the former Chief of the Röntgen dept. of PHILIPS, Dr. BOUWERS now with the OPTISCHE INDUSTRIE, OUDE DELFT.

DATE OF ASSESSMENT 14 May 1945.

ASSESSOR'S (NAME'S) F.W. Trenouth, Capt. REME. Army Group 21.

[See document photo on p. 4315.]

CIOS XXXI-2 p. 74

CONFIDENTIAL

PROF.SIZOO of the VRIJE UNIVERSITEIT AMSTERDAM
(Laressestraat 174)
Had to provide a Neutron Generator.

II. PROF. SIZOO of the VRIJE UNIVERSITEIT AMSTERDAM supplied the following information regarding BUTCHER:

BUTCHER'S early work was on light alloys and he had been making X ray investigations. PROF. VON STOKAR, the former German head of Education in APELDOORN had told Prof. SIZOO that BUTCHER was working in Holland because a very important institute in Germany had been bombed (thought to be an S.S. institute) and BUTCHER apparently had great plans for rebuilding this institute in Doetinchem. STOKAR also said that BUTCHER was working under the auspices of a research organisation controlled by GORING. When asked about the nature of the work, STOKAR would give very little information but did say to Prof. SIZOO "Das hangt mit neuem Waffen zusammen" (It has to do with new weapons). When asked by Prof. SIZOO why his Neutron generator must be taken by BUTCHER, STOKAR had inferred that the Germans were getting as many of these generators as they could; he also said that the installation of Prof. JOLIOT in PARIS (Mme. Curie Laboratory) was being used by the Germans, mentioned installations in COLOGNE and BERLIN and also said that two Neutron generators working with 1,000,000 Volts had been made in HAMBURG (MULLER factory) but one of them had been destroyed. Prof. SIZOO was impressed by the fact that STOKAR - a classical scholar - should know so much about the distribution of these equipments in Europe, and concluded that the S.S. placed high importance on obtaining Neutron generators.

Prof. SIZOO'S own opinion on the subject generally was that neither the German nor Dutch expert scientists considered the discovering of a powerful new weapon using atomic energy likely in the near future, but that the German S.S. had great faith in such a discovery eventually, thence they were trying to promote the maximum of research work in this direction. The propaganda value of the investigations was also probably very high in certain circles in Germany. Prof. SIZOO had not a very high opinion of BUTCHER'S capabilities and was certain that he had not achieved any measure of success either at LEIDEN or DOETINCHEM. It was suggested by Prof. SIZOO that information regarding the attitude of the S.S. to the subject generally and also further information on what has been done in producing NEUTRON and CYCLOTRAN generators could be obtained from the former Chief of the Rontgen dept. of PHILIPS, Dr. BOUWERS now with the OPTISCHE INDUSTRIE, OUDE DELFT.

DATE OF ASSESSMENT 14 May 1945.

ASSESSOR'S (NAME'S) F.W. Trenouth, Capt. REME. Army Group 21.

-74-

Figure D.618: Research Work Undertaken by the German Universities and Technical High Schools for the Bevollmaechtigter fuer Hochfrequenztechnik; Independent Research on Associated Subjects [CIOS XXXI-2 p. 74]

Visit to Eindhoven, Holland, October 1944 [CIOS X-13 Appendix B]

Developments in Germany of Radiological Apparatus and Applications

Very little real information was known at Philips, Eindhoven, Holland, or in German occupied countries but the following points were notes as being potentially interesting: [...]

3. Dr. Böttcher, Research Station at Doetinchem, Holland, is stated to have collected ultra-high voltage X-ray apparatus up to 5 million volts.

4. F. Kirchner (Köln) is reported to have built a 5 million volt Van de Graaff machine.

5. Mattauch & Hahn, Kaiser Wilhelm Institut (Berlin-Dahlem) are said to have built similar machines.

The same Institute is reputed to have in operation a 2 million volt Müller Cascade generator.

6. K.W. Institut für Hirnforschung (Berlin Buch)

Dr. Karl Zimmer is known to have been working on a neutron generator of 600 k.v. and in one of his laboratories there was seen in July, 1943, a few boxes (20 x 30 x 30 cms) filled with Uranium.

It is not known whether any work was done on the separation of isotopes of Uranium.

7. Dr. W. Heisenberg, Siemens, Berlin Dahlem, said to have built special H.T. plant.

8. Dr. W. Bothe, Heidelberg & Dr. G. Herk, Siemens-Gesellschaft said to be operating several cyclotrons.

9. Dr. K. Clusius, Breslau, said to be engaged on the problem of separating isotopes of Uranium.

[See document photos on p. 4317.]

CIOS X-13 Appendix B

Appendix B

Armament Research Dept.
Halstead Place,
Halstead,
Nr.Sevenoaks, Kent.

Developments in Germany of Radiological Apparatus and Applications

Very little real information was known at Philips, Eindhoven, Holland, or in German occupied countries but the following points were notes as being potentially interesting:-

1. The Broere Foundry, situated in Amsterdam opposite the Blookers Cocoa Factory, Omval, had X-ray industrial equipment delivered early last year on the very highest priority. It was thought to be in connection with V 2 projectiles.

Similar apparatus was delivered to Warsitz Werke, Valckenierstraat 69-87. Amsterdam.

2. Ruhrstahl., Annen., Witten-Armen (Ruhr) Commisair Lindner is stated to have special X-ray plant for the examination of V 2 parts.

3. Dr. Böttcher, Research Station at Doetinchem, Holland, is stated to have collected ultra-high voltage X-ray apparatus up to 5 million volts.

4. F. Kirchner (Köln) is reported to have built a 5 million volt Van de Graaff machine.

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Figure D.619: Visit to Eindhoven, Holland, October 1944 [CIOS X-13 Appendix B]

CIOS XXVIII-31. ***Investigation of the X-Ray Industry in Germany.*** [See document photos on pp. 3957–3970.]

During the past two years, C. H. F. Müller has constructed and delivered five "neutron generators". Three of these were rated at 1.5 megavolts, one at 1.2 megavolts, and one at .9 megavolts. They have on order, but have not yet completed, one additional neutron generator rated at .9 megavolts and another rated at 2.4 megavolts. These "neutron generators", or "deuteron accelerators", accelerate ionized heavy hydrogen against a beryllium or a lithium target. The neutron output at .9 megavolts when using a beryllium target was estimated to be equivalent to the neutron output of 2 kilograms of radium plus beryllium [$3.0 \cdot 10^{10}$ neutrons/sec]; when using a lithium target, 3 kilograms [$4.6 \cdot 10^{10}$ neutrons/sec]; when using a beryllium target at 1.5 megavolts, 13 kilograms [$2.0 \cdot 10^{11}$ neutrons/sec]; when using a lithium target, 8 kilograms [$1.2 \cdot 10^{11}$ neutrons/sec].

The Phillips "cascade" circuit was used for these neutron generators. Although the electrical output of these generators could be as high as 5 ma., the ion source limited this equipment to 0.8 ma. for continuous operation, regardless of the voltage.

CIOS ER 63. [AFHRA folder 506.6202 Nr. 1–99 20 Apr–13 Jun 1945, IRIS 207658; AFHRA A5189 frames 0708–0709] [See document photo on p. 4319.]

INTERROGATION OF DR. HANS RITZ

MANAGING DIRECTOR OF C.H.F. MÜLLER AT RÖNTGENSTRASSE,

FUHLSBÜTTEL, HAMBURG

May 11, 1945

In November and December 1945, Ritz was experimenting in the manufacture of infra red tubes to be installed in a mobile set for use by the Wehrmacht. Though all three services were probably interested in his production Ritz came into contact only with the army. He was working in conjunction with the firm of A.E.G. Berlin and delivered to them and to the Wehrmacht itself. His factory is located in Greiz, Thüringen. [...]

The firm also has a factory at Freiburg in Schlesien.

Ritz also proudly stated that he had been engaged on research work connected with splitting the atom and hinted that this was far enough advanced for the Europeans to combine forces and develop this "terrific" potential energy for use in any future war with the Asiatics. The subject was not pursued owing to the complete lack of knowledge on the part of the interrogator.

Robert R. Furman to John Lansdale Jr. and Francis J. Smith. 7 June 1945. [NARA RG 77, Entry UD-22A, Box 169, Folder 32.32. Germ. Ind. TA] [See photo p. 4320.]

1. The interrogation of Dr. Hans Ritz revealed that Ritz was experimenting in the manufacture of infra-red tubes which was his main scientific research project. However, the following is quoted from a CIOS report of 11 May 1945 made by S. Wheeler, Captain, R. M. (It should be recalled that Müller had a small tonnage of U_3O_8). [...]

~~CONFIDENTIAL~~

INTERROGATION OF DR. HANS RITZ

MANAGING DIRECTOR OF C.F.H. MULLER AT RONTGENSTRASSE,

FUHLSBUTTEL, HAMBURG

May 11, 1945

In November and December 1944, Ritz was experimenting in the manufacture of infra red tubes to be installed in a mobile set for use by the Wehrmacht. Though all three services were probably interested in his production Ritz came into contact only with the army. He was working in conjunction with the firm of A.E.G. Berlin and delivered to them and to the Wehrmacht itself. His factory is located in Greiz, Thuringen. In December he returned to Hamburg and remained in touch with Griez which carried on production until, he thinks, about April when our bombing of communications virtually paralysed it.

Ritz would at first not commit himself on the use of his infra red tubes, insisting that they could be built in to almost any kind of set and stating that his job was merely to produce them. Eventually however, he became so keen to show how advanced this type of research in Germany had become that he gave his opinion on their application. Stressing the compactness of the set whose vital part he had produced Ritz explained how tanks blind and tactically useless at night could when fitted with infra red be enabled to "see in the dark" - this by means of an infra red receiver and an infra red searchlight (thelatter either fitted to the tank or vehicle - of. Leigh Light - or independently operated from a flank of. "Artificial moonlight".) Ritz gave the impression that this was the actual intention of the Wehrmacht by his eagerness to convince his hearers that with a little more time this might have been a weapon for which, used for example in a night attack at the start of the counter offensive, it would have been difficult to find an immediate antidote. He assumes that if it was never used in action the reason could only be that in order to take full advantage of the element of surprise the German Army had decided to delay its appearance until sufficient had been produced to equip a large number of vehicles. Discussing other applications Ritz mentioned the detection of aircraft and Naval gunnery control at night. The latter cases did not, however, seem to interest him so deeply and it is considered that he was not, so far as his knowledge goes, working on a set destined for use by the Navy.

Range of the set when relying on radiated heat as opposed to "recording" and image illuminated by an infra red lamp is given as 10-15 Kilometers under good conditions. Ritz expressing the hope that the benefits of his work fall into the hands of the Americans and not into those of the Russians, states that the sets must still be available at Greiz (sic)

Production figures he estimates roughly as being between 50-100. A.E.G. Berlin are, according to Ritz, the big infra red people. He recommends Dr. Meyer of Berlin as a man with most expert knowledge of the subject. Kugler the Berlin director, is more the organizer. The firm also has a factory at Freiburg in Schlesien.

Ritz also proudly stated that he had been engaged on research work connected with splitting the atom and hinted that this was far enough advanced for the Europeans to combine forces and develop this "terrific" potential energy for use in any future War with the Asiatics. The subject was not pursued owing to the complete lack of knowledge on the part of the interrogator.

Informant denied all knowledge of export of infra red to Japan. He did not consider it likely that the Germans would part with any new apparatus in this line though admitted that elementary material such as was used by the Italians may well have been sent without his knowledge.

I.O.'s note. Though now inclined to co-operate with British and Americans, Ritz cannot get rid of the idea that by giving us information which we might pass on to the Russians he is stabbing Europe and Civilization in the back. Professes however to have no love for the Japs, so this appears to be the line. Probably has an exaggerated idea of the importance of his work but it is strongly recommended that he be interrogated by an expert. He is at present in custody in the factory at Fuhlsbuttel. If released he will be available at short notice.

(signed)
S. Wheeler, Capt. R.M.

Figure D.620: Dr. Hans Ritz, the managing director of C. H. F. Müller, admitted that the company had been making components suitable for use in nuclear weapons. [CIOS ER 63, AFHRA folder 506.6202 Nr. 1–99 20 Apr–13 Jun 1945, IRIS 207658; AFHRA A5189 frames 0708–0709].

NARA RG 77, Entry UD-22A, Box 169, Folder 32.32. Germ. Incl. TA

SECRET

AMERICAN EMBASSY
Office of the Military Attache
London, England

Paris Office
7 June 1945

Subject: Interrogation of Dr. Hans Ritz, Managing Director of C. F. H. Müller at Röntgenstrasse, Fuhlsbuttel, Hamburg.

To : Lt. Colonel John Lansdale, Jr., and Major Francis J. Smith, Room 5119, New War Department Building, Washington, D. C.

1. The interrogation of Dr. Hans Ritz revealed that Ritz was experimenting in the manufacture of infa-red tubes which was his main scientific research project. However, the following is quoted from a CIOS report of 11 May 1945 made by S. Wheeler, Captain, R. M. (It should be recalled that Müller had a small tonnage of U_3O_8).

"Ritz also proudly stated that he had been engaged on research work connected with splitting the atom and hinted that this was far enough advanced for the Europeans to combine forces and develop this "terrific" potential energy for use in any future war with the Asiatics. The subject was not pursued owing to the complete lack of knowledge on the part of the interrogator."

R. R. FURMAN,
Major, CE.

Figure D.621: Dr. Hans Ritz, the managing director of C. H. F. Müller, admitted that the company had been making components suitable for use in nuclear weapons. The company also possessed a large amount of uranium. Robert R. Furman to John Lansdale Jr. and Francis J. Smith. 7 June 1945 [NARA RG 77, Entry UD-22A, Box 169, Folder 32.32. Germ. Ind. TA].

I. G. Ludwigshafen
Ammoniaklaboratorium Oppau

An

Herrn

Dr. W i e t z e l ,

Ammon.-Labor.

Ihre Zeichen	Ihre Nachricht vom	Unsere Nachricht vom	Unser Haustel	Unsere Zeichen	Ludwigshafen a. Rh.
				Dr. Schä/Me Lu 949,	den 16.6.43

Betreff

Der Stand der Neutronenanlage in Lu 949
Anfang Juni 1943 ist folgender :

Die Leistung unserer Neutronenanlage wurde an der Herstellung von künstlich radioaktivem Phosphor $^{32}_{15}P$ geprüft. Vorteilhaft benützt man hierzu folgenden Kernprozess :

$$^{32}_{16}S + ^{1}_{0}n = ^{32}_{15}P + ^{1}_{1}H$$

Für unsere Anlage empfiehlt sich eine Bestrahlung von Schwefel in Form von CS_2 mit den schnellen Neutronen der D - D Reaktion.

$$^{2}_{1}D + ^{2}_{1}D = ^{3}_{2}He + ^{1}_{0}n$$

Dieser Kernprozess wird in dem Neutronenrohr dadurch realisiert, dass man die in einer Kanalstrahlionenquelle erzeugten Deuteronen mit einer Spannung von einigen hundert Kilovolt nachbeschleunigt und den energiereichen, durch Fokussierung gebündelten Deuteronenstrahl auf eine deuteriumhaltige Substanz, in unserem Falle eine dünne Schicht von schwerem Eis, D_2O Target genannt, fallen lässt.

Die freiwerdenden schnellen Neutronen treten aus dem Neutronenrohr aus, treffen die S - Atome des CS_2 und der dabei gebildete, in unwägbarer Menge vorliegende aktive Phosphor kann von dem CS_2 durch bekannte Methoden abgetrennt werden. Die Stärke des gewonnenen aktiven Phosphorpräparates wird mit einem Geiger-Müller-Zählrohr+), das auf die beim radioaktiven Zerfall emittierten Elektronen anspricht, gemessen.

+) Nebenher wurde noch ein Zählrohrverstärker mit Netzanschluss und einem Thyratronkippkreis in der Endstufe gebaut. Die letztere empfahl sich, da das vorhandene mechanische Zählwerk von Wilichowsky -Göttingen nur bei Impulsen gleicher Grösse einwandfrei arbeitet, was durch den Kippkreis erreicht wird.

Figure D.622: This document demonstrates that scientists in Germany had been routinely using deuterium + deuterium and lithium + deuterium fusion reactions (in high-voltage tubes) as neutron sources for experiments during the war. [Technical Oil Mission Microfilm 119 (BM-6—Ludwigshaven), Folder LU III-2. https://www.fischer-tropsch.org/Tom%20Reels/Linked/TOM%20119%20Partial/TOC_TOM-119.htm]

Beim ^{32}P geschieht der Zerfall mit einer Halbwertzeit von 14,3 Tagen. 15 Zuverlässig messbare Bruchteile des angereicherten Präparates, das als Ammoniumphosphat vorlag, wurden auf Streifen Filtrierpapier gebracht und um den Zählrohrmantel gelegt. Die am Zählrohr in der Zeiteinheit gemessenen Ausschläge sind ein Mass für die Stärke des Präparates. Das Zählrohr gestattet Aktivitäten von etwa 5 Elektronen in der Minute noch nachzuweisen.

Bei 1 stündigem Betrieb der Anlage bei 200 KV an der Nachbeschleunigungsstrecke und 200 μA Deuteronenstrom, der, um eine bei elektrischer Messung des Stromes leicht auftretende Täuschung durch Sekundäreffekte zu vermeiden, kalorimetrisch bestimmt wurde, erhielten wir bei Bestrahlung von 0,5 Ltr CS_2 eine Präparatstärke des gebildeten aktiven Phosphors von ca 10^3 Elektronen/min. Durch Bestrahlung von grösseren Mengen CS_2 (5 - 10 Ltr.) könnte man bei 10 stündigem Betrieb Präparate von 10^5 Elektronen/min herstellen.

Es mag hier erwähnt werden, dass bei Verwendung der aktiven Phosphorpräparate als radioaktive Indikatoren manche Untersuchungen mit Präparaten von 10^4 Elektronen/min [+)] mit Erfolg durchgeführt werden können.

Bei Steigerung der Spannung auf 250 KV ist unter den gleichen sonstigen Bedingungen eine Steigerung der Neutronenausbeute und damit auch der Ausbeute an rad.Phosphor um 60% zu erwarten. Versuche ergaben aber vorläufig nur eine Zunahme von 30%. Dies ist darauf zurückzuführen, dass die mit flüssigem Stickstoff gekühlte D_2O - Schicht, die Belastung mit 50 Watt (250 KV, 200 μA) nicht mehr aushält. Durch Verringerung der spezifischen Belastung, also eine Vergrösserung des Brennfleckes ist eine Steigerung der Gesamtbelastbarkeit zu erreichen. Sollte auch dann die Belastbarkeit eines D_2O - Targets nicht hinreichend sein, so empfielt sich die Verwendung eines Targets mit Lithiummetall, der sicher genügend belastbar ist, aber den Nachteil einer geringen Ausbeute bei den in Frage kommenden Spannungen gegenüber einem Target mit schwerem Eis hat. Beim Li-Target wird zur Neutronenerzeugung folgender Kernprozess benützt :

$$^{7}_{3}Li + {}^{2}_{1}D = {}^{4}_{2}He + {}^{1}_{0}n$$

Das Neutronenrohr wurde auch mit 320 KV und 200 μA kurze Zeit betrieben, doch liegen noch keine Ausbeutemessungen vor. Es ist gegenüber 200 KV eine Steigerung der Neutronenausbeute bei einem D_2O - Target um 150% zu erwarten. Bei diesen hohen Spannungen treten infolge der entstehenden Sekundärelektronen harte Röntgenstrahlen in einem Masse auf, sodass ohne geeigneten Schutz gegen diese Strahlung, deren Intensität die Toleranzdosisleistung überschreitet, weitere Versuche bei hohen Spannungen nicht ausgeführt werden können. Daher müsste noch ein hinreichender Schutz in Form von 1 cm dicken Pb - Schirmen angebracht werden.

+) O.Meyerhof, P.Ohlmeyer, W.Gentner u.H.Maier, Leibnitz, Biochem.ZS. 298, 396-411, 1938 :
Studium der Zwischenreaktionen der Glykolyse mit Hilfe von radioaktivem Phosphor.

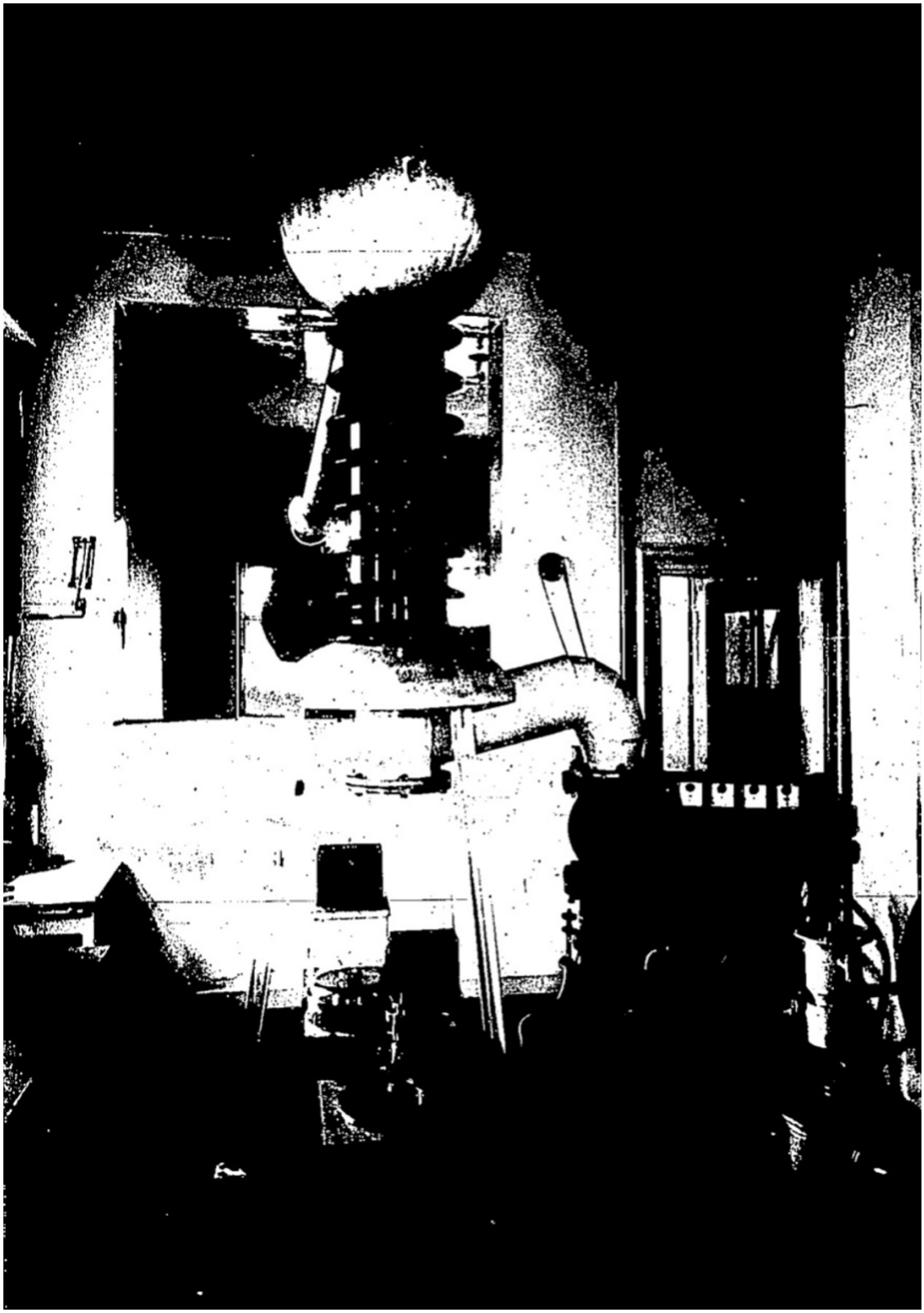
Figure D.623: This document demonstrates that scientists in Germany had been routinely using deuterium + deuterium and lithium + deuterium fusion reactions (in high-voltage tubes) as neutron sources for experiments during the war. [Technical Oil Mission Microfilm 119 (BM-6—Ludwigshaven), Folder LU III-2. https://www.fischer-tropsch.org/Tom%20Reels/Linked/TOM%20119%20Partial/TOC_TOM-119.htm]

Da zu erwarten ist, dass die Spannung noch über 320 KV hinaus erhöht werden kann und da besonders auch anzunehmen ist, dass sich die Ergiebigkeit der Jonenquelle über 200 μA hinaus steigern lässt, so dürfte eine Steigerung der Leistung des Neutronengenerators um ein Mehrfaches gegenüber dem jetzt schon bei 200 KV und 200 μA erreichten Werten, die einem Rn + Be - Äquivalent von ca 3 Curie ($\sim$ 3 gr Radium) entsprechen, zu verwirklichen sein.

Schäfer

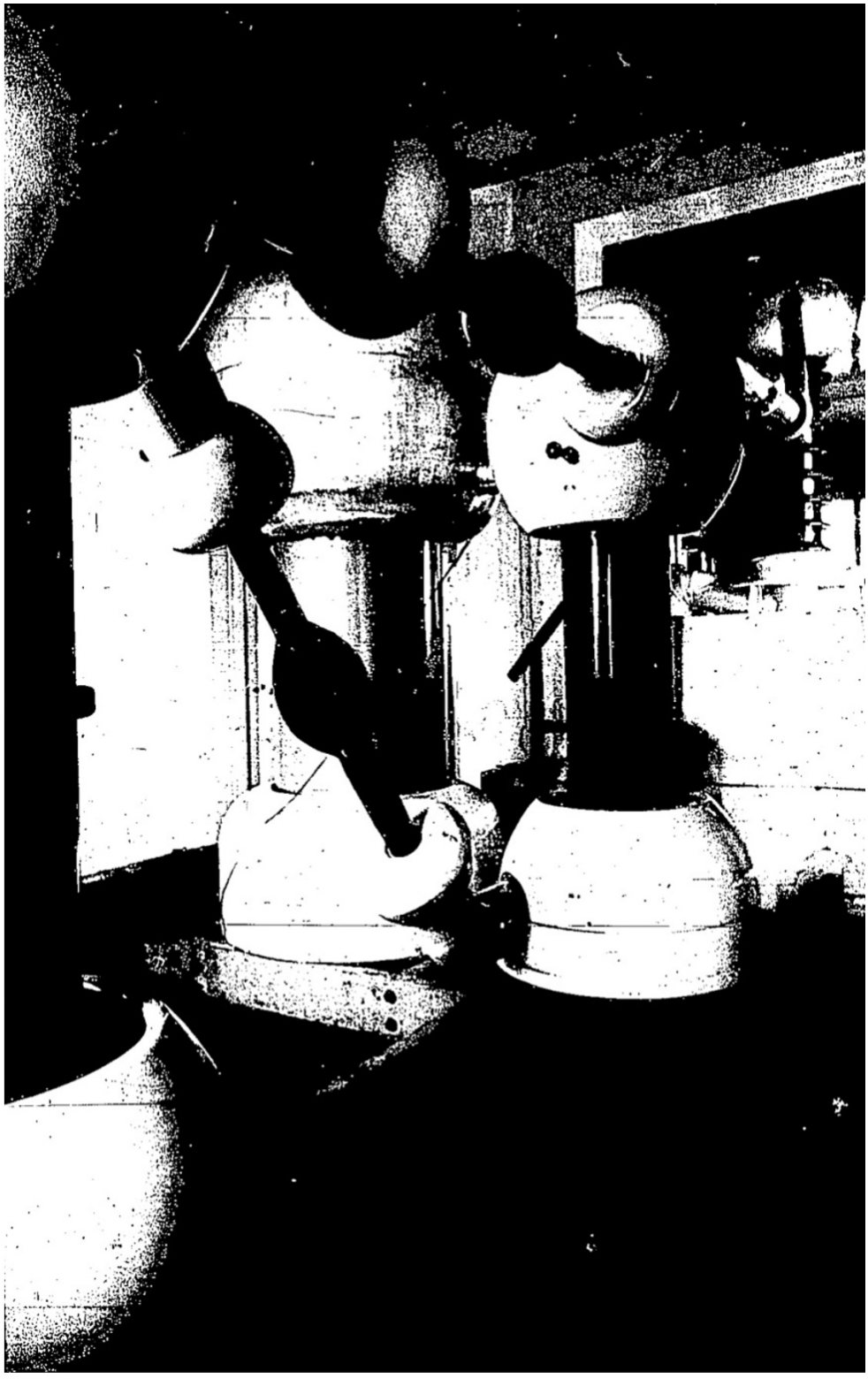
Anlagen :

Figure D.624: This document demonstrates that scientists in Germany had been routinely using deuterium + deuterium and lithium + deuterium fusion reactions (in high-voltage tubes) as neutron sources for experiments during the war. [Technical Oil Mission Microfilm 119 (BM-6—Ludwigshaven), Folder LU III-2. https://www.fischer-tropsch.org/Tom%20Reels/Linked/TOM%20119%20Partial/TOC_TOM-119.htm]



1.Bild Neutronenrohr.

Figure D.625: This document demonstrates that scientists in Germany had been routinely using deuterium + deuterium and lithium + deuterium fusion reactions (in high-voltage tubes) as neutron sources for experiments during the war. [Technical Oil Mission Microfilm 119 (BM-6—Ludwigshaven), Folder LU III-2. https://www.fischer-tropsch.org/Tom%20Reels/Linked/TOM%20119%20Partial/TOC_TOM-119.htm]



A. Bild Kaskadengenerator von
Siemens & Halske - 400 KV, 5m A.

Figure D.626: This document demonstrates that scientists in Germany had been routinely using deuterium + deuterium and lithium + deuterium fusion reactions (in high-voltage tubes) as neutron sources for experiments during the war. [Technical Oil Mission Microfilm 119 (BM-6—Ludwigshaven), Folder LU III-2. https://www.fischer-tropsch.org/Tom%20Reels/Linked/TOM%20119%20Partial/TOC_TOM-119.htm]

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Fritz Houtermans. Letter to Werner Czulius. 28 November 1944. AMPG, I. Abt. Rep. 34, Nr. 53, Bl. 1–2 [Nagel 2012a, pp. 639–640].

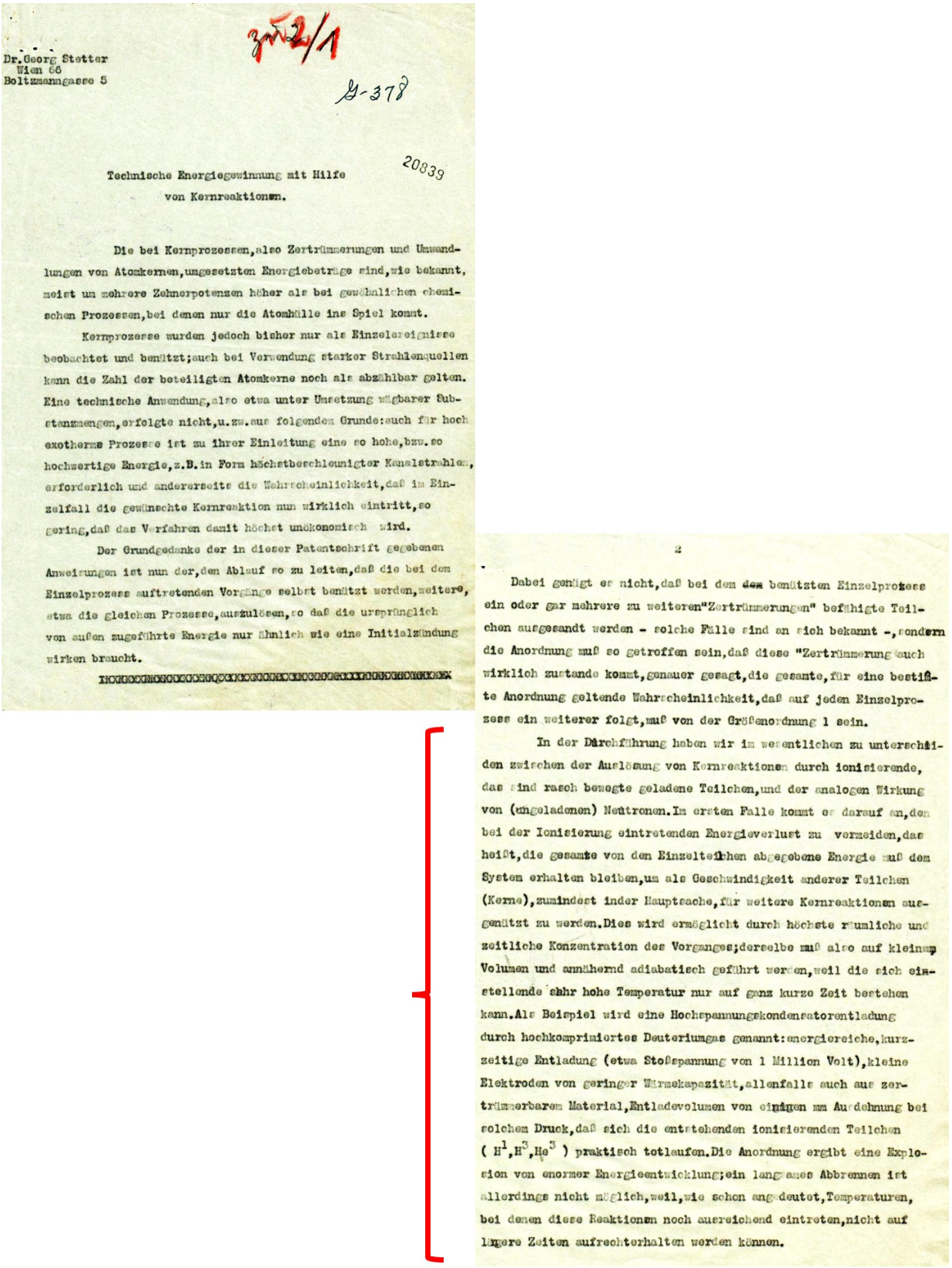
[...] Das beste ist zweifellos möglichst weit hinaus zu messen und mit 0,105 oder 0,106 zu extrapolieren. Den Bakkerschen Wert halte ich für zu niedrig. Ich sprach auch mit Bothe kürzlich über die Frage, wie weit, sich der Abfall von $A_c r^2$ bei grossen Entfernungen durch eine Exponentialfunktion approximieren lässt, und er sagte mir, dass er durch Rechnung gefunden habe, dass sich bei komplexem Spektrum schliesslich ein Wert von B einstellt, der wohl durch die freie Weglänge der schnellsten Neutronen bedingt isst, aber nur sehr langsam, d.h. bei sehr grossen Entfernungen. Es ist eben wie immer bei mehreren Exponentialfunktionen, z.B. beim radioaktiven Zerfall von 2 Körpern mit kurzer und langer H.W. Zeit, nur meinte er, es gehe hier noch langsamer. Welchen Wert sie für die Fluoridquelle nehmen sollen, weiss ich nicht, denn ich habe mit einer solchen Quelle nicht gearbeitet. Wenn Sie es nicht selbst messen können, würde ich aus den Tuve-Hafsad-Werten künstlicher Quellen einen aussuchen der einem primären Neutronenspektrum mit ungefähr ähnlicher oberer Grenze (ich glaube D+D, nach vorne, käme ungefähr hin) entspricht bezw. extrapolieren. Für Li + D haben wir 1/B = 10,8 cm gefunden, auch nach vorne, also ziemlich dasselbe, wie für Ra+Be, woraus man sieht, dass die Energieabhangigkeit nicht sehr viel ausmacht. Man wird also sicher auch für CaF_2 mit einem geeigneten interpolierten Wert rechnen dürfen. [...]

[...] The best is undoubtedly to measure as far as possible and to extrapolate it with 0.105 or 0.106. Bakker's value I think is too low. I also talked with Bothe about the question of how far the decay of $A_c r^2$ can be approximated by an exponential function at great distances, and he told me that for a complex spectrum he had calculated a value of B, which is probably due to the free path of the fastest neutrons, but only very slowly, i. e. at very great distances. It is just as always with several exponential functions, e.g. in the radioactive decay of two bodies with short and long half lives, he just meant, it was slower. I do not know which value you should take for the source of fluoride, because I have not worked with such a source. If you cannot measure it yourself, I have chosen one from the Tuve-Hafsad values of artificial sources which extrapolating corresponds to a primary neutron spectrum with a similar upper limit (I believe D+D, forward, approximately). For Li + D, we have found 1/B = 10.8 cm, also forward, which is quite the same as for Ra+Be, which shows that the energy dependence does not matter very much. Thus, CaF_2 may also be expected to have a suitable interpolated value. [...]

[This document demonstrates that scientists in Germany had been routinely using deuterium + deuterium and lithium + deuterium fusion reactions (in high-voltage tubes) as neutron sources for experiments during the war; they are casually mentioned alongside a much more conventional radium+beryllium neutron source. For producing neutrons, the lithium reaction would have been lithium-7 + deuterium → neutron + 2 helium-4 (alpha) particles.

A high-voltage tube containing such fusion fuel would make a good neutron initiator in a fission bomb and is apparently described in Ilyichev's March 1945 intelligence report on a German fission implosion bomb design; see pp. 4485 and 5157.

From unclassified references on nuclear weapons designs, lithium deuteride makes excellent fusion fuel in H bombs or can be used at the center of a fission bomb to provide a fusion neutron boost to greatly increase the fission efficiency and explosive yield.]



Dr. Georg Stetter
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G-378

20839

Technische Energiegewinnung mit Hilfe
von Kernreaktionen.

Die bei Kernprozessen, also Zertrümmerungen und Umwandlungen von Atomkernen, umgesetzten Energiebeträge sind, wie bekannt, meist um mehrere Zehnerpotenzen höher als bei gewöhnlichen chemischen Prozessen, bei denen nur die Atomhülle ins Spiel kommt.

Kernprozesse wurden jedoch bisher nur als Einzelereignisse beobachtet und benützt; auch bei Verwendung starker Strahlenquellen kann die Zahl der beteiligten Atomkerne noch als abzählbar gelten. Eine technische Anwendung, also etwa unter Umsetzung wägbarer Substanzmengen, erfolgte nicht, u.zw. aus folgenden Gründe: auch für hoch exotherme Prozesse ist zu ihrer Einleitung eine so hohe, bzw. so hochwertige Energie, z.B. in Form höchstbeschleunigter Kanalstrahlen, erforderlich und andererseits die Wahrscheinlichkeit, daß im Einzelfall die gewünschte Kernreaktion nun wirklich eintritt, so gering, daß das Verfahren damit höchst unökonomisch wird.

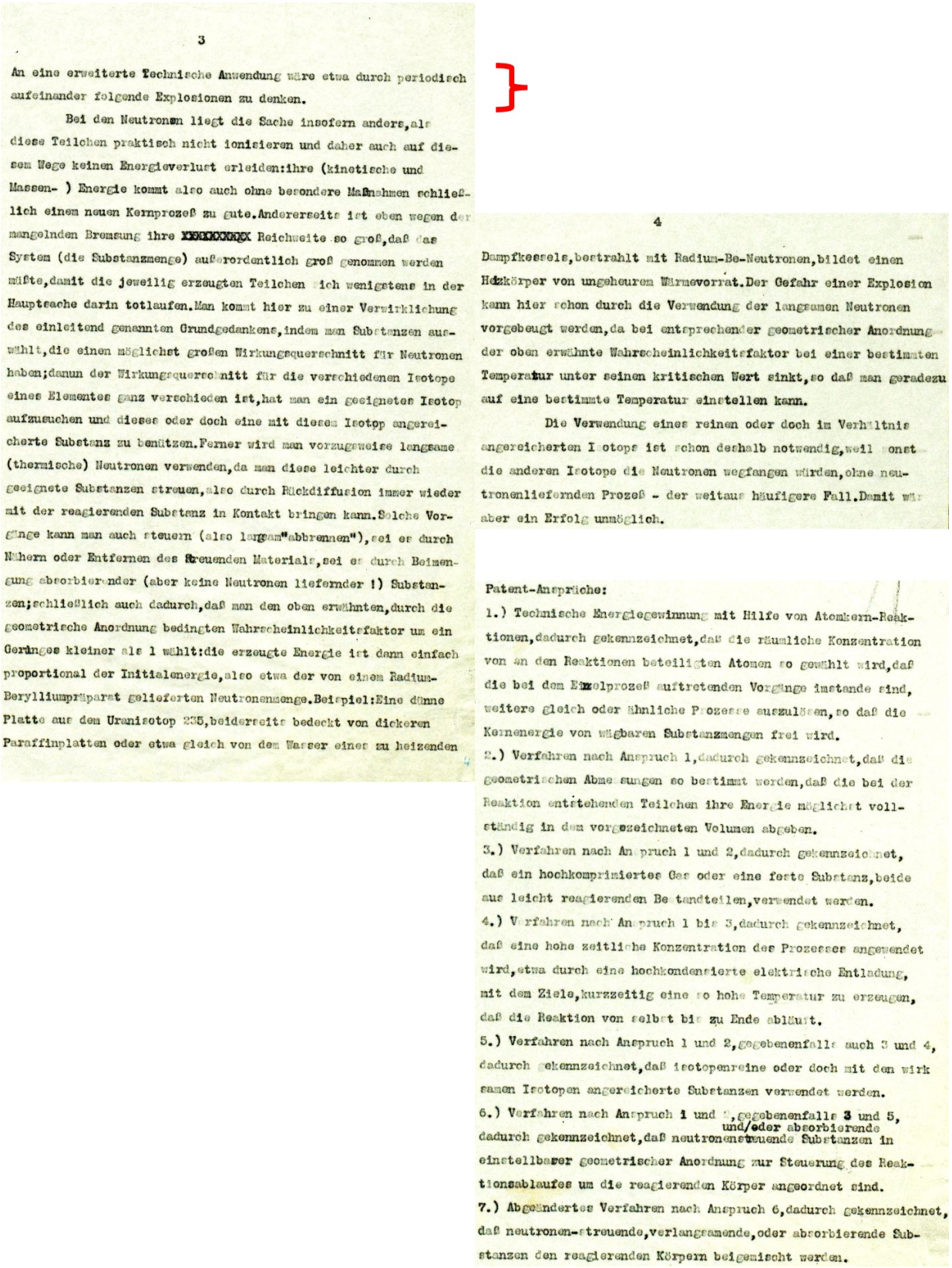
Der Grundgedanke der in dieser Patentschrift gegebenen Anweisungen ist nun der, den Ablauf so zu leiten, daß die bei dem Einzelprozesse auftretenden Vorgänge selbst benützt werden, weitere, etwa die gleichen Prozesse, auszulösen, so daß die ursprünglich von außen zugeführte Energie nur ähnlich wie eine Initialzündung wirken braucht.

2

Dabei genügt es nicht, daß bei dem dem benützten Einzelprozess ein oder gar mehrere zu weiteren "Zertrümmerungen" befähigte Teilchen ausgesandt werden - solche Fälle sind an sich bekannt -, sondern die Anordnung muß so getroffen sein, daß diese "Zertrümmerung" auch wirklich zustande kommt, genauer gesagt, die gesamte, für eine bestimmte Anordnung geltende Wahrscheinlichkeit, daß auf jeden Einzelprozess ein weiterer folgt, muß von der Größenordnung 1 sein.

In der Durchführung haben wir im wesentlichen zu unterscheiden zwischen der Auslösung von Kernreaktionen durch ionisierende, das sind rasch bewegte geladene Teilchen, und der analogen Wirkung von (ungeladenen) Neutronen. Im ersten Falle kommt es darauf an, den bei der Ionisierung eintretenden Energieverlust zu vermeiden, das heißt, die gesamte von den Einzelteilchen abgegebene Energie muß dem System erhalten bleiben, um als Geschwindigkeit anderer Teilchen (Kerne), zumindest in der Hauptsache, für weitere Kernreaktionen ausgenützt zu werden. Dies wird ermöglicht durch höchste räumliche und zeitliche Konzentration des Vorganges; derselbe muß also auf kleinem Volumen und annähernd adiabatisch geführt werden, weil die sich einstellende sehr hohe Temperatur nur auf ganz kurze Zeit bestehen kann. Als Beispiel wird eine Hochspannungskondensatorentladung durch hochkomprimiertes Deuteriumgas genannt: energiereiche, kurzzeitige Entladung (etwa Stoßspannung von 1 Million Volt), kleine Elektroden von geringer Wärmekapazität, allenfalls auch aus zertrümmerbarem Material, Entladevolumen von einigen mm Ausdehnung bei solchem Druck, daß sich die entstehenden ionisierenden Teilchen (H^1, H^3, He^3) praktisch totlaufen. Die Anordnung ergibt eine Explosion von enormer Energieentwicklung; ein langsames Abbrennen ist allerdings nicht möglich, weil, wie schon angedeutet, Temperaturen, bei denen diese Reaktionen noch ausreichend eintreten, nicht auf längere Zeiten aufrechterhalten werden können.

Figure D.628: G-378. Georg Stetter. Technische Energiegewinnung mit Hilfe von Kernreaktionen. FA 002/0762. Deutsches Museum Archive, Munich. https://digital.deutsches-museum.de/item/FA-002-762/



3

An eine erweiterte technische Anwendung wäre etwa durch periodisch aufeinander folgende Explosionen zu denken.

Bei den Neutronen liegt die Sache insofern anders, als diese Teilchen praktisch nicht ionisieren und daher auch auf diesem Wege keinen Energieverlust erleiden: ihre (kinetische und Massen-) Energie kommt also auch ohne besondere Maßnahmen schließlich einem neuen Kernprozeß zu gute. Andererseits ist eben wegen der mangelnden Bremsung ihre XXXXXXXXX Reichweite so groß, daß das System (die Substanzmenge) außerordentlich groß genommen werden müßte, damit die jeweilig erzeugten Teilchen sich wenigstens in der Hauptsache darin totlaufen. Man kommt hier zu einer Verwirklichung des einleitend genannten Grundgedankens, indem man Substanzen auswählt, die einen möglichst großen Wirkungsquerschnitt für Neutronen haben; dann der Wirkungsquerschnitt für die verschiedenen Isotope eines Elementes ganz verschieden ist, hat man ein geeignetes Isotop aufzusuchen und dieses oder doch eine mit diesem Isotop angereicherte Substanz zu benützen. Ferner wird man vorzugsweise langsame (thermische) Neutronen verwenden, da man diese leichter durch geeignete Substanzen streuen, also durch Rückdiffusion immer wieder mit der reagierenden Substanz in Kontakt bringen kann. Solche Vorgänge kann man auch steuern (also langsam "abbrennen"), sei es durch Nähern oder Entfernen des streuenden Materials, sei es durch Beimengung absorbierender (aber keine Neutronen liefernder !) Substanzen; schließlich auch dadurch, daß man den oben erwähnten, durch die geometrische Anordnung bedingten Wahrscheinlichkeitsfaktor um ein Geringes kleiner als 1 wählt: die erzeugte Energie ist dann einfach proportional der Initialenergie, also etwa der von einem Radium-Berylliumpräparat gelieferten Neutronenmenge. Beispiel: Eine dünne Platte aus dem Uranisotop 235, beiderseits bedeckt von dickeren Paraffinplatten oder etwa gleich von dem Wasser eines zu heizenden

4

Dampfkessels, bestrahlt mit Radium-Be-Neutronen, bildet einen Heizkörper von ungeheuren Wärmevorrat. Der Gefahr einer Explosion kann hier schon durch die Verwendung der langsamen Neutronen vorgebeugt werden, da bei entsprechender geometrischer Anordnung der oben erwähnte Wahrscheinlichkeitsfaktor bei einer bestimmten Temperatur unter seinen kritischen Wert sinkt, so daß man geradezu auf eine bestimmte Temperatur einstellen kann.

Die Verwendung eines reinen oder doch im Verhältnis angereicherten Isotops ist schon deshalb notwendig, weil sonst die anderen Isotope die Neutronen wegfangen würden, ohne neutronenliefernden Prozeß - der weitaus häufigere Fall. Damit wäre aber ein Erfolg unmöglich.

Patent-Ansprüche:

1.) Technische Energiegewinnung mit Hilfe von Atomkern-Reaktionen, dadurch gekennzeichnet, daß die räumliche Konzentration von an den Reaktionen beteiligten Atomen so gewählt wird, daß die bei dem Einzelprozeß auftretenden Vorgänge imstande sind, weitere gleich oder ähnliche Prozesse auszulösen, so daß die Kernenergie von wägbaren Substanzmengen frei wird.

2.) Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß die geometrischen Abmessungen so bestimmt werden, daß die bei der Reaktion entstehenden Teilchen ihre Energie möglichst vollständig in dem vorgezeichneten Volumen abgeben.

3.) Verfahren nach Anspruch 1 und 2, dadurch gekennzeichnet, daß ein hochkomprimiertes Gas oder eine feste Substanz, beide aus leicht reagierenden Bestandteilen, verwendet werden.

4.) Verfahren nach Anspruch 1 bis 3, dadurch gekennzeichnet, daß eine hohe zeitliche Konzentration des Prozesses angewendet wird, etwa durch eine hochkondensierte elektrische Entladung, mit dem Ziele, kurzzeitig eine so hohe Temperatur zu erzeugen, daß die Reaktion von selbst bis zu Ende abläuft.

5.) Verfahren nach Anspruch 1 und 2, gegebenenfalls auch 3 und 4, dadurch gekennzeichnet, daß isotopenreine oder doch mit den wirksamen Isotopen angereicherte Substanzen verwendet werden.

6.) Verfahren nach Anspruch 1 und 2, gegebenenfalls 3 und 5, dadurch gekennzeichnet, daß neutronenstreuende und/oder absorbierende Substanzen in einstellbarer geometrischer Anordnung zur Steuerung des Reaktionsablaufes um die reagierenden Körper angeordnet sind.

7.) Abgeändertes Verfahren nach Anspruch 6, dadurch gekennzeichnet, daß neutronen-streuende, verlangsamende, oder absorbierende Substanzen den reagierenden Körpern beigemischt werden.

Figure D.629: G-378. Georg Stetter. Technische Energiegewinnung mit Hilfe von Kernreaktionen. FA 002/0762. Deutsches Museum Archive, Munich. https://digital.deutsches-museum.de/item/FA-002-762/

G-378. Georg Stetter. Technische Energiegewinnung mit Hilfe von Kernreaktionen. FA 002/0762. Deutsches Museum Archive, Munich. https://digital.deutsches-museum.de/item/FA-002-762/ This early 1939 draft of a patent application covered both fusion and fission reactions. A key section on fusion is given below. In reviewing this patent draft, Karl Wirtz raised concerns that the fusion claims were too similar to Brasch and Lange's German Patent 662036 [AMPG 34/29]. The final patent application deleted the fusion claims and polished the fission claims (see p. 3372). Stetter and his fellow researchers were heavily involved in both the wartime fission and fusion programs (pp. 3372–3375, 4330–4345, 4788–4800, 4992). [See document photos on pp. 4328–4329.]

In der Durchführung haben wir im wesentlichen zu unterscheiden zwischen den Auslösung von Kernreaktionen durch ionisierende, das sind rasch bewegte geladene Teilchen, und der analogen Wirkung von (ungeladenen) Neutronen. Im ersten Falle kommt es darauf an, den bei der Ionisierung eintretenden Energieverlust zu vermeiden, das heißt, die gesamte von den Einzelteilchen abgegebene Energie muß dem System erhalten bleiben, um als Geschwindigkeit anderer Teilchen (Kerne), zumindest in der Hauptsache, für weitere Kernreaktionen ausgenützt zu werden. Dies wird ermöglicht durch höchste räumliche und zeitliche Konzentrationen des Vorganges; derselbe muß also auf kleinem Volumen und annähernd adiabatisch geführt werden, weil die sich einstellende sehr hohe Temperatur nur auf ganz kurze Zeit bestehen kann. Als Beispiel wird eine Hochspannungskondensatorentladung durch hochkomprimiertes Deuteriumgas genannt: energiereiche, kurzzeitige Entladung (etwa Stoßspannung von 1 Million Volt), kleine Elektroden von geringer Wärmekapazität, allenfalls auch aus zertrümmerbarem Material, Entladevolumen von einigen mm Ausdehnung bei solchem Druck, daß sich die entstehenden ionisierenden Teilchen (H^1, H^3, He^3) praktisch totlaufen. Die Anordnung ergibt eine Explosion von enormer Energieentwicklung; ein langsames Abbrennen ist allerdings nicht möglich, weil, wie schon angedeutet, Temperaturen, bei denen diese Reaktionen noch ausreichend eintreten, nicht auf längere Zeiten aufrechterhalten werden können.

In the main we have to differentiate between the induction of nuclear reactions by ionizing, that is rapidly moving charged particles, and the analogous effect of (uncharged) neutrons. In the first case, it is important to avoid the loss of energy occurring during ionization, that is, the total energy released by the individual particles must be retained by the system, as speed of other particles (nuclei), at least in the main, for further nuclear reactions to be exploited. This is made possible by highest spatial and temporal concentrations of the process; the same must therefore be performed on a small volume and approximately adiabatically, because the very high temperature condition can exist only for a very short time. As an example, a high-voltage capacitor discharge by highly compressed deuterium gas is considered: high-energy, short-term discharge (about 1 million volts surge), small electrodes of low heat capacity, if necessary also from fissile material, discharge volume of a few mm expansion at such pressure that the resulting ionizing particles (H^1, H^3, He^3) practically run into each other. The arrangement results in an explosion of tremendous energy development. However, a slow burning off is not possible because, as already indicated, temperatures at which these reactions still sufficiently occur cannot be maintained for longer periods of time.

An eine erweiterte technische Anwendung wäre etwa durch periodisch aufeinander folgende Explosionen zu denken.

An advanced technical application would be to think about successive periodical explosions.

Assistant Chief of Staff, G-2, Department of the Army, Washington, DC. Lintner, Karl Rudolf Josef. 6 April 1954. [NARA RG 330, Entry A1-1B, Box 103, Folder Lintner, Karl]

According to information received in Aug 1949 from an untested source, one Dr. Karl LINTNER was assistant to Prof Karl PRZIBAM at the Second Institute of Physics in Vienna. Source declared PRZIBAM to be pro-Russian and believed without being sure that he was in Moscow early 1949. PRZIBAM had been carrying out infra-red research for the Russians. During the war, the nuclear physicists of the Second Institute of Physics in Vienna engaged in a research project of releasing high amounts of energy through nuclear reactions of the lithium hydrite crystal *Li H*. The research was carried out mainly by Dr. Karl LINTNER under the supervision of Prof. Dr. Georg K. F. STETTER. The project failed because according to source, it was impossible to procure strong enough electrodes and equipment sufficiently resistant to heat.

[See document photo on p. 4333.

What lithium and hydrogen isotopes and what reactions did Stetter's group consider? Did they originate the "Jetter cycle" (see p. 4348)?]

Robert A. Snedeker, CIC Sub-Det "C" (Vienna). Agent Report. Dr. Georg Stetter's Patent Concerning Production of Atomic Energy, Technical Intelligence, Vienna. 29 September 1953. [NARA RG 319, Entry A1-134B, Box 749, Folder 23 Nov 95 Georg Stetter XA001081]

On 23 September 1953, Dr. Karl Lintner, Second Physical Institute of the University of Vienna, was interviewed by Informant 1063 and stated the following:

Source [Lintner] was Dr. Georg STETTER's assistant in the Second Physical Institute during World War II, when STETTER was working on the splitting of the lithium nucleus. STETTER intended to have certain processes patented, in connection with splitting nuclei, but Source is unaware of the result of this intention. All of STETTER's research material and notes fell into the hands of the Soviets in 1945 and to Source's knowledge STETTER has not concerned himself with nuclear research since that date. Source considers STETTER the best nuclear physicist in Austria. STETTER, before obtaining a position with the Second Physical Institute, University of Vienna, was affiliate with the United Austrian Iron and Steel Works and the Austrian Nitrogen Works.

[See document photo on p. 4333.

Note that Stetter applied or intended to apply for a patent on his fusion approaches. Was that just the deleted early 1939 patent sections on p. 4330, or did he write additional, more detailed patent drafts? Can any of his group's material be found in Russian archives?]

Air Intelligence Report No. 100-13/1-100, Significant Developments and Trends in Aircraft and Aircraft Engines, Antiaircraft Guided Missiles (15 June 1946). p. 93. NARA RG 38, Entry 98C, Box 11, Folder TSC # 3001–3100.

g. Heavy Hydrogen Bomb. In Germany a letter was picked up by the American censors. It had been written by a German desirous of exchanging information for an opportunity to go to the United States. The writer professed knowledge of "heavy water" research in Germany and of an "even more deadly weapon than the atomic bomb".

Immigration of Austrian Scientists to Soviet Zone. NARA RG 319, Entry A1-134A, Box 31, Folder 02/006 430.

K SCHINTLMEISTER, Dr Josef Peter - USSR. Born 15 June 1903. Nuclear physicist. Listed on National Scientific Intelligence Requirements - Nuclear Energy - USSR, 23 July 1947. Reportedly anti-communist and had requested that he brought into contact with British. Released as Chief of Physics Institute because of NSDAP membership. Formerly associated with GERLACH, STETTER, MATTAUCH, CZULIUS and ZEMPSCHEK. During war, succeeded in isolating Transuranen to Transuranen 104. In summer of 1945, subject with other members of Radium Institute, fled to Thumersbach. In 1946 he accepted Soviet employment and was taken to Moscow. In September 1948 he reportedly contacted JOLIOT CURIE on problems of extracting plutonium. Censorship intercept indicates subject is currently interested in lithium hydride bombs, originally begun with STETTER.

Figure D.630: Examples of postwar U.S. intelligence about wartime work on the German H-bomb [NARA RG 38, Entry 98C, Box 11, Folder TSC # 3001–3100. NARA RG 319, Entry A1-134A, Box 31, Folder 02/006 430.].

Robert A. Snedeker, CIC Sub-Det "C" (Vienna). Agent Report. Dr. Georg Stetter's Patent Concerning Production of Atomic Energy, Technical Intelligence, Vienna. 29 September 1953. NARA RG 319, Entry A1-134B, Box 749, Folder 23 Nov 95 Georg Stetter XA001081.

DECLASSIFIED
Authority NND 007017

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(F-3)

NARA RG 330, Entry A1-1B, Box 103, Folder Lintner, Karl.

DECLASSIFIED
Authority NND 013039

AGENCY REMARKS

According to information received in Aug 1949 from an untested source, one Dr. Karl LINTNER was assistant to Prof Karl PRZIBAM at the Second Institute of Physics in Vienna. Source declared PRZIBAM to be pro-Russian and believed without being sure that he was in Moscow early 1949. PRZIBAM had been carrying out infra-red research for the Russians. During the war, the nuclear physicists of the Second Institute of Physics in Vienna engaged in a research project of releasing high amounts of energy through nuclear reaction of the lithium hydrite crystal *Li H*. The research was carried out mainly by Dr. Karl LINTNER under the supervision of Prof. Dr. Georg K. F. STETTER. The project failed because according to source, it was impossible to procure strong enough electrodes and equipment sufficiently resistant to heat.

Assistant Chief of Staff, G-2
Department of the Army
Washington 25, D. C.

SIGNATURE

SECRET

6. MOIC-S-4412, dated 11 May 1949, Subject: "Schintlmeister Josef Dr., Nuclear Scientists Currently in the USSR," indicated that SUBJECT collaborated with Prof. Georg Stetter on the problem of releasing the energy or accomplishing the atomic fission of the Lithium Hydrite (LiH) crystal. SUBJECT was listed as an assistant at the University of Vienna, Physics Institute II. His political orientation was uncertain. Information in this report was obtained from Prof. Stetter.

Figure D.631: Examples of postwar U.S. intelligence about wartime work on the German H-bomb [NARA RG 319, Entry A1-134B, Box 749, Folder 23 Nov 95 Georg Stetter XA001081. NARA RG 330, Entry A1-1B, Box 103, Folder Lintner, Karl.].

Russian Department of the Archives of the State Cooperation of Atomic Energy (OOFR), Österreich 2, pp. 302–304, Gutachten von Kokin zur Annotation einer Aussage von Dr. Rober [Kober], 21 August 1945.

Prof. Stetter aus Wien, der sich mit dem Zerfall des Kernes von Lithium-Hydrid [...] beschäftige, hat entdeckt, dass diese Reaktion nicht stabil ist, das heisst, dass sie sich nach dem Anfang automatisch weiter fortsetzt, dabei wird eine ausserordentlich grosse Energie des Kernes freigesetzt, und die ganze Versuchseinrichtung explodiert (Versuch auf dem Erprobungsgelände). Prof. Bethe schätzt diese Reaktion als Quelle der Sonnenenergie ein, außerdem bringt diese Reaktion eine Wende in der Technik der Sprengstoffe, weil die Stärke der Explosion 10^6-mal größer ist als bei Nitroglyzerin. Diese Reaktion wurde in vielen Instituten untersucht, unter Teilnahme der Professoren Gerlach und Tomaschek—in München. Prof. Stetter aus Wien hat eine Theorie entwickelt, dass diese Reaktion bei der Temperatur 10^6 ^{o}C beginnen soll. Falls diese Theorie richtig ist, ist eine Versuchsanlage, die diese Energie zum praktischen Zweck benutzen darf, leicht zu bauen. [...] Dr. Rober [Kober] bittet um Erlaubnis, such damit zu beschäftigen und wies darauf hin, dass AEG schon einige Patente in dieser Frage hat.

Prof. Stetter from Vienna, who is concerned with the disintegration of the nucleus of lithium hydride, has discovered that this reaction is not stable, that is, that it continues automatically after the beginning; exceptionally large energy of the nucleus is released, and the whole experimental facility explodes (experiment at the test site). Prof. Bethe regards this reaction as a source of solar energy. In addition, this reaction brings about a change in the technique of explosives because the strength of the explosion is 10^6 times greater than in the case of nitroglycerin. This reaction was studied in many institutes, with the participation of professors Gerlach and Tomaschek—in Munich. Prof. Stetter from Vienna has developed a theory that this reaction should begin at the temperature of 10^6 ^{o}C. If this theory is correct, a test facility that can use this energy for practical purposes is easy to build. [...] Dr. Rober [Kober] asks permission to do so, and pointed out that AEG has already patented this issue.

[Again, which specific isotopes and reactions were considered? The general description sounds like the autocatalytic Jetter cycle (p. 4348). What experiments were done? What were the "many institutes" that also participated in this research? What exactly did Walther Gerlach and Rudolf Tomaschek do? Kober was known as a radar expert—what if any involvement with nuclear research did he have before or after the war? The existing AEG patent was that of Brasch and Lange (p. 4282).]

Immigration of Austrian Scientists to Soviet Zone. [NARA RG 319, Entry A1-134A, Box 31, Folder 02/006 430]

K SCHINTLMEISTER, Dr Josef Peter—USSR. Born 15 June 1908. Nuclear physicist. Listed on National Scientific Intelligence Requirements—Nuclear Energy—USSR, 23 July 1947. Reportedly anti-communist and had requested that be brought into contact with British. Released as Chief of Physics Institute because of NSDAP membership. Formerly associated with [Gustav] ORTNER, [Georg] STETTER, [Josef] MATTAUCH, [Werner] CZULIUS, and [Willibald] JENTSCHKE. During war, succeeded in isolating Transuranen to Transuranen 104. In summer of 1945, subject with other members of Radium Institute, fled to Thumersbach. In 1946 he accepted Soviet employment and was taken to Moscow. In September 1948 he reportedly contacted JOLIOT CURIE on problem of extracting plutonium. Censorship intercept indicates subject is currently interested in lithium hydride bombs, originally begun with STETTER.

[See document photo on p. 4332.

If Josef Schintlmeister really produced and identified transuranic elements through element 104 during the war, that long predates the recognized historical achievement of that milestone in 1969 in the United States. What evidence is this based on, and can it still be found? If transuranic elements were produced, was that in a cyclotron, a fission reactor, or by other methods?]

Friedrich Berkei. 1944 (probably). Page from laboratory notebook [Karlsch 2005, p. 330].

[This document is shown on the following page. Friedrich Berkei was a member of Kurt Diebner's research group. Virtually all of the rest of Berkei's notes were taken away from him after the war. This surviving page shows an amazingly comprehensive list of fusion reactions.]

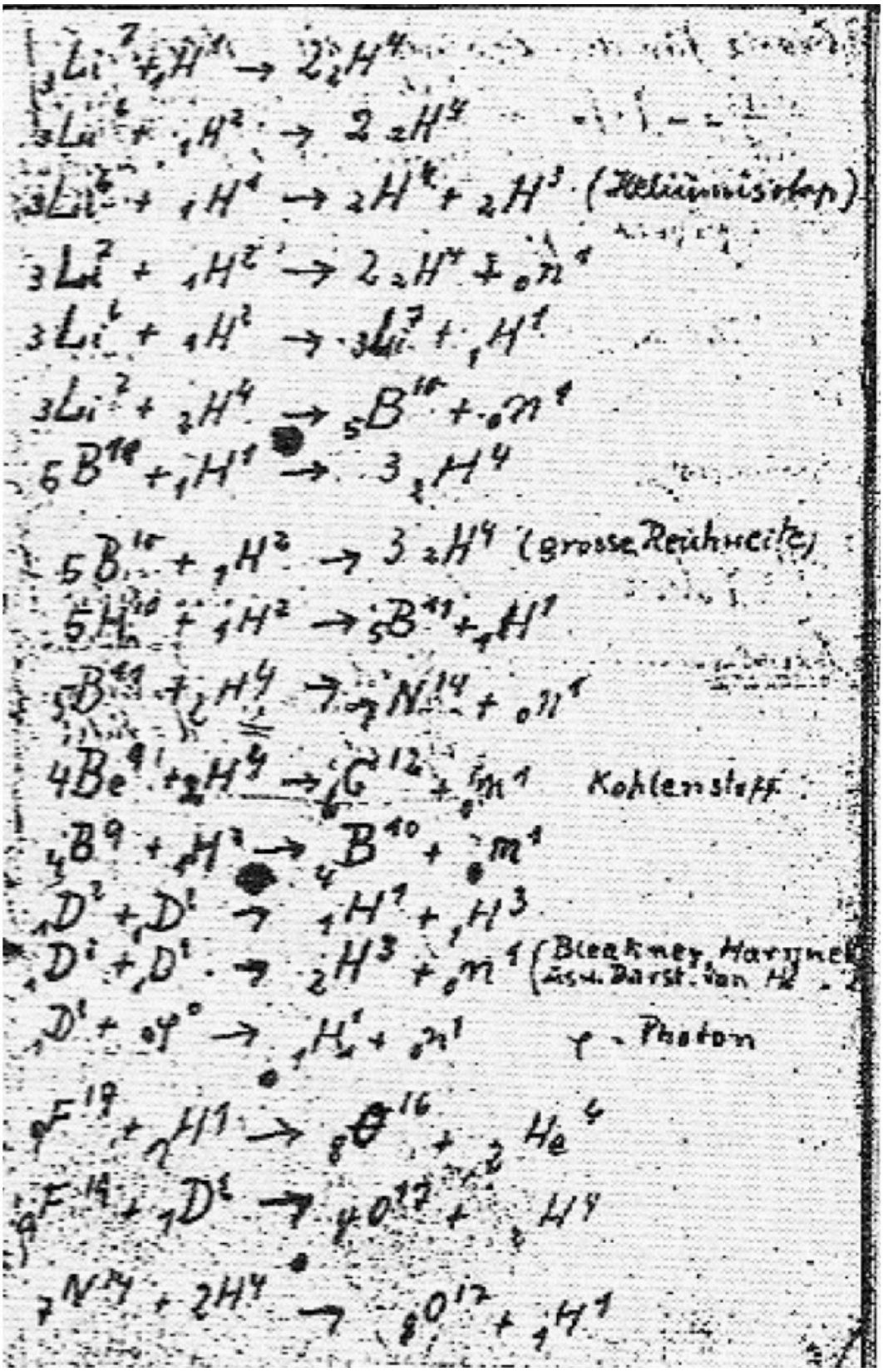


Figure D.632: Friedrich Berkei. 1944 (probably). Page from laboratory notebook systematically listing fusion reactions. [Courtesy of Rainer Karlsch]

Hans Thirring. 1946. *Die Geschichte der Atombombe.* Vienna: Neues Österreich. pp. 130–134, 138–139.

Es liegt deswegen die Idee nahe, ob man nicht die so schwer herstellbaren und deswegen immer nur in geringen Mengen zur Verfügung stehenden Stoffe U-235 and Plutonium in irgendeiner Weise "strecken" könnte, oder ob man nicht die bisherige Atombombe als eine Art "Zündpille" zur Einleitung weiterer Kernprozesse an anderen Stoffen verwenden könnte. [...]

Die Energie, die dem gestoßenen Deuteron verliehen wird, beträgt allerdings nur einen kleinen Bruchteil, höchstens etwa 1/25 der Energie des ursprünglichen Sprengstückes, aber diese Energie kann immerhin groß genug sein, damit das getroffene Deuteron, wenn es mit einem anderen Deuteron zusammenstößt, mit diesem die sogenannte d-d-Reaktion ausführt, die durch die Gleichung gegeben ist

The idea is therefore whether one might not be able in any way to "stretch" the substances U-235 and plutonium, which are so difficult to produce and therefore can only be produced in small quantities, or whether one might not be able to use the original atomic bomb as a kind of "sparkplug" to initiate further nuclear processes in other substances. [...]

The energy given to the destroyed deuteron is, however, only a small fraction, at most about 1/25 of the energy of the original explosive, but this energy can still be large enough for the deuteron to fuse when it collides with another deuteron, in the so-called d-d reaction, which is given by the equation

$$^{2}_{1}\mathrm{H}\,(d,n)\,^{3}_{2}\mathrm{He}$$

In Worten ausgedrückt: zwei Deuteronen stoßen zusammen (daher der Name d-d-Reaktion) und vereinigen sich zu dem Heliumisotop $^{3}_{2}$He, während gleichzeitig ein Neutron ausgestoßen wird. [...]

Eine andere Substanz, in der gegebenenfalls auch durch Zündung mittels einer Atombombe ein thermischer Kernkettenprozeß hervorgerufen werden könnte, ist das Lithiumhydrid (LiH), in dem sich bei einer Temperatur von Milliarden Graden der folgende Prozeß abspielen könnte

Expressed in words: two deuterons collide (hence the name d-d reaction) and fuse to form the helium isotope $^{3}_{2}$He, while a neutron is simultaneously emitted. [...]

Another substance, in which a thermal nuclear chain reaction could be induced by an atom bomb, is lithium hydride (LiH), in which the following process can take place at a temperature of billions of degrees

$$^{7}_{3}\mathrm{Li}\,(p,\alpha)\,^{4}_{2}\mathrm{He}$$

Die Gleichung bedeutet: Beim Aufprall eines Protons auf einen Lithiumkern $^{7}_{3}$Li entsteht ein Zwischenkern der Masse 8 und der Ladung 4, der in zwei mit großer Wucht auseinanderfliegende α-Teilchen zerfällt.

[...] die Energie, die man durch Bildung von Helium aus LiH gewinnen kann, fast dreimal so groß wie die bei der Kernspaltung aus der gleichen Menge von U-235 erzeugte. Dabei ist nun Lithium ein gar nicht so seltenes Element, so daß man in einer "Superatombombe" ungefähr ebensoviel Tonnen Lithiumhydrid verwenden könnte, als man jetzt Kilogramm Plutonium verwendet, derart, daß sich eine Wirkung ergäbe, die wiederum einige tausendmal gegenüber der bisher bekannten gesteigert werden könnte. Gott gnade jenem Lande, über dem eine Sechstonnenbombe von Lithiumhydrid zur Explosion gebracht wird!

Sofern die Idee überhaupt realisierbar ist, würde in solch einer Superatombombe die bisherige Uranbombe oder Plutoniumbombe nur die Rolle einer "Zündpille" spielen. [...]

The equation means that when a proton collides with a lithium nucleus $^{7}_{3}$Li, an intermediate nucleus of mass 8 and charge 4 is formed, which breaks up into two alpha particles which separate with great energy.

The energy which can be obtained by the formation of helium from LiH is almost three times as great as that produced by nuclear fission from the same quantity of U-235. In this case, lithium is not a rare element, so that in a "super atom bomb" it would be possible to use on the order of tons of lithium hydride compared to kilograms of plutonium [for fission], in such a way as to produce an effect several thousand times as large as before. God have mercy on the country over which a six-ton bomb of lithium hydride is made to explode!

If the idea is realizable at all, the former uranium bomb or plutonium bomb would only play the role of a sparkplug in such a super atom bomb. [...]

[Thirring was correct that lithium hydride would make an excellent solid fuel for a hydrogen bomb, and that such a bomb could be thousands of times more powerful than a fission bomb (megatons instead of kilotons of explosive yield). However, the specific isotopes and reaction that he proposed (^{7}Li + ^{1}H) are too difficult to use for fusion, because of the strong repulsion between the three positive charges in the lithium nucleus and the one positive charge in the hydrogen nucleus.

By using ^{6}Li, ^{2}H (deuterium), and two coupled nuclear reactions, the Jetter cycle (p. 4348) avoids that problem. Did scientists consider that possibility during the war?

Note that Thirring gave an extremely specific example of a fusion bomb: "a six-ton bomb of lithium hydride." Thirring was in direct contact with scientists who worked in the wartime German nuclear program. Why did he choose such a specific mass for a fusion bomb? Was there wartime work on a six-ton lithium hydride (lithium deuteride?) bomb? Immediately after the war, several other scientists and engineers mentioned wartime work on a mysterious six-ton bomb–see pp. 4350–4363 and 5343.]

[...] Man weiß seit fast einem Vierteljahrhundert, daß es α-strahlende Substanzen gibt, die etwas anderes sind als die bekannten α-Strahler der drei radioaktiven Familien. Sehr eingehende Messungen mit verfeinerten Appareten sind am Physikalischen Institut der Wiener Universität und am Wiener Radiuminstitut vorgenommen worden und ergaben, daß es eine ganze Gruppe von sieben neuen α-Strahlern mit verschiedener Reichweite gibt, die bisher keinem Isotop irgendeines der bekannten Elemente zwischen Nr. 1 und Nr. 92 zugeschrieben werden konnten. Es ist einer Wiener Forschergruppe, die aus den Herren Schintlmeister, Jentschke, Brukl, Hernegger und Frl. Hilbert besteht, gelungen, aus Zinkblende und aus anderen sulfidischen Erzen die α-Strahler anzureichern, aber die gewonnenen Mengen sind noch nicht groß genug, um mit Hilfe von Röntgen-spektralaufnahmen die chemische Natur festzustellen. Es wäre möglich, daß es sich um Transurane handelt, und zwar um andere und langlebigere als Neptunium und Plutonium, weil diese infolge ihrer Kurzlebigkeit schon längst nicht mehr im natürlichen Zustand auf der Erde vorkommen, sondern nur künstlich hergestellt werden können. Weil nun jedes Element mit einer Kernladung von 90 und darüber zur Kernspaltung neigt, ist mit Warscheinlichkeit anzunehmen, daß diese noch nicht identifizierten α-Strahler—falls sie wirklich Transurane sind—entweder selber Stoffe sind, in denen Kernkettenreaktionen eintreten können, oder als Ausgangsmaterial zur Heranzüchtung solcher Stoffe dienen können. Substanzen dieser Art würden dann sowohl für die Atomwaffe als auch für die reine Energiegewinnung das Uranmonopol brechen.

[...] It has been known for almost a quarter of a century that there are alpha-emitting substances that are different from the known alpha emitters of the three radioactive families. Very detailed measurements with refined equipment have been made at the Physics Institute of the University of Vienna and at the Vienna Radium Institute, and showed that there is a whole group of seven new alpha-emitters with different ranges which have hitherto not been associated with any isotope of any of the known elements between no. 1 and 92. It is a Viennese research group consisting of Schintlmeister, Jentschke, Brukl, Hernegger, and Frl. Hilbert, who succeeded in enriching the alpha emitters from zincblende and other sulphide ores, but the quantities obtained are not yet large enough to be combined with help of Roentgen spectral recordings to determine the chemical nature. It is possible that they are transuranics, and others are more durable than neptunium and plutonium, because, as a result of their short-livedness, they are no longer present in the natural state on the earth, but can be produced only in a manner which is artificial. Since every element with a nuclear charge of 90 or over tends to undergo nuclear fission, it is probable that these unidentified alpha-emitters, if they are really transuranics, are themselves substances in which nuclear chain reactions can occur, or as starting materials for the production of such substances. Substances of this kind would then break the uranium monopoly both for nuclear weapons and for pure energy production.

[Thirring provided more information about Schintlmeister's possible experiments with transuranic elements. Apparently Schintlmeister used the energies (range) of emitted alpha particles to try to identify the specific isotopes that emitted those alpha particles. If only isotopes from naturally occurring samples were analyzed, there should be no transuranic elements, and any results indicating that there were would presumably be spurious. Did the analyzed samples come from an artificial source, such as a cyclotron or fission reactor?]

Hans Thirring. Undated (circa 1971). In den nächsten zehn Jahren muss es zwischen den Supermächten USA, UdSSR, China, England und Frankreich zu einer allgemeinen Abrüstung kommen. Sondersammlung der Österreichischen Zentralbibliothek für Physik (ZBP), Universität Wien, Nachlass Broda, Box 24, File 55, Fiche 54.

Schon vor 25 Jahren wußte ich, daß man Wasserstoffbomben erzeugen wird, die eine zehntausendfache Sprengkraft der Hiroshima-Bombe haben würden. In den Jarhren 1951–1967 haben fünf Staaten an diesem Projekt gearbeitet und Megatonnenbomben erzeugt; es sind bereits genügend Bomben vorhanden, um die ganze Welt in einen chaotischen Zustand unvorstellbaren Ausmaßes bringen zu können. [...]

Im Juli 1946 diskutierte ich über das Problem der Entwicklung noch stärkerer Vernichtungswaffen mit meinem Kollegen Jentschke, einem jungen österreichischen Physiker, jetzt Generaldirektor des CERN in Genf. Jentschke war als reiner Physiker nicht so sehr von der Wichtigkeit der Kernvernschmelzung überzeugt; aber ich als Physiker und Politiker wußte, daß das Gelingen dieser Experimente (zur Herstellung der Wasserstoffbombe) leider von welthistorischer Bedeutung sein wird.

Im Herbst 1946 veröffentlichte ich mein Buch, "Die Geschichte der Atombombe". [...]

Die meisten Leute fanden die darin beschriebene historische Entwicklung sehr interessant, aber über die Berechnungen der Lithiumhydrid-Reaktion lasen sie, als zu wissenschaftlich, einfach hinweg. [...]

Im Studienjahr 1946/47 war ich Dekan an der Universität Wien und sprach in einem Seminar, das ich damals hielt, über die Möglichkeit, daß nicht nur die Amerikaner sondern auch die Russen sehr bald über Wasserstoffbomben verfügen könnten.

25 years ago, I knew that hydrogen bombs, which could have ten thousand times the explosive force of the Hiroshima bomb, would be produced. In the years 1951–1967 five countries worked on this project and produced megaton bombs; there are already enough bombs to turn the whole world into a chaotic state of unimaginable proportions. [...]

In July 1946, I discussed the problem of the development of even more powerful weapons of destruction with my colleague Jentschke, a young Austrian physicist, now General Manager of CERN in Geneva. Jentschke, as a pure physicist, was not so much convinced of the importance of nuclear fusion; but as a physicist and politician I knew that the success of these experiments (for the production of the hydrogen bomb) would unfortunately be of historical importance.

In the autumn of 1946 I published my book, *The History of the Atomic Bomb*. [...]

Most people found the historical development described therein very interesting, but they simply ignored the calculations of the lithium hydride reaction as too scientific. [...]

In the academic year 1946/47, I was a dean at the University of Vienna, and I spoke in a seminar I held at the time about the possibility that not only the Americans, but also the Russians, could soon have hydrogen bombs.

[Thirring acknowledged that an important source for his book was Willibald Jentschke, who was a member of Georg Stetter's research group during the war.

Does the information in Thirring's book accurately convey what the Austrian nuclear scientists knew (or did not know) during the war, or were any important details omitted?

How much involvement did Thirring himself have with nuclear work during the war?

What other sources of information did he use for his book?]

Dr. Alfred K l e m m (14) Tailfingen, 16.3.1945
Krs. Balingen/Württ.,
Postfach 86

Reichsforschungsrat
Bevollm. für Kernphysik
Eing. 29.3.45
9 Anl.

An den
Bevollmächtigten des Reichsmarschalls für Kernphysik,
Herrn Professor Dr. W. G e r l a c h ,
B e r l i n - D a h l e m
Boltzmannstr. 2o

26.3.45

Sehr verehrter Herr Professor Gerlach !

Da am 31.3.45 die vorgesehene Zeitspanne zur Durchführung meines Forschungsauftrages Nr. II.oo7.44 abläuft, möchte ich Ihnen mitteilen, wie weit die Arbeit seit meinem letzten Bericht an Sie vom 16.11.44 fortgeschritten ist.

Herr Dr. Hoernes und ich haben weiter zahlreiche Elektrolysen mit Schmelzen durchgeführt, wobei immer andere Versuchsbedingungen ausprobiert wurden. Von diesen Versuchen haben wir Lithium- und Bleiproben gewonnen. Zu einer Isotopen-Analyse der Proben ist es aber leider noch nicht gekommen. An unserm Institut ist Herr Dr. Hintenberger damit beschäftigt, sein Massenspektrometer für Lithium herzurichten. Wir werden Ihnen wohl bis Ende April das Ergebnis bei Lithium mitteilen können. Für die Untersuchungen des Bleis und anderer Metalle ausser Alkalien besteht an unserem Institut zurzeit wenig Aussicht, denn das Massenspektrometer von Dr. Hintenberger funktioniert vorläufig nur für Alkalien und mit dem Massenspektrographen von Dr. Ewald werden keine Häufigkeitsmessungen durchgeführt, sondern genaue Massenbestimmungen.

Herr Dr. Hoernes und ich bemühen uns inzwischen weiter, die jetzigen Bedingungen bei der Elektrolyse zu verbessern und damit bessere Proben der Metalle Lithium, Blei, Silber und Spezialmetalle zu gewinnen.

Sehr schade ist es, dass wir kein Thallium haben, von dem wir etwa 1 kg bräuchten. Wir haben schon mehrmals bei der Reichsstelle für Chemie darum angefragt, jedoch erhielten wir keine Antwort, obwohl mit gleichem Brief beantragtes Lithium bewilligt wurde. Das Thallium wäre für einen Versuch der Anreicherung von Spezialmetallen sehr wichtig.

Von den für meinen Forschungsauftrag bewilligten RM 3ooo.- habe ich bis jetzt ca. 12oo.- verbraucht. Die Abrechnungen darüber gehen Ihnen mit gleicher Post zu. Ich möchte Sie bitten, mir den Forschungsauftrag auf ein weiteres Jahr zu verlängern.

Da durch Feindeinwirkung die Geschäfte meines Vaters so geschädigt sind, dass ich von dieser Seite keine Zuschüsse mehr erhalten kann, bin ich jetzt darauf angewiesen, meine Familie, bestehend aus Frau und drei Kindern, selbst zu ernähren. Ich habe mir darum vom Institut angeben lassen, dass mir als Assistent im 9. Dienstjahr nach Hochschultarif 6oo.- RM monatlich zustünden. Ich möchte Sie daher bitten, mir ein Stipendium in dieser Höhe für das kommende Jahr zu bewilligen.

Mit vorzüglicher Hochachtung verbleibe ich

Ihr

Anlagen: 5 Sonderdrucke.

Alfred Klemm

1 Abrechnung mit dem RFR

Figure D.633: 16 March 1945 letter from Alfred Klemm to Walther Gerlach reporting successful demonstrations of lithium isotope separation [NARA RG 77, Entry UD-22A, Box 167, Folder 32.12-2 GERMANY: Personnel (Jan 45–Dec 45)].

Anreicherung der schweren Isotope von Li und K durch elektrolytische Ionenwanderung in geschmolzenen Chloriden

Von Alfred Klemm, Heinrich Hintenberger und Philipp Hoernes
Aus dem Kaiser-Wilhelm-Institut für Chemie, Tailfingen
(Z. Naturforschg. 2a, 245—249 [1947]; eingegangen am 26. Januar 1947)

Durch elektrolytische Ionenwanderung wurde an der Grenzfläche zwischen geschmolzenem LiCl mit 2 Molprozent KCl einerseits und geschmolzenem $PbCl_2$ andererseits bei einer Stromdichte von 5 A/cm² in 48 Stdn. K stark angereichert, das Mischungsverhältnis [⁷Li]/[⁶Li] von 12,3 auf 44,3 und das Mischungsverhältnis [⁴¹K]/[³⁹K] von 0,0714 auf 0,0885 verschoben. Als Quotienten der Ionenwanderungsgeschwindigkeiten wurden gefunden: $w_{Li}/w_K = 1{,}156$, $w_6/w_7 = 1{,}021$ und $w_{39}/w_{41} = 1{,}016$. Faßt man diese Quotienten als Trennfaktoren einer Stufe auf, so bedeuten die angegebenen Anreicherungen eine wirksame gesamte Trennstufenzahl von 61,5 bei den Li-Isotopen und 13,4 bei den K-Isotopen. Für den Masseneffekt $\mu = \ln(w_j/w_k)/\ln(m_j/m_k)$, ($m$ = Isotopenmasse), folgt $\mu = -0{,}135$ für Li und $\mu = -0{,}32$ für K. Der große Masseneffekt und die kleine Trennstufenzahl beim K kann durch dessen geringe Konzentration erklärt werden.

Nachdem sich bei zwei Diffusionsversuchen (H diffundierte in Pd[1], Cu diffundierte in α-Ag_2S[2]) und bei einem Versuch mit elektrolytischer Ionenwanderung (Ag^+ wanderte in α-AgJ[3]) gezeigt hatte, daß die leichten Isotope in festen Körpern eine größere Beweglichkeit haben als die schweren, sollte in der vorliegenden Arbeit untersucht werden, ob der gleiche Effekt bei elektrolytischer Ionenwanderung in Schmelzen auftritt.

Im Gegensatz zu dem Überführungsversuch in α-AgJ wurde diesmal die Anreicherung der weniger beweglichen Kationen nicht im Anodenraum, sondern vor einer wandernden Grenzfläche studiert, und zwar an der Grenzfläche zwischen LiCl, das zufällig etwas KCl enthielt, einerseits und $PbCl_2$ andererseits. Die Stromrichtung war dabei so gewählt, daß die Alkali-Ionen voraus und die Blei-Ionen hinterher wanderten. Da die Alkali-Ionen eine größere Beweglichkeit haben als die Blei-Ionen, bleibt bei dieser Stromrichtung die Grenzfläche scharf, während bei der umgekehrten Stromrichtung eine Vermischung der Alkali- und Blei-Ionen eintreten würde. Für die Anreicherung der schweren Alkali-Ionen ist es belanglos, ob der mit den Alkalichloriden erfüllte Raum anodenseitig durch die Anode selbst oder durch die beschriebene wandernde Grenzfläche begrenzt ist, da in beiden Fällen jene Grenze für Chlor passierbar und für Alkalien unpassierbar ist. Ist diese Bedingung erfüllt, dann tritt bei Stromfluß der beabsichtigte Vorgang ein, daß diejenigen Alkali-Ionen zur Grenzfläche hin verschoben werden, deren Wanderungsgeschwindigkeit w_i im Chlor kleiner ist als die Geschwindigkeit w_0, mit der das Chlor durch die Grenzfläche aus dem Raum der Alkali-Ionen austritt, während sich diejenigen Alkali-Ionen, bei denen w_i größer ist als w_0, von der Grenzfläche weg verschieben. An der Grenzfläche stauen sich also die schweren und verarmen die leichten Alkali-Ionen, wobei die Gesamtkonzentration der Alkali-Ionen aus Raumladungsgründen konstant bleibt. Die Gradienten der Partialkonzentrationen sind um so größer, je größer die Stromdichte und je kleiner die Diffusionskonstante und die eventuell vorhandene Konvektion ist. Die durch Raumladungskräfte erzwungene Konstanz der Gesamtkonzentration ist bei dem Verfahren wesentlich. Nähme nämlich die Gesamtkonzentration im Stauraum infolge der Überführung zu, so würde zwar die gleiche Überschußmenge der anzureichernden Komponente in den Stauraum eintreten wie im Falle konstanter Gesamtkonzentration, aber es würde zusätzlich eine große Menge nicht angereicherten Gemisches in den Stauraum eintreten, wodurch die tatsächliche Entmischung verschlechtert würde.

Nach dem gleichen Prinzip muß die Anreicherung leichter Isotope möglich sein. Z. B. ist anzu-

[1] W. Jost u. A. Widmann, Z. physik. Chem. (B) **45**, 285 [1940].
[2] A. Klemm, Z. physik. Chem. Abt. A **193**, 29 [1943].
[3] A. Klemm, Z. Naturforschg. **2a**, 9 [1947].

Figure D.634: Alfred Klemm, Heinrich Hinterberger, and Philipp Hoernes. 1947. Anreicherung der schweren Isotope von Li und K durch elektrolytische Ionenwanderung in geschmolzenen Chloriden. *Zeitschrift für Naturforschung.* 2a:245–249. [https://doi.org/10.17617/3.GRUJYR]

Alfred Klemm, Heinrich Hinterberger, and Philipp Hoernes. 1947. Anreicherung der schweren Isotope von Li und K durch elektrolytische Ionenwanderung in geschmolzenen Chloriden. *Zeitschrift für Naturforschung.* 2a:245–249. [**https://doi.org/10.17617/3.GRUJYR**]

Anreicherung der schweren Isotope von Li und K durch elektrolytische Ionenwanderung in geschmolzenen Chloriden.

Durch elektrolytische Ionenwanderung wurde an der Grenzfläche zwischen geschmolzenem LiCl mit 2 Molprozent KCl einerseits und geschmolzenem $PbCl_2$ andererseits bei einer Stromdichte von 5 A/cm^2 in 48 Stdn. K stark angereichert, das Mischungsverhältnis [^{7}Li]/[^{6}Li] von 12,3 auf 44,3 und das Mischungsverhältnis [^{41}K]/[^{39}K] von 0,0714 auf 0,0885 verschoben. Als Quotienten der Ionenwanderungsgeschwindigkeiten wurden gefunden: w_{Li}/w_K = 1,156, w_6/w_7 = 1,021 und w_{39}/w_{41} = 1,016. Faßt man diese Quotienten als Trennfaktoren einer Stufe auf, so bedeuten die angegebenen Anreicherungen eine wirksame gesamte Trennstufenzahl von 61,5 bei den Li-Isotopen und 13,4 bei den K-Isotopen. Für den Masseneffekt $\mu = \ln(w_j/w_k)/\ln(m_j/m_k)$, ($m$ = Isotopenmasse), folgt μ = -0,135 für Li und μ = -0,32 für K. Der große Masseneffekt und die kleine Trennstufenzahl beim K kann durch dessen geringe Konzentration erklärt werden.

[...] Der Trennversuch und die Auswertung der Analysenergebnisse wurde von A. Klemm, die massen-spektrometrische Analyse von H. Hintenberger und die chemische Arbeit von Ph. Hoernes durchgeführt. Hrn. Prof. J. Mattauch danken wir für die Förderung der Arbeit und den Assistentinnen H. und U. Scheid für ihre gewissenhafte Mitarbeit.

Enrichment of the heavy isotopes of Li [lithium] and K [potassium] by electrolytic ion migration in molten chlorides.

By electrolytic ion migration at the boundary between molten LiCl with 2 mole percent KCl, on the one hand, and molten $PbCl_2$, on the other hand, was strongly enriched in 48 hours of K at a current density of 5 A/cm^2, the mixing ratio [^{7}Li]/[^{6}Li] from 12.3 to 44.3 and the mixing ratio [^{41}K]/[^{39}K] from 0.0714 to 0.0885. As quotients of the ion migration rates were found: w_{Li}/w_K = 1.156, w_6/w_7 = 1.021 and w_{39}/w_{41} = 1.016. If these quotients are taken as the separation factors of a step, the indicated enrichment means an effective total separation step number of 61.5 for the Li isotopes and 13.4 for the K isotopes. For the mass effect $\mu = \ln(w_j/w_k)/\ln(m_j/m_k)$, ($m$ = isotope mass), μ = -0.135 for Li and μ = -0.32 for K. The large mass effect and the small number of separation stages in the K can be explained by its low concentration.

[...] The separation experiment and the analysis of the results of the analysis were carried out by A. Klemm, the mass spectrometric analysis by H. Hintenberger, and the chemical work of Ph. Hoernes. We thank Prof. J. Mattauch for the support of the work and the assistants H. and U. Scheid for their conscientious cooperation.

[See document photo on p. 4344. This was a delayed publication of work that was done during the war; see for example p. 4343. Lithium has two naturally occurring isotopes: ^{6}Li (approximately 7.5% of natural lithium) and ^{7}Li (approximately 92.5% of natural lithium). Thus their naturally occurring ratio is [^{7}Li]/[^{6}Li] $\approx$ 92.5%/7.5% $\approx$ 12.3. Within 48 hours, Klemm's process enriched them to a ratio [^{7}Li]/[^{6}Li] $\approx$ 97.8%/2.2% $\approx$ 44.3. The isotopes are virtually identical chemically; the only major reason to separate them would be for nuclear reactions. What exactly was the purified ^{6}Li intended for?

During the war, Josef Mattauch was head of the physics department at the Kaiser Wilhelm Institute for Chemistry in Tailfingen where Klemm worked. Prior to the war, Mattauch was at the University of Vienna for 26 years, and thus closely connected to Georg Stetter's research group. Was the purified ^{6}Li for the Stetter group's work on fusion? If so, that could suggest that they were working on the Jetter cycle, which requires ^{6}Li.]

Alfred Klemm. 1958. Lithium in der Kerntechnik. *Angewandte Chemie* 70:1:21–24.

Lithium kann in der modernen Kerntechnik auf vielfache Weise verwendet werden, so zur Herstellung von Tritium (etwa für thermonucleare Reaktionen), als Abschirmungsmittel, zum Nachweis thermischer Neutronen, als Reaktorkühlmittel, als Moderator oder in Form von geschmolzenem LiF als Lösungsmittel für Kernbrennstoffe. Zur Anreicherung der Lithium-Isotope 6 bzw. 7 sind die Ionenwanderung in geschmolzenem LiCl und das Lithium-Amalgam-Verfahren von besonderem Interesse.

Lithium can be widely used in modern nuclear engineering, for instance to produce tritium (for thermonuclear reactions), as a shielding agent, for detecting thermal neutrons, as a reactor coolant, as a moderator, or as a molten LiF as a solvent for nuclear fuels. The ion migration in molten LiCl and the lithium-amalgam process are of particular interest for the enrichment of the lithium isotopes 6 and 7, respectively.

[This postwar article by Klemm may suggest that his wartime work was indeed intended for nuclear purposes.]

Heiko Petermann, Discussion notes with Prof. Alfred Klemm, Mainz, Saarstr. 23, Max Planck Institut für Chemie. 5 March 2004. 06131-305-223 [courtesy of Heiko Petermann].

Klemm wirkte sehr nervös und wich meinen Fragen immer wieder aus. Er war bemüht, mich so schnell wie möglich wieder los zu werden.

Klemm looked very nervous and always gave up my questions. He tried to get rid of me as soon as possible.

Klemm hat sich während des Krieges ausschließlich mit Isotopentrennung beschäftigt und war sozusagen sein 'eigener Herr'. Das von ihm entwickelte Elektrolyt-Verfahren funktionierte bei Uranhexaflorid nicht.

During the war, Klemm concentrated exclusively on isotopic separation and was, so to speak, his own master. The electrolyte process he developed did not work with uranium hexafluoride.

Klemm hatte mit Hahns Truppe wenig zu tun, da er separat arbeitete, sich selbst als 'eigen' bezeichnet

Klemm had little to do with Hahn's group, since he worked separately, calling himself 'independent'

Klemm ging mit nach Tailfingen

Klemm also went to Tailfingen

Schwerpunkt der Arbeit war die Herstellung von Li6 durch Trennung von Li7. Dies gelang im elektrolytischen Verfahren sehr gut. Ab 1942–43. Klemm wies darauf hin, dass er wohl der erste war, dem die Trennung mittels Elektrolyse gelungen sei (wissenschaftliche Priorität, siehe auch Z. f. Naturforschung 2a, S. 245 ff, 1947, unter Mitarbeit v. H. Hintenberger u. P. Hoernes)

Main focus of the work was the production of Li6 by separation of Li7. This was achieved very well in the electrolytic process. From 1942–43. Klemm pointed out that he was probably the first to achieve the separation by means of electrolysis (scientific priority, see also Z. f. Naturforschung 2a, pp. 245 ff, 1947, with the collaboration of H. Hintenberger and P. Hoernes)

Über die Tritium-Problematik wusste er Bescheid, es war aber damals nicht seine Aufgabe. (wessen denn?)

He knew about the tritium problem, but it was not his job at the time. (Whose then?)

Diskutiert wurde die Verwendung von metallischem Li7 als Reaktorkühlmittel

The use of metallic Li7 as a reactor coolant was discussed

Klemm kannte die AEG-Hochspannungsanlage und meinte Flammersfeld hat dort mit Bestrahlung von Material gearbeitet
(Vorsicht bei dieser Aussage, sie passt zwar, doch es ist nicht klar ob Klemm da nicht einiges bezüglich der Hochspannungsanlage des KWI f. Chemie durcheinanderbringt, ich fasse brieflich nach—hp)

Klemm knew the AEG high voltage installation and said Flammersfeld worked there with irradiation of material
(Caution with this statement, it fits, but it is not clear whether Klemm was referring in part to the high-voltage plant of the KWI for Chemistry disagrees, I will get the correspondence after—hp)

Klemms Vater gehörte die Dietrichsche Verlagsbuchhandlung. 1946 entstand dann als Ableger der Verlag der Zeitschrift für Naturforschung, die seitdem A. Klemm leitet.

Klemm's father owned the book publisher Dietrich. In 1946, the publishing house of the Zeitschrift fúr Naturforschung (Journal of Natural Research), which has been headed by A. Klemm since then, was founded.

Brieflich dürfte er präziser sein, denn der Besuch hat ihn in erheblichste Unruhe gestürzt.

In correspondence he might be more precise, for the visit has plunged him into considerable disquiet.

Vielleicht lässt sich aus seinem Archiv noch ein Schätzchen heben.

Perhaps one can pick up a clue from his archive.

Nachtrag: Mit Antwortschreiben v. 4.4.04 notierte er handschriftlich, daß er Li6 im Grammbereich produzierte. Gegen Kriegsende hat er es 'weggeworfen'.

Addendum: With a reply from v. 4.4.04 he noted in handwriting that he produced Li6 in the gram range. He "threw it away" at the end of the war.

Er bestätigte weiterhin, daß die Tritiumproblematik (Zerfall Li6 in Tritium) bereits vor 1945 diskutiert wurde.

He also confirmed that the tritium problem (disintegration of Li6 into tritium) was already discussed before 1945.

[If Klemm's wartime work was for purely scientific reasons, why was he so nervous to discuss it 60 years later, and shortly before his death?

Klemm twice confirmed that scientists were working on tritium during the war. Who and where? Was his ^{6}Li bombarded with neutrons to produce tritium during the war? The knowledge of that reaction during the war, as shown by both Klemm and also Kallmann and Kuhn (p. 4298) may help demonstrate that the Jetter cycle (p. 4348) originated in the German-speaking world during the war.

An amount of ^{6}Li "in the gram range" (one gram? several grams?) would be extremely useful for fusion boosting of a fission bomb, or for producing a similar amount of tritium for the same purpose.

If Klemm's work was performed during 1942–1943, planning for fusion reactions must have begun early in the war. If Klemm's work was perfected at that time, was his ^{6}Li purification process transferred to other locations and scaled up later in the war?

If the gram-range amount of ^{6}Li was difficult to create and was produced for purely scientific reasons, why would Klemm "throw it away" at the end of the war? If he did throw it away, does that suggest that he knew its real purpose was much more serious? Or did he not throw it away—was it transferred to the German nuclear program, or seized by Allied forces, or hidden to protect it?]

Pavel V. Oleynikov. 2000. German Scientists in the Soviet Atomic Project. *Nonproliferation Review* 7:2:1–30.

After 1950, Hertz moved to Moscow where, together with Werner Schuetze, he started to work on analysis of lithium and purification of tritium.

Documents about German scientists who helped the Soviet Union develop an atomic bomb. 29 October 2019. [https://www.mbs.news/2019/10/documents-about-german-scientists-who-helped-the-soviet-union-develop-an-atomic-bomb.html]

Manfred von Ardenne, the scientific director of the A kurulan institute, established in another sanatorium in the USSR, was also awarded the Stalin Prize twice in 1947 for inventing the electronic microscope and in 1953 for obtaining the lithium 6 isotope necessary for the creation of nuclear warheads.

[After the war, Gustav Hertz, Werner Schuetze, and Manfred von Ardenne separated lithium isotopes and produced tritium for the Soviet hydrogen bomb project. Was their expertise in that area derived from work they did during the war to separate lithium isotopes and produce tritium for the German nuclear program?]

https://www.cia.gov/readingroom/docs/CIA-RDP82-00457R004500650007-8.pdf

Ulrich Jetter. 1950. Die sogenannte Superbombe. *Physikalische Blätter* (1950) 6:199-205.

Die beiden Reaktionen... "gehen" ungewöhnlich gut: das leichte Lithiumisotop hat einen sehr großen Wirkungsquerschnitt gegenüber der D-D-Reaktion eine tiefere Energieschwelle und bei gleicher Temperatur die rund hundertfache Ausbeute. Sofern also genügend Tritonen oder Neutronen zugegen sind, wird der Zyklus

$$\begin{array}{ccccc} \mathrm{n} + {}^{6}\mathrm{Li} & \longrightarrow & {}^{4}\mathrm{He} + \mathrm{Tr} \\ \uparrow & & \downarrow \\ \mathrm{n} + {}^{4}\mathrm{He} & \longleftarrow & \mathrm{D} + \mathrm{Tr} \end{array} \tag{D.15}$$

die Hauptreaktion bilden.

The two reactions... "go" [together] unusually well: the light lithium isotope has a very large cross section over the DD reaction, a lower energy threshold and at the same temperature a hundredfold yield, so if sufficient tritons or neutrons are present, the cycle

$$\begin{array}{ccccc} \text{neutron} + \text{lithium-6} & \longrightarrow & \text{helium-4} + \text{tritium} \\ \uparrow & & \downarrow \\ \text{neutron} + \text{helium-4} & \longleftarrow & \text{deuterium} + \text{tritium} \end{array} \tag{D.16}$$

will become the main reaction.

[This reaction uses lithium-6 deuteride and is the main reaction in modern hydrogen bombs. It was not demonstrated by the United States and Soviet Union until the 1950s.

Due to Allied restrictions on research in Germany and Austria after the war, it seems likely that this paper was based on wartime research. Where and when was that research done, and by whom? Can this paper be connected to wartime research by Georg Stetter's group or other groups on lithium-based fusion reactions? Ulrich Jetter (German, 1914–??) studied at the University of Stuttgart 1931–1941, worked at the Kaiser Wilhelm Institute for Metal Research 1941–1945, and served as an editor for *Physikalische Blätter* 1945–1951 [Jetter 1954]. Could Jetter's 1950 article, 1952 book, and 1954 article (Fig. D.635) on the scientific details of H-bombs have been based on information he learned during the war? Did Jetter do nuclear research during the war, or did he interact with other scientists who did? Lithium is a metal; was lithium fusion research being done at the KWI for Metal Research during the war?

Alternatively, could Jetter's article be based on wartime research that he learned about after the war in his capacity as an editor at the journal? Or does the paper truly demonstrate an insight that only came to Jetter, and only in 1950?

Note that Jetter was invited to Washington, D.C. as a "cultural exchange fellow" in 1951, before the U.S. produced and tested its first H-bombs.]

Die sogenannte Superbombe

Von Dr.-Ing. Ulrich Jetter, Stuttgart

„Es ist Teil meiner Verantwortung als Oberbefehlshaber der Streitkräfte, dafür zu sorgen, daß unser Land in der Lage ist, sich gegen jeden möglichen Angreifer zu verteidigen.

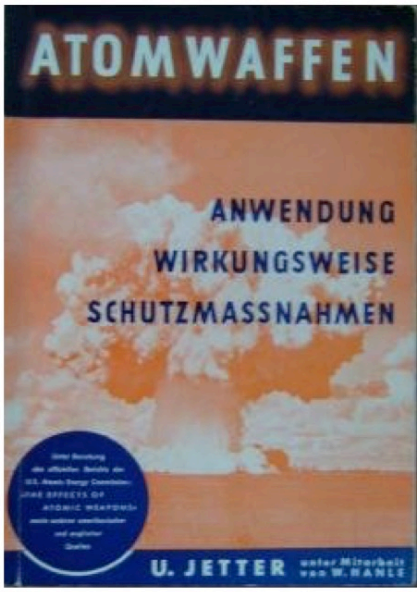
Demgemäß habe ich die Kommission für Atomenergie angewiesen, ihre Arbeit an Atomwaffen aller Art fortzusetzen, mit Einschluß der sogenannten Superbombe.

Wie alle andere Arbeit auf dem Gebiet der Atomwaffen wird auch diese Tätigkeit jetzt und in Zukunft auf einer Basis fortgeführt, die mit den allgemeinen Zielen unseres Programms für Frieden und Sicherheit übereinstimmt."

Präsident Truman, 1. 2. 1950.

Wenn eine Regierung bekannt gibt, sie wolle Geschütze mit 39 3/8 Zoll Kaliber bauen, dann läßt sich herausfinden, wie groß das Kaliber in Zentime-

1950 *Physikalische Blätter* article



1952 book, *Nuclear Weapons: Use, Mode of Action, Protective Measures*

1954 *Physikalische Blätter* article

Ulrich Jetter

Mitarbeiter des Instituts für Demoskopie Allensbach. Physik und Sozialwissenschaften. * 1914. Nach Abitur 2 Jahre Industriearbeit. 1935/40 Stud. d. Physik in Stuttgart. 1937/38 Foreign Exchange Fellowship Passadena, Master of Science. 1939 Dipl.-Ing. 1941 Dr.-Ing. TH Stuttgart. Bis 1945 KWI für Metallforschung, Militär- und Wetterdienst, Funk-Meßgeräte-Entwicklung. 1945/51 Schriftleiter Phys. Blätter. 1951 Cultural Exchange Fellow Washington und Ann Arbor. Ab 1951 Inst. f. Demoskopie.

Die Zeitgenossen der Wasserstoffbombe

Denkbar jäh und unter wahrhaft dramatischen Umständen sind die Atomwaffen vor einem knappen Jahrzehnt der Öffentlichkeit bekannt ge-

Figure D.635: Ulrich Jetter worked on mysterious research programs for the German government during the war, published a book and articles on the scientific details of H-bombs after the war, and was invited to Washington, D.C. as a "cultural exchange fellow" before the U.S. produced and tested its first H-bombs [Jetter 1950, 1952, 1954].

Major Edmund Tilley to Lt. Col. P. M. Wilson. Secret Missiles. EPES/FIAT, Control Commission for Germany, British Element, 13 July 1946 [TNA FO 1031/57].

1. Lt. F.T. GUTMANN, of 2940th Engineer Technical Intelligence Team (R), U.S. Army, has just returned from Austria with three of SCHULZ-KAMPFHENKEL's assistants, all of the Forschungsstaffel.

2. Lt. GUTMANN went into the Russian Zone in Austria and saw a gendarme, Anton KÄSTNER, in EURATSFELD near AMSTETTEN, in Lower Austria. KÄSTNER told Lt. GUTMANN of a new radio-active bomb, weighing six tons. This bomb has no fins and is lowered by parachute. KÄSTNER himself claims to have been connected only with the fuze part of this new secret missile.

3. Colonel PETERSEN was said to have been in charge of this secret missile at OKW. KÄSTNER claimed that Colonel PETERSEN's papers and documents were left by him at Kloster ANDECHS in AMMERSEE, Upper Bavaria. Colonel PETERSEN is presumed to be in Spain.

4. A Hauptmann (Captain) SORG is said to have been Colonel PETERSEN's Chief Administrative Officer and also in charge of organization. SORG is still living at UTTING on the AMMERSEE.

5. Lt. GUTMANN believed that this new radio-active bomb may not be unconnected with the "Wärmesuchgerät" described by SCHULZ-KAMPFHENKEL. This must be a very secret instrument, for SCHULZ-KAMPFHENKEL did not tell any of the Americans about its existence and would not reveal it to us at OBERURSEL until a high pressure was exerted on him. He continues to call it "Wärmesuchgerät", which means heat searching or finding instrument, but he describes it as an aircraft instrument for measuring temperatures on the ground during the flight of the aircraft. If this were all, the instrument would be called "Wärmemessgerät" or "Temperaturmessgerät".

6. SCHMITTHÜSEN has been indicated as the man in the Forschungsstaffel who knows most about this "Wärmesuchgerät". I shall interrogate him with Lt. GUTMANN on Monday, 15th July. He is likely to prove stubborn for I saw him for a moment outside FIAT and asked him to prepare immediately a list of all hideouts for Top Secret documents. He did not know that we had found the boxes at HARBURG which he himself had dug into the ground. He was informed smilingly that 20 years behind barbed-wire were awaiting him if he continued to deny such well-known facts. He quickly agreed to let me have a complete list by Monday.

7. PILLEWIZER is the glacier expert of the Forschungsstaffel. He has written two reports for us at Lt. GUTMANN's request. The most significant sentence at the beginning of the second report, on the activities of the Forschungsstaffel in Lappland in 1944, reads as follows:

"In July 1944 a small group of the Forschungsstaffel was sent to Northern Finland in order to demonstrate, by practical experiment, the feasibility of quick map-making in the swamps and primeval forests of Lappland, i.e. to make maps quickly for topographical evaluation of hardly explored territory."

The rest of the report explains more fully the real purpose of this expedition for the work was started in VUOTSO and PARKKINA, both in the Arctic Circle, and was continued there after the Germans had evacuated all Southern Finland. Later they photographed the SAARENPAEAE area in West Lappland (ENONTOEKICE area). It is hardly likely that such an important and secret group of scientists could have been left in the Arctic Circle as late as November 1944. After completion of

the work PILLEWIZER returned with his group, via NARWIK and OSLO, to Germany, where he arrived in mid-December 1944.

This expedition may have served the same purpose as other expeditions of SCHULZ-KAMPF-HENKEL, i.e. obtaining data of the effect of new deadly weapons or submitting data to enable the High Command to carry out such experiments with such missiles.

8. Lt. GUTMANN, who has not had much sleep for the last few days, will give me a copy of his report on this new missile on Monday and I shall show it to you before I go to DUSTBIN with Lt. GUTMANN.

[See document photos on pp. 4352–4353.

The six-ton bomb was specifically described as radioactive, which might mean a dirty bomb of conventional explosives releasing radioactive material, a fission bomb, or a hydrogen bomb. There was no apparent reason to make a six-ton dirty bomb—the same material could have been packaged into several smaller bombs that would have been much easier to deliver. There was also no apparent reason to make a six-ton fission bomb—the U.S. Gadget was approximately three tons without its fins or bomb casing, and the German fission bomb reported to have been tested in Thuringia in March 1945 was approximately two tons (p. 4485). In contrast, an early hydrogen bomb would be fairly much required by fundamental physical principles to be very large, since it would need to contain enough fission fuel, enough fusion fuel, enough conventional explosives to implode the fission fuel, and the structure necessary for the fission fuel to ignite the fusion fuel. Therefore the reported six-ton bomb seems to best match the description of a hydrogen bomb.

Note that Hans Thirring, who was in close contact with Austrian scientists who had worked on the wartime German nuclear program, specifically mentioned "a six-ton bomb of lithium hydride" (or perhaps lithium deuteride?); see p. 4338.

It sounds as if a German team was scouting locations in northern Finland in which to test the six-ton radioactive bomb. Seeking such a remote test location is further evidence that the bomb was a hydrogen bomb, with an explosive yield much higher than a fission bomb, making it too large to be safely or secretly tested closer to more populated regions.

The capabilities and intended functions of the "Wärmesuchgerät" are unclear from this document. It may have been a heat-seeking missile guidance system, an infrared vision system for night-time flying, or a semi-automated terrain mapping system, among other possibilities. Or since the "Wärmesuchgerät" seems to have been closely associated with the six-ton radioactive bomb and with the German team selecting a test site, perhaps the "Wärmesuchgerät" was intended to measure the explosive yield of the bomb from a safe distance in a remote territory without permanent emplacements of diagnostic instruments.

Can Lt. F. T. Gutmann's more detailed report on the six-ton radioactive bomb be located in archives, declassified, and released?

For information on Edmund Tilley, see pp. 4894–4895.]

TNA (Kew) FO 1031/57 General 'Top Secret' Tube Alloys Etc. Intelligence Reports

TOP SECRET

Enemy Personnel Exploitation Section
FIELD INFORMATION AGENCY TECHNICAL
Control Commission for GERMANY (BE)
B.A.O.R.

13th July 1946

SUBJECT : Secret Missiles.

FROM : Major E. TILLEY.

TO : Lt.Col. P.M. WILSON.

1. Lt. F.T. GUTMANN, of 2940th Engineer Technical Intelligence Team (R), U.S. Army, has just returned from Austria with three of SCHULZ-KAMPFHENKEL's assistants, all of the Forschungsstaffel.

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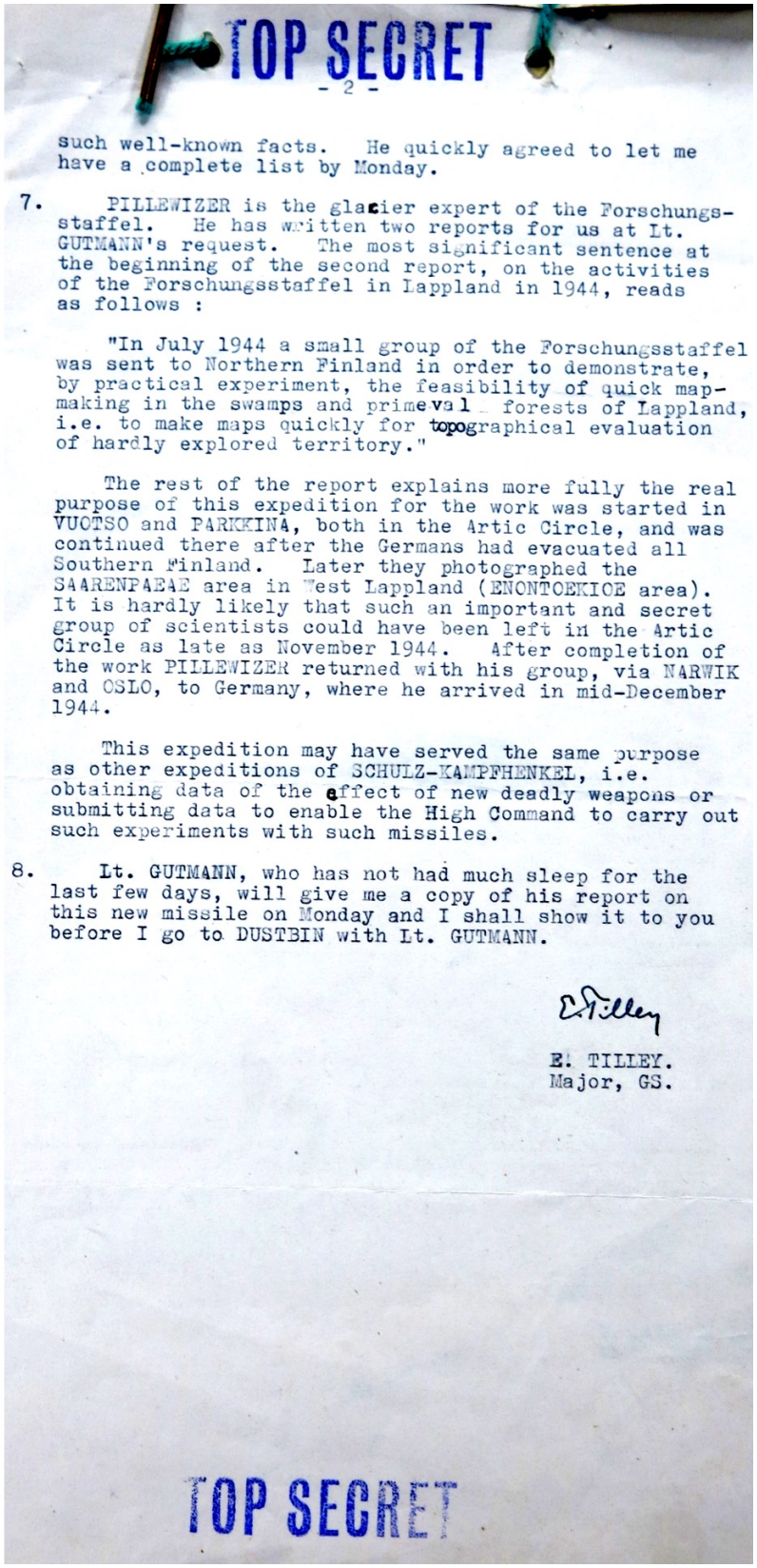
TOP SECRET .../TO SHEET 2...

Figure D.636: 6-ton radioactive bomb that must be dropped with a parachute (∼megaton yield), and a planned test site in northern Finland. Edmund Tilley to P. M. Wilson. Secret Missiles. EPES/FIAT, Control Commission for Germany, British Element, 13 July 1946 [TNA (Kew) FO 1031/57].

TNA (Kew) FO 1031/57 General 'Top Secret' Tube Alloys Etc. Intelligence Reports



TOP SECRET

- 2 -

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This expedition may have served the same purpose as other expeditions of SCHULZ-KAMPFHENKEL, i.e. obtaining data of the effect of new deadly weapons or submitting data to enable the High Command to carry out such experiments with such missiles.

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E. Tilley

E. TILLEY.
Major, GS.

TOP SECRET

Figure D.637: 6-ton radioactive bomb that must be dropped with a parachute (∼megaton yield), and a planned test site in northern Finland. Edmund Tilley to P. M. Wilson. Secret Missiles. EPES/FIAT, Control Commission for Germany, British Element, 13 July 1946 [TNA (Kew) FO 1031/57].

Notes on an Interrogation of Edmund Sorg at Dustbin. 7 August 1946 [TNA FO 1031/112].

REGARDING SPECIES OF V-2s

[...] I have never seen any plans of the steps in development of the V-2. I had nothing to do with the V-2 either personally or officially. When I mentioned 10–12 types of V-2 it is only personal supposition.

REGARDING ATOM BOMBS

I have never heard of the existence of atom bombs in connection with the German Wehrmacht. I can thus give no information as to whether the V1 was to have an atomic charge.

REGARDING V-1s WITH POISON GAS, BIOLOGICAL or BACTERIOLOGICAL CHARGES

I have never heard of V-1s being loaded with poison gas, biological matters or bacteria.

REGARDING 6 TON BOMBS

I never made any tests with 6 ton bombs and have never heard of them.

REGARDING USE OF POISON GAS, BIOLOGICAL MEANS and BACTERIA IN ROCKETS &c.

I have no knowledge of the use of poison gas, biological or bacteriological means in rockets, other missiles or in planes.

[Elsewhere in this file at The National Archive (UK), Major Tilley provided evidence that Sorg had detailed personal knowledge of many of the things he denied, such as V-2 rocket information. See p. 4896 for another example. Thus the fact that Sorg denied German atomic bombs, six-ton bombs, biological weapons, multiple types of large rockets, etc. is much less important than the fact that Sorg's Allied interrogators seemed convinced of the reality of those weapons, over a year after the war had ended. What other information did Allied officials have about those weapons from interrogations, captured documents, and/or capture hardware?]

TNA (Kew) FO 1031/112 Sorg V2

M(c)5

not carry out any tests or experiments with rockets(apart from the
t rockets (Startraketen) previously mentioned) or with V weapons or with
er defense and offensive weapons and no such tests were made under my
supervision. The testing of the manned V-1 was carried out and directed by
Staff Engineer KENSDRE or Hanna REITSCH. I myself was entrusted merely with
the technical direction and the flying of glider-towing planes.

REGARDING SPECIES OF V-2s

Species of V-2s and not V-1s are probably meant. I cannot give an exact descriptio
of the types of V-2s mentioned by me. My knowledge comes from engineers of the
E Station at PEENEMUENDE-WEST, who talked about experiments at the Army Testing
Station at PEENEMUENDE-OST and reported on the various types of V-2. I have never
seen any plans of the steps in development of the V-2. I had nothing to do with
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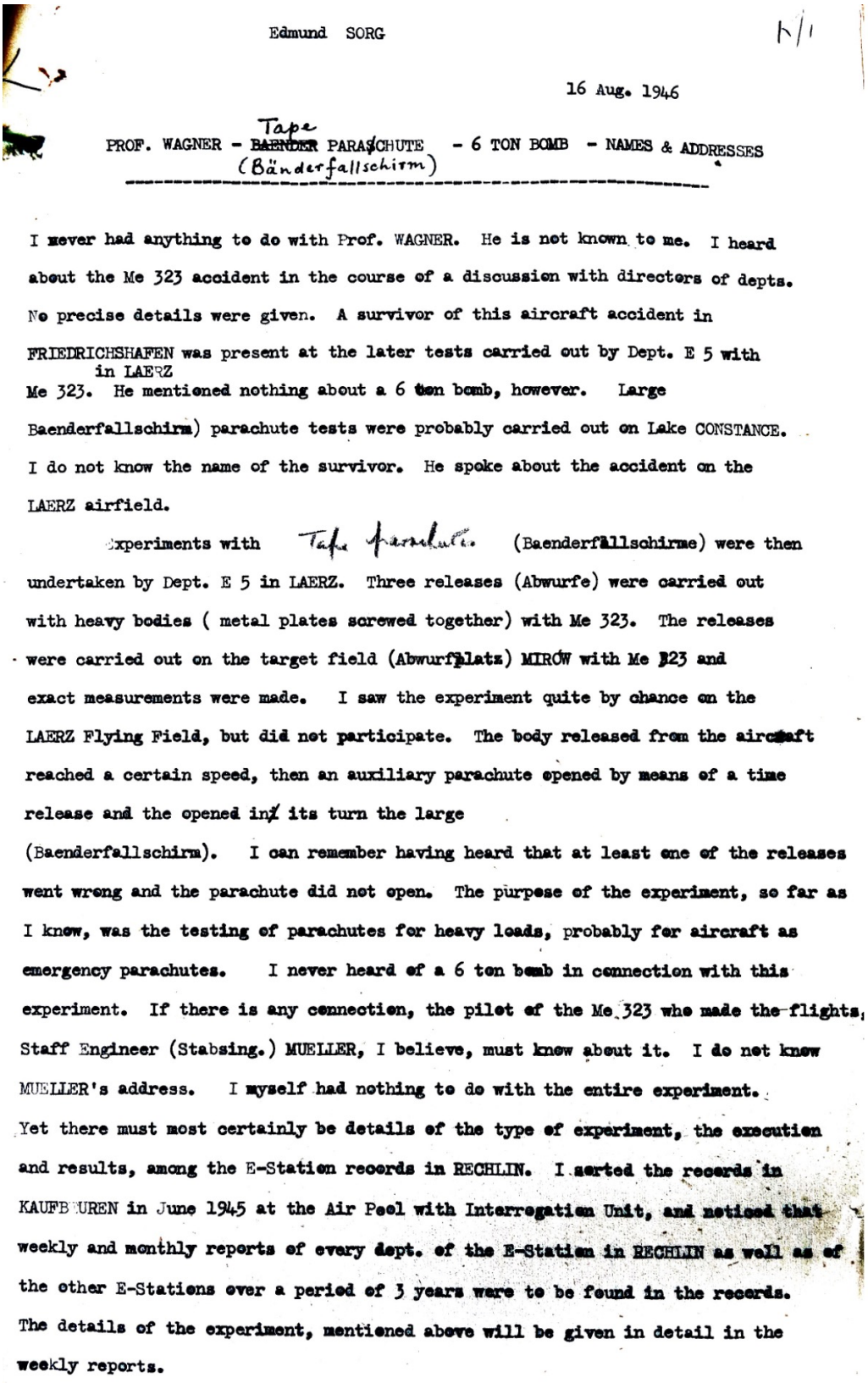

Edmund SORG

16 Aug. 1946

PROF. WAGNER - ~~BAENDER~~ Tape PARACHUTE (Bänderfallschirm) - 6 TON BOMB - NAMES & ADDRESSES

I never had anything to do with Prof. WAGNER. He is not known to me. I heard about the Me 323 accident in the course of a discussion with directors of depts. No precise details were given. A survivor of this aircraft accident in FRIEDRICHSHAFEN was present at the later tests carried out by Dept. E 5 with in LAERZ Me 323. He mentioned nothing about a 6 ton bomb, however. Large Baenderfallschirm) parachute tests were probably carried out on Lake CONSTANCE. I do not know the name of the survivor. He spoke about the accident on the LAERZ airfield.

Experiments with Tape parachute. (Baenderfallschirme) were then undertaken by Dept. E 5 in LAERZ. Three releases (Abwurfe) were carried out with heavy bodies (metal plates screwed together) with Me 323. The releases were carried out on the target field (Abwurfplatz) MIROW with Me 323 and exact measurements were made. I saw the experiment quite by chance on the LAERZ Flying Field, but did not participate. The body released from the aircraft reached a certain speed, then an auxiliary parachute opened by means of a time release and the opened in its turn the large (Baenderfallschirm). I can remember having heard that at least one of the releases went wrong and the parachute did not open. The purpose of the experiment, so far as I know, was the testing of parachutes for heavy loads, probably for aircraft as emergency parachutes. I never heard of a 6 ton bomb in connection with this experiment. If there is any connection, the pilot of the Me 323 who made the flights, Staff Engineer (Stabsing.) MUELLER, I believe, must know about it. I do not know MUELLER's address. I myself had nothing to do with the entire experiment. Yet there must most certainly be details of the type of experiment, the execution and results, among the E-Station records in RECHLIN. I sorted the records in KAUFBEUREN in June 1945 at the Air Pool with Interrogation Unit, and noticed that weekly and monthly reports of every dept. of the E-Station in RECHLIN as well as of the other E-Stations over a period of 3 years were to be found in the records. The details of the experiment, mentioned above will be given in detail in the weekly reports.

Figure D.639: Edmund Sorg. 16 August 1946 [TNA FO 1031/112].

sons unknown to SORG, on 6 May 45. We may therefore assume [illegible] the major was dealing with documents in the ANDECHS monastery and possibly tried to escape . SORG exhumed the body of the major in March 46 on the grounds that he had to produce proof for the major's widow of her husbands death so that she could draw on her life insurance. This exhumation coincides with the return of Colonel PETERSEN from the United Kingdom where he had been interrogated. We may therefore assume that there was a discussion between Colonel PETERSEN and Captain SORG concerning the exact location of various documents and that the body was disinterred on the assumption that this valuable list of caches might still be in the clothing of the body of the major. Only months later SORG mentioned [illegible] casually that the major's sergeant was shot with him and disinterred in March 46. Previously SORG had stated that only one person, aside from himself, knew all the hiding places of these documents, viz, the major.

Both SORG and Colonel PETERSEN claim to have revealed all their secrets to the Americans and British. Neither of them has admitted hiding documents in Kloster ANDECHS; therefore we may safely assume that both of them are still in possession of secrets which, for reasons best known to themselves, they are still withholding from us.

In the following paragraphs all particulars about the documents hidden by SORG in the Spring of 1945 are being presented. Any discrepancies between his original oral statements and his written statements will be put down.

Total of Boxes Hidden in Various Places.

According to SORG's written statement a total of 25 boxes were hidden by him in Southern Germany in February 1945 and were listed on the sheet which he entrusted to Major GROSSHOLZ la of Colonel PETERSEN. During his first interrogation at DUSTBIN,

Figure D.640: Major Edmund Tilley to Lt. Col. P. M. Wilson. October 1946 [TNA FO 1031/112].

(NOTE: SORG states that it is possible that he has made an error in the distribution of the boxes in the various hiding places and that for example there may have been 13 boxes hidden at KIRSCHLACH and only 2 at HAUNSHOFFEN. He cannot remember the names of the owners of the properties at FISCHEN, MITTERFISCHEN and HAUNSHOFEN, but he can indicate exactly the buildings concerned.)

Contents of the Boxes.

SORG refuses to admit any knowledge of the contents until after he had collected the boxes and ..... the contents under supervision of American officers, originally he refused to acknowledge the accuracy of the information that he had hidden V-2 documents but finally agreed that documents on V-2 fuzes were included in the lot. He states that he cannot remember the details of the rough classification but that those ~~this~~ details should be available at A.P.W.I.U. in KAUFBEUREN. He does, however, remember that the contents of all the boxes comprise records of the E-Stellen (testing stations) at RECHLIN (E-2, E-3, E-4, E-5, E-6, E-7,) at TARNEWITZ, PEENEMÜNDE and of the HQ Staff of all the E-Stellen. He also remembers that 2flat ammunition boxes contained the records of the E-7 Stellen (on Luftwaffe bombs and fuzes, probably also ~~all~~ on a 6-ton bomb which he himself tested). Unfortunately SORG cannot give us from memory a detailed list of all the boxes and exactly what each one contained.

Figure D.641: Major Edmund Tilley to Lt. Col. P. M. Wilson. October 1946 [TNA FO 1031/112].

Major Edmund Tilley to Lt. Col. P. M. Wilson. October 1946 [TNA FO 1031/112].

The general background of this brief report on the hiding by SORG of documents of the E-Stellen (testing stations) at RECHLIN, TARNEWITZ, TRAVEMÜNDE, WERNEUCHEN, UDETFELD, PEENEMÜNDE, GOTENHAFEN (GYDNIA) was given in a memorandum by the undersigned to Lt-Col. P.M. Wilson on 6 Oct 46. Information was received in Austria late summer 46 that a Captain SORG had hidden V-2 documents in Kloster ANDECHS on the Ammersee in Spring 45 and that Captain SORG was the administrative officer of Colonel PETERSEN.

[...] the return of Colonel PETERSEN from the United Kingdom where he had been interrogated. [...] Both SORG and Colonel PETERSEN claim to have revealed all their secrets to the Americans and British. Neither of them has admitted hiding documents in Kloster ANDECHS; therefore we may safely assume that both of them are still in possession of secrets which, for reasons best known to themselves, they are still withholding from us. [...]

SORG refuses to admit any knowledge of the contents until after he had collected the boxes [...] He also remembers that 2 flat ammunition boxes contained the records of the E-7 Stellen (on Luftwaffe bombs and fuzes, probably also on a 6-ton bomb which he himself tested). Unfortunately SORG cannot give us from memory a detailed list of all the boxes and exactly what each one contained.

[Based on (still classified) evidence they had already seen, Allied interrogators were convinced that the six-ton radioactive bomb had reached the point of testing before the end of the war. Thus that weapon was much more than a paper design or a long-term project. This information is consistent with other reports that a German hydrogen bomb could have been deployed later in 1945 or in 1946 if the war had continued. For information on Edmund Tilley, see pp. 4894–4895.]

Allen Dulles. 14 March 1944. [Princeton University Library, Allen Dulles Papers, Series 4, Subseries 4K: Telegrams d'etat, 1942–1945, 1942–1943, MC019.09_c44.pdf, https://findingaids.princeton.edu/catalog/MC019-09_c44].

Source 840. (1) 600 technicians doing research on rocket direction in high frequency lab in Gatow near Berlin. 300 rockets said to be ready for use one month ago. Length 15 to 17 meters, weight of explosive 4 to 6 tons. Rocket consists of over 1000 parts including two batteries. Remaining difficulty is deviation up to 500 meters radius over 230 km.

[This OSS intelligence report came from someone involved in developing rocket guidance systems. That source stated they were working on rockets that were larger than a standard A-4 (V-2), 15–17 meters long instead of the standard 14 meters, and that were designed to accommodate a special explosive warhead weighing up to 6 tons instead of the standard 1-ton warhead.]

J. P. E. Peters. Interrogation of Dipl. Ing. Hermann Zumpe at F.I.A.T. (Main) on 7th November, 1946. [TNA AIR 40/2832]

[...] 2. On 22nd October, 1946, ZUMPE presented himself at the headquarters of F.I.A.T. (Forward) in Berlin with the request that passage be provided for himself and his family to the British Zone of Germany. It transpired that ZUMPE had been working for the Russians in the GEMA Buildings, Wendelschlossstrasse, 3, Berlin-Kopenick, but did not wish to move to Russia with that organisation.

3. ZUMPE was interrogated by the Intelligence Department, Air Division, CCG. (BE), and was then evacuated by air to F.I.A.T. (Main), where he is at present lodged in "Dustbin". [...]

14. ZUMPE also had in hand a new project for a rocket motor on the same principles as the new C2, but developing a thrust of 50 tons for use in a 26 ton rocket of the A4 type. This project was still in the early stages; the only decision made was that the maximum weight allowable for the motor, fuels, and shell was 20 tons, leaving 6 tons for the warhead. He claims that he can complete the calculations for this project in 4–6 weeks. [...]

16. ZUMPE states that it was impossible to gain access to departments other than the one in which he worked, as his pass was clearly marked with the department for which it was valid, and even the Russian officers on the unit were not allowed to enter buildings with which they were not directly concerned. [...]

[The Soviets apparently found plans for the German 6-ton bomb and conscripted German engineers to recreate methods (especially the rocket mentioned by Dulles above) to deliver it.]

Nazis Were Working On 100-Ton Rocket. *The Courier-Mail* (Brisbane, Australia). 5 December 1946 p. 1. [**https://trove.nla.gov.au/newspaper/article/49363386**]

NEW YORK, December 4.—When the war ended the Nazis were building a 100-ton rocket with which to strike at the United States.

This has been revealed by the brilliant German scientist, Wernher von Braun, who invented the V2 rocket.

Von Braun is now in the United States working with American experts on rocket experiments.

The super-rocket, he said, was on the drawing-board when Germany was over-run. It would have carried an explosive charge of six tons, and would have been capable of travelling thousands of miles.

He claimed that the V2 rocket failed in only about 5 per cent of its tests in Germany.

Von Braun and his associates from Germany are being kept at work under the utmost secrecy by the Army as they help to train American ordnance men, industrialists, and scientists from leading American universities in the secrets of rocket bombs.

U.S. Gain

An estimate that German and Austrian scientists had saved the United States more than £235 million in basic research in rockets alone was disclosed by the War Department in announcing that 730 additional experts were to be brought to the United States.

Former enemy brain-power, the department said, had advanced American research in several fields by from two to 10 years.

Already 270 former enemy scientists are at work in the United States. They include the former chief designer for the Messerschmitt aircraft works and the technical director of the Nazis' Peenemunde rocket proving ground. They came to the United States voluntarily.

The scientists are being paid on contract, the maximum being £975 annually, plus 37/ daily expense allowance. This is considerably less than the salaries paid to American civil service workers doing comparable work.

The work of the foreign scientists covers the fields of electronics, supersonics, guided missiles, jet propulsion, and fuels.

["100-ton rocket" was a name sometimes used by the Peenemünde engineers for the A-9/A-10. Usually the expected payload of the A-9/A-10 is given as 1 ton. That could be stretched to 2 tons without much trouble. A German rocket design capable of carrying a 6-ton payload is unknown in the official histories. Was this a different version of the A-9/A-10, or a different rocket entirely?

Because of the extreme difficulty of accommodating a 6-ton payload on a rocket, that would have been attempted only if the payload could not be made smaller. Conventional explosives, chemical weapons, biological weapons, or a radioactive dirty bomb could be made as small as desired, and delivered on multiple rockets if necessary. Even a fission bomb would only weigh 2–3 tons. This must have been a weapon whose physical constraints at that time required it to be no smaller than 6 tons—presumably a hydrogen bomb.]

Nazi Scientists Work On U.S. Rocket Experiment. *Newcastle Morning Herald and Miners' Advocate* (NSW, Australia). 5 December 1946 p. 3.
[**https://trove.nla.gov.au/newspaper/article/133178482**]

NEW YORK, Dec. 4.—Before the war ended the Nazis were building a 100-ton rocket to strike the United States. This was revealed by the brilliant German scientist Wernher von Braun, who invented the V2 rocket, and who is now in the United States.

Von Braun is at present working with American experts on rocket experiments.

He said the Nazis' super-rocket was on the drawing board when Germany was overrun. It would have carried an explosive charge of six tons and be capable of travelling thousands of miles.

Von Braun claimed the V2 failed in only about five per cent of its tests in Germany.

Von Braun and his associates from Germany are being kept at work under the utmost secrecy by the army as they help to train American ordnance men, and industrialists and scientists from leading American Universities in the secrets of rocket bombs.

Saved U.S. Millions

A statement issued by the War Department in Washington said it was estimated that German and Austrian scientists had saved the United States more than 750 million dollars (£A234 1/2 millions) in basic research in rockets alone.

The department announced that about 730 additional experts would be brought to the United States.

The statement said that former enemy brainpower had advanced American research in several fields two to ten years. The number of experts put to work since September 1945 had grown to 270, and the total would be increased to about 1000 as soon as transportation arrangements were completed.

The scientists and technicians include the former Chief Designer for the Messerschmitt Aircraft Works and the Technical Director of the Nazis' Peenemunde rocket-proving ground. They came to the United States voluntarily.

Nazis Planned Rocket to Hit U.S. *New York Times.* 4 December 1946.

Wernher von Braun, 34-year-old German scientist who invented the deadly V-2 supersonic rocket, revealed today that before the war ended the Nazis were building a 100-ton rocket to strike at the United States.

Von Braun told reporters that the 100-ton rocket was on the drawing board when the Allies overran Europe. He said it would have carried a "pay-load" of six tons and would have traveled thousands of miles to strike the United States.

Eugen Sänger and Irene Bredt. 1944. *Über einen Raketenantrieb für Fernbomber.* UM 3538. Ainring: Deutsche Luftfahrtforschung. English translation 1952. *A Rocket Drive for Long Range Bombers.* CGD-32, C-84296. Technical Information Branch, Buaer Navy Department. pp. 148, 152.

As an example of area attack with single propulsion and full turn, we use the attack on New York at a range of 6500 km. For c=4000 m/sec, the bomb load is 6 tons, and the detailed attack runs as follows: the motor starts to work 36 seconds after the take-off at 12 km. distance from the take-off point, and consumes the total fuel supply of 84 tons in the next 336 sec. At the end of the climb process, the aircraft reaches a velocity of 6370 m/sec, an altitude of 91 km, a distance of 736 km. from the point of take-off, and a weight of 16 tons. Using only its store of potential and kinetic energy, the bomber flies on to the point of bomb release, 5550 km. from the take-off point, and 950 km. in front of the target. At this point, which is reached 1150 sec. after take-off, the velocity has decreased to 6000 m/sec, and the stationary altitude to 50 km. After the bomb release the weight is 10 tons. Then the aircraft goes into a turn and in 330 sec. goes through a turn-spiral 1000 km. in diameter until it has reached the direction for the return flight to the home base. During turning, the altitude is greatly decreased in order to develop the aerodynamic forces necessary for the turn. At the end of the turn path, the velocity is still 3700 m/sec. and the corresponding stationary altitude is 38 km. The supersonic glide-path in the direction of the home base goes over 5450 km. in 2600 sec. and ends 100 km. before the home base at an altitude of 20 km. and velocity 300 m/sec. Subsonic glide and landing are completed in customary fashion. The whole flight lasts 4755 sec.

[The Sänger-Bredt Silbervogel space plane was designed to bomb New York or other targets in the United States. Historians have dismissed the Silbervogel as merely a paper design that was never seriously considered or built. However:

- Eugen Sänger and Irene Bredt completed and submitted a 900-page proposal giving details of the Silbervogel design and development program to the German government in 1941 [Myhra 2002].
- Wind tunnel models of Silbervogel are known to have been constructed and tested (p. 5595).
- At least one photograph exists of a full-sized Silbervogel engine that had been constructed for testing no later than 1944 (p. 5596).
- In January 1946, five Canadian aerospace experts reported that while visiting a German research station, they viewed "a rocket motor 10 times larger than those used on V-2s." That description could match either the Silbervogel motor or the A-10 booster rocket motor (p. 5470).
- Detailed orbital calculations were performed in 1944 to find the best trajectory for the Sänger-Bredt vehicle to reach New York (pp. 5597–5599).
- An article published in the 30 October 1944 *Daily Mail* reported that the Germans in occupied France had been constructing a "huge ramp" that was "intended as a launching place for flying

bombs, which... would wreck New York." The size of the ramp, the reference to flying bombs, and the claimed target of New York seem consistent with the Silbervogel launch catapult (p. 5600).

- U.S. Army Air Forces Colonel Donald Putt, in charge of overseeing all German rocket scientists and related equipment and information rounded up at the end of the war, reported in March 1946: "Test model was made that carried one man and had landing gear, although it is not known if this model ever flew; it is known, however, that test runs were made on its engine." Thus according to an authority with arguably the best access to the available information, the Silbervogel engine was constructed and tested, a Silbervogel vehicle complete with cockpit and landing gear was constructed, its engine was operational, and postwar U.S. officials were left wondering if flight tests of the Silbervogel may have even been conducted (p. 5601). What German witnesses and documents was this information based on? What became of the prototype Silbervogel vehicle—was it destroyed by the Germans, removed by the Americans, or removed by the Soviets?

- A lengthy and detailed October 1946 article in *Harper's Magazine* stated that the Silbervogel system "was never completed merely because of the war's quick ending" (p. 5490).

- A 1957 U.S. Air Force report stated: "The boost-glide concept was... partially tested by the Germans in the early 1940's" (p. 5603).

In the part of their 1944 report quoted on the previous page, Sänger and Bredt specifically discussed using the Silbervogel to deliver a six-ton bomb to New York. That agrees with several other independent sources that mentioned a special six-ton bomb (pp. 4338, 4350–4362, 5343). Six tons of conventional explosive would not do even remotely enough damage to justify the enormous amount of money, labor, materials, time, and energy involved in developing a systems such as Silbervogel to deliver the bomb to a U.S. target, especially under wartime conditions when all of those resources were critically needed and in short supply. The whole approach would have made sense only if the six-ton bomb was nuclear, and indeed some of the sources specifically stated that it was nuclear—in fact, apparently a full-fledged hydrogen bomb.

Moreover, some sources indicated that much of the work related to the six-ton or hydrogen bomb was conducted in Austria, and Sänger was Austrian. Between his professional connections and his payload delivery method, it seems quite reasonable that Sänger would have had some contact with the scientists who were working on the actual bomb.

While most wartime papers on Sänger's work were destroyed or were captured and remain inaccessible in archives, some of the letters he wrote to Hermann Oberth after the war confirm that he was quite interested in fusion reactions [Oberth 1984, Vol. 1, pp. 199–200, 213–216].]

G. Ward Price. Fly-bombs Were Meant for U.S.: Huge Ramp Found. *Daily Mail.* 30 October 1944.

Immense concrete works on top of a hill in Artois, near Saint Omer, were intended as a launching place for flying bombs, which, the Germans boasted, would wreck New York.

Thousands of workmen were employed in tunnelling and building a cylindrical cupola on top of the hill, 250ft. in diameter.

Lorries, and even trains, could drive right into the heart of the hill.

German engineers told local French people that when the vast machinery was installed and ready to fire, the district would have to be evacuated for six miles around.

Frequent attacks by the R.A.F. kept on delaying work until the Allied advance from Normandy obliged all the enemy engaged on it to pack up hurriedly.

Footnote.—A German U-boat commander recently told naval cadets at Esjberg, Denmark, that Germany was preparing a new secret weapon for use against America. He said that U-boat crews would play a decisive part in the use of the weapon.

[The six-mile radius suggests that the bomb would have had that blast radius. A 6-mile or 10-km blast radius corresponds to an explosive energy of at least $(10,000/85.5)^3 \approx 1{,}600{,}000$ tons of TNT equivalent, or at least 1.6 megatons. This is well beyond the kiloton-ranges of fission bombs, as the German scientists knew from basic calculations of fission energies, and suggests that they were developing much more powerful hydrogen (H) or fusion bombs. Other sources from around the same time also mentioned the exact same 10-kilometer/6-mile blast radius (pp. 4366 and 4367).

This site sounds like a launching sled track for the Sänger-Bredt Silbervogel space plane, or possibly a slightly smaller launching track for the winged A-9 rocket. For more discussion on track-launched rockets, see Section E.3. Also see the article on p. 5011 that mentions development of a catapult-launched atomic bomb delivery system in Norway.]

Bruno Spampanato. 1974. *Contromemoriale.* Rome: Centro Editoriale Nazionale. pp. 917, 1116. [Spampanato (1902–1960) was a journalist and politician who was a longtime supporter of Mussolini and very well connected with high-ranking Italian officials. After the war, he wrote a multivolume memoir that preserved information from a huge number of sources that otherwise might have been lost or forgotten. Here he quoted two wartime sources that both appear to have been describing a nuclear weapon with a megaton-level yield. One of them even gave the exact same 10-kilometer/6-mile blast radius as other sources from that time (pp. 4365 and 4367).]

Qualche cosa del genere ci ha detto Goffredo Coppola ch'era stato in Germania a un congresso scientifico in rappresentanza del Governo: e tornava allora. Ci vediamo al Plaza con lui ed Enrico Santamaria. Coppola ci dice qualche cosa che rasenta i limiti della fantasia. Ma tutto si può sospettare di Coppola, Rettore Magnifico dell'università di Bologna, fuorché si occupi di fotomontaggi come Theil, o di altra propaganda razionale. Il prof. Coppola ci dice quanto gli hanno confidato degli scienziati che hanno fama mondiale per i loro studi.

Questo ci disse Coppola il 16 febbraio 1945: "I tedeschi hanno trovato il mezzo per disintegrare l'atomo. E una scoperta elettronica. La disintegrazione avviene a cicli successivi e prende aree vastissime di decine di chilometri. Nei laboratori si lavora in pieno". [...]

Tra gl'italiani il più a contatto coi più alti ambienti militari tedeschi era il Maresciallo [Rodolfo] Graziani. E proprio Graziani nella sua autodifesa dinanzi alle Assise Speciali di Roma [1948] depose: "Ognuno può dire quello che vuole sulla faccenda delle armi segrete; ma sta di fatto che le armi segrete in Germania c'erano: c'erano nel modo più assoluto e c'era un rinnovamento in tutta l'aviazione con apparecchi a reazione, e ne avevano già in gran numero, migliaia. Non sono riusciti a metterli in funzione perché in quel momento è cominciata a mancare la benzina, e in seguito ci sono stati i bombardamenti a tappeto fatti dagli anglo-americani sugli impianti delle industrie. Stavano per realizzare anche l'antiradar per le segnalazioni e avrebbero potuto ricominciare la guerre dei sommergibili. C'era la V-1 e c'era la V-2, ma si arrivava fino alla V-10 che distruggeva nel raggio di dieci chilometri ogni elemento di vita".

Something like this was said to us by Goffredo Coppola, who had been in Germany at a scientific congress representing the government and then came back. We met at the Plaza with him and Enrico Santamaria. Coppola told us something that borders on the limits of fantasy. But everything can be suspected of Coppola, the Magnificent Rector of the University of Bologna, except that he deals in fakes like Theil, or other intellectual propaganda. Prof. Coppola told us what he had been confidentially told by scientists who are world-renowned for their studies.

This Coppola told us on 16 February 1945: "The Germans have found the means to disintegrate the atom. And an electronic discovery. The disintegration occurs in successive cycles and covers vast areas of tens of [square] kilometers. In the laboratories work is at full capacity." [...]

Among the Italians the most in contact with the highest German military circles was Marshal [Rodolfo] Graziani. And it was Graziani himself in his self-defense before the Special Court in Rome [1948] who testified: "Everybody can say what they want about the matter of secret weapons; but the fact is that secret weapons in Germany were there: they were there in the most absolute way and there was a renewal in the whole aviation with jet aircraft, and they already had them in large numbers, thousands of them. They were not able to put them into operation because at that time there began to be a shortage of gasoline, and later there was the carpet bombing done by the Anglo-Americans on the plants of industries. They were also going to make anti-radar for signaling and they could have started the submarine wars again. There was the V-1 and there was the V-2, but it went all the way up to the V-10 which destroyed within a ten-kilometer radius every element of life."

Germans Timed Atom Bomb for October. *Evening Standard* (London). 7 August 1945.

The Germans had an atom bomb which would have been ready by October.

A colossal blast effect was claimed for the German bomb. It was said it would wipe out everything inside a radius of six miles, said B.U.P. today.

The German atomic plans were uncovered four months ago, when an Allied search party walked into a small silk factory at Celle, north of Hanover.

A laboratory of two rooms was buried away in the heart of the factory. A famous research scientist [Wilhelm Groth] was still at work. He was flown to Britain the same day.

This man, with others, had been working on the Atom bombs for months. The Nazi Government poured out money on it. Apparently they had not asked for immediate results.

Nazis Five Months from Completion of Atomic Bomb. *Pittsburgh Press.* 7 August 1945 p. 14.

21ST ARMY GROUP HEADQUARTERS, Germany, Aug. 7 (UP)—Germany was within five months of completing her own atom bomb when the European war ended.

A British task force four months ago discovered that German scientists almost had completed work on the bomb in a two-room laboratory in the heart of a small silk factory north of Hannover.

The bomb, it was calculated, would wipe out everything within a radius of six miles.

A famous German research scientist [Wilhelm Groth, in] charge of the experiments was flown immediately to Britain at the time. He estimated his work would have been completed by October.

He said the German Government had given him unlimited funds and equipment and had not demanded any immediate results.

[Also reported in:

6-Miles Radius Bomb. *Toronto Daily Star.* 7 August 1945. p. 1.

6-Miles Radius Bomb. *Madera Tribune* (Madera, California). 7 August 1945. p. 1.

Bomba de 10 Kilómetros. *ABC* (Madrid). 8 August 1945.

These articles all mentioned a bomb with a 6-mile blast radius. Completely independent sources from around the same time also gave the same 10-kilometer/6-mile blast radius (pp. 4365 and 4366). As already noted, a 10-kilometer/6-mile blast radius would correspond to at least a ∼1.6 megaton explosion, which would suggest a hydrogen bomb and not a simple fission bomb. Wilhelm Groth, a very talented physicist who along with Paul Harteck had played a major role in numerous aspects of the German nuclear program since early 1939, stated that Germany was five months away from completing such weapons. If true, that was a feat that the U.S. and U.S.S.R. did not actually accomplish until the 1950s.]

Air Intelligence Report No. 100-13/1-100, Significant Developments and Trends in Aircraft and Aircraft Engines, Antiaircraft Guided Missiles (15 June 1946). pp. 3, 90–93. [NARA RG 38, Entry 98C, Box 11, Folder TSC # 3001–3100]

[...] b. Russia is known to have acquired German technicians and V-weapon production and experimental sites. [...] In addition, German developments in the atomic energy field and the possibilities for use of this energy as a guided missile warhead are known to the Russians.

(3) Step rockets. This type of rocket had been considered by the Germans who anticipated ranges of 3,000 miles or more with successors of the V-2. Such a rocket would consist of a main body containing the demolition charge and control units and two or more detachable sections containing propulsion units. These sections would be dropped from the missile as they were exhausted in flight. Such a rocket in the hands of the Russians would make the transpolar routes probable tactical approaches. [...]

e. Russian Atomic Energy. The development of atomic weapons and guided rocket projectiles go hand in hand. It was the Germans who realized that the rocket was "the ideal vehicle for atomic warhead" and it has been established that they intended the A-4 (V-2) rocket to be such a vehicle. In the construction of a long-range rocket, space allotted to payload is of necessity reduced to a minimum by the increase in space allotted to fuel. Adaptability of the atomic warhead to such a missile can be fully appreciated because the ratio of destructive power to unit weight is far in excess of conventional explosives and a radical increase in the destructive power is not accompanied by a similar increase in volume of the warhead.

Little is known concerning the Russian activity with regard to atomic energy. [...]

g. Heavy Hydrogen Bomb. In Germany a letter was picked up by the American censors. It had been written by a German desirous of exchanging information for an opportunity to go to the United States. The writer professed knowledge of "heavy water" research in Germany and of an "even more deadly weapon than the atomic bomb".

h. German Heavy Hydrogen Bomb. During 1943 the Germans were experimenting with the production of "heavy water" in Norway. Their installation at Rjukan, Norway was deemed important enough at that time to warrant a visit from the heavy bombers of the Eighth Air Force. It was evident that the Germans recognized the potentialities of "heavy water" as a source of Heavy Hydrogen and were taking advantage of the abundance of electric power available in Norway for the production of this substance.

The war brought the German activity in connection with "heavy water" to a close but the question can now be posed, "Have the Russians obtained German personnel formerly employed in the project and if so will they exploit them in an effort to devise an atomic weapon which requires none of the radio active minerals so closely guarded throughout the world?" If the Russians are successful in this attempt, they will have within their grasp the new atomic weapon which is reported to have made the Uranium bomb obsolete. Research in the United States confirms the comparison of the Heavy Hydrogen bomb to the Uranium bomb.

[See document photos on pp. 4370–4371.

How exactly did U.S. intelligence know that Germany intended to build an atomic bomb, intended to deliver it via rocket, and made "developments" that fell into Russian hands?

No significant information about H-bombs was public until fall 1946 (pp. 4337–4341), so the German letter writer's knowledge apparently came directly from wartime work.

Can this letter be located now?]

b. Russia has apparently stepped up her exploitation of captured German facilities and personnel for the production of German jet-propelled aircraft. It is known that the Junkers and Siebel aircraft factories and the BMW aircraft-engine plants are being used by the Russians for production of this type aircraft and turbojet engines. Description of the aircraft reportedly produced, plus knowledge of the latest types of German aircraft produced in these factories prior to V-E Day, point to Russian production of the "JU-287" Bomber (509 miles per hour) and the "HE-162" and ME-262" aircraft.

c. France is known to be experimenting with several new jet-propelled aircraft and with commercial air transports having increased capacity. These include the large 108-passenger conventional four-engine transport (SE 2010) presently under development, the "NC 260" high speed jet-propelled commercial transport, the "NC 270" turbojet, and the "Nord 1600" jet-propelled military aircraft.

The trend in French aircraft development since the March 1946 report now appears to be in improving and re-establishing French commercial air transport, with military development as a secondary consideration due to the great reduction in military appropriations. This development can be expected to incorporate the latest research in the fields of jet-propulsion as soon as France has reached a more stabilized economy and a more settled political outlook.

d. Sweden has shown no new trends in aircraft or aircraft engine development since the March 1946 report. At that time successful purchase of the latest jet-propelled aircraft and engines from neighboring nations to build a modern, if modest, air force was being expedited by Sweden. Some native research, which has not progressed beyond the experimental stage, has been conducted on jet and turbojet engines.

2. Antiaircraft Artillery.

a. Great Britain has stated her policies for antiaircraft development for the next ten years. These policies include research and development for AA for the next two years with a long term policy for continued AA development along conventional lines until this research has resulted in a better means of destroying sonic speed aircraft flying in excess of 45,000 feet. Standardization, where possible, between Army and Navy weapons is planned, as is the organization of a nucleus force of regular troops supported by a readily conscriptable force of volunteers.

TOP SECRET

b. Russia, like other major powers, has shown a tendency to develop larger caliber AA guns. It has also been reported, but not confirmed, that the Soviets are manufacturing radar jamming equipment. A greater flexibility for antiaircraft defense has been provided by the recent reorganization of the Soviet Armed Forces.

c. German developments for increasing AA effectiveness by increasing muzzle velocity and a discussion of German anti-RCM (Radar Countermeasures) devices is outlined, due to the probable use of these advances by other countries.

d. Sweden and France appear to be in a better position to develop an adequate AA defense than most of the other smaller countries due to the experienced Bofors firm in Sweden and French knowledge of Allied and German AA equipment and methods of operation.

e. Fifteen other nations studied show no significant native developments or trends in the field of antiaircraft artillery.

f. Japanese shortcomings in AA development show that the value of antiaircraft artillery was not realized in time to develop it. The lack of coordination between Army and Navy and the lack of properly trained technical personnel to produce modern equipment helped to retard AA development once its value was realized.

3. Guided Missiles.

a. Great Britain is working closely with the United States in the development of her guided missile program. As a consequence, the British are running into similar problems relative to radar guidance, telemetering, fuel combustion, radio signal attenuation, and the means to be used in determining the point of separation of the missile and its boost device. In addition to their own development program, Britain is exploiting German guided missile technical personnel to the maximum. The close working liaison of Britain and the U. S. should allow each nation to profit by the other's mistakes and thus accelerate guided missile development in each country.

b. Russia is known to have acquired German technicians and V-weapon production and experimental sites. She has also acquired Britain for guided missile control experiments. With this combination the Russian potential for development of a guided missile program is great. In addition, German developments in the atomic energy field and the possibilities for use of this energy as a guided missile warhead are known to the Russians.

c. Other nations have shown almost universal interest in atomic energy but little as yet in the research or development of guided missiles.

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Air Intelligence Report No. 100-13/1-100, Significant Developments and Trends in Aircraft and Aircraft Engines, Antiaircraft Guided Missiles (15 June 1946). NARA RG 38, Entry 98C, Box 11, Folder TSC # 3001-3100

Suiza has acquired the manufacturing right from Rolls-Royce for the production of the "Derwent", under license.

4. U.S.S.R.

a. Significant Designs and Trends of Russian Aircraft.

(1) The trend of the U.S.S.R., since March 1946 has been to exploit German equipment and to utilize the knowledge of German scientists. A list of Russian aircraft together with the main characteristics of aircraft known to be under development and those operational, including obsolete and obsolescent aircraft, are shown in Annex No. II. These charts do not include foreign aircraft operated by the Russians; many of which have superior performance to similar Russian types. As can be seen from Annex No. II, operational aircraft are conventional, with relatively low speeds and low critical altitudes as compared to U. S. types. The Russians have no turbo supercharger operational except those installed on the "M-30" and "M-42" diesel engine models. The problems encountered by Russia, so far, in the design of turbos has been the metallurgical requirements necessary to counteract the high temperatures encountered around the turbine blades. If the Russians utilize the knowledge of German turbine blade design, this problem should be easily overcome.

(2) Recent information has indicated that the Russians are operating the Siebel and Junkers aircraft factories and BMW Jet Engine Plants. The Junkers factory is possibly manufacturing the German "Ju-287" bomber for the Russians. This bomber was in the flight test stage at the end of hostilities. It is fitted with from two to six jet units depending on the power of the units installed. The Germans expected to attain the high speed of 509 miles per hour at sea level and 537 miles per hour at 16400 feet altitude with this bomber. Other characteristics of this bomber were ranges of 985 miles with 8800 lb. bomb load, 1175 miles with 6600 lb. bomb load and 1325 miles with 4400 lb. bomb load. With the Junkers Plant available for the

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manufacture of airframes and the BMW plant for power units considerable progress should be made by the Russians. At the present time, the Russians are reported to have on order from these three German factories 6000 aircraft. These may well include the "He-162", the "Me-262" and the "Ju-287".

(3) The outstanding aircraft the Siebel Company was developing was the "DFS-346", a supersonic research aircraft with expected speed of about 1700 miles per hour at 50 - 100,000 feet altitude. This experimental aircraft, if perfected, would do much to hasten the Russian development of aircraft capable of operating in the transonic and supersonic speed ranges.

(4) This flight information, together with the available wind tunnels which may have been removed from the Russian Zone of Germany into Russia proper, could decrease the lag in Russian aircraft development. The highest speed wind tunnel known to be in Russian hands is at Dresden. This tunnel possesses a Mach No. 1 test speed, but the test section is so small it could not be of too much value. The most valuable tunnel for high speed research is the .92 Mach number tunnel at Berlin having an 8.8 foot diameter throat which could be used for testing relatively large models. All other wind tunnels in the Russian zone are of low speed.

(5) It is known that several four engine bombers are under development by Russia as well as some jet bombers and fighters. It is not known how much progress has been made on Russian designed aircraft. Nothing is known of a fully developed Russian jet unit so it may well be that the first Russian jet aircraft will be Russian built but of German design.

5. Sweden

a. Development and Trend of Swedish Aircraft and Engines.

(1) No new native Swedish aircraft or engine development is known although the Swedes are manufacturing under

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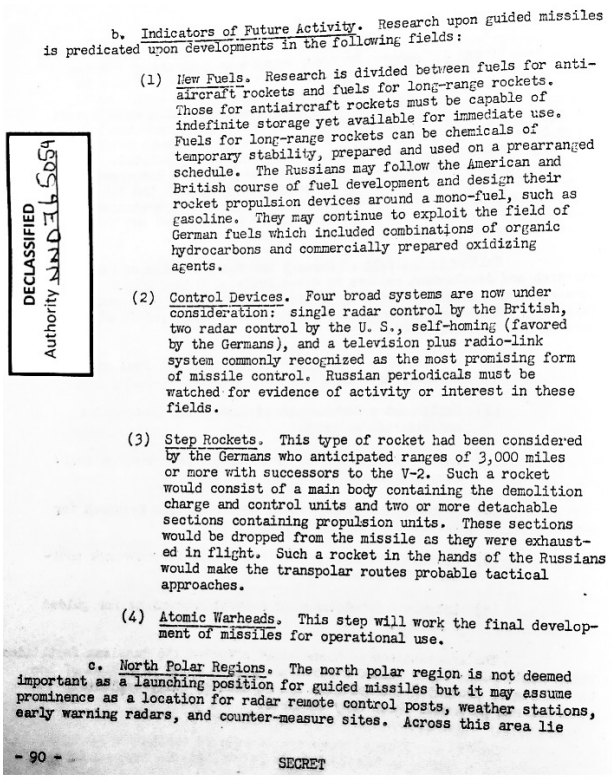
Figure D.642: Air Intelligence Report No. 100-13/1-100, Significant Developments and Trends in Aircraft and Aircraft Engines, Antiaircraft Guided Missiles (15 June 1946). [NARA RG 38, Entry 98C, Box 11, Folder TSC # 3001–3100]



b. Indicators of Future Activity. Research upon guided missiles is predicated upon developments in the following fields:

(1) New Fuels. Research is divided between fuels for anti-aircraft rockets and fuels for long-range rockets. Those for antiaircraft rockets must be capable of indefinite storage yet available for immediate use. Fuels for long-range rockets can be chemicals of temporary stability, prepared and used on a prearranged schedule. The Russians may follow the American and British course of fuel development and design their rocket propulsion devices around a mono-fuel, such as gasoline. They may continue to exploit the field of German fuels which included combinations of organic hydrocarbons and commercially prepared oxidizing agents.

(2) Control Devices. Four broad systems are now under consideration: single radar control by the British, two radar control by the U. S., self-homing (favored by the Germans), and a television plus radio-link system commonly recognized as the most promising form of missile control. Russian periodicals must be watched for evidence of activity or interest in these fields.

(3) Step Rockets. This type of rocket had been considered by the Germans who anticipated ranges of 3,000 miles or more with successors to the V-2. Such a rocket would consist of a main body containing the demolition charge and control units and two or more detachable sections containing propulsion units. These sections would be dropped from the missile as they were exhausted in flight. Such a rocket in the hands of the Russians would make the transpolar routes probable tactical approaches.

(4) Atomic Warheads. This step will work the final development of missiles for operational use.

c. North Polar Regions. The north polar region is not deemed important as a launching position for guided missiles but it may assume prominence as a location for radar remote control posts, weather stations, early warning radars, and counter-measure sites. Across this area lie

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Air Intelligence Report No. 100-13/1-100, Significant Developments and Trends in Aircraft and Aircraft Engines, Antiaircraft Guided Missiles (15 June 1946). NARA RG 38, Entry 98C, Box 11, Folder TSC # 3001-3100

cases the "fantastic" becomes a hard reality as in the case of the late Professor Goddard in his original rocket experiments in New Mexico.

b. Argentinian Guided Missiles. With the fall of Germany and its occupation by the Allies, it was assumed that German research on V-weapons was successfully halted. A speculative report from Argentina points out that the Argentinian Army received data from Germany concerning the manufacture of propulsion fluid used in making rocket bombs. In addition to this report of transfer of information, there remains a second possibility that former German scientific personnel, having been successful in evading capture by the Allies, may have found a haven in Argentina.

c. Atom Bomb Production. There have been no reports to date which would indicate that an atom bomb project similar to the one at Oak Ridge is under construction in any other part of the world. There are reports concerning advancements in atomic energy which indicate that a search is being made for materials other than Uranium which can be used in the production of more lethal and devastating weapons.

d. Uranium Control. The movement of various nations to place their Uranium deposits under rigid governmental control has attracted widespread attention. Restrictions may insure the owner of such deposits that the ores will not be exported for use by an aggressive nation, but do not prevent enterprising individuals from devising a similar bomb from other fissionable materials, i.e., "heavy water".

e. Uranium Deposits. The deposits of Uranium ore are widely dispersed and, as a result, available to many nations. The exploitation of these deposits and the refining of Uranium ore for experimental uses is limited at the present time to those nations financially capable of such an undertaking.

f. Atomic Dust. Reports indicate that the preparation of atomic bombs from Uranium yields additional materials which may be of military value. Most interesting of these is the "atomic dust" which is believed to be the "red mist". Mention of "red mist" has been made recently in the news from Europe as being a new atomic weapon. It is thought that the "red mist" may be a radio-active dust emitting powerful radiation. The possibilities for this type of weapon being used to deny entry to or use of wide areas to any enemy during maneuvers and its anti-personnel effect upon camps, industrial areas, and cities are not to be overlooked.

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the great circle paths between Eurasia and the United States. It is significant that the important paths pass over Iceland or Alaska.

d. Estimate of the Situation. The operations "Musk-Ox" and "Frostbite" clearly demonstrate that our strategists recognize the potentialities of the north polar region.

e. Russian Atomic Energy. The development of atomic weapons and guided rocket projectiles go hand in hand. It was the Germans who realized that the rocket was "the ideal vehicle for atomic warhead" and it has been established that they intended the A-4 (V-2) rocket to be such a vehicle. In the construction of a long-range rocket, space allotted to payload is of necessity reduced to a minimum by the increase in space allotted to fuel. Adaptability of the atomic warhead to such a missile can be fully appreciated because the ratio of destructive power to unit weight is far in excess of conventional explosives and a radical increase in the destructive power is not accompanied by a similar increase in volume of the warhead.

Little is known concerning the Russian activity with regard to atomic energy. Recent developments in the detection of radio-active material in the upper atmosphere resulting from the explosion of the three atomic bombs indicate that Russian atom bomb tests could be detected. This could be accomplished by examination of the upper airs known to have originated in or near Russian territory. An increase in radio-active material would indicate experimentation with atomic explosives. The validity of these experiments on the examination of upper airs will be more fully shown following the Crossroads experiment.

f. Polar Chart. Annex I shows possible great circle routes across the polar regions.

4. Other Nations

a. Atomic Bomb and Guided Missile Activity. The problem of how to obtain food in the various sections of the world has, during the past several months, far outweighed the problems of technical advancement in the field of guided missiles, electronics, and atomic energy. Occasionally, there have appeared items in the news which indicate that research on new branches of science is proceeding. From these bits of information an attempt is made to assemble a clear picture of future trends. The news must be carefully scrutinized and the fantastic separated from the possible before a hypothesis concerning the trend of research and development can be formulated. In many cases the inferences contained in these reports serve as a "straw in the wind." It is pointed out that in some

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g. Heavy Hydrogen Bomb. In Germany a letter was picked up by the American censors. It had been written by a German desirous of exchanging information for an opportunity to go to the United States. The writer professed knowledge of "heavy water" research in Germany and of an "even more deadly weapon than the atomic bomb".

h. German Heavy Hydrogen Bomb. During 1943 the Germans were experimenting with the production of "heavy water" in Norway. Their installation at Rjukan, Norway was deemed important enough at that time to warrant a visit from the heavy bombers of the Eight Air Force. It was evident that the Germans recognized the potentialities of "heavy water" as a source of Heavy Hydrogen and were taking advantage of the abundance of electric power available in Norway for the production of this substance.

The war brought the German activity in connection with "heavy water" to a close but the question can now be posed, "Have the Russians obtained German personnel formerly employed in the project and if so will they exploit them in an effort to devise an atomic weapon which requires none of the radio active minerals so closely guarded throughout the world?" If the Russians are successful in this attempt, they will have within their grasp the new atomic weapon which is reported to have made the Uranium bomb obsolete. Research in the United States confirms the comparison of the Heavy Hydrogen bomb to the Urahium bomb.

i. United Kingdom. It is reported that a 1,000,000 volt cyclotron and a mass spectrograph are under construction at Melbourne University in Australia. England has allocated $11,200,000 for atomic energy research and a former R.A.F. airfield is being converted to laboratories for atomic research. On 1 March 1946 the Director of Atomic Energy Group assumed his duties. This group was organized to formulate policies with regard to atomic energy.

j. Scandinavian Countries. Sweden proposes that seven million Kronor be set aside for atomic research. She possesses both a cyclotron and deposits of Uranium ore. A Scandinavian conference has been called by Norway, Sweden, and Denmark to discuss the future plans for application and use of atomic energy. Dr. Niels Bohr, outstanding nuclear physicist from Denmark, has received $125,000 for the continuation of his work and has declined invitations to travel outside of that country.

k. France. France has appointed a committee to formulate plans concerning the control of atomic energy. The immediate object of this committee is the establishment of small research plants.

l. Spain. It is reported that Spain has been mining Uranium. This country was recently the center of attention due to concern over reports that German nuclear physicists were employed in atomic bomb research. It is believed that these news reports were Communist inspired and aimed at diverting public attention from Russian activity.

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Figure D.643: Air Intelligence Report No. 100-13/1-100, Significant Developments and Trends in Aircraft and Aircraft Engines, Antiaircraft Guided Missiles (15 June 1946). [NARA RG 38, Entry 98C, Box 11, Folder TSC # 3001–3100]

Kurt Diebner, 1962, *Kerntechnik* 4:3:89–93. Nuclear explosive design with numerous concentric spherical shells, likely based on wartime work.

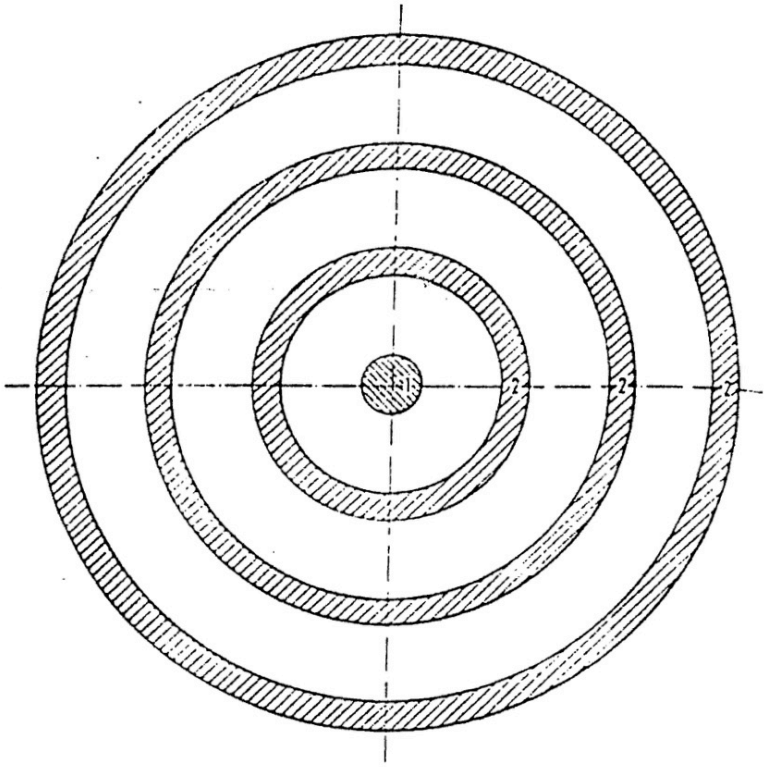

Abb. 3: Eine der Abb. 2 entsprechende schematische Anordnung mit einer Folge von ineinandergefügten Sprengstoffschalen (2) zur Verstärkung des Effektes; (1) bedeutet wieder den Fusionsreaktionsraum

Friedwardt Winterberg, 1981, *The Physical Principles of Thermonuclear Explosive Devices.* Winterberg worked very closely with Diebner after the war.

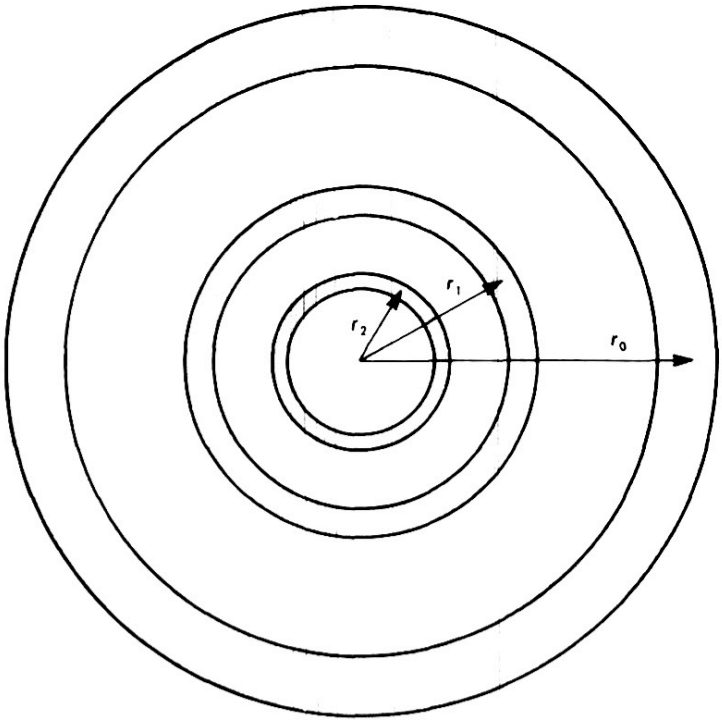

Figure 7. The implosion velocity can be raised through the subsequent collision of several concentric shells of decreasing mass.

Figure D.644: Top: Diagram from Kurt Diebner, likely based on wartime work [Diebner 1962]. Bottom: Diagram from Friedwardt Winterberg, who worked very closely with Diebner after the war [Winterberg 1981]. These diagrams illustrate nuclear explosive designs with a large number of concentric spherical shells to increase the implosion velocity, but they may also represent a key step toward a sloika H-bomb design that implodes alternating layers of fission and fusion fuel.

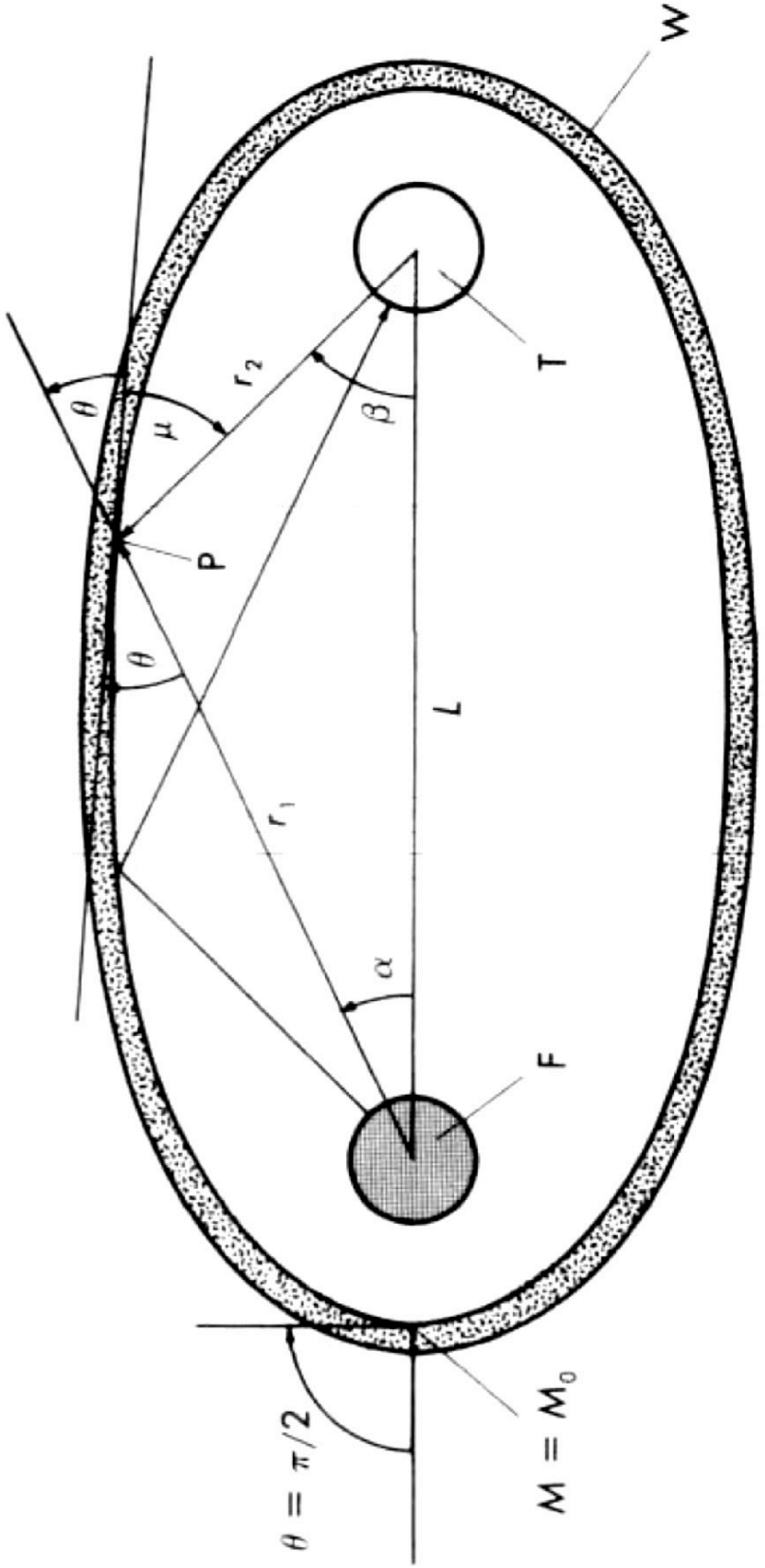

Figure 4. In the Prandtl-Meyer ellipsoid shock wave focusing principle, only one fission bomb F is used to induce a spherical implosion onto the thermonuclear explosive T by shock wave reflection from the wall inside the ellipsoidlike cavity. P is the point where the incoming wave intersects with the wall; M is the Mach number of the hypersonic flow associated with the diverging wave at P; θ is the angle between the wall slope and the incoming ray; r_1 and r_2 are the rays of the shock wave.

Figure D.645: Diagram from Friedwardt Winterberg, who worked very closely with Kurt Diebner after the war, showing a fission-fusion H-bomb design that appears to be deeply steeped in pre-war German hydrodynamic theory (Ludwig Prandtl, Theodor Meyer, Ernst Mach, etc.) and not derivative of the Teller-Ulam H-bomb design used in the United States [Winterberg 1981].

Friedwardt Winterberg. 1981. *The Physical Principles of Thermonuclear Explosive Devices*. New York: Fusion Energy Foundation.

[Friedwardt Winterberg (1929–) worked very closely with Kurt Diebner after the war. In 1981, Winterberg published a book of nuclear explosive designs that appear to have been heavily based on the wartime work of Diebner and others in the German nuclear program. In particular, Winterberg presented two diagrams that appear to be especially relevant for the history of H-bomb designs [Goncharov 1996a, 1996b; Chuck Hansen 1988, 2007; Rhodes 1995; Sublette 2019; Wellerstein and Geist 2017].

1. Page 4372 shows two similar versions of a nuclear explosive design with a large number of concentric spherical shells. The top version is from Diebner, quite likely based on wartime programs with which he was involved [Diebner 1962]. The bottom version is from Winterberg [Winterberg 1981]. In both of these postwar publications, Diebner and Winterberg made the point that such a design could be useful to increase the implosion velocity. However, using a large number of concentric spherical shells is also a critical feature of the sloika H-bomb approach, which implodes alternating layers of fission and fusion fuel. Thus these postwar diagrams might be clues that the wartime German H-bomb program was working toward a sloika design.

2. Page 4373 presents another diagram from Winterberg. The diagram depicts a fission-fusion H-bomb design that appears to be deeply steeped in prewar German hydrodynamic theory (Ludwig Prandtl, Theodor Meyer, Ernst Mach, etc.) and not directly derivative of the Teller-Ulam H-bomb design that was developed in the United States after the war [Winterberg 1981]. Yet like the Teller-Ulam design, the design shown by Winterberg was intended to function as a two-stage (fission explosion, then fusion explosion) thermonuclear bomb, or a three-stage (fission, fusion, fission) bomb if the outer casing were fissionable. For evidence that this ellipsoidal design originated in the wartime German program, see p. 4377.

Either a sloika multi-layered implosion design or an ellipsoidal two-stage design for an H-bomb could have used the lithium deuteride fusion fuel mentioned in other German documents (see pp. 4281–4349).

In principle, either design could have had a weight consistent with the 6-ton bomb mass reported in documents such as those on pp. 4338, 4350–4363, and 5343.

Likewise, if either a sloika or a two-stage design worked as intended, it could have had a megaton-level explosive yield, which would also be consistent with the 6-mile blast radius reported in documents such as those on pp. 4365–4367.]

Is either a large spherical sloika design or an ellipsoidal two-stage design what Werner Grothmann meant by "a third" German nuclear bomb design that was under development during the war, that was apparently quite different than the fission bombs with which Grothmann was more familiar, and that "must have looked like a swollen bomb" (see p. 4272)?

Charles Chamberlain. Germans Failed to Split Atom: Experiments With Heavy Water Futile. *Council Bluffs Nonpareil* (Council Bluffs, Iowa). 9 February 1946 p. 1. https://www.newspapers.com/article/the-daily-nonpareil/1957966/

Another atom scientist in the British occupation zone of Germany—Prof. Paul Harteck of the Kaiser Wilhelm institute of physics in Berlin—said that the light rays thrown out during the enormous explosion of an atomic bomb added greatly to the destructive force.

'The splitting of the atom causes a temperature of more than 10,000,000 degrees and aerial allure which destroy everything,' Harteck said.

This frees an amount of light which is beyond the visible spectrum. Only a few people know that the reflection of beams of light on solid bodies also exerts a mechanical pressure. This pressure is so small where our normal light is concerned that it is not noticed. The amount of light freed by an atomic bomb is so great it destroys walls.

[On the basis of his wartime work, Harteck was apparently describing the key to radiation implosion in H-bombs. Compare Harteck's description above with the description below from Kenneth Ford, one of the American H-bomb scientists. Harteck was brought to the United States to work after the war (p. 4993).]

Kenneth W. Ford. 2015. *Building the H-Bomb: A Personal History.* World Scientific Publishing. pp. 67, 70.

Let me explain what was special about the radiation-implosion idea (the 1951 insight of Edward Teller and Stan Ulam that replaced the unattainable runaway Super with the successful equilibrium Super). [...]

The energy in a given volume of radiation goes as the fourth power of the temperature. [. . .] If you increase the radiation temperature by a factor of ten, the radiant energy increases by a factor of ten thousand (10 to the 4th power). [. . .] The energy of one cubic meter of radiation at a temperature of 30 million K is, in the units favored by weaponeers, 15 kilotons. And its pressure is correspondingly elevated, to 2 billion atmospheres. [. . .]

At ordinary temperature, radiation is like the pixie dust that was visible only to Tinker Bell and her band of fairies. At the temperatures characteristic of nuclear explosions, radiation is "stuff," full of enormous energy and capable of pushing like a giant piston.

Walther Gerlach. Notebooks 1943/44 and 1944 [Deutsches Museum Archive NL 080/270-66 and NL 080/270-67].

[See document photo on p. 4377.

Walther Gerlach kept a series of small notebooks for scientific notes to himself. They are now in the Deutsches Museum Archive in Munich. Since these notebooks served simply as scientific reminders for Gerlach, they do not contain detailed explanations, as formal laboratory notebooks would. However, they also do not contain any random artistic doodles such as some people make during meetings. Everything in them appears to have had a specific scientific purpose for Gerlach.

Notizbuch 1943/44 [Deutsches Museum Archive NL 080/270-66] is a small orange notebook covering the period 10 November 1943 to March 1944. On the final page, Gerlach drew an ellipsoid remarkably similar to Friedwardt Winterberg's postwar diagram of a hydrogen bomb on p. 4373. On the same page, Gerlach also included nuclear reactions involving deuterium and sketches of converging shock waves [Karlsch 2005, pp. 205, 321, 333].

Notizbuch 1944 [Deutsches Museum Archive NL 080/270-67] is a small dark red notebook that apparently began in March 1944; it is not clear when the final entry was made, but that was likely sometime in 1944 or possibly early 1945. Entries in the notebook show that Gerlach had scientific discussions (although the notebook does not give the scientific details) with Kurt Diebner, Siegfried Flügge, Wilhelm Groth, Fritz Houtermans, and other scientists on nuclear topics, including specifically the use of lithium.

After the war, Kurt Diebner wrote about bombs employing fusion reactions (pp. 4260–4267) and worked closely with the young Friedwardt Winterberg. Edward Teller apparently tried to recruit Siegfried Flügge to help develop the U.S. hydrogen bomb (p. 4996). Wilhelm Groth was reported to have been working on a megaton-level bomb during the war, which is consistent with the physics of hydrogen bombs but not fission bombs (p. 4367). Fritz Houtermans was the first scientist to propose and analyze the fusion reactions in stars (p. 1542).

While these surviving notes from Gerlach are cryptic and certainly not conclusive, they do suggest the existence of a wartime program that was very active by March 1944 and that involved the use of deuterium, lithium, and both fusion and fission reactions in an ellipsoidal hydrogen bomb design highly similar to that on p. 4373. Any more detailed documents on such a program would have been either destroyed by the Germans at the end of the war or captured by Allied countries and still buried in their classified archives.]

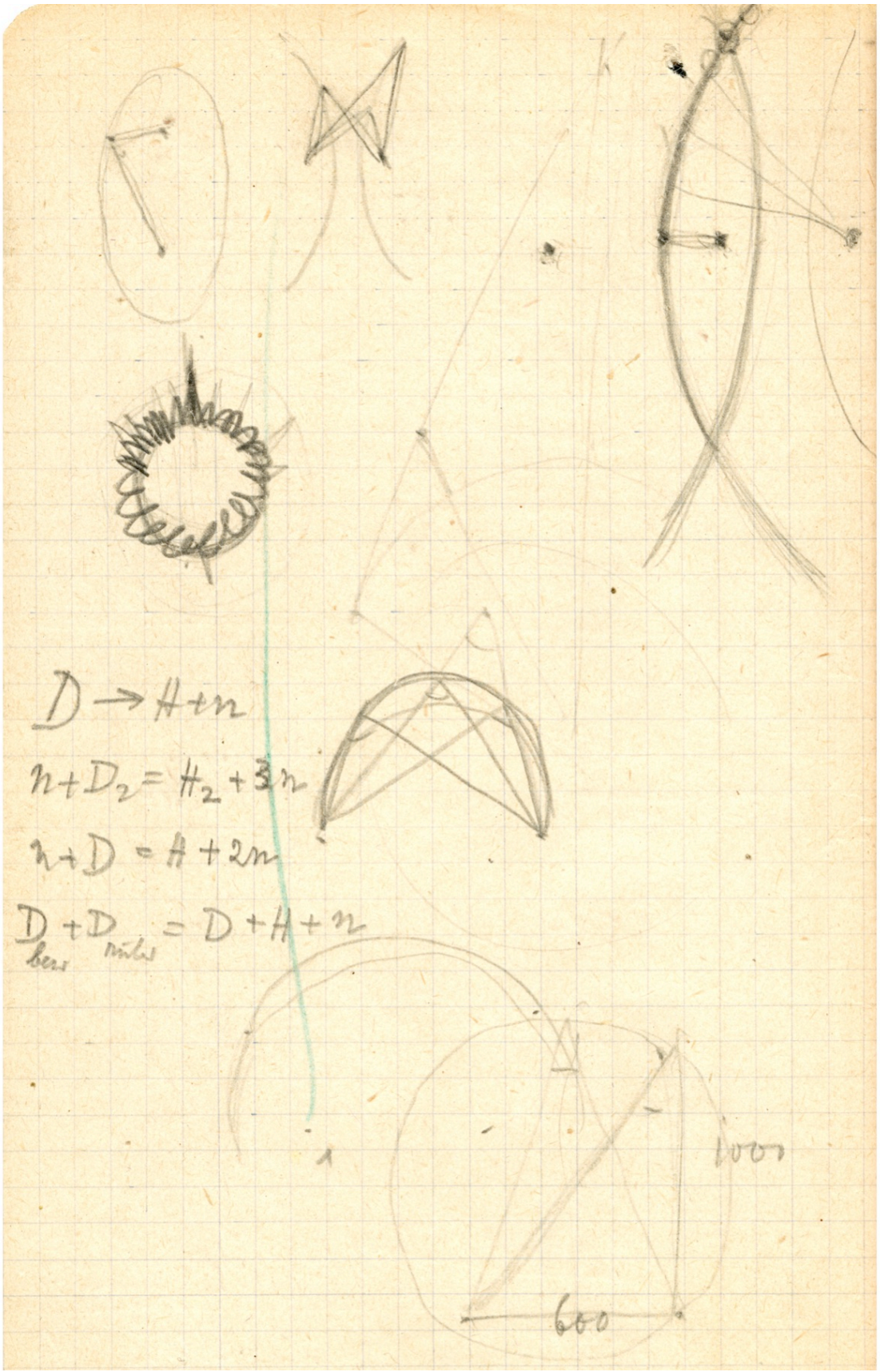

Figure D.646: March 1944 diagram from Walther Gerlach showing an ellipsoid (upper left) in conjunction with nuclear reactions involving deuterium and converging shock waves. Compare it to Fig. D.645 [Karlsch 2005, pp. 205, 321, 333; Deutsches Museum Archive, NL 080/270-66].

Ronald Richter's 1951–1957 Paperclip file [NARA RG 330, Entry A1-1B, Box 134, Folder Richter, Ronald W. Dr.].

[Ronald Richter (Austrian, 1909–1991) conducted research in Germany during the war, but he is mainly remembered for the highly publicized failure of an experimental fusion reactor project he led for Argentinian president Juan Perón during the period 1949–1952. Scientists and historians have spent the decades since then debating whether Richter was a willful charlatan, a misunderstood genius, or something else entirely.[14]

After the failed project in Argentina, Richter applied for admission to the United States under the Paperclip program, was denied, and lived the rest of his life in obscurity.

Richter's Paperclip file is rather lengthy and includes many pages written by him, or written by U.S. government interviewers about him, regarding his then past, present, and intended future research projects. As illustrated by the excerpts on pp. 4380–4389, these documents list a large number of extremely advanced and insightful ideas in applied physics, including (but not limited to):

- Magnetic-confinement plasma fusion reactors.
- Non-Maxwellian plasma fusion systems not in thermodynamic equilibrium.
- Advanced "aneutronic" fusion reactions (proton + boron-11, proton + lithium-6, helium-3 + helium-3, etc.) that would produce fewer unwanted neutrons than the simplest fusion reactions (deuterium + deuterium and deuterium + tritium).
- Traveling-wave direct electric converters to extract the output energy from fusion reactors in the form of more efficient electromagnetic waves instead of less efficient heat.
- Advanced fission reactors.
- Nuclear propulsion systems for various types of vehicles.
- Supersonic combustion ramjets (scramjets).
- Dual-mode scramjet/rocket engines.
- Quantum vacuum energy or zero-point energy.
- Gravitational theories and grand unified theories.

[14]See for example: Ehrenberg 1958a, 1958b; Paul-Jürgen Hahn 2003; Karlsch and Petermann 2007; Nagel 2002; Richter 1991; Thirring 1955.

Upon hearing all of these ideas, the Director of the Office of International Affairs at the U.S. Atomic Energy Commission, John Hall, was "quite impressed with the knowledge, theories and work of Dr. Richter" and "stated that Dr. Richter is thinking in the year 1970" (i.e., at least 14 years in the future, p. 4380).

While all of the ideas listed by Richter were extremely clever and worthy of study, detailed theoretical and/or experimental physics investigations would have shown that some of them (such as advanced aneutronic fusion reactions and highly non-Maxwellian plasma fusion reactors [Rider 1995, 1997]) were not practical even under the best possible conditions. There is no evidence that Richter conducted competent theoretical or experimental investigations of the topics that he listed, or that he ever discovered the fundamental physical limitations on some of them. Richter's apparent inability to carry out proper theoretical or experimental physics work was likely one of the primary causes of the failure of the Argentinian fusion project.

Richter's Paperclip file also lists his job history. From his graduation in 1935 until his move to Argentina in 1948, Richter changed research jobs extremely frequently, often after only a few months at each. He worked in labs all over the German-speaking world on a wide variety of projects, and interacted with countless stellar German and Austrian scientists. From reading Richter's job history, one gets the strong impression that Richter was probably discovered to be scientifically incompetent at each job and was quickly dismissed, only to land at another job. Military research and development projects were often overstretched and eager for additional personnel in wartime Germany, so they may not have asked as many questions about Richter's previous employment as they should have before hiring him each time. Yet precisely because those projects were so eager for personnel, Richter must presumably have demonstrated great incompetence to be fired so swiftly by each project.

It is possible that Richter was gifted at thinking of new physics ideas even though he was incapable of properly pursuing them. However, that possibility seems remote, since even conceiving of such ideas requires physical insight and understanding that Richter apparently never demonstrated in his jobs.

Thus by far the most likely explanation is that Richter appropriated the many intriguing research ideas he listed from much more competent scientists with whom he interacted in wartime Germany. In the Paperclip documents, Richter himself listed interactions with or knowledge of the work of Manfred von Ardenne, Adolf Busemann, Abraham Esau, Siegfried Flügge, Josef Mattauch, Max Steenbeck, Kurt Tank, and others. Von Ardenne, Busemann, Esau, Flügge, Mattauch, and Steenbeck appear to have played roles in a program to develop an H-bomb, among other wartime projects.

Therefore, Richter's lists of ideas may offer a rare and valuable glimpse into otherwise quite mysterious wartime research projects. If that explanation is correct, scientists in wartime Germany conceived detailed ideas for research projects that still remained cutting-edge topics many decades after the war, and they may have even made significant progress on some of those topics. At the very least, Richter's documents demonstrate that historians need to do much more work to investigate the true extent and accomplishments of highly advanced research and development programs in wartime Germany.]

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THE FOREIGN SERVICE
of the
UNITED STATES OF AMERICA
Office of the Air Attache
United States Embassy

Buenos Aires, Argentina
3 July 1956

175-R&D

(Uncl)
SUBJECT: Dr. Ronald Richter (See IR-76-56, 79-56, 80-56 and 145-56)

TO: Director of Intelligence
Headquarters, USAF
ATTN: Air Attache Branch
Washington 25, D. C.

1. A recent visit by a group of U. S. atomic energy scientists to Argentina, headed by Dr. John Hall, resulted in a conversation among Dr. Richter, Dr. Hall and two other scientists in the group. The undersigned officer attended a meeting with Dr. Hall subsequent to this conference and the following items of interest relative to Dr. Richter are being forwarded for information and whatever action is required:

a. Dr. Richter is considered by Dr. Hall to be "a mad genius". Along the same lines Dr. Hall stated that Dr. Richter is thinking in the year 1970. Dr. Hall was quite impressed with the knowledge, theories and work of Dr. Richter. He will attempt to send to Argentina an atomic scientist thoroughly familiar with Dr. Richter's field of work to further interrogate Dr. Richter and thus properly evaluate his capabilities. One of the visiting group who attended this conference was a medical doctor and has diagnosed Dr. Richter as being close to the verge of a complete breakdown.

b. Dr. Richter has visited the undersigned officer several times during the past four months. He has become increasingly concerned about his future inasmuch as he cannot secure employment in Argentina and has completely exhausted all his personal funds. Dr. Richter has repeatedly indicated his desire to work for the U.S. or for any country that is opposed to the Communists. It is known to this officer that Dr. Richter has been approached four times in the past six months by "pink" Germans residing in Buenos Aires and has been urged to visit the Russian attache who would [illegible] solve all of his problems. His condition at present is such that the undersigned feels that unless he has some definite encouragement for obtaining employment in the U.S. or with a Western Bloc country, he will accept employment with the Communist Bloc.

[redacted]

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AIR INTELLIGENCE INFORMATION REPORT

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1. The following information was given to the Preparing Officer by Dr. RICHTER in a personal interview :

Curriculum Vitae

Name: Ronald RICHTER, Dr.rer.nat.
Profession: Physicist, industrialist
Born: 21 February 1909
Place of Birth: Falkenau a.d. Eger, Bohemia, Austria (Czechoslovakia)
Citizenship: Naturalized Argentine, naturalized in May, 1950
Status: Married, one daughter of five years
Address: Almt. Brown - Berassain, Monte Grande; Province of Buenos Aires, Argentine Republic

Childhood and early life were strongly influenced by the industrial environment in which I was growing up. My father and the father of my father, both were directors of coal mines and administrative bodies. Design problems, construction work, machinery, instruments, power stations, extremely busy engineers and general managers, a.s.o., formed consciously and subconsciously an essential part of my 'world'. My grandfather as an engineer and my father merely as an industrialist gave me first lessons in technical sciences and industrial thinking.

1928: Entering the German University at Prague, studying physics, chemistry and geophysics.
1930: Assistent on the Geophysical Institute of the University.
1931: In charge ofthe Meteorological and Geophysical Observatory on the Donnersberg, Bohemia; solar physics and earth-magnetism.
1933/34: Thesis: 'Untersuchungen an Sperrschichtphotozellen mit weichen Roentgenstrahlen', (Investigations on photo-voltaic cells by soft X-rays).
1935: Graduated on March 2, Doctor of Natural Sciences.

1935/36: Running a private research laboratory near Falkenau a.d. Eger, sponsored by industrial circles.
Research on the activation of catalysts, catalyst-controlled high-pressure coal hydrogenation and coal cracking processes, development of an image-converter-like activity-contrast-microscope, based on scanning of hydrogen- or deuterium adsorbing border surfaces by protons, deuterons, or electrons; for the first time, it became possible to see and to photograph activity contrasts which cannot be made visible by light nor by electron microscopes.
Activation ofcatalysts under continuously activity-controlled conditions.
Research work and design studies on electric arc furnace systems, development of new types of arc plasma analyzing instruments and methods.
In 1936, discovery of a plasma shock wave generating process, conception of a completely new type of industrial arc reactor system, based rather on plasma shock wave reactivity than on heat transfer.
Development of a basis of operation for testing plasma shock wave conditions by means of plasma-collision-induced nuclear reactions.

1937/38: In charge of a research laboratory, connected to the Berlin-Suhler-Waffen- und Fahrzeugwerke. Gustloff-Werke, Suhl, Thuringia, Germany.
Research on the storage capacity of hydrogen-adsorbing highly activated materials; since a considerable amount of thermal energy has to be fed into the structure of a highly active adsorbing material to discharge its hydrogen content again, the aspects for adsorber-stored hydrogen as a fuel for rocket and jet engines are still under consideration.

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Considerable improvement in the analysis and generation of plasma shock waves.
Due to a lack of counter sensitivity and owing to a very poor counter geometry (one cannot place the counter tubes near to the extremely hot arc plasma zone), still no correct nuclear raction data could be obtained when analyzing a shock-wave-controlled non-Maxwellian deuterium high pressure plasma, development of a tele-analyzing method, based on excitation-energy-discriminating ultra-violet-sensitive proportional counter tubes, the ultraviolet photons being excited by plasma-collision-induced nuclear reactions.

1939/41: At the outbreak of World War II, I joined the research staff of the Junkers Flugzeug-und Motorenwerke, A.G., Dessau, Germany, research work on the excitation of mechanical resonance (fluttering) oscillations near the critical speed of flight, series of test flights and nose dives mainly with the proto-type Ju-88, in 1941, under research contract of the German Air Ministry, Forschungsfuehrung des Reichsluftfahrtministeriums, Abteilung LC 1.
Head of an Air Ministry sponsored research laboratory at Darmstadt, Germany. Development of methods and instruments for testing material strength under extreme mechanical and thermodynamic conditions, based on the excitation of photoelectrically analyzed mechanical resonance oscillations by means of sound and ultra-sound waves; analysis of structural damage by micro-vibrations and by corrosion.
The same analyzing device will considerably improve testing of structural stability on nuclear power reactor systems (corrosion and radiation damage).

In contact with Prof. Busemann and Prof. Dirksen, both were research directors at the Luftfahrtforschungsanstalt Hermann Goering near Braunschweig, Germany.
Research on jet operation analyzers, vibration problems near the sound barrier and in the supersonic range, development of supersonic wind-tunnel analyzers, analysis of structural stability of intensely heated up and extremely fast spinning jet turbine blades, a.s.o.
By this research contact, in the fall of 1942, Prof. Busemann invited me to transfer my research laboratory to the Luftfahrtforschungsanstalt, to work with him on rocket and supersonic projects.
At that time, by intervention of the Gestapo, I had to stop research work on secret projects.
(In August, 1937, when I had entered Germany to have discussions with an industrialist, the Gestapo took away my Czechoslovakian passport and issued me a Nansen passport, thus giving me the status of a stateless person by force; as a consequence of these strange events, all the time I have spent in Germany before and during World War II, I found myself being likewise sponsored and shadowed by the German authorities).

1942/43: In order to improve the detectability of shock-wave-induced nuclear reactions in the fall of 1942,- using nuclear mass data, just having been published by Mattauch and Fluegge, Kernphysikalische Tabellen, Springer Verlag, Berlin, 1942,- I developed nuclear reaction schemes, based on the chain-reacting consumption of the lithium and boron isotopes; the basic conception was to start a self-reproducing shock-wave-ignited reaction chain by jetting lithium or lithium-6-enriched lithium into a powerful non-Maxwellian, neutron-producing deuterium high pressure plasma.
Development of a reaction scheme, based on the combined chain-reacting consumption of the lithium and boron isotopes.

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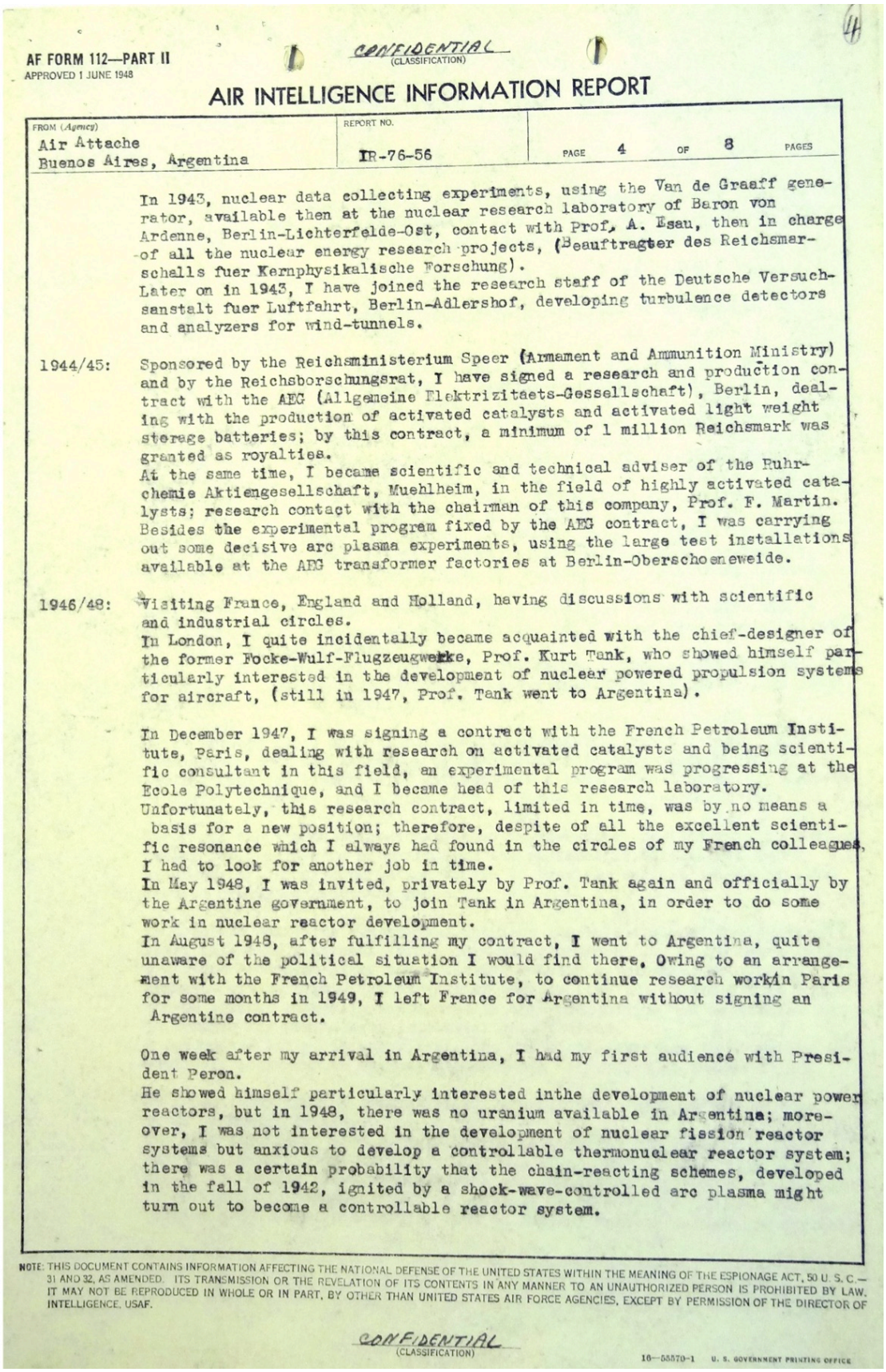

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In 1943, nuclear data collecting experiments, using the Van de Graaff generator, available then at the nuclear research laboratory of Baron von Ardenne, Berlin-Lichterfelde-Ost, contact with Prof. A. Esau, then in charge of all the nuclear energy research projects, (Beauftragter des Reichsmarschalls fuer Kernphysikalische Forschung).
Later on in 1943, I have joined the research staff of the Deutsche Versuchsanstalt fuer Luftfahrt, Berlin-Adlershof, developing turbulence detectors and analyzers for wind-tunnels.

1944/45: Sponsored by the Reichsministerium Speer (Armament and Ammunition Ministry) and by the Reichsborschungsrat, I have signed a research and production contract with the AEG (Allgemeine Elektrizitaets-Gesellschaft), Berlin, dealing with the production of activated catalysts and activated light weight sterage batteries; by this contract, a minimum of 1 million Reichsmark was granted as royalties.
At the same time, I became scientific and technical adviser of the Ruhrchemie Aktiengesellschaft, Muehlheim, in the field of highly activated catalysts; research contact with the chairman of this company, Prof. F. Martin.
Besides the experimental program fixed by the AEG contract, I was carrying out some decisive arc plasma experiments, using the large test installations available at the AEG transformer factories at Berlin-Oberschoeneweide.

1946/48: Visiting France, England and Holland, having discussions with scientific and industrial circles.
In London, I quite incidentally became acquainted with the chief-designer of the former Focke-Wulf-Flugzeugwerke, Prof. Kurt Tank, who showed himself particularly interested in the development of nuclear powered propulsion systems for aircraft, (still in 1947, Prof. Tank went to Argentina).

In December 1947, I was signing a contract with the French Petroleum Institute, Paris, dealing with research on activated catalysts and being scientific consultant in this field, an experimental program was progressing at the Ecole Polytechnique, and I became head of this research laboratory.
Unfortunately, this research contract, limited in time, was by no means a basis for a new position; therefore, despite of all the excellent scientific resonance which I always had found in the circles of my French colleagues, I had to look for another job in time.
In May 1948, I was invited, privately by Prof. Tank again and officially by the Argentine government, to join Tank in Argentina, in order to do some work in nuclear reactor development.
In August 1948, after fulfilling my contract, I went to Argentina, quite unaware of the political situation I would find there. Owing to an arrangement with the French Petroleum Institute, to continue research workin Paris for some months in 1949, I left France for Argentina without signing an Argentine contract.

One week after my arrival in Argentina, I had my first audience with President Peron.
He showed himself particularly interested inthe development of nuclear power reactors, but in 1948, there was no uranium available in Argentina; moreover, I was not interested in the development of nuclear fission reactor systems but anxious to develop a controllable thermonuclear reactor system; there was a certain probability that the chain-reacting schemes, developed in the fall of 1942, ignited by a shock-wave-controlled arc plasma might turn out to become a controllable reactor system.

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In October or November 1948, I have signed a five year contract with the Argentine authorities, became head of a thermo-nuclear reactor project, but never saw a copy of this contract in all the years to come.

1949/52: By June 1949, the reactor project at Huemul Island was starting from scratch.
During this period of construction, data were collected by means of an electronic reactor simulator.

On 16 February 1951 an exponential reactor system was ready for test.
In the first test, the injection of lithium-6-enriched lithium into a shock-wave-controlled proton hydrogen plasma, for a short interval, produced series of primary and secondary reactions, the helium-3 helium 3 reaction giving proof for the existence of self-reproducing reaction chains.
In a second test, by jetting lithium-6-enriched lithium into avalanche of neutron-reproducing reaction chains was monitored. In both tests, the self-reproducing reaction chains were analyzed by means of excitation-energy-discriminating ultraviolet sensitive proportional counter tubes.
At that time, a large-scale reactor system was under construction in which a self-sustaining chain reaction should have been realized; however, this reactor system has never been completed, probably for reasons fo sabotage.

Against my strict advice, President Peron announced these results with a great display of propaganda; from this time on, I found myself being mixed up with political affairs.
Still in 1951, President Peron offered to me the position of a National Director of Atomic Energy; I did not accept this offer to escape political interference with my scientific work.

On 26 October 1951, in a third decisive exponential reactor test, it has been proven that the avalanche of neutron-reproducing reaction chains, resulting from the injection of lithium into a shock-wave-controlled, neutron-producing deuterium plasma, can be kept going on by injecting boron.

Later on, the plasma-collision-induced isomerization of indium- and rhodium nuclei has been proven by monitoring the radioactive emission of gamma quantums; signal discrimination had to be provided against the shock-wave-induced bremsstrahlung background.

In order to shift the reactor project from the political and propaganda level to a more reasonable and profitable commercial level, in December 1951 I advised President Peron to accelerate reactor development by linking Argentina with a highly industrialized country like the United States. He showed himself extremely interested in this proposition and authorized me to arrange for preliminary industrial negotiations.
A few months later, in March 1952, the political situation in Argentina was obviously beginning to change; sabotage was increasing at Huemul Island.

On 2 September 1952, a commission of deputies and a group of experts arrived at Huemul Island.
The only purpose of this commission was to paralyze the reactor project; positive facts did not matter at all; the 'findings' of this commission were ppe-set in Buenos Aires, weeks before the commission arrived at San Carlos de Bariloche in November 1952. I suddenly found myself expelled from the reactor project and had to stop work on nuclear reactor systems immediately.

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Separate Sheet No.1.

3. Professional Field or Occupation: Include specialized fields of work or interest.

experimental and applied physics,

analysis of stress and vibration under extreme thermodynamic and mechanical conditions (hypersonic flight conditions, radiation corrosion, a.s.o.),
development of new materials of construction for rocket and jet motors, nuclear propulsion systems, a.s.o., to be produced in shock-wave- and ultra-sound-controlled arc melting furnaces,
high-pressure plasma physics and plasma implosion analysis, shock-wave physics and chemistry, interested in rocket and jet plasma analysis, solar plasma physics,
analysis of nuclear reactions in chain-reacting fission and fusion plasma zones,
development and testing of plasma-type, pulsation-controlled fission and fusion reactor systems,
development and testing of propulsion reactor systems,

experimental approaches to new concepts,

development and testing of highly-turbulent, magnetic-field-controlled fission and fusion plasma systems,
experimental approach to solar flare conditions and to the explosion-tendency of the solar plasma, ultraviolet excess analysis,
excitation of space structure by pulsation-controlled plasma implosion, testing the limitations of quantum mechanics and quantum dynamics,
experimental approach to the unified field theory and to the velocity of propagation of gravity, a.s.o.

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the substitution of the Lonardi government by the Aramburu government explains to some extent the hostile attitude of the Lonardi government against the 'Richter case',

in May, 1956, judge Dr. Botet was starting another investigations,

when being interrogated again and again, the investigation turned out to become a complete rehabilitation,

but there was no rehabilitation,

during the last interrogation about six months ago, Dr. Botet, despite of my loud and repeated protest, even confiscated the original of my doctor diploma, when I was offering a photocopy,

a few months ago, Dr. Botet, for some political reasons, lost his position as a judge; but I still cannot get a rehabilitation - and no job,

but it seems to be a matter of fact that I am now allowed to leave the country,

when entering exile in February, 1953, I immediately was beginning design work on shock-wave-controlled melting furnaces and chemical arc reactor systems,

still in 1953, I was developing an improved ram jet system, based on the shock-wave-controlled conversion of an intermittent ram jet system into a steady state ram jet system,

on the same basis, it was even possible to develop a propulsion system, interchanging continuously between rocket and ram jet phase, thus substituting turbo jet engines by a shock-wave-controlled combustion reactor system,

for the first time, the extraordinary feed-back loop between thrust and air-intake - which is an exclusive feature of a ram jet system - can be fully developed without the disadvantage of a minimum speed of flight,

these studies have derived from injection experiments and the characteristic curves of the penetrability of shock-wave-controlled plasma zones,

in the fall of 1953, and in 1954, much work was done for a better understanding of field-interaction-controlled fusion reactor systems; a workable basis for the development of a generalized theory of particle acceleration in highly-turbulent, magnetic-field-controlled fusion reactor systems was found,

during the same period, a nuclear fission plasma-type reactor system was analyzed theoretically,

first of all, there was the principle fission plasma experiment, controlled by excess reactivity, temperature coefficient, plasma turbulence, and magnetic-field-controlled plasma deformation,

improvement of the control of a fission plasma-type reactor system by critical-size (i.e. critical compression) - controlled plasma pulsation,

pulsation control was improved by the magnetic-field-controlled feed-back loop between shock-wave-induced plasma turbulence and plasma turbulence-induced promotion of shock-wave-generating plasma explosions, the shock-wave-generating plasma explosions initiated by the pulsation-controlled criticality of the chain-reacting fission plasma itself,

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from these theoretical studies derives, that such a shock-wave-controlled pulsation-controlled fission (or fusion) plasma system must be an enormously powerful source of shock-wave-induced ultra-sound, (converting nuclear energy directly into ultra-sound energy),

theoretically, a chain-reacting controllable plasma reactor system (fission or fusion type) will be the only one which can produce nuclear power in the range of millions of kilowatts, when based on the controlled pulsation of supercritical chain-reacting zones; therefore, the optimal output of nuclear-power-induced ultra-sound will be determined and limited by the reactor structure demoloshing effects of the ultra-sound itself,

still in 1944, I have been using the coupling between plasma jets and a magnetic field as a means for analyzing non-Maxwellian plasma conditions; experimental research on a plasma-controlled, energy-converting system (converting nuclear energy directly into electrical energy by the induction effect) has been carried out on a preliminary non-nuclear basis in 1951 and 1952, (deriving from the analysis of plasma induction spectra),

in 1954, a push-pull plasma reactor system has been analyzed theoretically, based on two interconnected reactor vessels which become plasma-critical alternately,

only one vessel becomes critical at a time; when it goed plasma-critical, a plasma jet is firing through a magnetic field, producing electrical energy by the induction effect,

in the fall of 1951, when analyzing the induction spectrum of an extremely turbulent, shock-wave-superimposed plasma of ordinary proton hydrogen, a specific class if signals revealed the existence of sort of 'decaying structures', not resulting from eventual electron capture by protons, forming decaying neutrons,

another class of signals, characterized by extremely large amplitudes and very small pulse width was even indicating the existence of a certain exchange mechanism of energy, the source of the energy being still a mistery; sort of extremely irregular fluctuation spectrum was developing at the very moment of optimal plasma compression,

during the past four years of exile, much theoretical work has been done to clarify this matter; it has been found, at least, that an explanation can be given for the large-amplitude 'exchange signals', when we assume, that highly compressed electron gas becomes a detector for energy exchange with what we call zero point energy,

zero point energy derives from the exclusion principle,

the exclusion principle derives from empirical data,

in a shock-wave-superimposed, turbulence-feed-back-controlled plasma zone exists a high probability for cell-like super-pressure conditions,

zero point energy in balance with the mass energy of the electron gas represents an enormously high energy capacity for exchange processes,

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about 10^{10} kwh per unit volume,

on the basis of exchange coupling, it seems to be possible to 'extract' a compression-proportional amount of zero point energy by means of a magnetic-field-controlled exchange fluctuation between the compressed electron gas and sort of cell structure in space (dimensions about 10^{-13} cm), representing the source of what we call zero point energy,

it seems even possible that the large-amplitude fluctuation signals derive from a mechanism of energy-conversion unknwon to us yet which becomes detectable only in highly compressed electron gas,

(it would be of interest to repeat these experiments not with a proton hydrogen plasma - proton spin and electron spin identical - but with a helium-4 plasma, the spin discrepancy supporting energy extraction,

it would also be worth-while to search for exchange signals in high-power pulsating fission plasma systems),

in case, all these interpretations are fully correct, plasma implosion analysis might turn out to become an approach to a completely new source of energy, probably superior to nuclear energy,

the present status of this matter can best be compared with the situation, when nuclear fission was discovered, but when the development of a chain-reacting fission reactor system was still depending on the realization of controllable neutron reproduction,

(the compression-induced 'decay signals' can be explained as resulting from wave-mechanical coupling of groups of electrons, the repulsive forces between the electrons becoming neutralized gradually by wave-mechanical coupling with increasing compression),

first, there was the discovery of the shock-wave-generating process in 1936, the discovery of a feed-back loop between shock-wave-induced plasma turbulence and plasma-turbulence-induced promotion of shock-wave-generating plasma explosions,

the concept of testing shock-wave conditions by means of plasma-collision-induced nuclear reactions,

the development of nuclear reaction schemes, based on the chain-reacting consumption of the lithium and boron isotopes in 1942,

the concept of a controllable fusion reactor system, ignited by a shock-wave-controlled deuterium high-pressure plasma,

then came the first series of exponential fusion experiments in February, 1951, and the second series of exponential fusion experiments in October, 1951, giving proof for the existence of self-reproducing reaction chains,

from these experiments derived the discovery of field-interaction-accelerated particles, initiating a completely new concept of fusion reactor systems, and the discovery of two specific classes of fusion processes, the 'decaying type', deriving from wave-mechanical coupling of electron groups, and the 'large-amplitude-type', deriving from a possible exchange

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process with a new source of energy, probably the zero point energy,

from the development of super-plasma conditions derives fluctuating plasma implosion as a concept for fusion reactor systems, and as a probable approach to a new source of energy (in any case, as a method for exploring space structure physics),

from the development of a shock-wave-controlled arc melting furnace probably derive series of new materials of construction for rocket and jet engines, and for nuclear propulsion systems, under hypersonic flight conditions,

from the analysis of the penetrability of shock-wave-controlled plasma zones derives the concept for an improved ram jet propulsion system, which will allow to take full advantage of the feed-back loop existing between thrust and air-intake,

from the theoretical analysis of a pulsating fission plasma system derives the conception of a nuclear-energy into ultra-sound converting reactor system, the conception of a nuclear-energy into electrical energy converting reactor system, and the conception of a nuclear-energy into radiofrequency energy converting reactor system,

during the past four years of exile, much theoretical work has been done in space-time physics, and in unified field theory (having been interested in possible experimental approaches).

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Figure D.656: Ronald Richter's 1951–1957 Paperclip file lists a large number of extremely advanced ideas in plasma fusion and related areas of physics, likely originating from much more competent scientists with whom Richter interacted in wartime Germany [NARA RG 330, Entry A1-1B, Box 134, Folder Richter, Ronald W. Dr.].

D.10 Possible October 1944 Test Explosion on the Baltic Coast

[There may have been a test explosion on the Baltic coast in October 1944, as reported by multiple sources:

- In August 1944, a German prisoner of war reported that "experiments are conducted on an estate in Pomerania [on the Baltic coast] and it is alleged that this explosive is capable of destroying everything in a radius of several kilometers." (p. 4396).
- On 20 October 1944, the U.S. physicist and intelligence analyst Philip Morrison mentioned "recent reports of Baltic explosions" that were being investigated by the Manhattan Project as possible tests of a German atomic bomb (p. 4398).
- A 21 October 1944 OSS intelligence report described the October test: "The Germans have completed a weapon which is founded on the principle of the disintegration of matter (Atomzertruemmerung). Experiments have been performed which have proved conclusive[...] The radius of action is supposed to be about three kilometers" (pp. 4400–4403).
- A 19 January 1945 U.S. military intelligence summary covering many areas of advanced German research included a subject heading for "ATOMIC BOMB," under which it mentioned "close surveillance of the area in which tests are alleged to have taken place" (p. 4404). While the report did not state a specific time or location for those alleged tests, it focused largely on the most recent work being conducted on the Baltic coast, suggesting that the tests occurred in late 1944 on the Baltic coast.
- In May 1945, German prisoner of war Friedrich Olmes said that there had been "experiments with the atom-splitting bomb" and that "practical experiments were conducted on the Baltic coast" (p. 4406).
- A 19 August 1945 U.S. Army Air Forces intelligence report entitled "Investigations, Research, Developments, and Practical Use of the German Atomic Bomb" presented testimony by Rudolf Zinsser, a German pilot captured by U.S. forces, that in October 1944 he flew near the massive explosion of a new German bomb on or near the Baltic coast, describing in detail a very large mushroom cloud and severe electrical disturbances (p. 4408). After further investigation, rather than dismissing Zinsser's report, the United States decided to upgrade it from Secret to Top Secret in October 1945 (p. 4422).
- In testimony in 1955, 1984, and 2005, Italian military correspondent Luigi Romersa stated that by a special arrangement between Benito Mussolini and Adolf Hitler, on 12 October 1944 he witnessed the massive explosion of a new German bomb on the Baltic coast (apparently Rügen island), had to wait in a bunker for many hours afterward for the site to become less dangerous (short radioactive half-lives?), and then had to wear a special protective suit when inspecting the leveled test site afterward (pp. 4427–4434).
- Werner Grothmann stated in 2000–2002 interviews that there was a successful atomic bomb test in October 1944 (p. 4436).
- In a 13 March 2005 television interview, Elisabeth Mestlin stated that she observed a massive explosion on Rügen from a neighboring island on 12 October 1944 (p. 4435).

Some of the major sources and details are summarized in Table D.4.]

Details	Primary sources for October 1944 test						
	German PW Aug. 1944	**Morrison Oct. 1944**	**Olmes May 1945**	**Zinsser Aug. 1945**	**Romersa 1955--2005**	**Grothmann 2000--2002**	**Mestlin 2004**
Test date	Preparing for test as of ~July 1944	First half of October 1944	Sometime near the end of the war	Early October 1944	11:45 a.m. on 12 October 1944	First half of October 1944	12 October 1944
Test location	Near an estate in Pomerania (Baltic coast)	Baltic coast	Baltic coast	Baltic coast	Rügen island on Baltic coast	Location would provoke negative public reaction [Baltic coast is tourist area]	Rügen island on Baltic coast
People who were involved	Military	Military	SS, military, scientists (implied)	Military	Army Ordnance Office, SS	SS, Himmler, Kammler, Gerlach, Post Office, Diebner, Flügge	Military
Blast	Expected blast radius of kilometers	Suspiciously large explosion(s)	Blast kilometers wide	Bright fireball, mushroom cloud, shockwave that grew to >9 km wide	Blinding flash; heat and shockwave in bunker 2 km away; mushroom cloud; vaporized animals, trees, buildings	Successful nuclear test, possibly ~3 kilotons	Violent explosion, big dust cloud, visible from kilometers away
Radio-activity	Development related to use of heavy water		Demonstrated atom splitting	Ionized glowing mushroom cloud, severe radio interference	Had to remain inside bunker for over 5 hours after explosion, then wear protective suit to visit test site	Nuclear fission	
Device design	New weapon that was an extremely powerful explosive and was extremely secret	Possibly an atomic bomb test	Atomic bomb with ~1 kg of fuel	Atomic bomb	Atomic disintegration (i.e., fission) bomb mounted above the ground	> 1 m dia. sphere Very heavy Aluminum case A little U-235 for test More U-235 for deployment Ignition by special system Tested on a stand	Something that produced an extraordinarily large explosion

Table D.4: Details about possible October 1944 test explosion from primary sources.

AFHRA A1260 frame 0951

ROCKET FILE

REMOTE-CONTROL ROCKET BOMBS:

A prisoner has heard that current tests of the remote-controlled rocket bombs are being carried out on the Island of Ruegen, which has been made a prohibited area and completely evacuated. His version of the range for these projectiles is 500 (??) km., and he dates the moment for launching an attack with them upon England at the end of the year.

Source: P/W report, #B-488, 11 November 1943.

Figure D.657: Rocket File [AFHRA A1260 frame 0951]

Rocket File [AFHRA A1260 frame 0951]

REMOTE-CONTROL ROCKET BOMBS:

A prisoner has heard that current tests of the remote-controlled rocket bombs are being carried out on the Island of Ruegen, which has been made a prohibited area and completely evacuated. His version of the range for these projectiles is 500 (??) km., and he dates the moment for launching an attack with them upon England at the end of the year.

Source: P/W report, #B-488, 11 November 1943.

[See p. 4392. Although the entire island of Rügen was not evacuated during the war, significant parts of it, such as the Bug peninsula on the northwestern side, were indeed evacuated and tightly controlled by the German military, which is apparently what this prisoner of war was referring to.]

Howard G. Bunker. German Aircraft Research Establishments. 11 May 1944. [AFHRA A5729 frame 1148] [Colonel/General Howard Bunker was involved at the highest levels with intelligence/transfer of German technologies and with U.S. nuclear weapons: https://www.af.mil/About-Us/Biographies/Display/Article/107565/major-general-howard-g-bunker/]

APPENDIX 'A'

G.A.F. Experimental Stations

Rechlin:	Chief experimental field.
Adlershof:	Research on a/c in advanced state and likely to be used in this war.
	Aerodynamic experimental station.
Aichach:	Radio controlled aircraft.
Ainring:	Radio controlled bombs.
Darmstadt/Griesheim:	Experimental glider station.
	Research on jet propelled aircraft.
Diepensee:	Night fighter apparatus.
Garz:	Rockets (also advanced training on special weapons)
Göttingen:	Experiments in supersonic flight.
Koethen/Anhalt:	Air Signals Research Regiment.
Merseburg:	Glider experiments.
Oberpfaffenhofen:	Radio experimental center.
Oranienburg:	High altitude experimentation.
Peenemünde:	Rockets and jet propulsion.
Zinnowitz:	Satellite of Peenemunde.
Repelort:	Die Motte
Rügen:	Most secret research.
Tarnewitz:	New types aircraft armament.
Travemünde:	Sea plane experiments.
Usedom:	Most secret research (field not established)
Werneuchen:	Night fighter testing
	Research work at Guidonia (jet propulsion ?) transferred here.

[See document photo on p. 4394. What research occurring on Rügen island and Usedom peninsula (adjacent to Peenemünde) was considered "most secret," even more secret than the listed work on rockets, missiles, and jets? Could that "most secret research" have been associated with the upcoming possible atomic test on the Baltic coast in October 1944 and the production and testing of possible atomic bomb components on Usedom (see p. 4270)?]

COPY

rep [illegible]

APPENDIX 'A'

G.A.F. Experimental Stations

Rechlin:	Chief experimental field.
Adlershof:	Research on a/c in advanced state and likely to be used in this war.
	Aerodynamic experimental station.
Aichach:	Radio controlled aircraft.
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	Research on jet propelled aircraft.
Diepensee:	Night fighter apparatus.
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Gottingen:	Experiments in supersonic flight.
Koethen/Anholt:	Air Signals Research Regiment.
Merseburg:	Glider experiments.
Oberpfaffenhofen:	Radio experimental center.
Oranienburg:	High altitude experimentation.
Peenemunde:	Rockets and jet propulsion.
Zinnowitz:	Satellite of Peenemunde.
Repelort:	Die Motte
Rugen:	Most secret research.
Tarnewitz:	New types aircraft armament.
Travemunde:	Sea plane experiments.
Usedom:	Most secret research (field not established)
Werneuchen:	Night fighter testing
	Research work at Guidonia (jet propulsion ?) transferred here.

Aircraft Firms.

Arado:	Brandenburg.
Blohm & Voss:	?
Dornier:	Lowenthal (Airfield near Manzell and Bregenz ?)
Focke-Wulf:	Langenhagen. (Airfield near Bad Eilsen ?)
Heinkel:	Schwechat.
Henschel:	Berlin/Schonfled.
Junkers:	Dessau.
Messerschmitt:	Augsburg. Lechfeld.

Aero-engine firms

BMW:	Munich
DB:	Stuttgart - Unterturkheim.
Jumo:	Dessau.

Figure D.658: Howard G. Bunker. German Aircraft Research Establishments. 11 May 1944. [AFHRA A5729 frame 1148]

Rügen island on the Baltic coast of Germany was used for the "most secret research" during the war.

In particular, the isolated Bug peninsula was used as a military base 1935–1945.

It may have been the location of a nuclear test in October 1944.

Figure D.659: Rügen island on the Baltic coast of Germany was used for the "most secret research" during the war (pp. 4393–4394). In particular, the isolated Bug peninsula was used as a military base 1935–1945. It may have been the location of a nuclear test in October 1944.

Baltimore Branch Office, Manhattan Engineer District. 4 August 1944 [NARA RG 77, Entry UD-22A, Box 171, Folder 32.7003-2 GERMANY: US Wartime Positive Int. (July–Oct. 44)]

Subject: Positive Intelligence Secured from Prisoners of War at Camp Reynolds, Pa., Relative to "Secret Weapon"

Summary of Information:

The following information has been received from what is believed to be a reliable source relative to use by the Germans of a secret weapon.

"According to informant, the Germans are at present working on an extremely secret explosive. Informant knows very little about it and states that it has something to do with 'Heavy Water' (Schweres Wasser). Experiments are conducted on an estate in Pomerania and it is alleged that this explosive is capable of destroying everything in a radius of several kilometers."

Prisoner of war Schaeffer stated the following relative to a secret weapon.

"One of the weapons which the Germans are relying on has something to do with Heavy Water. It is a shell or an explosive and has the effect of collapsing the lungs of persons in a large area. Informant says he personally saw victims' mouths filled with blood, on the Russian front as a result of this weapon."

[See document photo on p. 4397. This report summarizes information from two different captured Germans. The unnamed first prisoner of war mentioned the production of "an extremely secret explosive" using "heavy water"—the production of plutonium for fission bombs. He also said such bombs should have a blast radius of several kilometers and were to be tested on the Baltic coast.

The second prisoner of war, Schaeffer, mentioned nuclear explosives whose production involved heavy water. He also mentioned fuel-air explosives that could be as small as artillery shells and would create a shock wave capable of destroying the lining of the lungs of people exposed to the blast. He said he had seen such fuel-air explosives actually employed on the Russian front. Schaeffer appeared to confuse nuclear explosives and fuel-air explosives (incorrectly connecting heavy water with fuel-air explosives), likely because of the extreme secrecy around both projects and the fact that both were intended to produce powerful explosions.

For more information fuel-air explosives, see pp. 538–557, 2615–2623.]

OSS London. 5 December 1944. Report T-2805-a. [NARA RG 77, Entry UD-22A, Box 171, Folder 32.7003-3 GERMANY: US Wartime Positive Int. (Nov. 44–June 45)]

GERMANY : ATOMIC PHYSICS

Heavy Water Experimental Station.

Heavy water experiments are being carried out at the Dräger Werke, Lübeck, which is reported to be the largest gas factory in Germany. The plant's experimental station is connected with the experimental station at Peenemünde.

[See document photo on p. 4063.]

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CONFIDENTIAL

WAR DEPARTMENT

BALTIMORE BRANCH OFFICE
MANHATTAN ENGINEER DISTRICT
(Office of Headquarters)

BALTIMORE, MD.
(Place)
4 AUG 1944
(Date)

Subject: Positive Intelligence Secured from Prisoners of War at Camp Reynolds, Pa., Relative to "Secret Weapon"

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"According to informant, the Germans are at present working on an extremely secret explosive. Informant knows very little about it and states that it has something to do with 'Heavy Water' (Schweres Wasser). Experiments are conducted on an estate in Pomerania and it is alleged that this explosive is capable of destroying everything in a radius of several kilometers."

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Previous Distribution:

Distribution:

Evaluation B 2
-of source -of information
Reliable
Credible
Questionable
Undetermined

16—32269-1 GPO

SECRET
CONFIDENTIAL

Figure D.660: Baltimore Branch Office, Manhattan Engineer District. 4 August 1944. Subject: Positive Intelligence Secured from Prisoners of War at Camp Reynolds, Pa., Relative to "Secret Weapon" [NARA RG 77, Entry UD-22A, Box 171, Folder 32.7003-2 GERMANY: US Wartime Positive Int. (July–Oct. 44)].

Philip Morrison to Joseph Volpe, 20 October 1944, Loose Ends [NARA RG 77, Entry UD-22A, Box 171, Folder 32.60-2 Germany: Summary Reports (1945–1946)]

There are a number of things to be done by the Washington office which have not yet been done.

1. We need a final report on the installation at Watten. This is such an extraordinary enterprise that we must be sure that it was not designed for something in our field.

2. The questions for Mr. Baker should be answered.

3. The recent reports of Baltic explosions should be covered by Major Calvert as usual.

4. The de Boer matter is still open. Has Alsos contacted J. H. de Boer at Eindhoven? This should be done if it is still possible.

[See document photo on p. 4399.

Dr. Philip Morrison (U.S., 1915–2005), a Manhattan Project physicist, was stationed in the United States but specifically tasked with analyzing Allied intelligence data on the German nuclear program. Morrison's publicly available documents indicate that up through 1945, he believed the German nuclear program was much more advanced and dangerous than better-known investigators such as Samuel Goudsmit and Boris Pash seemed to.

Regarding the specific points in the memo above:

1. Even months after the Allied invasion of France, Morrison and other Allied officials were both awed ("extraordinary") by the rocket-launching installation at Watten and worried that some of its features seemed to indicate it involved nuclear payloads for the rockets.

2. "Mr. Baker" was Niels Bohr, who was famously quite concerned about the progress of the wartime German nuclear program.

3. In October 1944, there were "recent reports of Baltic explosions" that were being investigated by the Manhattan Project as possible tests of a German atomic bomb. That information agrees well with the other sources in this section that reported the apparent test of an atomic bomb on the Baltic coast in October 1944. Morrison's comment also makes it clear that Allied officials thought the German nuclear program could be sufficiently advanced to test an atomic bomb, and that U.S. Army Major Horace Calvert had a "usual" procedure for collecting and analyzing such data. Can the relevant Allied intelligence reports be located and declassified now?

4. Manhattan Project intelligence analysts were actively seeking information on the German nuclear program from the Dutch intelligence network, and Samuel Goudsmit was involved in at least some of those contacts, including with the physical chemist Dr. Jan Hendrik de Boer (Dutch, 1899–1971). See pp. 4832–4853.]

NARA RG 77, Entry UD-22A, Box 171, Folder 32.60-2 Germany: Summary Reports (1945-1946)

file

SECRET

20 October 1944

Subject: Loose Ends.

To: Mr. Joseph Volpe

From: Dr. P. Morrison

There a number of things to be done by the Washington office which have not yet been done.

1. We need a final report on the installation at Watten. This is such an extraordinary enterprise that we must be sure that it was not designed for something in our field.

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3. The recent reports of Baltic explosions should be covered by Major Calvert as usual.

4. The deBoer matter is still open. Has Alsos contacted J. H. de Boer at Eindhoven? This should be done if it is still possible.

P. Morrison

Cy #3 destroyed RX.

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JV

Figure D.661: Philip Morrison to Joseph Volpe. 20 October 1944. Subject: Loose Ends [NARA RG 77, Entry UD-22A, Box 171, Folder 32.60-2 Germany: Summary Reports (1945–1946)].

OSS Report No. FF-83. 21 October 1944. Atom Smashing Secret Weapon. [NARA RG 77, Entry UD-22A, Box 171, Folder 32.7003-2 GERMANY: US Wartime Positive Int. (July–Oct. 44).]

1. The Germans have completed a weapon which is founded on the principle of the disintegration of matter (Atomzertruemmerung). Experiments have been performed which have proved conclusive. The effect of this weapon is like that of a thunderbolt, naturally much magnified.

2. It would be possible to direct the effect of this weapon in any given direction. Possibly it is a question of a sort of projectile rather than of a weapon properly so-called. The radius of action is supposed to be about three kilometers. The devastation produced by this weapon is said to be such that Hitler plans to use it only in the air, against planes, for example. Nevertheless, the Germans say that in case of necessity they will not hesitate to use it on the ground as well. This weapon seems to be ready, in fact, for use upon the battlefield, but it still exists only in the form of a model. Germany needs—and this appears to be absolutely certain—a delay of at least three months. Practically speaking, it seems that only within five months could the weapon be ready for use.

3. Different conversations which have taken place with industrial leaders in charge of concentration of production of German war material give the impression that Germany has unlimited confidence in the use of this weapon, which is to bring them certain victory.

4. Herr Schneider, one of the directors of the German factories called Deutsche Waffen u. Munitions-fabrik (a combine representing some fifteen factories and 250,000 workers) declared with a smile: "We shall gain the victory by new weapons, we are absolutely sure of that. Just now it is simply a case of gaining time, because the new arms will not be ready before three or four months. Bombing cannot keep us from building them. Our important factories where the assembly is carried out are all subterranean. An immense quantity of accessories is made in small lots everywhere throughout the country, so that bombing cannot interrupt the production. Our troops may retire within our frontiers. That does not matter, for nothing will be able to stand up for any length of time against these new weapons and we shall resume our overwhelming advance."

5. Directors of certain other factories have shown the same inveterate optimism, aroused by the confidence which they have in the effects of these new weapons.

6. Names of certain industrialists with whom the interviews took place:

> Herr [Adolf] Schneider—Director of the Deutsche Waffen und Munitions-Fabrik. His German title is Wehrwirtschaftsbeauftragter (Superintendent of Armament Production) in the region of the Duchy of Baden and Wurtemberg. He has charge of the plants of the Karlsruhe region.
>
> Director Dr. Buesse, who directs the DWM factories at Karlsruhe.
>
> Dr. Quandt, Administrator of a part of the DWM combine of factories.

[See document photos on pp. 4402–4403.

Deutsche Waffen- und Munitionsfabriken (DWM) was a massive German company (founded in the nineteenth century) that produced explosives, weapons, and other equipment. It had enormous amounts of support and funding from the German government and political contacts at the highest levels [https://zkm.de/en/from-the-munitions-factory-to-a-culture-factory]. During the war, it made extensive use of slave labor and underground facilities. As noted in this OSS report, it had fifteen factories and 250,000 workers.

Adolf Schneider (German, 1899–1979, https://historisches-lexikon.li/Schneider,_Adolf) was a senior manager of DWM during the war and a leading industrialist before, during, and after the war.

"Dr. Buesse" was another senior manager of DWM and may have been a member of the Busse family of weapons makers.

"Dr. Quandt" would have been either Günther Quandt (German, 1881–1954, https://www.deutsche-biographie.de/gnd124997821.html), who was the owner of DWM during the war, or his son Herbert Quandt (1910–1982, https://www.deutsche-biographie.de/sfz103954.html).

"Directors of certain other factories" were also interviewed but not explicitly named here.

According to all of these very well-informed and highly placed individuals, Germany had developed a secret weapon that used atomic disintegration (fission) to create an explosion with a blast radius of three kilometers and effects like a thunderbolt but much magnified—i.e., blinding light, intense heat, and a shock wave extending out to that radius. As of the final report date of 21 October 1944, a prototype of the weapon had been successfully tested.

More nuclear weapons were expected to be ready within five months, or by March 1945. Adolf Schneider, who was in charge of so many facilities and people and therefore in a position to know, explained how German nuclear weapons were being mass-produced: "Our important factories where the assembly is carried out are all subterranean. An immense quantity of accessories is made in small lots everywhere throughout the country, so that bombing cannot interrupt the production."

What OSS source(s) had access to all of these important individuals and could get them to speak so candidly?

Where are the transcripts and reports on postwar Allied interrogations of Günther Quandt, Herbert Quandt, Adolf Schneider, "Dr. Buesse," and the other factory directors regarding the German nuclear weapons program and other advanced programs?

Where are the reports on postwar Allied inspections of the many underground facilities manufacturing components for nuclear weapons, as described in this wartime OSS report?]

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SIRA/L

Original Report No. FF-83

Report from Paris

O S S L O N D O N

Distribution:
G-2 FAAA
G-2 USSTAF
EWD
X-2
USEmb(G)Bartlett
WASH

Information Date : 23 August 1944
Report Date : "Recent"
Dissemination Date : 21 October 1944

Value : B-4
Source [redacted]

GERMANY: AIR-MILITARY-TECHNICAL

Atom Smashing Secret Weapon.

1. The Germans have completed a weapon which is founded on the principle of the disintegration of matter (Atomzertruemmerung). Experiments have been performed which have proved conclusive. The effect of this weapon is like that of a thunderbolt, naturally much magnified.

2. It would be possible to direct the effect of this weapon in any given direction. Possibly it is a question of a sort of a projectile rather than of a weapon properly so-called. The radius of action is supposed to be about three kilometers. The devastation produced by this weapon is said to be such that Hitler plans to use it only in the air, against planes, for example. Nevertheless, the Germans say that in case of necessity they will not hesitate to use it on the ground as well. This weapon seems to be ready, in fact, for use upon the battlefield, but it still exists only in the form of a model. Germany needs - and this appears to be absolutely certain - a delay of at least three months Ptactically speaking, it seems that only within five months could the weapon be ready for use.

3. Different conversations which have taken place with industrial leaders in charge of concentration of production of German war materiel give the impression that Germany has unlimited confidence in the use of this weapon, which is to bring them certain victory.

~~SECRET~~

Figure D.662: OSS Report No. FF-83. 21 October 1944. Atom Smashing Secret Weapon [NARA RG 77, Entry UD-22A, Box 171, Folder 32.7003-2 GERMANY: US Wartime Positive Int. (July–Oct. 44)].

~~S E C R E T~~ Original No. FF-83- Page 2

4. Herr Schneider, one of the directors of the German factories called Deutsche Waffen u. Munitions-fabrik (a combine representing some fifteen factories and 250,000 workers) declared with a smile: "We shall gain the victory by new weapons, we are absolutely sure of that. Just now it is simply a case of gaining time, because the new arms will not be ready before three or four months. Bombing cannot keep us from building them. Our important factories where the assembly is carried out are all subterranean. An immense quantity of accessories is made in small lots everywhere throughout the country, so that bombing cannot interrupt the production. Our troops may retire within our frontiers. That does not matter, for nothing will be able to stand up for a ny length of time against these weapons and we shall resume our overwhelming advance."

5 5. Directors of certain other factories have shown the same inveterate optimism, aroused by the confidence which they have in the effects of these new weapons.

6. Names of certain industrialists with whom the interviews took place:

Herr Schneider - Director of the Deutsche Waffe und Munitions-Fabrik. His German title is Wehrwirtschaftsbeauftragter (Superintendent of Armament Production) in the region of the Duchy of Baden and Wurtemberg. He has charge of the plants of the Karlsruhe region.

Director Dr. Buesse, who directs the DWM factories at Karlsruhe.

Dr. Quant, Administrator of a part of the DWM combine of factories.

JHM/jd

~~S E C R E T~~

Figure D.663: OSS Report No. FF-83. 21 October 1944. Atom Smashing Secret Weapon [NARA RG 77, Entry UD-22A, Box 171, Folder 32.7003-2 GERMANY: US Wartime Positive Int. (July–Oct. 44)].

Headquarters, United States Strategic Air Forces in Europe, Office of the Director of Intelligence, An Evaluation of German Capabilities in 1945. The Commanders Intelligence Digest. 19 January 1945. [AFHRA folder 519.635 1945 Intelligence Digest; AFHRA A5729 electronic version pp. 255 onward and 561 onward; NARA RG 319, Entry UD-1041, Box 27, Folder 925497]].

1. In the following paragraphs are listed the actual or potential weapons which the Germans may use against USSTAF operations in 1945. For the most part they include the so-called V weapons. No consideration is given to those for which there is lacking evidence of possible use for some time to come. [...]

2. V-2:

[...] The V-2, or rocket projectile, with a warhead of approximately one ton, and a current range of 225 miles, is being fired at London at the rate of 180/250 per month, and against Continental ports at the rate of approximately 300 per month.

[...] Larger rockets (68 feet in length as against 45 feet) are known to exist, and may appear in small quantities during the year. They would have a considerably larger warhead. [...]

7. ATOMIC BOMB: Close check of every report, and close surveillance of the area in which tests are alleged to have taken place lead to the conclusion that such bombs are not a likelihood in 1945.

[See document photos on pp. 5338–5340.

Point 1 suggests that there was significant evidence for each of the weapons listed thereafter.

Point 2 proves that rockets 50% longer than the V-2 (21 m vs. 14 m), and with a warhead "considerably larger" than one ton (suitable for an atomic bomb?), were "known to exist."

Point 7 suggests U.S. knowledge of multiple alleged German atomic bomb tests prior to January 1945, in a particular area or areas under close Allied surveillance. This likely means the Baltic coast (which was being closely monitored for activities at Peenemünde and other locations), and might therefore include the October 1944 test. It might also refer to a failed test in the North Sea in autumn 1943 (pp. 4436, 5011, 5034).]

Theodor Soucek. 2001. *Mein Richter, mein Henker.* Malmö, Sweden: Bright Rainbow.

[Soucek (1919–20??) was born in Graz, Austria and served throughout the war as an officer. After the war he returned to Austria and helped run one of the "ratlines" for people fleeing Austria and Germany; in that context he sheltered and became well acquainted with Armin Dadieu, a scientist and former senior official from Graz. Soucek's memoirs were written near the end of his life and mix what he had actually seen with what he had heard or believed, so one must be quite cautious in using them, but they contain several intriguing passages that align well with independent sources. For more information, see pp. 4613–4624.]

In diesem Zusammenhang erzählte ich Dadieu von einer außerordentlichen Begegnung mit einem hochrangigen ungarischen General, als ich mich—noch verwundet—im gleichen Zugabteil auf der Bahnfahrt von Berlin nach Wien Mitte Januar 1945 befand. [...]

Mir gegenüber hatte ein älterer, weißhaariger Herr Platz genommen, der sich mir im Laufe der Reise nach vertraulichem und angeregtestem Gespräch als hochrangiger ungarischer General vorstellte.

Nach mehr als einer Stunde Bahnfahrt wandte sich der General überraschend und vertraulich zu mir:

"Schauen Sie, lieber junger Freund, Sie sind für mich ein frontbewährter Offizier und offenbar bedingungslos Ihrer Nation und der Verteidigung Europas verschworen, dazu noch Schriftsteller von höchstem Verantwortungsbewußtsein zur Rettung vor dem Kommunismus. So kann ich Ihnen von meinem Besuch als Vertreter der ungarischen Regierung in Berlin erzählen, weil man uns mit anderen verbündeten Regierungsvertretern der Achsenmächte in den letzten Tagen die jüngsten Entwicklungen der deutschen Geheimwaffen vorführte.

Wir wurden an der Ostsee in ein Sperrgebiet der Wehrmacht geflogen und es geschah folgendes: Als Zielgebiet zeigte man uns eine vielleicht 20–25 km entfernte kleine Insel und beschoß diese mit einer neuartigen Bombe, aus einem Flugzeug abgeworfen. Diese Bombe wirkte so beispiellos, daß von der Insel nichts mehr zu sehen war, sie war im Wasser verschwunden![4]

Mit dieser neuen Waffe werden Sie den Krieg gewinnen, Deutschlands Sieg ist nicht mehr aufzuhalten. Ich gratuliere Ihnen!"

Das waren seine Worte.

4 [...] Der "Schwedische Beobachter" bericht vom Verschwinden einer Insel nach Beschuß durch eine deutsche Sonderwaffe.

In this context, I told Dadieu about an extraordinary encounter with a high-ranking Hungarian general when I was—still wounded—in the same train compartment on the train ride from Berlin to Vienna in mid-January 1945. [...]

An elderly, white-haired gentleman had taken a seat opposite me, who introduced himself to me as a high-ranking Hungarian general during the course of the journey after a confidential and animated conversation.

After more than an hour's train ride, the general turned to me surprisingly and confidentially:

"Look, dear young friend, you are for me a front-line officer and obviously unconditionally sworn to your nation and the defense of Europe, in addition to being a writer of the highest sense of responsibility to save us from communism. So I can tell you about my visit to Berlin as a representative of the Hungarian government, because in the last few days we were shown the latest developments in German secret weapons together with other allied government representatives of the Axis powers.

We were flown to a Wehrmacht restricted area on the Baltic Sea and the following happened: We were shown a small island perhaps 20–25 km away as a target area and bombarded it with a new type of bomb, dropped from an airplane. This bomb had such an unprecedented effect that nothing could be seen of the island, it had disappeared into the water![4]

With this new weapon you will win the war, Germany's victory can no longer be stopped. I congratulate you!"

Those were his words.

4 [...] The "Swedish Observer" reports on the disappearance of an island after bombing by a German special weapon.

Harry K. Lennon. 23 May 1945. SUBJECT: Addition to Preliminary Report on OLMES, Friedrich. [NARA RG 77, Entry UD-22A, Box 167, Folder 32.12-2 GERMANY: Personnel (Jan 45–Dec 45)]

The following information was given by OLMES, after he had recovered his notebook buried in the LUENEBURGER HEIDE. [...]

2. The experiments with the atom-splitting bomb had almost been brought to conclusion. The proven effect of a one kilogram bomb is to cause a crater of 18 miles wide. Only 8–10 more weeks work would have been required to put the bomb into the operational stage.

3. Laboratory experiments were conducted in DANZIG and BERLIN. Practical experiments were conducted on the Baltic coast. [...]

[See document photo on p. 4407.

Olmes stated that "practical experiments" with an "atom-splitting bomb" "were conducted on the Baltic coast," corroborating information from the other sources in this section.

Intriguingly, he apparently obtained that information from documents, people, or personal experience he had found in the Lüneburger Heide, an area just south of Hamburg that several other independent sources said contained factories producing atomic bombs or major components for them (pp. 4176–4182).]

S E C R E T

HEADQUARTERS TWELFTH ARMY GROUP
Mobile Field Interrogation Unit No.4
APO 655

23 May 45

SUBJECT: Addition to Preliminary Report on OLMES, Friedrich.

TO : Chief CIB, G-2 Section, HQ 12 Army Group, APO 655, US Army.

The following information was given by OLMES, after he had recovered his notebook buried in the LUENEBURGER HEIDE.

1. German Development of Atom-splitting bomb.

1.The following German scientists were instrumental in the development of an atom-splitting bomb:
a. Prof. HEISENBERG, recipient of the 1932 NOBEL prize in physics. BERLIN-DAHLEM, Kaiser Wilhelm Institut for Physik, the "brains" of the project .
b. Prof. PASQUAL JORDAN, physics lecturer at the BERLIN university.
c. Prof. HAHN, Director of the Kaiser Wilhelm Institut fuer physikalische Chemie, BERLIN.
d. Dr. STRASSNER, assistant to Prof. HAHN.
e. Prof. KOSSEL, lecturer at the Technische Hochschule in DANZIG. X-ray and electronics specialist.
f. Prof. GERTHSEN, BERLIN University. Developed the German super microscope.
g. Baron MANFRED von ARDENNE, BERLIN LICHTERFELDE. Amateur scientist. No scientific tng, but considered a genius.
h. Dr. ULRICH NEUBERT, Luftfahrts Forschungs Insitiut, BRAUNSCHWEIG: Private address: 1 Saarstrasse, BRAUNSCHWEIG. Specialist in cumbustion engines.

2. The experiments with the atom-splitting bomb had almost been brought to conclusion. The proven effect of a one kilogram bomb is to cause a crater of 18 miles wide. Only 8-10 more weeks work would have been required to put the bomb into the operational stage.

3. Laboratory experiments were conducted in DANZIG and BERLIN. Practical experiments were conducted on the Baltic coast.

4. OLMES knows all the above named scientists personally. He claims to know the principle of the atom-splitting bomb fairly well and would be able to explain it to an expert.

5. HITLER was very impatient for the experiments to come to a conclusion. He had BORMANN call up Prof. HEISENBERG daily to inquire about the progress.

6. The above named scientists were afraid of the responsibility of putting into operation a wpn of such horrifying proportions. They deliberately stalled and had false reports given to HITLER. Some of their assistants were involved in the plot of 20 Jul 1944.

7. Through scientist friends in SWITZERLAND and SWEDEN the German scientists were fairly well informed about atom-splitting experiments in other countries, including the USA. They know that the other countries were far behind GERMANY in that respect.

8. The germans thought that the Russians were particularly eager to find out about the atom-splitting bomb. Orders were given that under no circumstances any plans should fall in Russian hands.

9. Although plans for the escape of some atom-splitting specialists to JAPAN had been vaguely mentioned, OLMES thinks that all of the scientists were opposed to such a project.

Figure D.664: Harry K. Lennon. 23 May 1945. SUBJECT: Addition to Preliminary Report on OLMES, Friedrich [NARA RG 77, Entry UD-22A, Box 167, Folder 32.12-2 GERMANY: Personnel (Jan 45–Dec 45)].

Interrogation of Zinsser, Rudolph G. Papers attached: Memo of 17 July 1945, 609th CIC Detachment [AFHRA C5094 frames 1546–1552].

Re: Subject & 1 incl. thereto; Miscellaneous Interviews, Abstract: Contains Biographical Information on Rudolph G. Zinsser

[...] 1. SUMMARY

Subject was investigated because of his appearance under suspicious circumstances at the Signal Intelligence Section project which is being conducted at Bad Kissingen. Interrogation of subject revealed that he was formerly the director of a German research project, Code Name DERNA, whose purpose was the development of a fully automatic, self-steering anti-aircraft rocket. Subject stated that he is willing to develop this device for the American authorities.

2. INVESTIGATION

Subject ZINSSER, Rudolph G. was born 6/9/13 in Vienna of Austrian parents. Subject became an engineer at the Technische Hochschule in Darmstadt in 1933–1935 and later took his doctorate degree at University J. W. Goethe in Frankfurt 1935–1939.

In 1939 subject entered the Luftwaffe and served in Norway, France, Italy and Africa. Subject was discharged from the Luftwaffe late in 1944 because of wounds received in combat. Highest rank attained was Oberleutnant. [...]

Previous to his discharge from the Luftwaffe subject stated that he was granted space at the Luftkriegs Academy, Berlin/Gatov, to work on above mentioned rocket-steering device. He left the academy in September 1944 having secured financial backing from the Flugzeugwerk Siebl in Halle and opened his own laboratory at Jibka in the Sudeten. [...]

On the 26 April subject stated that the factory was evacuated to the vicinity of Bad Aussee and that at the present time he does not know what happened to his equipment or personnel. [...]

[See document photos on pp. 4409–4410.]

CONFIDENTIAL

HEADQUARTERS
609 C.I.C. DETACHMENT

17 July 1945

MEMORANDUM TO THE OFFICER IN CHARGE

Subject: Investigation of ZINSSER, Rudolph G.

1. SUMMARY

Subject was investigated because of his appearance under suspicious circumstances at the Signal Intelligence Section project which is being conducted at Bad Kissingen. Interrogation of subject revealed that he was formerly the director of a German research project, Code Name DERNA, whose purpose was the development of a fully automatic, self - steering anti - aircraft rocket. Subject stated that he is willing to develop this device for the American authorities.

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In 1939 subject entered the Luftwaffe and served in Norway, France, Italy and Africa. Subject was discharged from the Luftwaffe late in 1944 because of wounds received in combat. Highest rank attained was Oberleutnant.

Subject stated that while in Africa he was ordered by his commanding officer to return to Erding, near Munich, and develop a special bomb-sight for use against fast moving ground targets. Subject stated that this work was completed in September 1942 and that the bomb-sight was successfully used. Production of the bomb-sight was by Ziess Jena and Ziess Ikon factories and fifty-three (53) were completed.

Previous to his discharge from the Luftwaffe subject stated that he was granted space at the Luftkriegs Academy, Berlin/Gatov, to work on above mentioned rocket-steering device. He left the academy in September 1944 having secured financial backing from the Flugzeugwerk Siebl in Halle and opened his own laboratory at Jibka in the Sudeten. Here he financed his work through the sale of small radio transmitters to the Wehrmacht. Subject stated that during this time he and his assistants developed some working models of the rocket steering device.

On the 26 April subject stated that the factory was evacuated to the vicinity of Bad Aussee and that at the present time he does not know what happened to his equipment or personnel. Orders were left by him to destroy the test models of the steering device. At this time Zinsser stated that he returned to Roding, near Nurnberg, and attempted to contact the American authorities. Subject stated that he feels certain that the report turned in to the authorities at Roding did not accurately describe his project since no one there spoke German.

3. Zinsser was advised to return to Roding and to remain there pending further developments.

4. AGENTS NOTE

Since a project of this type is of such a highly technical nature it is not possible for this agent to make any evaluation of possible value of the project. Suggest that a further investigation of this project be conducted by appropriate technical authorities.

Enclosed is a brief description of the project as outlined by Zinsser.

W. A. Currie
Special Agent, CIC

Dist:
1 Cy CO 609 CIC Detachment
1 Cy CIB
1 Cy IPW Section

Figure D.665: W. A. Currie. 17 July 1945. Subject: Investigation of ZINSSER, Rudolph G. [AFHRA folder 570.620-1 17 July 1945; AFHRA C5094 frames 1546–1552].

Target. SMC

Major Marcus, Ops 538

1. Tech/IntellTech/Intell 25 Aug.
Air Document USAFE 1945
Research (main)
Center,
USAFE
(Rear)
59 Weyman
W1 London

1. Herewith for your file papers which were in the hand of Capt. Worthman. He started to the target and due to transportation returned to St. Germain

2. Capt. Giles has obtained the complete information on the target so it was not necessary for Capt. Worthman to follow through.

3. Lt Col. Warburg has been informed that the subject person can be released.

LOYD K. PEPPLE,
Colonel, Ordnance.

Incls:
Incl 1 - Interrogation Report of Rudolph G. Zinsser.

#494A

HEADQUARTERS
NINTH AIR FORCE

FILE NO. INFORMAL ROUTING SLIP

NOTE: Use this slip for comment in connection with papers attached. Number notes consecutively. Draw a line full width of paper below each note. Initial each note. File this slip with retained copy of papers.

SUBJECT: INTERROGATION OF ZINSSER, Rudolph G.

PAPERS ATTACHED: Memo, dtd 17 Jul 609th CIC Det, re: Subject & 1 incl thereto

NO.	DATE	FROM	TO	NOTES or CORRESPONDENCE
1	18 Jul 1945	609th CIC Det	INTERROGATION P W	Forwarded for your information. L.L.L.
2	19 Jul	Hq Air PW Inter Unit, USSTAF, APO 696	Hq USSTAF Main, Att: Lt Col Werner.	Forwarded for your information. T.G.B.

Figure D.666: Loyd K. Pepple. 25 August 1945 [AFHRA folder 570.620-1 17 July 1945; AFHRA C5094 frames 1546–1552].

A.P.W.I.U. [Air Force Prisoner of War Interrogation Unit] (Ninth Air Force) 96/1945. 19 August 1945. Investigations, Research, Developments, and Practical Use of the German Atomic Bomb. [NARA RG 38, Entry 98C, Box 9, Folder TSC # 2601–2700; NARA RG 77, Entry UD-22A, Box 171, Folder 32.60-2 Germany: Summary Reports (1945–1946); AFHRA B-5737 electronic version pp. 340–345]

2. Dr. EDSE, well known chemist, wrote:
At the Institute for Physical Chemistry of the Hamburg University I worked on problems concerning nuclear physics under the direction of Prof. Dr. P. HARTECK, and engaged in investigations of behavior and properties of the so-called trans-uraniums, already mentioned by HAHN and STRASSMANN in Berlin, and by JOLIOT-CURIE in Paris. [...]

9. Furthermore the improvement and application of ultra-centrifuge, thermo-diffusion, and distillation had its effect on the success of these experiments. For this reaction the material to be split must have the form of a liquid, a gas, or a solution; UF_6 was used which will melt at 69.2^o C. under light over-pressure. This is advantageous as Fluor (UF_6) has not isotope. In this manner only the uranium isotopes are separated. [...]

14. When Germany was at this stage of the game, the war broke out in Europe. At first investigations on this disintegration of $^{235}_{92}U$ were somewhat neglected because a practical application seemed too far off. Later, however, this research continued, especially in finding methods of separating isotopes. Needless to say that the center of gravity of Germany's war effort at that time lay on other tasks.

15. Nevertheless the atomic bomb was expected to be ready toward the end of 1944, if it had not been for the effective air attacks on laboratories engaged in this uranium research, especially on the one at Rjuken in Norway, where heavy water was produced. It is mainly for this reason that Germany did not succeed in using the atomic bomb during the war. [...]

17. [...] The disintegration of one kg $^{235}_{92}U$ delivers an amount of energy of $\frac{1000}{235} \cdot 160 \cdot 23 \cdot 10^6$ kg cal $= 1.6 \cdot 10^{10}$ kg cal, whereas one kg of TNT only delivers 1000 kg cal when detonating. Out of this follows that an atomic bomb of 3 lbs $^{235}_{92}U$ has the same effect as a bomb of 20,000 tons of TNT. [...]

47. A man named ZINSSER, a Flak rocket expert, mentioned what he noticed one day: In the beginning of Oct. 1944 I flew from Ludwigslust (south of Lubeck), about 12 to 15 km from an atomic bomb test station, when I noticed a strong, bright illumination of the whole atmosphere, lasting about 2 seconds.

48. The clearly visible pressure wave escaped the approaching and following cloud formed by the explosion. This wave had a diameter of about 1 km when it became visible and the color of the cloud changed frequently. It became dotted after a short period of darkness with all sorts of light spots, which were, in contrast to normal explosions, of a pale blue color.

49. After about 10 seconds the sharp outlines of the explosion cloud disappeared, then the cloud began to take on a lighter color against the sky covered with a gray overcast. The diameter of the

still visible pressure wave was at least 9000 meters while remaining visible for at least 15 seconds.

50. Personal observations of the colors of the explosion cloud found an almost blue-violet shade. During this manifestation reddish-colored rims were to be seen, changing to a dirty-like shade in very rapid succession.

51. The combustion was lightly felt from my observation plane in the form of pulling and pushing. The appearance of atmospheric disturbance lasted about 10 seconds without noticeable climax.

52. About one hour later I started with an He 111 from the A/D [aerodrome] at Ludwigslust and flew in an easterly direction. Shortly after the start I passed through the almost complete overcast (between 3000 and 4000 meter altitude). A cloud shaped like a mushroom with turbulent, billowing sections (at about 7000 meter altitude) stood, without any seeming connections, over the spot where the explosion took place. Strong electrical disturbances and the impossibility to continue radio communication as by lightning, turned up.

53. Because of the P-38s operating in the area Wittenberg-Merseburg I had to turn to the north but observed a better visibility at the bottom of the cloud where the explosion occurred. Note [by U.S. Captain Freiberger]: It does not seem very clear to me why these experiments took place in such crowded areas.

[See document photos on pp. 4414–4419.

Paragraph 15 clearly states that the German nuclear weapons program was so advanced that the bomb would have been ready for use by the end of 1944, and that timetable was only slowed by Allied attacks. For independent sources that confirmed that fact, see pp. 5022, 5031, and 5073.

Rudolf Edse's calculation in paragraph 17 agrees well with modern calculations of the amount of U-235 required per ton of explosive yield (p. 5144). Of the roughly 180 MeV of energy released by each uranium fission, Edse appears to have assumed that approximately l60 MeV would be deposited within a short enough distance to directly contribute to the explosion, which would have been a very plausible assumption for him to make. How much did Edse actually know about nuclear weapons? What exactly did he work on, both during and after the war?

Rudolf Zinsser said he took off from Ludwigslust, flew toward the east, and turned to the north

(to avoid Allied aircraft going to/from Berlin). That suggests he was somewhere along the Baltic coast, likely in the vicinity of Rügen, when he observed the test. If that was the case, Zinsser took off from a "crowded area" (Ludwigslust) but observed the test site in a much less populated area on the Baltic coast, which is well known to have been filled with test areas for everything from rockets to biological agents. His U.S. interrogator does not seem to have understood that initially, judging by the appended final note from Captain Helenes Freiberger.

Although Zinsser did not admit it, he had most likely been ordered to make multiple flights over the test area in order to make visual observations of the atomic bomb test, and quite possibly to carry cameras or measuring equipment. One flight at the right place and time might have simply been an extraordinary coincidence (and quite improbable, considering that it would have been a high-security area), but two flights shows deliberate intent to observe the test, especially coupled with his highly detailed description.

Zinsser provided many details about the nuclear explosion—such as the strong electromagnetic disturbances, the behavior of the blast wave and the debris cloud over time, and the colors of the cloud—that are scientifically correct and would not have been known to the public (or even many specialists), even after the bombings of Hiroshima and Nagasaki. Moreover, Zinsser had been in custody and under interrogation going back to at least 17 July 1945, well before Hiroshima and Nagasaki. Thus all the details that Zinsser described regarding the explosion strongly support the veracity of his story and the conclusion that what he observed was a nuclear test and not the test of some other sort of weapon. See especially p. 4421.

After two months of further Allied interrogation of Zinsser and investigation of any corroborating evidence, Zinsser's claims were not dismissed. Rather, they were actually upgraded to Top Secret—see p. 4422. Allied officials must have found their postwar investigation of German nuclear weapons tests to be very convincing indeed. Where are the follow-on reports about Zinsser, the other evidence, and the tests? Can they be located and declassified?]

AFHRA Folder 533.619-5 1945

SECRET

: Auth: CG 9th AF :
: Date: 20 Aug 45 :
: Initials :

HEADQUARTERS
AIR P/W INTERROGATION UNIT
United States Strategic Air Forces in Europe

A.P.W.I.U.(Ninth Air Force)96/1945
373.2

APO 696, U S Army
19 August 1945

SUBJECT: Enemy Intelligence Summaries

TO : See Distribution

INVESTIGATIONS, RESEARCH, DEVELOPMENTS, AND PRACTICAL USE OF THE GERMAN ATOMIC BOMB

THE FOLLOWING INFORMATION WAS OBTAINED FROM FOUR GERMAN SCIENTISTS: A CHEMIST, TWO PHYSICAL CHEMISTS, AND A ROCKET SPECIALIST. ALL FOUR MEN CONTRIBUTED A SHORT STORY AS TO WHAT THEY KNEW OF THE ATOMIC BOMB DEVELOPMENT.

1. After the first atomic bomb was released over Hiroshima recently, several Germans began talking about whatever little they knew in this field of German research. Out of the many stories received, the following were selected.

2. Dr. EDSE, well known chemist, wrote:
At the Institute for Physical Chemistry of the Hamburg University I worked on problems concerning nuclear physics under the direction of Prof. Dr. P. HARTECK, and engaged in investigations of behavior and properties of the so-called trans-uraniums, already mentioned by HAHN and STRASSMANN in Berlin, and by JOLIOT - CURIE in Paris.

3. These new elements originated from uranium bombarded by slow neutrons. As the experimental results exhibited some incorrectness and because there were symptoms leading to the disintegration of the nucleus of the uranium, we began making theoretical calculations to investigate the possible disintegration as a whole.

4. Before we were able to report theoretical investigations, U.S. physicists confirmed the reality of the disintegration of the nucleus of uranium when bombarded by neutrons, and found that the disintegration of one atom delivered an energy of 160 Million Volts. Another result of these investigations was that the disintegration of a piece of uranium, containing only the nucleus $^{235}_{92}U$, produces an explosive of enormous powers.

5. This disintegration delivers besides the lighter atoms like Strotium (Sr) and Xenon (X) neutrons to which in turn hits another nucleus and forces it to disintegrate. This process, which is termed "chain reaction", is very quick and delivers an enormous quantity of energy.

6. However, the theory could not be proved for no experiments could be made, because the ordinary uranium does not produce this explosion, but, like the theory predicted, only the isotope with the number 235 posses this quality.

7. Uranium has three isotopes and is composed of:
0.006% : $^{234}_{92}U$; 0.720% : $^{235}_{92}U$; 99.274% : $^{238}_{92}U$.
The uranium isotope $^{235}_{92}U$ is separated from ordinary uranium when the chain reaction, the uranium explosion, takes place.

8. This is a difficult problem and requires effective methods of adsorption and desorption to separate the isotopes. I developed in particular the method of desorption and adsorption, while afterwards adding to it the chromatography method, which turned out to be very effective, as indicated by several experiments.

-1-

SECRET

Figure D.667: Rudolf Zinsser reported observing an apparent atomic bomb test near the Baltic coast in October 1944. U.S. documents state that Rudolf Edse worked on the German atomic bomb program. [AFHRA Folder 533.619-5 1945]

AFHRA Folder 533.619-5 1945

SECRET

9. Furthermore the improvement and application of ultra-centrifuge, therno-diffusion, and distillation had its effect on the success of these experiments. For this reaction the material to be split must have the form of a liquid, a gas, or a solution; UF_6 was used which wi will melt at 69.2° C. under light over-pressure. This is advantageous as Fluor (UF_6) has no isotope. In this manner only the uranium isotopes are separated.

10. Heavy water or hydrogen served as pattern for the methods of separating isotopes because these isotopes could easily be produced. The separation by the method of chromatography was applied to $CuSO_4$ in a solution of ammonia and water. The heavy water is produced by electrolysis of a solution of NaOH in water. The light hydrogen, having a greater tendency to escape than deuterium, is enriched as D_2O in the remaining solution which contains only heavy water when this process is repeated several times. This electrolysis, however, requires a large amount of energy. Therefore, cheap water power must serve as main source of energy (Norske Hydro, Norway).

11. Having recognized the behavior of the nucleus of uranium, it seemed simple to construct a so-called atomic bomb. However, we did not want this destroying effect but tried to find a way to control the disintegration of the nucleus of uranium bombarded by neutrons.

12. We had several plans but I do not know whether they will work. The importance of this energy or rather its source, may be seen in the fact that 1 kg $^{235}_{92}$U delivers the same amount of energy as the combustion of 1600 tons of gasoline.

13. The risk of the atomic bomb may lay in its enormous explosive power which may, perhaps, destroy our planet, for the theory says that it is possible that other nuclei will disintegrate. This disintegration is probably induced by the particles of the disintegrated uranium.

14. When Germany was at this stage of the game, the war broke out in Europe. At first investigations on this disintegration of $^{235}_{92}$U were somewhat neglected because a practical application seemed too far off. Later, however, this research continued, especially in finding methods of separating isotopes. Needless to say that the center of gravity of Germany's war effort at that time lay on other tasks.

15. Nevertheless the atomic bomb was expected to be ready toward the end of 1944, if it had not been for the effective air attacks on laboratories engaged in this uranium research, especially on the one at Rjukon in Norway, where heavy water was produced. It is mainly for this reason that Germany did not succeed in using the atomic bomb in this war.

16. The disintegration of the nucleus of uranium follows seven equations, not enumerated in this report, but in the first step the neutron enters the nucleus and forms a new nucleus which is unstable and disintegrates spontaneously while yielding atoms. The neutron enters the heavy nucleus easily because it carries no electric charge.

17. The light nuclei are always radio-active and can be identified by their radiation (half period, B-spectra). The disintegration of one kg $^{235}_{92}$ U delivers an amount of energy of $\frac{1000}{235} \cdot 160 \cdot 23 \cdot 10^6$ kg cal = $1.6 \cdot 10^{10}$ kg cal, whereas 1 kg of TNT only delivers 1000 kg cal when detonating. Out of this follows that an atomic bomb of 3 lbs $^{235}_{92}$U has the same effect as a bomb of 20,000 tons of TNT.

18. The explosion of uranium will be induced by borbarding the nucleus by neutrons which are produced by a so-called neutron source. Mixtures of radium salts and beryllium in suitable containers are used as neutron sources. Radium emits alpha - particles of carbon of mass 12 and neutrons are produced according to the equasion:
$^{9}_{4}Be + {}^{4}_{2}He \text{ --- } {}^{12}_{6}C + {}^{1}_{0}n$ ($^{4}_{2}H$ = alpha).

-2-

SECRET

Figure D.668: Rudolf Zinsser reported observing an apparent atomic bomb test near the Baltic coast in October 1944. U.S. documents state that Rudolf Edse worked on the German atomic bomb program. [AFHRA Folder 533.619-5 1945]

AFHRA Folder 533.619-5 1945

SECRET

19. Before the explosion the neutrons have to be kept away from the uranium. This is done by surrounding the neutron source by a hydrogen containing medium. The neutrons do not penetrate a layer of 20cm water or parafine because their energy is exhausted by their collisions with the protons that have the same size as the neutron. Hereby slow neutrons are produced entering a proton nucleus leading to a denterium nucleus.

20. However, these neutrons will penetrate through thin layers of water but then retain only thermal energy. These neutrons are important in very many nuclear reactions, for these nuclei possess a larger cross section for such neutrons. After dropping the bomb by airplane, and in order that the uranium bomb explode, this water - or parafine - coat between the uranium and the neutron source will have to be removed. To prevent an early explosion by means of counter action, I propose to launch the atomic bomb by a rocket.

21. During my engagement in Hamburg I intended to investigate the attractive problems of nuclear physics because many discoveries may still be made and the enormous quantity of energy in the nuclei promises an enormous evolution in producing energy for human consumption. Already 35 cyclotrons were built in the U.S. at that time, whereas in Germany just one existed.

22. It is of the utmost importance to mankind to continue research and investigations in this field of utilising the energy of the nuclei of these chemical elements for building up large sources of energy. Moreover, it is more or less mandatory to use other elements for the atomic bomb or engine because the $^{235}_{92}$U is one hundred times as scarce as mercury. Therefore all uranium will be exhausted soon.

23. Dr. EDSE concludes his resume' about the atomic bomb with an incomplete list of sources of uranium, dated 1934:

Country		Content of U	Demand
Africa (Katanga)	Uranium - pecherz	3%	50%
Canada	"		25%
Joachimsthal (Bohemia)	"		50%
U.S.A. (Colo.)	Carnotite	1%	? %

24. Dr. HARRIES tells of the atomic developments in Germany, the following: A substantial part of the German nuclear research was located in the Wuerzburg area at the Kaiser Wilhelm Institut (K.W.I.) for Physical Chemistry. Dr. HAHN at Tailfingen, Dr. DAELLENBACH, who planned to build a cyclotron according to his own ideas in that vicinity, and also Dr. HEISENBERG of the K.W.I. for Physics, were all to be brought to the Wuerzburg area.

25. Dr. Gustav HERTZ, according to the latest reports, is in Moscow and heads an institute for nuclear research there, along with a group of his own co-workers.

26. Prof. HERTZ was a student of Prof. RUBENS, Berlin. In the twenties he started his work on excitation and ionization of atoms, which earned him, together with James FRANCK, the NOBEL PRIZE in 1926. In the same year HERTZ became professor of experimental physics at Halle and in 1928 he went in the same capacity to the Technische Hochschule (Institute of Technology) in Berlin-Charlottenburg. Because he was not a pure aryan, Prof. HERTZ lost his professorship in 1935 and was made director of a Siemens & Halske research laboratory. There he remained until the Russians came.

27. Until Prof. HERTZ came to Siemens he did not pay much attention to nuclear physics, but once with Siemens he became absorbed in this problem. One of his co-workers was sent to America before the war to familiarize himself with the cyclotron work being done there. Siemens, in the mean time started to build a cyclotron, but it was a failure.

-3-

SECRET

Figure D.669: Rudolf Zinsser reported observing an apparent atomic bomb test near the Baltic coast in October 1944. U.S. documents state that Rudolf Edse worked on the German atomic bomb program. [AFHRA Folder 533.619-5 1945]

AFHRA Folder 533.619-5 1945

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28. Since his days at Halle, HERTZ had been interested in the question of separation of isotopes and did quite a bit of pioneering in the field of nuclear research.

29. Dr. HARRIES, a physical chemist himself, believes that quite a bit of the basic research in nuclear physics, with a view toward the construction of an atomic bomb, has already been completed. There still remains much to be done to perfect our methods of production of isotopes in pure form.

30. Dr. LIEB, also a physical chemist and head of the Patent Office in the Speer Ministry, relates some inside stories related to the aton bomb, under the heading:
The Handling Of The Problem Of Nuclear Physics By The Ministry Of Armament And War Production.

31. Because of its set-up and pre-occupation with other tasks this ministry had little time for, or interest in, purely theoretical research. When I entered the ministry in 1941 I immediately told Mr. TODT that this situation was deplorable and that it would cause us great concern and trouble in the future. No change was made because the head of the technical office was a good organiser and a man of actual practice and therefore not interested in matters which could not show practical application quickly.

32. The problem of nuclear physics with its chief aim the utilization of atomic energy was being worked on only by Army Ordnance Research Dept. (Brig. Gen. Dr. SCHUMANN) and by a small Navy group. In view of the importance of the problem this military interest was much too small, as I often pointed out at that time.

33. Early in 1943, with the help of various scientists, we finally succeeded in calling a meeting under the chairmanship of Mr. SPEER himself, where the problem of nuclear physics was disdussed. The meeting was held in Harnack-Haus, K.W.I., Berlin-Dahlem, and was attended by about 50 people.

34. Aside from the Ministry authorities the following named persons were present:
a. Min. Dir. Brig. Gen. Dr. SCHUMANN with his staff.
b. From the Air Force
Gen. MILCH with staff and research staff members.
c. From the Navy
Adm. RHEIN, leader of the section "Research, Development, Patents".
d. Scientists
A group of leading physicists and chemists, including: Prof. HEISENBERG, Prof. HAHN, Prof. STRASSMANN, Prof. HARTECK (Hamburg), Prof. JENSEN (Hamburg), Dr. W. GROTH (Hamburg), Prof. BOTHE (Heidelberg), Prof. CLUSIUS (Munich), Prof. SOMMERFELD (Munich), Prof. JOOS (Jena), Dr. ARDENNE (Berlin), and many others.

35. Various lectures were given which covered a survey of the state of research in Germany and, as far as was known, in foreign countries. The nature of these discussions resulted in acquainting the government leaders with the importance of this problem. Minister SPEER promised to give this problem a place in the armament program in accordance with its importance and to aid it financially, and furnish housing, provide materials and personnel.

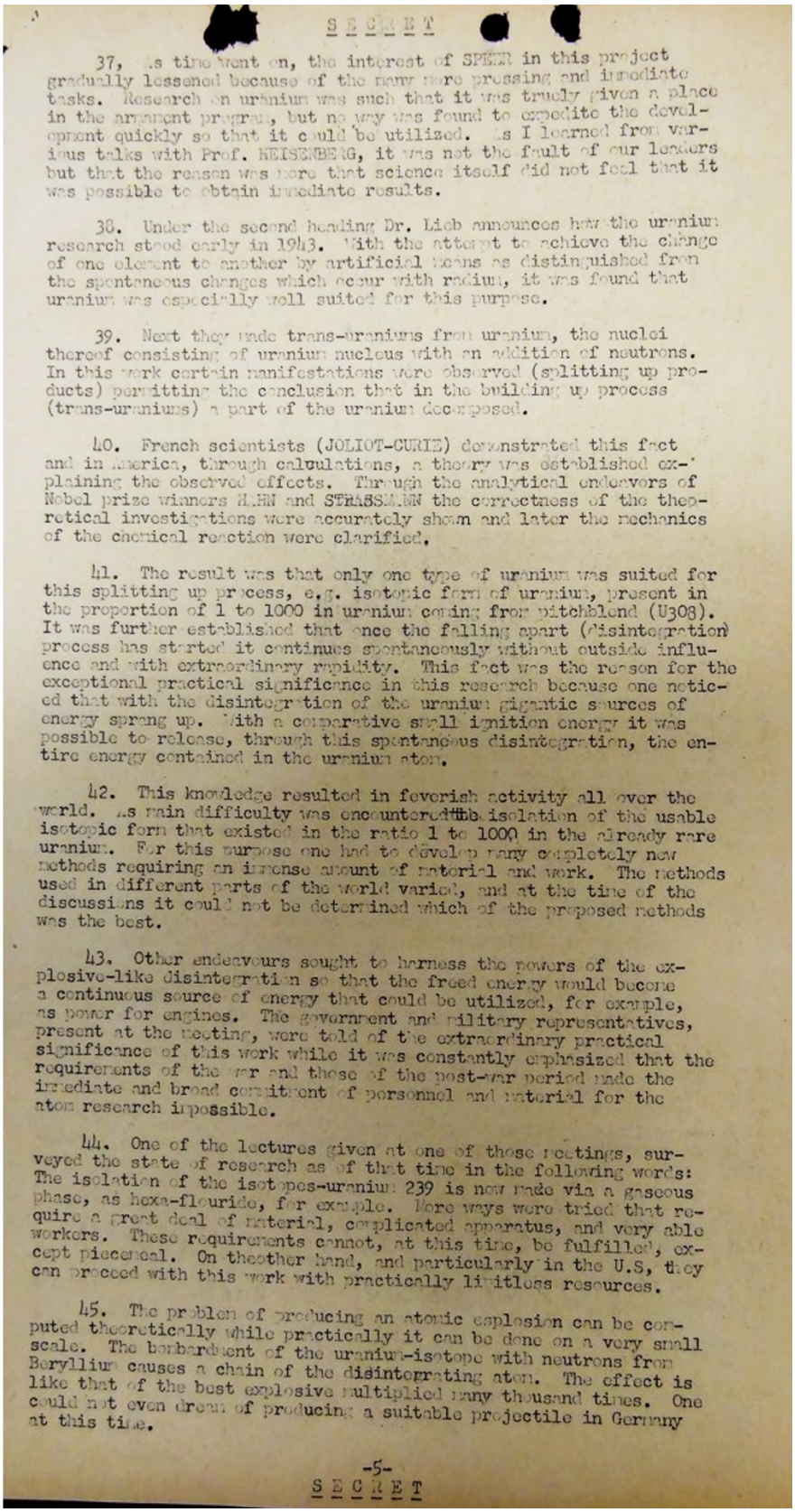
36. It was generally felt that the results of this research could not materially effect the course of the war. Some people pointed out, however, that the possession of a weapon like the aton bomb would assure to the country having it undisputed superiority for a long time and that the smashing of the aton would be a source of energy for technical development in the post war period.

-4-

SECRET

Figure D.670: Rudolf Zinsser reported observing an apparent atomic bomb test near the Baltic coast in October 1944. U.S. documents state that Rudolf Edse worked on the German atomic bomb program. [AFHRA Folder 533.619-5 1945]

AFHRA Folder 533.619-5 1945



SECRET

37. As time went on, the interest of SPEER in this project gradually lessened because of the many more pressing and immediate tasks. Research on uranium was such that it was truely given a place in the armament program, but no way was found to expedite the development quickly so that it could be utilized. As I learned from various talks with Prof. HEISENBERG, it was not the fault of our leaders but that the reason was more that science itself did not feel that it was possible to obtain immediate results.

38. Under the second heading Dr. Lieb announces how the uranium research stood early in 1943. With the attempt to achieve the change of one element to another by artificial means as distinguished from the spontaneous changes which occur with radium, it was found that uranium was especially well suited for this purpose.

39. Next they made trans-uraniums from uranium, the nuclei thereof consisting of uranium nucleus with an addition of neutrons. In this work certain manifestations were observed (splitting up products) permitting the conclusion that in the building up process (trans-uraniums) a part of the uranium decomposed.

40. French scientists (JOLIOT-CURIE) demonstrated this fact and in America, through calculations, a theory was established explaining the observed effects. Through the analytical endeavors of Nobel prize winners HAHN and STRASSMANN the correctness of the theoretical investigations were accurately shown and later the mechanics of the chemical reaction were clarified.

41. The result was that only one type of uranium was suited for this splitting up process, e.g. isotopic form of uranium, present in the proportion of 1 to 1000 in uranium coming from pitchblend (U308). It was further established that once the falling apart (disintegration) process has started it continues spontaneously without outside influence and with extraordinary rapidity. This fact was the reason for the exceptional practical significance in this research because one noticed that with the disintegration of the uranium gigantic sources of energy sprang up. With a comparative small ignition energy it was possible to release, through this spontaneous disintegration, the entire energy contained in the uranium atom.

42. This knowledge resulted in feverish activity all over the world. As main difficulty was encountered the isolation of the usable isotopic form that existed in the ratio 1 to 1000 in the already rare uranium. For this purpose one had to develop many completely new methods requiring an immense amount of material and work. The methods used in different parts of the world varied, and at the time of the discussions it could not be determined which of the proposed methods was the best.

43. Other endeavours sought to harness the powers of the explosive-like disintegration so that the freed energy would become a continuous source of energy that could be utilized, for example, as power for engines. The government and military representatives, present at the meeting, were told of the extraordinary practical significance of this work while it was constantly emphasized that the requirements of the war and those of the post-war period made the immediate and broad commitment of personnel and material for the atom research impossible.

44. One of the lectures given at one of those meetings, surveyed the state of research as of that time in the following words: The isolation of the isotopes-uranium 239 is now made via a gaseous phase, as hexa-flouride, for example. Here ways were tried that require a great deal of material, complicated apparatus, and very able workers. These requirements cannot, at this time, be fulfilled, except piecemeal. On the other hand, and particularly in the U.S, they can proceed with this work with practically limitless resources.

45. The problem of producing an atomic explosion can be computed theoretically while practically it can be done on a very small scale. The bombardment of the uranium-isotope with neutrons from Beryllium causes a chain of the disintegrating atom. The effect is like that of the best explosive multiplied many thousand times. One could not even dream of producing a suitable projectile in Germany at this time.

-5-

SECRET

Figure D.671: Rudolf Zinsser reported observing an apparent atomic bomb test near the Baltic coast in October 1944. U.S. documents state that Rudolf Edse worked on the German atomic bomb program. [AFHRA Folder 533.619-5 1945]

AFHRA Folder 533.619-5 1945

S E C R E T

46. The problem of harnessing the released energy in the sense of using it as power for engines, factory machines, transportation (ground, water, air), has not been practically solved as yet. This side of uranium research is clearly a post war problem.

47. A man named ZINSSER, a Flak rocket expert, mentioned what he noticed one day: In the beginning of Oct. 1944 I flew from Ludwigslust (South of Luebeck), about 12 to 15 km from an atomic bomb test station, when I noticed a strong, bright illumination of the whole atmosphere, lasting about 2 seconds.

48. The clearly visible pressure wave escaped the approaching and following cloud formed by the explosion. This wave had a diameter of about 1 km when it became visible and the color of the cloud changed frequently. It became dotted after a short period of darkness with all sorts of light spots, which were, in contrast to normal explosions, of a pale blue color.

49. After about 10 seconds the sharp outlines of the explosion cloud disappeared, then the cloud began to take on a lighter color against the sky covered with a gray overcast. The diameter of the s still visible pressure wave was at least 9000 meters while remaining visible for at least 15 seconds.

50. Personal observations of the colors of the explosion cloud found an almost blue-violet shade. During this manifestation reddish-colored rims were to be seen, changing to a dirty-like shade in very rapid succession.

51. The combustion was lightly felt from my observation plane in the form of pulling and pushing. The appearance of atmospheric disturbance lasted about 10 seconds without noticeable climax.

52. About one hour later I started with an He 111 from the A/D at Ludwigslust and flew in an easterly direction. Shortly after the start I passed through the almost complete overcast (between 3000 and 4000 meter altitude). A cloud shaped like a mushroom with turbulent, billowing sections (at about 7000 meter altitude) stood, without any seeming connections, over the spot where the explosion took place. Strong electrical disturbances and the impossibility to continue radio communication as by lightning, turned up.

53. Because of the P-38s operating in the area Wittenberg-Merseburg I had to turn to the north but observed a better visibility at the botton of the cloud where the explosion occured.
Note: It does not seem very clear to me why these experiments took place in such crowded areas.

FOR THE COMMANDING OFFICER:

HELENES T. FREIBERGER
Captain AC

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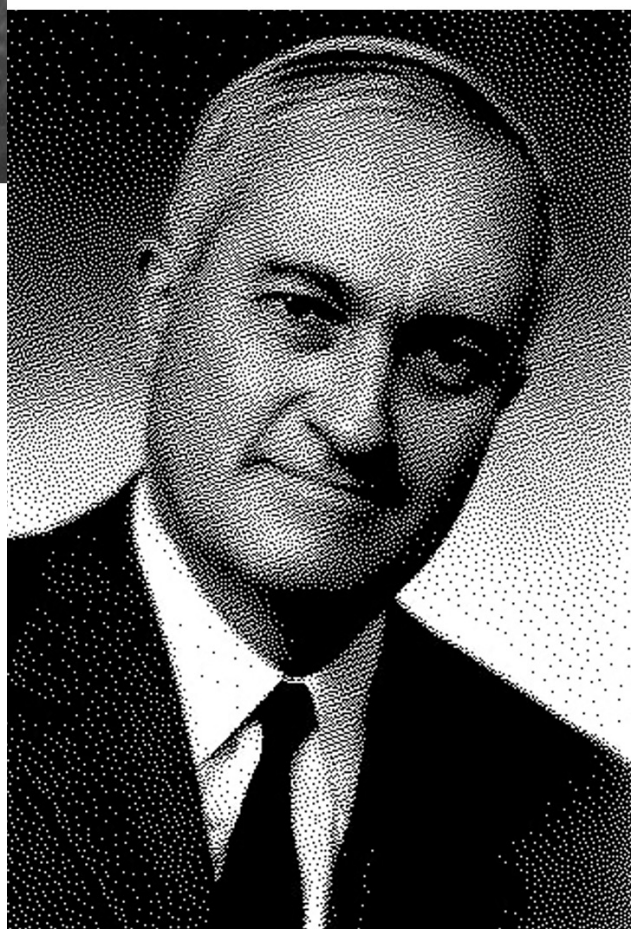
-6-

S E C R E T

Figure D.672: Rudolf Zinsser reported observing an apparent atomic bomb test near the Baltic coast in October 1944. U.S. documents state that Rudolf Edse worked on the German atomic bomb program. [AFHRA Folder 533.619-5 1945]

Rudolf Edse
(1913–1998)



Rudolf Zinsser
(1916–1995)

Figure D.673: Rudolf Zinsser reported observing an apparent atomic bomb test near the Baltic coast in October 1944. U.S. documents state that Rudolf Edse worked on the German atomic bomb program.

R. J. Ritter, ed. Inside the Mushroom Cloud. *Newsletter for America's Atomic Veterans.* July 2013, pp. 3–10. National Association of Atomic Veterans. https://naav.com/archives/2013_07_NAAV_Newsletter.pdf

At the instant of the initial nuclear detonation, the fission process generates & emits Alpha (a) & Beta (b) particles, Gamma (g) & X-rays (x), and Electro-Magnetic Pulse (EMP), from within the boiling fireball, after which cooler air is drawn into the center of the rising "toroidal" formation, which itself begins to cool into the familiar mushroom-cloud shape & appearance as it begins to rise to higher altitudes. EMP is the root cause of electronic instrumentation and communication device failures, shortly thereafter, and in close proximity, to the nuclear weapon detonation event. [...]

The distribution of radiation in the mushroom cloud varies with the total yield of the explosion, the type of weapon, the fusion/fission ratio, the burst altitude, the terrain type, and the prevailing weather patterns. Generally it can be said that lower-yield (Kiloton-range) explosions have about 90% of radioactivity in the mushroom head and 10% in the (heat-chute) stem, while Megaton-range detonations tend to have most of the radioactivity in the lower third of the mushroom cloud.

At the instant of detonation, the (fission process) fireball is formed, and the ascending, roughly spherical, mass of hot incandescent gases changes shape due to atmospheric friction and cools its surface by energy radiation, thus turning from a sphere to a violently swirling annular vortex. A (*Rayleigh-Taylor*) instability is formed at the boundary between the hot fireball and the surrounding cooler air. This will then cause turbulence and forms a vortex, which sucks air into its center, creating after-winds and thus cooling itself. As it begins to cool, the speed of its swirling motion begins to slow down, and may stop entirely during later phases. The vaporized parts of the weapon, and other materials, then condense into visible dust (and water vapor mist) forming the cloud; while the white-hot vortex core becomes yellow, then red, then loses any visible incandescence. [...]

The initial colors of some radioactive clouds can be red, or reddish brown, due to the presence of nitrogen dioxide and nitric acids, which are formed from the combination of nitrogen, oxygen, and atmospheric moisture. In the high temperature, high radiation environment of the blast, ozone is also formed. It is estimated that each Megaton of yield produces about 5,000 tons of nitrogen oxides...

Yellow and orange hues are also described. And a reddish hue is later obscured by the white color of water vapor (condensing in the fast flowing air as the fireball begins to cool) and the dark color of smoke and debris that is sucked into the strong updraft. The ozone will give the blast its characteristic corona & discharge like smell. [...]

The intense radiation in the first seconds after a nuclear blast may cause an observable aura of fluorescence, that emits an eerie blue-violet-purple glow of ionized oxygen and nitrogen at some distance from the fireball, surrounding the rapidly forming radioactive cloud. The light is best visible during the night or just before daylight, or just after sundown. The brightness then decreases rapidly, becoming barely visible in 20 to 45 seconds.

S. D. Felkin. 9 October 1945. [NARA RG 38, Entry 98C, Box 9, Folder TSC # 2601–2700]

SECRET.

A.P./W.I.U. (9th. AIR FORCE) REPORT NO. 96/1945.

Will all recipients of the above report please note that it has now been upgraded to TOP SECRET.

S. D. Felkin
Group Captain

[By spring 1945, the U.S. Alsos Mission concluded that Germany never even made a serious attempt to develop an atomic bomb during the war, yet Zinsser's testimony about an apparently successful October 1944 German atomic bomb test was given wide circulation and credence in U.S. military intelligence circles several months later, in August 1945. That fact suggests that U.S. intelligence officials had good reasons to doubt the conclusions of the Alsos Mission.

Moreover, the fact that the Zinsser report was then **upgraded** from Secret to Top Secret in October 1945 suggests that intelligence about German atomic bomb tests became more credible, not less credible, with further time and investigation. What new information did U.S. intelligence learn about the German atomic bomb program and/or Zinsser between August and October 1945 that prompted them to increase the classification level of Zinsser's report?]

Loose memo with no title, date, or signature [NARA RG 38, Entry 98C, Box 9, Folder TSC # 2601–2700]

The Enclosure to this report previously obtained from MIS and incorporated in report on the atomic bomb. A copy of the previous enclosure in Mr. Alberti's file. This report filed without further action or distribution.

[MIS was the Military Intelligence Service. This note appears to have originally been attached to a report, but what report and what enclosure does it reference?

"Mr. Alberti" would have meant Jack H. Alberti, a Naval Intelligence investigator who was one of the first to board the U-234 submarine in May 1945, who conducted many of the interrogations of its passengers and crew, and who was in charge of cataloging and processing its cargo. Alberti also performed the same functions for other captured German submarines (pp. 4866–4881). Does this loose memo suggest that Alberti obtained information from U-234 (or other German submarines) that was related to the Zinsser report about the German atomic bomb program? If so, what information?

See document photos on p. 4423.]

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S.D. Felkin S/L
Group Captain.

A.D.I. (K)
9th October, 1945.

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.....

The Enclosure to this report previously obtained from MIS and incorporated in report on the atomic bomb. A copy of the previous enclosure in Mr. Alberti's file.

This report filed without further action of distribution.

Enclosure (A) to ~~(Letter)~~ (Report) No A.42-15-46 24 Jan. 1946.
from the Commander, U.S. Naval Forces

SC-6823

Figure D.674: Top: S. D. Felkin. 9 October 1945. Bottom: Loose memo [NARA RG 38, Entry 98C, Box 9, Folder TSC # 2601–2700].

Edse, Rudolf. Foreign Scientist Case File. [NARA RG 330, Entry A1-1B, Box 35, Folder Edse, Rudolf]

DATE: 9 May 1946

The following information in the case of Dr. Rudolf Edse is submitted in accordance with letter, Headquarters, Army Air Forces [...]

a. [...] Department head of Chemical Research Branch at LFA, specialist for nuclear physics, chemical basic research, powdered rockets, and thermodynamics.

b. [...] Has written report on possibilities of atomic research at Wright Field.

c. [...] Because of his work on the production of isotopes related to atomic research, he might be employed along similar lines in this country. [...]

D. L. PUTT
Colonel, Air Corps
Deputy Commanding General
Intelligence (T-2)

Date 26 September 45 [...]

BASIC PERSONNEL RECORD Arrived: 20 Sept. 1945

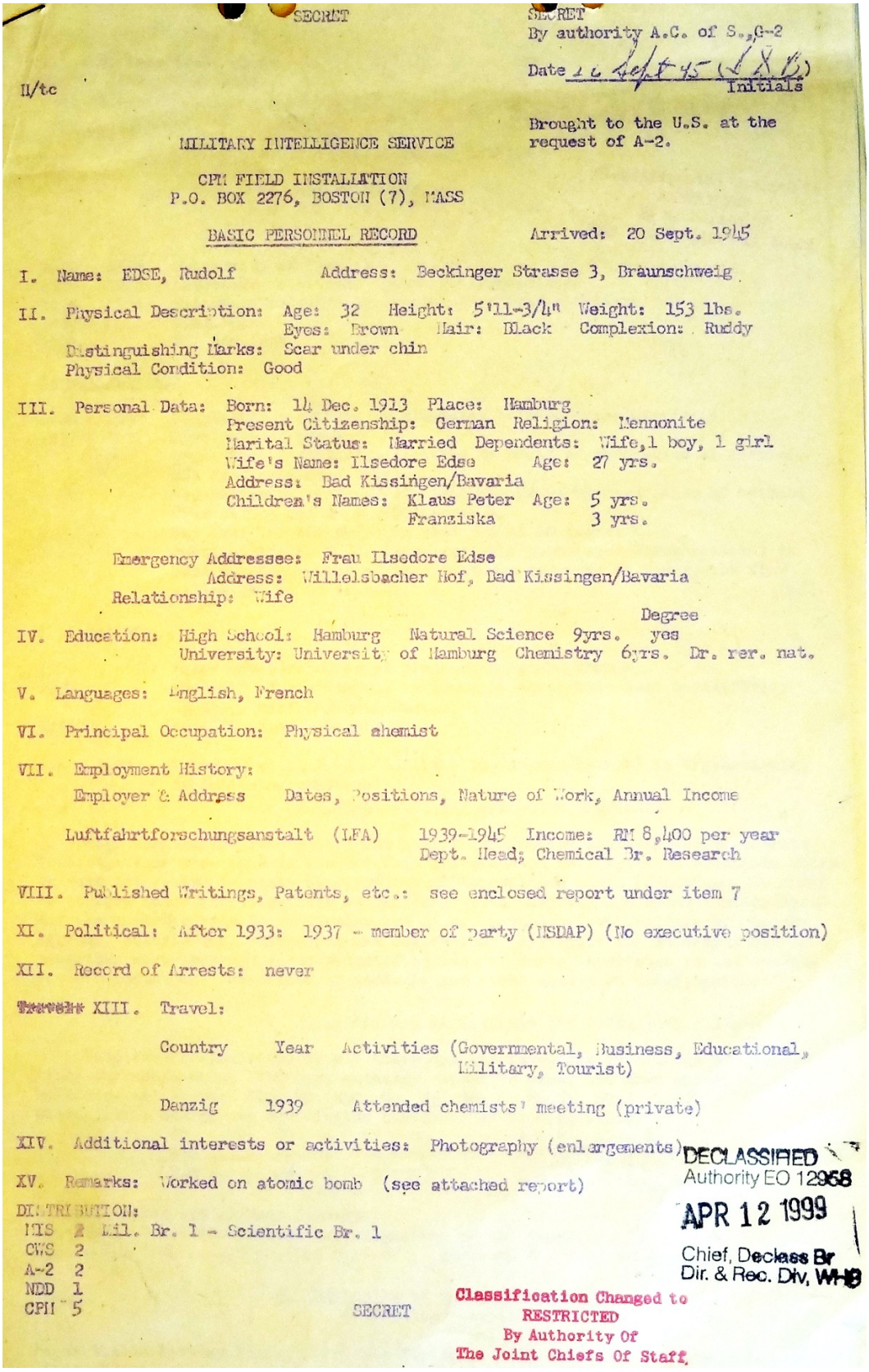
I. Name: EDSE, Rudolf [...]

XV. Remarks: Worked on atomic bomb (see attached report)

[The same 19 August 1945 report that included Rudolf Zinsser's description of an October 1944 German atomic bomb test also included information from Rudolf Edse, who said that he had worked on the German nuclear program, and that it had had the goal of having an atomic bomb ready by late 1944 (p. 4411).

The Foreign Scientist Case File ("Paperclip" file) for Rudolf Edse reaffirms that he did work on the German atomic bomb. It also indicates that he gave detailed descriptions of his work for Germany and how he could do similar work for the United States, although those details are not in the files. Edse was brought to the United States in 1945 (much sooner than many other Paperclip scientists) and given lifetime employment in the United States. He does not appear to have ever again mentioned the German nuclear work.

See document photos on pp. 4425–4426.]



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II/tc

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MILITARY INTELLIGENCE SERVICE

CPM FIELD INSTALLATION
P.O. BOX 2276, BOSTON (7), MASS

BASIC PERSONNEL RECORD

Arrived: 20 Sept. 1945

I. Name: EDSE, Rudolf Address: Beckinger Strasse 3, Braunschweig

II. Physical Description: Age: 32 Height: 5'11-3/4" Weight: 153 lbs.
Eyes: Brown Hair: Black Complexion: Ruddy
Distinguishing Marks: Scar under chin
Physical Condition: Good

III. Personal Data: Born: 14 Dec. 1913 Place: Hamburg
Present Citizenship: German Religion: Mennonite
Marital Status: Married Dependents: Wife, 1 boy, 1 girl
Wife's Name: Ilsedore Edse Age: 27 yrs.
Address: Bad Kissingen/Bavaria
Children's Names: Klaus Peter Age: 5 yrs.
Franziska 3 yrs.

Emergency Addressee: Frau Ilsedore Edse
Address: Willelsbacher Hof, Bad Kissingen/Bavaria
Relationship: Wife

IV. Education: High School: Hamburg Natural Science 9yrs. Degree yes
University: University of Hamburg Chemistry 6yrs. Dr. rer. nat.

V. Languages: English, French

VI. Principal Occupation: Physical chemist

VII. Employment History:
Employer & Address Dates, Positions, Nature of Work, Annual Income

Luftfahrtforschungsanstalt (LFA) 1939-1945 Income: RM 8,400 per year
Dept. Head; Chemical Br. Research

VIII. Published Writings, Patents, etc.: see enclosed report under item 7

XI. Political: After 1933: 1937 - member of party (NSDAP) (No executive position)

XII. Record of Arrests: never

~~Travel~~ XIII. Travel:

Country	Year	Activities (Governmental, Business, Educational, Military, Tourist)
Danzig	1939	Attended chemists' meeting (private)

XIV. Additional interests or activities: Photography (enlargements)

XV. Remarks: Worked on atomic bomb (see attached report)

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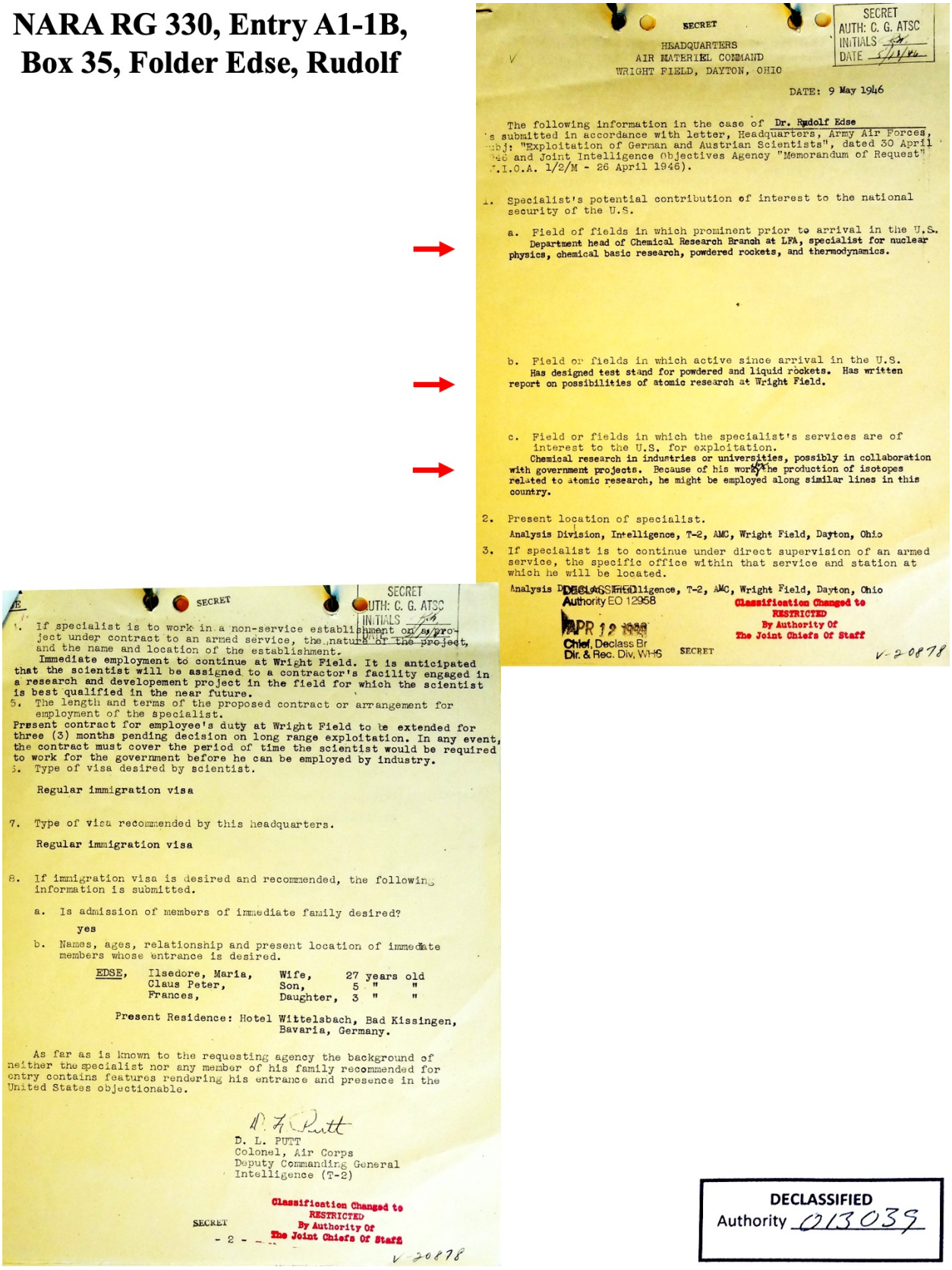
Figure D.675: Edse, Rudolf. Foreign Scientist Case File. [NARA RG 330, Entry A1-1B, Box 35, Folder Edse, Rudolf]

NARA RG 330, Entry A1-1B, Box 35, Folder Edse, Rudolf



SECRET

HEADQUARTERS
AIR MATERIEL COMMAND
WRIGHT FIELD, DAYTON, OHIO

SECRET
AUTH: C. G. ATSC
INITIALS
DATE

DATE: 9 May 1946

The following information in the case of Dr. Rudolf Edse is submitted in accordance with letter, Headquarters, Army Air Forces, subj: "Exploitation of German and Austrian Scientists", dated 30 April 1946 and Joint Intelligence Objectives Agency "Memorandum of Request" (J.I.O.A. 1/2/M - 26 April 1946).

1. Specialist's potential contribution of interest to the national security of the U.S.

a. Field of fields in which prominent prior to arrival in the U.S. Department head of Chemical Research Branch at LFA, specialist for nuclear physics, chemical basic research, powdered rockets, and thermodynamics.

b. Field or fields in which active since arrival in the U.S. Has designed test stand for powdered and liquid rockets. Has written report on possibilities of atomic research at Wright Field.

c. Field or fields in which the specialist's services are of interest to the U.S. for exploitation.
Chemical research in industries or universities, possibly in collaboration with government projects. Because of his work on the production of isotopes related to atomic research, he might be employed along similar lines in this country.

2. Present location of specialist.
Analysis Division, Intelligence, T-2, AMC, Wright Field, Dayton, Ohio

3. If specialist is to continue under direct supervision of an armed service, the specific office within that service and station at which he will be located.
Analysis Division, Intelligence, T-2, AMC, Wright Field, Dayton, Ohio

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AUTH: C. G. ATSC
INITIALS

4. If specialist is to work in a non-service establishment on a project under contract to an armed service, the nature of the project, and the name and location of the establishment.
Immediate employment to continue at Wright Field. It is anticipated that the scientist will be assigned to a contractor's facility engaged in a research and developement project in the field for which the scientist is best qualified in the near future.

5. The length and terms of the proposed contract or arrangement for employment of the specialist.
Present contract for employee's duty at Wright Field to be extended for three (3) months pending decision on long range exploitation. In any event, the contract must cover the period of time the scientist would be required to work for the government before he can be employed by industry.

6. Type of visa desired by scientist.
Regular immigration visa

7. Type of visa recommended by this headquarters.
Regular immigration visa

8. If immigration visa is desired and recommended, the following information is submitted.

a. Is admission of members of immediate family desired?
yes

b. Names, ages, relationship and present location of immediate members whose entrance is desired.

EDSE,	Ilsedore, Maria,	Wife,	27 years old
	Claus Peter,	Son,	5 " "
	Frances,	Daughter,	3 " "

Present Residence: Hotel Wittelsbach, Bad Kissingen, Bavaria, Germany.

As far as is known to the requesting agency the background of neither the specialist nor any member of his family recommended for entry contains features rendering his entrance and presence in the United States objectionable.

D. L. Putt

D. L. PUTT
Colonel, Air Corps
Deputy Commanding General
Intelligence (T-2)

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- 2 -

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Figure D.676: Edse, Rudolf. Foreign Scientist Case File. [NARA RG 330, Entry A1-1B, Box 35, Folder Edse, Rudolf]

[Luigi Romersa (1917–2007), shown in Fig. D.677, was an Italian military and aerospace journalist who had a long and distinguished career both during and after the war. According to him (and supported by documents such as those below and others [Karlsch 2005]), Benito Mussolini sent him to Germany in October 1944 as his special representative to observe the latest German secret weapons tests and to report back to Mussolini to strengthen his flagging confidence that Germany could win the war. Along with a long list of now well known advanced German rockets, missiles, and jets, Romersa said he was also briefed about V-3 and V-4 rockets and an atomic bomb.

The calendar of Mussolini's appointments has been published, and it shows that Mussolini met with Romersa on 1 October 1944 (before Romersa's trip to Germany) and 30 October 1944 (after his trip), and that Mussolini had met with Romersa on several earlier occasions as well [Guerrazzi 2020, pp. 219, 241, 250, 257–258, 279–280]. This independent information supports Romersa's account.]

29 October 1944 memo for Mussolini to meet with Luigi Romersa [Archivo Centrale dello Stato, Rome, SPD CO RSI B 65, File 5680]

Telefona il Tenente Romersa per informare che è rientrato dal suo viaggio in Germania e per chiedere di essere ricevuto dal DUCE, possibilmente in giornata.

29 ott. XXIII

Lieutenant Romersa called to report that he has returned from his trip to Germany and to ask to be received by the DUCE, possibly within the day.

29 Oct. 1944
[beginning of year XXIII of the Fascist Era]

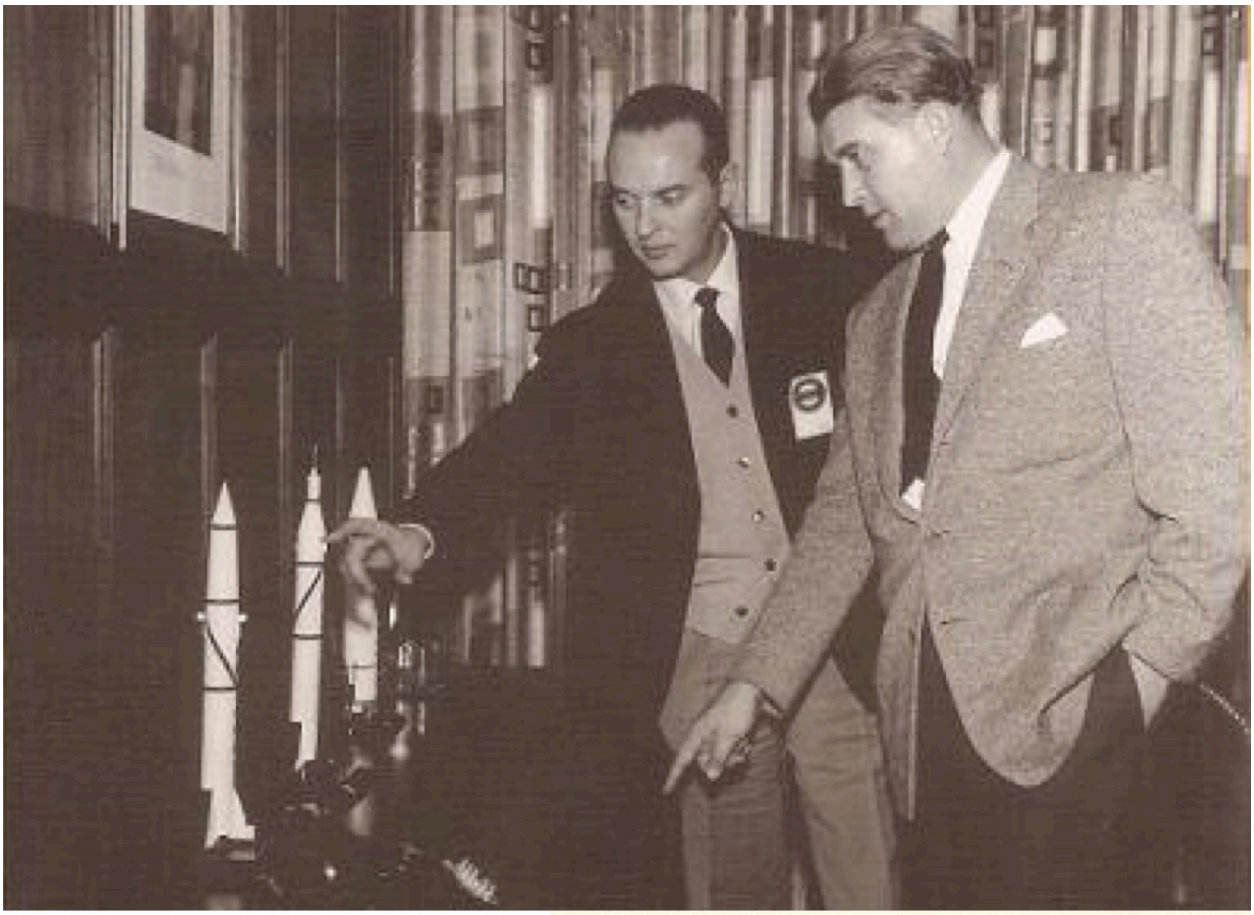
[See document photo on p. 4428.]

Ubaldo Alberto Mellini Ponce De Leon. 1950. *Guerra diplomatica a Salò.* Cappelli. pp. 44–45.

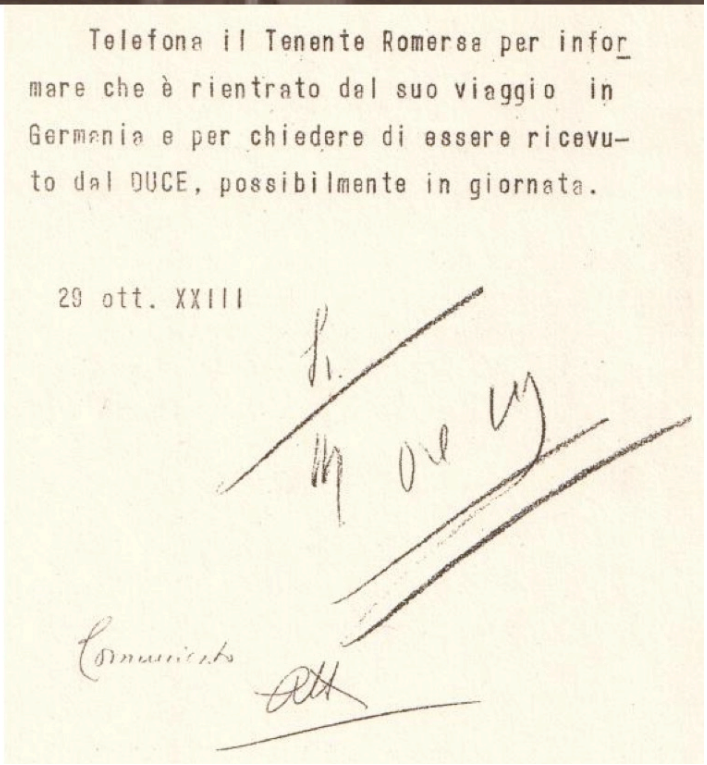
Qualche speranza fu riaccesa da nuove notizie ottimistiche da parte tedesca circa le armi segrete confermate dalla relazione che fece a Mussolini il giornalista Romersa su quanto aveva visto in proposito con i suoi occhi in una recente visita.

Some hopes were rekindled by new optimistic news from the German side about the secret weapons confirmed by the report that the journalist Romersa made to Mussolini on what he had seen in this regard with his own eyes in a recent visit.

[Ubaldo Alberto Mellini Ponce De Leon (1896–1969) served under Mussolini as a diplomat from the 1920s onward and also as Undersecretary of Foreign Affairs during February–March 1945.]



Luigi Romersa (1917–2007) with Wernher von Braun in Huntsville, Alabama in 1958



29 October 1944 memo for Romersa to meet Mussolini to report on his trip to Germany

Figure D.677: Luigi Romersa reported observing an apparent atomic bomb test near the Baltic coast in October 1944.

Luigi Romersa. May-June 1955. Le armi segrete di Hitler [Hitler's Secret Weapons]. *Civiltà delle Macchine.*

Il dottor Schaeffer, referente per la stampa italiana presso il ministero della propaganda tedesco, mi combinò il primo incontro col sottosegretario [Werner] Naumann, braccio destro di Goebbels. Il 6 ottobre 1944, Schaeffer mi comunicò all'albergo che Neumann mi avrebbe ricevuto alle quattordici al Propaganda Ministerium, nel suo ufficio. [...]

Si raccolse per un istante poi scandendo le parole riprese: "Abbiamo raggiunto la disgregazione dell'atomo. Abbiamo la bomba disgregatrice i cui effetti vanno al di là di ogni umana immaginazione..." [...]

Alla fine del suo lungo monologo, Naumann venne a parlare delle "V 2", "V 3" e "V 4" precisando che gli ultimi due tipi, ai quali ne dovevano seguire altri tre, erano radiocomandati e perciò infallibili. Ottenni anche la promessa di una visita alle fabbriche sotterranee e del suo interessamento, presso Goebbels, per assistere a un esperimento di bomba disgregatrice che doveva aver luogo in quei giorni in un'isola del Baltico. [...]

Il 10 ottobre 1944 fui avvertito di tenermi pronto a partire per il nord.

Lasciai Berlino nella notte dell'11 in automobile; mi accompagnavano due ufficiali, uno mi disse che al ritorno sarei stato ricevuto da Goebbels.

Dr. Schaeffer, contact person for the Italian press at the German propaganda ministry, arranged for me to meet first with Undersecretary [Werner] Naumann, Goebbels' right-hand man [p. 4650]. On 6 October 1944, Schaeffer informed me at the hotel that Naumann would receive me at 2:00 p.m. in his office at the Propaganda Ministerium. [...]

He [Naumann] collected himself for a moment, then emphasizing the words resumed: "We have achieved the disintegration of the atom. We have the disintegration bomb whose effects are beyond all human imagination..." [...]

At the end of his long monologue, Naumann came to talk about the "V-2," "V-3," and "V-4," pointing out that the last two types, to be followed by three more, were radio-controlled and therefore precise. I also obtained the promise of a visit to the underground factories and his support, with Goebbels, that I could witness a test of the disintegration bomb which was to take place within days on an island in the Baltic. [...]

On 10 October 1944, I was warned to be ready to leave for the north.

I left Berlin on the night of the 11th by car; two officers accompanied me, one of whom told me that on my return I would be received by Goebbels.

Avevo passato quasi tutta la serata nel rifugio dell'albergo Adlon. Mi era rimasta negli orecchi la voce di un altoparlante che nel corso del bombardamento diceva ai berlinesi dove erano cadute le bombe, il numero degli apparecchi incursori e le località in cui si erano sviluppati incendi. Molti, ancora prima di lasciare il rifugio, sapevano che all'uscita non avrebbero più trovato la casa. Viaggiammo per diverse ore nel buio umido che s'incollava ai vetri come nebbia. Pareva che sui vetri della macchina invece di nebbia colasse buio. Solo alla fine del viaggio seppi che mi trovavo nei pressi di Stralsund, davanti all'isola di Rugen che raggiungemmo con un motoscafo della marina militare.

I had spent most of the evening in the bomb shelter of the Adlon Hotel. In my ears remained the voice of a loudspeaker, telling Berliners during the bombing where the bombs had fallen, the number of bomber formations, and the locations where fires had broken out. Many people, even before they left the shelter, knew that they would never see their homes again. We traveled for several hours in the damp darkness that stuck to the windows like fog. It seemed that instead of fog, darkness was dripping onto the car windows. Only at the end of the trip did I learn that I was near Stralsund, in front of the island of Rügen, which we reached by a navy speedboat.

Rügen era un centro d'esperimenti dove venivano collaudate le nuove armi germaniche. Speciali reparti di truppe d'assalto proteggevano l'isola e ne impedivano l'accesso a chiunque. Per recarsi a Rugen occorreva un salvacondotto a firma del capo dello stato maggiore della Wehrmacht. Ci recammo subito in una zona folta di alberi dove trovammo altri ufficiali e alcuni tecnici. Nel bosco erano stati costruiti rifugi in cemento e piccole case in mattoni. Entrammo in una torretta blindata, semisepolta, attraverso una porticina metallica che venne richiusa con ogni cura. Dentro eravamo in quattro: i due ufficiali che mi avevano accompagnato, un altro uomo vestito di una tuta e io. Aspettavo mezzogiorno col cuore in gola. A mezzogiorno, secondo quanto aveva detto l'uomo in tuta, ci sarebbe stato l'esperimento della "bomba disgregatrice".

Rügen was an experimental center where the new German weapons were tested. Special units of assault troops protected the island and restricted access. To travel to [part of] Rügen required a safe-conduct pass signed by the Wehrmacht's chief of staff. We immediately went to an area thick with trees where we found other officers and some technicians. Concrete shelters and small brick buildings had been built in the woods. We entered an armored, half-buried turret through a small metal door that was closed with every precaution. Inside there were four of us: the two officers who had accompanied me, another man dressed in a suit, and me. I waited for noon with my heart in my throat. At noon, according to what the man in the suit had said, there would be the test of the "disintegration bomb."

La bomba doveva scoppiare a terra, a due chilometri circa dal nostro osservatorio blindato.

The bomb was to explode on the ground, about two kilometers from our armored observatory.

Il tempo non passava mai; i minuti erano ore. Aveva ripreso a piovere e una fumana densa saliva dal sottobosco. La terra, davanti a noi, era marcia e scura, color del saio dei monaci. Squillò un telefono nell'interno del bunker. Avvertirono che l'esperimento era stato anticipato alle 11,45. Mancavano perciò cinque minuti. Feci appena in tempo a consultare l'orologio che sentii un boato tremendo. Il pavimento mi dondolò sotto i piedi e per un istante mi parve che le pareti del rifugio si chiudessero. Davanti non vedevo che fumo, un fumo biancastro, lanoso, che ribolliva come la melma vomitata da una fogna. Si sentirono altri scoppi seguiti da lampi accecanti. Il cielo, tetro e chiuso, era stracciato da lampi bianchissimi. Mi passai una mano sulla faccia, sudavo. Nessuno aprì bocca. Al boato di poc'anzi seguì un silenzio che metteva i brividi. Fu l'uomo in tuta che parlò per primo. Era un colonnello dell'"Heereswaffenamt", l'organo addetto alla preparazione degli armamenti. "Quello che vedremo oggi—disse—è di capitale importanza. Quando potremo lanciare la nostra bomba sulle truppe d'invasione o su una città nemica gli angloamericani saranno costretti a meditare se valga la pena di continuare la guerra o di finirla ragionevolmente. Sono anni che studiamo. Siamo finalmente arrivati in porto". Le sue parole caddero nel silenzio. Lo ascoltavamo tutti con gli occhi.

Time did not pass; the minutes were hours. It had started raining again and a dense fog was rising from the undergrowth. The ground in front of us was rotten and dark, the color of monks' robes. A telephone rang inside the bunker. They warned that the test had been brought forward to 11:45 a.m. It was therefore five minutes away. I barely had time to consult the clock when I heard a tremendous roar. The floor rocked under my feet, and for an instant it seemed to me as if the walls of the shelter were falling in. In front I could see nothing but smoke, a whitish, woolly smoke that bubbled up like slime spewed from a sewer. More bursts were heard followed by blinding flashes. The sky, bleak and closed, was ripped apart by the whitest flashes of lightning. I ran a hand over my face; I was sweating. No one opened their mouth. The roar just then was followed by a chilling silence. It was the man in the suit who spoke first. He was a colonel in the "Heereswaffenamt" [Army Ordnance Office], the body in charge of developing weapons. "What we witness today—he said—is of paramount importance. When we can drop our bomb on invading troops or on an enemy city, the Anglo-Americans will be forced to decide whether it is worth continuing the war or ending it reasonably. We have been working for years. We have finally achieved our objective." His words fell into silence. We all listened to him with our eyes.

Uscimmo dal bunker verso la diciassette, dopo che erano arrivati alcuni uomini vestiti di una tuta mostruosa; in testa portavano uno scafandro del tipo di quello dei palombari, soltanto che era floscio e non aveva viti. Anche noi indossammo uno strano camiciotto di stoffa ruvida, bianchiccia e pantaloni dello stesso tessuto. Camminammo preceduti dai soldati. A mano a mano che avanzavamo la terra ci appariva sconvolta, arata, straziata da paurose voragini. Faceva freddo eppure tutto era arso come se fosse passata sull'isola una ventata di fuoco. Gli alberi non avevano più chioma nè rami; erano ridotti a tronconi abbrustoliti. Col piede urtai qualcosa; mi abbassai e vidi una capra carbonizzata. Si capiva che era una capra perché sulla carne strinata si vedevano ciuffi di peli; aveva la testa schiacciata, come pestata col martello. Le casette di pietra, erano mucchi di calcinacci. Solo le torrette in cemento armato avevano resistito. Qualche capra moribonda belava in maniera disperata; pareva il lamento di un uomo.

In nottata rientrai a Berlino. Alla fine di ottobre vidi Goebbels. Passai una serata nella sua casa e seppi la lui altre cose che Neumann non mi aveva detto. Seppi che esistevano altri due tipi di razzi, l'"A 4" e l'"A 9", uno di dieci tonnellate e l'altro di quindici, muniti di cariche atomiche, dotati di un'autonomia fantastica. Goebbels parlò di alcune migliaia di chilometri e aggiunse che con quei missili la Germania avrebbe bombardato anche l'America. Per il piccolo, claudicante ministro della propaganda che fu l'anima della Germania in guerra, occorrevano sei o sette mesi prima che il suo paese fosse in grado di sferrare un'offensiva che lui stesso, allora, definì infernale.

[...] Nel 1936 gli stessi tecnici, Walter Dornberger, Thiel e Wernher von Braun, inventore della "V 2", ora in America, impiantarono il centro di Peenemünde da cui uscirono tutte le bombe volanti, compreso l'"Aggregat 10", un razzo del peso di 65 tonnellate capace di volare per 5000 chilometri con il quale il Führer si riprometteva di martellare gli Stati Uniti.

We left the bunker around 5:00 p.m., after some men dressed in monstrous suits had arrived; on their heads they wore a helmet like that of a diving suit, only it was floppy and had no screws. We, too, wore a strange smock of rough, off-white cloth and pants of the same fabric. We walked ahead of the soldiers. As we advanced, the land appeared to have been shocked, plowed, torn apart by fearful chasms. It was cold and yet everything was scorched as if a blast of fire had passed over the island. The trees no longer had foliage or branches; they were reduced to burnt trunks. My foot bumped into something; I bent down and saw a charred goat. You could tell it was a goat because tufts of hair could be seen on the streaked flesh; its head was crushed, as if it had been pounded with a hammer. The little stone buildings were piles of rubble. Only the concrete bunkers had been resistant. A few dying goats bleated desperately; it sounded like a man's lament.

During the night I returned to Berlin. At the end of October I saw Goebbels. I spent an evening at his house and from him learned other things that Naumann had not told me. I learned that there were two types of rockets, the "A-4" and the "A-9," one of ten tons and the other of fifteen, equipped with atomic warheads, with a fantastic range. Goebbels spoke of several thousand kilometers and added that with those missiles Germany would also bomb America. According to the little, limping propaganda minister who was the soul of Germany at war, it would take six or seven months before his country would be able to launch an offensive that he himself then defined as hellish.

[...] In 1936 the same technicians, Walter Dornberger, Thiel, and Wernher von Braun, inventor of the "V-2," now in America, established the Peenemünde center, from which came all the flying bombs, including the "Aggregat 10," a rocket weighing 65 tons capable of flying 5,000 kilometers, with which the Führer vowed to hammer the United States.

[Romersa misspelled the name of Goebbels' undersecretary Werner Naumann as "Neumann." I have corrected the spelling here.

A French translation of Romersa's *Civiltà delle Macchine* article was published as:

> Luigi Romersa. J'ai Vu Exploser La Bombe Atomique de Hitler!
> *Paris-Presse L'Intransigeant*. 19 November 1955 p. 14.

In 1984, Romersa repeated his claims in a Spanish article:

> Luigi Romersa. August-September 1984. Las "Armas Secretas" de Hitler,
> algo más que fantasía. *Defensa* No. 76–77.

He continued to make the same claims for the rest of his life, as shown by:

> Luigi Romersa. 2005. *Le Armi Segrete di Hitler*. Milan: Mursia.

and the following article.]

John Hooper. 30 September 2005. Author fuels row over Hitler's bomb. *The Guardian*. [https://www.theguardian.com/world/2005/sep/30/books.italy]

Mr Romersa [...] lives today in an elegant flat in the Parioli district of Rome. His study walls are covered with photographs from a career during which he interviewed many of the major figures of the 20th century, from Chiang Kai-shek to Lyndon Johnson. Though he suffers from some ill-health these days, he is still lucid and articulate.

He told the *Guardian* how, in September 1944, Italy's wartime dictator, Benito Mussolini, had summoned him to the town of Salo to entrust him with a special mission. Mussolini was then leader of the Nazi-installed government of northern Italy and Mr Romersa was a 27 year-old war correspondent for *Corriere della Sera*.

Mr Romersa said that when Mussolini had met Hitler earlier in the conflict, the Nazi dictator had alluded to Germany's development of weapons capable of reversing the course of the war. "Mussolini said to me: 'I want to know more about these weapons. I asked Hitler but he was unforthcoming'."

Mussolini provided him with letters of introduction to both Josef Goebbels, the Nazi propaganda chief, and Hitler himself. After meeting both men in Germany, he was shown around the Nazis' top-secret weapons plant at Peenemünde and then, on the morning of October 12 1944, taken to what is now the holiday island of Rügen, just off the German coast, where he watched the detonation of what his hosts called a "disintegration bomb".

"They took me to a concrete bunker with an aperture of exceptionally thick glass. At a certain moment, the news came through that detonation was imminent," he said. "There was a slight tremor in the bunker; a sudden, blinding flash, and then a thick cloud of smoke. It took the shape of a column and then that of a big flower.

"The officials there told me we had to remain in the bunker for several hours because of the effects of the bomb. When we eventually left, they made us put on a sort of coat and trousers which seemed to me to be made of asbestos and we went to the scene of the explosion, which was about one and a half kilometres away.

"The effects were tragic. The trees around had been turned to carbon. No leaves. Nothing alive. There were some animals—sheep—in the area and they too had been burnt to cinders."

On his return to Italy, Mr Romersa briefed Mussolini on his visit. In the 1950s, he published a fuller account of his experiences in the magazine *Oggi*. But, he said, "everyone said I was mad".

2004 testimony of Elisabeth Mestlin, as described by Wolfgang Ebsen [Karlsch and Petermann 2007, p. 163]

Sie erinnerte sich aufgrund glaubwürdiger Umstände genau an das außergewöhnliche Ereignis. Frau Mestlin fuhr nach der Bombardierung von Stralsund am 6. Oktober 1944 zu ihren Kindern nach Vitte auf der Insel Hiddensee. Auf der Insel Hiddensee hörte sie am 12. Oktober 1944 eine heftige Explosion und sah eine große Staubwolke an der Südspitze der Halbinsel Bug.

Interview mit Elisabeth Mestlin vom 5.10.2004, aufgezeichnet von Lutz Riemann, ausgestrahlt vom NDR am 13.3.2005.

She remembered the extraordinary event because of credible circumstances. After the bombardment of Stralsund on 6 October 1944, Ms. Mestlin went to see her children in Vitte on the island of Hiddensee. On the island of Hiddensee on 12 October 1944, she heard a violent explosion and saw a large cloud of dust on the southern tip of the Bug peninsula.

Interview with Elisabeth Mestlin from 5 October 2004, recorded by Lutz Riemann, broadcast by NDR on 13 March 2005.

[In some sources, Elisabeth Mestlin's name is given as Ilse Menslin.

Bug is a peninsula on the northwestern side of Rügen island. During the war, it was used as a German naval base. It is geographically rather isolated from the rest of Rügen and from the Baltic coastline of Germany. Because of its relative isolation and its highly secure military status, it would have been a good location for atomic bomb development and/or testing. It is known that new types of bombs were tested in that area [e.g., Stüwe 1999, pp. 451, 461]. Advanced scientific testing was conducted at other locations on the Baltic coast of Germany—virology at Riems island, rockets and jets at Peenemünde, radar on the German-occupied Danish island of Bornholm off the coast, etc.

Vitte is the main village on Hiddensee island. It is approximately 3 km west of the southern tip of the Bug peninsula. It would be reasonable to expect a large explosion on Bug to be audible and visible from the eastern ocean side of Vitte.]

Heinrich Himmler's chief adjutant Werner Grothmann on test explosions [Krotzky 2002]. For a discussion of the background and reliability of this source, see pp. 3396–3397.

[S. 31] Also, es ist so: Mir ist bekannt, dass es vier Atomversuche gab. Der erste noch 1943 im Herbst in der Nordsee, der ist gescheitert. Dann zwei 1944 im Herbst und im Spätherbst. Einer davon am Boden, also auf einem niedrigen Gestell, der spätere in der Atmosphäre am Fallschirm. Der im Winter 1944 in der Luft war brisant und die Ladung war auch größer. Das könnte im November gewesen sein. Der letzte Versuch war dann wieder mit kleiner Ladung im März 1945. Wo die Versuche waren, möchte ich jetzt noch nicht sagen, weil sich sonst die Bevölkerung unnötig aufregen würde.

[p. 31] Well, it is so: It is known to me that there were four atomic tests. The first still in 1943 in the autumn in the North Sea, which failed. Then two in 1944 in the autumn and the late autumn. One of them on the ground, that is on a small stand, the later one in the atmosphere on a parachute. That one in winter 1944 in the air was highly explosive and the charge [fuel] was also larger. That could have been in November. The last test was then again with a small charge in March 1945. Where the tests were I would like to not say now, because otherwise the population would be unnecessarily upset.

[S. 32] Ich kann aber mit Bestimmtheit erklären, dass mir von sechs Atombomben berichtet wurde, die aus drei verschiedenen Forschungsanlagen stammten. Alle waren Prototypen. Darüber hinaus gab es einige Kleinstkörper, die für die Laborversuche vorgesehen waren. Für den Versuch im Winter 1944 ist allerdings eine größere Ladung verwendet worden, wie ich ja schon sagte.

[p. 32] I can definitely declare that I was told of six atomic bombs that came from three different research installations. All were prototypes. In addition, there were some very small devices that were intended for laboratory experiments. For the experiment in the winter of 1944, a larger charge was indeed used, as I already told you.

[S. 13] Als im Oktober 1944 klar war, dass die Theorie zur Atombombe grundsätzlich stimmt, ist in verschiedenen Kreisen natürlich auch darüber nachgedacht worden, was man dann machen sollte, um den Krieg schnellsten zu beenden.

[p. 13] When, in October 1944, it was clear that the theory of the atomic bomb was in principle correct, various circles had, of course, also been thinking about what should be done to end the war as quickly as possible.

[S. 17] Ich möchte aber mal etwas zu dem Hintergrund sagen, warum Himmler nicht zu dem Atombombentest am vierten März nach Thüringen gekommen ist.

[p. 17] But I would like to say something about the background, why Himmler did not come to Thuringia for the atomic bomb test on the fourth of March.

[S. 40] Dieser Versuch sollte den Beweis bringen, dass das Zündsystem stabil arbeitet und der Vorbereitung eines entsprechenden Angriffs dienen, der mit einer Rakete geflogen werden sollte.

[p. 40] This test was to provide proof that the ignition system worked stably and to serve as preparation for a corresponding attack that was supposed to be flown with a rocket.

[S. 40] Das sind aber alles Projekte gewesen, wo die Industrie auf die eine oder andere Weise beteiligt war. Ob die Facharbeiter stellten, oder ihre spezielle technische Kompetenz. Natürlich lieferten die auch Einzelstücke oder Bauteile für Prototypen oder für die Versuche. Das war ja kein Problem, weil man einem Metallstück ja nicht ansieht, für welchen Zweck es gebraucht wird. Sehen Sie, das ging soweit, dass das Gestell für unseren Atomversuch in Thüringen von einer Schlosserei aus Thüringen hergestellt wurde. Ich weiß es deshalb, weil, als man sich dort traf, Diebner auf die Frage von jemandem, ob den unsere Leute gebaut hätten erklärte, der wäre von einer Schlosserei aus der Gegend. Die hätten ja nicht erfahren, wofür der gedacht war.

Der Versuch ist gerade dort durchgeführt worden, obwohl das ja in bewohntem Gebiet liegt, weil wir durch den Kriegsverlauf nicht mehr viel Auswahl hatten und natürlich, weil ja auch die Zeit drängte. Also sind wir gleich dort geblieben, wo auch das erforderliche Material erzeugt und auch gelagert worden war. Außerdem hatten hier unsere Leute und die von Diebners anderer Gruppe ihre Labors und die Entwicklungsabteilung. Und hier in der Nähe war ja auch die Serienproduktion der Uran-Bombe geplant gewesen. Außerdem sollte Anfang Januar die Zünderfertigung oder zumindest die Entwicklung eines für die Uran-Bombe vorgesehenen Zündsystems nach meiner Erinnerung ebenfalls hierher verlagert werden. Das war aber in einem aufgelassenen Bergwerk untergebracht, nicht in einer der Anlagen vor Ort. Diebner hatte angeblich, versichert, die Sprengwirkung wäre bei der geringen Menge, die der Versuch kosten würde, ganz gering. Leider hat sich seine Vorhersage aber nicht bestätigt. Das was da geschehen ist, war scheußlich. Außerdem hat es in der Umgebung noch Folgen gegeben, wobei ich nur hörte, dass Ärzte, die bei uns unter Vertrag standen, dort eingesetzt werden mussten.

[p. 40] But these were all projects where industry was involved in one way or another. Whether the skilled workers were placed, or their special technical competence. Of course, they also supplied individual pieces or components for prototypes or for the tests. That was not a problem, because one cannot tell from a piece of metal for what purpose it is needed. You see, that went so far that the stand for our atom test in Thuringia was manufactured by a metalworking shop in Thuringia. I know it because when meeting there, Diebner explained, in response to someone's question about whether our people had built it, it was from a metalworking shop from the area. They would not have known what it was meant for.

The test was carried out directly there, even though that was in an inhabited area, because due to the course of the war we did not have a lot of choice and, of course, because time was also critical. So we just stayed where the necessary material was produced and stored. In addition, our people and those of Diebner's other group had their laboratories and the development department. And here close by, too, the mass production of uranium bombs had been planned. In addition, at the beginning of January, the ignition [system] production or at least the development of an ignition system intended for the uranium bomb was likewise supposed to be relocated here, according to my memory. But this was placed in an abandoned mine, not in one of the facilities on site. Diebner allegedly assured that the explosive effect would be quite small for the small amount [of fuel] that the test would require. Unfortunately his prediction was not confirmed. What happened there was horrible. In addition, there were other consequences in the surrounding area, of which I only heard, that doctors, who were under contract with us, had to be deployed there.

[S. 13] Nach dem dritten Versuch, also das war dann der vom März in Thüringen, ist Hitler informiert worden. [...] Es war doch so, als der Versuch in Thüringen gelang, sind nach meiner Kenntnis unbeabsichtigt Arbeitskräfte aus einem Lager ums Leben gekommen. Die Leute, die bei dem Versuch dabei waren, hatten zum Teil größte Bedenken, ob man die Waffe einsetzen sollte, also ich meine, es war ja klar, dass im Einsatz nicht mit einem Testkörper operiert werden würde.

[p. 13] After the third attempt, which was the one from March in Thuringia, Hitler was informed. [...] It was like this: when the test in Thuringia succeeded, according to my understanding, workers from a camp died accidentally. The people involved in the test had some of the biggest concerns about using the weapon, I mean, it was clear that deployment would not involve an experimental device.

[S. 43] Was bleibt, sind die drei gelungenen Atomwaffenversuche, darunter ein größerer, ein Fehlschlag und ein Unfall.

[p. 43] What remains are the three successful atomic weapons tests, including a big one, a failure, and an accident.

[According to Grothmann, at least six prototype atomic bombs were produced at at least three different facilities. Of those, at least four were detonated in test explosions:

1. A test in autumn 1943 in the North Sea that failed. Grothmann provided no other details, and little information is available from other public sources. (For some possibly related sources, see pp. 4404, 5011, 5034.) Elsewhere, Grothmann stated that fission fuel was very scarce even in 1944–1945 and that the implosion system was not perfected until 1944. Although it is very surprising that a test would even be attempted in 1943, either or both of those problems could have easily caused the failure.

2. A test in the first half of October 1944 at a location that Grothmann refused to name for fear of public reaction. The bomb was on a low stand or holder, and its explosion successfully demonstrated the principles of the device. This information is consistent with statements from Rudolf Zinsser (p. 4408), Luigi Romersa (pp. 4427–4434), Elisabeth Mestlin (p. 4435), and other sources, who described a test explosion on the Baltic coast, possibly on Rügen island, on approximately 12 October 1944. That area of the Baltic coast has long been a popular tourist destination for people from all of Germany and beyond, which may explain Grothmann's reluctance to name the location.

3. A test during or around November 1944 at another location that Grothmann refused to name for fear of public reaction. That bomb was suspended from a parachute (presumably after having been dropped by a large aircraft), contained more fission fuel, and had a larger explosive yield. This information is consistent with statements from Robert Jackson (p. 4458), Felix Kersten (p. 4470), Wilhelm Wulff (p. 4471), and other sources, who described a test explosion near Auschwitz, which was said to have occurred over a specially constructed concentration camp and its inmates. If that is true, both that specific war crime and the larger issue of war crimes at Auschwitz and elsewhere in Poland could explain why Grothmann would not name the location.

4. A test on 4 March 1945 in Thuringia. Although Grothmann did not name the specific location, he said the test occurred very close to the research installation, and he separately said the research installation was located at or adjacent to the Ohrdruf Truppenübungsplatz military base. According to Grothmann, the bomb was mounted on a test stand, used a smaller amount of fission fuel, and had a smaller explosive yield, but was intended to test an improved implosion system that would be light enough to be carried on a rocket. Nonetheless, the explosive yield was still larger than had been expected, killed a number of workers, contaminated the area, and necessitated the use of special doctors to treat local people who were affected by the "horrible" event. This description closely matches those given by Ivan Ilyichev (pp. 4481–4485), Oscar Koch (p. 4566), Cläre Werner (p. 4551), Heinz Wachsmut (p. 4557), and other sources.

Assuming that Grothmann did not overlook any tests or failures and that there were at least six bombs as he stated, at least two bombs remained at the end of the war. Grothmann reported that the United States captured at least one bomb (p. 5042).]

D.11 Possible ~November 1944 Test Explosion in Poland

[There may have been a test explosion in Poland in approximately November 1944, as reported by multiple sources:

- As already mentioned, a Top Secret U.S. cable from March 1946 stated that a "capable young engineer" in Poland knew that atomic bomb casings included a layer of cadmium, which was true for the implosion bomb designs described by both Ilyichev and Schumann (p. 4255). The Polish engineer's knowledge suggests that German-run industry in wartime Poland was involved in developing and/or testing an atomic bomb.
- Robert Jackson, chief U.S. prosecutor at the Nuremberg trials, stated on 21 June 1946 that he had received evidence that a new bomb design producing very intense heat had killed 20,000 Jewish prisoners in a specially constructed test village near Auschwitz (p. 4458).
- In August 1946, a FIAT intelligence document mentioned that there had been a number of unconfirmed reports that "about Christmas 1944, successful experiments were conducted in Pomerania with V-1 and atomic warheads, radio directed. The ensuing crater was 2 km in diameter" (p. 4460). There was also an August 1944 report of nuclear weapons development work in Pomerania (p. 4396).
- In December 1946, Otto Hahn said that there had been rumors that "atom bomb tests had been carried out in Poland during the last year of the war which were supposed to have had an effect similar to the first atom bomb dropped on Hiroshima though on a considerably smaller scale" (p. 4460).
- Gezo Mansfeldt, a survivor of Auschwitz, reported in December 1946 that he was frequently interrogated by Soviet officials about high-security wartime production work at Auschwitz and that he "learned of the atomic bomb tests" (p. 4463).
- A 1947 U.S. intelligence report stated that the Germans built a heavy water production plant near Auschwitz and that it was removed by the Soviets (p. 4463). Heavy water would only be useful for nuclear work, and the production of heavy water near Auschwitz suggests the presence of other nuclear work in Poland.
- Another 1947 intelligence report discussed wartime nuclear weapons work at Tucheler Heide in Poland, including the production of ^{235}U and ^{239}Pu and apparently even 1–5 kg fission pits for atomic bombs (p. 4902).
- In 1947, Heinrich Himmler's physical therapist, Felix Kersten, stated that Franz Göring, a senior SS security official, had told him that a new bomb design producing several thousand degrees of heat had killed 20,000 Jewish prisoners in a specially constructed test village near Auschwitz (p. 4470).
- Heinrich Himmler's personal astrologer, Wilhelm Wulff, confirmed that Franz Göring had stated that a new bomb design producing several thousand degrees of heat had killed 20,000 Jewish prisoners in a specially constructed test village near Auschwitz (p. 4471).
- Werner Grothmann stated that there was a successful atomic bomb test in or around November 1944 (p. 4436).

Some of the major sources and details are summarized in Table D.5.]

Details	Primary sources for ∼November 1944 test							
	Polish engineer March 1946	**Jackson June 1946**	**Rumor cited by Hahn Dec. 1946**	**Mansfeldt Dec. 1946**	**Edmund Tilley August 1947**	**Kersten 1947**	**Wulff 1973**	**Grothmann 2000-2002**
Test date	Prior to end of war (implied)	Late 1944?	∼November 1944	Prior to January 1945	Prior to January 1945 (implied)	1944	1944	∼November 1944
Test location		Near Auschwitz	Somewhere in Poland	Associated with Auschwitz	Somewhere in Poland (implied)	Near Auschwitz	Near Auschwitz	Location would provoke negative public reaction [war crimes]
People who were involved	German-run industry in Poland	SS	SS (implied)	SS	SS, I.G. Farben, German-run industry in Poland	SS	SS	SS, Himmler, Kammler, Gerlach, Post Office, Diebner, Flügge
Blast		Immediately vaporized entire test village with 400-500°C [4000-5000°C?]	Like Hiroshima but smaller			Single burst of 6000°C incinerated entire test village	Explosion, heat of 6000°C incinerated entire test village in a flash	Highly explosive, ∼3 kilotons?, detonated in air over test site
Radio-activity	Atomic	Atomic	Like Hiroshima but smaller	Atomic	Nuclear fission	Atomic	Atomic	Nuclear fission
Casu-alties		20,000 Jewish prisoners in specially constructed test village	Like Hiroshima but smaller			20,000 Jewish prisoners in specially constructed test village	20,000 Jewish prisoners in specially constructed test village	
Device design	Atomic bomb with a layer of cadmium in the case	Newly invented atomic weapon of mass destruction	Atomic bomb	Atomic bomb	Atomic bomb with a 1-5 kg pit of U-235 or Pu-239	Atomic bomb detonated above the test site	Atomic bomb detonated above the test site	> 1 m dia. sphere Very heavy Aluminum case Larger amount of U-235 than other tests Ignition by special system Dropped over the test site on a parachute

Table D.5: Details about possible ∼November 1944 test explosion from primary sources.

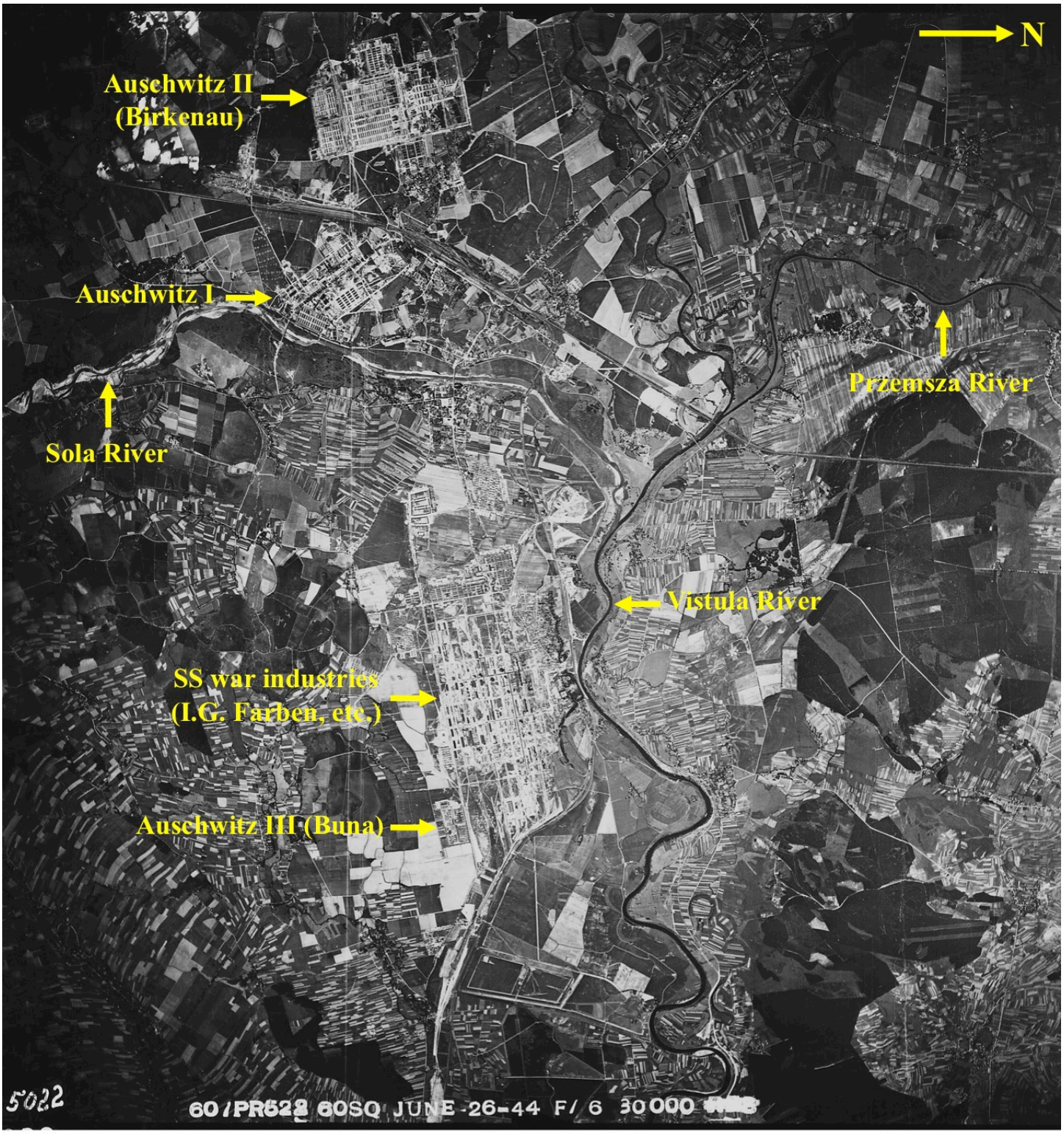


Figure D.678: U.S. aerial surveillance photo of Auschwitz on 26 June 1944, showing very large industrial installations built next to three rivers.

PW Intelligence Bulletin No. 2/25. 9 January 1945. [AFHRA folder 506.61952 Nos. 2/25–2/31 9–25 Jan 1945, IRIS 207531; AFHRA A5186 frames 0023–0027]

[See document photos on pp. 4445–4449.]

[...]

PW INTELLIGENCE BULLETIN No. 2/25

21. Bunawerke MONOWITZ nr AUSCHWITZ

See ANNEXES I and II.

Preamble. PW, a Slovak, was drafted into the Slovakian labor service 15 April 43 and sent to a guard coy in AUSCHWITZ. After three days black SS uniforms were issued the coy. PW remained there until July 44.

Location. The factory, commonly known as Bunawerke MONOWITZ, houses the two firms BUNA and IG FARBEN. Completely underground, it can nevertheless be located easily by six large wooden barracks, used as quarters for foremen and head mechanics, and situated atop a hill.

Personnel. Employed in the factory are appr 30,000 workers, all political prisoners whose work is supervised by SS guards. The workers—Poles, Russians, Czechs, and Jews—march to and from the factory from the nearby concentration camp at AUSCHWITZ, where a total of 680,000 prisoners are detained. There are two shifts, 0600 to 1800 and 1800 to 0600.

Products. Synthetic rubber products and Flak guns are turned out in the BUNA section. Although never inside the factory, PW has seen tanks (believed to be Tiger IIs) being taken from the factory grounds by rail.

PW does not know what is manufactured by the IG FARBEN section of the factory, but he saw the name on some of the barracks and on papers.

Guards. A total of 37 guard towers are situated at irregular intervals around the area. Every second tower has one machine gun. Encircling the area is electrically-charged wire fencing four meters high, run in 2 rows three meters apart. The area is flood-lighted at night.

Rubber Plants. There are appr 35 sq km of fields covered with rubber plants brought from RUSSIA. The fields and plants are maintained entirely by Russian civilians. The plants are used in the manufacture of rubber product.

LEGEND FOR ANNEX I (ITEM 21)

1. DAW uniform factory.
2. AUSCHWITZ concentration camp, containing 30,000 prisoners.
3. GUSTLO shell factory (connected with BUNA), employing 1,500.
4. BUNA underground factory (See ANNEX II).
5. Supply and ordnance depot.

6. "REISKO" Jail for women, with 275 prisoners.
7. BUNA synthetic rubber laboratory.
8. Same as 7.
9. Shed for storage of plants used for rubber production.
10. Concentration Camp BIRKENAU I. 150,000 prisoners, Jews of all nationalities.
11. Salvage dump for planes. [...]
12. Barracks for RR police.
13. Power distribution plant.
14. Flour mill.

[...] 15. PW believes a new plant was under construction here. Circles indicate reservoir-like concrete pits 8 m in diameter.

16. Incomplete concrete foundations 6-7 m in diameter.

LEGEND FOR ANNEX II

1. Main entrance to area, with iron gate.
2. Second entrance.
3. Section of guard towers (37 encircle the factory area. Every other one contains LMG. Dimension: 2 m x 2 m x 10 m).
4. Air-raid shelters.
5. Entrance guard booth.
6. Cistern. (PW is not sure of contents, probably liquid rubber (?)).
7. Three ventillation towers, appr. 10 m high and 1 m in diameter.
8. Tower appr 7 m high and 4 m in diameter. Has been observed emitting steam.
9. Tower appr 8 m high and 1 m wide. Has been observed emitting smoke.
10. Coal shed, 20 m x 30 m x 1 m.
11. Wooden barracks appr 30 m x 20 m x 5 m. Roofs camouflaged with paint and walls painted green. Windows in the roofs only. Barracks rest on cement foundations. Under each of these barracks is a subterranean hall housing the factory proper.
12. Electrified fence.

[...] Note: The factory grounds are completely grassed. There are heavy Flak installations throughout the area. Over the whole area are barrage balloons. PW does not know where the entrances to the actual underground factory are located.

~~SECRET~~

PW INTELLIGENCE BULLETIN No 2/25

21. Bunawerke MONOWITZ nr AUSCHWITZ

See ANNEXES I and II.

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Products. Synthetic rubber products and Flak guns are turned out in the BUNA section. Although never inside the factory, PW has seen tanks (believed to be Tiger IIs) being taken from the factory grounds by rail.

PW does not know what is manufactured by the IG FARBEN section of the factory, but he saw the name on some of the barracks and on papers.

Guards. A total of 37 guard towers are situated at irregular intervals around the area. Every second tower has one machine gun. Encircling the area is electrically-charged wire fencing four meters high, run in 2 rows three meters apart. The area is flood-lighted at night.

Rubber Plants. There are appr 35 sq km of fields covered with rubber plants brought from RUSSIA. The fields and plants are maintained entirely by Russian civilians. The plants are used in the manufacture of rubber products.

~~SECRET~~

Figure D.679: There was a very large and very secretive underground I.G. Farben factory near Auschwitz. PW Intelligence Bulletin No. 2/25. 9 January 1945 [AFHRA folder 506.61952 Nos. 2/25–2/31 9–25 Jan 1945, IRIS 207531; AFHRA A5186 frames 0023–0027].

~~SECRET~~

PW INTELLIGENCE BULLETIN No 2/25

LEGEND FOR ANNEX I (ITEM 21)

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3. GUSTLO shell factory (connected with BUNA), employing 1,500.
4. BUNA underground factory (See ANNEX II).
5. Supply and ordnance depot.
6. "REISKO" Jail for women, with 275 prisoners.
7. BUNA synthetic rubber laboratory.
8. Same as 7.
9. Shed for storage of plants used for rubber production.
10. Concentration Camp BIRKENAU I. 150,000 prisoners, Jews of all nationalities.
11. Salvage dump for planes. PW claims that thousands of American, English, Russian, and German planes are brought here, repaired if possible and then moved out by rail, or otherwise junked and smelted(?) for re-use in "BUNA."
12. Barracks for RR police.
13. Power distribution plant.
14. Flour mill.
15. PW believes a new plant was under construction here. Circles indicate reservoir-like concrete pits 8 m in diameter.
16. Incomplete concrete foundations 5-6 m in diameter.

~~SECRET~~

Figure D.680: There was a very large and very secretive underground I.G. Farben factory near Auschwitz. PW Intelligence Bulletin No. 2/25. 9 January 1945 [AFHRA folder 506.61952 Nos. 2/25–2/31 9–25 Jan 1945, IRIS 207531; AFHRA A5186 frames 0023–0027].

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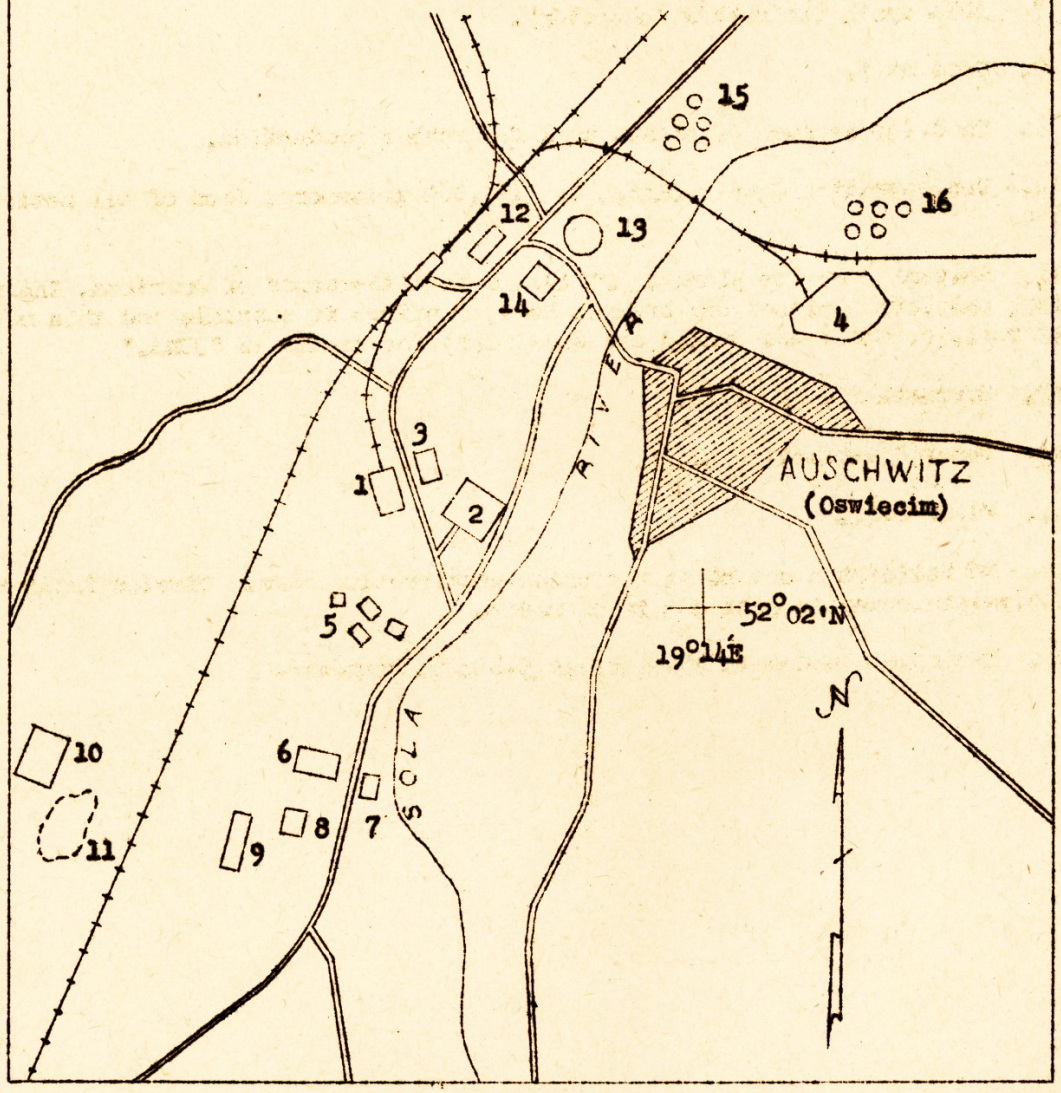
PW INTELLIGENCE BULLETIN No 2/25

ANNEX I (Item 21)

INDUSTRIAL & MILITARY INSTALLATIONS

vic AUSCHWITZ

Sketch from memory, appr scale 1:40,000
Map Ref: GSGS 4172, POLAND, Sheets 74 & 84, Scale 1:300,000
Longitude referred to Greenwich



SECRET

Figure D.681: There was a very large and very secretive underground I.G. Farben factory near Auschwitz. PW Intelligence Bulletin No. 2/25. 9 January 1945 [AFHRA folder 506.61952 Nos. 2/25–2/31 9–25 Jan 1945, IRIS 207531; AFHRA A5186 frames 0023–0027].

~~SECRET~~

PW INTELLIGENCE BULLETIN No 2/25

LEGEND FOR ANNEX II

1. Main entrance to area, with iron gate.

2. Second entrance.

3. Section of guard towers (37 encircle the factory area. Every other one contains one LMG. Dimensions: 2 m x 2 m x 10 m).

4. Air-raid shelters.

5. Entrance guard booth.

6. Cistern. (PW is not sure of contents, probably liquid rubber(?)).

7. Three ventilation towers, appr 10 m high and 1 m in diameter.

8. Tower appr 7 m high and 4 m in diameter. Has been observed emitting steam.

9. Tower appr 8 m high and 1 m wide. Has been observed emitting smoke.

10. Coal shed, 20 m x 30 m x 1 m.

11. Wooden barracks appr 30 m x 20 m x 5 m. Roofs camouflaged with paint and walls painted green. Windows in the roofs only. Barracks rest on cement foundations. Under each of these barracks is a subterranean hall housing the factory proper.

12. Electrified fence.

Note: The factory grounds are completely grassed. There are heavy Flak installations throughout the area. Over the whole area are barrage balloons. PW does not know where the entrances to the actual underground factory are located.

~~SECRET~~

Figure D.682: There was a very large and very secretive underground I.G. Farben factory near Auschwitz. PW Intelligence Bulletin No. 2/25. 9 January 1945 [AFHRA folder 506.61952 Nos. 2/25–2/31 9–25 Jan 1945, IRIS 207531; AFHRA A5186 frames 0023–0027].

~~SECRET~~

PW INTELLIGENCE BULLETIN No 2/25

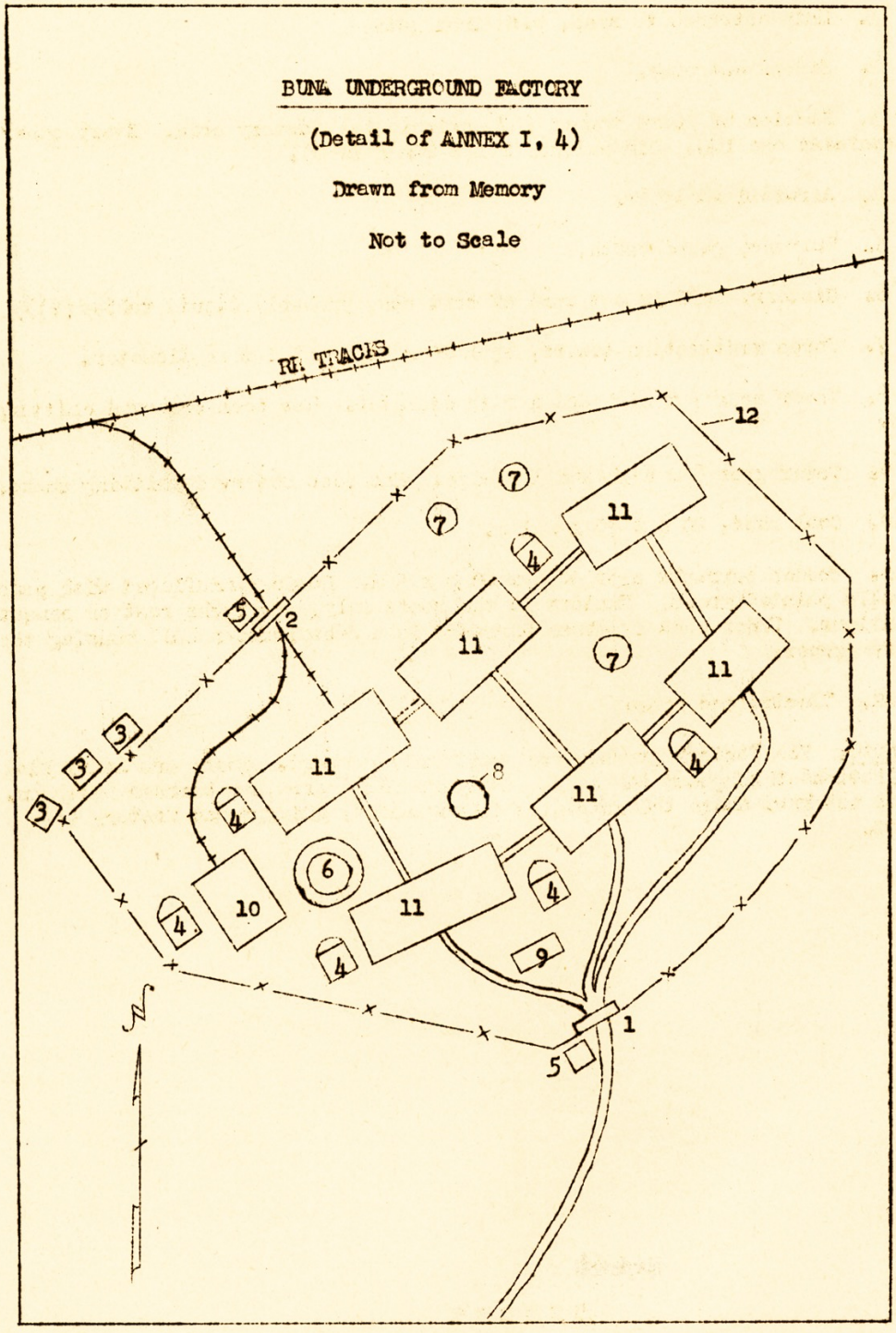
ANNEX II (Item 21)

BUNA UNDERGROUND FACTORY

(Detail of ANNEX I, 4)

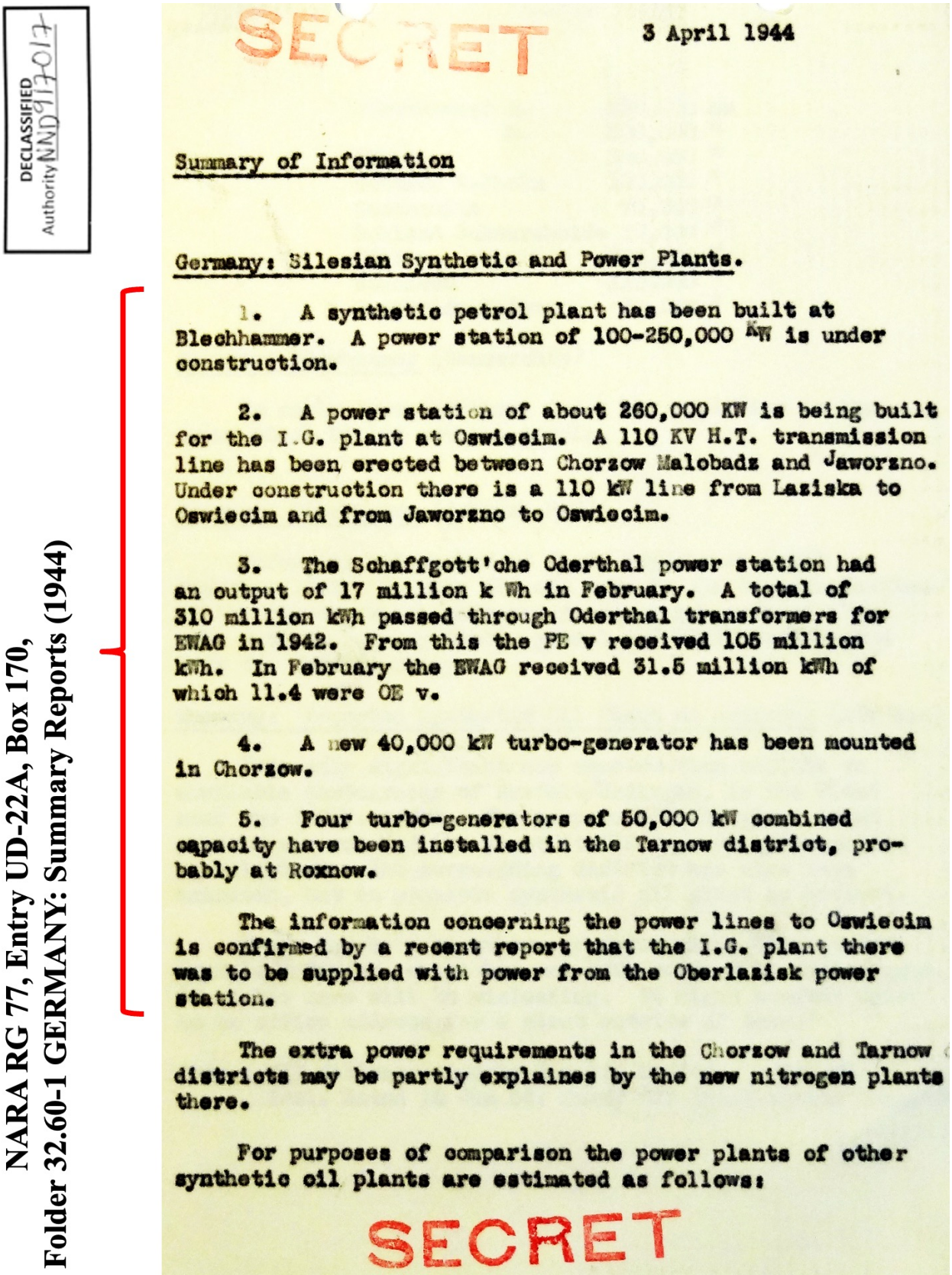
Drawn from Memory

Not to Scale



~~SECRET~~

Figure D.683: There was a very large and very secretive underground I.G. Farben factory near Auschwitz. PW Intelligence Bulletin No. 2/25. 9 January 1945 [AFHRA folder 506.61952 Nos. 2/25–2/31 9–25 Jan 1945, IRIS 207531; AFHRA A5186 frames 0023–0027].



SECRET

3 April 1944

Summary of Information

Germany: Silesian Synthetic and Power Plants.

1. A synthetic petrol plant has been built at Blechhammer. A power station of 100-250,000 KW is under construction.

2. A power station of about 260,000 KW is being built for the I.G. plant at Oswiecim. A 110 KV H.T. transmission line has been erected between Chorzow Malobadz and Jaworzno. Under construction there is a 110 kW line from Laziska to Oswiecim and from Jaworzno to Oswiecim.

3. The Schaffgott'che Oderthal power station had an output of 17 million k Wh in February. A total of 310 million kWh passed through Oderthal transformers for EWAG in 1942. From this the PE v received 105 million kWh. In February the EWAG received 31.5 million kWh of which 11.4 were OE v.

4. A new 40,000 kW turbo-generator has been mounted in Chorzow.

5. Four turbo-generators of 50,000 kW combined capacity have been installed in the Tarnow district, probably at Roxnow.

The information concerning the power lines to Oswiecim is confirmed by a recent report that the I.G. plant there was to be supplied with power from the Oberlasisk power station.

The extra power requirements in the Chorzow and Tarnow districts may be partly explaines by the new nitrogen plants there.

For purposes of comparison the power plants of other synthetic oil plants are estimated as follows:

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Figure D.684: Examples of numerous power plants near Auschwitz. Summary of Information. 3 April 1944 [NARA RG 77, Entry UD-22A, Box 170, Folder 32.60-1 GERMANY: Summary Reports (1944)].

SECRET

Blechhammer N.	250,000 kw
S.	300,000 "
Böhlen	390,000 "
Bottrop Welheim	100,000 "
Deschowitz	75,000 "
Ruhland Schwarzheide	60,000 "
Pölitz	300,000 "
Scholven	110,000 "
Syerkrade Holten	80,000 "

Germany: Blechammer (Censorship)

In early November there was a big explosion in the works which killed several people.

Germany: Blechammer (British P/W)

Informant had worked at I. G. Heydebreck until November 1942. He only did odd jobs in the Siemens section of the factory which made gas producer generators. The main factory made synthetic petrol and 15-20 tank wagons left the factory daily.

Germany: Reported Synthetic Oil Plant at Urdinger (Air Rec)

"The only significant new construction visible on available photographs of Krefelt/Urdingen, is the Plant near the I.G.F. works. The purpose of this plant is at present unknown and the plant itself appears quite unlike an oil plant. The surrounding district has also been examined, but no possible synthetic oil plant is present.

There may be a plant two or three miles distant from Krefeld/Urdingen, which has not been covered by photographs. If so the name will be misleading. It might however refer to an office address for a plant outside of town."

From : MID Military Attache Report, London - 1 Feb 44.
Incl. dated 10 Jan 44. Enemy Oil Intelligence Committee

SECRET

Figure D.685: Examples of numerous power plants near Auschwitz. Summary of Information. 3 April 1944 [NARA RG 77, Entry UD-22A, Box 170, Folder 32.60-1 GERMANY: Summary Reports (1944)].

H. W. Dix to Francis Smith. Subject: Heavy Water. 26 December 1944. [NARA RG 77, Entry UD-22A, Box 171, Folder 32.7003-3 GERMANY: US Wartime Positive Int. (Nov. 44–June 45)]

This office has received the following comments from our Swedish people and it is dated 22 November 1944 and has a B-2 rating.

> Heavy water is manufactured primarily in Norway by I. G. at Norsk Hydro. However, manufacture in Germany at the Bayrische Stickstoffwerke in Piesteritz or Auschwitz is certainly a possibility.
>
> I have heard nothing about experiments with heavy water as an explosive. After all, that would be a case of splitting the atom!

Monthly Intelligence Summary. II Information on Possible TA Sites. January 1945. [NARA RG 77, Entry UD-22A, Box 168, Folder 202.3-1 LONDON OFFICE: Combined Intell Rpts.]

Report received from OSS Stockholm mentions the possibility that heavy water is being made in Germany at Piesteritz or Auschwitz at The Bayrische Stickstoffwerke, but the same source said he has heard nothing about heavy water in connection with an explosive. While coverage of these two towns has been requested, Auschwitz is in that part of Germany which is now in Russian hands.

Monthly Intelligence Summary. II Information on Possible TA Sites. February 1945. [NARA RG 77, Entry UD-22A, Box 168, Folder 202.3-1 LONDON OFFICE: Combined Intell Rpts.]

Reference Monthly Intelligence Summary, January 1945, II 5, page three. All available air coverage and Interpretation Reports of Auschwitz and Piesteritz have been obtained and forwarded to General Groves' office for further study.

U.S. Embassy, Warsaw. 12 August 1947. Report No. R-107-47, MIS-390731. Subject: Plants producing heavy water. [NARA RG 319, Entry 85A, Box 2534, Folder 390731–390740] [See document photo on p. 4454.]

1. It is believed that no plants designed specially for the production of heavy water exist in Poland. It is reliably reported that the Germans built one such plant near OSWIECIM (Auschwitz) but that it was destroyed or moved out by the SOVIETS in 1945.

2. A definite potentiality exists for the production of heavy hydrogen as a by-product of coal hydrogenation. There is believed to be small likelihood of the realization of this potential, since the Polish government insists on the complete orientation of industry toward the physical reconstruction of the country. [...]

[Heavy water would be of little use for anything other than nuclear work, specifically as a moderator for fission reactors. Because it was "reliably reported" that the Germans had built a heavy water production plant near Auschwitz and that the Soviets had removed, and that heavy water manufacturing was given such a high priority amid all the other war-related materials that urgently needed to be produced, these documents appear to confirm that the I.G. Farben and/or other installations at Auschwitz were (at least in part) manufacturing materials for a nuclear weapons program.]

BIOS 562. *The German Phosphorus Industry at Bitterfeld & Piesteritz.* p. 41.

[Piesteritz]

The plant was well laid out and in excellent condition but at the time of inspection was partially dismantled. The whole of the dearsenicating equipment had been removed.

BIOS 889. *Manufacture of Nitric Acid, Ammonium Nitrate and Fertilizers at Bitterfeld, Wolfen and Piesteritz.* p. 1.

Little information however was obtained from Piesteritz. The plant for making nitric acid and ammonium phosphate had already been completely dismantled, for transfer to Russia. It is believed that information on these plants had been obtained earlier by American investigators.

[If there was any nuclear-related work (such as heavy water production) at Piesteritz, the Russians would have removed all evidence of that before other countries ever had a chance to see it.]

SECRET

Report No. R-107-47 — CLASSIFICATION — Copy No. 2

INTELLIGENCE REPORT

FOR GENERAL USE BY ANY U.S. INTELLIGENCE AGENCY

From Military Attache (AGENCY OR OFFICER.) Warsaw, Poland (STATION) Date 12 August 1947

Source Officers, U.S. Embassy, Warsaw Eval. B-2

Area Reported On POLAND Subject Plants producing heavy water

Reference Control S-761 (DIRECTIVE, CORRESPONDENCE, PREVIOUS REPORT, ETC., IF APPLICABLE.)

SUMMARY: ENTER CAREFUL SUMMARY OF REPORT, CONTAINING SUBSTANCE SUCCINCTLY STATED. ANSWER QUESTIONS WHERE, WHEN, WHAT, HOW, HOW MANY, AND GIVE DATE OF EVENT. IN A FINAL ONE SENTENCE PARAGRAPH GIVE SIGNIFICANCE. BEGIN TEXT ON PAGE 2.

1. It is believed that no plants designed specially for the production of heavy water exist in Poland. It is reliably reported that the Germans built one such plant near OSWIECIM (Auschwitz) but that it was destroyed or moved out by the SOVIETS in 1945.

2. A definite potentiality exists for the production of heavy hydrogen as a by-product of coal hydrogenation. There is believed to be small likelihood of the realization of this potential, since the Polish government insists on the complete orientation of industry toward the physical reconstruction of the country.

3. Absolutely no intimations have been received of Polish activity in the field of research or development of atomic energy on Soviet account.

4. This subject will be kept under observation.

T. J. BETTS
Colonel GSC
Military Attache

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390731

M/A Moscow.

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Figure D.686: U.S. Embassy, Warsaw. 12 August 1947. Report No. R-107-47, MIS-390731. Subject: Plants producing heavy water. [NARA RG 319, Entry 85A, Box 2534, Folder 390731–390740]

NARA RG 77, Entry UD-22A, Box 163, Folder 57.70 Poland Misc

Ti: 4173

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CLASSIFICATION

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WASHINGTON, D. C.
INTELLIGENCE DISSEMINATION

NUMBER Q A-64999
ORIGINAL RPT. LS-714
DATE OF INFO. Oct.-Nov. 1945
DATE OF RPT. 29 Dec. 1945
DISTRIBUTED 4 February 19

UNTRY Poland
BJECT Explosives Factory in Bydgoszcz
GIN Austria, Salzburg
ATRE
URCE Z
SOURCE As stated
LUATION F-0
CONFIRMATION
SUPPLEMENT
NO. OF PAGES 1
ATTACHMENTS

Sub-source (1): Polish DP, native of Bydgoszcz, editor of DP paper in Salzburg, known and trusted informant.

Sub-source (2): Russian officer, deserter from Polish Army, who left Poland in late November 1945.

1. According to sub-source (1), the Germans constructed a dynamite plant in 1940 in a forest along the Bydgoszcz canal between Bydgoszcz and the river Wisla; the distance between the two points is approximately 8 kilometers. The forest covers about nine square kilometers. Some units of the plant extend two stories below ground. Sub-source obtained this information from reliable friends living in the area.

2. Sub-source (2) was in the vicinity of this plant with his unit clearing mine fields during the last week of October 1945. He noted barbed wire fences enclosing the entire area, a strong guard of NKVD soldiers, and heavy Russian traffic, stringently controlled, moving in and out of the area. His men were not permitted to approach the perimeter of the fence in their search for mines. From conversations with natives living nearby, Sub-source (2) learned that immediately after Russian occupation of the area, fences were thrown around the forest, strong guards were posted, and about 3,000 Russian soldiers were brought in and housed within the grounds. The natives told Sub-source that German scientists had been brought to live and work there.

Figure D.687: Strategic Services Unit, War Department. Explosives Factory in Bydgoszcz. 4 February 1946. [NARA RG 77, Entry UD-22A, Box 173, Folder 57.70 Poland Misc]

Strategic Services Unit, War Department. Explosives Factory in Bydgoszcz. 4 February 1946. [NARA RG 77, Entry UD-22A, Box 173, Folder 57.70 Poland Misc]

Sub-source (1): Polish DP, native of Bydgoszcz, editor of DP paper in Salzburg, known and trusted informant.

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[See document photo on p. 4455.

From the details provided, it sounds as if this plant was manufacturing something far more secret, more complex, and more valuable than dynamite. It could have been enriching uranium-235, or breeding and/or purifying plutonium-239 or uranium-233. Apparently General Leslie Groves and intelligence officers of the U.S. Manhattan Project thought so too, which is why they included this report in their foreign intelligence files.

With intelligence reports of apparent nuclear-related work at Auschwitz, Bydgoszcz, and possibly Posen (see p. 3245), there are indications that the wartime German nuclear program may have involved extensive production work at a number of sites in Poland. All of those sites were taken over by the Russians, while the western Allies only received fragmentary reports about them.]

Top Secret Cable from Warsaw to Secretary of State. 7 March 1946 [NARA RG 77, Entry UD-22A, Box 160, Folder 205.2 Cables Incoming, Top Secret]

From: Warsaw

To: Secretary of State

Nr: 300 7 March 1946

Nr 300. Signed Lane.

Information has been given this Embassy by a capable young engineer working in the zinc industry, that one of the best if not the only material for atomic bomb containers is cadmium. According to the informant the cadmium output of Poland in 1945 amounted to 49.15 tons, and in January of 1946 to 10.9 tons. In 1945 there was exported to Russia the total Polish cadmium output.

End

ACTION: General Groves

INFO: General Spaatz, General Hull, General Vandenberg

[See document photo on p. 4256.]

From Capt. Volpe to Colonel Shuler. Subject: Cable to Secretary of State from Warsaw. 12 March 1946. [NARA RG 77, Entry UD-22A, Box 173, Folder 57.70 Poland Misc]

1. I discussed the attached cable with Marks. The State Department is cabling Warsaw that subject matter is of interest and all pertinent information should be forwarded.

2. Perhaps Lt. Rugg might look into the question of the relative importance of the quantities specified in the cable. It might also be useful to determine if possible normal industrial uses of cadmium. This information might serve to explain the Russian demand for the Polish output.

[A detailed description from March 1945 of the German atomic bomb said that the bomb casing design included a very important layer of cadmium—see p. 4486. The above highly specific, early 1946 statement by the "capable young engineer" in Poland suggests that he in particular, and wartime German industry in Poland in general, had been involved in developing atomic bombs. The capable young engineer's supreme confidence in the suitability of cadmium for the bomb design may also suggest that he knew the bomb had been successfully tested, perhaps in Poland.

When the United States followed up with the capable young engineer, what else did they find out? Where are those documents?]

Robert Jackson, chief U.S. prosecutor at the Nuremberg trials. Cross-examination of Albert Speer. 21 June 1946. [https://avalon.law.yale.edu/imt/06-21-46.asp and http://law2.umkc.edu/faculty/projects/ftrials/nuremberg/speer.html]

MR. JUSTICE JACKSON: And certain experiments were also conducted and certain researches conducted in atomic energy, were they not? [...] Now, I have certain information, which was placed in my hands, of an experiment which was carried out near Auschwitz and I would like to ask you if you heard about it or knew about it. The purpose of the experiment was to find a quick and complete way of destroying people without the delay and trouble of shooting and gassing and burning, as it had been carried out, and this is the experiment, as I am advised. A village, a small village was provisionally erected, with temporary structures, and in it approximately 20,000 Jews were put. By means of this newly invented weapon of destruction, these 20,000 people were eradicated almost instantaneously, and in such a way that there was no trace left of them; that it developed, the explosive developed, temperatures of from 400 to 500 [4000 to 5000?] centigrade and destroyed them without leaving any trace at all. Do you know about that experiment?

SPEER: No, and I consider it utterly improbable. If we had had such a weapon under preparation, I should have known about it. But we did not have such a weapon. It is clear that in chemical warfare attempts were made on both sides to carry out research on all the weapons one could think of, because one did not know which party would start chemical warfare first.

MR. JUSTICE JACKSON: The reports, then, of a new and secret weapon were exaggerated for the purpose of keeping the German people in the war?

SPEER: That was the case mostly during the last phase of the war.

[What information about atomic energy experiments or weapons tests near Auschwitz was "placed in" Jackson's "hands"? Has that information been preserved in archives?

It is interesting that Speer answered a question about atomic energy experiments and an alleged atomic weapons test by immediately deflecting the discussion to talk about chemical warfare planning instead.]

Robert H. Jackson
(1892–1954)

Felix Kersten
(1898–1960)

Figure D.688: Robert Jackson and Felix Kersten both mentioned an atomic bomb test that killed concentration camp inmates in Poland.

DI 092.-76 FIAT. Subject: Periodic Intelligence Report 1. 2 August 1946 [TNA FO 1031/59]

[...] Completely unreliable source described the following: ARDENNE made experiments with an atom gun (Atomkanone). About Christmas 1944, successful experiments were conducted in Pomerania with V-1 and atomic warheads, radio directed. The ensuing crater was 2 km in diameter. Because the time for developments was too short nothing more came of it. Source has heard this from a man who participated in experiments but inconsiderately died in winter of 1945. It has not been possible to verify this statement from any other source although rumours to this effect, although with different names, have been persistent. [...]

[See document photos on pp. 3610–3615.]

R. W. Shaw to L. E. Seeman, 5 December 1946, Transmittal of Item from DAILY DIGEST OF WORLD BROADCASTS AND RADIO TELEGRAPH SERVICES [NARA RG 77, Entry UD-22A, Box 171, Folder 32.60-2 Germany: Summary Reports (1945–1946)]

[...] Hahn said that a rumour which went the rounds in Germany about six months before the capitulation was equally untrue. According to this rumour, atom bomb tests had been carried out in Poland during the last year of the war which were supposed to have had an effect similar to the first atom bomb dropped on Hiroshima though on a considerably smaller scale. [...]

[See document photo on p. 4461.

The rumor reported by Hahn seems to agree very well with other reports of an atomic bomb test in Poland in October–December 1944.

Hahn does not appear to have been involved in the German nuclear weapons program, only basic nuclear physics experiments. It is unclear how much he knew or had been informed about the nuclear weapons program.

Note also that from April 1945 until January 1946, Hahn had been imprisoned (mostly at Farm Hall) and eavesdropped upon by the U.K. and U.S. military. After he was released, his public statements were still closely monitored and controlled by Allied officers. Even if Hahn knew that the rumor of an atomic bomb test in Poland was true, he would undoubtedly have been aware that it would be extremely unwise personally and politically to admit that information publicly.]

RESTRICTED

Manhattan Engineer District
Office of the Military Attache
American Embassy, London
5 December 1946

SUBJECT: Transmittal of Item from DAILY DIGEST OF WORLD BROADCASTS AND RADIO TELEGRAPH SERVICES

TO: Colonel L. E. Seeman, P.O. Box 2610, Washington 25, D. C.

The following item which appeared in DAILY DIGEST OF WORLD BROADCASTS AND RADIO TELEGRAPH SERVICES, dated 5 December 1946, is thought to be of interest to your office:

"21.10 ATOMIC RESEARCH IN GERMANY: PROF. OTTO HAHN (As DPD 12.05, 3.12.46, Digest No. 2, 692, add:) Hahn said that a rumour which went the rounds in Germany about six months before the capitulation was equally untrue. According to this rumour, atom bomb tests had been carried out in Poland during the last year of the war which were supposed to have had an effect similar to the first atom bomb dropped on Hiroshima though on a considerably smaller scale.

"Hahn stated that during the war various tests had been made to increase the German war potential by processes based on the splitting of the uranium atom. The object of this work, however, had not been to create a new weapon but to open up new sources of energy. In these tests the "heavy water" frequently mentioned in connection with the atom bomb had been used.

"Hahn then spoke of the first scientific experiments with atomic energy which he had undertaken. 'The first step towards atomic energy was made through our work and we realised at the time - sometime before the outbreak of war - that the splitting of the uranium nucleus would release large quantities of energy. If Hitler had prevented publication of the results of our research then, in all likelihood it would have been impossible for the USA to have developed their atom bomb." Publication took place at the beginning of 1939, and shortly before the war - either in May or in June - he had lectured in London on his scientific work and had also given scientific lectures during the war in Oslo, Stockholm and Copenhagen with the permission of the Reich Government. Hahn then referred to insinuations made against him all over the world, the most persistent of which was that he had given the Americans the secret of atomic bomb production and that the Nobel Prize had been his Judas's reward for treason.

This was wrong for the production of atomic bombs had been impossible in Germany.

"Speaking on his activities after the war, Hahn stated that he had been invited on 25th April 1945, when living in a small Wuerttemberg town, to which the Kaiser Wilhelm Institute Department of Chemistry had been evacuated since February 1944, to go to England via France and Belgium. Some time ago he had returned to Germany to work in Goettingen as president of the Kaiser Wilhelm Institute for the development of sciences and to continue with his scientific work. If this society were dissolved by the Control Council, Prof. Hahn hoped to be able to create in the British zone a society for the development of scientific work within the framework of the Control Council regulations, obtaining at the same time the benevolent permission of the British Control Commission. He regarded it as his duty to continue the pure scientific research work in Germany in the tradition of the Kaiser Wilhelm Institute, which had never been a National Socialist institution.

"Prof. Hahn answered various questions about the use to which cosmic rays could be put. Russia was also working on cosmic ray research, but the importance which is ascribed to cosmic rays in Russia may be propaganda. He did not believe that cosmic rays could provide energy which would be of any importance in war. Only small quantities of energy could be obtained which could not compare with the atom bomb."

R. W. SHAW
Captain, C.E.

Figure D.689: R. W. Shaw to L. E. Seeman, 5 December 1946, Transmittal of Item from DAILY DIGEST OF WORLD BROADCASTS AND RADIO TELEGRAPH SERVICES [NARA RG 77, Entry UD-22A, Box 171, Folder 32.60-2 Germany: Summary Reports (1945–1946)].

Germany took over Tucheler Heide in September 1939 and used it as a proving ground (Truppenübungsplatz Westpreußen) for rockets, nuclear work, and other experiments until January 1945. It or one of the other Polish proving grounds may have been the location of a nuclear test around November 1944.

Figure D.690: The German military took over Tucheler Heide in September 1939 (upper photo) and used it as a proving ground (Truppenübungsplatz Westpreußen or Heidekraut) for rockets [Dornberger 1958, pp. 227–229], nuclear work (pp. 4902–4903), and other experiments until January 1945. It or one of the other Polish proving grounds (p. 2096) may have been the location of a nuclear test around November 1944.

Letter of Prof. Dr. Gezo Mansfeldt, Professor of Physiological Institute of the University of Budapest (former inmate of the Rajsko camp) to Dr. Hans Münch (during the war at the SS-Hygiene Institute in Rajsko). 5 December 1946. US Holocaust Memorial Museum. RG-15.169M (1998.A.0247) microfilm reel 8.

Der nachste Tag verlief ereignislos und am 27. Januar 4 Uhr Nachmittag marschierte die erste russische Vorhut durch das Lager Auschwitz. So wurden wir etwa 3000 Mann–Aerzte, Pfleger und Kranke—frei. [...] Ich war der einzig lebende Zeuge, der über das Hygiene-Institut Bescheid wusste und so wurde ich mindestens 2–3 mal wöchentlich einem Verhör unterzogen und musste freilich einigemal, aber jetzt schon im feinen Auto nach Raisko fahren, um dort alles zu zeigen. Die verschiedenen wissenschaftlichen Kommissionen waren nur schwer davon zu überzeugen, dass dort nicht giftiges Gas und dergleichen fabriziert wurde und was man eigentlich vermutete wurde mir erst viel später klar, als ich von den Atombombenversuchen erfuhr.

The next day was uneventful, and on January 27th [1945], 4:00 in the afternoon the first Russian vanguard marched through the Auschwitz camp. Thus we approximately 3,000 men—physicians, nurses, and patients—were free. [...] I was the only living witness who knew about the Hygiene Institute information and so I was at least 2–3 times weekly interviewed and had to drive to Raisko several times, but now in the fine car, and show everything there. The various scientific commissions were difficult to convince that poison gas and the like was not produced there, and what was actually suspected was clear to me only much later, when I learned of the atomic bomb tests.

[See document photos on pp. 4464–4469.

Mansfeldt's testimony suggests that something of great scientific interest to the Soviets was produced at Auschwitz during the war, and that this was connected to multiple German atomic bomb tests that had occurred during the war. It is not clear if he means that one or more of those tests occurred near Auschwitz, as reported by Robert Jackson, Felix Kersten, and Wilhelm Wulf. Apparently his Soviet interrogators were keenly interested in an atomic bomb test that had already occurred by the time Soviet forces took control of Auschwitz in January 1945. That would put an Auschwitz-associated test in late 1944, consistent with Grothmann's testimony of a test during or around November 1944.

I.G. Farben Auschwitz was a very large and very expensive facility whose products are not well documented. The following documents provided additional evidence to support the ideas mentioned by Mansfeldt that at least part of I.G. Farben Auschwitz produced materials related to nuclear and/or chemical weapons of mass destruction.]

Prof. Dr. G. Mansfeldt
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INSTITUTUM PHYSIOLOGICUM UNIVERSITATIS
BUDAPEST, VIII., ESZTERHÁZY-UTCA 9.
TELEFON: 138-582.

Budapest, 1946. 5. Dezember

Mein lieber Herr Kollege Münch!

Eine unsagbare Freude hatte ich mit der Abschrift Ihres an Paul Reichl geschriebenen Briefes, aus dem ich erfahre, dass Sie alles glücklich überlebt haben und in absehbarer Zeit auch wieder Ihre Freiheit erlangen werden, was vielleicht inzwischen schon geschehen ist. Auf jeden Fall lege ich diesem Brief ein Zeugnis bei, dass Ihnen vielleicht nützlich sein konn. Seit einem Jahr hatte ich alle möglichen Wege versucht um von Ihnen Nachricht zu bekommen bzw. zu erfahren, ob Sie am Leben sind, aber ganz ohne Erfolg. Mein Schwiegersohn /ein Schweitzer/ war vor kurzem 3 Wochen mit dem Auto dienstlich in Deutschland, suchte in München das botanische Institut auf, um Ihren Herrn Vater zu finden, aber erhielt auch dort keine Auskunft über Sie. Nun freue ich mich aufrichtig mit Ihnen die Verbindung aufnehmen zu können und will Ihnen kurz über mein Schicksal berichten, von dem Tage an, da Sie zum letzten Mal bei meinem Krankenbett standen und die Absicht äusserten mit dem kleinen Karren mich mit dem Transport mitzuschicken. Glücklicherweise scheiterte dieser Plan, denn am Abend desselben Tages, als der grösste Teil des Krankenbaus wegmarschierte und ich um jeden Preis mitgehen wollte, verhinderten mich daran einige wohlwollende Kollegen mit der Versicherung, dass ich höchstens 5 km. mitkommen würde. So blieb ich denn in der sicheren Erwartung dort, dass wir vor dem Abmarsch der Wachmannschaft hingerichtet werden. Dies war am 18. Januar. Am 21. Januar als wir zu unserer grössten Überraschung immer noch am Leben waren, geschah etwas, das wir Häftlinge eigentlich vom ersten Tag unserer Haft ersehnten: die Wachtürme wurden leer, die SS. verschwand. Wir richteten uns bald auf Selbstständigkeit ein, wir wählten Torwache, Küchenpersonal, ich übernahm die Apotheke auf Block 28. und

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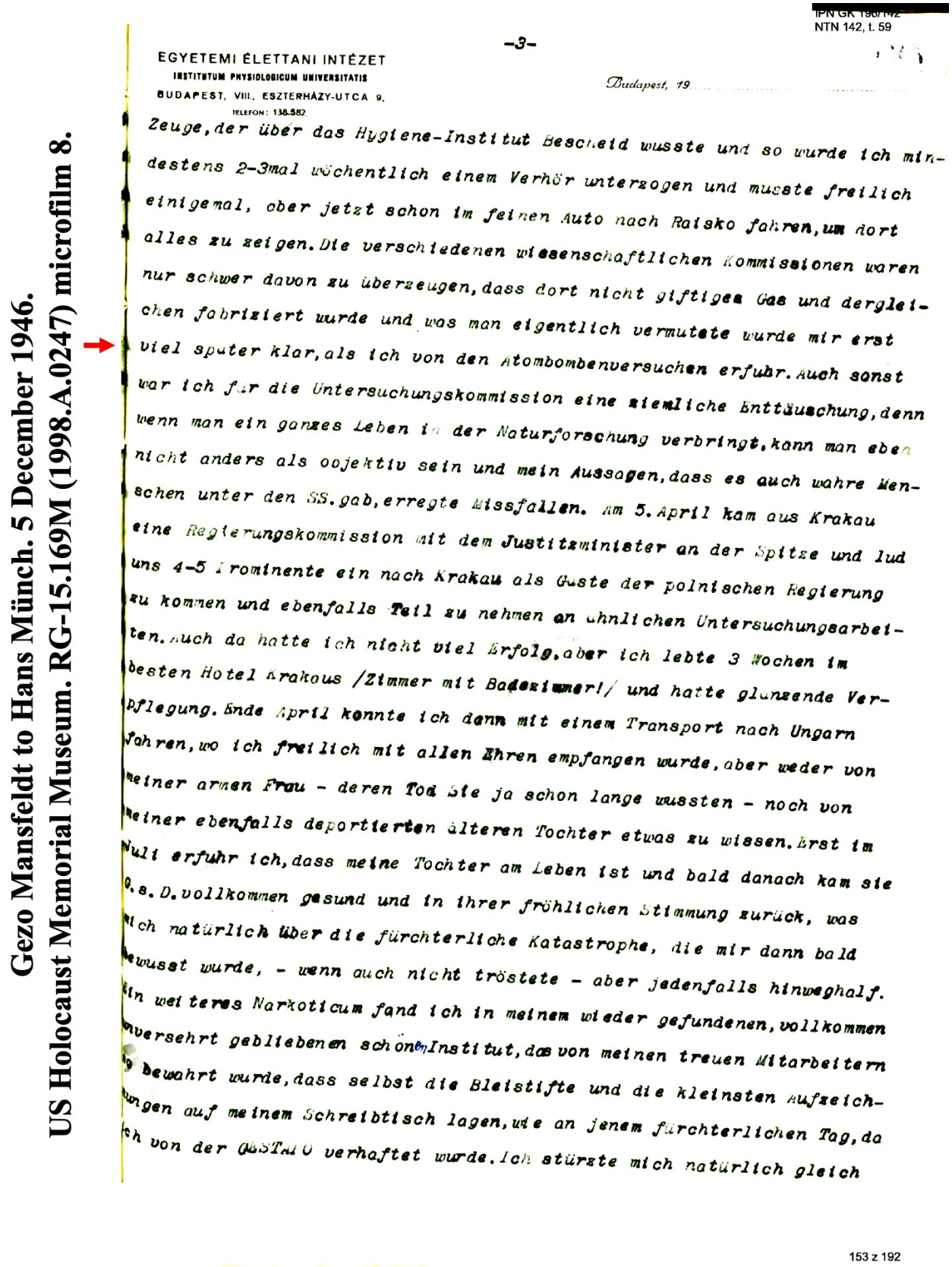
Figure D.691: Letter of Prof. Dr. Gezo Mansfeldt, Professor of Physiological Institute of the University of Budapest (former inmate of the Rajsko camp) to Dr. Hans Münch (during the war at the SS-Hygiene Institute in Rajsko). 5 December 1946 [US Holocaust Memorial Museum. RG-15.169M (1998.A.0247) microfilm reel 8].

empfanden das schon seit langer Zeit vermisste Glücksgefühl der Freiheit
Am 24.Januar geschah etwas,das nur Sie aufklären könnten. Vom Tor kam in
Laufschrift ein Häftling zu mir mit Ihrer Nachricht,ich möchte sofort
Tor kommen,Sie hätten noch einen Weg zu machen,würden aber gleich zurück
kommen,ich soll auf Sie warten. Dies tat ich natürlich sofort,sass etwa
1 1/2 Stunden in der ausgeräumten Blockführerstube vor dem Tor,bis mir
schon das Knochenmark zu frieren begann,Sie kamen aber nicht wieder und
weiss bis heutigen Tag nicht was Ihre Absicht mit mir war.Am nächsten
am 25.Januar wurde ich aus meinem Nachmittagsschlafchen aufgeweckt mit
dem Gebrüll "Alles antreten!". Erst dachte ich es sei ein Scherz,erfuhr
aber bald die bittere Wahrheit,dass ein sog. Totenkommando zurückgekommen
sei,um die zurückgebliebenen umzubringen.Wir wurden am Hof aufgestellt,
umgeben von Maschinengewehren,dann die übliche rassenmässige Sichtung,
dass selbst die grössten Optimisten auch die letzte Hoffnung auf ein
leben aufgeben mussten.So standen wir etwa eine 1/4 Stunde,als plötzlich
das Kommando hörbar wurde: "Alles zurück in die Blöcke!". Das Totenkom-
do verschwand so rasch als es kam und als Erklärung erfuhren wir nach
sten Tag,dass der russische Vormarsch die Eisenbahnlinie gefährdete,
dass ein plötzlicher Rückzug notwendig wurde,sonst hätten sie sich nicht
mehr retten können. Der nächste Tag verlief ereignislos und am 27.Januar
4 Uhr Nachmittag marschierte die erste russische Vorhut durch das Lager
Auschwitz. So wurden wir etwa 3000 Mann - Aerzte,Pfleger und Kranke -
frei. In den nächsten Tagen richteten die Russen auch in den anderen
Blöcken Krankenhäuser ein ,so dass die Kranken und Aerzte aus der Umge-
bung Birkenau usw.zu uns kamen. So lebte ich als besonders bevorzugter
/die Russen schätzen die Wissenschaft sehr hoch/ bis 5.April, denn ich
musste mit einigen Ordinarien /Prof.Limousin aus Clairemont-Ferrand,
Prof.Epstein aus Prag,sowie einigen Universitätsdozenten/ versprechen
so lange dort zu bleiben,bis die Kommission zur Untersuchung der deut-
schen Greueltaten ihre Arbeit beendet hat.Ich war der einzig lebende

Figure D.692: Letter of Prof. Dr. Gezo Mansfeldt, Professor of Physiological Institute of the University of Budapest (former inmate of the Rajsko camp) to Dr. Hans Münch (during the war at the SS-Hygiene Institute in Rajsko). 5 December 1946 [US Holocaust Memorial Museum. RG-15.169M (1998.A.0247) microfilm reel 8].



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Budapest, 19

Zeuge, der über das Hygiene-Institut Bescheid wusste und so wurde ich mindestens 2-3mal wöchentlich einem Verhör unterzogen und musste freilich einigemal, aber jetzt schon im feinen Auto nach Raisko fahren, um dort alles zu zeigen. Die verschiedenen wissenschaftlichen Kommissionen waren nur schwer davon zu überzeugen, dass dort nicht giftiges Gas und dergleichen fabriziert wurde und was man eigentlich vermutete wurde mir erst viel später klar, als ich von den Atombombenversuchen erfuhr. Auch sonst war ich für die Untersuchungskommission eine ziemliche Enttäuschung, denn wenn man ein ganzes Leben in der Naturforschung verbringt, kann man eben nicht anders als objektiv sein und mein Aussagen, dass es auch wahre Menschen unter den SS. gab, erregte Missfallen. Am 5. April kam aus Krakau eine Regierungskommission mit dem Justizminister an der Spitze und lud uns 4-5 Prominente ein nach Krakau als Gaste der polnischen Regierung zu kommen und ebenfalls Teil zu nehmen an ähnlichen Untersuchungsarbeiten. Auch da hatte ich nicht viel Erfolg, aber ich lebte 3 Wochen im besten Hotel Krakaus /Zimmer mit Badezimmer!/ und hatte glanzende Verpflegung. Ende April konnte ich dann mit einem Transport nach Ungarn fahren, wo ich freilich mit allen Ehren empfangen wurde, aber weder von meiner armen Frau - deren Tod Sie ja schon lange wussten - noch von meiner ebenfalls deportierten älteren Tochter etwas zu wissen. Erst im Juli erfuhr ich, dass meine Tochter am Leben ist und bald danach kam sie G.s.D. vollkommen gesund und in ihrer fröhlichen Stimmung zurück, was mich natürlich über die fürchterliche Katastrophe, die mir dann bald bewusst wurde, - wenn auch nicht tröstete - aber jedenfalls hinweghalf. Ein weiteres Narkoticum fand ich in meinem wieder gefundenen, vollkommen unversehrt gebliebenen schönen Institut, das von meinen treuen Mitarbeitern so bewahrt wurde, dass selbst die Bleistifte und die kleinsten Aufzeichnungen auf meinem Schreibtisch lagen, wie an jenem fürchterlichen Tag, da ich von der GESTAPO verhaftet wurde. Ich stürzte mich natürlich gleich

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Figure D.693: Letter of Prof. Dr. Gezo Mansfeldt, Professor of Physiological Institute of the University of Budapest (former inmate of the Rajsko camp) to Dr. Hans Münch (during the war at the SS-Hygiene Institute in Rajsko). 5 December 1946 [US Holocaust Memorial Museum. RG-15.169M (1998.A.0247) microfilm reel 8].

in die Arbeit, begann mit den Vorlesungen, wurde zum Dekan gewählt, dies alles nützte aber nicht sehr viel, denn die fürchterlichen Magenschmerzen, die Sie ja in Raisko mit angesehen haben und die Sie auch immer zu lindern versuchten, wurden immer schlimmer, so dass ich mich im Dezember entschloss zu einem längeren Urlaub nach Genf zu fahren, wo meine jüngere Tochter verheiratet lebt. So fuhren wir mit meiner älteren Tochter die ja seit vielen Jahren meine chemische Mitarbeiterin ist, mit einem Autokonvoy in die Schweiz, wo ich wieder ein Heim vorfand und 10 Monate dort blieb. Ich lebte dort nicht ganz untätig, denn ich hatte in Genf, Basel und Bern Vorträge zu halten und wurde sehr geehrt und zu allerlei Handbuchbeiträgen, Monographien verpflichtet und meine Monographie "Über die Hormone der Schilddrüse und ihrer Wirkungen" die in 1943. in Basel erschien, wurde von einem englischen Verlag gekauft und wird demnächst in London erscheinen. Im vergangenen September kam ich dann wieder zurück, aber ohne meiner Tochter, die auch jetzt noch am Genfer Biochemischen Institut arbeitet. Meine Rückkehr war deshalb notwendig geworden, da ich inzwischen an den Lehrstuhl der Physiologie der Universität Budapest berufen wurde und gleichzeitig wählte man mich zum Klassenpräsidenten der Ungarischen Akademie der Wissenschaften, so dass es höchste Zeit und Pflicht war wieder zum Wohl des Vaterlands etwas beizutragen. Das Wesentliche ist, dass ich von meinem Magengeschwür, das nun endlich röntgenologisch an der kleinen Kurvatur unweit von der Cardia festgestellt wurde, geheilt bin und wieder meine volle Arbeitslust und Arbeitskraft wiederfand.

Was unsere gemeinsame Arbeit betrifft muss ich Ihnen Folgendes mitteilen: Als ich zum erstenmal mit einer russischen Kommission von Auschwitz nach Raisko fuhr fand ich das Hygiene-Institut in einem fürchterlichen Zustand. Es müssen dort sehr heftige Kämpfe gewesen sein, es lagen viel Tote im Hof, vor dem Hauptgebäude ein zerschossener deutscher Tank, sämmtliche Fensterscheiben zertrümmert, an den Wänden

Figure D.694: Letter of Prof. Dr. Gezo Mansfeldt, Professor of Physiological Institute of the University of Budapest (former inmate of the Rajsko camp) to Dr. Hans Münch (during the war at the SS-Hygiene Institute in Rajsko). 5 December 1946 [US Holocaust Memorial Museum. RG-15.169M (1998.A.0247) microfilm reel 8].

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Budapest, 19...

grosse Löcher. In den Laboratorien war natürlich alles kaputt gegangen und als ich in die "Histologie" eintrat wollte ich kaum meinen Augen glauben, denn mein kleiner Schreibtisch an dem ich arbeitete blieb unversehrt und in seiner Schublade fand ich alle Protokolle und Aufzeichnungen vor und hinter dem einen Schrank die Kurven, die ich nach den Versuchsergebnissen zeichnete. Ich habe natürlich alles mitgebracht, so dass ich einen grossen Teil der Versuchsergebnisse besitze, nämlich jene, an denen ich bis 16. Dezember 44. mitarbeitete, als ich dann die Magenblutung bekam. Seitdem habe ich an dem ganzen Problem noch weitergearbeitet und bin gerade dabei die letzten Versuche fertigzustellen, die ich bezüglich der Immunitätsfrage als das Experimentum crucis ansehe. Ich habe die Absicht sämtliche diesbezüglichen Arbeiten in einer Monographie: "Neue Wege der Infektions- und Immunitätslehre" herauszubringen. Es würde mich natürlich sehr freuen, wenn ich auch jene Versuchsergebnisse bekommen könnte, die Sie in Ihrem Brief erwähnen und wäre sehr froh, wenn Sie mir Ihre Zustimmung geben würden, dass ich die Versuche, - die wir in Auschwitz zusammen ausführten - als gemeinsame Arbeit veröffentliche.

Ich versuche diesen Brief bzw. seine Abschriften auf verschiedenen Wegen Ihnen zuzuschicken und hoffe, dass wenigstens einer Sie erreichen wird. Wie ich erfahre kann man aus Deutschland nach Ungarn unmittelbar Briefe und dergleichen schicken, dagegen aus Ungarn nach Deutschland noch nicht. Ich versuche also teils über die UNRA, teils über die Schweiz Sie zu erreichen oder bitte ich jemanden diesen Brief nach Wien mitzunehmen und dort aufzugeben. Ihre Antwort, falls es noch nicht möglich wäre sie unmittelbar nach Budapest zu schicken, könnten Sie an meine Genfer Adresse senden, wo ich zu Weihnachten bis zum 10. Januar meine Ferien verbringen werde. Diese lautet:

Prof. G. Mansfeld c/o. Olivier Béguin, 28. Avenue de Champel, Genève.

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Figure D.695: Letter of Prof. Dr. Gezo Mansfeldt, Professor of Physiological Institute of the University of Budapest (former inmate of the Rajsko camp) to Dr. Hans Münch (during the war at the SS-Hygiene Institute in Rajsko). 5 December 1946 [US Holocaust Memorial Museum. RG-15.169M (1998.A.0247) microfilm reel 8].

Ich wäre sehr froh sobald als möglich zu erfahren, ob Sie bereits sich der Freiheit erfreuen und möchte Sie sehr gerne bald wiedersehen. Was ich Ihnen zu danken habe wissen Sie ja sehr gut, ich bin überzeugt davon, dass ich ohne Sie nicht am Leben geblieben wäre. Ob es sehr wichtig war weiss ich nicht, aber das ändert nichts an Ihrer guten Absicht, für die ich Ihnen immer dankbar sein werde. Oft habe ich mich gefragt, ob Ihr kleines Töchterchen den kleinen weissen Pelzmantel zu Weihnachten bekommen hat, der zwei blutenden Magengeschwüren seine Existenz verdankte. Auch an Herren und Frau Delmotte denke ich viel, sie waren beide sehr gut zu mir. Es würde mir sehr leid tun Sie nicht mehr unter den Lebenden zu wissen. Vom Chef werden Sie schon durch Reichl erfahren haben, dass er vor kurzem in Frankfurt verhaftet wurde. Ohne ihm Schlechts zu wünschen glaube ich, dass bessere Menschen zugrunde gingen. Es ist doch ein grosses Glück, dass man mit der Zeit alles Schlechte vergisst und nur das Gute als Erinnerung behält so wenn ich an die schreckliche Zeit meiner Haft denke, so denke ich immer weniger an Gaskammer und Krematorium und immer mehr an meinen lieben und verehrten Mitarbeiter Dr. Münch.

Seien Sie herzlichst gegrüsst von Ihrem stets dankbaren

1. Beilage.

G. Mansfeld

Figure D.696: Letter of Prof. Dr. Gezo Mansfeldt, Professor of Physiological Institute of the University of Budapest (former inmate of the Rajsko camp) to Dr. Hans Münch (during the war at the SS-Hygiene Institute in Rajsko). 5 December 1946 [US Holocaust Memorial Museum. RG-15.169M (1998.A.0247) microfilm reel 8].

Edmund Tilley. Brief Operational Report on [censored] and Other Germans and Italians Connected with Project Abstract. 19 August 1947. [NARA RG 319, Entry A1-134A, Box 29, Folder Operation Oberjoch]

[See p. 4902 for this document. In this 19 August 1947 intelligence report that is still heavily censored, Edmund Tilley discussed wartime nuclear weapons work at Tucheler Heide in Poland, including the production of ^{235}U and ^{239}Pu and apparently even 1–5 kg fission pits for atomic bombs. According to Tilley, one of the German scientists most directly responsible for that work, "Dr. Niels" (Walter Nielsch?), had already been taken to the United States for interrogation and/or work. For more information on Project Abstract, see Mills and Johanson 2019.]

Heinrich Himmler's physical therapist, Felix Kersten [Kersten 1947, pp. 252–253, 256–258].

When I returned to Himmler's headquarters in December [1944] I found him singularly optimistic. Once again he was prophesying a German victory! [...] Himmler saw my bewilderment and said: "Very soon we shall put our last secret weapon into use. And that will change the war situation entirely!" [...]

Early in March 1945 I paid one of my last visits to Himmler's headquarters... He was more optimistic than ever before! In his conversations with me he returned to the subject of the mysterious *secret weapon*. He made some strange assertions, and I kept a careful record of these. "Most people," he said, "think we have lost the war, and I cannot deny that apparently they have reason. But we have not yet used our last secret weapon. V-1 and V-2 bombs are effective secret weapons, but the secret weapon we still have up our sleeves will have an effect no one can even imagine. One or two shots and cities like New York or London will simply vanish from the earth! Allied aviation has destroyed many essential factories for its manufacture. That is why we are behind in our schedule. But in a month or two you will read all about it in the papers. Then you will realize that I know what I am talking about." [...]

This talk aroused my curiosity. I began giving heed to some very wild rumors–or so I had thought them–which seemed to be in line with Himmler's veiled disclosures. And when Kriminalrat Obersturmfuehrer Goering, a trustworthy man (unlike his homonym) told me something about the "secret weapon" I believed him. He said that a village had been built near Auschwitz for experimental purposes. They wanted to "try out" the new weapon. For the purpose, twenty thousand Jewish men, women, and children had been brought to live in this village. A single shell had been fired on the settlement. It had caused six thousand degrees of heat, and the whole village–houses, human beings, and animals included–was burnt to ashes.

Obviously, as I see it now in retrospect, the Germans had nearly completed their atomic bomb and were almost ready to use it on the enemy when the encirclement of Berlin was complete.

Heinrich Himmler's personal astrologer, Wilhelm Wulff [Wulff 1973, pp. 147, 160–161].

On March 10, Kersten, who had returned from Hohenlychen, came to my room and said that Himmler wished me to report to him the next day for a consultation. [...]

There were also reports of other secret weapons that were ready for mass production, all of which tended to contribute to Himmler's vacillation.

He [Himmler] went on to talk about a quite different missile, one of incredible power. Cities like New York and London, he said, could be wiped off the face of the earth with the help of this new weapon. This particular report was not entirely unfounded but meant little now that the Allies had already crossed the Rhine and the Russians had reached Küstrin, Stettin, and the Oder River and were threatening to occupy the whole of the Brandenburg region.

I had already heard about these new missiles and their enormous destructive power from Franz Göring in February, 1944. What he had told me was basically true, for work was already being done on the German atom bomb at the time.

Franz Göring also told me that the new missiles had been tested. According to him, a large town was especially built near Auschwitz concentration camp and some 20,000 Jews, mostly women and children, were sent to live in it. A single missile was then fired into the settlement. In the ensuing explosion, which developed a heat output of 6,000^o C at its center, the whole town and the entire population were burned to cinders in a flash. Stories such as this also reached Himmler's ears. Was it surprising, then, that he pinned his hopes on the effect of such weapons? Was it surprising that he hesitated to depose Hitler?

[Did Wulff mean that Franz Göring told him about the weapons test near Auschwitz in February 1944? Or did he mean that Franz Göring first told him about the new weapon in February 1944, and then at some later date told him that the weapon had been tested near Auschwitz? The second meaning would allow a much wider range of dates for when the Auschwitz test might have occurred. A successful nuclear weapons test in late 1944 seems much more probable than a successful test in early 1944.

Note that the alleged nuclear test on a village near Auschwitz does not appear to be simply a garbled account of the 27 January 1945 burning of the Fürstengrube concentration camp (30 km from Auschwitz) and several hundred of its inmates by the SS just before Soviet troops arrived. Although the date of the test to which sources refer remains vague, the sources seem to place the test as having occurred sometime prior to late January 1945.]

Heinrich Himmler's chief adjutant Werner Grothmann [Krotzky 2002]

[For testimony from Werner Grothmann apparently about the ∼November 1944 test, see p. 4436.]

Trials of War Criminals Before the Nuernberg Military Tribunals Under Control Council Law No. 10. Nuernberg October 1946–April 1949. Volume VIII. Washington, DC: U.S. Government Printing Office. 1952. [The I.G. Farben Case]
[**https://lccn.loc.gov/2011525364**]

[pp. 334–335:] TRANSLATION OF DOCUMENT NI-11783

Buna IV
Mineral Oil Construction Company Limited
Berlin SW 61, Belle-Alliance Stresse 7-10

To Direktor Ambros
I. G. Farbenindustrie A. G.
Ludwigshafen/Rhein

Our reference Si/Th/Kb
Berlin SW 61
11 January 1941

Dear Sir,

With reference to yesterday's discussion, I am enclosing excerpts from the report of the conference of 10 December 1940 concerning the site for 2 new hydrogenation plants. [...]

When inspecting the third building site (east of Auschwitz) it was noticed that there is an excellent site of about 5 square kilometers which offers still better possibilities for expansion. In addition, the water situation is very favourable because the draining works can be placed below the confluence of the Weichsel [Vistula], Przemsza, and Sola Rivers and sufficient water will be available, even with minimum outflow. Exact outflow data will be obtained from the Katowice *Water Office*.

Coal can be procured from 3 sides; to wit, the Cracow district, the central district, and the coal deposits southwest of the building site, where the new Brzeszcze and Jawiszowitz shafts of the Hermann Goering Werke are located, and from the Silesia Shaft, near Dzieditz, which is supposed to be the property of Elektroindustrie/Berlin. The distance from the central and Cracow districts is about 25 kilometers by rail, and from the southwestern district about 9-10 kilometers by rail. It would be preferable to get supplies from the southwestern district because a private works railroad could be built for that purpose. [...]

Since it may be expected that the greater part of the inhabitants will be evacuated when construction begins, in view of the population policy, there would be suitable quarters available to accommodate building workers and later on factory staff.

In addition, the site is very favorably located from the point of view of possible air pollution, so that, taking everything into account, it can be said that this building site would in every respect satisfy the requirements.

[pp. 535–537:] TRANSLATION OF DOCUMENT NI-14291

The Reichfuehrer SS and Chief of the German Police SS Economic and Administrative Main Office
Group D-Concentration Camps

Ref. No. D II/114/16 So. Hue.
Oranienburg near Berlin, 31 July 1943
Enclosure to letter, Dy [Dyhernfurth] dated 27 August 1943
Re: Use of Inmates

To firm, Max Haaf, Certified Engineer,
Local Construction Management
Attention: Regierungsbaumeister Wuerz
Falkenhagen via Fuerstenwalde/Spree

As a consequence of the conference between the SS Lt. General and General of the Waffen SS Pohl and Dr. Ambros, the site in Falkenhagen near Fuerstenwalde was inspected by Dr. Schaefer, Certified Engineer Weirich, and Regierungsbaumeister Wuerz together with SS 1st Lt. Grimm on 20 July 1943. [...]

Chief of Office D II
[Signed] BAUER
SS Lt. Colonel

Reichsfuehrer SS and Chief of German Police,
D ill SS Economic and Administrative Main Office
Copies to: Dr. Schaefer, I. G. Farbenindustrie, Berlin, with request for transmittal to your office Breslau No. 56551.

[p. 1243:] *Ambros* was manager of the following plants: Schkopau (buna I), 1935–45; Ludwigshafen-Oppau (organic, intermediates and dyestuffs plants and laboratories), 1938–45; Huels (buna II), 1938–45; Ludwigshafen (buna III), 1941–45; Auschwitz (buna IV), 1941–45; Gendorf (inorganic), 1941–45; Dyhernfurt, 1941–45; Falkenhagen, 1942–45; which produced synthetic rubber, inorganics and nitrogen, organic intermediates, solvents, plasticisers, methanol, plastics, accelerators, dyestuffs, dyeing and printing auxiliaries, detergent raw materials, poisonous gas and intermediates. [...]

Kuehne was plant leader of Leverkusen, 1933–43, which produced inorganics, organic intermediates, buna, plastics, pharmaceuticals, insecticides, acetylcellulose, synthetic fibres.

[p. 1361:] AMBROS, OTTO (def.)—Professor of chemistry; member of Vorstand, Technical Committee, and Chemicals Committee of I. G. Farben, 1938–45; chairman of three Farben committees in the chemical field; plant leader of eight of the most important Farben plants, including Buna-Auschwitz; member of control bodies in several Farben enterprises, including Francolor; member of Nazi Party and German Labor Front; Military Economy Leader; chief of Special Committee "C" (Chemical Warfare) of the Main Committee Powder and Explosives, Reich Ministry of Armaments and War Production; chief of a number of units in the Economic Group Chemical Industry.

[pp. 1363–1364:] FAUST, MAX—Engineer; entered employment of Badische Anilin und Sodafabrik as construction engineer in 1922; until 1929, plant engineer at the Oppau plant of Farben; construction engineer at Ludwigshafen plant, 1929–36; in charge of construction of Farben's Rattwitz and Dyhernfurth plants, 1940–41; Farben Prokurist, 1941–45; construction chief of Auschwitz plant, 1941–45.

[For additional details, including the long series of I.G. Farben's payments for the Auschwitz facility, see Final Brief of the Prosecution Part IV. 1 June 1948. Especially pp. 54–56. [http://www.profit-over-life.org/rolls.php?roll=95]

The requirements for the I.G. Farben Auschwitz facility seem greatly excessive for a routine buna plant, but highly consistent with a facility that was intended (at least in part) to produce materials for a nuclear and/or chemical weapons program:

- Immediate proximity to not just one but three rivers.
- Proximity to a number of different coal deposits, to provide very large amounts of electricity.
- Proximity to not just one but several rail lines, with more to be built.
- The inhabitants of the region were removed.
- The site was quite remote to alleviate concerns about possible "pollution."
- Work at the facility was directly managed by Otto Ambros, a brilliant chemist who was one of the key figures in the highly secretive and very advanced German chemical weapons program, and who had conducted revolutionary research in other areas as well. Such expertise would not be required to manufacture buna, a routine process in Germany by the 1940s.
- The facility was built and operated by Max Faust and a large number of other people who had been involved in building and operating chemical weapons development facilities such as Dyhernfurt (tabun and sarin production), Falkenhagen (sarin production), and Gendorf (mustard gas production). Those other facilities featured extremely high levels of military security, chemical confinement, and technological sophistication. They were also given benign-sounding descriptions (production of detergents, insecticides, etc.) in wartime German documents and even in postwar Allied documents. Were these same things also true for the Auschwitz facility?]

Joseph Borkin. 1978. *The Crime and Punishment of I. G. Farben: The Unholy Alliance Between Hitler and the Great Chemical Combine.* New York: Free Press. pp. 3, 116, 127.

Drawn by the almost limitless reservoir of death camp labor, I.G. chose to build a great industrial complex at Auschwitz for the production of synthetic rubber and oil. So enormous was this installation that it used as much electricity as did the entire city of Berlin. More than 25,000 camp inmates paid with their lives to construct it. [...]

Rather than let the German government finance the building of the installations, the I.G. directors voted to put up the funds to make I.G. Auschwitz a privately owned I.G. enterprise and to assume the entire risk. With almost no opposition, they committed more than 900 million Reichsmarks, over $250 million, to the building of the single largest project in the I.G. system. With such an enormous risk, officials of I.G. carefully watched over their huge investment. [...]

From the bare records available, 300,000 [30,000?] concentration camp workers passed through I.G. Auschwitz of whom at least 25,000 were worked to death. The plants when completed were so enormous that they used more electricity than the entire city of Berlin. But in the final tally, I.G. Auschwitz was a miserable failure. Despite the investment of almost 900 million Reichsmarks and thousands of lives, only a modest stream of fuel and not a single pound of Buna rubber was ever produced.

[Borkin was in charge of investigating and prosecuting I.G. Farben on behalf of the United States after the war, so his statements should be considered authoritative.]

Peter Hayes. 1996. The European Strategies of IG Farben, 1925–45. In: Volker R. Berghahn, ed. 1996. *Quest for Economic Empire: European Strategies of German Big Business in the Twentieth Century.* Providence, Rhode Island: Berghahn Books. p. 63.

IG took some 30,000 camp prisoners between 1941 and 1944, 90 percent of whom died there or in the gas chambers when they could no longer work, yet only one installation was ever completed. No buna had been produced on the site by the time IG's managers evacuated it in January 1945.

Peter Hayes. 2001. *Industry and Ideology: I.G. Farben in the Nazi Era.* 2nd ed. Cambridge, UK: Cambridge University Press. pp. 367–368.

Throughout 1944, then, the Auschwitz project continued on its gruesome course, more impeded by continuing labor shortages than by the Allied air strikes that hit the plants on August 20, September 13, and December 18 and 26. No rubber had flowed by the time the SS ordered evacuation of the site on January 19, 1945. While some nine thousand inmates of Monowitz marched west toward Gleiwitz, were the war had begun, IG's employees began dismantling or destroying the factories. Eight hundred and fifty ill inmates remained behind to receive the Russians. Two hundred died in the week before the arrival of the Red Army, but the survivors escaped at least the final horror visited on the sick at Fürstengrube, who were burned in their huts. Having descended to the very depths of complicity with Nazism, IG Farben came away from Auschwitz still showing a net loss on its books for the development of buna.

Diarmuid Jeffreys. 2008. *Hell's Cartel: IG Farben and the Making of Hitler's War Machine.* New York: Bloomsbury. pp. 290–291.

The IG, meanwhile, had pulled its people home. The last of them left Auschwitz in the second week of January 1945 on two special trains reserved for the town's remaining civilian male Reich Germans (German women and children had been evacuated in October 1944). In the days before their departure, Walter Dürrfeld and Max Faust had toured the Buna-Werke, supervising the dismantling of key equipment and the destruction of documents that hadn't been sent back to Frankfurt and Berlin. Despite their efforts (and a last brief Allied raid after their departure on 19 January), most of the factory's infrastructure remained intact. But it mattered not; IG Auschwitz had been an almost total failure. Around 150,000 people (Reich Germans, foreign labourers, POWs and Auschwitz prisoners) had been engaged at different times on the plant's construction, at a cost of over 900 million reichsmarks and—estimated conservatively—some 35,000 human lives. This number rises to over 40,000 if the death toll at the IG's Fürstengrube and Janina mines is taken into account. Some Nuremberg prosecutors put the figures much higher, concluding that some 200,000 people had died while working for IG Auschwitz, either on-site or as a consequence of being dispatched from the IG's employ to the gas chambers at Birkenau—but this was almost certainly an overestimate based on the incomplete information available at the time. Whichever figure is correct, one thing is clear: although some explosive-grade methanol was produced, not a single pound of buna or one litre of synthetic gasoline ever emerged from the Buna-Werke's gates. After nearly four years of intense activity, all that IG Farben really had to show for its efforts was a reputation stained forever with the blood of those murdered in the Holocaust. Now, as the Red Army drew near, the huge Buna-Werke stood silent and waiting, a bomb-scarred monument to the ambition, greed and folly of a once mighty company.

[Carter Hydrick was apparently the first person to propose that the characteristics of the I.G. Farben Auschwitz facility were highly inconsistent with those of a synthetic rubber (buna) plant, but highly consistent with those of a nuclear production facility [Hydrick 1998, 2016]:

- The facility never produced any buna (or gasoline).
- Construction of the facility began in January 1941, and the facility operated until January 1945. Comparable plants were built and manufacturing final products within a matter of months [e.g., Hydrick 2016, pp. 76–77].
- The facility cost over 900 million Reichsmarks, or over 250 million wartime U.S. dollars. That appears to be over 25 times the cost of other typical buna plants [Hydrick 2016, p. 74]. For contemporary comparisons, the construction of the massive and highly advanced Peenemünde rocket facility cost approximately 300 million Reichsmarks [Neufeld 1995, p. 273], and the construction of the U.S. Oak Ridge electromagnetic uranium enrichment facility cost 304 million U.S. dollars [Groves 1962, p. 97].
- The facility consumed more electricity than the city of Berlin (which at the time was the eighth largest city in the world), vastly more than would be required for a buna plant [Hydrick 2016, p. 73]. However, the electricity consumption is consistent with uranium enrichment methods such as electromagnetic separation and gaseous diffusion, which are very energy-intensive.
- The facility employed around 150,000 people at various points during its four-year history. While that is far more than would be expected for a buna plant, it is consistent with a nuclear production facility. Even Oak Ridge only employed around 22,000 people at its wartime peak.

The Auschwitz facility was also producing heavy water; see p. 4463. Heavy water is not required for uranium-235 enrichment, but would be very helpful to operate a fission reactor and produce plutonium-239 (or uranium-233). On the other hand, production of plutonium-239 would not require enormous amounts of electricity. Could the Auschwitz facility have contained both a uranium-235 enrichment program and a plutonium-239 production program? Both programs would have required significant quantities of uranium as an input material. Furthermore, a uranium-235 enrichment program could have provided enriched uranium to accelerate a plutonium-239 production program.

Whereas the United States showed little interest in Manfred von Ardenne and Gustav Hertz and merely stated that they had played insignificant roles in the German nuclear program, as soon as the war ended, the Soviet Union immediately sought out both von Ardenne and Hertz and made them very lavish offers (by Soviet standards). Was that because Soviet forces sweeping through formerly German-held areas such as Auschwitz discovered technologies or documents that demonstrated that von Ardenne (an expert on electromagnetic separation) and/or Hertz (an expert on gaseous diffusion) had designed nuclear-related production plants that were in operation at Auschwitz or elsewhere in the east?

As shown in the document on pp. 4472–4473, Otto Ambros was the scientific manager of the I.G. Farben Auschwitz facility for its entire history. He is documented to have been deeply involved in the German chemical weapons program, and quite likely he was equally involved in the nuclear weapons program. After the war, Ambros was variously interrogated, imprisoned, and employed by the United States. Where are the transcripts of his interrogations and scientific reports to the United States? Did he reveal the scientific details about nuclear-related or other work at Auschwitz?]

D.12 Possible March 1945 Test Explosion in Thuringia

[There may have been a test explosion in Thuringia in March 1945, as reported by multiple sources:

- A 15 November 1944 letter from General Ivan Ilyichev, chief of intelligence for the Soviet army, to Joseph Stalin reported that the Germans in Thuringia were preparing under hurried but very high security conditions to test a new "bomb of unusual construction" with a "large destructive power" that might be an atomic bomb (p. 4481).

- A 23 March 1945 letter from General Ilyichev to Joseph Stalin reported that the Germans in Thuringia had recently conducted two very high-security test explosions of a new bomb design, described in considerable detail as a 2-ton, 1.3-meter-diameter spherical implosion device with multiple concentric layers and a uranium-235 core that created a "massive radioactive effect," incinerated or burned nearby prisoners of war (POWs), and destroyed buildings and trees within a radius of 500–600 meters (p. 4485).

- In a 30 March 1945 letter from Igor Kurchatov to General Ilyichev, Kurchatov analyzed the details reported in the 23 March 1945 letter, said it gave a "very believable description of the construction of the bomb," and requested further information (p. 4496).

- 21 and 29 May 1945 letters from Georgy Flerov to Igor Kurchatov reported that Flerov was currently in Dresden and en route to study the alleged German atomic test site using Geiger counters, and requested that former POWs returning from Germany to the Soviet Union should be interviewed to learn if any of them knew anything about the test (p. 4503).

- An October 1945 report from Soviet Marshal Georgy Zhukov to Stalin stated: "Based on the collected materials, it can be concluded that the German scientists in the field of theoretical and practical research and application of atomic energy have achieved good results up to the creation of the atomic bomb" (p. 4523).

- A 1946 Russian interrogation summary reported that Robert Döpel stated that there was an atomic bomb test on a German military base before the end of the war (p. 4530).

- It seems there is or at least was considerably more information about the apparent German nuclear tests in Russian government archives, including even a captured German film entitled "Film of the Launch of a V-2 and the Explosion of an Atomic Bomb" (p. 4533). At a bare minimum, there are presumably documents identifying the Soviet spy who provided the information given in Ilyichev's two reports, documents reporting the suspected test site location to Flerov (which he seemed to know, but which was not in Ilyichev's two reports), documents reporting what (if anything) Flerov ultimately found, and documents describing the "collected materials" to which Zhukov referred.

- 21 March 1945 and 9 June 1945 U.S. aerial reconnaissance photos of the Ohrdruf military base appeared to show a large circular area of possible blast damage, as well as surrounding buildings that may have been affected by blast and/or radioactive fallout, whereas a 12 August 1944 aerial reconnaissance photo did not show those features (pp. 4541–4545).

- In what appears to be a transcript of her testimony before an East German government inquiry on 16 May 1962, Cläre Werner, a wartime lookout at the Veste Wachsenburg castle near the Ohrdruf Truppenübungsplatz military base, reported watching a large nearby test explosion on 4 March and another one on 12 March 1945, as well as being informed of the historic nature of the explosions by visiting military and SS officials. She reported that she and other local residents suffered from symptoms that sound like radiation sickness. Although there are unresolved questions about the nature and the chain of custody of the 1962 transcript, Cläre Werner confirmed the key points of her testimony in several interviews conducted between 1998 and 2003 (p. 4551).

- In a transcript of his apparent testimony before the same East German government inquiry on 16 May 1962, Heinz Wachsmut reported being conscripted into a unique work assignment for the afternoon and evening of 5 March 1945 in Thuringia. He reported encountering large numbers of living, dying, and dead people suffering from what sounds like radiation sickness and burns in the aftermath of what the SS told him was a history-making test explosion. Under the close supervision of the SS, he was instructed to wear protective gear, and he burned approximately 450 bodies on woodpiles and saw a total of approximately 700 bodies being burned. (It is not clear if all of those were victims of the test explosion, or if some were victims of the daily harsh treatment of POWs.) Afterward his protective gear and clothing were burned, he was instructed to wash himself thoroughly, and he was unable to eat for days afterward possibly due to radiation sickness. While there are again unresolved questions about the 1962 transcript, the family of Heinz Wachsmut confirmed that he had described the same events and details to them (p. 4557).

- In transcripts of his testimony before East German government inquiries in 1966, Erich Rundnagel, a plumber who had worked for Kurt Diebner's nuclear research group in Thuringia during the war, reported that the scientists had told him they had two eight-kilogram atomic bombs (most likely fission pits for atomic bombs) in their safe (p. 4564).

- Colonel Oscar Koch, who was a high-ranking intelligence officer working with General George Patton, stated that a German prisoner of war described the massive explosion of a new bomb type in Thuringia in March 1945 (p. 4566).

- Werner Grothmann stated in 2000–2002 interviews that there was an atomic bomb test in Thuringia on 4 March 1945 (p. 4436).

Some of the major sources and details are summarized in Table D.6.]

Details	Primary sources for March 1945 test								
	Ilyichev 11/1944	**Ilyichev 3/1945**	**Kurchatov 3/1945**	**Flerov 5/1945**	**Döpel 1946**	**Werner 1962**	**Wachsmut 1962**	**Rundnagel 1966**	**Koch 1960s**	**Grothmann 2000-2002**
Test date	Preparations at fastest pace	Two in ~March 1945	~March 1945	Recent months	Prior to end of war	Evenings of 4 & 12 March 1945	4 March 1945	Work from 1944 to end of war	Early March 1945	4 March 1945
Test location	Thuringia Wooded area Very remote	Thuringia Wooded area Very remote	Remote area (implied)	Wooded area Very remote	Truppen-übungs-platz military base	Behind Röhrensee from Wachsenburg	Near Ringhofen estate	Thuringia near Diebner lab, possibly other installations	Thuringia Wooded area Near research installation	Thuringia near Ohrdruf base, SS lab, Diebner lab, bomb production
People who were involved	SS	SS			SS (implied) scientists (implied)	SS, Post Office, Research Council	SS, Kammler, Post Office, Research Council, special doctors	Diebner's scientists, SS (implied)	SS (implied), scientists (implied)	SS, Himmler, Kammler, Gerlach, Post Office, Diebner, Flügge, special doctors
Blast	Large destructive power	High temp., large blast, buildings/trees in 500-600 m radius	Several hundred meter radius		Atomic bomb test	Bright flash and strong wind from kilometers away	Stinging flame to edge of forest		Far larger than normal bomb, destroyed test site, knocked down trees	Deployed: ≥ 3 kt Tested: ≥ 0.13 kt but << 3 kt, larger than expected
Radio-activity	Probably atomic	Massive radioactive effect	Probably atomic	Test for residual radioactivity	Atomic bomb test	Radiation sickness in surrounding towns	Protective gear, decon., radiation sickness			On-site production Horrible test effects Doctors had to help surrounding areas
Casu-alties	Rapid SS construction → many POWs likely present	Many POWs vaporized, killed, and burned		POWs present		Many bodies to be collected	~450-700 POWs killed or burned; more than expected		People in the area would have been killed	Many workers at test site killed, doctors had to help surrounding areas
Device design	Probably atomic, 1.5 m diameter, several nested hollow spheres	1.3 m dia. 2 tons Al case U-235 fuel Ignition by neutrons Detailed implosion design Designed for rocket Used LOX to reduce weight	Spherical U-235 fuel Ignition by neutrons Implosion design Designed for rocket Used LOX to reduce weight	Probably atomic bomb	Uranium bomb	Something new that will make world history	Something new of which the whole world will speak	Atomic bomb capable of killing >100,000 people. At least two bombs. 8 kg fuel each, small enough to store in safe.	New and unusual weapon	> 1 m dia. sphere Very heavy Aluminum case A little U for test More U-235 for deployment Ignition by special system Designed for rocket Integrated design to minimize weight Tested on a stand

Table D.6: Details about possible March 1945 test explosion(s) from primary sources. The provenance of the 1962 Werner and Wachsmut sources is unknown and open to question (p. 4551).

[The following wartime Russian intelligence reports on the German nuclear program are part of a large archive, of which some selected documents were published in Riabev 2002a. These intelligence reports were first analyzed in Karlsch 2005 and Karlsch and Petermann 2007. See also Uhl 2024.]

General Ivan Ilyichev. 15 November 1944. Intelligence report to General Antonov and Joseph Stalin. Archive of the President of the Russian Federation, Fund 93, Division 81 (45), List 37. [See document photos on pp. 4482–4483.]

Peoples' Commissariat of Defense of the USSR
Chief Intelligence Department of the Red Army
15 November 1944
Moscow

To the Head of the Red Army General HQ
General of the Army, Comrade Antonov

Report:

Our trustworthy source in Germany reports:

"The Germans are preparing to conduct tests of a new secret weapon, which has a large destructive power. The test explosion of a bomb of unusual construction is being prepared under highest secrecy in Thuringia. For the preparations of the tests the local residents are supposed to be transported away by an SS detail; the whole operation is reported to be undertaken in strictest secrecy.

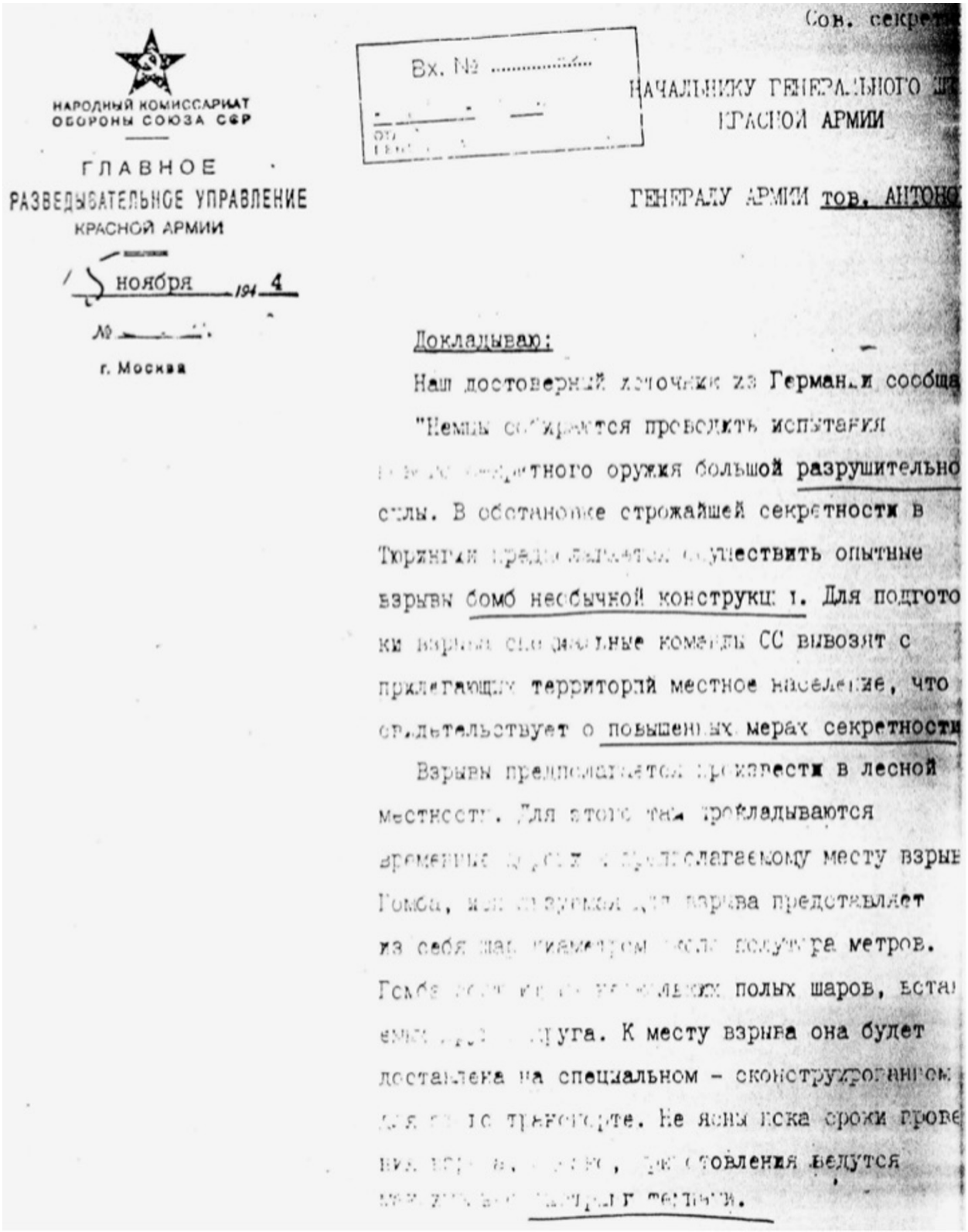
The explosions are supposed to take place in a wooded area. For that, special roads to the presumptive test site are being created. The bomb to be tested has a diameter of one and a half meters. It consists of several hollow spheres that nest inside each other. It will be brought to the explosion place with a transporter specially constructed for it. It is still unclear when the test is supposed to take place, but the preparations are going at the maximum fastest pace.

CONCLUSION.

In the last months our source has reported more and more often about the feverish efforts of the Germans to test ever more powerful weapons and their means of delivery. Probably these experiments lead directly to an attempt of the Germans to actually carry out tests of atom bombs, about whose existence we have only incomplete, scanty information."

Head of Chief Intelligence Department
of the Red Army
Lieutenant General Ilyichev

Typed 4 copies
Copy Nr. 1 — Comrade Stalin
" Nr. 2 — Comrade Molotov
" Nr. 3 — Comrade Antonov
" Nr. 4 — into archive
8 pp.



Сов. секрет

НАРОДНЫЙ КОМИССАРИАТ
ОБОРОНЫ СОЮЗА ССР

ГЛАВНОЕ
РАЗВЕДЫВАТЕЛЬНОЕ УПРАВЛЕНИЕ
КРАСНОЙ АРМИИ

5 ноября 1944

№

г. Москва

Вх. № .....

НАЧАЛЬНИКУ ГЕНЕРАЛЬНОГО
КРАСНОЙ АРМИИ

ГЕНЕРАЛУ АРМИИ тов. АНТОНО

Докладываю:

Наш достоверный источник из Германии сообща

"Немцы собираются проводить испытания

секретного оружия большой разрушительно

силы. В обстановке строжайшей секретности в

Тюрингии предполагается осуществить опытные

взрывы бомб необычной конструкции. Для подгото

ки взрыва специальные команды СС вывозят с

прилегающих территорий местное население, что

свидетельствует о повышенных мерах секретности

Взрывы предполагается произвести в лесной

местности. Для этого там прокладываются

временные дороги к предполагаемому месту взры

бомбы, а площадка для взрыва представляет

из себя шар диаметром около полутора метров.

Бомба состоит из двух металлических полых шаров, вста

ем друга. К месту взрыва она будет

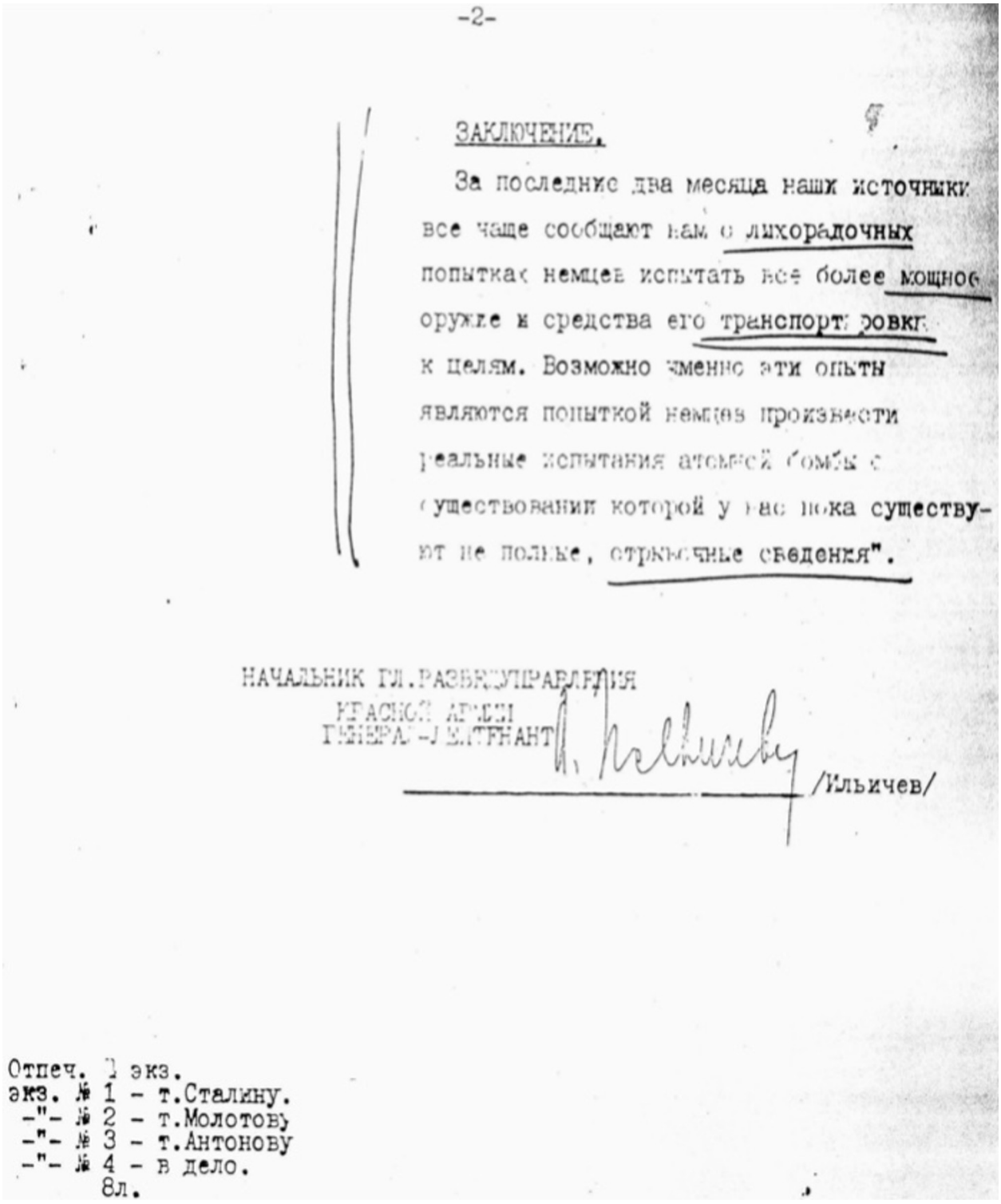
доставлена на специальном - сконструированном

для этого транспорте. Не ясны пока сроки прове

взрыва, однако, приготовления ведутся

усиленными темпами.

Figure D.697: General Ivan Ilyichev. 15 November 1944. Intelligence report to General Antonov and Joseph Stalin, p. 1 [Archive of the President of the Russian Federation, Fund 93, Division 81 (45), List 37, courtesy of Rainer Karlsch].



-2-

ЗАКЛЮЧЕНИЕ.

За последние два месяца наши источники все чаще сообщают нам о лихорадочных попытках немцев испытать все более мощное оружие и средства его транспортировки к целям. Возможно именно эти опыты являются попыткой немцев произвести реальные испытания атомной бомбы, о существовании которой у нас пока существуют не полные, отрывочные сведения".

НАЧАЛЬНИК ГЛ.РАЗВЕДУПРАВЛЕНИЯ
КРАСНОЙ АРМИИ
ГЕНЕРАЛ-ЛЕЙТЕНАНТ /Ильичев/

Отпеч. 1 экз.
экз. № 1 - т.Сталину.
-"- № 2 - т.Молотову
-"- № 3 - т.Антонову
-"- № 4 - в дело.
8л.

Figure D.698: General Ivan Ilyichev. 15 November 1944. Intelligence report to General Antonov and Joseph Stalin, p. 2 [Archive of the President of the Russian Federation, Fund 93, Division 81 (45), List 37, courtesy of Rainer Karlsch].

Figure D.699: Hanomag ST100W tractor pulling a specially designed trailer with a liquid oxygen tank for fueling up A-4 (V-2) rockets [Deutsches Museum Archive, photo CD74787]. Could similar vehicles have been used for the test described by General Ivan Ilyichev? See p. 4485: "The bomb, supposedly filled with uranium 235 and weighing approximately two tons, was brought to the test site on a specially constructed truck. Dewars of liquid oxygen were delivered together with it."

General Ivan Ilyichev. 23 March 1945. Intelligence report to General Antonov and Joseph Stalin. Archive of the President of the Russian Federation, Fund 93, Division 81 (45), List 37. [See document photos on pp. 4488–4491.]

Peoples' Commissariat of Defense of the USSR
Chief Intelligence Department of the Red Army
[2]3 March 1945
Moscow

To the Head of the Red Army General HQ
General of the Army, Comrade Antonov

Report:

Our trustworthy source from Germany reports:

"The Germans have in recent times carried out two large-capacity bomb explosions in Thuringia. The explosions took place in a forest area, under conditions of strictest secrecy. Trees fell at a distance of 500–600 meters from the center of the explosion. Buildings and fortifications specially constructed for the tests have been destroyed.

Prisoners of war who were near the epicenter of the explosion died, often without leaving a trace. Prisoners of war who were in the area beyond the center of the explosion have burns on their face and body, the strength of which depends on their position in relation to the epicenter of the explosion. The tests were carried out in a remote deserted area. The regime of secrecy at the test site was at maximum level. Entrance and exit from the territory are by special pass only. SS soldiers have surrounded the area of tests and interrogated any person approaching the area.

The bomb, supposedly filled with uranium 235 and weighing approximately two tons, was brought to the test site on a specially constructed truck. Dewars of liquid oxygen were delivered together with it. The bomb was permanently guarded by 20 guards with dogs. The bomb explosion was accompanied by a large explosive wave and high temperature. In addition, a massive radioactive effect was observed. The bomb is a sphere with a diameter of 130 cm.

The bomb consists of:

1. High-voltage discharge tube, which is charged by special generators
2. A sphere made of metal uranium 235
3. A delay mechanism
4. Protective casing
5. Explosive substance
6. Detonating mechanism
7. Steel casing

All parts of the bomb fit inside each other.

Initiator or bomb fuse.

Consists of a special tube, which creates fast neutrons. It is charged by special generators, which create high voltage inside the tube. As a result, fast neutrons attack active material.

Active bomb material.

Active bomb material is uranium 235. It represents a sphere with an opening into which an initiator is inserted. Once this is done, the opening is sealed by a cork made of uranium 235.

Protective casing.

The uranium sphere is encased in a protective aluminum casing, which is covered by a layer of cadmium. This significantly impedes thermal neutrons emanating from uranium 235, which can cause premature detonation.

Explosive matter.

After the layer of cadmium it is placed inside explosives that consist of porous TNT saturated with liquid oxygen; TNT is made up of bars of a specially chosen shape. The inner surface of the bars has a spherical curvature, which is the same as that of the external surface of the cadmium layer. Each of the bars is supplied with one detonator or two electrical fuses.

Casing.

TNT is covered by a protective layer made of a light aluminum alloy. A blasting mechanism is attached on top of this casing.

Exterior casing.

An exterior casing of armored steel is installed above the blasting mechanism.

Fairing.

A fairing made of a light alloy can be installed on top of the armored casing for future installation on a rocket of the V-type.

Bomb assembly.

The sphere, which consists of metal uranium, is placed inside a protective casing, which consists of aluminum, covered in a layer of cadmium, so that the opening in the sphere coinciding with the opening is sealed off by a uranium cork. After this the aluminum sphere, covered in cadmium, is sealed off by a cork, on top of which the last bar of TNT is placed. Next, liquid oxygen is pumped through the opening inside a protective casing, which covers the TNT. After this the bomb is ready for deployment.

Bomb ignition.

The bomb ignition is carried out with the help of a high-voltage discharge tube. It forms a flow of neutrons, which attack the active material. When the flow of neutrons impacts upon uranium, element 93 fissions, which speeds up the creation of a chain reaction. Next, the detonating mechanism detonates the explosive matter, after which a shock from the explosion of the external layer of TNT mixed with liquid oxygen takes place, which is directed toward the center. This allows the uranium to reach a critical mass.

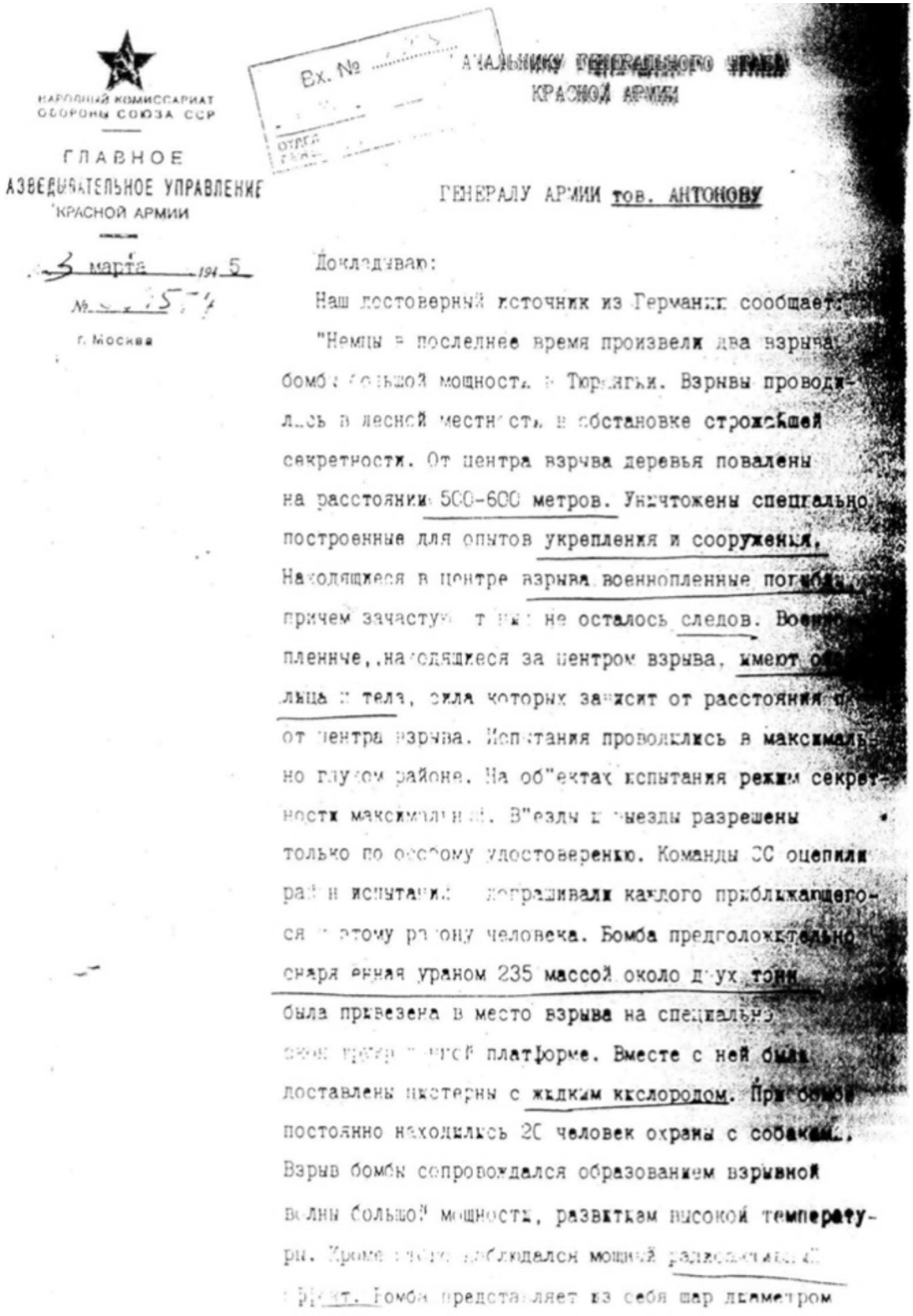
Ahead of this, before the explosion, the uranium sphere is irradiated with gamma-rays, the energy of which does not exceed 6 million electron volts, which many times increases its explosive qualities.

CONCLUSION.

Without doubt, the Germans are carrying out tests of a bomb of high destructive force. In the event of their successful conclusion and production of such bombs in sufficient quantities, they will have weapons capable of slowing down our advance.

Head of Chief Intelligence Department
of the Red Army
Lieutenant General Ilyichev

Typed 4 copies
Copy Nr. 1 — Comrade Stalin
" Nr. 2 — Comrade Molotov
" Nr. 3 — Comrade Antonov
" Nr. 4 — into archive
16 pp.



НАРОДНЫЙ КОМИССАРИАТ ОБОРОНЫ СОЮЗА ССР

ГЛАВНОЕ РАЗВЕДЫВАТЕЛЬНОЕ УПРАВЛЕНИЕ КРАСНОЙ АРМИИ

3 марта 1945

№ 357

г. Москва

Вх. №

НАЧАЛЬНИКУ ГЕНЕРАЛЬНОГО ШТАБА КРАСНОЙ АРМИИ

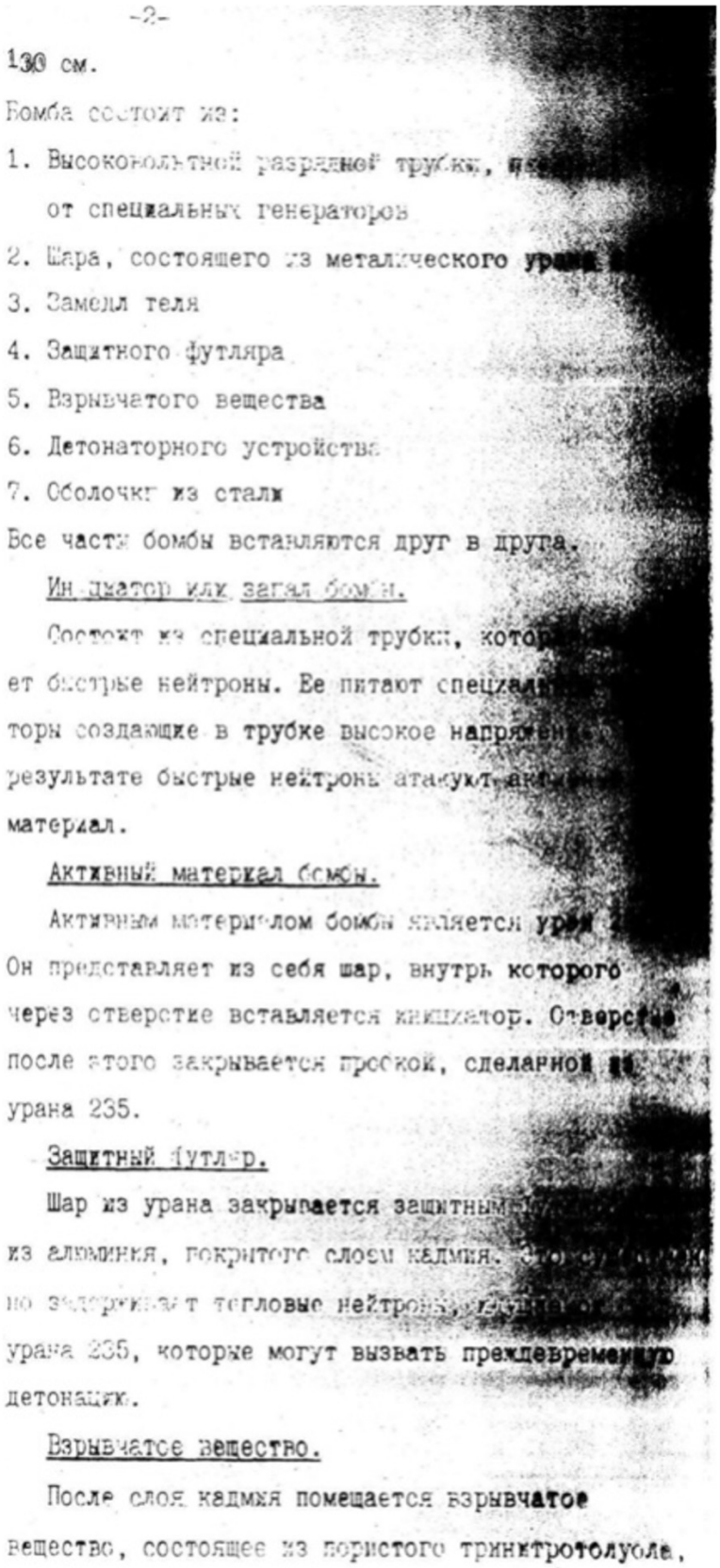
ГЕНЕРАЛУ АРМИИ тов. АНТОНОВУ

Докладываю:

Наш достоверный источник из Германии сообщает:

"Немцы в последнее время произвели два взрыва бомб большой мощности в Тюрингии. Взрывы проводились в лесной местности в обстановке строжайшей секретности. От центра взрыва деревья повалены на расстоянии 500-600 метров. Уничтожены специально построенные для опытов укрепления и сооружения. Находящиеся в центре взрыва военнопленные погибли, причем зачастую от них не осталось следов. Военнопленные, находящиеся за центром взрыва, имеют ожоги лица и тела, сила которых зависит от расстояния от центра взрыва. Испытания проводились в максимально глухом районе. На объектах испытания режим секретности максимальный. Въезд и въезды разрешены только по особому удостоверению. Команды СС оцепили район испытания, проверяли каждого приближающегося к этому району человека. Бомба предположительно снаряженная ураном 235 массой около двух тонн была привезена в место взрыва на специальной сверхтяжелой платформе. Вместе с ней были доставлены цистерны с жидким кислородом. При бомбе постоянно находилось 20 человек охраны с собаками. Взрыв бомбы сопровождался образованием взрывной волны большой мощности, развитием высокой температуры. Кроме этого наблюдался мощный радиоактивный эффект. Бомба представляет из себя шар диаметром

Figure D.700: General Ivan Ilyichev. 23 March 1945. Intelligence report to General Antonov and Joseph Stalin, p. 1 [Archive of the President of the Russian Federation, Fund 93, Division 81 (45), List 37, courtesy of Rainer Karlsch].



-2-

130 см.

Бомба состоит из:

1. Высоковольтной разрядной трубки, [illegible]
   от специальных генераторов
2. Шара, состоящего из металлического урана
3. Замедл теля
4. Защитного футляра
5. Взрывчатого вещества
6. Детонаторного устройства
7. Оболочки из стали

Все части бомбы вставляются друг в друга.

Ин дыатор или запал бомбы.

Состоит из специальной трубки, котор[illegible]
ет быстрые нейтроны. Ее питают специал[illegible]
торы создающие в трубке высокое напряжен[illegible]
результате быстрые нейтроны атакуют акти[illegible]
материал.

Активный материал бомбы.

Активным материалом бомбы является ура[illegible]
Он представляет из себя шар, внутрь которого
через отверстие вставляется инициатор. Отверстие
после этого закрывается пробкой, сделанной из
урана 235.

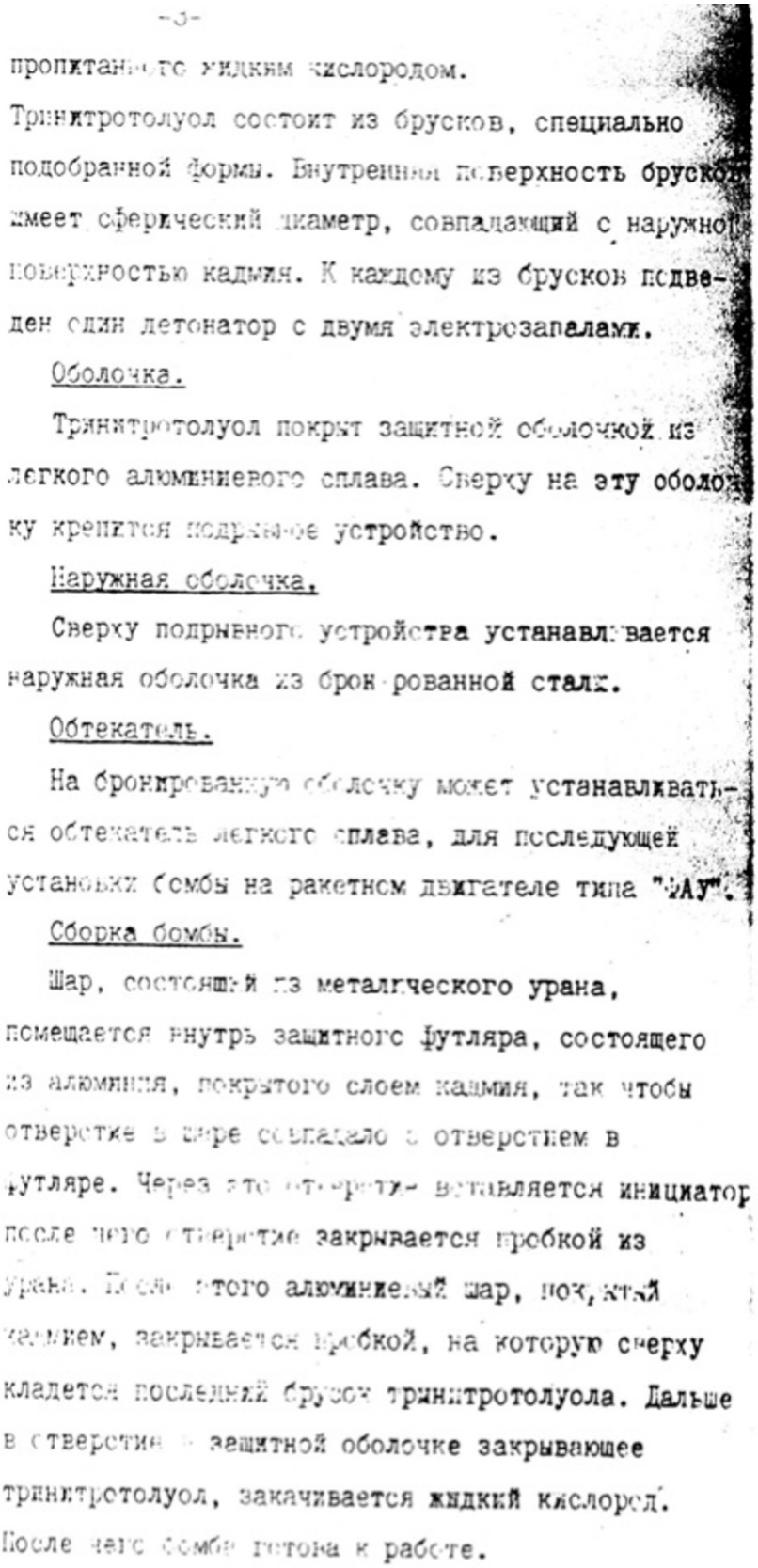
Защитный футляр.

Шар из урана закрывается защитным [illegible]
из алюминия, покрытого слоем кадмия. [illegible]
но задерживает тепловые нейтроны, [illegible]
урана 235, которые могут вызвать преждевременный
детонацию.

Взрывчатое вещество.

После слоя кадмия помещается взрывчатое
вещество, состоящее из пористого тринитротолуола,

Figure D.701: General Ivan Ilyichev. 23 March 1945. Intelligence report to General Antonov and Joseph Stalin, p. 2 [Archive of the President of the Russian Federation, Fund 93, Division 81 (45), List 37, courtesy of Rainer Karlsch].



-3-

пропитанного жидким кислородом.

Тринитротолуол состоит из брусков, специально подобранной формы. Внутренняя поверхность брусков имеет сферический диаметр, совпадающий с наружной поверхностью кадмия. К каждому из брусков подведен один детонатор с двумя электрозапалами.

Оболочка.

Тринитротолуол покрыт защитной оболочкой из легкого алюминиевого сплава. Сверху на эту оболочку крепится подрывное устройство.

Наружная оболочка.

Сверху подрывного устройства устанавливается наружная оболочка из бронированной стали.

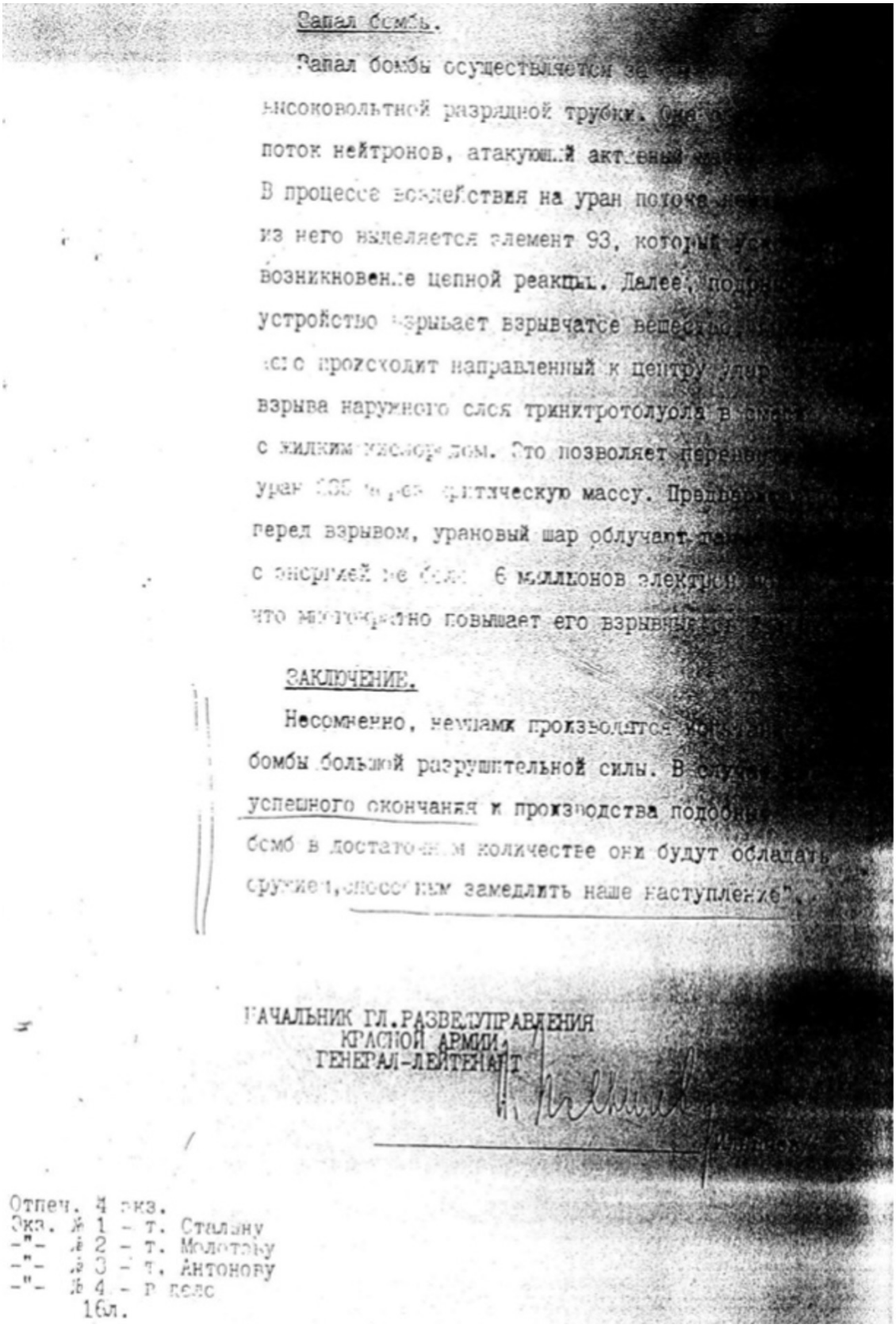
Обтекатель.

На бронированную оболочку может устанавливаться обтекатель легкого сплава, для последующей установки бомбы на ракетном двигателе типа "РАУ".

Сборка бомбы.

Шар, состоящий из металлического урана, помещается внутрь защитного футляра, состоящего из алюминия, покрытого слоем кадмия, так чтобы отверстие в шаре совпадало с отверстием в футляре. Через это отверстие вставляется инициатор после чего отверстие закрывается пробкой из урана. После этого алюминевый шар, покрытый кадмием, закрывается пробкой, на которую сверху кладется последний брусок тринитротолуола. Дальше в отверстии в защитной оболочке закрывающее тринитротолуол, закачивается жидкий кислород. После чего бомба готова к работе.

Figure D.702: General Ivan Ilyichev. 23 March 1945. Intelligence report to General Antonov and Joseph Stalin, p. 3 [Archive of the President of the Russian Federation, Fund 93, Division 81 (45), List 37, courtesy of Rainer Karlsch].



Запал бомбы.

Запал бомбы осуществляется за
высоковольтной разрядной трубки. Она
поток нейтронов, атакующий актив
В процессе воздействия на уран потоке
из него выделяется элемент 93, который
возникновение цепной реакции. Далее, по
устройству взрывает взрывчатое вещество,
что происходит направленный к центру
взрыва наружного слоя тринитротолуола в
с жидким кислородом. Это позволяет перев
уран 235 в
перед взрывом, урановый шар облучают
с энергией не
что многократно повышает его взрывн

ЗАКЛЮЧЕНИЕ.

Несомненно, немцами производятся
бомбы большой разрушительной силы. В
успешного окончания и производства подобн
бомб в достаточном количестве они будут обладать
оружием, способным замедлить наше наступление.

НАЧАЛЬНИК ГЛ.РАЗВЕДУПРАВЛЕНИЯ
КРАСНОЙ АРМИИ,
ГЕНЕРАЛ-ЛЕЙТЕНАНТ

Отпеч. 4 экз.
Экз. № 1 - т. Сталину
-"- № 2 - т. Молотову
-"- № 3 - т. Антонову
-"- № 4 - в дело
16л.

Figure D.703: General Ivan Ilyichev. 23 March 1945. Intelligence report to General Antonov and Joseph Stalin, p. 4 [Archive of the President of the Russian Federation, Fund 93, Division 81 (45), List 37, courtesy of Rainer Karlsch].

[Ivan Ilyichev was the Head of the Main Intelligence Directorate (GRU, military foreign intelligence) of the Soviet Union from August 1942 until July 1945.

Compare the description in Ilyichev's report with other descriptions of the German fission bomb design (p. 4157), especially Erich Schumann's design for a two-ton spherical implosion bomb (p. 4244).

As discussed on p. 5154, Ilyichev's report gives a highly detailed and scientifically very plausible design for a fission implosion bomb, especially considering that the original design has been passed through several nonscientific hands, translated from German to Russian, and compressed into a Russian spy's succinct long-distance report. A few points deserve clarification:

"3. A delay mechanism" presumably refers to the heavy tamper, which has a large inertia that "delays" the expansion of the exploding fission fuel, and which is located between the fission fuel (item 2 in Ilyichev's list) and the aluminum pusher/casing (item 4). This component is mentioned in the numbered list but not in the more detailed descriptions that follow that list. The best tamper would be natural uranium, so the spy may have simply lumped the uranium fission fuel and the uranium tamper together in the more detailed descriptions.

Two different neutron initiators are apparently described, perhaps to be used together (for redundancy in case one fails during the implosion, or to maximize the number of initial neutrons and therefore the amount of fission chain reactions that occur before the fission fuel blows apart) or perhaps to be used in two different versions of the bomb:

- There are three similar descriptions: (a) "1. High-voltage discharge tube, which is charged by special generators." (b) "Consists of a special tube, which creates fast neutrons. It is charged by special generators, which create high voltage inside the tube." (c) "The bomb ignition is carried out with the help of a high-voltage discharge tube. It forms a flow of neutrons, which attack the active material. When the flow of neutrons impacts upon uranium, element 93 fissions, which speeds up the creation of a chain reaction." These three descriptions seem to refer to a high-voltage tube that is filled with fusion fuel (deuterium, tritium, and/or lithium) that produces high-energy fast neutrons when a high voltage is applied to the tube. Those neutrons initiate fission reactions in the uranium, releasing more neutrons and starting the fission chain reaction. Such tubes were known to exist in wartime Germany. The term "Element 93" was widely and scientifically loosely used in the German nuclear program to mean uranium that had absorbed a neutron, sometimes meaning neptunium and sometimes plutonium. Here it simply seems to mean the excited uranium compound nucleus, just after it has absorbed a high-energy fusion neutron and just before it fissions.

- A completely different description is also included under "Bomb ignition": "Ahead of this, before the explosion, the uranium sphere is irradiated with gamma-rays, the energy of which does not exceed 6 million electron volts [MeV], which many times increases its explosive qualities."[15] Gamma rays in that energy range can cause photofission of uranium, again releasing neutrons and starting the fission chain reaction. Gamma rays with energies up to

[15] An alternative possible interpretation (suggested by Michael Haupt) of this somewhat ambiguous statement is that long before bomb assembly, natural uranium may have been bombarded by particle accelerators to breed plutonium-239 and/or neptunium-237 fuel, which could have been purified and then included in the fission pit of the bomb.

6 MeV in the uranium could be produced in the early stages of the implosion process by bombarding the uranium with a beam of electrons with energies of at least 6 MeV from a compact betatron; absorption of the high-energy electrons would produce the high-energy gamma rays. Such compact betatrons were known to exist in wartime Germany; see p. 3089 for one weighing 272 kg, and lighter versions may have been constructed too. By maximizing the number of initial neutrons and hence the number of resulting chain reactions, the gamma irradiation would indeed "many times increase" the "explosive qualities" of the uranium, just as Ilyichev reported. The betatron would also need "special generators, which create high voltage," so that part of Ilyichev's description could apply to either or both neutron initiators.

Note that Igor Kurchatov, the scientific head of the Soviet nuclear program, was puzzled by these statements and did not know how to correctly interpret them; see p. 4496.

The two Ilyichev reports were addressed to Aleksei Antonov but also sent to Joseph Stalin and Vyacheslav Molotov, with one copy for records:

1. The fact that the reports were sent directly to Stalin demonstrates both how important and how reliable Ilyichev believed them to be.

2. General Aleksei Antonov was Deputy Chief of Staff of the Soviet military December 1942–February 1945 but was commonly considered the acting Chief in Moscow (where Ilyichev's reports were sent), since the official Chief of Staff Aleksandr Vasilevsky was usually directing operations on the front lines as the Soviet military advanced westward. Antonov became the official Chief of Staff in February 1945. By addressing his letters to Antonov, Ilyichev was reporting to the highest military official in Moscow. (See also pp. 5028–5029.)

3. Vyacheslav Molotov was the Soviet Minister of Foreign Affairs 1939–1949, but he also handled the logistics of the Soviet nuclear program (along with Lavrentiy Beria) during the war and after the war until at least 1946. By sending a copy of his letters to Molotov, Ilyichev was keeping this top official of the Soviet nuclear program in the loop on intelligence about the German nuclear program.

4. The fact that only four copies of the reports were made (apart from a fifth copy that was apparently forwarded to Igor Kurchatov in late March 1945) again demonstrates how important Ilyichev and the others considered them to be.

The authenticity of the two Ilyichev reports appears beyond doubt [Uhl 2024]:

- The Ilyichev reports are part of an extended paper trail that includes published responses by Kurchatov and Georgy Flerov [Riabev, ed. 2002], so they cannot be more recent fabrications. All of the details in Kurchatov's published response agree quite well with the details in these Ilyichev reports that he referenced (pp. 4496–4497).

- Since these documents cast grave doubt on the Soviet Union's claim to be the second nuclear nation or to have achieved that status by its own scientific strength, there appears to be no incentive for Russians of any time period to have forged or embellished them.

- These reports do not appear to have been a wartime German attempt to bluff the Russians into believing that the Germans possessed a weapon that they did not actually have. A bluff would surely have claimed that the test explosion was much larger, and would not have handed the Russians a highly detailed and presumably quite effective design for a fission bomb.

Of course, despite the authenticity of these documents, how accurate or inaccurate they may be depends on the competence of the unnamed Soviet spy who transmitted the details from Germany. That raises an obvious question—who was the "trustworthy source from Germany" who provided all the information to Ilyichev for the short 15 November 1944 report and the long 23 March 1945 report?

Within the U.S. nuclear program, there were Russian spies from Los Alamos to Oak Ridge transmitting every last technical detail to the Russians. Klaus Fuchs is the most famous, but he was only one of many. Therefore there may well have been multiple Russian spies within the German nuclear program. Because there are so few surviving German records of the program, we may have never even heard of the people who were the key Russian spies within the German program. Those names are probably still in Russian records, but unfortunately historians will probably not be allowed to view more of those records for a long time.

A different approach is to try to think about the types of source people who could have created these reports, just as some scholars divide up books of the Bible into multiple hypothetical sources. Taking that approach, there appear to be at least three possible sources within these reports, which could all be the same single person, or could be two, three, or more people providing information for the reports:

Source 1 was able to write long, detailed reports and transmit them to Russia without being detected by the Germans. Considering how tight German security for the nuclear weapons program was, and how viciously the SS treated anyone even suspected of disloyalty, that was a major accomplishment. Source 1 was also well known by and highly valued by the highest levels of the Russian military/intelligence system/government, apparently due to previous reports that we do not currently have.

Source(s) 2 was one or more people with detailed knowledge of the bomb design. Source 2 could have been a scientist or engineer who worked on the design or the practical assembly, or could have simply been someone who could observe and describe details accurately and who spent enough time with the bomb plans, with the bomb components as they were being assembled, and/or with the scientists who designed or assembled the bomb. Source 2's knowledge covers virtually every major component of the bomb, so this was a person who had comprehensive access, not just someone familiar with only some parts of the bomb. Moreover, source 2's information on all of those bomb components is highly accurate in all cases yet intriguingly is generally not described in very scientific language, which is why it puzzled Kurchatov. Collectively, that evidence suggests that source 2 had unfettered access to the complete bomb and/or complete bomb plans but quite possibly was not a formally educated scientist.

Source(s) 3 was one or more people very familiar with the SS security situation on the ground in Thuringia. That source was likely in the SS in Thuringia, or at least had access to detailed SS reports going to and from Thuringia (maybe in Berlin, or at one of Hans Kammler's other research installations that was closely coordinating with Thuringia). Source 3 knew about all SS security

aspects in Thuringia from advanced preparations for the test, to setup of the test, to the effects of the test.

This same combination of sources 1–3 appears in both the short 15 November 1944 report and the long 23 March 1945 report. The identity of the one unified source, or the composition of the team of sources, did not change noticeably during that time period.

As already mentioned, sources 1–3 could have been several different people, or they could have all been the same person. If it was all the same single person, the most plausible profiles (which may or may not be correct) for that person might be:

A. An SS member in Thuringia, who was directly involved in helping to assemble the bomb and prepare for the tests, but probably was not a trained scientist or one of the designers of the bomb.

   or

B. Someone in an SS headquarters office in Berlin, Austria, or Czech territory with unrestricted access to both bomb plans and also SS security reports sent to and from Thuringia. That person could have been anyone from a highly trusted courier or secretary to a high-ranking SS officer, but likely was not a trained scientist.

Someone in the position of profile A above would have been in a far less populated area and perhaps better able to occasionally escape security to send messages to Russia. On the other hand, someone in the position of profile B above would have been surrounded by far more people and communications infrastructure that could potentially be used to send messages to Russia.]

Letter from Igor Kurchatov to General Ilyichev. 30 March 1945. Archive of the President of the Russian Federation, Fund 93, Division 81 (45), List 24–25. Published in L. D. Riabev, ed. 2002. *Atomnii Projekt SSR [Soviet Atomic Project] 1938–1945.* Vol. 1, Part 2. Moscow. pp. 260–261. [See document photos on pp. 4498–4501.]

Opinion of I. V. Kurchatov on the document "About a German atomic bomb" that was received by the head office of the General Staff of the Red Army, March 30, 1945

"Secret classified information" (strictly confidential)

The material is extremely interesting. It contains a description of the construction of a German atomic bomb, which is intended to be transported by a carrier rocket of the type "V."

The bringing together of uranium-235 over the critical mass that is required for the achievement of a nuclear chain reaction is caused by the described construction, the explosion of the mixture of granulated trinitrotoluene and liquid oxygen surrounding the U235. The ignition of the uranium is carried out by fast neutrons, which are generated by means of a high-voltage gas discharge tube fed by special generators.

To protect against thermal neutrons, the uranium container is surrounded by a cadmium layer. All of these design details are very credible ~~and agree overall with those according to us that underlie the project of an atomic bomb~~.

It should be noted that I am not totally convinced on the basis of the reviewed material that the Germans have actually made experiments with an atomic bomb.

The level of destruction of a nuclear bomb would be greater than stated, and spread over several kilometers and not just a few hundred meters. The events mentioned in the documents may be preparatory tests with nuclear weapon designs, but conducted without U235 explosive.

It would be desirable to obtain additional information about the course of the experiments, in order to get a more precise location and to obtain a sample of the uranium 235.

Some aspects that, judging from the description, very convincingly demonstrate the effect of a bomb, remain unclear to me.

These include: 1) the preliminary irradiation of uranium with gamma rays, whose energy potential does not exceed 6 million electron volts; 2) the indication that the radioactive element 93, which is obtained from uranium by neutron irradiation, acts extremely positively on the decay of the uranium-235.

It is hard to imagine that some kind of exposure to gamma rays or neutrons could change the explosion characteristics of U235 crucially. Only by the strong intensity of this radiation from utilizing a fission reactor can one change the properties of uranium-235 significantly. Here the wording of specific details at the beginning of the explosion process is rather based on some sort of new physical factors on exposure of the atomic nucleus of uranium to neutrons.

It would be extremely important to obtain detailed and accurate information on these issues.

Even more important would be to learn more details about the process of extracting uranium-235 from natural uranium.

I must note that it would be extremely important for our physicists to have a conversation with the person who gave the information reviewed here.

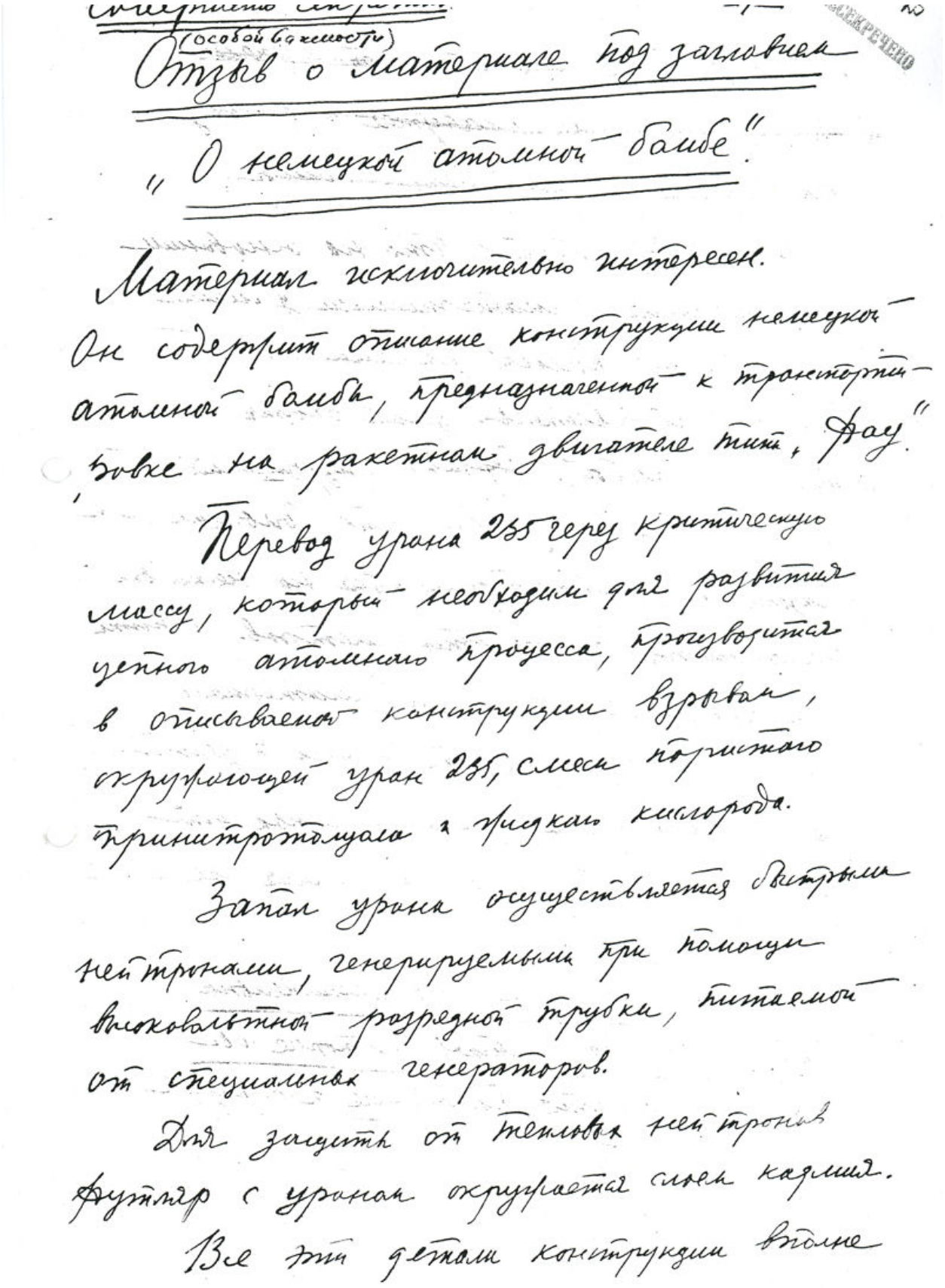
30 March 1945

I. Kurchatov
Single copy
(Note:) Copy sent to Gen. Ilyichev with No. 3GVS-s distribution. A. Vasin

[As shown in the table below, the details of Kurchatov's well-known and officially published 30 March 1945 letter agree essentially perfectly with the details of Ilyichev's 23 March 1945 letter that he was referencing, further confirming the authenticity of the archival documents from Ilyichev.

Information	**Ilyichev**	**Kurchatov**
Bomb design	Spherical implosion	(Implied spherical) implosion
Neutron initiator (1)	High-voltage [fusion] tube produces fast neutrons	High-voltage [fusion] tube produces fast neutrons
Neutron initiator (2)	$\leq$ 6 MeV gamma rays [from 6 MeV betatron]	$\leq$ 6 MeV gamma rays [from 6 MeV betatron]
Fission pit	Hollow sphere of uranium-235	(Implied spherical) uranium-235
Tamper and pusher	(Implied U) "delay mechanism" and aluminum shell	(Implied spherical) "uranium container"
Neutron absorber	Spherical cadmium layer	(Implied spherical) cadmium layer
Conventional explosive	Spherical shell of TNT and liquid oxygen	(Implied spherical) shell of TNT and liquid oxygen
Delivery system	V-type rocket	V-type rocket
Development status	Reportedly tested recently	Reportedly tested recently
Blast radius in tests	500–600 meters	Hundreds of meters

Table D.7: Comparison of details from Ilyichev's 23 March 1945 letter and Kurchatov's 30 March 1945 letter.]



Совершенно секретно (особой важности)

Отзыв о материале под заголовком

„О немецкой атомной бомбе".

Материал исключительно интересен.

Он содержит описание конструкции немецкой атомной бомбы, предназначенной к транспортировке на ракетном двигателе типа „Фау".

Перевод урана 235 через критическую массу, которая необходима для развития цепного атомного процесса, производится в описываемой конструкции взрывом, окружающей уран 235, смеси порошкообразного тринитротолуола с жидким кислородом.

Запал урана осуществляется быстрыми нейтронами, генерируемыми при помощи высоковольтной разрядной трубки, питаемой от специальных генераторов.

Для защиты от тепловых нейтронов футляр с ураном окружается слоем кадмия.

Все эти детали конструкции взяты

Figure D.704: Igor Kurchatov. 30 March 1945. Letter to General Ilyichev, p. 1 [Archive of the President of the Russian Federation, Fund 93, Division 81 (45), List 24–25, courtesy of Rainer Karlsch and Heiko Petermann].

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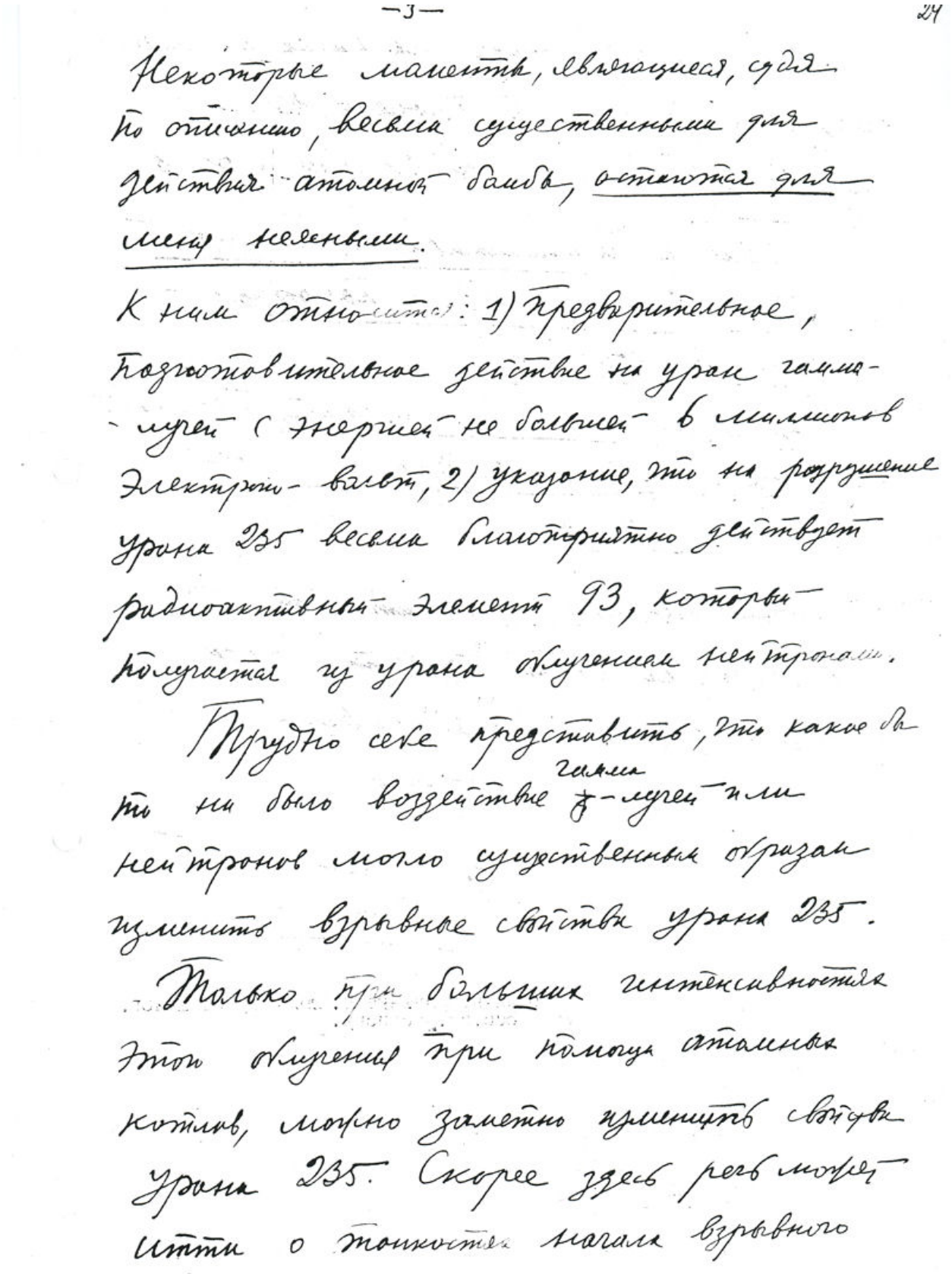
Правительства ~~в соответствии с тем~~,
~~которые и у нас кладутся в основу~~
~~проектировки атомной бомбы~~.

Надо отметить, что на основании ознакомления с материалами у меня не осталось полной уверенности, что немцы действительно делали опыты с атомной бомбой. Эффект разрушения от атомной бомбы должен быть большим, если ~~нужно~~, и распространяться на несколько километров, а не сотен метров. Опыты, о которых идет речь в материалах могли быть предварительными и делались на конструкциях, предназначенных для атомных бомб, но без снаряжения ее ураном 235.

Желательно получить дополнительные сведения о ходе опытов, которые бы помогли уяснить положение, и образцы Урана 235

Figure D.705: Igor Kurchatov. 30 March 1945. Letter to General Ilyichev, p. 2 [Archive of the President of the Russian Federation, Fund 93, Division 81 (45), List 24–25, courtesy of Rainer Karlsch and Heiko Petermann].



—3—

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Некоторые моменты, являющиеся, судя по отчету, весьма существенными для действия атомной бомбы, остаются для меня неясными.

К ним относятся: 1) предварительное, подготовительное действие на уран гамма-лучей (энергией не больше 6 миллионов электрон-вольт, 2) указание, что на разрушение урана 235 весьма благоприятно действует радиоактивный элемент 93, который получается из урана облучением нейтронами.

Трудно себе представить, что какое-либо из этих воздействий гамма-лучей или нейтронов могло существенным образом изменить взрывные свойства урана 235.

Только при больших интенсивностях этих облучений при помощи атомных котлов, можно заметно изменить свойства урана 235. Скорее здесь речь может идти о толщине начала взрывного

Figure D.706: Igor Kurchatov. 30 March 1945. Letter to General Ilyichev, p. 3 [Archive of the President of the Russian Federation, Fund 93, Division 81 (45), List 24–25, courtesy of Rainer Karlsch and Heiko Petermann].

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процесса, базирующихся на каких-то новых физических данных по процессу взаимодействия нейтронов с атомными ядрами урана.

Было бы исключительно важно получить по этим вопросам более подробную и точную информацию.

Еще более важно было бы знать подробности о процессе извлечения урана 235 из обычного урана.

Сейчас нужно отметить, что было бы исключительно важно провести беседу нашего физика с лицом, дающим рецензируемую информацию.

И. Курчатов

30 марта 1945 г.

Экз. единств.

Копия направлена т. Ильичеву 31/Ш-45г. за № Зсс.см.расписку.

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Figure D.707: Igor Kurchatov. 30 March 1945. Letter to General Ilyichev, p. 4 [Archive of the President of the Russian Federation, Fund 93, Division 81 (45), List 24–25, courtesy of Rainer Karlsch and Heiko Petermann].

Ivan Ilyichev (1905–1983)

Igor Kurchatov (1903–1960)

Georgy Flerov (1913–1990)

Georgy Zhukov (1896–1974)

Figure D.708: Ivan Ilyichev, Igor Kurchatov, Georgy Flerov, and Georgy Zhukov were some of the key Soviet officials who investigated the German nuclear program.

Circa 21 May 1945 letter from Georgy Flerov to Igor Kurchatov. Published in Oleynikov 2000 and L. D. Riabev, ed. 2002. *Atomnii Projekt SSR [The Soviet Atomic Project] 1938–1945.* Vol. 1, Part 2. Moscow. pp. 310–311.

[...] Today or tomorrow we are going to fly in the direction that you know. I am taking with me Dubovsky's instrument [Geiger counter], but its sensitivity is, probably, too low. If we determine on site that there are objects of interest for examination and sensitivity of the instrument is the issue, I'll send you a cable.

You will have to assign Stoljarenko or Davidenko (if he gets back by then) to this work. Instruct them to assemble the instrument [Geiger counter] in the lightweight option: powered from the mains by 220 volts... Along with the instrument, let them pack the tables for finding the appropriate periods [half lives]...

29 May 1945 letter from Georgy Flerov to Igor Kurchatov. Published in Oleynikov 2000 and L. D. Riabev, ed. 2002. *Atomnii Projekt SSR [The Soviet Atomic Project] 1938–1945.* Vol. 1, Part 2. Moscow. pp. 312–315.

[...] Possibly, you can send somebody from the staff to help me. I think that as a result of such search we will be able to find what we need—a person who occasionally was there nearby, as there were a lot of escapees wandering through forests at the time. If successful, we will get objective confirmation of the fact, tantamount to as if we personally had been at that site. This must be done right here and right now, because afterwards all people crossing the border are dispersed through camps in Germany and then are transferred to the Soviet Union, and then even such an enthusiast as myself would question our ability to catch the right people. [...]

The second direction is connected to what I wrote you in the previous letter. In order to determine finally what was really tested there, we shall of course look after artificial, not natural radioactivity. Unfortunately, a lot of time has passed since, but I think that with [our instruments] we will be able to attain the required sensitivity. [...]

Georgy Flerov, 1983, Warsaw private interview. Stanisław Michalik, Tajemnice kopalni Wałbrzycha, *Głos Głuszycy* 2008-04-24. https://www.gornictwo.walbrzych.pl/news-91-Tajemnice_kopalni_Walbrzycha.php

G. N. Frołow—Czemu interesujecie się niemieckimi badaniami atomowymi?

JR—Bywam u nas na południu Polski w Górach Sowich, w okolicach Wałbrzycha, tam są podziemne sztolnie z okresu wojny i krążą legendy o tym, że Niemcy zaczęli tam jakieś badania naukowe, a ja przecież wiem, że nie mieli bomby atomowej. Pogłoski te jednak występują tak często, że temat mnie zainteresował, a pan Szymański mówi, że wy Grigoriju Nikołajewiczu wiecie na ten temat wszystko.

GNF—(śmiech)—Nikt nie wie wszystkiego, bo Niemcy dużo dokumentów i materiałów doświadczalnych poniszczyli, a też dużo zabrali sojusznicy, Amerykanie. A gdzie byliście w tych górach koło Waldenburga?

JR—Chyba wszędzie, w Głuszycy, w Walimiu,

GNF—Chwila, chwila, używajcie niemieckich nazw. Ja tak pamiętam, polskich nie znam.

JR—To muszę je sobie przypomnieć: Wüstegiersdorf, Ludwigsdorf, Wüstewaltersdorf, Dörnau,

GNF—A w miejscowości Rudolfswald byliście?

JR—Rudolfswald, to chyba Sierpnica. Oczywiście byłem

GNF—Sierpnica? No nie wiem. W dokumentach ja potem chyba inną polską nazwę widziałem, coś od drzewa—Modrzew chyba. Powiedzcie co tam było?

Flerov—Why are you interested in German atomic research?

JR—[interviewer]: I sometimes visit the south of Poland in the Owl Mountains, near Wałbrzych [Waldenburg in German], where there are underground tunnels from the time of the war and there are rumors circulating about the fact that the Germans started some scientific research there, but I know that they did not have an atomic bomb. However, these rumors appear so often that the topic interested me, and Mr Szymanski says that you, Georgy Nikolayevich, know everything about this subject.

Flerov—(laughs) Nobody knows everything, because the Germans destroyed a lot of documents and experimental materials, and the Allies, the Americans, took a lot. And where were you in those mountains near Waldenburg?

JR—I think everywhere, in Gluszyca, in Walim,...

Flerov—Wait, wait, wait, use German names. I remember it this way, I don't know any Polish names.

JR—Then I have to remember them: Wüstegiersdorf, Ludwigsdorf, Wüstewaltersdorf, Dörnau,...

Flerov—Were you in Rudolfswald?

JR—Rudolfswald, I think it is Augustine. Of course I was.

Flerov—Augustine? I don't know. In the documents I later saw a different Polish name, something from a tree—Larch, I think. Tell me what was there?

JR—Na południowy wschód od wsi, niedaleko, jakieś półtora kilometra takie sztolnie wykute w skale więźniowie budowali.

GNF—To się zgadza. (Zgadza się rzeczywiście—w 1945 roku ta wieś nosiła nazwę Modrzewki -JR) W 1945 roku nasze wojsko tam było. Ciekawe rzeczy stamtąd przywieźli.

JR—Jakie wojsko, przecież armia poszła dalej?

GNF—Armia tak, ale mieliśmy takie oddziały specjalne (waha się).

JR—SMIERSZ?

GNF—No nie, SMIERSZ—sporo wiecie (uśmiecha się)—Szymański dobrze o Was mówił. W Rudolfswaldu i gdzie indziej był wywiad naukowy—no naukowcy w mundurach, ale nie podlegli NKMD.

JR—Współpracowaliście z nimi Grigoriju Nikołajewiczu?

GNF—Nie, z nimi nie, dopiero w Moskwie raporty czytałem.

JF—Jak to dopiero w Moskwie, to nie byliście na Dolnym Śląsku po wojnie?

GNF—Na Dolnym Śląsku nie, nie byłem (waha się), ja byłem tylko w Waldenbergu.

JR—Czy możecie mi powiedzieć, co żeście tam robili wy najlepszy radziecki fizyk atomowy?

GNF—(śmieje się) Takich komplementów mi nie mówcie, ja nie dziewczyna. Wielu lepszych ode mnie było. I u nas, choćby Igor Kurczatow, a i u Niemców jak się okazało.

JR—Southeast of the village, not far from there, about a kilometer and a half from there, prisoners built such tunnels carved in the rock.

Flerov—That is right. (That is right—in 1945 the village was called Modrzewki—JR.) In 1945 our army was there. They brought interesting things out of there.

JR—What army, after all, the army went further?

Flerov—The army did, but we had such special forces (he hesitates).

JR—SMERSH?

Flerov—No, not SMERSH—you know a lot (smiles)—Szymanski spoke well of you. In Rudolfswald and elsewhere there was a scientific investigation—scientists in uniforms, but they were not part of the NKVD.

JR—Did you work with them Georgy Nikolayevich?

Flerov—No, not with them, I read the reports only in Moscow.

JR—What do you mean only in Moscow, you were not in Lower Silesia after the war?

Flerov—Not in Lower Silesia, I wasn't (hesitates); I was only in Waldenburg.

JR—Can you tell me what you, the best Soviet atomic physicist, were doing there?

Flerov—(laughs) Don't give me such compliments; I'm not a girl. There were many better than me. With us there was for example Igor Kurchatov, but also [some] with the Germans, as it turned out.

JR—Jak to u Niemców? Więc to prawda z tą niemiecką bombą atomową?

GNF—Prawda i nieprawda—to zawsze się ze sobą miesza (milczy dłuższą chwilę). Ile lat minęło, trzydzieści osiem chyba, no dobrze—opowiem Wam, pytajcie.

JR—Powiem szczerze, nie wiem, o co mam pytać. Wiem za mało. Jak było w Rudolfswaldu, co tam były za ciekawe rzeczy, o których mówiliście?

GNF—Rudolfswald to inna historia. Tam wojsko badało i o tym mówić nie mogę.

JR—A w Wałbrzychu byliście?

GNF—W Waldenbergu byłem, ale tuż przed powrotem z Niemiec do Moskwy.

JR—Po co jechaliście do Niemiec, czy możecie opowiedzieć?

GNF—Mnie tam Stalin i Kurczatow wysłali. Meldunki były, że Niemcy badania atomowe prowadzą. Pojechałem tam jako przedstawiciel Ministerstwa Maszyn Lekkich. Okazało się na miejscu, że Niemcy byli bardziej zaawansowani w tych badaniach niż można było przypuszczać.

JR—Przekazywali Wam informacje?

GNF—Informacje i wyniki badań, różne miejsca pokazywali, i dlatego w Waldenbergu się znalazłem.

JR—Pokazywali coś w Wałbrzychu?

GNF—Nie, w Waldenbergu nie, ale dowiedziałem się, że w Dreźnie wywiad trzymał niemieckiego naukowca, fizyka, który mi opowiadał o tajnych badaniach w Waldenburgu, to go wziąłem i pojechaliśmy, ale wiedział zbyt mało.

JR—What do you mean by Germans? So it is true about the German atomic bomb?

Flerov—Truth and untruth—they are always mixed with each other. (He is silent for a long time.) How many years have passed, 38, I think? Well, I will tell you, ask me.

JR—I will tell you honestly, I do not know what to ask you. I know too little. How was it in Rudolfswald, what were the interesting things there that you mentioned?

Flerov—Rudolfswald is a different story. The military was investigating there and I cannot talk about it.

JR—Were you in Wałbrzych?

Flerov—I was in Waldenburg, but just before I came back from Germany to Moscow.

JR—Why did you go to Germany, can you tell me about it?

Flerov—Stalin and Kurchatov sent me there. There were reports that the Germans were conducting atomic tests. I went there as a representative of the Ministry of Light Machines. It turned out on the spot that the Germans were more advanced in the tests than one could have imagined.

JR—Did they give you information?

Flerov—Information and test results, various locations came up, and that is why I went to Waldenburg.

JR—Did they show anything in Wałbrzych?

Flerov—No, not in Waldenburg, but I found out that in Dresden the “Service” [NKVD] had captured a German scientist, a physicist, who told me about secret experiments in Waldenburg, so I took him with me and we went there, but he knew too little.

JR—Jak to—za mało?

GNF—Widzicie, Niemcy mieli dużo badawczych grup. Mój Niemiec pracował w instytucie drezdeńskim podległym Ministerstwu Poczty, tylko raz był w Waldenbergu instalować urządzenia, bo tamten ośrodek podlegał SS.

JR—Zaraz, zaraz, pogubiłem się. SS mogło prowadzić badania, ale Ministerstwo Poczty? Co Poczta ma wspólnego z badaniami naukowymi?

GNF—(śmieje się) Takie czasy były, przecież mówiłem. Nikt by się nie spodziewał atomu w Ministerstwie Poczty i (śmiech) w Ministerstwie Maszyn Lekkich jak u nas też.

JR—Ale Wasz Niemiec, ten fizyk pracował w Wałbrzychu.

GNF—Jego instytut przekazywał część urządzeń dla SS i on tylko pomagał w instalacji, ja to laboratorium chciałem koniecznie zobaczyć, ale nic z tego nie wyszło.

JR—Niemcy wysadzili?

GNF—Wysadzić chyba nie wysadzili, bo to pod samym miastem było, tylko on trafić nie mógł.

JR—?

GNF—Był tam tylko raz. Samochód, który go wiózł z dworca kolejowego długo jeździł po mieście i Niemcowi droga się pogubiła. Później wjechali na teren kopalni i zwieźli go pod ziemię. Dwa dni tam siedział, pracował, jadł i spał pod ziemią. Jak skończył, to znów samochód powoził go po mieście, zanim dotarł na stację. I dlatego ze mną Niemiec niczego nie mógł znaleźć.

JR—What do you mean—too little?

Flerov—You see, the Germans had a lot of research groups. My German worked in an institute in Dresden that belonged to the Postal Ministry. He was in Waldenburg only one time to install equipment, because that institute belonged to the SS.

JR—Wait a minute, wait a minute, I got lost. The SS could carry out research, but the Postal Ministry? What does the Post Office have to do with scientific research?

Flerov—(laughs) Times were like that, I told you. No one would have expected atom [research] in the Postal Ministry and (laughs) also in the Ministry of Light Machines in our country.

JR—But your German, this physicist, worked in Wałbrzych.

Flerov—His institute gave some equipment to the SS and he only helped with the installation. I wanted to see the laboratory, but was not able to.

JR—Did the Germans blow it up?

Flerov—I do not think they blew it up, because it was just outside the city, but he could not find it.

JR—?

Flerov—He was there only once. The car that carried him from the railway station drove around the city for a long time until the German had forgotten the way. Then they drove into the mine and drove him underground. He sat there for two days, worked, ate, and slept underground. When he finished, the car drove him around the city again, before he reached the station. And that is why the German could not find anything with me.

JR—Ale przecież kopalni w Wałbrzychu nie jest tak dużo nie - mógł poznać otoczenia, budynków?

JR—But there are not so many mines in Wałbrzych—could he recognize the surroundings, buildings?

GNF—Jeździłem z nim długo, namawiałem, straszyłem, nic nie dało. On mówił, że wtedy, gdy był pierwszy raz też się bał. Mówił, że wszędzie pilnowali ludzie SS, określił ich jako "ostrych", mówił że mieli takie dziwne znaczki przy mundurach, jakich wcześniej nie widział.

Flerov—I drove around with him for a long time, I persuaded him, I threatened him, it did not work. He said that when he was there for the first time he was also afraid. He said that SS people were guarding everywhere; he described them as "sharp." He said they had strange emblems on their uniforms that he had never seen before.

JR—Mówił coś o tym co było w kopalni?

JR—Did he say anything about what was in the mine?

GNF—Tak, mówił, że z kolegami zawiózł tam cyklotron, ale okazało się, że to drugi, bo jeden już tam był. Oni zamontowali ten drugi. Opowiadał, że kopalnię specjalnie dostosowano. Były wózki, stoły, wszystkie konieczne urządzenia, a na wejściach śluzy i wartownicy. On wejść nie mógł, bo nie miał specjalnej przepustki.

Flerov—Yes, he said that with his colleagues he had installed a cyclotron there, but it turned out that it was the second one, because one was already there. They installed the second one. He told us that the mine had been specially adapted. There were trolleys, tables, all the necessary equipment, and at the entrances there were locks and guards. He could not enter because he did not have a special pass.

JR—Czy opowiadał o podziemnym laboratorium atomowym, uwierzyliście mu Grigoriju Nikołajewiczu?

JR—Did he talk about the underground atomic laboratory, did you believe him Georgy Nikolayevich?

GNF—Uwierzyłem. Mówił o drobiazgach, które znał nasz wywiad. Oni tam mieli w tej kopalni pod ziemią łączność telefoniczną z całymi Niemcami. Była podobno telewizja. Tak, ja mu uwierzyłem, on nie miał potrzeby kłamać, za to była wtedy kula.

Flerov—I believed him. He described little details that our intelligence knew. They had a telephone connection with all the Germans in the underground mine. Apparently, there was television. Yes, I believed him; he had no reason to lie, otherwise he would have been shot.

JF—Nie szukaliście dalej tej kopalni?

JR—Did you not search any further for this mine?

GNF—Jak to nie szukaliśmy? Jak można było nie szukać? Ja już nie, ale nasi długo szukali. Mieli niemieckie plany kopalni, chodzili z polskimi górnikami. Na nic było. Nie znaleźli, a kilku zginęło.

Flerov—What do you mean did we not search for it? How could one not search? I myself did not [search] further, but others were searching on our behalf for a long time. They had German plans for mines; they went out with Polish miners. It was for nothing. They did not find it, and a few died.

JR—Zawał był jakiś w kopalni?

GNF—Nie zawał, tylko Niemcy pracujący z Polakami w kopalni potajemnie podkładali miny. To i przestali szukać.

JR—I Niemcy mieli bombę atomową?

GNF—Ja Wam na to pytanie nie odpowiem, ale historia może da odpowiedź. Oni mieli znacznie więcej niż mogliśmy się spodziewać.

JR—Was there a heart attack in the mine?

Flerov—Not a heart attack, but Germans working with Poles in the mine had secretly laid explosive mines. So they stopped searching.

JR—And did the Germans have an atomic bomb?

Flerov—I will not answer that question for you, but maybe history will give you an answer. They had much more than we could have expected.

[Some especially noteworthy points from Flerov's interview include:

- Apparently a very advanced German scientific facility was located at Rudolfswald/Modrzewki (now called Sierpnica) and was removed by the Russians. It was so important and so secret that it was handled by special Russian scientists working with the Russian military, and Flerov could not discuss it even 38 years later. What work was conducted at that facility—was it nuclear or something else?

- Another advanced German scientific facility was located at Waldenburg/Wałbrzych and conducted important nuclear work during the war.

- According to conventional histories, the various underground facilities that were part of the Riese construction project in Silesia were never finished, let alone utilized. According to Flerov, though, at least two underground scientific facilities there (in Waldenburg/Wałbrzych and Rudolfswald/Modrzewki) were fully equipped and fully operational. How many other Riese facilities were equipped and operational during the war? See Figs. D.709–D.717 for examples of other Riese facilities.

- German security on the nuclear program was extremely tight. Even a German physicist working on the program was taken on a lengthy car detour between the train station and the underground nuclear facility on his way to and from the facility, so that he would not know where the facility was. He and the other workers there were not able to leave the underground facility, so they worked, ate, and slept there round the clock. Everything was tightly locked up and closely guarded. The SS guards were described as being especially "sharp," even by the standards of wartime SS members.

- At the end of the war, "the Germans destroyed a lot of documents and experimental materials" from their nuclear program. Germans kept the nuclear program very secret both during and after the war.

- Likewise, at the end of the war, the Germans sealed and booby-trapped their underground scientific facilities. That helps to explain why so little has been found, and it also poses challenges for modern researchers hoping to find and open those underground facilities.

- At the end of the war, "the Americans took a lot" of documents and materials from the German nuclear program. Flerov could not have been referring to the documents and materials that were taken by the Alsos Mission but then publicly disclosed (especially regarding the small group around Heisenberg), because he lamented that the documents and materials to which he referred were not available. What other—more important and more secret—documents and materials from the German nuclear program were taken by the United States, and where are those documents and materials now?

- Even the Russian scientific investigators like Flerov who scoured large parts of the former Third Reich and conscripted thousands of German scientists and engineers never got a complete understanding of the full extent and accomplishments of the German nuclear program, due to material that was destroyed by the Germans or removed by other Allied countries.

- The Reichspost (Post Office) and the SS were collaborating on a highly secret, high-priority nuclear program, and they had a number of advanced laboratories in remote locations, exactly as independently stated by Werner Grothmann.

- The Germans were operating multiple cyclotrons in remote locations for a highly secret, high-priority war program. That information strongly suggests that they were conducting electronuclear breeding of fission fuel for nuclear weapons.

- Even in such remote areas, German underground scientific facilities were able to communicate with other German facilities not just by telephone, but also by television for two-way video teleconferencing in a remarkably modern manner. This video teleconferencing technology was first publicly available in Germany in 1936 and was utilized for government business during the war (pp. 1013, 1014).

- Members of the specialized SS division that was conducting advanced nuclear work wore a strange emblem on their uniforms that even a German physicist has never seen before. Different parts of the SS had different emblems, but I am not aware of an example of what this one would have been. What was the emblem of the SS's most advanced and most secret scientific division? It must have been quite distinctive to have stood out in the memory of the German physicist, and then to have been mentioned by Flerov too 38 years later.

- When asked if the Germans had an atomic bomb, rather than saying no, Flerov replied, "They had much more than we could have expected," and predicted that history might later reveal it.

Can additional relevant documents written by Flerov, written to Flerov, or related to Flerov's investigations of the German nuclear program be located and released from Russian archives?]

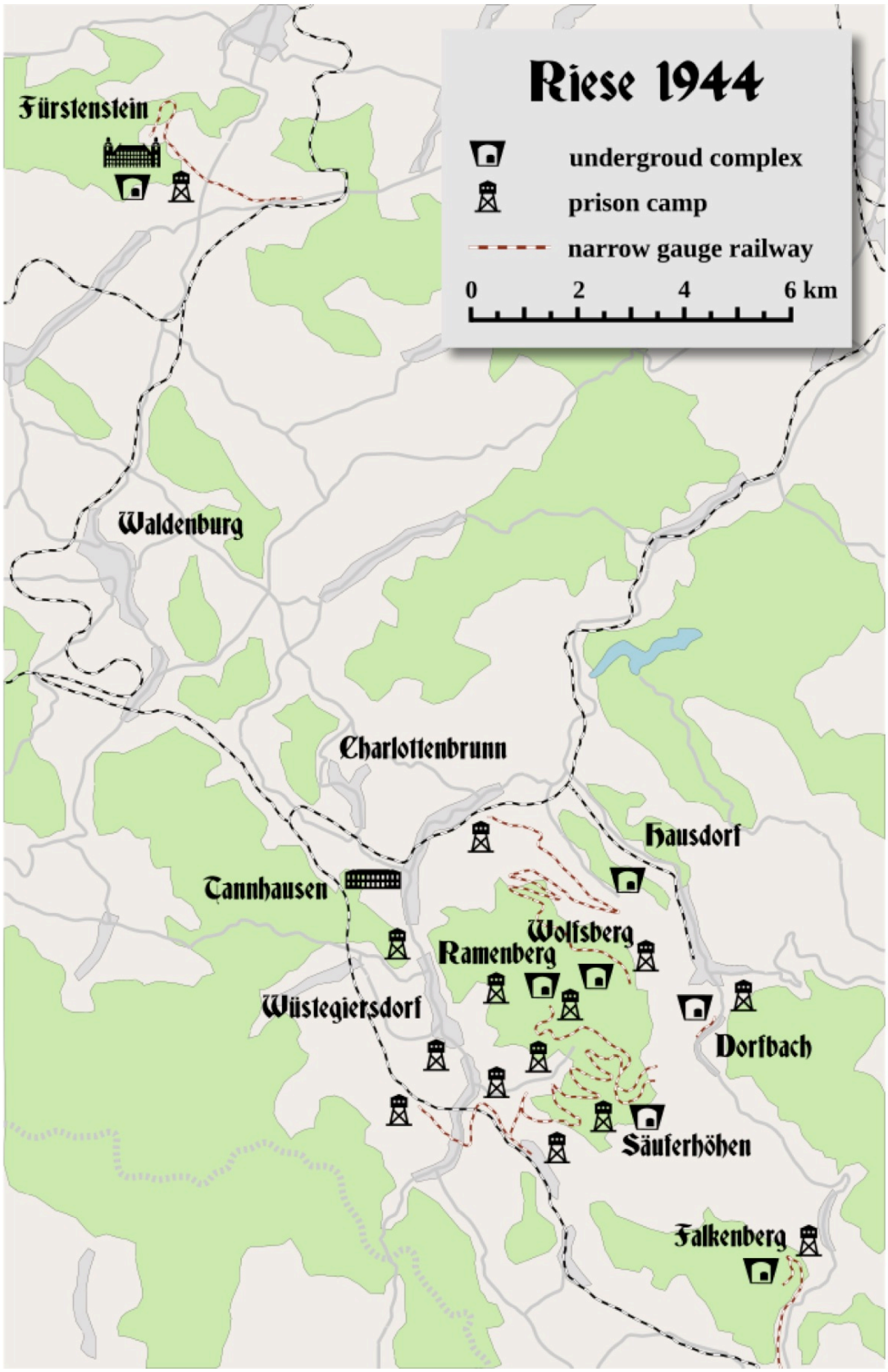

Figure D.709: Some of the known underground complexes that were part of the wartime Riese construction project in Silesia.

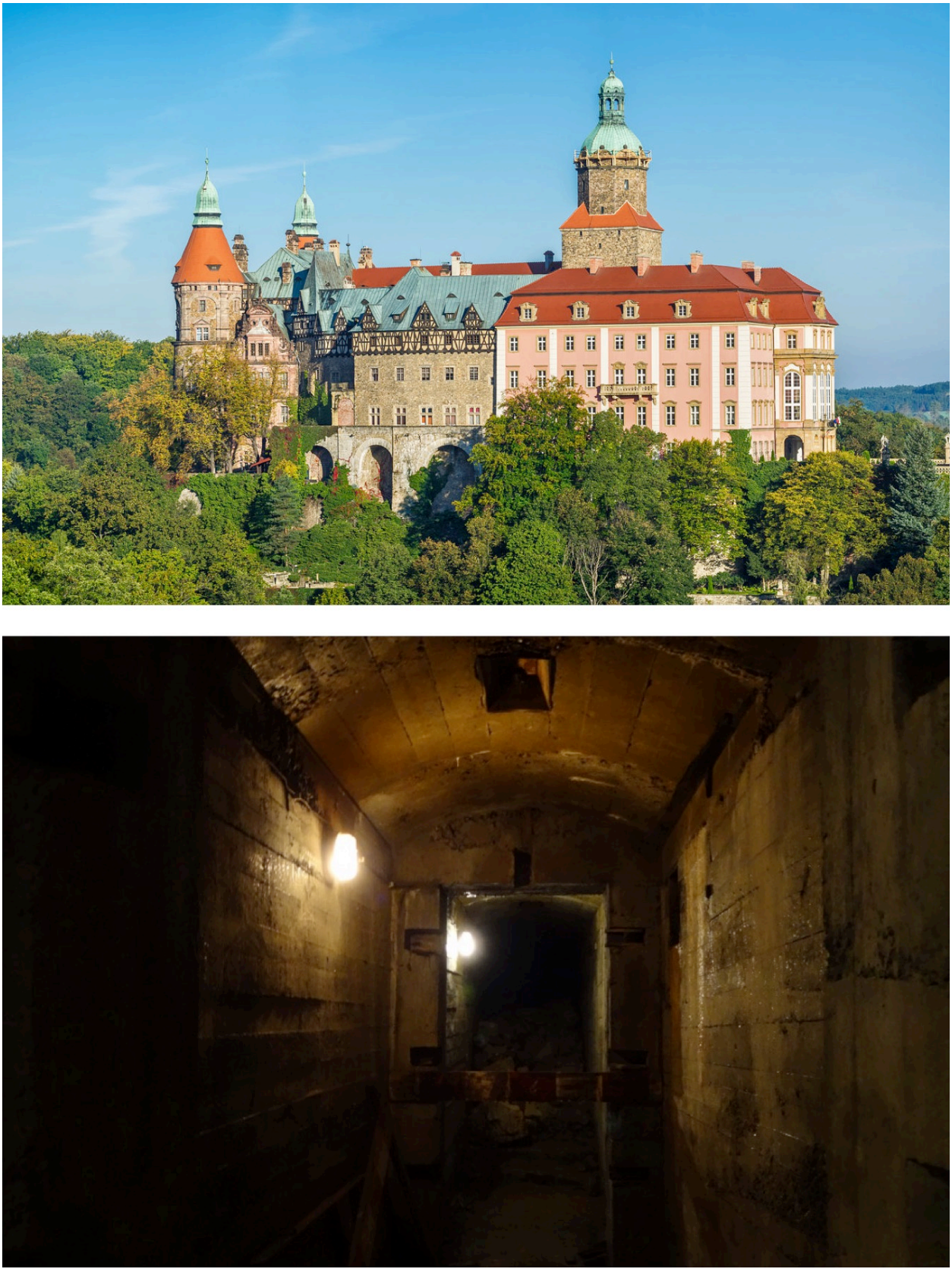

Figure D.710: The former Schloss Fürstenstein, Książ castle in Silesia, and the tunnels under it.

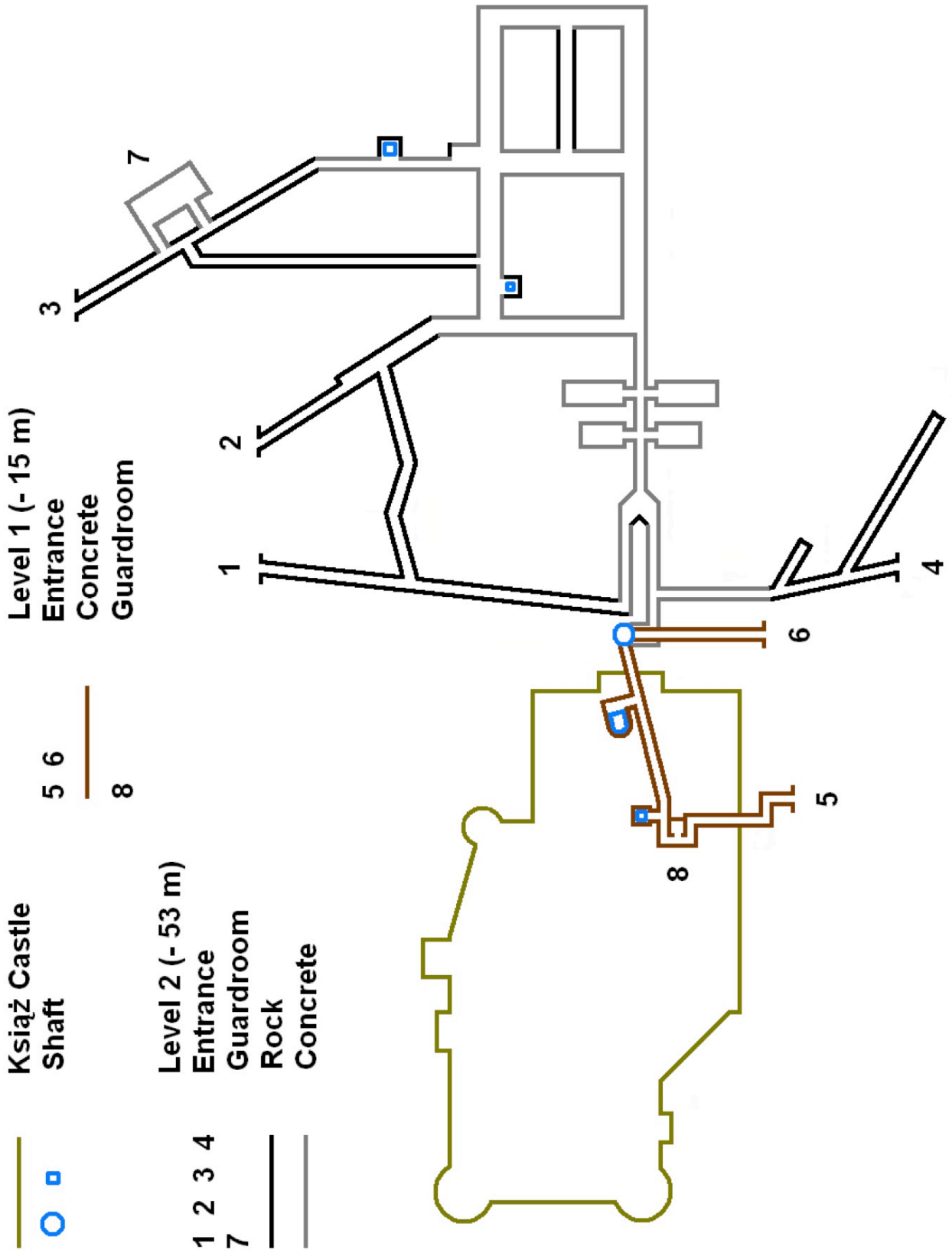

Figure D.711: The tunnels under the former Schloss Fürstenstein, Książ castle in Silesia.

Figure D.712: The former Säuferhöhen tunnel complex, Osówka in Silesia.

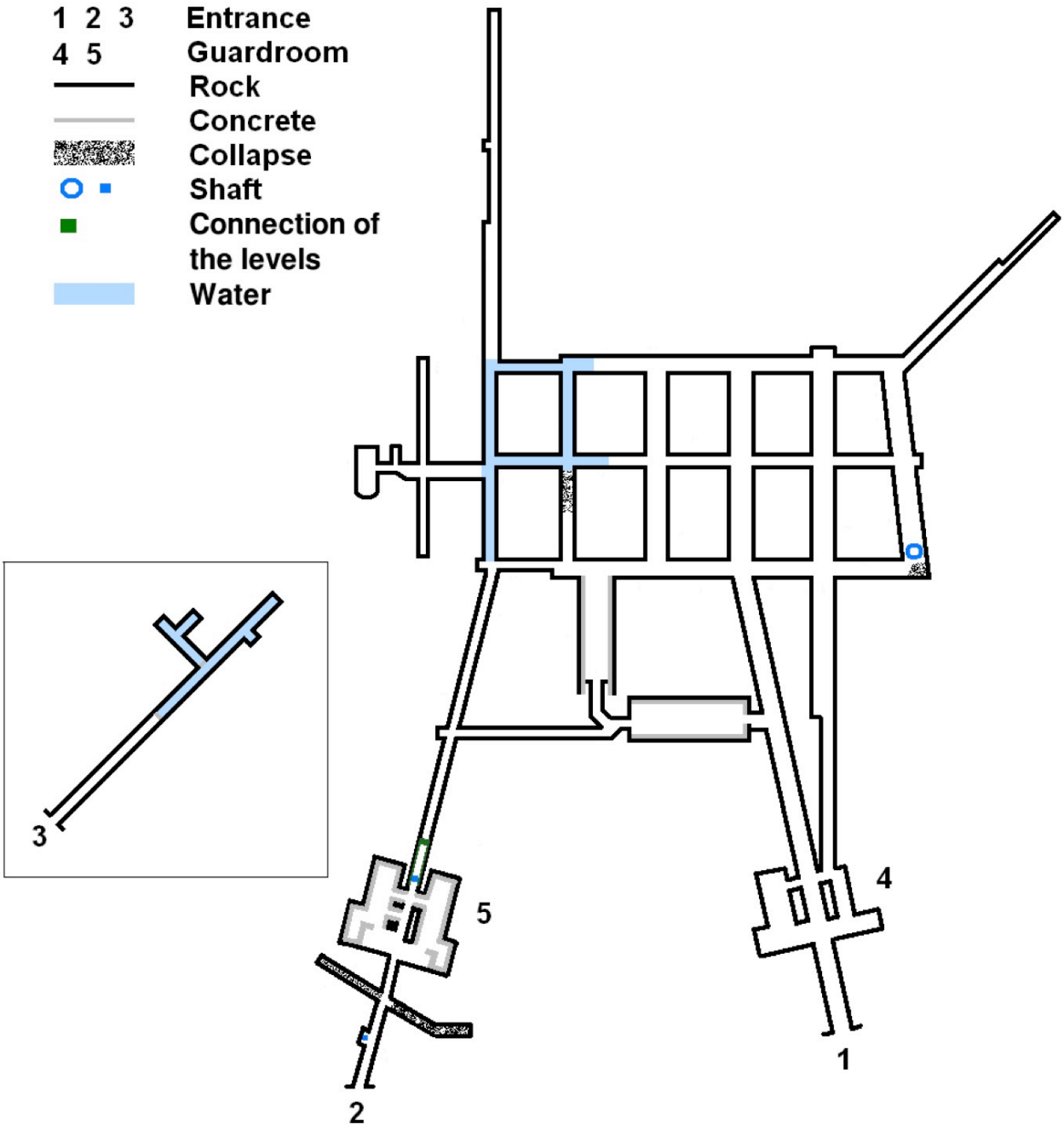

Figure D.713: The former Säuferhöhen tunnel complex, Osówka in Silesia.

Figure D.714: The former Dorfberg tunnel complex, Rzeczka/Walim in Silesia.

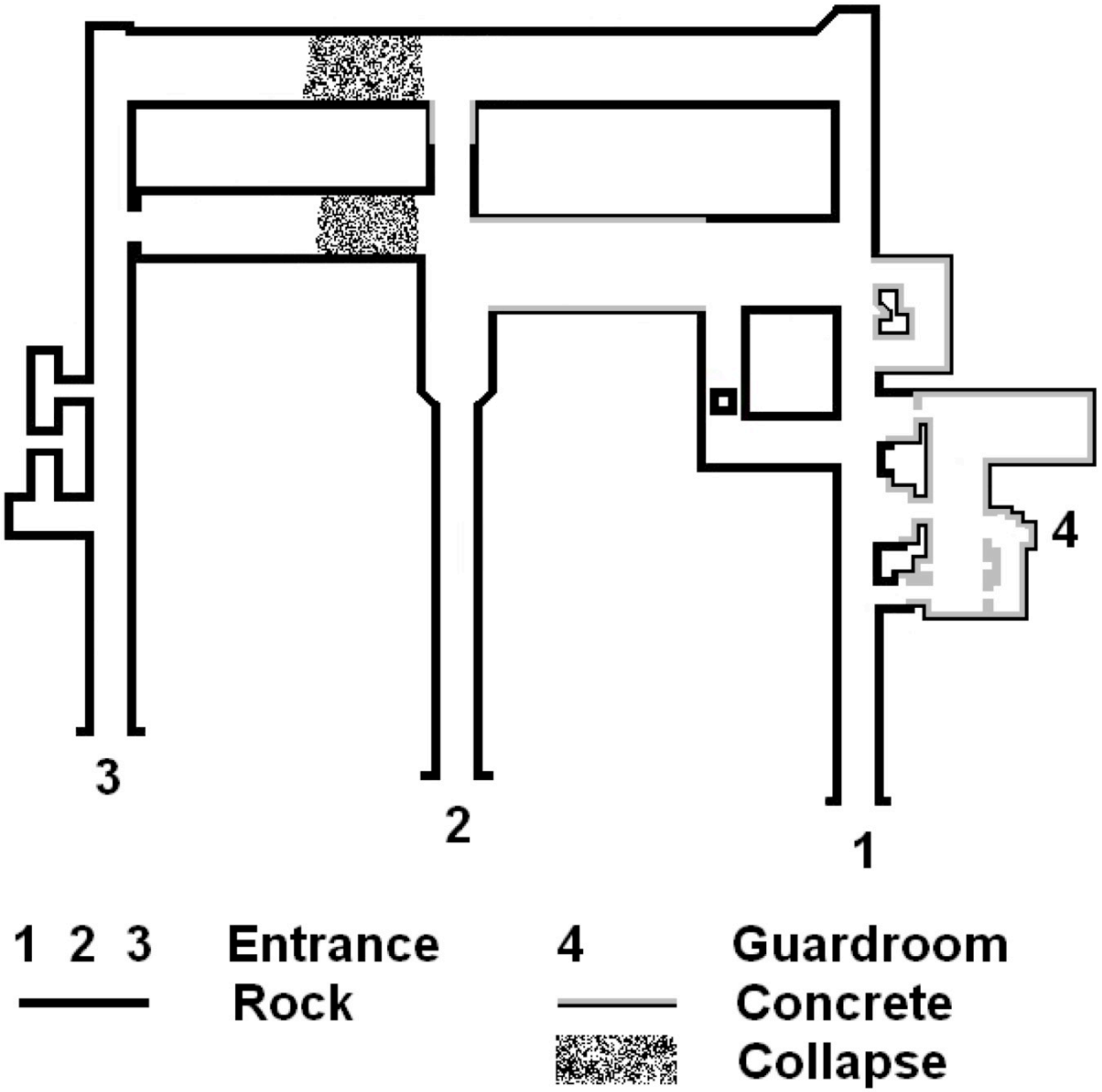

Figure D.715: The former Dorfberg tunnel complex, Rzeczka/Walim in Silesia.

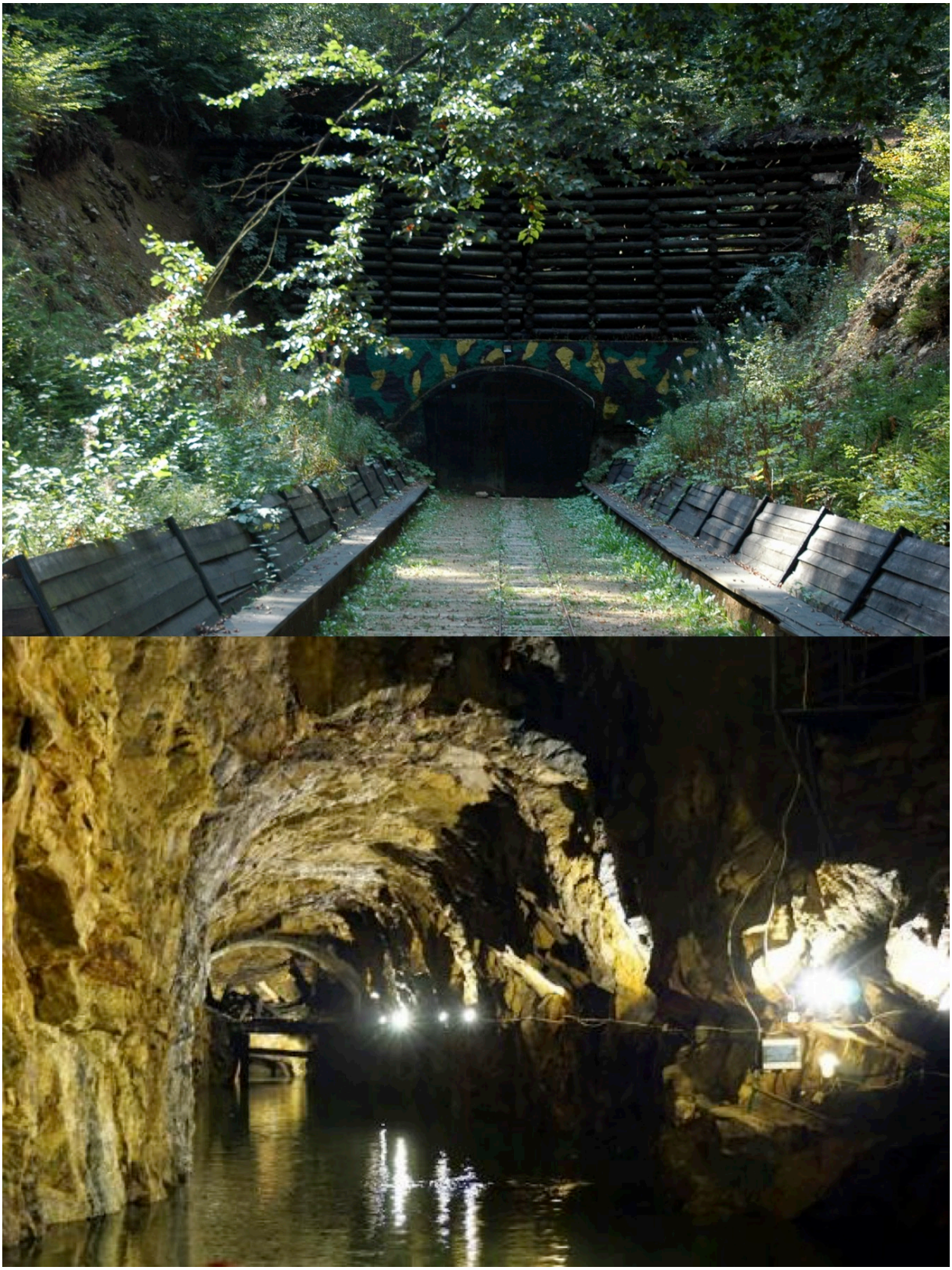

Figure D.716: The former Wolfsberg tunnel complex, Włodarz in Silesia.

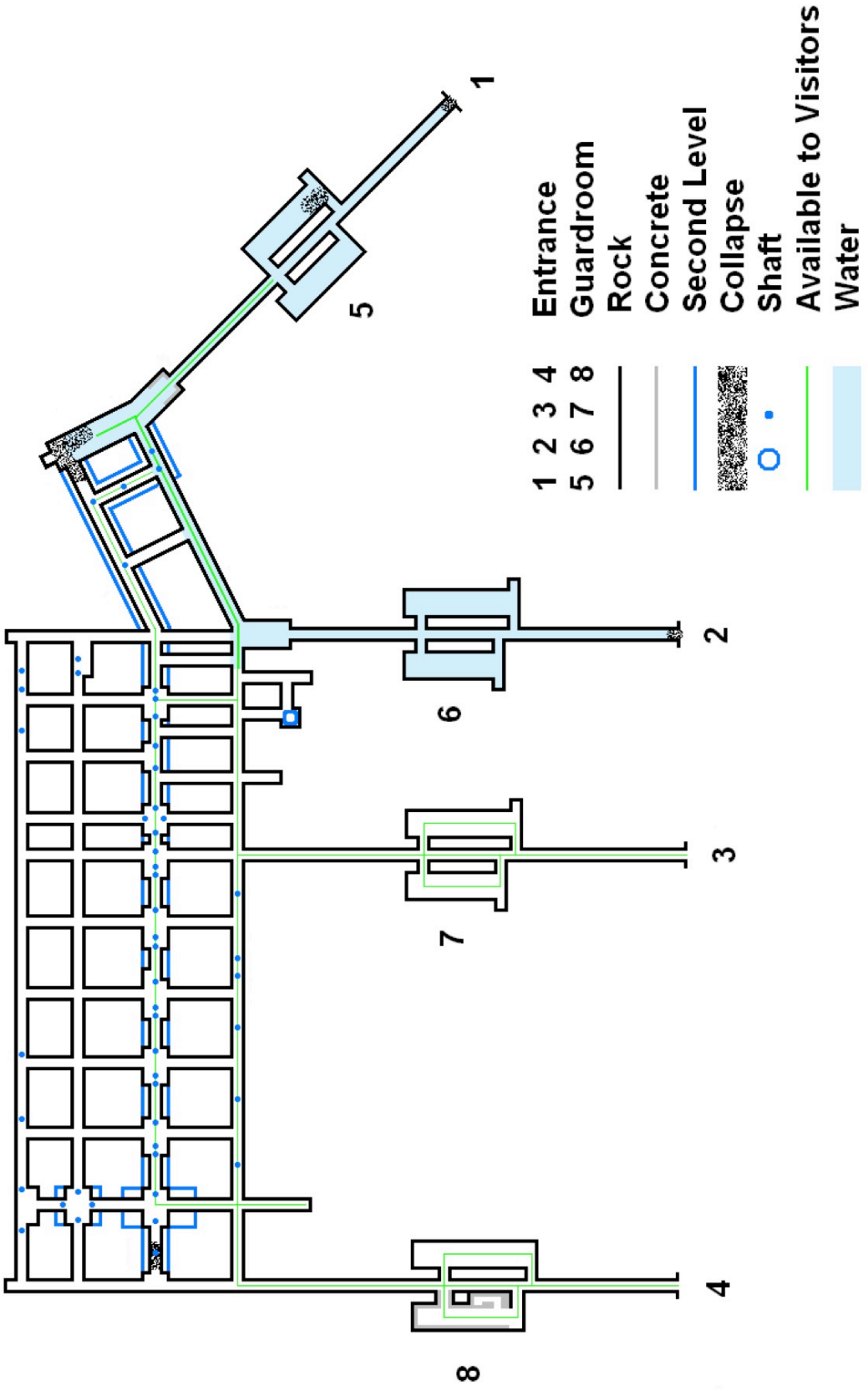

Figure D.717: The former Wolfsberg tunnel complex, Włodarz in Silesia.

Marshal Georgy Zhukov. 2 October 1945. Report to Joseph Stalin [Archive of the President of the Russian Federation, Fund 93, Division 77 (45), List 4–11, published in Riabev 2006c, pp. 60–64]. [See document on pp. 4525–4528.]

2 October 1945
Sov. Secret
Ex. No. 1

Moscow

Generalissimo of the Soviet Union
to Comrade Stalin I.V.

In August and September, a group of employees of the Soviet Military Administration organized an inspection in the Soviet occupation zone, which was done by German scientists in the field of creating an atomic bomb.

I present brief conclusions from what I have been able to establish:

1. After the discovery in 1939 by Professor Hahn and Dr. Strassmann in Germany of the uranium decay, a society was created to use atomic energy obtained from the fission of the atom.

The society included:

Kaiser Wilhelm Institute of Physics. Berlin-Dahlem (American zone). In 1943, it was evacuated to Hechingen (American zone), led by Professor Heisenberg and staff.

Kaiser Wilhelm Institute of Chemistry. Berlin-Dahlem (American zone). Evacuated to Tailfingen (American zone), led by Professor Hahn, Dr. Strassmann, and staff.

Technische Hochschule. Berlin, Institute of Physics, Professor Geiger.

Dr. Diebner's working group. Berlin, later Stadtilm (Thuringia)—Soviet zone. Dr. Diebner, Dr. Czulius, Dr. Hartwig, Dr. Berkei, Professor Gerlach.

Kaiser Wilhelm Institute for Brain Research, Genetic Department. Dr. Zimmer, Professor Timoféeff. Berlin-Buch (Soviet zone).

Physikalische-Techische Reichsanstalt, Radiological Department. Dr. Weiss.

Research Institute of the Reichspost, Miersdorf, Berlin (Soviet zone). Dr. Otterbein, Professor Flügge.

Kaiser Wilhelm Medical Research Institute, Physics Department. Heidelberg (American zone). Professor Bothe.

Physics Institute of Leipzig University. Professor Hofmann, Professor Döpel, Professor Heisenberg, Professor Pose.

Physicochemical Institute of the University of Leipzig. Leipzig (Soviet zone). Professor Bonhoeffer.

Physicochemical Institute, University of Hamburg. Hamburg (English zone). Professor Harteck, Professor Jensen, Professor Knauer.

Physics Institute, University of Strasbourg (France). Professors Fleischmann, von Weizsacker.

Second Physics Institute, University of Vienna. Professors Stetter, Ortmann.

Institute of Physics, University of Cologne (English zone). Professor Kirchner.

Physics Institute, University of Göttingen (English zone).

Institute of Chemistry, University of Kiel (English zone). Dr. Martin.

Kaiser Wilhelm Institute of Biochemistry. Frankfurt am Main (American zone). Professor Raevsky.

Institute of Chemistry, Danzig University (Poland). Professor Albers.

Physics Institute of the University of Bon (France). Professors Schmitz, Schmitz-Dumont.

French College (Paris). Professor Bothe.

Physics Institute. Munich (American zone). Professor Clusius.

In addition, the study of the atomic nucleus in Germany was carried out by the following leading German scientists:

Von Laue	–	US zone
Professor von Ardenne		[USSR]
Professor Kallmann	–	Berlin, Westend (English zone)
Professor Flügge	–	US area
Professor Max Planck	–	Rodetz, USSR zone
Professor Pascual [Jordan]	–	Göttingen, University (US zone)
Professor Gustav Hertz		[USSR]
Professor Smekal	–	whereabouts unknown
Professor Erich Regener	–	Friedrichshafen, Bodensee (American zone)
Professor Hans Bauer	–	Vienna
Professor Stark	–	Bavaria (American zone)
Professor Seliger	–	Greifswalde (Soviet zone)
Professor Bechter	–	Munich (American zone)
Dr. Ullman	–	Berlin (US area)
Professor Westphal	–	Berlin, Zehlendorf (American zone)

Most of the major scientists working in this field were evacuated to southern Germany by the Allies.

2. In 1941, the German [Army] Ordnance Office, the Navy Research Institute, and the Air Force Research Institute set the task for the companies Pinch [or Hinch, maybe Henschel?], Siemens, and Allgemeine Elektricitäts-Gesellschaft [AEG] to create atomic weapons.

For the practical implementation of this task, German scientists worked:

a) on the production of pure uranium oxide (coded under the name "preparation No. 38") and then from it—uranium metal.

The firms of the Auergesellschaft and Degussa (Frankfurt am Main, American zone) were used.

The scientific advisors were Drs. Riehl, Zimmer, Schulenburg;

b) on the production of the isotope uranium-235.

Scientists have found that the active element (ie, capable of explosion) is uranium-235, which is only 0.7% of the total uranium mixture.

The main specialists in the field of isotope separation in Germany were Professor Harteck, Dr. Groth, who, together with the chief designer of the Anschütz company (Kiel, English zone), Dr. Beyerle, invented an ultracentrifuge built by the above company, as well as by the Hellige company (Breslau, USSR zone).

Another method for separating uranium isotopes and obtaining uranium-235 was proposed by Dr. Bagge (Kaiser Wilhelm Institute of Physics);

c) over the organization of the production of heavy water.

Heavy water in Germany was initially brought from Norway (Norsk Hydro plant). After the termination of supplies from Norway, the Germans tried to organize their own production of heavy water in the city of Merseburg (zone of the USSR), the Leunawerke plant at two installations—"small" and "large," and at the Bitterfeld plant.

Currently at the Leunawerke plant the "small installation" has been fixed again on September 7. The "large installation," destroyed by bombing during its construction, is being restored.

Scientific works were supervised by Professors Harteck, Jensen, Bonhoeffer, Clusius;

d) on the creation of the "Uranium-machine" installation as a source of energy obtained as a result of uranium disintegration.

3. At the direction of Professor Bonhoeffer (Leipzig, Soviet zone), valuable information about the practical application of the Hahn-Strassmann process could be given by Professor Döpel, Professor Pose, and Professor Hund (Leipzig, USSR zone). The latter showed that he knew about the existence of the atomic bomb, but the details were unknown to him. Professor Hund considers the Hechingen and Tailfingen (American zone) institutes to be important institutes where work on the atomic bomb was carried out.

4. It was established that Professor Heisenberg (Hechingen, American zone) was engaged in the practical issues of making the atomic bomb.

Gerlach (Munich, American zone) was in charge of all secret materials.

5. The Germans created to disintegrate the atomic nucleus:

- the cyclotron, built by Siemens-Schuckert, is located in Heidelberg (American zone) in an almost finished condition;
- the cyclotron built by the Pinch [or Hinch, maybe Henschel?] company in Beaune (France) has been in operation for several months;
- an installation with a high voltage of 5 million volts (Hennigsdorf, Soviet zone);
- the large cyclotron of Allgemeine Elektricitäts-Gesellschaft [AEG] in the Reichspost Zeuthen Institute (Soviet zone). Construction is not finished yet.

At the Kaiser Wilhelm Institute, Berlin-Dahlem (American zone), there is a structure for a cyclotron, not completely finished.

From the Kaiser Wilhelm Institute we have removed part of the archive of the Main Directorate of the Kaiser Wilhelm Institute, as well as laboratory and chemical preparations of Professor Hahn.

At present, in the city of Stadtilm (Thuringia, Soviet zone), Dr. Hartwig and Berkei are from the working group of Dr. Diebner (Dr. Diebner was the initiator of the creation of the working society for the use of atomic energy obtained from the decay of the atom). There is also a laboratory for experiments with the "Uran-machine," various laboratory equipment, chemicals and a physicochemical library (2,000 volumes).

According to Dr. Berkei and Hartwig, at the departure of Dr. Diebner with the Americans to the south of Germany (American zone) the following equipment and raw materials were taken:

- radium — about 4 grams;
- metal-uranium — about 1 ton;
- heavy water — 400 kg;
- 2 sets of measuring equipment for measuring machine experiments;
- photographic laboratory;
- technical library;
- instruments required for laboratory equipment: transformers, capacitors, rheostats, amplifiers, meters, vacuum pumps, etc.

When the Americans left, they took away about 10 tons of uranium oxide, beryllium, all available documentation, including personnel cards.

According to Dr. Hartwig and Dr. Berkei, Dr. Osenberg (who booked scientists on important government issues) handed over the complete list of the latter to the Americans.

Based on the collected materials, it can be concluded that the German scientists in the field of theoretical and practical research and application of atomic energy have achieved good results up to the creation of the atomic bomb.

According to German scientists, the Americans partially took advantage of the results of the work of German scientists on this issue.

All materials on the above issue, as well as those removed from the Institute Kaiser Wilhelm's chemical preparations, a group of German scientists in the field of atomic energy and the equipment, materials and a library available in Stadtilm, containing about 2,000 volumes, we handed over to the representative of the NKVD of the USSR, who arrived in Berlin, Lieutenant Colonel Comrade Sidenko on 19 September 1945.

In the future, I would consider it necessary to use the remaining group of scientists and the laboratory of the Physical Chemistry Institute in Stadtilm (Soviet zone) to collect German scientists working on atomic energy, and after gathering these scientists, evacuate them to the Soviet Union.

Commander-in-Chief of the Group of Soviet Occupation Forces in Germany,
Marshal of the Soviet Union G. Zhukov

[The names of people and places got slightly distorted in being translated from German to Russian. The proper German names are used in this English translation of the Russian document.

Georgy Zhukov (Russian, 1896–1974) became Marshal of the Soviet Union, the highest possible military rank, in January 1943. He led battles on the Soviet/German front, accepted the German surrender in Berlin on 8 May 1945, and commanded Soviet troops in (East) Germany after the war.

Zhukov listed numerous examples of the scientists, organizations, and locations involved in the German nuclear program. On the other hand, there are many German nuclear scientists who went to work for the Soviet Union (e.g., pp. 1633–1636) and many nuclear sites in areas occupied by the Soviet Union (e.g., pp. 2086–2099, 3405, 3407, 3671, 3841, 4030) after the war that Zhukov did not mention. Those omissions might be because Zhukov:

- Considered those details too numerous to include in this report.
- Considered those details too sensitive to include in this report.
- Did not personally inspect those sites or former projects.
- Was excluded from some of those sensitive details by other Soviet officials such as Antonov, Molotov, and Beria who were more closely associated with the fledgling Soviet nuclear program.

Nonetheless, Zhukov clearly stated that he had seen enough evidence to know for himself: "Based on the collected materials, it can be concluded that the German scientists in the field of theoretical and practical research and application of atomic energy have achieved good results up to the creation of the atomic bomb."

Zhukov stated that uranium gas centrifuges were produced by the Hellige company in Breslau (Wrocław), an important detail that does not seem to appear in any other publicly released documents. A heavy water production plant was also reported to be located just outside Breslau (pp. 4070–4071), so Breslau appears to have been an important area for nuclear work.]

2 октября 1945 г.
Сов. секретно
Экз. № *1*

Москва

Генералиссимусу Советского Союза
товарищу Сталину И.В.

В августе и сентябре месяце группой работников Советской военной администрации была организована проверка в Советской зоне оккупации, что сделано немецкими учеными в области создания атомной бомбы.

Докладываю краткие выводы из того, что удалось установить:

1. После открытия в 1939[1] году профессором Ганом и доктором Штрассманом распада урана в Германии было создано общество для использования атомной энергии, получаемой при распаде атома.

В состав общества вошли:

Институт физики Кайзера Вильгельма. Берлин–Далем (американская зона). В 1943 году был эвакуирован в Хехинген (американская зона) во главе с профессором Гейзенбергом и сотрудниками.

Институт химии Кайзера Вильгельма. Берлин–Далем (американская зона). Эвакуирован в Тайфинген (американская зона) во главе с профессором Ганом, доктором Штрассманом и сотрудниками.

Высшая техническая школа. Берлин, Физический институт, профессор Гейгер.

Рабочая группа доктора Дибнера. Берлин, позднее Штадтильм (Тюрингия) — советская зона. Доктор Дибнер, доктор Чулиус, доктор Гартвиг, доктор Беркай, профессор Герлах.

Институт Кайзера Вильгельма по исследованию мозга, генетическое отделение. Доктор Циммер, профессор Тимофеев. Берлин–Бух (советская зона).

Физико-технический имперский институт, радиологическое отделение. Доктор Вайте.[2]

Исследовательский институт Германской государственной почты, Мирсдорф, Берлин (советская зона). Доктор Оттербайн, профессор Флюгге.

Научно-исследовательский медицинский институт Кайзера Вильгельма, отделение физики. Гейдельберг (американская зона). Профессор Ботте.

Физический институт Лейпцигского университета. Профессор Гофманн, профессор Доппель, профессор Гейзенберг, профессор Позе.

Физико-химический институт Лейпцигского университета. Лейпциг (советская зона). Профессор Бангоффер.

Физико-химический институт Гамбургского университета. Гамбург (английская зона). Профессор Гартек, профессор Енсен, профессор Кнауэр.

Физический институт Страсбурского университета (Франция). Профессора Фляйеман, фон Вайцзеккер.

Второй Физический институт Венского университета. Профессора Штеттер, Ортманн.

Физический институт Кельнского университета (английская зона). Профессор Киршнер.

Физический институт Геттингенского университета (английская зона).

Химический институт Кильского университета (английская зона). Доктор Мартин.

Институт биохимии Кайзера Вильгельма. Франкфурт-на-Майне (американская зона). Профессор Раевский.

Химический институт Данцигского университета (Польша). Профессор Альберс.

Физический институт Бонского университета (Франция). Профессора Шмитц, Шмитц-Дюмон.

Французский колледж (Париж). Профессор Боте.

Физический институт. Мюнхен (американская зона). Профессор Клузиус.

Figure D.718: Marshal Georgy Zhukov. 2 October 1945. Report to Joseph Stalin [Archive of the President of the Russian Federation, Fund 93, Division 77 (45), List 4–11, published in Riabev 2006c, pp. 60–64].

Кроме того, исследованием атомного ядра в Германии занимались следующие немецкие ученые:

Фон Лауэ	–	зона США
Профессор фон Арденне		
Профессор Кальман	–	Берлин, Вестенд (английская зона)
Профессор Флюге	–	зона США
Профессор Макс Планк	–	г. Родетц, зона СССР
Профессор Паскаль	–	Геттинген, университет (зона США)
Профессор Густав Герц		
Профессор Смекаль	–	местонахождение неизвестно
Профессор Эрих Регенер	–	Фридрихсхаген, Боденсее (американская зона)
Профессор Ганс Бауэр	–	Вена
Профессор Штарк	–	Бавария (американская зона)
Профессор Зелигер	–	Грайфсвальде (советская зона)
Профессор Бехтер	–	Мюнхен (американская зона)
Доктор Ульман	–	Берлин (зона США)
Профессор Вестфаль	–	Берлин, Целендорф (американская зона)

Большинство крупных ученых, работавших в этой области, союзниками эвакуированы в Южную Германию.

2. В 1941 году Управление вооружения Германии, Исследовательский институт ВМФ и Научно-исследовательский институт ВВС перед фирмами «Пинч», «Сименс» и Акционерным электрическим обществом поставили задачу — создать атомное оружие.

Для практического выполнения этой задачи немецкие ученые работали:

а) ***над получением чистой окиси урана*** (зашифрованной под названием «препарат № 38») и затем из нее — ***металл-урана***.

Использовались фирмы акционерного общества «Ауэр» и Германский институт золота и серебра (Франкфурт-на-Майне, американская зона).

Научными руководителями были доктора Риль, Циммер, Шуленбург;

б) ***над получением изотопа уран-235***.

Учеными было установлено, что действующим активным (т. е. способным к взрыву) является уран-235, который составляет всего 0,7 % всей смеси урана.

Основными специалистами в области разделения изотопов в Германии были профессор Гартек, доктор Грот, которые совместно с главным конструктором фирмы «Аншютц» (Киль, английская зона), доктором Вейерлем изобрели ультрацентрифугу, построенную вышеуказанной фирмой, а также фирмой «Хеллиге» (Бреслау, зона СССР).

Другой метод разделения изотопов урана и получения урана-235 был предложен доктором Багтером[3] (Институт физики Кайзера Вильгельма);

в) ***над организацией производства тяжелой воды***.

Тяжелую воду в Германии вначале привозили из Норвегии (завод «Норск Гидро»). После прекращения поставок из Норвегии немцы пытались организовать собственное производство тяжелой воды в г. Мерзербург (зона СССР), завод «Лейна Верке» на двух установках — «малой» и «большой», и на заводе «Биттерфельд».

Figure D.719: Marshal Georgy Zhukov. 2 October 1945. Report to Joseph Stalin [Archive of the President of the Russian Federation, Fund 93, Division 77 (45), List 4–11, published in Riabev 2006c, pp. 60–64].

В настоящее время на заводе «Лейна Верке» «малая установка» 7 сентября вновь исправлена. «Большая установка», разрушенная в стадии ее строительства бомбардировкой, восстанавливается.

Научными работами руководили профессора Гартек, Енсен, Бангоффер, Клузиус;

г) ***над созданием установки «Уран-машины»*** как источника энергии, получаемой в результате дробления урана.

3. По указанию профессора Бангоффера (Лейпциг, советская зона), ценные сведения о практическом применении процесса Гана–Штрассмана могли бы дать профессор Доппель, профессор Позе и профессор Хунд (Лейпциг, зона СССР). Последний показал, что о существовании атомной бомбы он знал, но подробности были ему неизвестны. Важными институтами, где проводились работы по атомной бомбе, профессор Хунд считает институты Хехинген[4] и Тайльфинген (американская зона).

4. Установлено, что практическими вопросами изготовления атомной бомбы занимался профессор Гейзенберг (Хехинген, американская зона).

Всеми секретными, научно-исследовательскими материалами ведал Герлах (Мюнхен, американская зона).

5. Немцами были созданы для дробления атомного ядра:

– ***циклотрон***, строившийся фирмой «Сименс-Шуккерт», находится в г. Гейдельберг (американская зона) почти в готовом состоянии;

– ***циклотрон***, построенный фирмой «Пинч» в г. Бон (Франция), был уже несколько месяцев в действии;

– ***установка высокого напряжения в 5 млн вольт*** (Генигсдорф, советская зона);

– ***большой циклотрон Акционерного электрического общества*** в Гайхспосте — Институте Цейтена (советская зона). Постройка не закончена.

В Кайзер Вильгельм институте, Берлин–Далем (американская зона), имеется сооружение для циклотрона, полностью не законченное.

Из Института Кайзера Вильгельма нами изъяты часть архива Главного управления Института Кайзера Вильгельма, а также лабораторные и химические препараты профессора Гана.

В настоящее время в г. Штадттильме (Тюрингия, советская зона) из состава рабочей группы доктора Дибнера (доктор Дибнер был инициатором создания рабочего общества по использованию атомной энергии, получаемой при распаде атома) находятся доктора Гартвиг и Беркай. Там же имеется лаборатория для опытов с «Уран-машиной», различное лабораторное оборудование, химические препараты и физико-химическая библиотека (2 000 томов).

По данным докторов Беркая и Гартвига, доктором Дибнером при его отъезде с американцами на юг Германии (американская зона) были взяты следующие аппаратура и сырье:

– радий – примерно 4 грамма;
– металл–уран – примерно 1 тонна;
– тяжелая вода – 400 кг;
– 2 комплекта измерительной аппаратуры для измерения опытов машины;
– фотографическая лаборатория;
– техническая библиотека;
– приборы, необходимые для оборудования лаборатории: трансформаторы, конденсаторы, реостаты, усилители, счетчики, вакуумные насосы и т. д.

Figure D.720: Marshal Georgy Zhukov. 2 October 1945. Report to Joseph Stalin [Archive of the President of the Russian Federation, Fund 93, Division 77 (45), List 4–11, published in Riabev 2006c, pp. 60–64].

Американцы при своем уходе увезли примерно 10 тонн окиси урана, бериллия, всю имевшуюся документацию, включая карточки личного состава.

По данным доктора Гартвига и доктора Беркая, доктор Озенберг (занимавшийся бронированием ученых, занятых важной государственной тематикой) передал полный список последних американцам[5].

На основании собранных материалов можно сделать вывод, что ученые Германии в области теоретического и практического исследования и применения атомной энергии добились хороших результатов вплоть до создания атомной бомбы.

По мнению немецких ученых, американцы частично воспользовались результатами работ немецких ученых по данному вопросу.

Все материалы по вышеуказанному вопросу, а также изъятые из Института Кайзера Вильгельма химические препараты, группа немецких ученых в области атомной энергии и имеющиеся в Штадтильме оборудование, материалы и библиотека, содержащая примерно 2 000 томов, нами переданы прибывшему в Берлин представителю НКВД СССР подполковнику т. Сиденко 19 сентября 1945 года.

В дальнейшем считал бы необходимым оставшуюся группу ученых и лабораторию Физико-химического института в Штадтильме (советская зона) использовать для сбора немецких ученых, работавших над атомной энергией, и после сбора ученых эвакуировать в Советский Союз.

Главнокомандующий группы Советских оккупационных войск в Германии,
Маршал Советского Союза Г. Жуков[6]

«*2*» октября 1945 г.
№ 2072сс

АП РФ. Ф. 93, д. 77/45, л. 4–11. Подлинник.

[1] Так в документе; следует: *1938 году* [36. С. 277], [38. С. 74, 304].

[2] На полях, слева от абзаца, помета, от руки: *Палата мер и весов*. Здесь и далее пометы сделаны неустановленным лицом.

[3] Над этой фамилией запись, от руки: *Багге*.

[4] В этом слове подчеркнута вторая буква «*х*» и над ней написана буква «*ш*».

[5] Далее абзац выделен двойным очерком на полях неустановленным лицом.

[6] Жуков Георгий Константинович (1896–1974) — Маршал Сов. Союза, четырежды Герой Сов. Союза (1939, 1944, 1945, 1956). Участник Первой мировой войны. Кавалер двух Георгиевских крестов. С марта 1917 председатель эскадронного солдатского комитета. В августе 1918 добровольно вступил в РККА. Проходил службу в кавалерийских частях. Прошел путь от курсанта кавалерийских курсов (1920) до заместителя по кавалерии командующего войсками Белорусского военного округа (1938). В 1939 командовал войсками в боях на р. Халхин-Гол. В январе–июле 1941 нач. Генштаба. В 1941–1942 командовал войсками Резервного, Ленинградского и Западного фронтов. С августа 1942 1-й зам. наркома обороны и зам. Верховного Главнокомандующего. По поручению Ставки Верховного Главнокомандования координировал действия фронтов в Сталинградской битве. В 1944–1945 командовал войсками 1-го Украинского и 1-го Белорусского фронтов (в Висло-Одерской и Берлинской операциях). 8 мая 1945 принял капитуляцию фашистской Германии. В 1945–1946 главнокомандующий группой Сов. войск в Германии, Главнокомандующий Сухопутными войсками. С июня 1946 командующий войсками Одесского, а с февраля 1948 — Уральского военных округов. В 1953–1955 1-й зам. министра обороны, в 1955–1957 министр обороны СССР. С марта 1958 в отставке [36. С. 445–446], [40. С. 310–311].

Figure D.721: Marshal Georgy Zhukov. 2 October 1945. Report to Joseph Stalin [Archive of the President of the Russian Federation, Fund 93, Division 77 (45), List 4–11, published in Riabev 2006c, pp. 60–64].

SECRET

WAR DEPARTMENT

OFFICE OF THE ASSISTANT SECRETARY OF WAR

STRATEGIC SERVICES UNIT

25th & E STREETS, N.W.
WASHINGTON 25, D.C.

26 October 1945
AA-245

To : Major A. E. Britt
5004 New War Department Bldg.

From: Technical Section
Col. H. W. Dix

The five paragraphs below are of interest on the subject in hand and show Russian interest in Austrian Research Scientist on atomic energy. This report came to us from our Austrian headquarters September 29, 1945. The sub-source, who obtained the information, has not been tried before by this Organization but our Austrian office indicates that the information should be given a 3 value. The information was obtained in Vienna, Austria.

1. The following information was given by Dr. Ortner in an interview with source.

2. Dr. Ortner is a physicist who worked at the Physical Institute of the University of Vienna. He became an NSDAP member in May 1938 as a result of which he was dismissed from the staff of the Institute in May 1945. At the Institute he worked mainly on side problems connected with uranium research. He was thus in a position to know something about the advance of German scientists in the field of atom splitting.

3. On 27 April 1945 Dr. Ortner, together with Dr. Wambacher, former assistant to Prof. Stetter, head of the Physical Institute, was taken into custody by Russian authorities and flown to Moscow. They remained there until 2 August, on which date they were flown back to Vienna. They were treated well throughout their stay in Moscow, although they were under house arrest.

4. The scientists were interrogated once by three Russian officers, scientists according to Dr. Ortner. It seemed that the Russians wanted to investigate a rumor that the Germans had made successful tests with a "Uran Maschine". Such a machine would presumably make use of the energy released by the disintegration of the atom without such a process being necessarily an explosion. Dr. Ortner declares, however, that no such tests were ever made in Austria, and made statements to that effect to his Russian interrogators.

5. The Physical Institute of the University of Vienna had about 70 kg of uranium at the time of the Russian occupation. This supply was taken away by the Russians.

Figure D.722: H. W. Dix to A.E. Britt. 26 October 1945 [NARA RG 77, Entry UD-22A, Box 174, Folder 10.70 Austria Misc]. This memo from the Strategic Services Unit (formerly OSS) confirms that Russian officials were conducting a high-priority investigation of reports that German scientists had carried out successful tests of uranium devices (bombs, reactors, or both) during the war.

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[See photo on p. 4529. This 26 October 1945 memo from the Strategic Services Unit (SSU, formerly OSS) confirms that Russian officials were conducting a high-priority investigation of reports that German scientists had carried out successful tests of uranium devices (bombs, reactors, or both) during the war. Note that Ortner only denied that such tests had occurred in Austria, not elsewhere.]

Russian summary of information obtained from Robert Döpel. 1946 [Archive of the President of the Russian Federation, courtesy of Rainer Karlsch]. [See photo p. 4531.]

Some information related to materials of Prof. Döpel about extremely powerful atomic bombs and an atomic heat source for energy-generating machines.

1. A method has been found to split atoms of uranium with the help of heavy water and rays of radium, which is accompanied by the discharge of a large amount of energy.

2. The names of institutes that worked on this problem are provided in the note.

3. It is noted that the problem of a uranium bomb has been developed to the point of testing on a [military] base.

4. The solution of the problem of a uranium heat source for use in energy-generating machines is outlined.

5. The Americans forcibly removed over 20 individuals, professors and scientists, working on this problem, and over 20 grams of radium was also removed after the transfer of the region by our troops.

6. In order to heighten the attention of Prof. Döpel to the technical content of the note, the NKTM engineers (Vidman and Pevzner) indicated to Prof. Döpel that his document would be received by the famous physicists, Joffe or Kapitsa, more likely Kapitsa, who is located in Moscow.

This explains the fact that the note is addressed to Academic Kapitsa.

7. Döpel is a professor who worked at Leipzig University on the use of atomic energy. He has been awarded two iron crosses. He is emotionally broken. He lost his wife during the bombing and was left alone and is now extremely hostile toward the Americans and the English.

Robert Döpel (1895–1982)

1946 Russian summary of information obtained from Robert Döpel

Некоторые сведения, относящиеся к материалам проф.Допеля о сверхмощных атомных бомбах и атомном уране для энергетических машин.

1. Найден способ разложения атома урана с помощью тяжелой воды и лучей радия, сопровождающийся выделением большого количества энергии.

2. В записке указаны институты, которые работали над данной проблемой.

3. Сообщается, что проблема урановой бомбы доведена до полигонных испытаний.

4. Намечено решение проблемы уранового урана для использования в энергетических машинах.

5. Американцами насильственно увезено более 20 человек профессоров и научных работников, занимавшихся этой проблемой, а также увезено более 20 гр. радия после передачи района нашим войскам.

6. В целях повышения внимания проф.Допеля к техническому содержанию записки, инженеры НКТМ /Видман и Певзнер/ указали проф.Допелю, что его документ поступит к известным физикам - Иоффе или Капице, вероятнее Капице, как находящемуся в Москве. Этим об"ясняется адресование записки на имя академика Капица.

7. Допель - профессор, работал в Лейпцигском университете по использованию атомной энергии. Награжден двумя железными крестами. Морально разбит. Потерял во время бомбардировки жену, остался одиноким и сейчас крайне враждебно настроен к американцам и англичанам.

Figure D.723: 1946 Russian summary of information obtained from Robert Döpel, in which he mentioned a German atomic bomb test on a military base [Archive of the President of the Russian Federation, courtesy of Rainer Karlsch].

Report of the Head of the Special Camp Department of SMAD, Colonel Sviridov, No. 00400 of 11 June 1946 to the Deputy Minister of Interior of the USSR General Serov, GARF, Fund 9409, Catalog 1, File 14, Sheet 72 [discovered by Rainer Karlsch].

3. Kirfes, Horst—born 1916 in Erfurt (Thuringia), recently living in central Berlin; engineer for aircraft engine construction, took part in the production of the aircraft "jet fighter," a diesel fighter without propeller and with a speed of 1600 km/h. He was acquainted with the director of the department for the production of the V1, 2 and 4. That one told about how the V2 was made and that it was equipped with an atomic bomb. (The director died.) (At present [Kirfes] is in Special Camp 7.)

[During interrogation in the Soviet Union after the war, the engineer Horst Kirfes said he was involved in the wartime production of a supersonic jet aircraft. From his testimony, apparently that program was also somehow connected to nuclear weapons production (possibly to deliver a nuclear weapon, or to use nuclear power for the propulsion?). See p. 5761 for a very similar account of the wartime production of a nuclear-related supersonic jet aircraft by Josef Ernst, an engineer found by British investigators after the war.

Kirfes mentioned the "production" (not merely design) of the V-4. Since several different projects were vying for the title of "V-4," which one did he mean?

The department director who gave detailed information on rocket and nuclear programs to Kirfes but later died may have been Dr. Albin Sawatzki of Peenemünde.

According to the information from Kirfes, an atomic bomb was actually produced, and it was designed to be carried by a V-2 or similar rocket. That information agrees with the March 1945 report by Ivan Ilyichev (p. 4485).

Moreover, the information from Kirfes seems to indicate that the rocket was *already* "equipped with an atomic bomb," or in other words that the rocket, the atomic bomb, and the mated system of those two were either fully ready or very nearly ready before the end of the war. That information agrees with what the U.S. Army Air Forces publicly published in July 1946 (p. 5038).

For many more references to nuclear-armed rockets that were intended to attack Allied targets during the war, see the list of documents on p. 5821.]

Commentary on Horst Kirfes from Rainer Karlsch [Karlsch 2005, p. 224].

Dazu gehören die Schilderungen von Gerhard Rundnagel und Horst Kirfes. Letzterer berichtete in sowjetischer Gefangenschaft über die Verlegung von Atomforschern mitsamt fertiger Bomben aus Berlin Anfang 1945.

These include the descriptions of Gerhard Rundnagel and Horst Kirfes. The latter reported in Soviet captivity on the transfer of nuclear researchers together with finished bombs from Berlin in early 1945.

Rainer Karlsch. Stalin, der Bluff und die Bombe: Verwirrspiel um den ersten sowjetischen Atomtest. *Osteuropa* December 2007 pp. 117–175. English translation courtesy of Rainer Karlsch. [https://zeitschrift-osteuropa.de/hefte/2007/12/stalin-der-bluff-und-die-bombe/ and https://www.freitag.de/autoren/rainer-karlsch/der-grosse-bluff]

[...]In May 1949, the central committee of the Chinese Communist Party (CCP) decided to send a government delegation headed by the second highest party functionary of the CCP, Liu Shaochi, to Moscow. [...] Stalin met with Liu Shaochi for five rounds of discussions. The first reception took place at Stalin's dacha in Kuntsevo and the second that is of special interest to us, took place in the evening of July 11 in the Kremlin. [...]

However, Stalin denied the wish of Liu Shaochi. It was not in his calculation to provide nuclear technology to the Chinese. As compensation and a demonstration of his own strength, he invited his guests to a film showing instead. It showed the test explosion of an atomic bomb! The test, according to Stalin, had taken place in the upper north of the Soviet Union, in a deserted region near the polar circle. After the showing of the film Stalin bragged about the progress in science and technology achieved by the Soviet Union. His country was soon to be in the position to manufacture substantially effective weapons.[18] One thing about this story is extremely noteworthy: The showing of the film took place a few weeks before the first successful test of a Soviet atomic bomb in Semipalatinsk (on August 29, 1949). [...]

Kovalev, Stalin's China expert and the most important of Soviet functionaries in China, has reported the film showing in his unpublished memoir. He presented the background of the Soviet-Chinese relation in a series of articles in 1991/1992.[20]

Shi Zhe held a position comparable to Kovalev's function. [...] Shi Zhe also mentioned the film showing in his memoirs.[22] The Chinese historian Zhu Yuanshi also drew upon it in his account of the secret visit of Liu Shaochi in Moscow.[23]

[...] Possibly the said film was found after the war somewhere in Germany. That sounded at first like a wild conspiracy theory. Yet there are written records that support this theory. For example, a very interesting inventory of sources is in the Archive of Russian Contemporary History in Moscow. In it, hundreds of German files on the rocket development are listed. All these documents were looted in the German Reich, taken to Moscow and inventoried. Besides files, films were also listed. The content of one roll of film is written word for word as follows: "Film of the launch of a V2 and the explosion of an atomic bomb."[25] This film and still a few others, and the complete documentation on German rocket development were turned over in May 1946 by the Director of the Main Administration for Artillery of the Red Army, Marshall Nikolai Jakovlev, to the Deputy Chairman of the Special Committee for Rocket Technology, Ivan G. Zubovic.[26] [...]

For our connection, it is important to make a note of the fact that the films of interest to us were discovered sometime between May 1945 and April 1946 in Germany by workers of the Special Committee for "Reactive Technology." Likely, these films are mostly about the recordings of various rocket launches. But on one roll of film, not only a rocket launch was to be seen, but also the "Explosion of an Atomic Bomb," according to the archive inventory. This title designation seems to have been carried over word by word from the German film roll into Russian, particularly it was

similarly experienced in cases of other film rolls. A translation error is to be ruled out. [...]

Unexpectedly, we came across the sequel of this saga at another station. It concerns more papers of the Special Committee for Rocket Technology (Committee No. 2) and Interior Ministry from 1948 to 1950 related to the "top-secret special films." On October 28, 1948, the already mentioned Ivan G. Zubovic turned over "top-secret' Special Film No. 185 in eight parts to the Secretary of the Interior Ministry Haritov.[30] [...]

The deputy Interior Minister Serov was responsible for the archiving. He will have inquired at the Technical Archive of the Committee No. 2 as to where the films were. Thereupon he was informed on September 23, 1949 by Zubovic that at the instigation of Nikolai Bulganin, one of Stalin's deputies, one copy of the special film had been loaned to the Ministry of Interior already on October 28, 1948.[37] A second copy, which the Committee No. 2 got from the Ministry of Armament, should be also handed over to Serov. It comes from the chief of Stalin's private chancellery, Alexander N. Poskrebyschew.[38] [...]

The last letter concerning the films was dated January 20, 1950.[39] In it, Haritonov informed his boss Serov that the archive of the MVD had turned over both top-secret special films no. 185 and no. 127 to the National Movies and Photo Archive for final safekeeping. The letter was enclosed with the film copy in turnover action. Accordingly the National Movies and Photo Archive took over the special film 185 in eight parts and also the suitcase with the second copy of the special film. All seals on the suitcase were undamaged. Furthermore the top-secret film no. 127 in two copies with four parts each were turned over to the National Movies and Photo Archive. At the end, one passage was yet included: "Inspection in the file on the movie films is prohibited without the expressed consent of the MVD."

Up until today the top secret "special films" still could not be located. They were removed in the mid-fifties from the inventory of the National Movies and Photo Archive at the instigation of the MVD (Serov's Department) and have since been missing. [...]

[18] Cf. Sergei Goncharov, John Lewis, Xue Litai, *Uncertain Partners, Uncertain Partners, Mao and the Korean War*. Stanford 1993, p. 71.

[20] Cf. Ivan Kovalev, Stalin's Dialogue with Mao Zedong, Two parts, in: *Problems of the Far East*, No. 6, 1991 and No.1-3, 1992; unpublished memoirs.

[22] Cf. Shi Zhe, *Zai Lishi Juren Shenbian Shi Zhe Huiyilu* (*Beside Great Historical Figures: The Memoirs of Shi Zhe*), Beijing 1991, p. 410.

[23] Cf. Zhu Yuanshi, Liu Shaoqi's Secret Visit to the Soviet Union in 1949, in: *Dang de Wenxian* (*Party Documents*), no. 3, 1991, p. 76f.

[25] Archive list with material on the reactive technology for safekeeping by the Cadre Administration of ZK KPSU and for preparation of tasks of Special Committee of the Soviet Minister Council, May 1946, RGASPI Moscow, Fond 17, Cat. 127, file 1294, p. 7f.

[26] Cf. letter of May 1946 from Ivan Zubovic to Cadre Department of KPSU, Georgij Malenkov, and the Special Committee, Ibd., p. 16.

[30] Cf. top-secret file note of Haritonov (Committee No. 2) of October 29, 1948, GARF (National Archive of the Russian Federation), Fond 9401, Cat. 1, File 4153, p. 366.

[37] Vgl. Documentation of the handover of film number 185 from the Special committee Nr. 2 to the Deputy of the Minister of Inferior of October 29, 1948. GARF Moscow, Fond 9401, Cat. 1, file 4153, p. 366.

[38] Cf. top-secret letter of September 3, 1949 from the Director of the Liquidation Commission of the Committee No. 2, Ivan Zubovic, to Ivan Serov (MVD), ibid, p. 361.

[39] Cf. top-secret letter of January 20, 1950 from Haritonov (Committee No. 2) to Serov (MVD), ibid, p. 364f.

[Can any copies of this film (or other films of German technologies that have not been publicly acknowledged) be located in the archives of any nation and declassified?

The fact that the film highlights two projects back-to-back ("Film of the Launch of a V-2 and the Explosion of an Atomic Bomb") suggests that those two projects—long-range rockets and atomic bombs—were intended to go together. That agrees very well with evidence from many independent sources (p. 5821). Just how far did the integration of an atomic bomb with a rocket get by the end of the war?]

[There were persistent reports of one or more Soviet nuclear weapons tests in 1946, long before the first known Soviet-built bomb test in 1949 (RDS-1/Joe-1). Could those 1946 reports have been Soviet tests of captured German nuclear weapons?]

U.S. Military Attaché Moscow to War Department. 14 September 1946. [NARA RG 77, Entry UD-22A, Box 160, Folder 205.2 Cables Incoming, Top Secret January 1946 thru December 1946]

[See document photo on p. 4537.]

CG USAFIK Korea to War Department. 6 October 1946. [NARA RG 77, Entry UD-22A, Box 160, Folder In & Out July 16, 1946–Jan. 1947]

[See document photo on p. 4538.]

R. H. Free to U.S. Military Attaché London. 5 December 1946. [NARA RG 77, Entry UD-22A, Box 160, Folder 205.3 Cables Outgoing, Secret and Under January 1946 thru December 1946]

[See document photo on p. 4539.]

WAR DEPARTMENT
CLASSIFIED MESSAGE CENTER
INCOMING CLASSIFIED MESSAGE

Shuler

TOP SECRET

TOP SECRET TOT

PRIORITY

PARAPHRASE NOT REQUIRED. HANDLE AS TOP SECRET CORRESPONDENCE PER PARAS 51i and 60a. AR 380-5.

From: MA Moscow Russia sgd Macon

To: War Department for Chamberlin

Nr: MA 50746 14 September 1946

TOP SECRET

Believe importance of evaluation of information contained in ALUSMA Moscow 121350-Z to CNO warrants expression my views.

Comments:

1. Report may be true:

A. Positive: Previous rumors tests Atomic Bomb point toward explosion June or July (See R-207-46, R-152-46, and MA -50650). Present report refers to experimental drops during some months. No apparent connection between sources of these rumors.

52°03'N, 113°30'E.

Harshaw uncertain that Chita was base of experimentation, therefore Kazakhstan may have been scene. Statements high Soviet Officials indicate progress and expected early development.

B. Negative: Soviet industrial structure cannot support process following American production.

Weight and power of reported bomb not in keeping with American experience. Story copies inaccuracies of American early stories. Unlikely Soviets would grant leave to active participant of tests.

If true unlikely officer would disclose to family.

2. Report may be planted.

CM-IN 2678 (14 Sep 46)

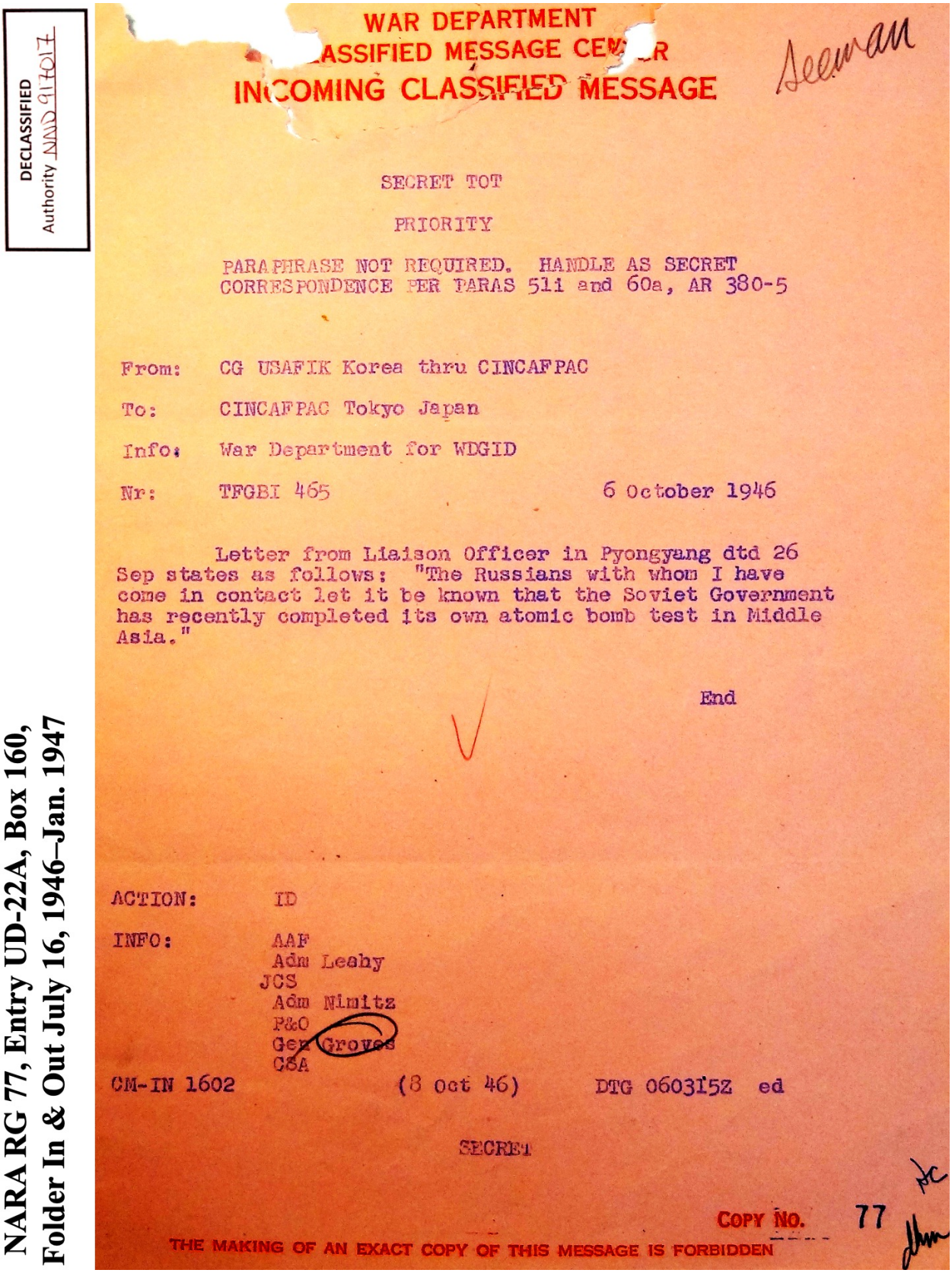
TOP SECRET

Gen Groves

COPY NO. 24

THE MAKING OF AN EXACT COPY OF THIS MESSAGE IS FORBIDDEN

Figure D.724: There were persistent reports of one or more Soviet nuclear weapons tests in 1946, long before the first known Soviet-built bomb test in 1949 (RDS-1/Joe-1). Could those 1946 reports have been Soviet tests of captured German nuclear weapons? U.S. Military Attaché Moscow to War Department. 14 September 1946 [NARA RG 77, Entry UD-22A, Box 160, Folder 205.2 Cables Incoming, Top Secret January 1946 thru December 1946].



DECLASSIFIED
Authority NND 947017

WAR DEPARTMENT
CLASSIFIED MESSAGE CENTER
INCOMING CLASSIFIED MESSAGE

Seeman

SECRET TOT

PRIORITY

PARAPHRASE NOT REQUIRED. HANDLE AS SECRET CORRESPONDENCE PER PARAS 511 and 60a, AR 380-5

From: CG USAFIK Korea thru CINCAFPAC

To: CINCAFPAC Tokyo Japan

Info: War Department for WDGID

Nr: TFGBI 465 6 October 1946

Letter from Liaison Officer in Pyongyang dtd 26 Sep states as follows: "The Russians with whom I have come in contact let it be known that the Soviet Government has recently completed its own atomic bomb test in Middle Asia."

End

ACTION: ID

INFO: AAF
Adm Leahy
JCS
Adm Nimitz
P&O
Gen Groves
CSA

CM-IN 1602 (8 Oct 46) DTG 060315Z ed

SECRET

COPY NO. 77

THE MAKING OF AN EXACT COPY OF THIS MESSAGE IS FORBIDDEN

NARA RG 77, Entry UD-22A, Box 160, Folder In & Out July 16, 1946–Jan. 1947

Figure D.725: There were persistent reports of one or more Soviet nuclear weapons tests in 1946, long before the first known Soviet-built bomb test in 1949 (RDS-1/Joe-1). Could those 1946 reports have been Soviet tests of captured German nuclear weapons? CG USAFIK Korea to War Department. 6 October 1946 [NARA RG 77, Entry UD-22A, Box 160, Folder In & Out July 16, 1946–Jan. 1947].

NARA RG 77, Entry UD-22A, Box 160, Folder 205.3 Cables Outgoing, Secret and Under January 1946 thru December 1946

WAR DEPARTMENT—OFFICIAL BUSINESS

OUTGOING CLASSIFIED MESSAGE

FOR WD MC USE ONLY
86931
0422092

DEFERRED—ROUTINE—PRIORITY—URGENT: PRECEDENCE: PRIORITY
DATE: 5 DECEMBER 1946
OFFICE OF ORIGIN: MAJ. GEN. L. R. GROVES' OFFICE ROOM 4166
EXTENSION: 78893
NAME OF OFFICER PREPARING: LT. COL. R. H. FREE

CLASSIFICATION ➡ RESTRICTED | CONFIDENTIAL | SECRET X | TOP SECRET

(LIST EACH ADDRESSEE SEPARATELY. USE UPPER CASE AND DOUBLE SPACING BETWEEN EACH ADDRESS AND THROUGHOUT MESSAGE.)

SECRET

TO:

US MILATTACHE AM EMBASSY LONDON ENGLAND

LOCO PERSONAL FOR DEAN FROM SEEMAN SIGNED GROVES REFERENCE

YOUR CABLE SEVEN ONE TWO SEVEN FIVE

YOU SHOULD EVIDENCE NO INTEREST AND MAKE NO VISIT PERIOD HERE AGAIN

CHANCES ARE THAT MORE MIGHT BE LOST THAN GAINED PD SUGGEST MA ASK

PRINCIPALS FOR A WRITTEN DESCRIPTION AND SKETCHES OF ALLEGED SUCCESSFUL

EXPERIMENT UPON WHICH TO BASE JUDGMENT PERIOD RECOMMEND DISCREET BUT

THOROUGH INVESTIGATION OF PERSONALITIES AND CONNECTIONS END

205.3

SECRET

86931

DISTRIBUTION: LOCO NONE

COORDINATION, CONTENT AND CLASSIFICATION AUTHENTICATED BY:

TYPED NAME AND GRADE: L. R. SEEMAN
COLONEL, CORPS OF ENGINEERS

COORDINATION

DIVISION			
SIGNATURE OF RESPONSIBLE OFFICER			

W. D., A. G. O. Form No. 0990 7 September 1944 (This form supersedes W. D., A. G. O. Form No. 990, 1 June 1944, which may be used until existing stocks are exhausted.) 16—41817-1 U. S. GOVERNMENT PRINTING OFFICE

Figure D.726: There were persistent reports of one or more Soviet nuclear weapons tests in 1946, long before the first known Soviet-built bomb test in 1949 (RDS-1/Joe-1). Could those 1946 reports have been Soviet tests of captured German nuclear weapons? R. H. Free to U.S. Military Attaché London. 5 December 1946 [NARA RG 77, Entry UD-22A, Box 160, Folder 205.3 Cables Outgoing, Secret and Under January 1946 thru December 1946].

Rainer Karlsch. 2013. Die Abteilung Atomphysik der PTR in Ronneburg und das deutsche Uranprojekt. *PTB-Mitteilungen* 123:1:73–81. [See also Karlsch 2005, p. 211.]

Am 28. Februar 1945 kamen Diebner und Gerlach von Berlin nach Ronneburg und forderten von Carl-Friedrich Weiss die Übergabe des gesamten Poloniumvorrates. Wofür das Polonium gebraucht wurde, erfuhren die Wissenschaftler der PTR nicht: "Bei den Besuchen hat er [Gerlach] mit mir [Weiss] nicht über die Uranfragen gesprochen, zumal wir nicht allein waren. Auf Verletzung der Geheimhaltung standen schwerste Strafen; keiner durfte mehr erfahren, als unbedingt nötig war." Was danach mit den Polonium-Präparaten geschah, ist unklar. Sie wurden nach Kriegsende nicht mehr gefunden. Die Polonium-Anlage sowie das gesamte noch in Kisten befindliche Bleinitrat mußte von Mitarbeitern der PTR am 25. Juni 1945 einer amerikanischen Militärkommission übergeben werden.

On 28 February 1945, Diebner and Gerlach came from Berlin to Ronneburg and demanded the transfer of the entire stock of polonium from Carl-Friedrich Weiss. The scientists of the PTR did not learn why the polonium was needed: "During the visits he [Gerlach] did not talk with me [Weiss] about the uranium questions, especially since we were not alone. Violations of secrecy were severely punished; no one was allowed to know more than was absolutely necessary." What happened afterwards with the polonium preparations is unclear. They were no longer found after the end of the war. The polonium plant as well as all of the lead nitrate still contained in boxes had to be handed over to an American military commission on 25 June 1945 by employees of the PTR.

[This information comes from these archival references:

Protokoll der Befragung von Dr. Carl-Friedrich Weiss am 28.10.1945, Archiv der Max Planck Gesellschaft, Abt. I, Rep. 34, KWI für Physik, Nr. 99a, Diebner-Gruppe, Nr. 19208.

Görken: Bericht über den Abtransport der Anlage zur Polonium-Gewinnung, 6.7.1945, BArch, Berlin-Lichterfelde, DF-5, Nr. 14.]

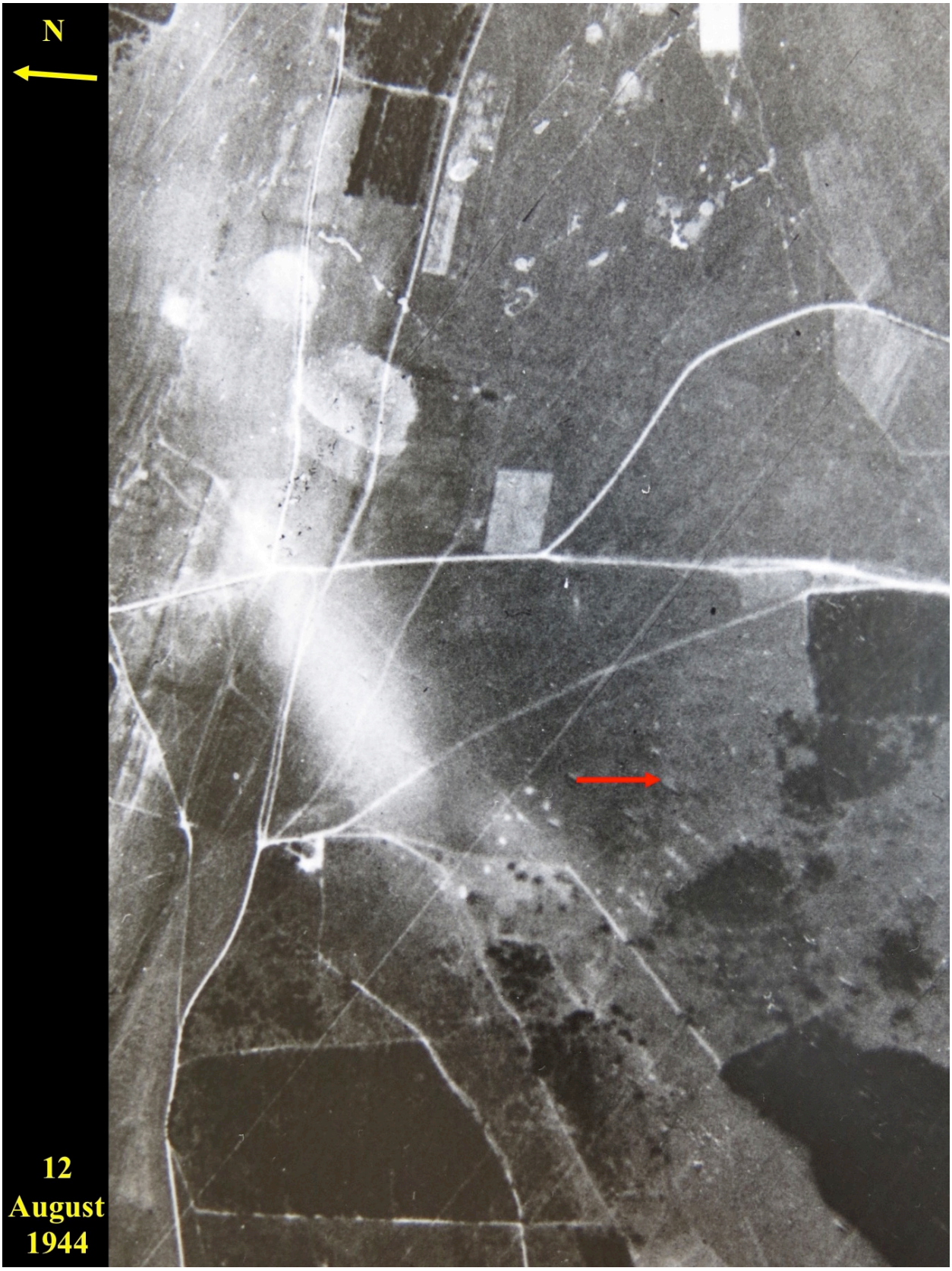


Figure D.727: 12 August 1944 U.S. aerial reconnaissance photo of Ohrdruf military training base, showing location (red arrow) before possible March 1945 test explosion. Note the absence of visible craters or blast damage, and the rectangular structures to the east that appear to be partially camouflaged buildings.

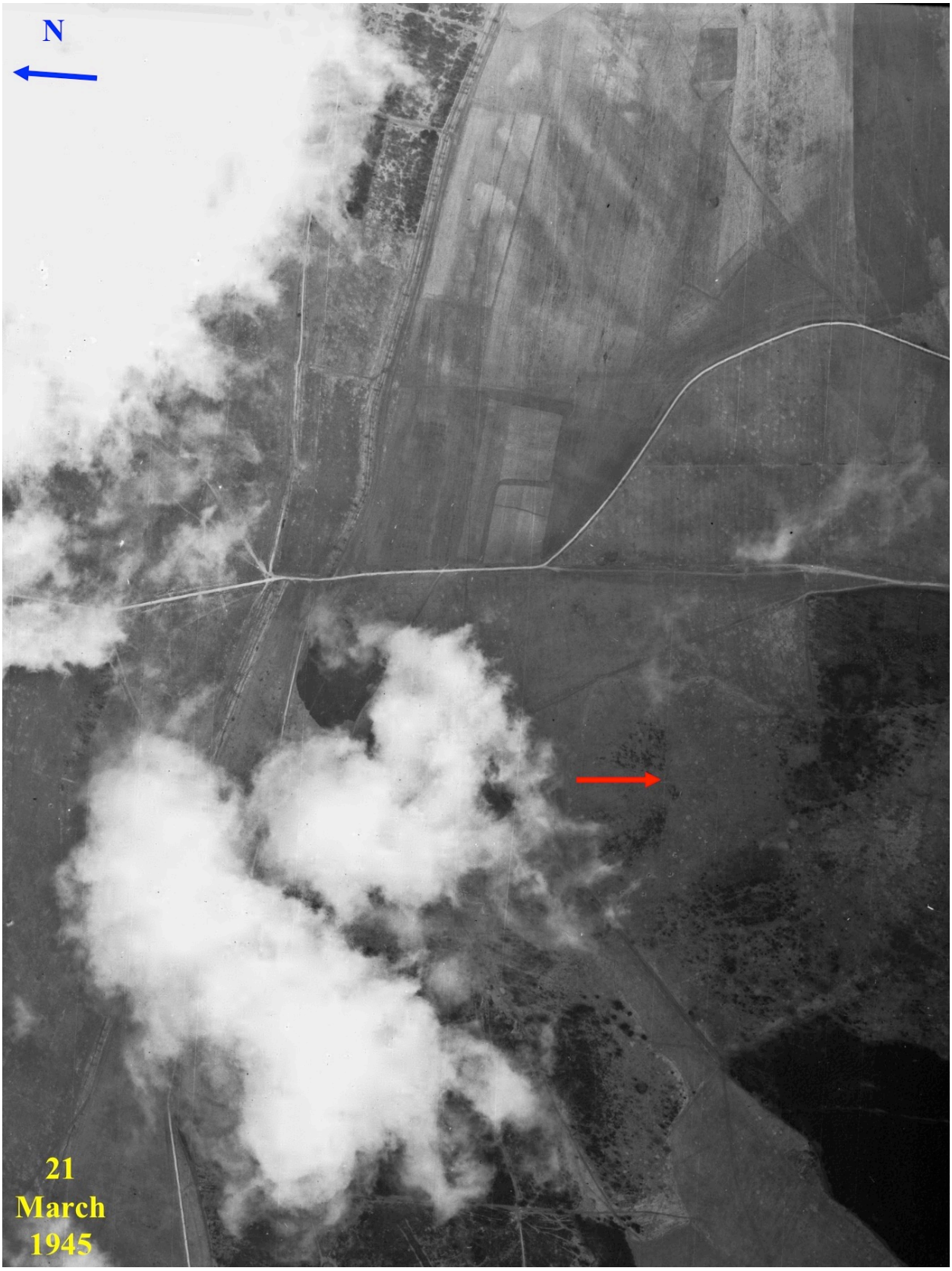


Figure D.728: 21 March 1945 U.S. aerial reconnaissance photo of Ohrdruf military training base, showing location after possible March 1945 test explosion. Note the apparent crater with many streaks of ejecta radiating outward from its center (denoted by the red arrow), and the removal or alteration of buildings.

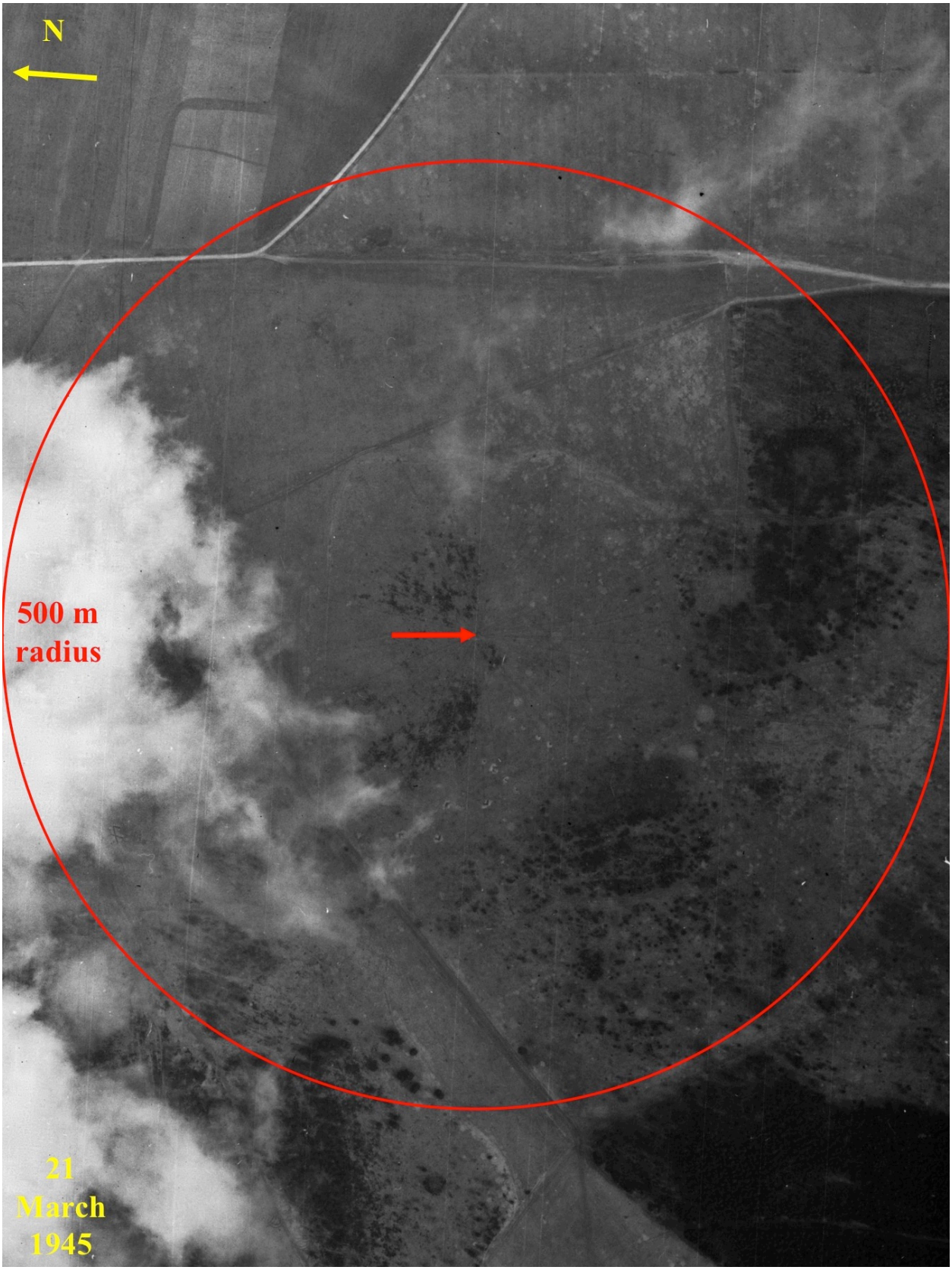


Figure D.729: 21 March 1945 U.S. aerial reconnaissance photo of Ohrdruf, zoomed in on the apparent crater, with a circle to show the scale of a possible 500-meter blast radius.

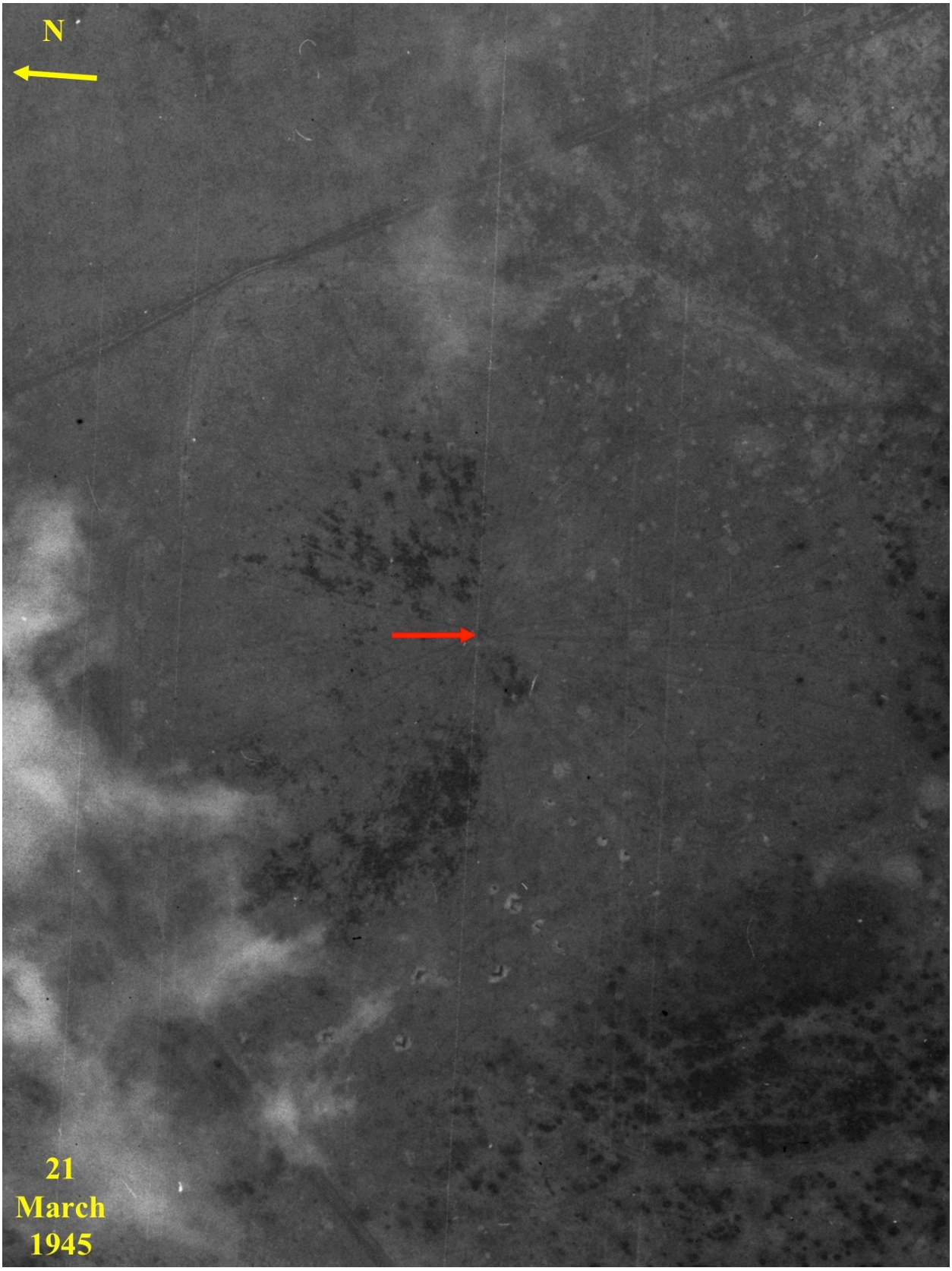


Figure D.730: 21 March 1945 U.S. aerial reconnaissance photo of Ohrdruf, zoomed in further to more clearly show the many streaks of ejecta radiating outward from the center (red arrow) of the apparent crater.

Figure D.731: 9 June 1945 U.S. aerial reconnaissance photo of Ohrdruf military training base, showing location after possible March 1945 test explosion. Note the circular shape with a center denoted by the red arrow and a radius approximately the same size as the red arrow. Again, note the apparent removal or alteration of buildings that had previously been on the field.

Figure D.732: Entrance to the Ohrdruf Truppenübungsplatz now, and overview of the base and the surrounding area.

Figure D.733: Even now, the Ohrdruf Truppenübungsplatz is a mixture of fields and forested areas in close proximity.

Figure D.734: Memorials to concentration camp victims at the Ohrdruf Truppenübungsplatz.

Franciszek Stryjewski. 1960. *We Cieniu Krematorium.* Katowice. [Translation from Polish to German by Stefan Wohanka in Jonastalverein archive, Arnstadt.]

Die Organisation dieses Lagers fiel dem Lager Buchenwald zuteil, welches als Mutterlager wenigstens 95000 Häftlinge in verschiedenen Kommandos beschäftigte. Grössere Ansammlungen der Häftlinge, die unter der direkten Leitung der SS untergebracht waren, wie z. B. "Dora" mit 32000 Häftlingen, haben sich von dem Mutterlager nicht so langer her, erst vor drei Monaten getrennt.

- Dieses verdammte Schlachthaus Ohrdruf—fuhr der Vorarbeiter fort—besteht schon erst seit ein paar Jahren. Wir wurden mal in Buchenwald auf den Appellplatz zusammengerufen, von allen Seiten umgeben, 1000 Männer wurden ausgewählt und noch an demselben Abend abgeschickt; aus uns wurde der Ansatz eines neuen Nebenlagers Ohrdruf S: III (S = Sonderlager) organisiert. Wir haben uns als Lager schon vergrössert, wenn trotz sehr zahlreicher Todesfälle über 3000 Häftlinge heute da sind, abgesehen von diesen dort im Nordlager. Transporte kamen doch zahlreich aus Sachsenhausen, Stutthof, Krakow-Plaszow, Dachau, Auschwitz und aus vielen anderen Lagern.

Am Heiligen Abend [1944] waren wir nur durch einen halben Tag in Arbeit. Die SS-Leute wollten auch freihaben.

Der Lagerführer, der ein Stockwerk eines der repräsentativen Blocks für sein Büro reserviert hatte, lud zum Heiligen Abend alle Blockführer, Oberkapos und Kapos zu sich ein, um ihnen eine schnelle Heimkehr zu wünschen, wenn die Deutschen den vom Führer versprochenen "Endsieg" davonträgen.

- Ihr könnt ganz ruhig in die Zukunft schauen—sagte er—weil der Führer angekündigt hat, dass er eine neue Waffe einsetzen wird, die den ganzen bisherigen Verlauf des Krieges radikal verändern und die ganze Welt zu Füssen des Grossen Deutschen Reichs legen soll. [...]

The organization of this camp fell to the Buchenwald camp, which, as the mother camp, employed at least 95,000 prisoners in various commandos. Larger concentrations of prisoners housed under the direct direction of the SS, such as "Dora" with 32,000 prisoners, separated from the mother camp not so long ago, only three months ago.

- This damned Ohrdruf slaughterhouse—the foreman continued—has only existed for a few years. We were once called together on the roll call square in Buchenwald, surrounded on all sides, 1000 men were selected and sent off that very evening; the beginnings of a new Ohrdruf S: III (S = special camp) subcamp were organized from among us. We have already expanded as a camp, even though there are more than 3000 prisoners there today despite numerous deaths, apart from those in the north camp. Transports came in large numbers from Sachsenhausen, Stutthof, Krakow-Plaszow, Dachau, Auschwitz and many other camps.

On Christmas Eve [1944] we were only at work for half a day. The SS people also wanted the day off.

The camp commander, who had reserved a floor of one of the representative blocks for his office, invited all the block leaders, head kapos and kapos to his house on Christmas Eve to wish them a speedy return home when the Germans delivered the "final victory" promised by the Führer.

- You can look quite calmly into the future—said he—because the Führer has announced that he will use a new weapon which will radically change the whole course of the war so far and lay the whole world at the feet of the Great German Reich. [...]

Das Eschebachkommando wurde Anfang Februar [1945] liquidiert. Ich musste zum Steinbruch übergehen. Wir verliessen als die ersten das Lagergelände, sofort nach dem Morgenappell. Unsere Kolonne zählte 2,3–3 Tausend Häftlinge. Wir wurden von über 200 SS-Leuten begleitet. Wir gingen auf Waldwegen, immer aufwärts, bis wir nach einer Stunde Marsch einen Gebirgspass zwischen zwei Ketten von ziemlich hohen Anhöhen erreicht haben. Das war eigentlich ein grosser Bergkessel, voll von Eisenbahngleisen, Weichen und einer grossen Menge von Baustoffen. Am Fuss des südlichen Abhangs eines ca. 200 Meter hohen Berges schienen schwarze Löcher von Tunnels, die tief in den Kalkberg liefen. Etwas weiter flossen Rutschen von gelben und weissen Steinen herunter.

The Eschebachkommando was liquidated at the beginning of February [1945]. I had to go over to the quarry. We were the first to leave the camp grounds immediately after the morning roll call. Our column numbered 2300–3000 prisoners. We were accompanied by over 200 SS men. We walked along forest paths, always uphill, until after an hour's march we reached a mountain pass between two chains of fairly high hills. This was actually a large mountain basin, full of railroad tracks, switches and a large amount of building materials. At the foot of the southern slope of a mountain about 200 meters high, black holes appeared from tunnels running deep into the limestone mountain. A little further on, chutes of yellow and white stones flowed down.

- Hier ist—erklärte mir August Szary—der Ort unserer Qualen. Die Deutschen nennen ihn "Jonas Tal". Siehst du diese zwei Tunnels dort? Sie sind schon seit langem fertig. Sie sind mit Händen unserer Vorgänger gebaut worden. An diesen Tunnels fahren täglich Waggons und Kraftwagen vor. Soldaten entladen und tragen Kästen, Maschinen und weiss der Teufel was für einen Mist noch herein. In diesen Tunnels sollen superneue Einrichtungen zur Produktion von noch unbekannten Bomben montiert werden. Jemand sprach sogar von Atombomben, die durch Hitler als die "neue Waffe" angekündigt wurden. Diese drei Tunnels sind noch im Bau. Einer von ihnen reicht bis ca. 40 Meter in die Tiefe, der zweite—27 Meter, und den dritten haben wir erst begonnen, auszuhauen. Willst du eine ziemlich leichte Arbeit haben, dann ergreife die Arbeit mit einer Lore. Man belädt sie dir schön mit dem Hauerausschlag, du fährst das dorthin auf den Sturzplatz aus und so immer wieder.

- Here is—explained August Szary to me—the place of our torment. The Germans call it "Jonas Valley." See those two tunnels there? They were finished a long time ago. They were built with the hands of our predecessors. Wagons and motor vehicles pull up to these tunnels every day. Soldiers unload and carry in boxes, machines and who knows what else. In these tunnels, super-new facilities for the production of as yet unknown bombs are to be assembled. Someone even spoke of atomic bombs, which were announced by Hitler as the "new weapon." These three tunnels are still under construction. One of them reaches to a depth of about 40 meters, the second one 27 meters, and the third one we have just started to excavate. If you want to have a fairly easy job, then take on the work with a wagon. You load it up with a heap of material, drive it out to the fall site and so on.

Cläre Werner. 16 May 1962 SED transcript. Jonastalverein Archive, Arnstadt.

Auch dies habe ich schon alles gesagt. Ich kann mich noch gut an den Tag erinnern. Es war der 4. März 1945. Für den Tag hatten wir eine Geburtstagsfeier für den Abend, diese wurde abgesagt. Am Nachmittag war der BDM von Gotha auf der Burg. Hans war auch da und half uns noch, dann sagte er uns, daß heute auf dem Platz Weltgeschichte geschrieben wird. Es wird etwas gemacht, was es auf der Welt noch nicht gegeben hat. Wir sollen am Abend auf den Turm [der Wachsenburg] gehen und in Richtung Röhrensee schauen. Er wisse auch nicht, wie das neue Ding aussehen wird. So waren wir ab 20 Uhr auf dem Turm.

I have already said all of this. I still remember the day well. It was March 4, 1945. For the day, we had a birthday party for the evening that was canceled. In the afternoon the BDM [Federation of German Girls] of Gotha was at the castle. Hans was also there and was helping us, and then he told us that today world history would be written on the [military training] ground. Something would be made that had not previously existed in the world. We should go on top of the tower [of Wachsenburg castle] in the evening and look in the direction of Röhrensee. He also did not know what the new thing would look like. So we were on top of the tower by 20:00.

Nach 21 Uhr, gegen halb Zehn, war hinter Röhrensee mit einmal eine Helligkeit wie Hunderte von Blitzen, innen war es rot und außen war es gelb, man hätte die Zeitung lesen können. Es war alles sehr kurz, und wir konnten dann alle nichts sehen, wir merkten nur, daß es eine mächtige Sturmbö gab, aber dann alles ruhig war.

After 21:00, at 21:30, behind Röhrensee there was all at once a brightness like hundreds of lightning bolts, it was red on the inside and yellow on the outside, you could have read the newspaper. It was all very brief, and then we could not see anything, we only realized that there was a powerful squall, but then all was quiet.

Ich wie auch viele Einwohner von Röhrensee, Holzhausen, Mühlberg, Wechmar und Bittstädt hatten am anderen Tag oft Nasenbluten, Kopfschmerzen und auch einen Druck auf den Ohren. Am Nachmittag, gegen 14 Uhr, waren so zwischen 100 und 150 SS-Leute auf einmal auf der Burg, sie fragten wo die Leichen seien, wo sie hingebracht worden seien und wer schon da war. Wir wußten von nichts, und sie fragten uns, ob sie hier im "Objekt Burg" seien. Ich sagte ihnen, sie seien hier auf der Veste Wachsenburg, die im Volk immer nur als Burg bezeichnet wird. Ein Kradfahrer gab eine Meldung ab, daß die "Burg" über Ringhofen zu erreichen ist. Daraufhin fuhren die Autos von der Burg nach Mühlberg. Ich sah vom Turm, daß sie dann zum Übungsplatz fuhren.

Like many residents of Röhrensee, Holzhausen, Mühlberg, Wechmar, and Bittstädt, the next day I also had frequent nosebleeds, headaches, and also a pressure on the ears. In the afternoon, at 14:00, between 100 and 150 SS men at one time came to the castle, they asked where the bodies were, where they had been brought and who was already there. We knew nothing, and they asked us if this was "Installation Castle [Burg]." I told them that they are here in the Veste Wachsenburg which is popularly always referred to as a castle. A motorcyclist gave a message that the "Castle" is accessible via Ringhofen. Then the cars drove from the castle toward Mühlberg. I saw from the tower that they then drove to the training ground.

Bei der zweiten Explosion war Hans mit einigen Leuten auf dem Turm, wir waren nur im Turmzimmer. Es war am 12. März 1945 gegen 22.15 Uhr. Es war nicht eine so große Helligkeit wie das erste Mal. Auch hatten wir kein Nasenbluten usw.

For the second explosion, Hans was with some people on top of the tower, we were only in the tower room. It was on March 12, 1945, at 22:15. It was not so great a brightness like the first time. We also had no nosebleeds, etc.

Auch hatte er uns verboten, etwas über die Blitze zu sagen.

He had also forbidden us to say anything about the lightning.

Figure D.735: Cläre Werner.

[In the 1990s, after the reunification of East and West Germany, a document surfaced in southern Thuringia that appeared to be transcripts of 1962 interrogations of local residents by officials from the then-ruling East German communist party, the Sozialistische Einheitspartei Deutschlands (SED, Socialist Unity Party of Germany). In these transcripts, a number of people who had lived in southern Thuringia for many years were asked what they knew about secret German military research and development that occurred in that area during World War II. Some of the respondents described witnessing or hearing about tests of a powerful new explosive and separate tests of a new rocket.

The chain of custody of the transcripts from 1962 until the 1990s is unclear, and therefore their authenticity cannot be proven. It is possible that the transcripts are simply fictions that were created by a forger in the 1990s or earlier, or that they are real transcripts that contain fictional insertions supplied by a forger. Indeed, some researchers have raised serious questions about the transcripts [e.g., Frank Döbert, in *Geheimnis Jonastal* 2011, No. 11, p. 25].

It is also possible that the testimony in the 1962 SED transcripts is authentic. Due to the highly sensitive nature of the statements in these transcripts, East German officials would almost certainly not have stored them in a regular archive where they could be routinely and permanently accessed. In any event, the 1990 transition from communist rule to unified German government rule was chaotic, and many files were destroyed, stolen, or hidden to avoid embarrassing or implicating East German officials and citizens. According to former East German officials, the 1962 SED transcripts seem to be consistent in appearance with other East German interrogation transcripts from that place and time.

Cläre Werner (1913–2003), the most important witness quoted in the 1962 SED transcripts, was a wartime lookout living in Veste Wachsenburg, a castle on a hill with an excellent view of the Ohrdruf Truppenübungsplatz military base and the surrounding area (see Fig. D.736).

In several interviews conducted between 1998 and 2003, Werner confirmed that she had seen extraordinary explosions from the castle in March 1945, consistent with the more detailed account attributed to her in the 1962 SED transcripts [Petermann 2000; Karlsch 2005, pp. 215–216; Karlsch and Petermann 2007, pp. 34–36].

Werner's testimony in the 1962 transcripts is also consistent with those of other witnesses in the transcripts and consistent with details from the other sources quoted in this section that reported the 4 March 1945 test, as summarized in Table D.6.

According to Werner's testimony in the 1962 SED transcripts, the 4 March 1945 test explosion occurred at approximately 9:30 p.m. Archived seismographic recordings from the Institut für Geowissenschaften Jena (approximately 60 km from Ohrdruf) appear to show an otherwise unidentified seismic event on 4 March 1945 at 9:25 p.m. local German time [Ziegert 2011]. See Fig. D.737. Note the jittering on the indicated line just after the square clock pulse. Could that have been the nuclear explosion, or merely an unrelated event or noise? (A nuclear explosion may not have created strong seismic waves, especially if the explosion was small and/or the bomb was detonated on a tower and not on the ground.)

As shown in the scientific analysis beginning on p. 5138, the transcribed testimony of Werner and

others is highly consistent with the physics of nuclear weapons, in ways that could not have been foreseen by Werner, her interrogators, or a document forger who was not a nuclear physicist.

Therefore, despite many unanswered questions about the 1962 SED transcripts, they are quoted and analyzed in Appendices D (for parts relevant to nuclear tests) and E (for parts relevant to rocket tests; see pp. 5344–5347). I certainly do not and cannot claim that this analysis "proves" the authenticity of the SED transcripts, yet the transcripts do seem to be in remarkably good agreement with all of the other evidence.

I strongly recommend that researchers search for information to either support or refute the authenticity of the 1962 SED transcripts. Please contact me if you find relevant information.]

Figure D.736: Wachsenburg castle now, and the view from the castle of the village of Röhrensee and beyond.

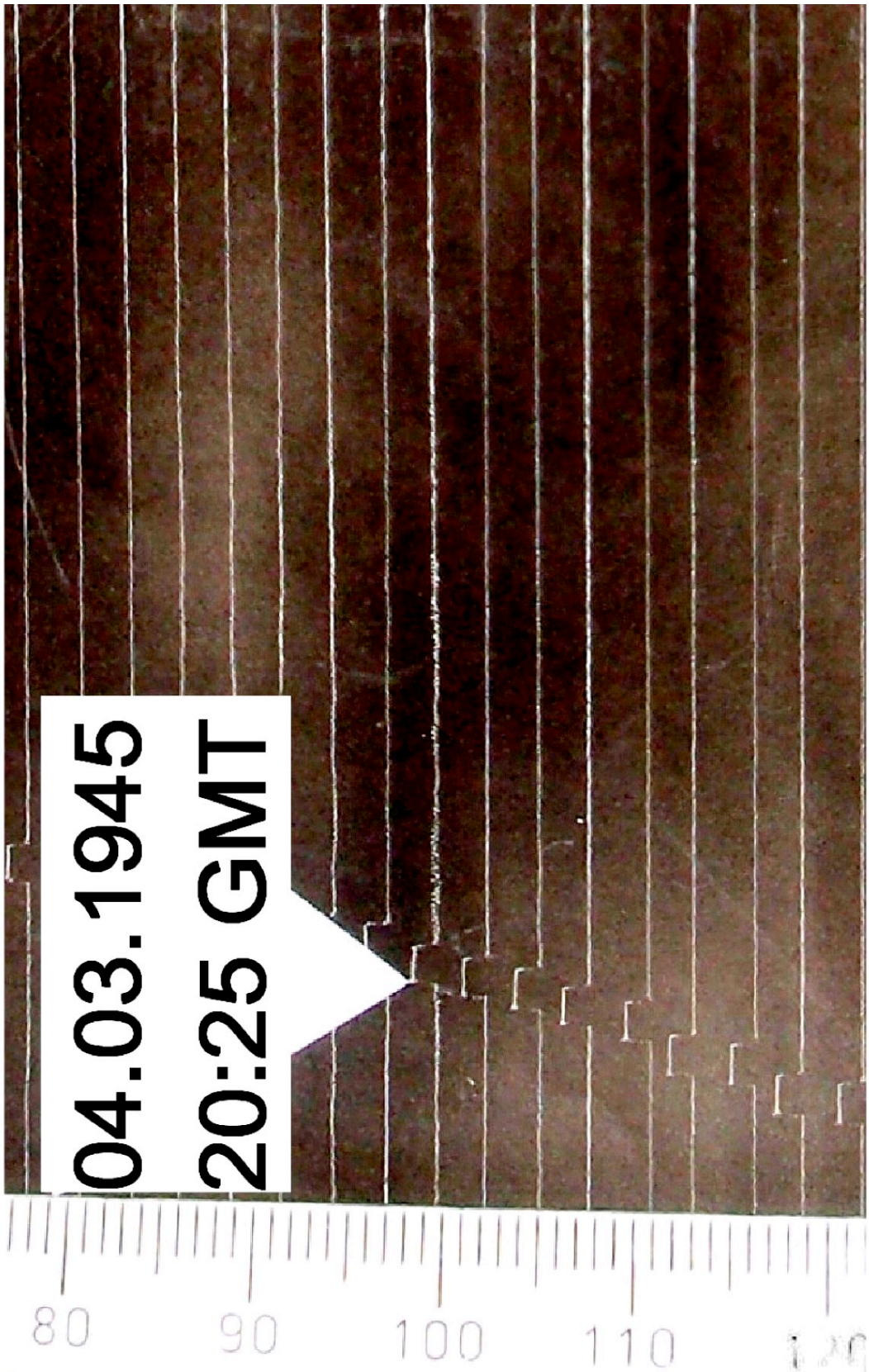


Figure D.737: Archived seismographic recordings from the Institut für Geowissenschaften Jena (approximately 60 km from Ohrdruf) appear to show an otherwise unidentified seismic event on 4 March 1945 at 9:25 p.m. local German time [Ziegert 2011]. Note the jittering on the indicated line just after the square clock pulse. Could that have been the nuclear explosion, or merely an unrelated event or noise?

Heinz Wachsmut. 16 May 1962 SED transcript. Jonastalverein Archive, Arnstadt.

[Heinz Wachsmut's testimony was also part of the 1962 SED transcripts. As discussed on p. 4551, the chain of custody for the 1962 SED transcripts is uncertain and hence their authenticity cannot be proven. However, the written testimony of Wachsmut is consistent with stories he told his family before he died [Karlsch and Petermann 2007, p. 37], consistent with Cläre Werner's testimony, and consistent in appearance with other East German interrogation transcripts from that place and time. It is also consistent with other reports of the 4 March 1945 test quoted in this section, as summarized on p. 4480. As shown in the scientific analysis beginning on p. 5138, Wachsmut's testimony is highly consistent with the physics of nuclear weapons, in ways that would not have been possible for Wachsmut, his interrogators, or a document forger to foresee. Nonetheless, I cannot claim that this analysis "proves" the authenticity of the SED transcripts. Much more research is needed to investigate their background and authenticity.]

Nach einer Straftat... wurde ich zwangsverpflichtet. Wir waren sechs Deutsche und hatten zur Hilfe 18 Häftlinge, darunter sieben Ungarn, fünf Polen und vier Russen; es waren alles Techniker, sie trugen keine Häftlingsanzüge, sondern Felddienst, und wurden auch mit uns verpflegt. Unsere Hauptaufgabe war, Tarnarbeiten durchzuführen. An gelandeten Flugzeugen, an Objekten, an Transportgut, das nicht immer sofort eingelagert werden konnte, und auch zu Hilfsarbeiten (wurden wir eingesetzt), wenn zu viele Häftlinge verstorben waren. Dazu mußten wir dann oft Holzhaufen errichten, wo die Leichen dann draufgelegt und angezündet wurden. Es gab keine Listen über die verstorbenen Häftlinge.

After a crime... I was conscripted. We were six Germans and had help from 18 prisoners, including seven Hungarians, five Poles, and four Russians; they were all engineers, they wore no prisoner suits, rather field service uniforms, and were also fed with us. Our main task was to conduct camouflage work at landed airplanes, bases, transported goods, which could not always be immediately removed, and also for auxiliary work (we were used) if too many prisoners had died. For that we often had to build wood piles, upon which the bodies were laid and set on fire. There were no lists of the prisoners who died.

Ein Tag, der immer in meinem Leben Bilder vor den Augen macht, war der Nachmittag des 5. März 1945. Wir mußten in der Polte Rudisleben Gerüste errichten für einen Versuch, der in wenigen Tagen stattfinden sollte. Am Nachmittag fuhr die SS mit LKWs vor, eigentlich hatte uns die SS nichts zu sagen, da wir ja immer mit Sonderbefehlen arbeiteten, die immer die Stempel der Reichspost bzw. des Forschungsrates trugen und nach dem Lesen sofort vernichtet werden mußten. Es war ein Befehl, der die Unterschrift von Kammler trug. Wir mußten alles Holz, das verfügbar war, aufladen. Die Fahrt ging nach Röhrensee, dort waren einige SS Ärzte tätig, da eine große Anzahl von Bewohnern Kopfschmerzen hatte und Blut spuckte. Wir waren dort falsch und wurden sofort nach Gut Ringhofen bei Mühlberg gebracht. Dort wurde uns gesagt, wir müssen Holzhaufen am Waldrand errichten, ca. 12x12 m und nur höchstens 1 m hoch, dazu mußten wir Vollschutz tragen, auch unsere Häftlinge. Am Waldrand sahen wir schon einige Haufen von Menschenleichen, die wohl ehemalige Häftlinge waren. Die Menschen hatten alle absolut keine Haare mehr, teils fehlten Kleidungsteile, sie hatten aber auch zum Teil Hautblasen, Feuerblasen, nacktes rohes Fleisch, teilweise waren einige Teile nicht mehr vorhanden. SS und Häftlinge brachten die Leichen an. Als wir die ersten sechs Haufen fertig hatten, wurden die Leichen darauf gelegt, je Haufen ca. 50 Stück, und Feuer gelegt. Wir wurden zurückgefahren. Im Gut mußten wir den Schutz und unsere gesamte Kleidung ausziehen. Diese wurde ebenfalls sofort von der SS angezündet, wir mußten uns waschen und erhielten neue Kleidung und neuen Schutz, dazu jeder eine Flasche Schnaps, auch unsere Häftlinge.

A day whose images I see before my eyes throughout my life, was the afternoon of 5 March 1945. In the Polte Rudisleben we had to erect scaffolding for a test that was supposed to take place in a few days. [16 March A-9/A-10 launch? See pp. 5344–5347.] In the afternoon the SS drove up with trucks, actually the SS did not have anything to say to us since we always worked with special orders that always bore the stamp of the Reich Post Office or the Research Council and had to be immediately destroyed after reading. It was an order that bore the signature of Kammler. We had to load up all the wood that was available. The trip went to Röhrensee, where some SS doctors were busy, since a large number of residents had headaches and were spitting up blood. We were there mistakenly and were immediately brought to the Ringhofen estate by Mühlberg. There we were told we must build woodpiles at the edge of the forest, approximately 12x12 m and only 1 m high at the highest, plus we had to wear full protection, as did our prisoners. At the edge of the forest we saw there were already a few piles of human corpses that were probably former prisoners. The people all had absolutely no more hair, some missing items of clothing, but they had also some skin blisters, fire blisters, exposed raw flesh, some were missing some [body] parts. SS and prisoners brought the bodies. When we had made the first six piles ready, the bodies were placed on them, approximately 50 per pile, and set on fire. We were driven back. At the estate we had to take off the protection and all our clothes. This was also immediately burned by the SS, we had to wash ourselves and received new clothes and new protection, to each a bottle of Schnaps, including our prisoners.

Ein hoher SS-Mann sagte mir, es habe da oben eine große Stichflamme gegeben gestern, man hat etwas neues gemacht, davon wird die ganze Welt sprechen, und wir Deutschen sind die ersten. Leider sei dabei einiges nicht so gelaufen wie geplant und einige Nichtsnutze habe man weniger.

A high-ranking SS man told me, there had been a big flash of flame up there yesterday, something new had been made, of which the whole world will speak, and we Germans are the first. Unfortunately some things did not go as planned and some unwanted people had been eliminated.

Beim zweiten Einsatz wurden nochmals drei Haufen errichtet. Dabei sahen wir, wie aus dem Wald einige völlig unmenschliche Lebewesen angekrochen kamen. Wahrscheinlich konnten einige nichts mehr sehen.—Pause—Ich kann es auch heute nicht beschreiben. Von zwei SS Leuten wurden diese ca. zwölf bis fünfzehn Menschen sofort erschossen. Ob sie wirklich schon erschossen waren, kann ich nicht sagen, da einige noch den Mund bewegten. Sie wurden bzw. mußten von anderen Häftlingen auf die in Flammen stehenden Haufen getragen werden. Wir wurden wieder zum Gut gebracht und es wiederholte sich alles. Gegen 23 Uhr fuhren wir zurück zur Polte. Am Waldrand waren 14 Feuerstellen zu sehen. Wir konnten an diesem und am nächsten Tag nichts essen, es gab für uns und die Häftlinge immer wieder Schnaps.

During our second operation three more piles were erected. There we saw, out of the forest some totally inhuman creatures came crawling. Probably some of them could no longer see. (Pause.) I cannot describe it even today. These approximately 12 to 15 people were immediately shot by two SS men. I cannot say whether they were really [all] shot, as some still moved their mouths. They were or had to be carried to the flaming pile by other prisoners. We were brought back to the estate and it [decontamination] was all repeated. At 23:00 we drove back to Polte. At the edge of the forest there were 14 fires to be seen. [14 fires $\times$ 50 bodies each = 700 bodies?] We could not eat anything on this and the next day, there was for us and the prisoners always more Schnaps.

Einer unserer russischen Häftlinge sagte uns, er habe einen der Erschossenen noch verstanden, "... großer Blitz—Feuer, viele sofort tot, von der Erde weg, einfach nicht mehr da, viele mit großen Feuerwunden, viele blind, Gruß an Mutter von Olek Barto nach Gurjew..."

One of our Russian prisoners told us that he had understood one of the injured: "... big flash—fire, many dead immediately, gone from the earth, simply not there any more, many with large burns, many blind, greetings to Mother in Guriev from Olek Barto..."

Figure D.738: U.S. Generals Dwight Eisenhower, Omar Bradley, and George Patton inspect burned human remains at Ohrdruf on 12 April 1945.

Figure D.739: The Ringhofen estate now.

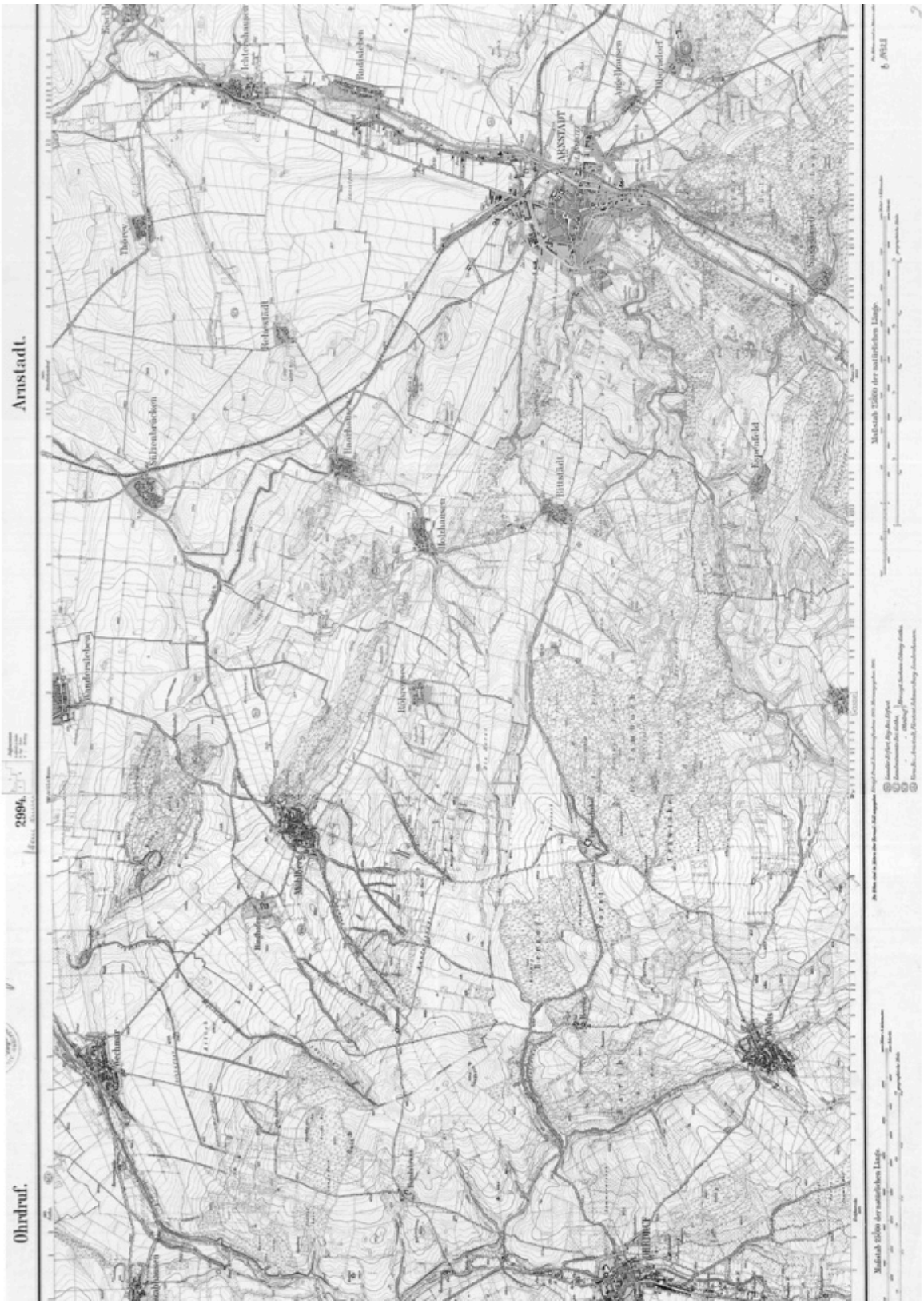


Figure D.740: 1907 map of test area described by Cläre Werner and Heinz Wachsmut.

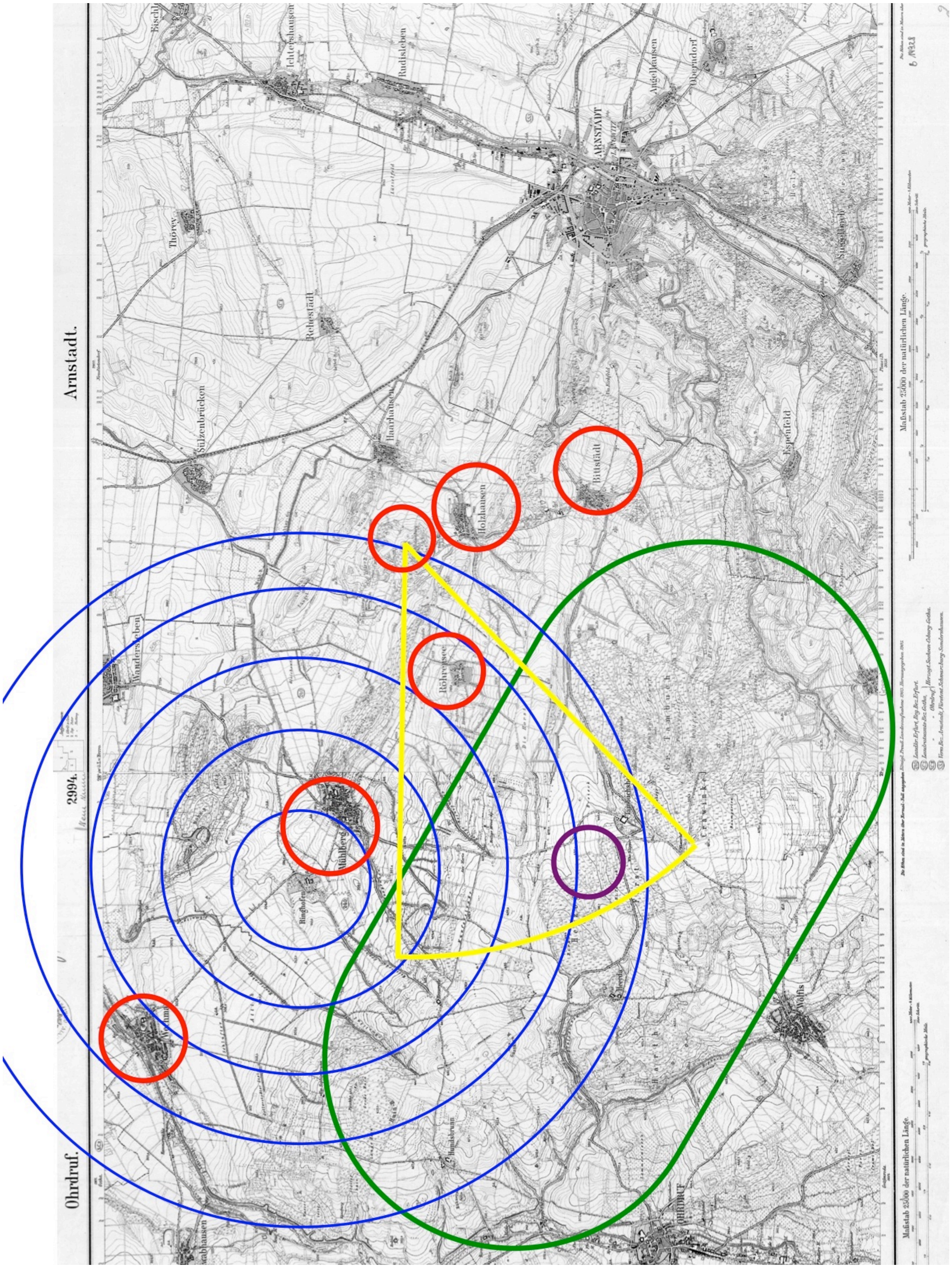


Figure D.741: Test area with clues described by Cläre Werner and Heinz Wachsmut. Green: approximate boundary of military training base. Red: population centers reporting sickness from radioactive fallout. Yellow: Direction in which Werner reported seeing explosion. Blue: driving range (1 km per circle) for Wachsmut from Ringhofen estate. Purple: 1-km-diameter explosion centered on the apparent crater from aerial photos (pp. 4541–4545).

Report on interview of Erich Rundnagel. 8 July 1966 SED Arnstadt transcript. MfS-Kreisdienststelle Arnstadt, BStU Außenstelle Erfurt. Rundnagel was a plumber who worked with Fritz Rehbein and Heinz Rackwitz, members of Kurt Diebner's research group. As shown on the next page, his nephew confirmed that he had spoken to the Stasi and did not dispute the details.

[...] Weiterhin will er Gesprächen mit Dr. Rehbein entnommen haben, daß sich in dem anderen Panzerschrank zwei Atombomben befunden haben sollen, die seiner Vermutung nach später auf Hiroshima und Nagasaki abgeworfen wurden. [...]

[...] Furthermore he [Rundnagel] wanted to infer from conversations with Dr. Rehbein that two atomic bombs were supposed to have been found in the other safe, which in his speculation were later dropped on Hiroshima and Nagasaki. [...]

Erich Rundnagel [Remdt and Wermusch 2006, pp. 125–126]

[...] Ich hatte vor allem mit Dr. Rehbein und Ingenieur Rackwitz zu tun, mit denen ich in eine Art Vertrauensverhältnis kam. Es war also am 7., nein am 9. Juli [1944], als mir Dr. Rehbein sagte: "Rundnagel, nun hören Sie mal ganz genau Nachrichten, innerhalb von ein paar Tagen werden Sie eine entscheidende Meldung hören, von der abhängt, wie der Krieg ausgeht." [...] Am 20. Juli war dann das Attentat auf Hitler. Als ich Rehbein fragte, ob er das gemeint habe, lachte er nur und sagte: "Jetzt kommt sie nicht mehr zum Einsatz, der Krieg ist verloren."

[...] I was mainly involved with Dr. Rehbein and engineer Rackwitz, with whom I came into a kind of relationship of trust. It was on the 7th, no on the 9th of July [1944], when Dr. Rehbein told me: "Rundnagel, now you listen closely to the news, within a few days you will hear a decisive report, on which will depend how the war ends." [...] On July 20th was then the assassination attempt on Hitler. When I asked Rehbein whether he meant that, he just laughed and said, "Now it will no longer come to deployment, the war is lost."

Ich unterhielt mich öfters mit ihm darüber, was hier eigentlich gemacht werde; denn nach Arbeit sah das alles wirklich nicht aus. Da erzählte er mir, dass hier etwas entwickelt werde, das eine größere Sprengkraft habe als all das, was ich mir als alter Pionier vorstellen könne. Mit einer einzigen Bombe könne man im Umkreis von zwanzig Kilometern alles Leben vernichten, und wenn es hunderttausend Menschen wären. Ich antwortete, das sei doch Quatsch, mir altem Soldaten könne er so was nicht vormachen, das gebe es nicht. Ein bisschen kenne ich mich wirklich mit Sprengstoffen aus. Rehbein lächelte nur und sagte, die ganze Bombe sei nur ein paar Dezimeter groß, wiege aber so um die acht Kilo. Als ich ihn fragte, ob ich das Ding mal sehen könnte, winkte er ab: "Das könnte uns beide den Kopf kosten." [...]

I often talked to him about what was really being done here, because after work, it really did not look like anything. Then he told me that something was being developed here that had a greater explosive power than anything I could imagine as an old pioneer. With a single bomb, you could destroy all life within a radius of twenty kilometers, and if there were a hundred thousand people. I replied, that was nonsense, that he could not make such a claim to me the old soldier, that was not the case. I know something about explosives. Rehbein just smiled and said the whole bomb was only a few decimeters in size but weighs about eight kilograms. When I asked him if I could see the thing, he waved it off: "That could cost us both our heads." [...]

Gerhard Rundnagel. Letter to *Der Spiegel*. 21 March 2005 p. 14.

Sie haben aus Rainer Karlschs Buch "Hitlers Bombe" die Behauptung übernommen, ich hätte gegenüber der Stasi Aussagen über deutsche Atomwaffentests in Ohrdruf gemacht. Das stimmt nicht. Es war mein Onkel Erich Rundnagel, der mit der Stasi gesprochen hat.

Based on Rainer Karlsch's book "Hitler's Bomb," you made the assertion that I had made statements to the Stasi about German atomic weapons tests in Ohrdruf. That is not correct. It was my uncle Erich Rundnagel who spoke to the Stasi.

Rainer Karlsch. 2013. Die Abteilung Atomphysik der PTR in Ronneburg und das deutsche Uranprojekt. *PTB-Mitteilungen* 123:1:73–81.

Unterdessen hatte die 3. US-Armee unter General Patton ihren schnellen Vorstoß nach Thüringen begonnen. Georg Graue, der die Kriegswirtschaftsstelle des Reichsforschungsrates leitete und die Details der Uranversuche nicht kannte, reagierte auf die Meldung über den amerikanischen Vorstoß mit den Worten: "Ja, von Stadtilm muss sofort die Atombombe weg."

In the meantime the 3rd US Army under General Patton had begun its rapid advance to Thuringia. Georg Graue, who headed the War Office of the Reich Research Council and did not know the details of the uranium tests, responded to the report of the American attack with the words: "Yes, the atomic bomb must be immediately removed from Stadtilm."

[The original quote is from an interview with Georg Graue on 4 April 1966, Institut für Zeitgeschichte (IfZ) München, Irving collection.]

Oscar W. Koch with Robert G. Hays. 1999. *G-2: Intelligence for Patton.* Atglen, Pennsylvania: Schiffer. pp. 115–118. Note: Koch died in 1970, but he worked on this manuscript with Hays in the 1960s, and it was published after his death.

Time had run out on Hitler's grand plan; the final chapter of the war in Europe began when soldiers of the First United States Army crossed the Remagen Bridge on March 7. The Third Army attack jumped off that same day.

In the next week, 38,572 prisoners of war passed through Third Army cages. [...]

On March 15, with well over 185,000 prisoners taken since the preceding August 1, the actual count varied from our advance intelligence estimates by only 518.

Prisoners of war could prove valuable sources of intelligence information. German soldiers, experience had shown, were remarkably well-informed. Experience had also shown that some were willing to talk. Sometimes *too* willing.

The Third Army intelligence staff would never forget one particular prisoner captured sometime earlier who had told us a convincing story.

His unit had been working on a new and unusual weapon, the PW told interrogators. Then, he said, while he was temporarily away from his post, there had been a terrific explosion. Everything at the site was a shambles and trees in a wide area of the surrounding forest had been laid low. No aircraft had been near and the blast—the most forceful he ever had witnessed—could not possibly have resulted from a bomb.

To add even more intrigue, the soldier was unable to say just what kind of weapon he had been working on. It was so secret that the individuals in his unit never knew the complete story. He knew only enough to be able to carry on his own duties.

The prisoner knew precisely where he was at the time of the blast. He readily pinpointed the exact location on a map.

His story aroused great interest in the intelligence section. The Germans had already launched V-1 and V-2 rockets, and Hitler had promised a "secret weapon" which would one day make its appearance and bring the Allies to their knees. With no other information explaining the explosion, the prisoner's account might very well mark the Allied discovery of a significant new enemy weapon.

The prisoner's story was put through the usual process of challenge. Was the information hearsay? No, it came from an eyewitness. Was the witness reliable? There was no way to know. Was the information confirmed by other sources? No, it was not. Did the information make sense in light of other data at hand? Somewhat.

There was only one loophole in the story. Through calculations of time and space, we concluded that the witness himself should have been caught in the death-dealing blast. But perhaps he had misjudged his own position, an understandable error under the circumstances. In any event, his story was worthy of further investigation. If it turned out to be true, it would be of enormous intelligence significance.

Fortunately, the story could be checked through a relatively simple expedient. If the trees had been laid low over a wide area of the forest as the prisoner said, the effects of the explosion would be

readily apparent in aerial photos. Such a mission was requested and flown. The results were awaited with great anticipation.

But the photos showed that all of the trees were still standing; the area was undisturbed. The prisoner's story had been pulled out of the blue.

One of the prisoners taken in the early days of the March offensive, on the other hand, was to prove an extremely valuable source of intelligence information. [...]

Spreading the map, the prisoner explained that his duties as a German officer had been concerned with construction. Symbols on his map, he said, marked locations selected by the German high command for construction of proposed military installations as the war progressed. These were to become communications centers housed in bombproof underground shelters. A color code indicated the status of work in progress at the various sites. The map, he added, was current; none of the work had been ordered stopped.

Command requires communications. A marked map showing locations of communications centers would reflect as well the proximity of major headquarters. And from the location of headquarters sites the future planning of the German high command could be deduced. [...]

In view of the possible significance of information gained from the German major, we wanted to check the credibility of his story as quickly as possible. Some of the installations shown on his map were located in the Third Army zone of advance and could be confirmed on the ground in the near future. Until such a time, however, the prisoner's disclosure would be known to only a few persons. Patton, of course, was briefed at once.

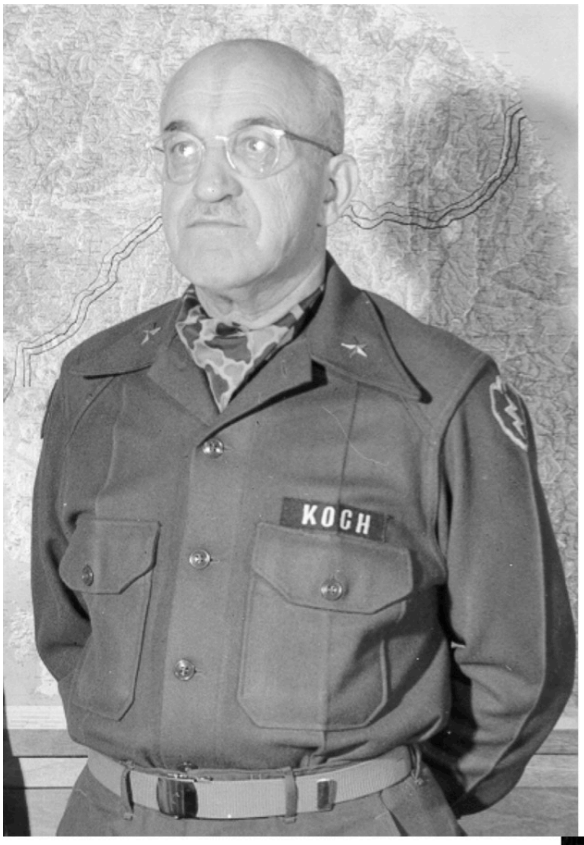
On April 6, early in the morning, word was received that advance elements of the 4th Armored Division were approaching Ohrdruf. The closest of the reported secret underground centers would be nearby. Colonel Allen, personally selected for the mission by General Patton, departed for the 4th Armored Division command post. Following a briefing there, he would head a small inspection party which, on the following day, would visit the reported site of the enemy installation to see if things there supported the prisoner's story.

[...] At the Ohrdruf site, however, they visited the location described by the prisoner. Construction of the underground, bombproof center was complete, although the equipment was not yet operative. Time had obviously been insufficient to allow completion of the installation of the expensive and highly technical equipment. The building had never been occupied. But the site confirmed, at least in part, that the story the German major had told [...] was true.

[The German prisoner of war was apparently captured by the Americans sometime around mid-March 1945, apparently placing the test in early March. Can records of the interrogation and aerial photos be located in U.S. archives?

The account of the test is consistent with the other reports in this section, but why was it not possible to confirm the test by aerial photos? Did the test not actually occur? Were the aerial photos not of the correct location? Did senior U.S. military officials suppress aerial photos confirming the test due to secrecy? Or did the Germans replant trees or otherwise camouflage the damage at the test site?

This account also confirms the existence of some German underground installations.]



Oscar Koch
(1897–1970)

Robert Allen
(1900–1981)

Figure D.742: Oscar Koch mentioned a massive test explosion in Thuringia, and Robert Allen was sent in to investigate the area.

Robert S. Allen. [Allen 1947, pp. 369, 371–372]

The mop-up of the hilly Meiningen-Gotha-Eisenach sector produced some startling war trophies.

At Ohrdruf, 4th Armored liberated the first of the grisly Nazi horror camps and uncovered a number of astounding subterranean installations. And in the little town of Merkers, 90th Division discovered the German gold reserve.

It was found in a chemical-salt mine of tremendous proportions. The main shaft descended over 2,000 feet and there were more than 200 miles of tunnels. Some were 30 feet in height and width. [...]

The grisly horror camp and a vast, indescribably nauseous open-pit crematorium were on the outskirts of Ohrdruf.

The main architectural feature of this little Thuringian city is an imposing stone *Schloss* built before the war by a local baron. Surrounded by handsome landscaped grounds, the massive edifice was lavishly furnished and equipped with modern facilities, including tiled bathrooms, flush toilets, and an elevator. The baron was a large "employer" of inmates of the horror camp who slaved in his chemical plant. The baron also was a leading dignitary of the local Nazi organization. [...]

The underground installations were amazing. They were literally subterranean towns.

There were four in and around Ohrdruf: one near the horror camp, one under the *Schloss*, and two west of the town. Others were reported in near-by villages. None were natural caves or mines. All were man-made military installations. The horror camp had provided the labor. An interesting feature of the construction was the absence of any spoil. It had been carefully scattered in hills miles away.

Over 50 feet underground, the installations consisted of two and three stories several miles in length and extending like the spokes of a wheel. The entire hull structure was of massive, reinforced concrete. Purpose of the installations was to house the High Command after it was bombed out of Berlin. The Ohrdruf installations were to have been used by the Signal Communications Section. One, near the horror camp, was a huge telephone exchange equipped with the latest and finest apparatus. Signal Corps experts estimated their cost at $10,000,000.

This place also had paneled and carpeted offices, scores of large work and store rooms, tiled bathrooms with both tubs and showers, flush toilets, electrically equipped kitchens, decorated dining rooms and mess halls, giant refrigerators, extensive sleeping quarters, recreation rooms, separate bars for officers and enlisted personnel, a moving-picture theater, and air-conditioning and sewage systems.

Begun in 1944, the installations had been completed but never occupied. Third Army's lightning advance through central Germany had blocked that.

[U.S. government censors limited what Robert Allen could write. However, he did mention that there were many massive and well-equipped underground installations in the greater Ohrdruf area, and that U.S. forces visited "a number of astounding subterranean installations." Where are the detailed reports of what they found there?

Allen only mentioned (or was only allowed by censors to mention) a command center and a communications center, but it is likely that most of the underground installations were involved in research, development, and production for advanced weapons.

In fact, a brief report from U.S. Army's 80th Infantry Division in April 1945 mentioned an underground plant close to Wölfis (near Ohrdruf) and described the whole region as a "very important production area" (p. 5363).]

G-2 Periodic Report No. 177. 7 April 1945. [NARA RG 407, Entry NM3-427, Box 12342, Folder 604-2.1 G-2 Periodic Reports 4th Armored Div 1 Jan–18 May 45]

Murdercamp, vic[inity] OHRDRUF: A PW, NCO, rpts that a Concentration Camp of political prisoners, existed in the vic of OHRDRUF. According to stories told him by members of the guards, several thousand persons were killed during this winter at the camp. The PW himself happened onto an open mass grave some weeks ago, and he states that he saw nude bodies laying in lakes of blood. The PW further rpts that many, or perhaps all, of the bodies were exhumed lately and burned in the woods, vic J 115565. On 28 Mar 45, PW believes, several hundred of the political prisoners were still alive. He further states that guards in part belonged to the SS Das REICH and in part to SS LEIB-STANDARTE Adolf Hitler.

The entire area btwn OHRDRUF – SCHWABHAUSEN – WOLFIS – WECHMAR (J 1156) was a tk troop drill and maneuver ground. PW was told by an ordnance man stationed at OHRDRUF that from here a new secret wpn will shortly rise (wird steigen). It is believed that the entire area should be very thoroughly examined for new material. If any of the above mentioned political prisoners can be found alive, interesting evidence should also be forthcoming. (Source: 89 Inf Div Per Rpt No. 27).

Office of Military Government for Germany (US). Field Information Agency, Technical. DI 254-82 (FIAT) EP. 24 June 1946. Personality List No 2. [NARA RG 238, Entry NM70-160, Box 30, Folder FIAT—Misc.—Reports—No. 1–10]

BÜHL Dr. Alfons

Dir. of Inst. of Physics, Technische Hochschule, KARLSRUHE (Laboratory equipment for atomic research evacuated and also ballistic measurement apparatus)

FROM: HILDBURGHAUSEN

TO: HEIDENHEIM

[This is one of several lists of German scientists and technicians who had been relocated from the Russian Zone of postwar Germany to U.S.-controlled territory. Why did Bühl have "laboratory equipment for atomic research" and "ballistic measurement apparatus" at Hildburghausen, south of Ohrdruf? Does that confirm wartime nuclear work in the general Ohrdruf area? What exactly did Bühl do during the war? What information, hardware, or assistance did Bühl give the Soviets during his time in the Soviet Zone? What information, hardware, or assistance did Bühl give the Americans after that? Where are other U.S. records about Bühl?

Note that after the war, Bühl worked at the Karlsruhe Nuclear Research Center, was an advisor to the West German government in the field of nuclear civil defense, and wrote a book on nuclear weapons [Bühl 1972].]

Heinrich Himmler's chief adjutant Werner Grothmann [Krotzky 2002]

[See p. 4436 for Werner Grothmann's testimony about the March 1945 test in Thuringia.]

D.13 Axis Belief in the Reality of German Nuclear Weapons

[Among Axis officials in positions of knowledge, there was a widespread belief in the reality of German nuclear weapons, both during and after the war:

- There are photographs of Hitler visiting the Reichswerke Hermann Göring at Linz, Austria on 4 April 1943, apparently surrounded by nuclear scientists, indicating that the German nuclear weapons program had the highest level of support (pp. 3877–3879).

- One of Heinrich Himmler's closest diplomatic contacts, Grand Mufti Amin al-Husaini of Jerusalem, said Himmler had informed him in July 1943 that Germany was developing an atomic bomb (p. 4578).

- Himmler's political rival, Albert Speer, confirmed that Himmler was keenly interested in developing an atomic bomb during the war (p. 4593).

- Hans Ulrich Rudel, the most decorated German pilot of the war, reported that in March 1944 Hitler told him that (1) atomic bombs were at a highly advanced stage of development and (2) the bombs were intended to be delivered via V-type rockets (p. 4591).

- On 5 August 1944, Hitler informed the Romanian Prime Minister Ion Antonescu that Germany had developed and would use a V-series weapon with "such a tremendous effect that all human life would be destroyed within a radius of three to four kilometers from the impact point" (p. 4594).

- On 16 December 1944, Benito Mussolini stated that "thousands of German scientists are working day and night" to develop new weapons that would change the war, apparently in reference to information he received via Luigi Romersa (p. 4603).

- In 16 November 1944 and 9 February 1945 letters from FBI Director J. Edgar Hoover to Franklin Roosevelt's top advisor Harry Hopkins, Hoover reported that intercepted messages from Germany to German spies in the U.S. asked the spies about "the probable reaction of the people of the United States if Germany used the explosive power obtained through the splitting of the uranium atom," high-priority targets in the United States that Germany could bomb, and methods that U.S. laboratories used to avoid criticality accidents with large quantities of enriched uranium, suggesting that Germany possessed large quantities of enriched uranium (pp. 4604–4625).

- Widespread German reports from late 1944 through 1945 claimed that Germany was on the verge of deploying atomic bombs and missiles for them (p. 4627).

- On 14 February 1945, Hitler told one of his doctors: "In no time at all, I'm going to start using my Victory weapon and then the war will come to a glorious end. Some time ago we solved the problem of nuclear fission, and we have developed it so far that we can exploit

the energy for armaments purposes. They won't know what hit them! It's the weapon of the future. With it Germany's future is assured" (p. 4634).

- Heinrich Himmler's physical therapist, Felix Kersten, wrote that in early March 1945, Himmler was very optimistic about the imminent success of an atomic bomb (p. 4470).

- Heinrich Himmler's personal astrologer, Wilhelm Wulff, confirmed that in mid-March 1945, Himmler was very optimistic about the imminent success of an atomic bomb (p. 4471).

- Henry Picker, a close confidant of Hitler, wrote that before the war ended, prototype fission bombs were completed and ready, and facilities for mass-producing the bombs had been built (pp. 4635–4639).

- In 2000–2002 interviews, Werner Grothmann described how an extensive program run by Heinrich Himmler developed, tested, and debated the deployment of atomic bombs (p. 4668).

- In a 1 April 1945 telegram to Allied leaders, Allen Dulles reported that Luftwaffe General Albert Kesselring mentioned deliberations among Hitler's top staff about whether to use a final secret weapon, referred to as the "desperation weapon," that would cause a "terrible blood bath" (p. 4670).

- In a September 1945 interrogation, the father of an SS officer told Americans about deliberations among Hitler's top staff over an atomic bomb in April 1945 (p. 4670).

- In Otto Hahn's autobiography, he wrote that he had heard from reliable sources that there were at least three completed atomic bombs at the end of the war (p. 4182). Lending additional credibility to Hahn's story, the bombs were said to be at Lüneburger Heide, which wartime Allied intelligence reports had identified as the site of what sounded like large underground uranium enrichment facilities producing fuel for spherical implosion bombs (Section 8.8.4). There were also other reports of nuclear-related work at Lüneburger Heide (pp. 4176–4181, 4406).

- Former SS officer Erwin Bartmann reported very similar information from his insider knowledge of conversations among Hitler, Göring, and others—there were specific mentions of "three special bombs" and even up to nine completed bombs by the end of the war (p. 4667).

- Shortly after the war, German rocket engineers Wernher von Braun and Walter Dornberger, as well as American officials who examined the German rocket program, reported that Germany planned to use its rockets to carry a "much more powerful explosive," presumably atomic bombs (p. 4681).

In the end, German leaders appear to have concluded that they did not have a sufficient number of nuclear weapons (and/or sufficiently reliable delivery vehicles) to strike enough Allied targets to change the ultimate outcome of the war. Moreover, Franklin Roosevelt and Winston Churchill had

made it clear that if Germany used anything other than conventional weapons in the war, the Allies would respond by killing tens of millions of German civilians with crude but effective WWI-style chemical weapons (mustard agent and phosgene) or other means; see pp. 2632–2651. Individual German political or military leaders may have also feared even greater postwar prosecutions if they used nuclear weapons, or considered it more personally beneficial to try to trade German nuclear and other technologies to the Allies than to employ them against the Allies.]

Adolf Hitler. 19 September 1939. Speech in Danzig.
https://learninglink.oup.com/access/content/von-sivers-3e-dashboard- resources/document-adolf-hitler-speech-in-danzig-after-the-invasion-of-poland- september-1939

[...] If peoples go to pieces it will not be the German people, who are fighting for justice, who have no war aims and who were attacked.

Rather, those peoples will break when they gradually find out what their misleaders plan, and gradually grasp for what little reason they are fighting, and that the only reasons for war are the profits or political interests of a very small clique. [...]

These gentlemen should take note of the following: Today you have the Germany of Frederick the Great before you. These gentlemen can believe this. The German people will not split up in this fight but become more unified. If anything splits up it will be those States that are not so homogeneous, those empires built on the oppression of peoples. We are fighting only for our naked beings. We are not able ourselves to be misled by propaganda.

Just imagine! There are people who say there are those ruling in another land who do not please us, so now we have war with them. Naturally they do not carry on the war themselves, but look about for someone to conduct it for them. They provide cannon and grenades while others provide grenadiers and soldiers. Such an utter lack of conscience!

What would be said if one of us should say that the present regime in France or Britain does not suit us and consequently we are conducting a war? What immeasurable lack of conscience. For that, millions of persons are whipped into death. These gentlemen can say that calmly, for they themselves never have been on the battlefield for even an hour.

But we will see how long they keep nations at war. There can be no doubt of one thing. however. We will take up the gauntlet and we will fight as the enemy fights. England, with lies and hypocrisy, already has begun to fight against women and children. They found a weapon which they think is invincible: namely, sea power. And because they cannot be attacked with this weapon they think they are justified in making war with it against women and children—not only of enemies but also of neutrals if necessary.

Let them make no mistake here, however. The moment could come very suddenly in which we could use a weapon with which we cannot be attacked. I hope then they do not suddenly begin to think of humaneness and of the impossibility of waging war against women and children. We Germans do not like that. It is not in our nature. In this campaign I gave an order to spare human beings. When columns cross a market-place it can occur that someone else becomes the victim of attack.

In those places where insane or crazy people did not offer resistance not one windowpane was broken. In Cracow, except for the air field, railroads and the railroad station, which were military objectives, not one bomb fell. On the other hand, in Warsaw the war is carried on by civilian shootings in all streets and houses. There, of course, the war will take in the whole city. We followed these rules and would like to follow them in the future. It is entirely up to England to carry out her blockade in a form compatible with international law or incompatible with international law. We will adapt ourselves thereto.

But there should be no doubt about one thing:

England's goal is not 'a fight against the regime' but a fight against the German people, women and children. Our reaction will be compatible, and one thing will be certain: This Germany does not capitulate. We know too well what fate would be in store for Germany. [...]

We are determined to carry on and stand this war one way or another. We have only this one wish, that the Almighty, who now has blessed our arms, will now perhaps make other peoples understand and give them comprehension of how useless this war, this debacles of peoples, will be intrinsically, and that He may perhaps cause reflection on the blessings of peace which they are sacrificing because a handful of fanatic warmongers, persons who stand to gain by war, want to involve peoples in war.

Raymond J. Batvinis. 2014. ***Hoover's Secret War Against Axis Spies: FBI Counterespionage During World War II.***

[p. 156:] This priceless German smorgasbord included three dots filled with questions[...]

The next instruction raised terrifying concerns for the small group of scientists who would soon offer their recommendations to President Roosevelt regarding a decision to move forward on the atomic bomb:

> Decay Uran. According to some information obtained there is reason to believe that the scientific works for the utilization of the atoxic [*sic*]—kernel energy are being driven forward into a certain direction in the U.S. partly by use of helium. Continuous information about tests made on this subject are required particularly 1. What process is practiced in the U.S. for sending of heavy uran? 2. When are being made [*sic*] tests with more important quantities of uran? (Universities, industrial laboratories, etc.) 3. Which other raw-materials are being used at these tests? It is recommended to entrust only best experts with this test, and if not available, to abstain from it. [13 April 1942]

[...] The contents of these eleven microdots provided military analysts with a goldmine of insights into German intelligence gaps concerning U.S. readiness, capabilities, and strategic planning so soon after the Pearl Harbor attack.

[p. 187:] [Hans] Blum then raised another consideration, atomic research, ordering [Jorge] Mosquera to search out any information concerning "experiments performed in the United States relative to shattering of atoms." The German military was anxious to develop high explosives from atom sources that they believed would weigh no more than a pound to a pound and a half. In what was almost a premonition of the future five years hence, Blum speculated that the nation which "will be victor in this war will be the one which has accomplished the task of shattering the atoms and applying the results thereof." With training behind him and instructions in hand, Mosquera left Hamburg by train on June 15, 1941[...]

[The preceding information demonstrates that remarkably early in the war (spring 1941 to spring 1942):

- The German military knew that nuclear technology could create extremely powerful bombs (not just reactors).
- The German military was committed to developing nuclear weapons.
- The German military believed that whichever country was the first to perfect nuclear weapons would win the war.
- Germany was aware that the United States had also begun work on nuclear weapons.
- Germany was actively seeking as much information about the U.S. program as possible.
- Germany's awareness of the U.S. nuclear weapons program, combined with its belief that the first country to create such weapons would win the war, was a strong incentive for Germany to proceed as rapidly as possible with its own program.
- No later than spring 1941, German scientists believed that the critical mass of fission fuel required for a bomb could be less than one kilogram.
- That value for the critical mass appears to indicate that German scientists had a very good understanding of the relevant nuclear physics.
- That value for the critical mass also appears to show that German scientists intended to use an implosion bomb design with compression to achieve that critical mass. (A gun-type design without compression would require a far larger critical mass.)

[See also a similar version of this story in Bryden 2014, pp. 223–226.]]

Ulrich von Hassell. 2011. *The Ulrich von Hassell Diaries, 1938–1944: The Story of the Forces Against Hitler Inside Germany.* London: Frontline. p. 198

9 June 1943. [...]

In their pessimism people are clinging to the idea of 'a miracle weapon', a rocket gun which can reduce whole sections of a city to ashes from extreme distances at one blow—a terrible vision! a frightful prospect in view of the fact that this will not shorten the war with a satisfactory conclusion, but most probably lengthen it with increasing bitterness.

Heinrich Himmler's diplomatic contact, Muhammad Amin Al-Husayni, the Grand Mufti of Jerusalem. Translated and paraphrased in: Wolfgang G. Schwanitz. Review of Karlsch, Rainer; Petermann, Heiko, Für und Wider "Hitlers Bombe": Studien zur Atomforschung in Deutschland. *H-Soz-u-Kult, H-Net Reviews.* February 2009. https://www.h-net.org/reviews/showrev.php?id=24129

Am selben Tage (nach Widmung auf ihrem gemeinsamen Foto der 4. Juli 1943) habe Himmler ihm, neben einem Bericht über Panzer, eine Geheiminformation gegeben, die, wie er ihm sagte, nicht mehr als zehn Eingeweihte im Deutschen Reich kennen: den Bau einer Atombombe, die den Sieg garantiere. Dies trug seine Siegesgewissheit. Die Deutschen kamen, erläuterte Himmler dem Großmufti, in der Atomforschung voran. Die Atomwaffe werde die stärkste Waffe sein, die den Sieg garantiere." Wir haben erfahren, dass Engländer und Amerikaner auch begonnen haben, eine Atomwaffe zu erlangen. Jedoch sind wir ihnen um drei Jahre voraus. Wir werden die Atomwaffe wenigstens drei Jahre vor ihnen haben." Abd al-Karim Umar, *Muzakkirat al-Hagg Muhammad Amin al-Husaini* [*The Memoires of al-Hagg Muhammad Amin al-Husaini*], Damascus 1999, S. 127, 162f. Al-Husaini beschrieb in (alliiert abgefangenen) Briefen an den Araber Shakib Arslan 1944 "V-Waffen".

On the same day (after the dedication in the joint photo of 4 July 1943), Himmler had given him, besides a report on tanks, secret information which, as he told him, was known to only ten people in the German Reich: the construction of an atomic bomb guaranteeing victory. This bore its certainty. The Germans, Himmler explained to the Grand Mufti, were advanced in atomic research. The atomic weapon would be the strongest of all weapons, guaranteeing victory. "We have learned that the British and Americans have also begun to develop an atomic weapon, but we are three years ahead of them, and we will have the atomic weapon at least three years before them." Abd al-Karim Umar, *Muzakkirat al-Hagg Muhammad Amin al-Husaini* [*The Memoirs of al-Hagg Muhammad Amin al-Husaini*], Damascus 1999, p. 127, 162f. In 1944 Al-Husaini described "V-weapons" in (Allied intercepted) letters to the Arab Shakib Arslan.

Nach 1945 meinte der Großmufti, dass die Feindspionage durch "jüdische, englische und amerikanische Geheimdienste" Deutschland "größten Schaden" zufügte. Sie konnten die Orte der "Atomreaktoren" in Ostpreußen entdecken. Ein Teil der Spione sei unter den 17 Millionen Fremdarbeitern gewesen. Sie hätten auch die geheimen Plätze in Peenemünde an der Ostsee in Ostdeutschland verraten, die die Alliierten dann zerstörten. Auch wären eine Anzahl deutscher Atomforscher getötet worden. So hätten die Alliierten verhindert, dass Deutschland eine Atombombe baute. Deutsche seien gezwungen gewesen, Betriebe auf eine Insel vor Dänemark mit unterirdischen Werken der Atomforschung zu verlagern. Abd al-Karim Umar, *Guerilla-Fidaiyun-Kommandos*, S. 145.

After 1945 the Grand Mufti said that the enemy espionage by "Jewish, English and American intelligence services" caused "the greatest damage." They were able to discover the locations of "atomic reactors" in East Prussia. Some of the spies were among the 17 million foreign workers. They also betrayed the secret places in Peenemünde on the Baltic Sea in eastern Germany, which were then destroyed by the Allies. A number of German atomic researchers were also killed. Thus the Allies prevented Germany from building an atomic bomb. Germans had been forced to relocate operations to an island off the coast of Denmark with underground installations for atomic research. Abd al-Karim Umar, *Guerilla-Fidaiyun-Kommandos*, p. 145.

[The Grand Mufti provided numerous details that are very useful (if they are accurate):

- German intelligence was aware of the U.S. Manhattan Project.
- The goal of the German nuclear program was to develop a bomb as rapidly as possible, before the United States could.
- As of mid-1943, Heinrich Himmler (and hence the SS) was in charge of the German nuclear program.
- Security for the German nuclear program was highly compartmentalized—"only ten people" knew the whole truth about it.
- As of mid-1943, Himmler thought the German nuclear program was "three years ahead" of the U.S. program, so the German program was at least three years old and could have begun no later than mid-1940. Since Himmler knew that the U.S. program was already underway in 1943, that would push the origin of the German program back even earlier, likely to 1939 when war was declared.
- There were one or more fission reactors under construction (or operational?) in East Prussia (now northeastern Poland and western Russia). See also pp. 3929 and 4998.
- Allied intelligence was aware of the German nuclear program.
- Allied bombing and sabotage caused significant delays in the German nuclear program.
- Some nuclear work was being conducted at Peenemünde (or elsewhere on the Baltic coast).
- Some nuclear work was being conducted on the island of Bornholm.
- To avoid Allied bombing, some nuclear work was being conducted in underground installations.

The Mufti's account was not translated from Arabic until after Werner Grothmann had already died, yet all of these details are remarkably consistent with Grothmann's account of the German nuclear program and lend credibility to Grothmann as an historical source. Whether the details are accurate could still be debated, but both the Mufti and Grothmann were close associates of Heinrich Himmler and heard the same information from him.]

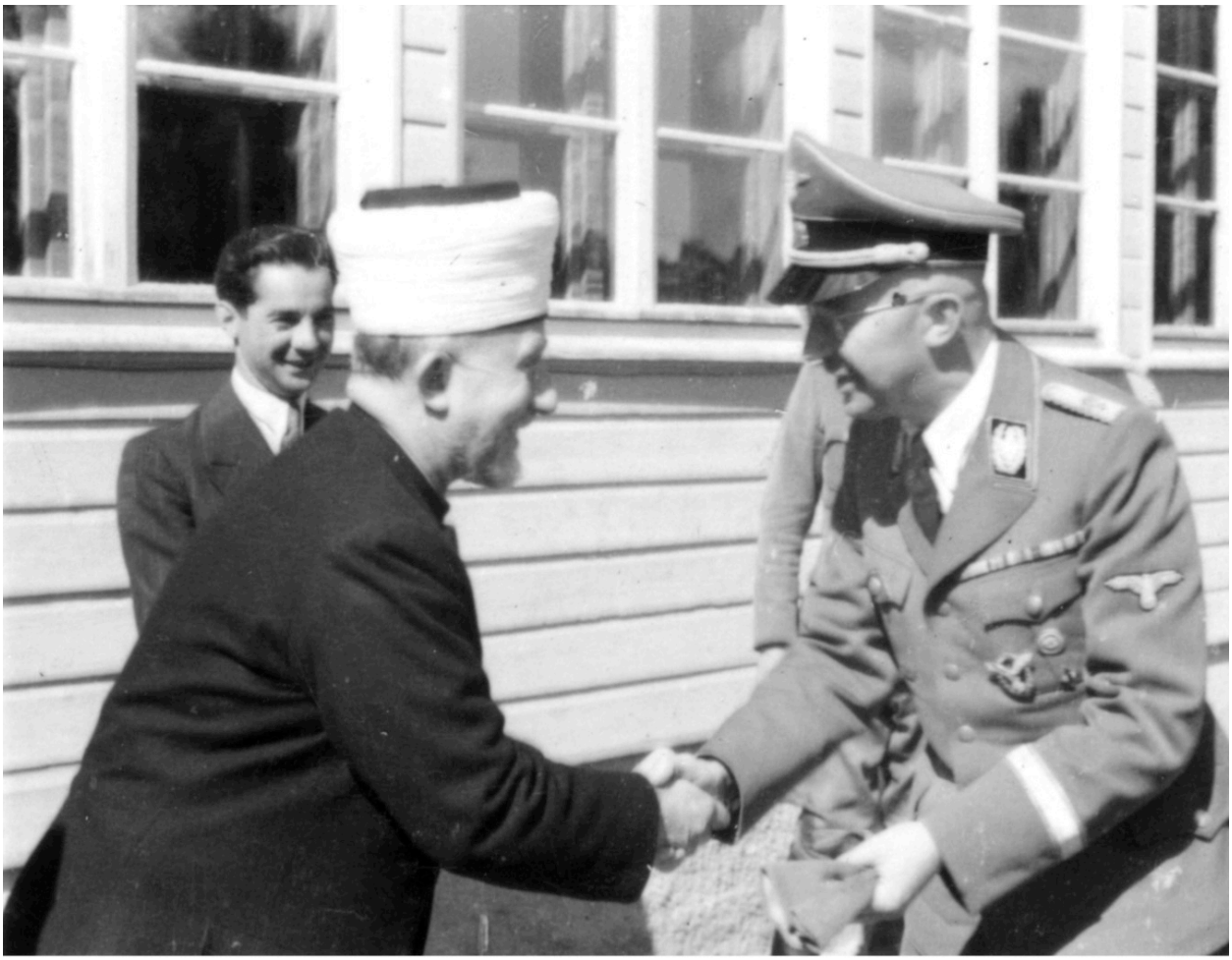


Figure D.743: Muhammad Amin Al-Husayni, the Grand Mufti of Jerusalem, meeting with Heinrich Himmler on 4 July 1943. See pp. 4578–4579.

SECRET

4 December 1943

FACT SHEET

1. Activities of Scientists

A. Hahn

Known to be a violent anti-Nazi.

Went to Paris early in 1942 where it is believed he discussed academic matters.

At the beginning of the war when asked by German officials to contribute to the research on fission, Hahn replied he did not want to participate.

In April 1943 Hahn visited Meitner in Sweden. When asked how the fission project was going, he replied, it isn't going.

Gave a lecture in Sweden on the general subject of fission in November 1943. Referred to the serious accomplishment of the development and research work as a post-war project.

E. Harteck

Physical chemist active in the development of the exchange reaction used in the production of D20.

Made frequent trips to Norway.

F. Jensen

Professor of Physics at Hanover.

Makes frequent trips to Norway

Associated in his work with Harteck

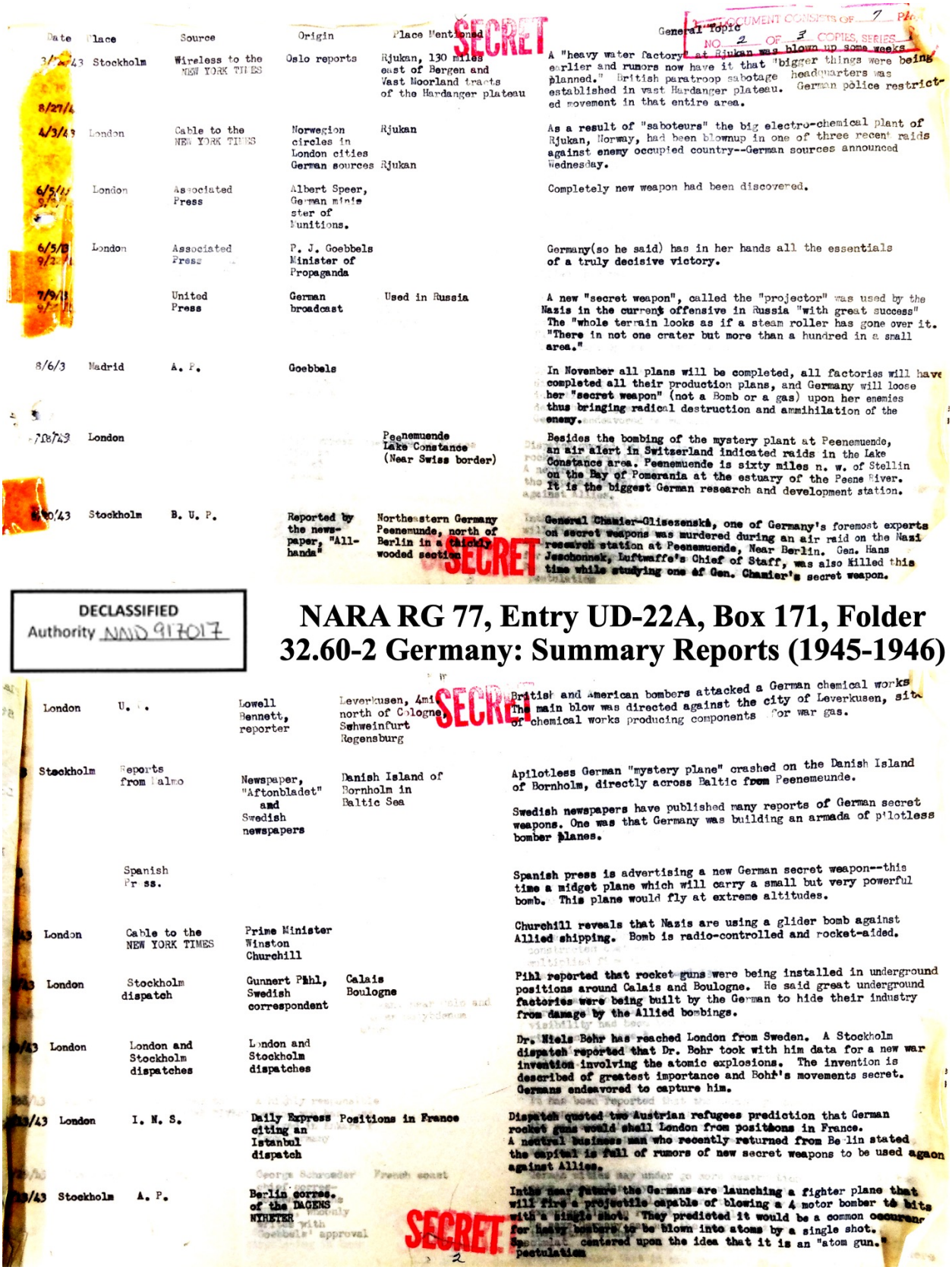
Has talked at intervals with Bohr

A naturalized German, parents Danish extraction.

Has said to Bohr that the Germans have a new weapon, that he knows about it, that he is very worried and wants to go to America.

SECRET

Figure D.744: In 1943, the German nuclear physicist Johannes Hans Jensen passed word via Niels Bohr to the United States "that the Germans have a new weapon, that he knows about it, that he is very worried and wants to go to America." Fact Sheet. 4 December 1943 [NARA RG 77, Entry UD-22A, Box 170, Folder 32.60-1 GERMANY: Summary Reports (1944)].



SECRET

Date	Place	Source	Origin	Place Mentioned	General Topic
3/[illegible]/43	Stockholm	Wireless to the NEW YORK TIMES	Oslo reports	Rjukan, 130 miles east of Bergen and Vast Moorland tracts of the Hardanger plateau	A "heavy water factory" at Rjukan was blown up some weeks earlier and rumors now have it that "bigger things were being planned." British paratroop sabotage headquarters was established in vast Hardanger plateau. German police restricted movement in that entire area.
8/27/4					
4/3/43	London	Cable to the NEW YORK TIMES	Norwegian circles in London cities German sources	Rjukan Rjukan	As a result of "saboteurs" the big electro-chemical plant of Rjukan, Norway, had been blownup in one of three recent raids against enemy occupied country--German sources announced Wednesday.
6/5/43	London	Associated Press	Albert Speer, German minister of Munitions.		Completely new weapon had been discovered.
6/5/43 9/2[illegible]	London	Associated Press	P. J. Goebbels Minister of Propaganda		Germany(so he said) has in her hands all the essentials of a truly decisive victory.
7/9/43		United Press	German broadcast	Used in Russia	A new "secret weapon", called the "projector" was used by the Nazis in the current offensive in Russia "with great success" The "whole terrain looks as if a steam roller has gone over it. "There in not one crater but more than a hundred in a small area."
8/6/3	Madrid	A. P.	Goebbels		In November all plans will be completed, all factories will have completed all their production plans, and Germany will loose her "secret weapon" (not a Bomb or a gas) upon her enemies thus bringing radical destruction and annihilation of the enemy.
7/8/43	London			Peenemuende Lake Constance (Near Swiss border)	Besides the bombing of the mystery plant at Peenemuende, an air alert in Switzerland indicated raids in the Lake Constance area. Peenemuende is sixty miles n. w. of Stellin on the Bay of Pomerania at the estuary of the Peene River. It is the biggest German research and development station.
8/20/43	Stockholm	B. U. P.	Reported by the newspaper, "Allhanda"	Northeastern Germany Peenemunde, north of Berlin in a thickly wooded section	General Chamier-Glisezenski, one of Germany's foremost experts on secret weapons was murdered during an air raid on the Nazi research station at Peenemuende, Near Berlin. Gen. Hans Jeschonnek, Luftwaffe's Chief of Staff, was also killed this time while studying one of Gen. Chamier's secret weapon.

SECRET

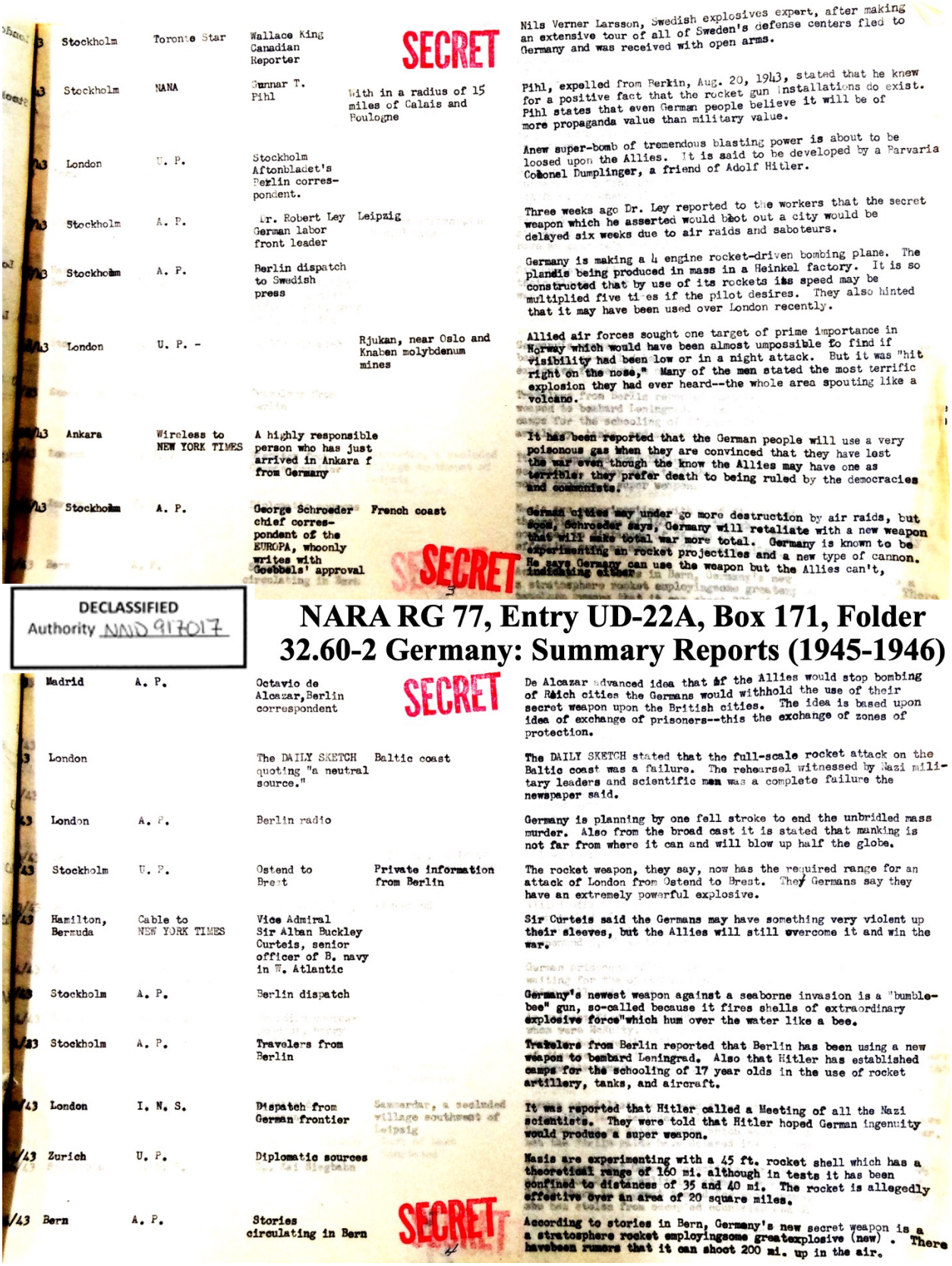
DECLASSIFIED
Authority NND 917017

NARA RG 77, Entry UD-22A, Box 171, Folder 32.60-2 Germany: Summary Reports (1945-1946)

	London	U. [illegible]	Lowell Bennett, reporter	Leverkusen, 4mi north of Cologne, Schweinfurt Regensburg	British and American bombers attacked a German chemical works The main blow was directed against the city of Leverkusen, site of chemical works producing components for war gas.
	Stockholm	Reports from Malmo	Newspaper, "Aftonbladet" and Swedish newspapers	Danish Island of Bornholm in Baltic Sea	Apilotless German "mystery plane" crashed on the Danish Island of Bornholm, directly across Baltic from Peenemeunde. Swedish newspapers have published many reports of German secret weapons. One was that Germany was building an armada of pilotless bomber planes.
		Spanish Press.			Spanish press is advertising a new German secret weapon--this time a midget plane which will carry a small but very powerful bomb. This plane would fly at extreme altitudes.
[illegible]43	London	Cable to the NEW YORK TIMES	Prime Minister Winston Churchill		Churchill reveals that Nazis are using a glider bomb against Allied shipping. Bomb is radio-controlled and rocket-aided.
[illegible]/43	London	Stockholm dispatch	Gunnert Pihl, Swedish correspondent	Calais Boulogne	Pihl reported that rocket guns were being installed in underground positions around Calais and Boulogne. He said great underground factories were being built by the German to hide their industry from damage by the Allied bombings.
[illegible]/43	London	London and Stockholm dispatches	London and Stockholm dispatches		Dr. Niels Bohr has reached London from Sweden. A Stockholm dispatch reported that Dr. Bohr took with him data for a new war invention involving the atomic explosions. The invention is described of greatest importance and Bohr's movements secret. Germans endeavored to capture him.
[illegible]/43	London	I. N. S.	Daily Express citing an Istanbul dispatch	Positions in France	Dispatch quoted two Austrian refugees prediction that German rocket guns would shell London from positions in France. A neutral business man who recently returned from Berlin stated the capital is full of rumors of new secret weapons to be used again against Allies.
[illegible]/43	Stockholm	A. P.	Berlin corres. of the DAGENS NYHETER		Inthe near future the Germans are launching a fighter plane that will fire a projectile capable of blowing a 4 motor bomber to bits with a single shot. They predicted it would be a common occurrence for heavy bombers to be blown into atoms by a single shot. Speculation centered upon the idea that it is an "atom gun."

SECRET

Figure D.745: During the war, especially in its later years, countless newspaper articles reported that Germany was developing an atomic bomb. The U.S. Manhattan Project's Foreign Intelligence Unit analyzed many of those articles [NARA RG 77, Entry UD-22A, Box 171, Folder 32.60-2 Germany: Summary Reports (1945–1946)].



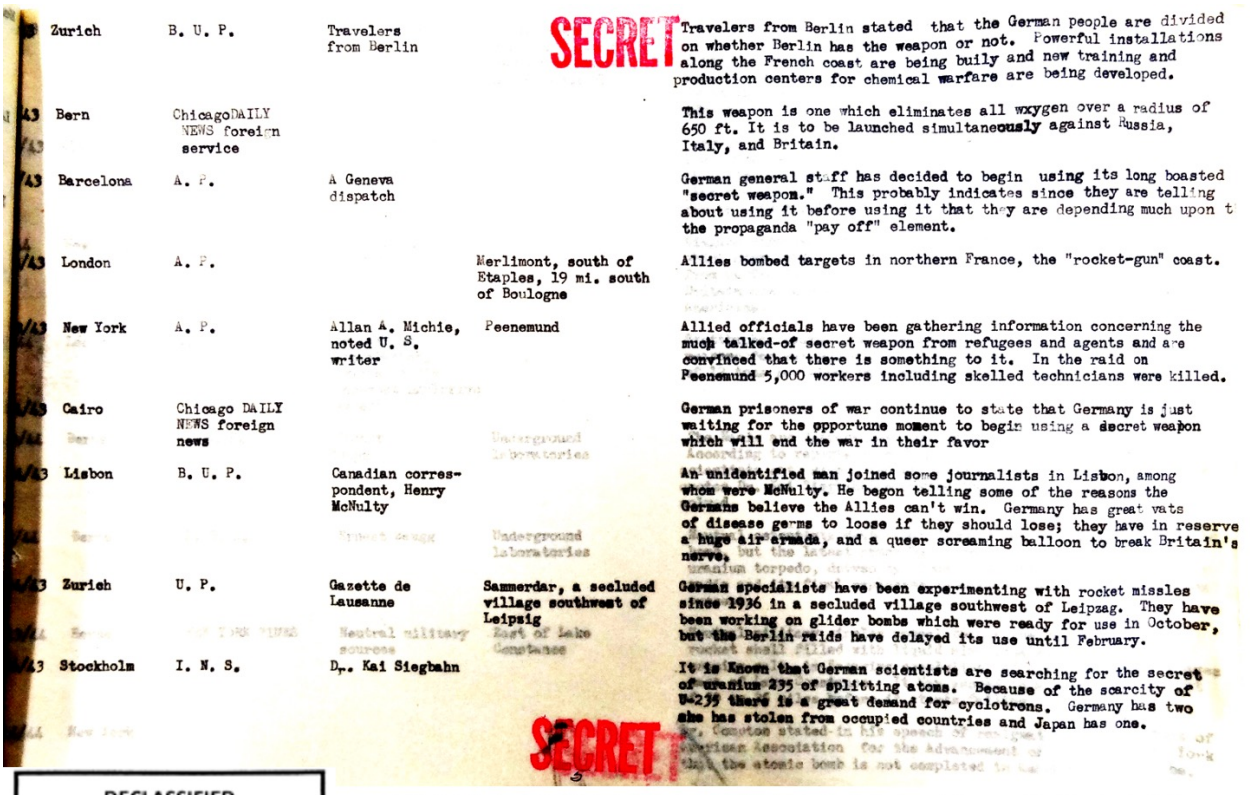
Stockholm	Toronto Star	Wallace King Canadian Reporter	SECRET	Nils Verner Larsson, Swedish explosives expert, after making an extensive tour of all of Sweden's defense centers fled to Germany and was received with open arms.
Stockholm	NANA	Gunnar T. Pihl	With in a radius of 15 miles of Calais and Boulogne	Pihl, expelled from Berlin, Aug. 20, 1943, stated that he knew for a positive fact that the rocket gun installations do exist. Pihl states that even German people believe it will be of more propaganda value than military value.
London	U. P.	Stockholm Aftonbladet's Berlin correspondent.		Anew super-bomb of tremendous blasting power is about to be loosed upon the Allies. It is said to be developed by a Barvaria Colonel Dumplinger, a friend of Adolf Hitler.
Stockholm	A. P.	Dr. Robert Ley German labor front leader	Leipzig	Three weeks ago Dr. Ley reported to the workers that the secret weapon which he asserted would blot out a city would be delayed six weeks due to air raids and saboteurs.
Stockholm	A. P.	Berlin dispatch to Swedish press		Germany is making a 4 engine rocket-driven bombing plane. The plane is being produced in mass in a Heinkel factory. It is so constructed that by use of its rockets its speed may be multiplied five times if the pilot desires. They also hinted that it may have been used over London recently.
London	U. P. -		Rjukan, near Oslo and Knaben molybdenum mines	Allied air forces sought one target of prime importance in Norway which would have been almost impossible to find if visibility had been low or in a night attack. But it was "hit right on the nose," Many of the men stated the most terrific explosion they had ever heard--the whole area spouting like a volcano.
Ankara	Wireless to NEW YORK TIMES	A highly responsible person who has just arrived in Ankara f from Germany		It has been reported that the German people will use a very poisonous gas when they are convinced that they have lost the war even though the know the Allies may have one as terrible; they prefer death to being ruled by the democracies and communists.
Stockholm	A. P.	George Schroeder chief correspondent of the EUROPA, whoonly writes with Goebbels' approval	French coast	German cities may under go more destruction by air raids, but soon, Schroeder says, Germany will retaliate with a new weapon that will make total war more total. Germany is known to be experimenting an rocket projectiles and a new type of cannon. He says Germany can use the weapon but the Allies can't,
		SECRET		

DECLASSIFIED
Authority NND 917017

NARA RG 77, Entry UD-22A, Box 171, Folder 32.60-2 Germany: Summary Reports (1945-1946)

Madrid	A. P.	Octavio de Alcazar, Berlin correspondent	SECRET	De Alcazar advanced idea that if the Allies would stop bombing of Reich cities the Germans would withhold the use of their secret weapon upon the British cities. The idea is based upon idea of exchange of prisoners--this the exchange of zones of protection.
London		The DAILY SKETCH quoting "a neutral source."	Baltic coast	The DAILY SKETCH stated that the full-scale rocket attack on the Baltic coast was a failure. The rehearsel witnessed by Nazi military leaders and scientific men was a complete failure the newspaper said.
London	A. P.	Berlin radio		Germany is planning by one fell stroke to end the unbridled mass murder. Also from the broad cast it is stated that manking is not far from where it can and will blow up half the globe.
Stockholm	U. P.	Ostend to Brest	Private information from Berlin	The rocket weapon, they say, now has the required range for an attack of London from Ostend to Brest. They Germans say they have an extremely powerful explosive.
Hamilton, Bermuda	Cable to NEW YORK TIMES	Vice Admiral Sir Alban Buckley Curteis, senior officer of B. navy in W. Atlantic		Sir Curteis said the Germans may have something very violent up their sleeves, but the Allies will still overcome it and win the war.
Stockholm	A. P.	Berlin dispatch		Germany's newest weapon against a seaborne invasion is a "bumble-bee" gun, so-called because it fires shells of extraordinary explosive force"which hum over the water like a bee.
Stockholm	A. P.	Travelers from Berlin		Travelers from Berlin reported that Berlin has been using a new weapon to bombard Leningrad. Also that Hitler has established camps for the schooling of 17 year olds in the use of rocket artillery, tanks, and aircraft.
London	I. N. S.	Dispatch from German frontier	Sammerda, a secluded village southwest of Leipzig	It was reported that Hitler called a Meeting of all the Nazi scientists. They were told that Hitler hoped German ingenuity would produce a super weapon.
Zurich	U. P.	Diplomatic sources		Nazis are experimenting with a 45 ft. rocket shell which has a theoretical range of 160 mi. although in tests it has been confined to distances of 35 and 40 mi. The rocket is allegedly effective over an area of 20 square miles.
Bern	A. P.	Stories circulating in Bern	SECRET	According to stories in Bern, Germany's new secret weapon is a a stratosphere rocket employingsome greatexplosive (new) . There havebeen rumors that it can shoot 200 mi. up in the air.

Figure D.746: During the war, especially in its later years, countless newspaper articles reported that Germany was developing an atomic bomb. The U.S. Manhattan Project's Foreign Intelligence Unit analyzed many of those articles [NARA RG 77, Entry UD-22A, Box 171, Folder 32.60-2 Germany: Summary Reports (1945–1946)].



SECRET

Zurich	B. U. P.	Travelers from Berlin		Travelers from Berlin stated that the German people are divided on whether Berlin has the weapon or not. Powerful installations along the French coast are being builty and new training and production centers for chemical warfare are being developed.
Bern	Chicago DAILY NEWS foreign service			This weapon is one which eliminates all oxygen over a radius of 650 ft. It is to be launched simultaneously against Russia, Italy, and Britain.
Barcelona	A. P.	A Geneva dispatch		German general staff has decided to begin using its long boasted "secret weapon." This probably indicates since they are telling about using it before using it that they are depending much upon t the propaganda "pay off" element.
London	A. P.		Merlimont, south of Etaples, 19 mi. south of Boulogne	Allies bombed targets in northern France, the "rocket-gun" coast.
New York	A. P.	Allan A. Michie, noted U. S. writer	Peenemund	Allied officials have been gathering information concerning the much talked-of secret weapon from refugees and agents and are convinced that there is something to it. In the raid on Peenemund 5,000 workers including skelled technicians were killed.
Cairo	Chicago DAILY NEWS foreign news			German prisoners of war continue to state that Germany is just waiting for the opportune moment to begin using a secret weapon which will end the war in their favor
Lisbon	B. U. P.	Canadian correspondent, Henry McNulty		An unidentified man joined some journalists in Lisbon, among whom were McNulty. He begon telling some of the reasons the Germans believe the Allies can't win. Germany has great vats of disease germs to loose if they should lose; they have in reserve a huge air armada, and a queer screaming balloon to break Britain's nerve.
Zurich	U. P.	Gazette de Lausanne	Sammerdar, a secluded village southwest of Leipsig	German specialists have been experimenting with rocket missles since 1936 in a secluded village southwest of Leipzag. They have been working on glider bombs which were ready for use in October, but the Berlin raids have delayed its use until February.
Stockholm	I. N. S.	Dr. Kai Siegbahn		It is known that German scientists are searching for the secret of uranium 235 of splitting atoms. Because of the scarcity of U-235 there is a great demand for cyclotrons. Germany has two she has stolen from occupied countries and Japan has one.

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NARA RG 77, Entry UD-22A, Box 171, Folder 32.60-2 Germany: Summary Reports (1945-1946)

Bern	By radio to Chicago DAILY NEWS and VINDICATOR	Swiss reports	German side of Lake Constance on north east border of Switzerland	Strange noises from the German side of Lake Constance on Switzerlandis north east border have been heard recently. For days and nights thunderous detonations like explosions have made the ground quake over a radius of 7 miles or more. The Swiss presumed this was the testing of high powered fuses for projectiles.
Lisbon	U. P.	Latest travelers from Berlin		Germany, they said, have a new type of small bomb with a tremendous explosive power supplied by a process of splitting the atom. These bombs will be scattered by a new stratosphere planes which can fly far above ack-ack fire and each plane can be loaded with hundreds of small bombs.
New York		Karl H. Von Wiegand		Wiegand discusses the uranium bomb (size of oranges) stories of which have leaked out of Germany. He believes that they are far from perfection yet, due to the scarcity of uranium. People of Britain are much more serious about this new threat than the Americans.
London	I. N. S.	Dr. Alfred Stettbacher, Switzerland's foremost explosive expert		Stettbacher brands the "rocker gun" as nothing more than a weapon for war nerves. It would be impossible to fire a shell of 12 tons 120 miles much less with any degree of accuracy.
Berne	I. N. S.	Ernest Zuagg	Underground laboratories	The Nazis are desperately working on a "uranium torpedo". According to reports spread by Goebbels department, the German scientists eat, sleep, and exercise at their places of work. He quotes Dr. Kai Siegbahn as saying the secret is far from being solved.
Berne	I. N. S.	Ernest Zaugg	Underground laboratories	Neutral scientists doubt that Germany has perfected a new atomic bomb, but the latest rumor by Goebbels is that they have a uranium torpedo, driven by from 5 to 7 rockets and directed by radio and its final explosion is derived from an atom-splitting process.
Berne	NEW YORK TIMES	Neutral military sources	East of Lake Constance	Neutral military circles reveal that a new secret weapon, a rocket shell filled with liquid air containing a solution of uranium salt, is "nearing completion" of its experimental stages east of Lake Constance. It May ascend to a theoretical height of 30 to 35 miles before it starts falling.
New York				Dr. Compton stated in his speech of resignation as president of American Association for the Advancement of Science in New York that the atomic bomb is not completed in Germany and won't be.

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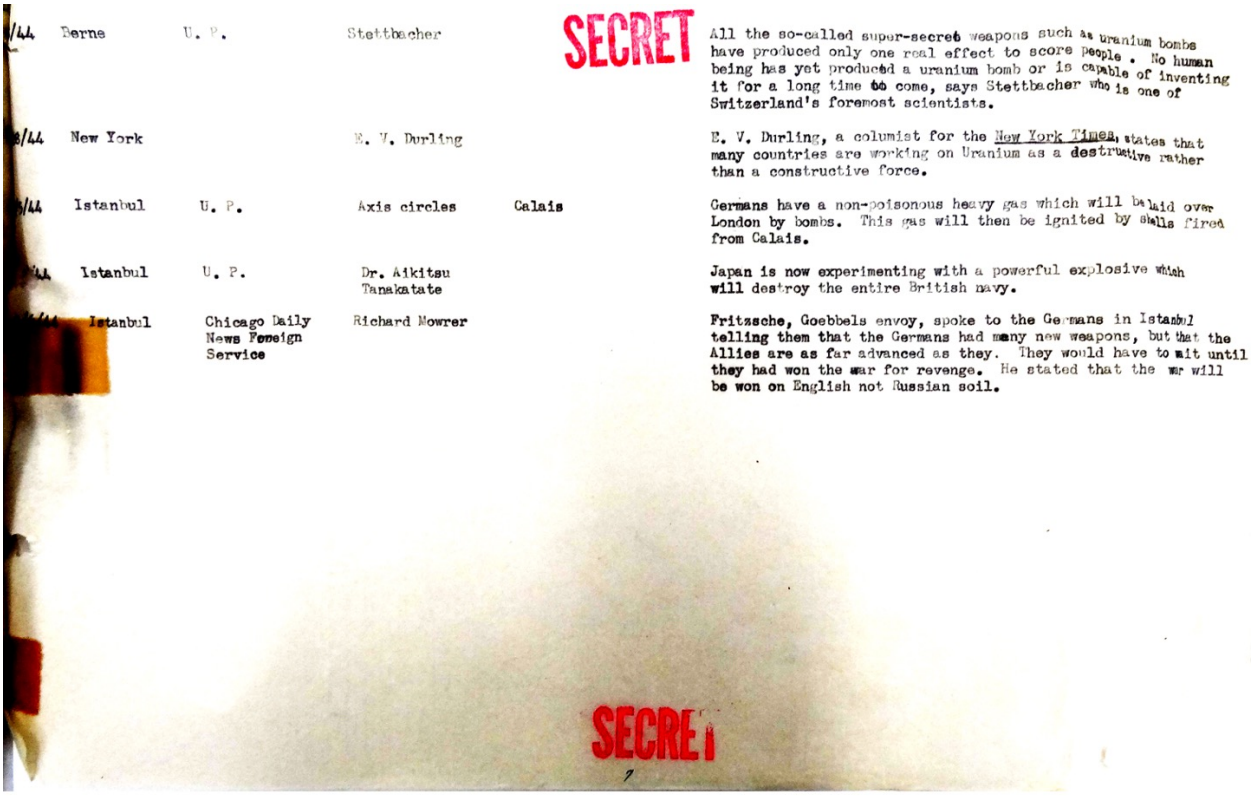
Figure D.747: During the war, especially in its later years, countless newspaper articles reported that Germany was developing an atomic bomb. The U.S. Manhattan Project's Foreign Intelligence Unit analyzed many of those articles [NARA RG 77, Entry UD-22A, Box 171, Folder 32.60-2 Germany: Summary Reports (1945–1946)].



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/44	Berne	U. P.	Stettbacher	All the so-called super-secret weapons such as uranium bombs have produced only one real effect to score people . No human being has yet produced a uranium bomb or is capable of inventing it for a long time to come, says Stettbacher who is one of Switzerland's foremost scientists.
/44	New York		E. V. Durling	E. V. Durling, a columist for the New York Times, states that many countries are working on Uranium as a destructive rather than a constructive force.
/44	Istanbul	U. P.	Axis circles	Calais	Germans have a non-poisonous heavy gas which will be laid over London by bombs. This gas will then be ignited by shells fired from Calais.
/44	Istanbul	U. P.	Dr. Aikitsu Tanakatate	Japan is now experimenting with a powerful explosive which will destroy the entire British navy.
/44	Istanbul	Chicago Daily News Foreign Service	Richard Mowrer	Fritzsche, Goebbels envoy, spoke to the Germans in Istanbul telling them that the Germans had many new weapons, but that the Allies are as far advanced as they. They would have to wait until they had won the war for revenge. He stated that the war will be won on English not Russian soil.

SECRET

NARA RG 77, Entry UD-22A, Box 171, Folder 32.60-2 Germany: Summary Reports (1945-1946)

Figure D.748: During the war, especially in its later years, countless newspaper articles reported that Germany was developing an atomic bomb. The U.S. Manhattan Project's Foreign Intelligence Unit analyzed many of those articles [NARA RG 77, Entry UD-22A, Box 171, Folder 32.60-2 Germany: Summary Reports (1945–1946)].

Winston Churchill. 21 September 1943. Address to Parliament, *War Situation* Vol. 392 https://hansard.parliament.uk/Commons/1943-09-21/debates/1083c667-4ccd-40de-b6a1-e387f595fee8/WarSituation

We must not in any circumstances allow these favourable tendencies to weaken our efforts or lead us to suppose that our dangers are past or that the war is coming to an end. On the contrary, we must expect that the terrible foe we are smiting so heavily will make frenzied efforts to retaliate. The speeches of the German leaders, from Hitler downwards, contain mysterious allusions to new methods and new weapons which will presently be tried against us. It would, of course, be natural for the enemy to spread such rumours in order to encourage his own people, but there is probably more in it than that. For example we now have experience of a new type of aerial bomb which the enemy has begun to use in attacks on our shipping, when at close quarters with the coast. This bomb, which may be described as a sort of rocket-assisted glider, is released from a considerable height, and is then apparently guided towards its target by the parent aircraft. It may be that the Germans are developing other weapons on novel lines with which they may hope to do us damage and to compensate to some extent for the injury which they are daily receiving from us. I can only assure the House that unceasing vigilance and the most intense study of which we are capable are given to these possibilities. We have always hitherto found the answer to any of the problems which have been presented to us. At the same time I do not exclude, and no one must exclude from their minds, that novel forms of attack will be employed, and, should they be employed, I should be able to show to the House in detail the prolonged, careful examination beforehand which we have made into these possibilities, and I trust we shall be able to show the measures which will be brought into force against them.

Associated Press. Heavy 'Retaliation' Threatened by Nazis. [Alternate title in some editions of that day's newspaper: "Huge Reprisal Blow Threatened by Nazis."] *New York Times*, 4 December 1943, p. 1.

LONDON, Dec. 3—Again threatening retaliation for the air war upon Germany, the Berlin radio said today that the German High Command "intends by one fell, drastic stroke to end the unbridled mass murder," and added that "mankind is not far from the point where it can at will blow up half the globe."

The broadcast quoted the periodical Reich as saying that "the commencement of retaliation no longer depends on technical matters, but solely on the object which is to be attained by it."

"The retaliation," it continues, "will be so powerful and will be started at such a psychologically opportune moment as to influence the development of the war. It would be superfluous to retaliate for ruins with ruins. The sense of retaliation will find quite a different and surprising expression spiritually as well as politically."

[A clipping of this newspaper article is in the Franklin Delano Roosevelt Library in Hyde Park, New York [Small Collections, Box 1, Folder 3, ATOMIC BOMB FILE]. The fact that this article was singled out to be saved and placed in a presidential file labelled "ATOMIC BOMB FILE" demonstrates that President Roosevelt and other senior officials of the U.S. government clearly understood this article to be a reference to the German nuclear weapons program.

This same 3 December 1943 German announcement was analyzed in more detail in the following article from *Newsweek*.]

Can the Nazis 'Blow Up Half the Globe'? *Newsweek* Vol. 22, No. 24, 13 December 1943, p. 32.

The plane was flying so high that only a few people saw it. And when the bombs that it dropped struck it was doubtful if anyone in the city heard the explosion. For that explosion was so tremendous and all-inclusive that in a fraction of a second the entire community had been wiped from the face of the earth.

This is the sort of destruction that scientists and novelists have often envisioned as taking place in some future war. By and large, it has had little foundation in actuality. The possibilities of inventing new explosives out of known materials have been discounted as being so remote as almost to be out of the question. The only chance seemed to be in tapping some new and frightful source of energy—as in the favorite scientific fantasy in which the atom is broken up and a cupful of water made to generate enough power to drive a steamer across the Atlantic.

Now the Germans are claiming, although not in so many words, that they have developed some such phenomenal new instrument of destruction. It is, of course, part of the propaganda campaign promising retaliation for British and American air raids. For the moment, it is obviously intended to bolster the morale of a badly shaken people. And as such it has not been taken seriously by the Allied public. However, a number of peculiar circumstances coupled with this boast give it a deeply serious significance—so serious that perhaps the world should prepare for the last stage of the war to unleash a terror beyond present comprehension.

The first circumstance is that Allied leaders expect new forms of war to be developed and have said so. Churchill was most explicit. In the same speech in which he told of the Nazi rocket-glider-bomb (and effective but not decisive weapon), he warned: "It may be that the Germans are developing other weapons on novel lines with which they hope to do us damage." Then he underlined the importance of this otherwise rather uninformative statement by referring to the "prolonged, careful examination beforehand that we have given to these possibilities."

Another circumstance stems from the reported blowing up last spring of a German electrochemical plant at Rjukan in Norway. This plant was supposed to be manufacturing "heavy water," a substance extremely useful in atom cracking (NEWSWEEK, April 19). Still another was the RAF raid last August in which 1,730 tons of bombs were lavished on a German research laboratory in the woods at Peenemünde, north of Berlin.

The wording of the German propaganda lent weight to all this evidence. On Dec. 3, the Berlin radio quoted the German High Command as saying that "the retaliation will be so powerful and will be started at such a psychologically opportune moment as to influence the development of the war." The High Command also said that it "intends by one fell, drastic stroke to end the unbridled mass murder." A hint of the method was contained in the declaration that mankind is not far from the point where it can at will blow up half the globe."

These boasts did not sound like the ordinary propaganda line for two reasons. First, they came directly from the High Command, an unusual proceeding. Second, there was no qualification to these and similar earlier promises that the retaliation would surely come. The inference was strong that the weapon itself had been perfected—a Stockholm dispatch said flatly that it was a new high explosive—and that only the moment when the maximum effect could be secured was being awaited. Finally, Hitler himself in his beer-hall speech last November proclaimed that the next target would be Britain.

U.S. Military Attaché, U.S. Embassy in Istanbul. 8 December 1943. [AFHRA A1261 electronic version p. 31] [See document photo on p. 4589 top.]

Source: M/A Istanbul, Turkey, #8507, 8 December 1943.

Before Mr. Shimura left the office, informant asked him about the damage to Berlin. Mr. Shimura said damage was enormous and effect on morale serious but not to the point of a German collapse.

"However," remarked Mr. Shimura, "the raids will not continue much longer."

"How so?", asked informant.

"Because the Allies will soon receive ten times more than they have given. The Germans have a weapon in preparation which is more devastating than anything we have ever seen." Mr. Shimura laughed. "Yes", he said, "It is coming very, very soon."

U.S. Military Attaché, U.S. Embassy in Istanbul. 18 December 1943. [AFHRA A1261 electronic version p. 27] [See document photo on p. 4589 bottom.]

Source: M/A Istanbul, Turkey, #8609, 18 December 1943.

In the course of a violent argument with a Bulgarian officer, an engineer of the Todt organization revealed in Sofia that the Germans now possess a new type of incendiary far surpassing anything yet used in warfare. The engineer intimated that London would suffer a fate worse than that of Berlin or Hamburg in the near future.

The Japanese have been given technical details about some new German weapon, possibly this one.

[Organisation Todt, founded by Fritz Todt (German, 1891–1942), developed the autobahn and many other large government and military engineering projects before and during World War II. One would expect it to have played an important role in any German nuclear weapons program, just as the U.S. Army Corps of Engineers did in the Manhattan Project.

After Fritz Todt's death in early 1942 (officially an accidental plane crash, but quite likely an assassination by his political rivals or Allied agents), formal control of Organisation Todt was granted to Albert Speer. However, direct management of Organisation Todt was carried out by Todt's former deputy, Franz Xaver Dorsch (German, 1899–1986). It seems likely that the nuclear-related aspects of Organisation Todt were subsumed by the SS's nuclear program under Heinrich Himmler and Hans Kammler.

Since 1938, Germany had been operating and receiving shipments from a uranium mine at Buchovo (or Buhovo), a suburb of Sofia, Bulgaria [Hayes 2004, p. 235; https://ejatlas.org/conflict/life-after-the-uranium-mines-in-buhovo-bulgaria]. That would explain why an engineer from Organisation Todt with apparent knowledge of the German nuclear weapons program was in Sofia in 1943.

As of late 1943, the engineer seemed to believe that the German nuclear weapons program was very far along and would soon deliver a final product. That implies that the program had been running for several years, and it is consistent with conducting the first successful tests in 1944.

Although unsigned, the above two intelligence reports are likely from George Earle, a U.S. Naval Attaché who ran a very well connected spy ring in Turkey that gathered a great deal of valuable intelligence (p. 4701).]

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Source: M/A Istanbul, Turkey, #8507, 8 December 1943. -

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CONFIDENTIAL

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Source: M/A Istanbul, Turkey, #8609, 18 December 1943.

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The Japanese have been given technical details about some new German weapon, possibly this one.

Figure D.749: U.S. Military Attaché, U.S. Embassy in Istanbul. December 1943 [AFHRA A1261 electronic version pp. 31 (top) and 27 (bottom)].

Rocket Weapons. *New York Times*, 23 January 1944, p. 75.

Fantastic tales come out of neutral Switzerland and Sweden about Germany's secret rocket weapons. Jules Verne never gave us anything more hair-raising. The splitting of the uranium atom a few years ago, with the release of energy on a minute scale, evidently inspired the recent Swiss account of a German rocket shell which is loaded with liquid air and a solution of uranium salt. It sounds terrible after the vivid pictures that were drawn of uranium's possibilities in driving factory wheels and lighting cities. The truth is that almost any existing fuel will do for a rocket plane and any existing explosive for a rocket shell, bomb or torpedo.

Ordnance experts will probably raise a skeptical eyebrow at the devastation supposedly wrought by "uraniated" rocket shells. Buildings and vegetation are said to be destroyed with a radius of half a mile from the point of explosion. [...]

[Despite the newspaper's mixture of condescension and cluelessness, this article said that an unnamed Swiss source reported that Germany was developing a completely new type of bomb that used fission reactions, uranium, and liquid oxygen ("liquid air"), that had a blast radius of at least half a mile, and that could be delivered by a rocket. According to an intelligence report to Joseph Stalin, a German bomb exactly matching that description was successfully tested in March 1945 (p. 4485).]

Hans Ulrich Rudel. 1958. *Stuka Pilot.* New York: Ballantine Books. Ch. 13.

In March 1944 our southern front is on the defensive, fiercely contesting the efforts of strong Russian forces to effect a decisive southward breakthrough so as to liquidate the whole German front in the South. [...]

At noon the General summons me to Odessa by telephone. [...]

For two days I bask in the sun on the terrace of the Berchtesgadener Hotel, inhaling the glorious mountain air of home. Now gradually I relax. Two days later I stand in the presence of the Führer in the magnificent Berghof. [...]

Now at last I am glad and happily look forward to seeing the pleasure in the faces of my comrades when they hear that I am back.We have tea together and chat for an hour or two. New technical weapons, the strategic situation, and history are the staple of our conversation. He specially explains to me the V weapons which have recently been tried out. For the present, he says, it would be a mistake to overestimate their effectiveness because the accuracy of these weapons is still very small, adding that this is not so important, as he is now hopeful of producing flying rockets which will be absolutely infallible. Later on we should not rely as at present on the normal high explosives, but on something quite different which will be so powerful that once we begin to use them they should end the war decisively. He tells me that their development is already well advanced and that their final completion may be expected very soon. For me this is entirely virgin ground, and I cannot yet imagine it. Later I learn that the explosive effect of these new rockets is supposed to be based on atomic energy.

The impression left after every visit to the Führer is enduring.

[Rudel was the most decorated German pilot of World War II and was closely connected to Hitler and his inner circle. *Stuka Pilot* is an English translation of Rudel's memoir *Trotzdem*, which he wrote soon after the war. Thus he would have been an excellent source of information.

According to Rudel, in March 1944 Hitler said that (1) atomic bombs were at a highly advanced stage of development and (2) the bombs were intended to be delivered via V-type rockets. Both points are consistent with many other sources in this appendix.]

C.S.D.I.C. (U.K.) S. R. Report S.R.G.G. 932. 3 July 1944. [NARA RG 77, Entry UD-22A, Box 171, Folder 32.7003-2 GERMANY: US Wartime Positive Int. (July–October 1944)]

M 179—Generalleutnant (GOC 10th Pz. Division) Captured TUNISIA 12 May 43
CS/23(N)—Konteradmiral (Commandant, Sea Defence NORMANDY) Captured CHERBOURG 26 Jun 44

CS/23: [...] The things they told us: within a radius of 6 km—I told him 3 km would do—not a bird would remain alive, not a leaf would be left on the trees—one hit on an airfield and it would be destroyed. [...] Well, it is quite possible—they are always drivelling here about an atom bomb. With an atom bomb I can destroy the whole world.

Otto Hofmann. 22 June 1944 letter. [Bundesarchiv (Berlin Lichterfelde), Collection NS 19 (Persönlicher Stab Reichsführer SS), 317]

Reichsführer-SS [Himmler] hat bei seiner heutigen Anwesenheit wiederholt seiner Auffassung Ausdruck gegeben, daß überall, wo es nur einigermaßen angängig ist, empfindliche Rüstungsbetriebe oder zumindest die empfindlichsten Teile der Rüstungsbetriebe unterirdisch und bombensicher unterzubringen sind. Er hat kein Verständnis dafür, wenn ihm Betriebsführer erklären, daß es im Augenblick ja doch schon zu spät sei, mit entsprechenden Bauten zu beginnen. Die Dauer des Krieges sei noch nicht abzusehen, außerdem dürfte das nicht der letzte Krieg sein und zukünftige Kriege werden sicherlich nicht mehr durch lange Erklärungen eröffnet, auch nicht durch Anflüge von Luftflotten, die einigermaßen rechtzeitig erkannt werden können. Er ist der Meinung, daß durch die Fortschritte der Technik urplötzlich Sprengkörper auftauchen, deren Wirkungen und deren Schnelligkeit unsere neuesten Sprengmittel der Vergeltungswaffe in den Schatten stellen. [...]

In his presence today, the Reichsführer-SS [Himmler] has repeatedly expressed his view that, wherever there is only a moderate risk, sensitive armament plants, or at least the most sensitive parts of them, must be accommodated underground and bomb-proof. He has no sympathy for the fact that plant managers tell him that it is already too late at the moment to start building such facilities. The duration of the war could not yet be foreseen, it would also not be the last war and future wars would certainly not be opened by long explanations, not even by approaches of air fleets which could be recognized in time. He is of the opinion that with the progress of technology, explosives are suddenly emerging whose speed and effect overshadow the newest explosives of the retaliatory weapon. [...]

[As shown on the next page, Albert Speer later quoted part of the above 22 June 1944 announcement by Himmler and explained that Himmler was specifically referring to the development of an atomic bomb.]

Heinrich Himmler's political rival, Albert Speer. [Speer 1981, pp. 150–152]

A few months earlier, Himmler had been hot on the trail of new explosives. On June 22, 1944, he had announced "that with the progress of technology, explosives are suddenly emerging whose speed and effect overshadow the newest explosives of our retaliatory weapons." In my ministry, we had long since come to realize than an atomic bomb (that was the only thing he could have meant) could not be produced before the winter of 1945...

Himmler was reticent in the area of atomic research. Nevertheless, he rebuked me for neglecting it, precisely because of the consequences of nuclear fission. Himmler's letter is not extant. But my reply shows that I was forced to defend myself. On September 23, 1944, "in order to prevent misunderstandings," I informed Himmler of the following: "There can be no doubt that research must go on even in wartime, and indeed very intensively... Ultimately, however, the main issue in research is that projects advantageous to the war effort should be given preference..."

Ohlendorf [one of Himmler's deputies] interfered to a huge extent with atomic research in a letter of January 25, 1945. He accused me of neglecting a discipline that had been labeled "Jewish physics" for many years, and he rebuked me for not paying the necessary attention to atomic research...

As a precaution, I had already written to Professor Gerlach on December 19, 1944: "Because of urgent tasks, I am unable to come into personal contact with you and your work. However, I place extraordinary value on research in the field of nuclear physics and I am following your work with great expectations..."

All these orders and arrogance on the part of the SS and especially Himmler reduced our capacity for research and development and created uncertainty about the command channels and areas of responsibility.

[Speer confirmed that:

- Heinrich Himmler was strongly interested in developing nuclear weapons.
- Interest in the German nuclear program intensified further in 1944 (the Allies invaded Normandy on 6 June 1944, and there was an attempted assassination of Hitler on 20 July 1944).
- There was political rivalry for the control and direction of the German nuclear program.

This information is consistent with a number of other accounts of the German nuclear program in this appendix.]

Discussion between Adolf Hitler and Romanian Prime Minister Ion Antonescu on 5 August 1944. Reported in: Andreas Hillgruber, ed. 1970. *Staatsmänner und Diplomaten bei Hitler: Vertrauliche Aufzeichnungen über Unterredungen mit Vertretern des Auslandes 1942-1944.* Vol. 2. Frankfurt am Main: Bernard & Graefe. pp. 482–484.

In diesem Zusammenhang machte der Führer noch technische Ausführungen über weitere neue Sprengstoffe, deren Entwicklung bis zum Experimentierstadium durchgeführt sei. Er habe den Eindruck, daß der Sprung von den jetzt gebräuchlichen Explosivstoffen bis zu diesen neuartigen Sprengmaterialien größer sei, als der vom Schwarzpulver bis zu den bei Kriegsbeginn gebräuchlichen Sprengmaterialien gewesen wäre.

In this context the Führer gave technical explanations about further new explosives, whose development had been brought to the experimental stage. He had the impression that the leap from the currently used explosives to these new explosive materials was greater than that from black powder to the explosive materials used at the beginning of the war.

Als der Marschall darauf erwiderte, dass er hoffe, die Zeit der Anwendung dieser neuen Explosivstoffe, die vielleicht das Ende der Welt herbeiführen würden, nicht mehr zu erleben, erwähnte der Führer die von einem deutschen Schriftsteller vorausgesehenen weiteren Entwicklungsstufen auf diesem Gebiet, die bis zu einem Punkt führen würden, wo die Materie als solche sich auflöse und dann allerdings Katastrophen von ungeahnter Größe herbeiführen würde.

When the Marshal replied that he hoped not to live to experience the time of the utilization of these new explosives, which would perhaps lead to the end of the world, the Führer mentioned the further development stages foreseen by a German writer in this field would lead to a point where matter as such would dissolve, and then disasters of unimagined size would be produced.

Bei dieser Forschungstätigkeit müsse man zwei Richtungen unterscheiden: einmal die militärische Auswertung bereits vervollkommneter und voll durchentwickelter Waffen und andererseits die wissenschaftlich vorbereitete, experimentell allmählich erprobte und langsam bis zur fabrikatorischen Massenherstellung durchgeführte Entwicklung neuartiger Stoffe.

In these research activities, one had to distinguish two directions: on one hand the military utilization of already perfected and fully developed weapons, and on the other hand, the scientifically prepared, experimentally gradually tested and slowly developed creation of novel substances.

Ganz allgemein gelte bei der Einführung neuer Waffen der Grundsatz, dass man sie nur dann unverzüglich zur Anwendung bringen könne, wenn man der felsenfesten Überzeugung sei, dass sie mit einem Schlage den Krieg beenden würden. In der Mehrzahl der Fälle bestehe jedoch die Gefahr, dass der Gegner sich nach Ablauf von zehn bis zwölf Monaten der gleichen Stoffe bedienen würde, so dass man solche Stoffe erst praktisch anwenden könne, wenn man selbst vorher ein Abwehrmittel entwickelt habe. [...]

In general, the introduction of new weapons is based on the principle that they can only be applied without delay if one is firmly convinced that they will end the war in one stroke. In the majority of cases, however, there is a danger that the opponent would use the same substances after ten to twelve months, so that such substances can only be applied in practice if a defensive agent has already been developed. [...]

Dabei sei V1 nur eine von 4 Waffen, die Deutschland einsetzen würde. Eine andere dieser Waffen habe z.B. eine so gewaltige Wirkung, dass in einem Umkreis von 3–4 km von der Einschlagstelle alles menschliche Leben vernichtet würde.

V1 is only one of four weapons that Germany would use. Another of these weapons has for example such a tremendous effect that all human life would be destroyed within a radius of three to four kilometers from the impact point.

[During the war, uranium was being very actively mined in Romania for the German nuclear weapons program (pp. 3449–3455). Thus Hitler was telling Antonescu about some of the results of that work, and also trying to persuade him to continue the Romanian alliance with Germany. Antonescu was overthrown by pro-Soviet Romanians in late August 1944; subsequently, Romanian uranium was sent to what became the postwar Soviet nuclear weapons program.]

Figure D.750: Ion Antonescu and Adolf Hitler together in Munich on 10 June 1941.

Summary of information from OSS report. 5 August 1944. [NARA RG 77, Entry UD-22A, Box 171, Folder 32.60-2 GERMANY: Summary Reports (1945–1946)]

5 August 1944

Summary of Information

The Germans have succeeded in isolating a small quantity of powder involving atomic separation from the element "iran" [Uran, uranium]. To do so the process has used heavy water. The product is considered of such explosive energy that the Germans have not yet dared to conduct experiments with it. Before using the secret weapon, V-2, which is not the atomic powder they want to be sure that the American experiments have not reached the point where the British and Americans could respond with a destructive weapon so powerful as they believe can be evolved from these experiments.

(OSS report)

Summary of information. August 1944. [NARA RG 77, Entry UD-22A, Box 171, Folder 32.60-2 GERMANY: Summary Reports (1945–1946)]

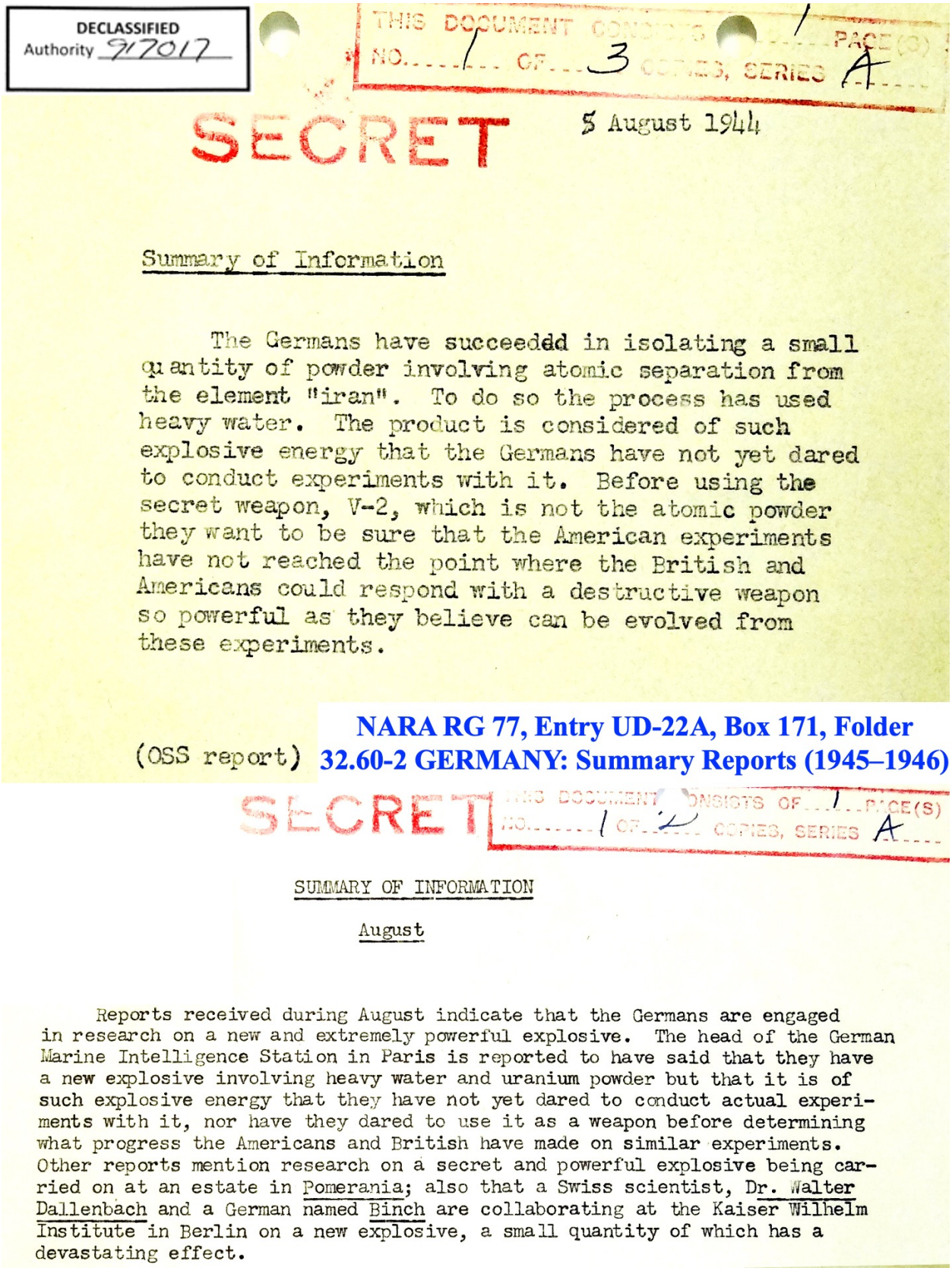
SUMMARY OF INFORMATION

August

Reports received during August indicate that the Germans are engaged in research on a new and extremely powerful explosive. The head of the German Marine Intelligence Station in Paris is reported to have said that they have a new explosive involving heavy water and uranium powder but that it is of such explosive energy that they have not yet dared to conduct actual experiments with it, nor have they dared to use it as a weapon before determining what progress the Americans and British have made on similar experiments. Other reports mention research on a secret and powerful explosive being carried on at an estate in Pomerania; also that a Swiss scientist, Dr. Walter Dallenbach and a German named Binch are collaborating at the Kaiser Wilhelm Institute in Berlin on a new explosive, a small quantity of which has a devastating effect. [...]

[See document photos on p. 4597. These two documents paraphrase an OSS report from July or very early August 1944. Where is that original OSS report?

The use of uranium and heavy water, as well as the mention of separation from uranium, all suggest that the "new and extremely powerful explosive" was plutonium-239. As of July/early August 1944, the Germans were very seriously contemplating testing a device using that new explosive but had not yet done so. Progress on that atomic bomb program was directly linked to progress on the rocket program, suggesting that rockets were intended to be the (or a) delivery vehicle for the atomic bomb. Germany was concerned that use of its atomic bomb could provoke an Allied response using similar (or other) weapons of mass destruction.]



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SECRET

5 August 1944

Summary of Information

The Germans have succeeddd in isolating a small quantity of powder involving atomic separation from the element "iran". To do so the process has used heavy water. The product is considered of such explosive energy that the Germans have not yet dared to conduct experiments with it. Before using the secret weapon, V-2, which is not the atomic powder they want to be sure that the American experiments have not reached the point where the British and Americans could respond with a destructive weapon so powerful as they believe can be evolved from these experiments.

(OSS report)

NARA RG 77, Entry UD-22A, Box 171, Folder 32.60-2 GERMANY: Summary Reports (1945–1946)

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THIS DOCUMENT CONSISTS OF 1 PAGE(S)
NO. 1 OF 2 COPIES, SERIES A

SUMMARY OF INFORMATION

August

Reports received during August indicate that the Germans are engaged in research on a new and extremely powerful explosive. The head of the German Marine Intelligence Station in Paris is reported to have said that they have a new explosive involving heavy water and uranium powder but that it is of such explosive energy that they have not yet dared to conduct actual experiments with it, nor have they dared to use it as a weapon before determining what progress the Americans and British have made on similar experiments. Other reports mention research on a secret and powerful explosive being carried on at an estate in Pomerania; also that a Swiss scientist, Dr. Walter Dallenbach and a German named Binch are collaborating at the Kaiser Wilhelm Institute in Berlin on a new explosive, a small quantity of which has a devastating effect.

Figure D.751: Summary of information from OSS report. August 1944. [NARA RG 77, Entry UD-22A, Box 171, Folder 32.60-2 GERMANY: Summary Reports (1945–1946)]

William L. Shirer. 27 August 1944 CBS radio broadcast [Shirer 1947, p. 4].

Berlin is trying to frighten us with tall talk about an atomic bomb. Scientists do say that the explosive force released by splitting the atom is more deadly than any hitherto discovered. But a scientist who knows a great deal about the atom—Theodore Svedberg, a Swede and Nobel prize-winner for his work with atoms—said last week: "Talk about the atom bomb is so much hooey."

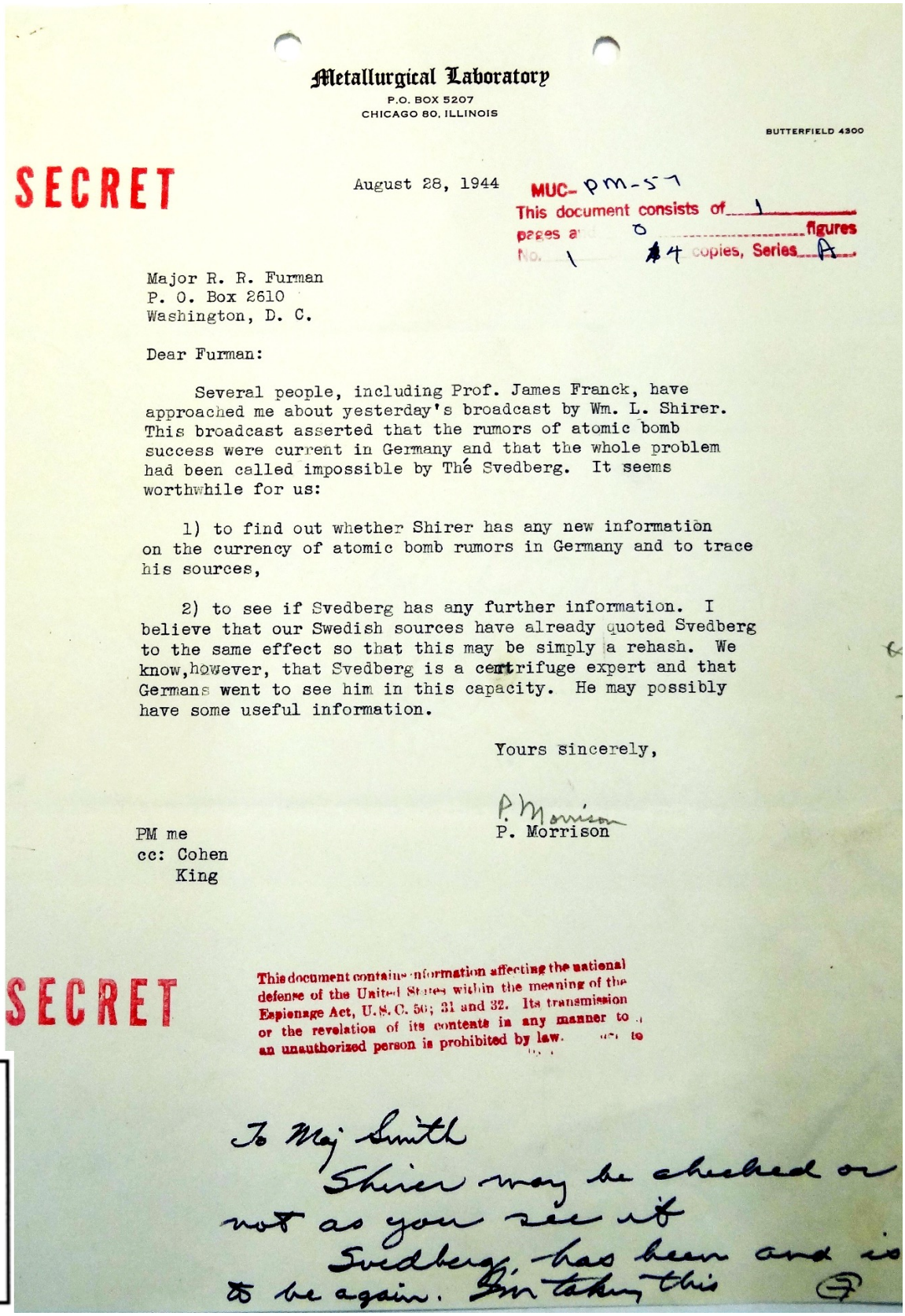
Philip Morrison to Robert R. Furman. 28 August 1944. [NARA RG 77, Entry UD-22A, Box 171, Folder 32.60-2 GERMANY: Summary Reports (1945–1946)]

Several people, including Prof. James Franck, have approached me about yesterday's broadcast by Wm. L. Shirer. This broadcast asserted that the rumors of atomic bomb success were current in Germany and that the whole problem had been called impossible by Thé Svedberg. It seems worthwhile for us:

1) to find out whether Shirer has any new information on the currency of atomic bomb rumors in Germany and to trace his sources,

2) to see if Svedberg has any further information. I believe that our Swedish sources have already quote Svedberg to the same effect so that this may be simply a rehash. We know, however, that Svedberg is a centrifuge expert and that Germans went to see him in this capacity. He may possibly have some useful information.

[See document photo on p. 4599.]



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August 28, 1944

MUC-PM-57
This document consists of 1 pages and 0 figures
No. 1 of 4 copies, Series A

Major R. R. Furman
P. O. Box 2610
Washington, D. C.

Dear Furman:

Several people, including Prof. James Franck, have approached me about yesterday's broadcast by Wm. L. Shirer. This broadcast asserted that the rumors of atomic bomb success were current in Germany and that the whole problem had been called impossible by Thé Svedberg. It seems worthwhile for us:

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Yours sincerely,

P. Morrison

PM me
cc: Cohen
King

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This document contains information affecting the national defense of the United States within the meaning of the Espionage Act, U.S.C. 50; 31 and 32. Its transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law.

To Maj Smith
Shirer may be checked or not as you see it
Svedberg has been and is to be again. I'm taking this

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Figure D.752: Philip Morrison to Robert R. Furman. 28 August 1944. [NARA RG 77, Entry UD-22A, Box 171, Folder 32.60-2 GERMANY: Summary Reports (1945–1946)]

Bruno Spampanato. 1974. *Contromemoriale.* Rome: Centro Editoriale Nazionale. pp. 1115–1116.

Nel settembre del 1944 l'ambasciatore della R. S. a Berlino trasmetteva al sottosegretario agli Esteri, Mazzolini, un rapporto "segretissimo" circa le "armi nuove". L'ambasciatore aveva avuto le informazioni da un elemento sicuro: un italiano nato in Germania e da tempo investito di funzioni di responsabilità nel Consorzio Junker (costruzioni aeronautiche).

Questi furono i dati trasmessi dall'ambasciatore Anfuso:

a) "V-2".—Si tratta di un grosso proiettile avente un carico utile di dieci tonnellate. Questo proiettile viene lanciato verticalmente fino alla stratosfera nella quale può percorrere una distanza fino a settecento chilometri, andando poi a cadere sull'obbiettivo desiderato. L'esplosione di questo proiettile provoca la totale distruzione di fabbricati esistenti in un raggio di 1.500 metri.

b) "V-3".—Si tratta di un nuovo esplosivo molto potente, applicabile soprattutto per i proiettili della Contraerea; proiettili i quali, col solo spostamento d'aria, hanno il potere di distruggere gli aerei esistenti nel raggio di un chilometra.

c) "V-4".—Si tratta di un altro nuovo e speciale esplosivo il quale, venendo a contatto con l'aria, la dissocia nei suoi componenti, sottraendo poi l'ossigeno in essa contenuto.

"Trattandosi, come è evidente, di un mezzo di guerra chimica, i tedeschi dovrebbero prepararsi ad una reazione avversaria a mezzo di gas.

"Secondo le notizie pervenute, prima ad essere messa in azione, fra breve, sarebbe la "V-3", allo scopo di ridurre fortemente l'aviazione "alleata".

In September 1944 the R. S. ambassador in Berlin forwarded to the undersecretary for foreign affairs, Mazzolini, a "secret report" about the "new weapons." The ambassador had gotten the information from a sure element: an Italian born in Germany and long invested with responsible functions in the Junker Consortium (aircraft construction).

These were the data forwarded by Ambassador Anfuso:

a) "V-2".—This is a large projectile having a carrying capacity of ten tons. This projectile is launched vertically up to the stratosphere in which it can travel a distance of up to seven hundred kilometers, eventually falling on the desired target. The explosion of this projectile causes the total destruction of existing buildings within a radius of 1,500 meters.

b) "V-3".—This is a very powerful new explosive, applicable especially for antiaircraft projectiles; projectiles which, by the mere displacement of air, have the power to destroy existing aircraft within a one-kilometer radius.

c) "V-4".—This is another new and special explosive which, coming into contact with air, dissociates it into its components, then subtracting the oxygen it contains.

"Because it is, as is evident, a means of chemical warfare, the Germans should prepare for an adversary reaction by means of gas.

"According to the reports received, first to be put into action, shortly, would be the "V-3," for the purpose of greatly reducing the "allied air force."