Mysterious WWII Sites in Poland

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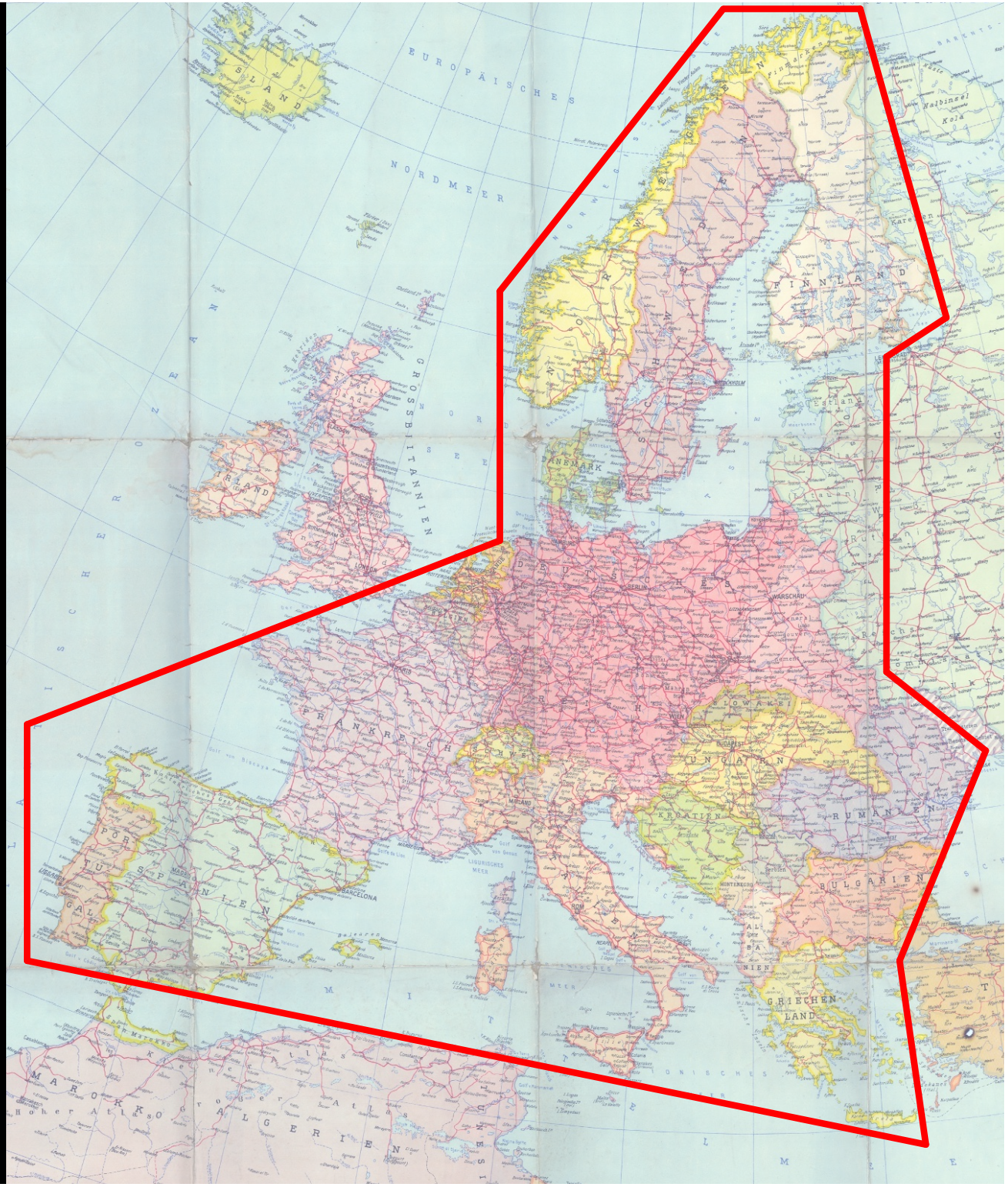
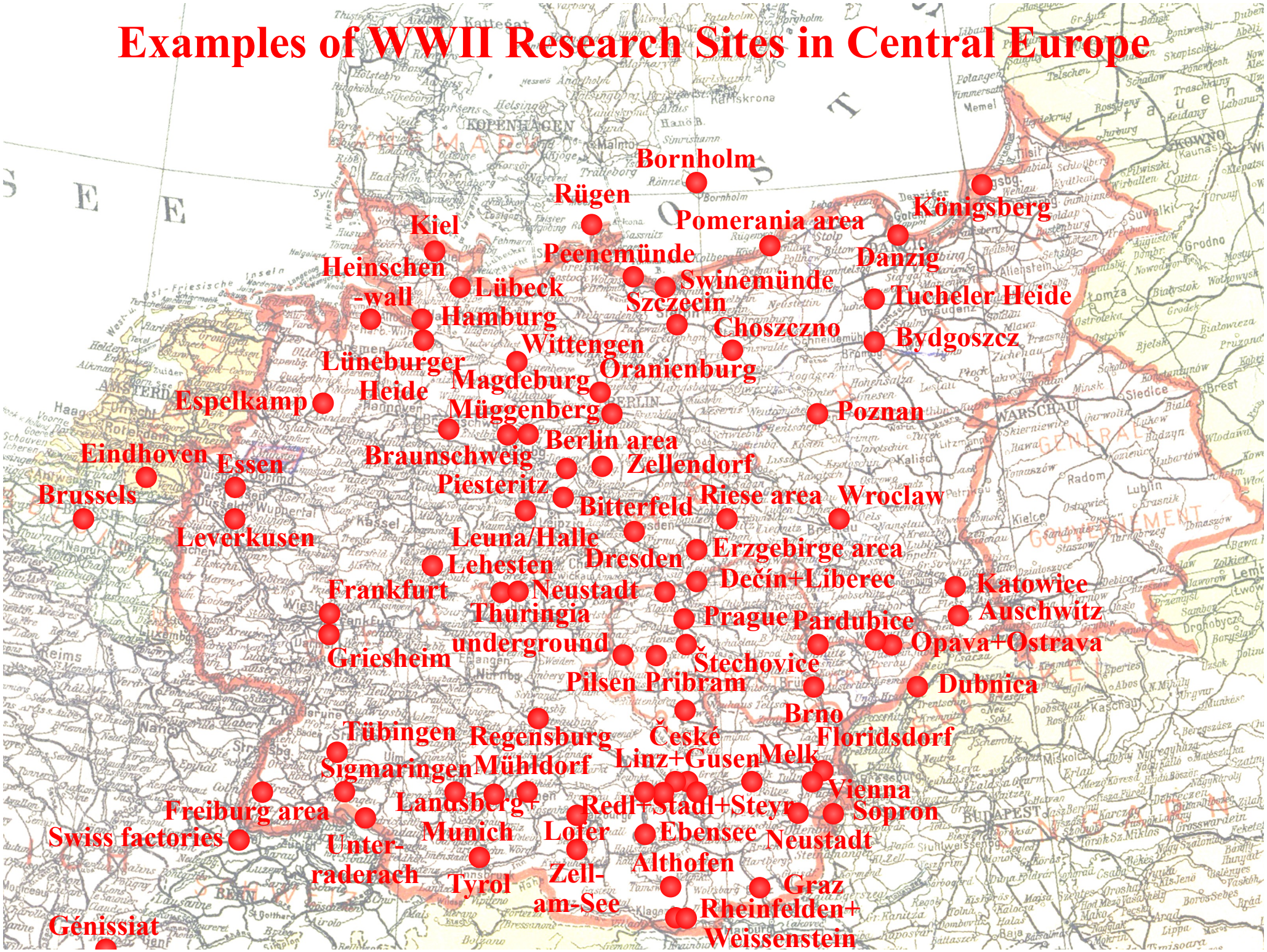
WWII German Research, Development, and Production Sites Were Spread All Over Europe (Including "Neutral" Countries)

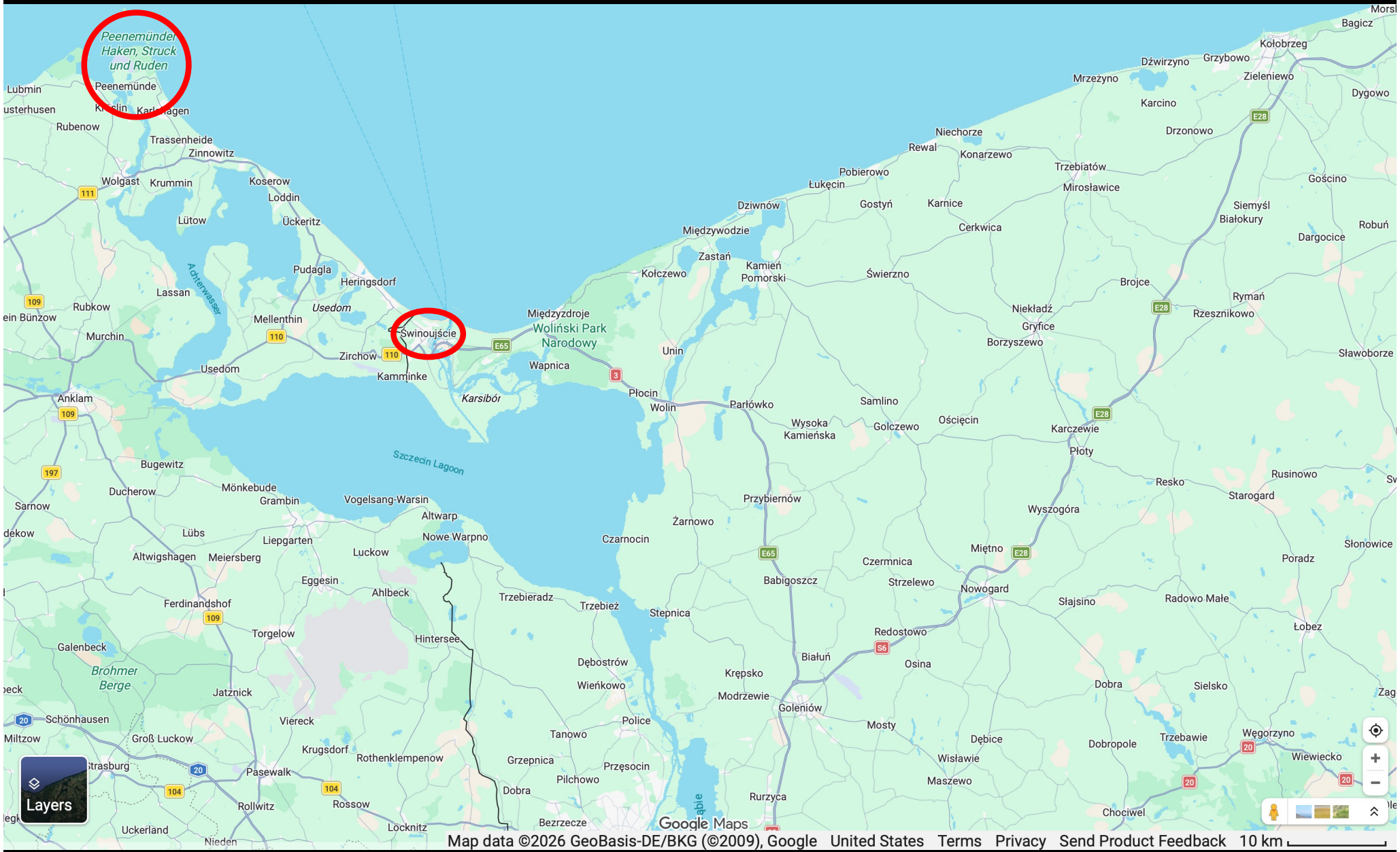


Examples of WWII Research Sites in Central Europe



Some WWII Research Sites in Poland (+ Kaliningrad) For Which I Am Seeking More Information

Swinemünde/Świnoujście


Peenemünder Haken, Struck und Ruden
Peenemünde
Świnoujście
Międzyzdroje
Wolin
Karsibór
Wapnica
Kamminke
Zirchow
Usedom
Heringsdorf
Pudagla
Koserow
Loddin
Ückeritz
Lütow
Wolgast
Krummin
Zinnowitz
Trassenheide
Rubenow
Lubmin
Lassan
Rubkow
Mellenthin
Murchin
Anklam
Bugewitz
Ducherow
Sarnow
Mönkebude
Grambin
Vogelsang-Warsin
Altwarp
Nowe Warpno
Luckow
Liepgarten
Meiersberg
Altwigshagen
Lübs
Eggesin
Ahlbeck
Ferdinandshof
Torgelow
Galenbeck
Brohmer Berge
Jatznick
Schönhausen
Miltzow
Groß Luckow
Viereck
Krugsdorf
Rothenklempenow
Pasewalk
Rollwitz
Rossow
Uckerland
Nieden
Löcknitz
Hintersee
Trzebieradz
Trzebież
Stepnica
Dębostrów
Wieńkowo
Tanowo
Police
Grzepnica
Przęsocin
Pilchowo
Dobra
Bezrzecze
Rurzyca
Modrzewie
Krępsko
Białuń
Goleniów
Mosty
Dębice
Wisławie
Maszewo
Chociwel
Osina
Redostowo
Dobra
Sielsko
Dobropole
Trzebawie
Węgorzyno
Wiewiecko
Łobez
Radowo Małe
Słajsino
Nowogard
Strzelewo
Czermnica
Babigoszcz
Mietno
Poradz
Słonowice
Wyszogóra
Resko
Starogard
Rusinowo
Płoty
Karczewie
Ościęcin
Golczewo
Wysoka Kamieńska
Samlino
Parłówko
Płocin
Unin
Międzywodzie
Dziwnów
Kołczewo
Zastań
Kamień Pomorski
Świerzno
Gostyń
Karnice
Cerkwica
Łukęcin
Pobierowo
Rewal
Niechorze
Konarzewo
Trzebiatów
Mirosławice
Niekładź
Gryfice
Borzyszewo
Brojce
Rzesznikowo
Rymań
Siemyśl
Białokury
Dargocice
Robuń
Gościno
Drzonowo
Karcino
Mrzeżyno
Dźwirzyno
Grzybowo
Kołobrzeg
Zieleniewo
Dygowo
Bagicz
Przybiernów
Żarnowo
Czarnocin
Szczecin Lagoon
Achterwasser
Woliński Park Narodowy
Layers
Google Maps
Map data ©2026 GeoBasis-DE/BKG (©2009), Google
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Send Product Feedback
10 km

PW Intelligence Bulletin No 1/47.
13 March 1945. NARA RG 165,
Entry NM84-79, Box 1915.

S E C R E T

PW Intelligence Bulletin No 1/47

-/. Uranium Explosive

O/Lt GOTT, a chemist, OC coy in PW's bn (959 Gren Regt) had been granted indefinite leave to resume his former position as director of a chemical laboratory in S Germany. This laboratory was experimenting with uranium. It produced 1/10 milligram of an explosive which, when accidentally set off, destroyed the plant and killed the scientists engaged in the experiments. O/Lt GOTT maintained that if subsequent experiments and production have proceeded without accident, enough of the explosive should now (Feb 45) be available to "destroy England in one blow".

(Source: Lt Helmut SCHWOTZER 959 Gren Regt captured 25 Feb vic WELLDORF)

18. V-Weapon against USA

An acquaintance told PW (28 Jan) that the laboratory in SWINEMUNDE where he worked, experimented with a new rocket missile, resembling V-2, 30 m long 4-5 m in diameter. Experiments conducted with 1/25 of the explosive charge produced devastating results. It was intended to use the projectiles in nuisance bombings of the USA.

19. Atom Smasher

PW heard from friends that atom-smashing experiments (conducted somewhere NW of BERLIN) were successful and would result in the perfecting of an atom-disintegrating weapon by May 45.

(Source: San Uffz Theodor GÖRGES 4 San Bereitschaft Hermann GÖRING Fallsch Corps captured 1 Mar)

Stettin/Szczecin


Peenemünde
Świnoujście
Szczecin
Choszczno
Tuchola
Bydgoszcz
Szczecin Lagoon
Drawski Park Krajobrazowy
Park Narodowy Bory Tucholskie
Cedyński Park Krajobrazowy
Layers
Google Maps
Map data ©2026 GeoBasis-DE/BKG (©2009), Google
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Terms
Privacy
Send Product Feedback
20 km

Bundesarchiv, Bild 101III-Alber-064-27A
Foto: Alber, Kurt | 1943

Werner Grothmann with Heinrich Himmler (1943)

Grothmann quotes in *Forgotten Creators* and these slides are from:

Werner Grothmann, 2002 interview by Wolf Krotzky. Jonastalverein Archive, Arnstadt.

Werner Grothmann, pp. 40-42

Es war jedenfalls so, dass versucht worden ist, Plutonium zu erzeugen, ohne dass man den Reaktor hatte. In der Theorie war das möglich, wie man Himmler erklärt hatte, in der Praxis so gut wie unwahrscheinlich. Zum Beispiel fehlten dazu erst mal die Geräte. Es hat aber Versuche gegeben, im Labormaßstab, also da sind in kleinstem Maßstab Versuche gemacht worden Plutonium herzustellen. Man muß sich das so vorstellen, dass die Ergebnisse, die man erzielen wollte, nur unvorstellbar geringe Mengen erbracht hätten, vielleicht so Milligramm oder noch weniger. Es ging ja erst mal auch nur darum zu sehen, ob die Theorie stimmt und ob das überhaupt klappen würde. Ich hörte dann mal, dass man das vor allem in Österreich versucht hatte, dass die Physiker aber enttäuscht waren, weil es eben nicht ging, Ich weiß nicht woran es lag, das habe ich nicht erfahren, es gab aber dazu Besprechungen: Im Sommer 1944, als sich die Uran-Geschichte schon ordentlich entwickelt hatte sind dann entschiedene Maßnahmen vorgenommen worden, weil es dann doch Hinweise darauf gegeben hatte, dass man Plutonium herstellen könnte, wenn auch mühsam und mit sehr geringen Mengen. Es hat dazu von Himmler den Auftrag gegeben, unsere technischen Möglichkeiten zu nutzen, um die ersten Geräte dafür zu bauen. Die Konstruktionszeichnungen dafür waren aber nicht von unseren Leuten. Die erste Anlage, wo dieses Material hergestellt werden sollte, ist nicht weit von Stettin eingerichtet worden. Später erfuhr ich, aber das war schon in den letzten Kriegstagen, gerade bevor wir von den Engländern festgehalten wurden, dass auch noch eine zweite Anlage für den Zweck errichtet worden war, die war nordwestlich im Harzvorland. Was aus der wurde, kann ich nicht sagen. Die Anlage bei Stettin ist nach meiner Kenntnis nicht mehr in Betrieb gegangen, weil die Geräteausstattung nicht fertig wurde und weil die Leute, die das machen sollten, nicht mehr alle zusammenzubringen waren. Außerdem gab es dann ja doch Bedenken, gerade in dem Raum die Sache zu machen, weil es bis in den Herbst hinein nicht gelungen war, den Vormarsch der Sowjets aufzuhalten. Über die Probleme, die Front zu stabilisieren ist ja offiziell nicht gesprochen worden, also ich meine von den politisch Verantwortlichen in der Öffentlichkeit, intern waren wir aber schon sehr darauf bedacht, dass wir mit allen Eventualitäten rechnen mussten. Deshalb könnte es auch so gewesen sein, dass die vielleicht halbfertige Anlage dort ganz bewusst nicht mehr an dieser Stelle fertiggestellt werden sollte, weil die Gefährdung doch langsam sichtbar wurde. Das ist aber nur eine Spekulation von mir.

In any case, attempts were made to produce plutonium without having a reactor. In theory, this was possible, as had been explained to Himmler, but in practice it was highly unlikely. For example, the necessary equipment was lacking. However, there were attempts on a laboratory scale, i.e., experiments were conducted on a very small scale to produce plutonium. One must imagine that the results they wanted to achieve would have yielded only unimaginably small quantities, perhaps milligrams or even less. At first, it was just a matter of seeing whether the theory was correct and whether it would work at all. I heard that attempts had been made primarily in Austria, but that the physicists were disappointed because it did not work. I do not know what the reason was, I never found out, but there were discussions about it: In the summer of 1944, when the uranium story had already developed considerably, decisive measures were taken because there were indications that plutonium could be produced, albeit laboriously and in very small quantities. Himmler gave the order to use our technical capabilities to build the first devices for this purpose. However, the design drawings for this were not made by our people. The first plant where this material was to be produced was set up not far from Stettin [now Szczecin, Poland]. Later, but that was already in the last days of the war, just before we were captured by the British, I learned that a second plant had also been built for this purpose, northwest of the Harz foothills. I cannot say what became of it. To my knowledge, the plant near Stettin never went into operation because the equipment was not ready and because it was no longer possible to bring together all the people who were supposed to do the work. In addition, there were concerns about doing this in that particular area, because by the fall it had not been possible to stop the Soviet advance. The problems of stabilizing the front were not officially discussed, at least not by the political leaders in public, but internally we were very aware that we had to be prepared for all eventualities. That may be why the half-finished facility there was deliberately not completed at that location, because the danger was slowly becoming apparent. But that is just my speculation.

Igor Witkowski, *The Truth About the Wunderwaffe* (2013), pp. 224-225, 326

Contrary to my own expectations, this chapter is completely different from the rest of the book. Perhaps this will surprise many readers, but I will not describe the history of German work on the breaking of the atom, since in available publications there are so many missing elements and even contradictions, that a consistent representation is difficult.

Initially I intended to begin this chapter with the statement that what one usually understands by calling to mind the "German nuclear programme" slogan, in reality had very little in common with work on an atom bomb. After all, the resources designated for this objective (which we know) were very modest in comparison e.g. to the USA; in contrast to this country the Germans never passed to the industrial phase. In short, any mention of a German atom bomb seems to be a misunderstanding and suggests an unawareness of the basic facts, mainly of the fact, that there was no equivalent of the American "Manhattan Project."

It was through such optics that I saw this aspect of history, before I began to collect and analyse materials on my own. When it had already come to this I found that I would never take full responsibility for the above statement—my optics had been subject to change… Instead of writing on what the "nuclear programme" was, I decided to write rather on what it was not and to clarify some common misunderstandings.

Above all, one should take into account that German research concerning nuclear technology was carried out by many **independent groups** of scientists, acting within the confines of various institutions (from particular institutes right up to the Post Ministry). A reflection of this was the large number of laboratories and research establishments, scattered all over the Reich. The problem lies among others in the fact that for certain we don't know about many of them and because of this, we do not know the full picture of German work, and certainly will never do so. There are simply too many of these "blank spots."

From talks which I once conducted with people who had been analysing this problem for many years on the basis of intelligence materials, I recall that the town of Torgau fulfilled a very important role in the German programme, where in 1944 in all probability a plant for enriching fissionable materials was constructed. It was "legended" as a water purification station.

This issue finds in the meantime no reflection whatsoever in contemporary publications.

Similarly nobody mentions the role of the underground facility in Książ (Fürstenstein bei Waldenburg), although on the German plan the designation for that time for fissionable materials appeared—three circles overlying each other.

Completely omitted is the role of the nuclear research laboratory in nearby Kowary (Schmiedeberg), where an electrolytic installation for the production of heavy water was built at the end of the war and in a nearby underground facility lead plates 20-cm in thickness were found (!) as well as a number of tin pipes, probably made of cesium.

A similar, unexplained element is contained in a report from Polish Home Army Intelligence reproduced in part three. It suggests associations with some form of nuclear weapon—the term "lead chambers" appears, for assembly of some unspecified devices (mention of production carried out in the "Mittelwerk" facility in Thuringia even before assembly of the V-2 was commenced).

Another case: in 1995 the periodical "Przegląd Techniczny" ("Technical Review") reproduced a list of post-German facilities, located on Polish territory, mainly underground.[124] This was probably a document from the Ministry of Industry and Trade. It dates from 1953. Apart from such curiosities like e.g. the description of an underground facility, in which "lighting was arranged with the aid of phosphorizing walls," mention was made of: "An underground ammunition factory, in which the Germans conducted experiments on **atomic weapons**."

This is position no. 42.

In a column referring to the location was written: "administrative district Nowogard, town Marty (Sobótka)." Nowogard suggests the region of Szczecin, but I was unable to find either the town of Marty or Sobótka in this region—in 1953 many unofficial names still functioned, sometimes being changed several times. This case may be a good example of how difficult the unravelling of such mysteries may be. Later on I managed to clarify that the town of "Marty" never existed, but the name "Sobótka" was in use for a short period after the war, with regard to the present village of "Mosty" (previously: Speck). The underground facility is however completely inaccessible—being flooded.

A similarly secret nuclear research laboratory was mentioned

Linnes:rabe	26 April 45.	Under consideration for investigation. The assessors suggest that a fierce interrogator is required.	Research on nuclear phys. could have possessed 20 million volt deuterons cyclotrons but for destruction of the lab a few weeks ago. Almost completely destroyed.

Fragment of documentation regarding the "Operation Lusty" with a short description of one of the nuclear laboratories.

in the files of the so-called operation "Lusty," described further on.[125] It was destroyed shortly before the end of the war and located in the town of Linnessrabe or Linnesgrabe (one letter is almost illegible). Short description of this "target" suggests work on thermonuclear fusion—there is a mention of "20 MV deuterons cyclotron." In the report it was emphasised only that a "fierce" officer would be needed to interrogate possible personnel. This laboratory is also not described in any generally available materials and it is unknown what activity was taking place in it. Who can assure that there were not significantly more unknown elements in the German nuclear "programme"?

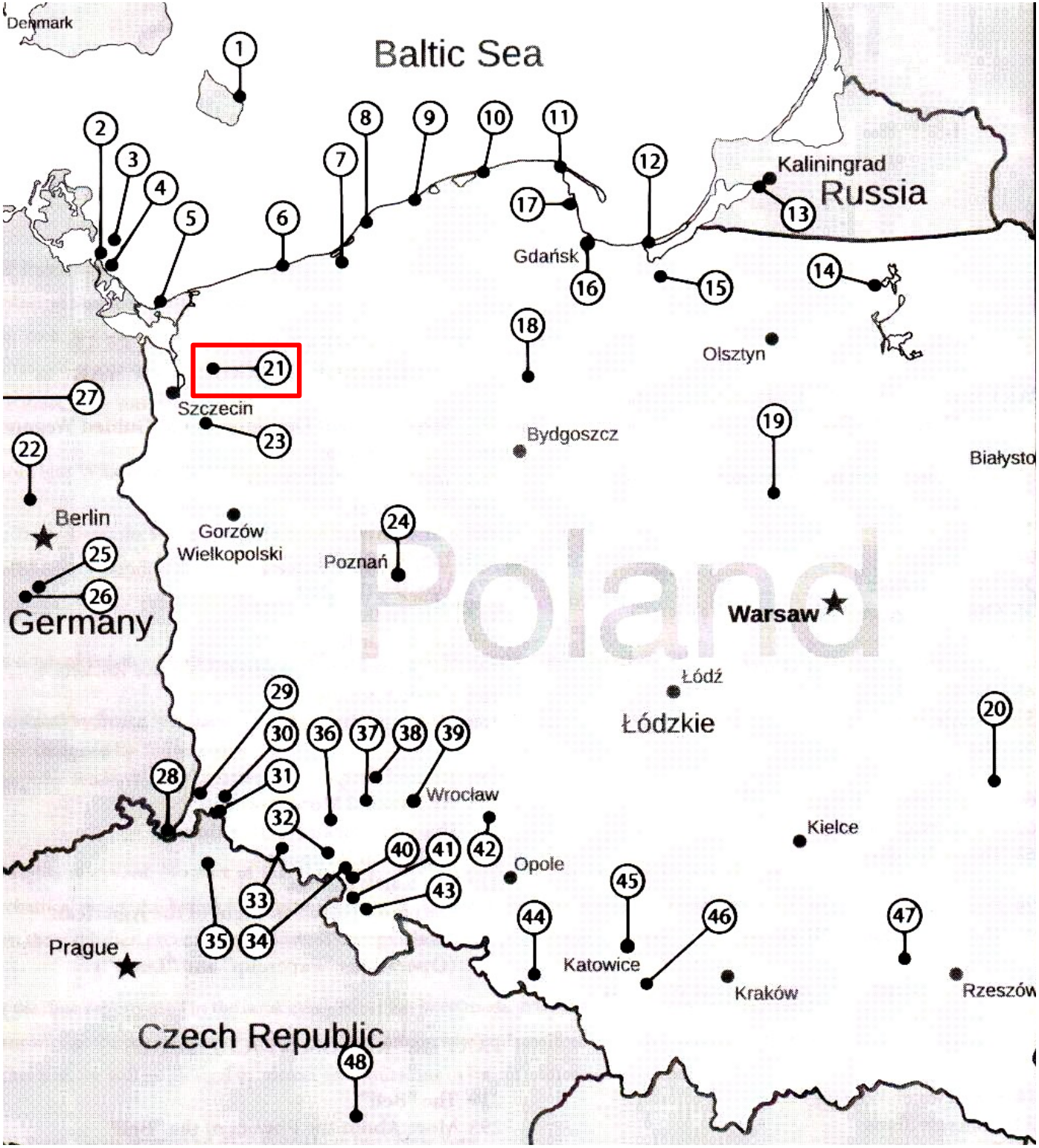
123 IPN / microfilm "Akta Bergeamt Waldenburg-Nord."

124 "Wykaz obiektów opuszczonych i niewłaściwie zagospodarowanych (stan na 13 lutego 1953 r.)," document reproduced in: "Przegląd Techniczny", June 11, 1995.

125 U.S. Air Force History Office/Bolling AFB, microfilm "Operation Lusty."

Does anyone have any additional information about R&D sites on this map from Igor Witkowski, *The Truth About the Wunderwaffe?*

1 Bornholm Island: "target" for the Rheinbote rockets
2 Peenemünde: V-1, V-2, etc.
3 Greifswalder Oie: tests of A-3 and A-5 rockets
4 Karlshagen: Elektro-Mechanische Werke, production of missiles
5 Międzyzdroje/Misdroy: V-3
6 Kołobrzeg/Kolberg: H. Coler
7 Koszalin/Köslin: long range missile schools
8 Darlowo/Rügenwalde: heaviest artillery test range, concrete ships
9 Ustka/Stolpmünde: firing range, also school for the crews of the new generation of submarines (T. XXI, XXIII)
10 Łeba/Leba: missile test range
11 Władysławowo/Grossendorf: experimental test range of the SS (detailed purpose unknown)
12 Stutthof concentration camp
13 Jesau: trials of the Hs-293 missiles
14 Kętrzyn/Rastenburg: Führer's main command post
15 Elbląg/Elbig: underwater silos for the V-2
16 Gdańsk/Danzig: stealth technology
17 Babie Doły, Oksywie/Hexengrund, Oxhöft: Kriegsmarine's evaluation centre. New types of torpedoes, midget submarines, propulsion systems
18 Bory Tucholskie/Tucholer Heide: V-1 and V-2 launch sites in the area near the Gacno village
19 The "Nord" test range: Schmetterling missiles
20 Majdanek concentration camp
21 Mosty/Speck: underground ammunition factory, also laboratory working on nuclear bomb
22 Oranienburg: nuclear laboratory (Auerwerke), also the Sachsenhausen concentration camp
23 Stargard, Miedwie Lake/Madüsee: tests of air-to-surface guided weapons
24 Pokrzywno/Nesselstadt: biological weapons
25 Kummersdorf: test range for tanks and artillery
26 Gottow: works on experimental nuclear reactor
27 Rechlin: weapon test centre of the Air Force
28 Zittau: Jägerstab
29 Zgorzelec/Görlitz, Łąki village: underground V-2 factory
30 Lubań/Lauban: GEMA-Werke
31 Leśna/Marklissa: V-2 engines factory (VDM)
32 Książ/Fürstenstein: Jägerstab's R&D dept., SS research
33 Kowary/Schmiedeberg: heavy water production plant, nuclear research facility, uranium mine
34 "Riesa" ("Riese"): underground complex, not finished
35 Zelezny Brod: command planning centre for the "guided, strategic weapons," not finished
36 Gross-Rosen concentration camp
37 Środa Śląska/Neumarkt: Wehrmacht's laboratories
38 Brzeg Dolny/Dyhernfurth: chemical weapons
39 Wroclaw/Breslau: Rheinmetall plant and other objects
40 Ludwikowice/Ludwigsdorf: underground complex dedicated to weapons of mass destruction
41 Ścinawka Średnia/Mittelsteine: production of V-1 and V-2 components
42 Namysłów/Namslau: infrared technology
43 Kłodzko/Glatz: production of components for the V-1 (AEG)
44 Racibórz/Ratibor: graphite productions for nuclear research (Siemens)
45 "Udetfeld" (Mierzęcice): ME 163
46 Oświęcim/Auschwitz concentration camp
47 Blizna: V-1 & V-2 tests
48 Brno/Brünn: SS research and development



Arnswalde/Choszczno


Szczecin
Choszczno
Tuchola
Bydgoszcz
Świnoujście
Szczecin Lagoon
Koszalin
Słupsk
Piła
Gorzów Wielkopolski
Drawski Park Krajobrazowy
Cedyński Park Krajobrazowy
Kaszubski Park Krajobrazowy
Park Narodowy Bory Tucholskie
Wdzydzki Park Krajobrazowy
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TOP SECRET

SD-5820-A

REFERENCE NO. 478 - 33 DATE 7 Aug 47

UNCLASSIFIED

REGRADED: By authority of ACSI letter dated 24 March 1959 0929657

TO: The Director of Intelligence, WDGS, (Through BAS WASHINGTON)

FOR: Scientific Branch By [illegible] on 6/23/59

I.G. by

DECLASSIFIED [illegible] 5200.9, 27 September 1966 Ltr 6/23/59

SUBJECT: Guided Missiles - USSR

REMARKS:

1. Transmitted herewith for your information is document No. -, entitled "Guided Missiles - USSR (answer to SALO request 27 June 47) (M.I.10) classified TOP SECRET

2. Refer: SALO # 475-10 (22 May 47); letter from Lt.Col.Mills to Chief I.G. of 8 July 47 # Ext/M/265.

S.A.L.O. M.I.3(c) War Office

Lt.Col. GSC

55

[illegible] TOP SECRET

DECLASSIFIED
Authority NND 017044
By RS NARA Date 8/25/09

NARA RG 319,
Entry NM3-85M,
Box 170, Folder 929657

TOP SECRET

7 (v) KAMINSKAIA PENINSULA, ARCHANGEL STATE.

Only one, vague and unconfirmed report has been received about this part of RUSSIA. It stated that in the KAMINSKAIA Peninsular on the Kara Sea shores are factories and laboratories concerned with chemical, rocket and atom warfare.

8 (vi) KIRGIZ STEPPES, between ASTRAKAN and STALINGRAD, EAST of the RIVER VOLGA.

Information on this areasis also, so far, unconfirmed but as the informant is a Russian Officer deserter who has, to all appearances, tried to be helpful and tell the truth, the gist of his remarks is passed on with confidence.

When questioned concerning his knowledge of the location of Guided Missile experimental establishments in the U.S.S.R., he replied: "I recently conversed with one of the officers attached to the GEMA establishment. The establishment has been moved to a place between STALINGRAD and ASTRAKAN, the former KIRGIZ REPUBLIC, semi-desert land EAST of the Volga. This will be the main research establishment for Guided Missiles, and due to the vast area, firings will take place there.

All the local inhabitants were moved some time ago to Siberia".

When further questioned, this subject said that he believed Guided Missiles were being produced in the U.S.S.R. He spoke of a huge underground factory at ARNSWALDE in the Polish Zone, which, he said, is intact, and production is in full swing. He spoke of the very heavy guards on the place, that the only Railway line in the vicinity terminates at the factory, and that he has seen large railway flat waggons leaving covered with tarpaulains.

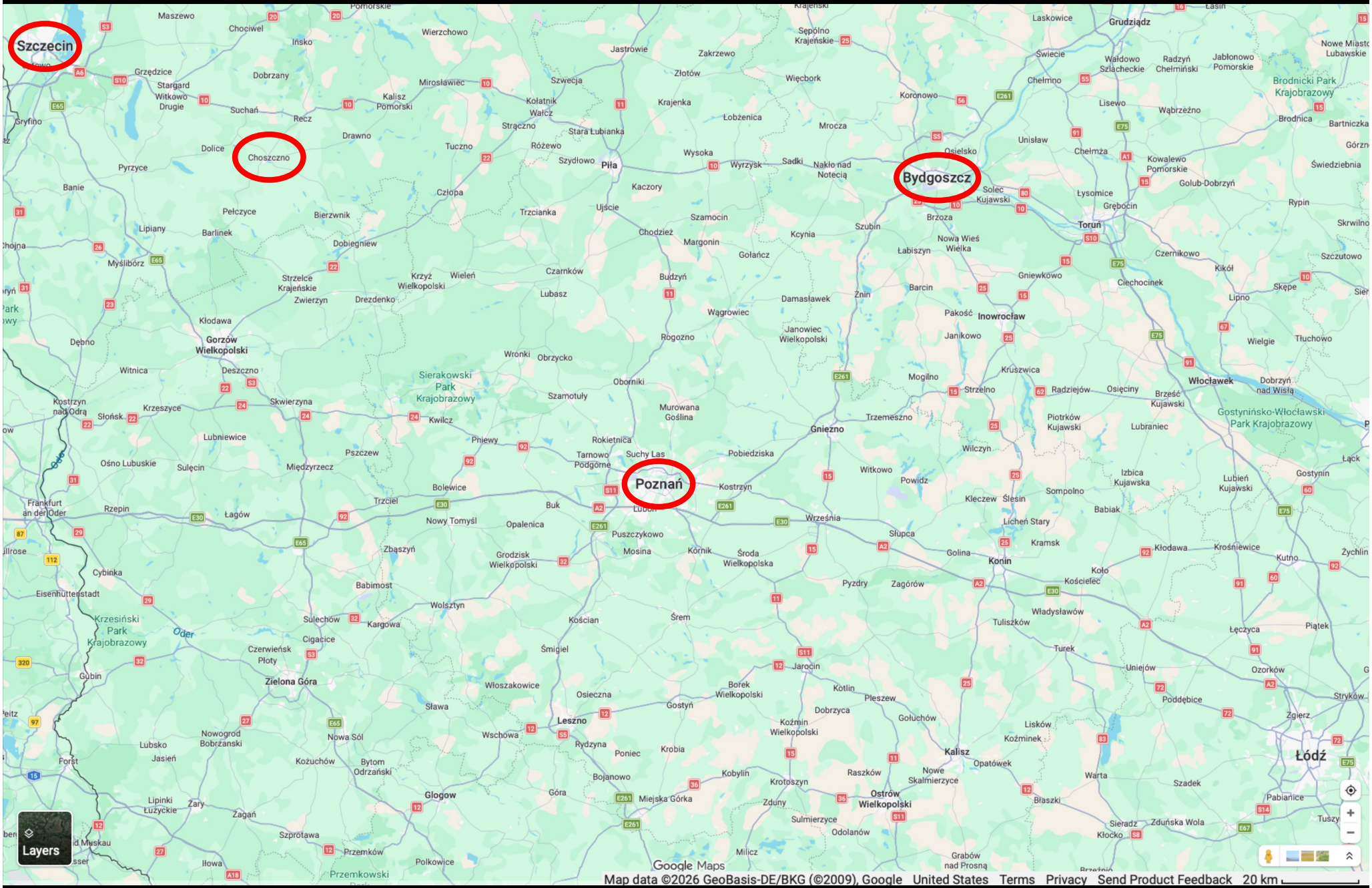
9 (vii) TURKMEN.

The Germans knew of Russian experiments with remote controlled rockets in the Turkmen Deserts in 1944. Tests with V-1 weapons "behind the Caspian Sea" were scheduled for May 1946.

10 (viii) HISTORICAL DATA

The following paragraph of Historical data about Russian Guided Missiles is added in case these details are not already

Posen/Poznań
Nesselstadt/Pokrzywno


Szczecin
Choszczno
Bydgoszcz
Poznań
Gorzów Wielkopolski
Zielona Góra
Leszno
Konin
Kalisz
Piła
Inowrocław
Toruń
Włocławek
Gniezno
Łódź
Ostrów Wielkopolski
Glogow
Frankfurt an der Oder
Oder
Sierakowski Park Krajobrazowy
Krzesiński Park Krajobrazowy
Brodnicki Park Krajobrazowy
Gostynińsko-Włocławski Park Krajobrazowy
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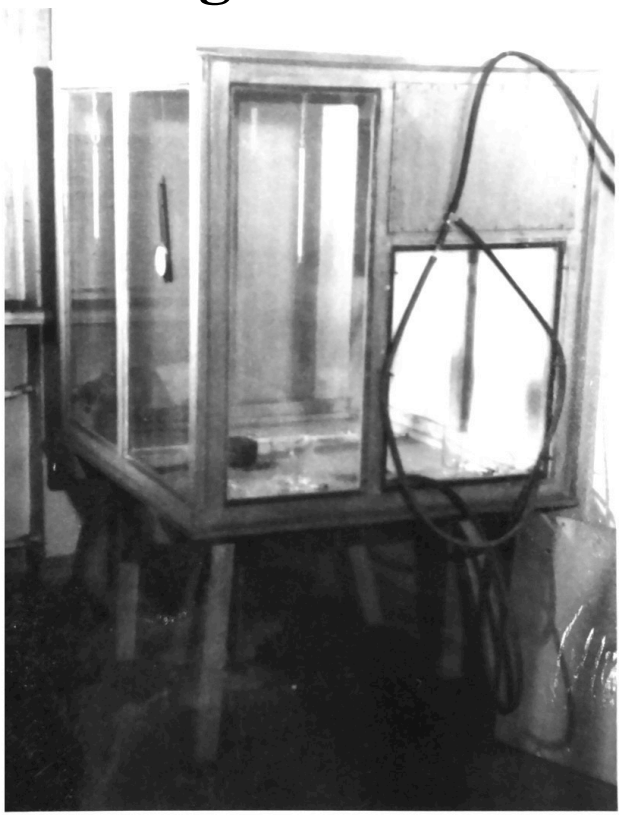
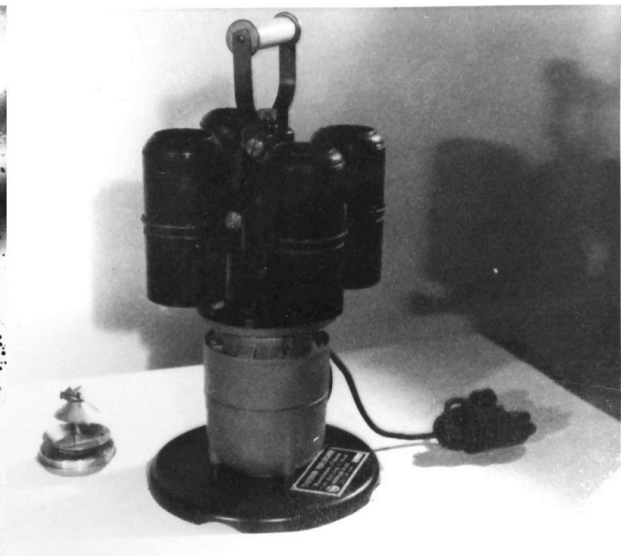
Reichsinstitut für Krebsforschung

An Advanced Biological Warfare Laboratory during the War

Bacteria culture and lab equipment for biological warfare research

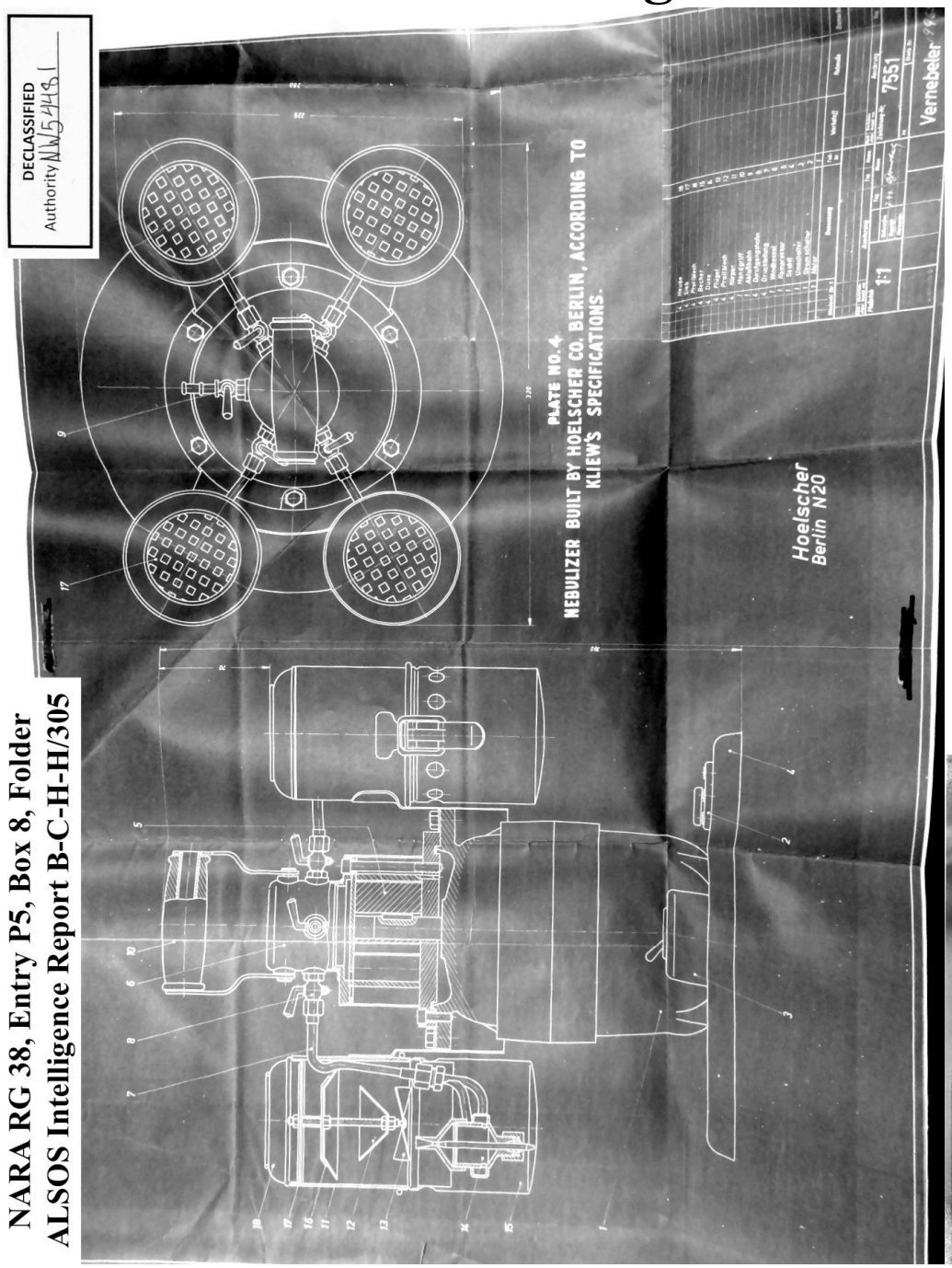
NARA RG 319, Entry NM3-82A, Box 4, Folder DCL-1





Reichsinstitut für Krebsforschung

An Advanced Biological Warfare Laboratory during the War

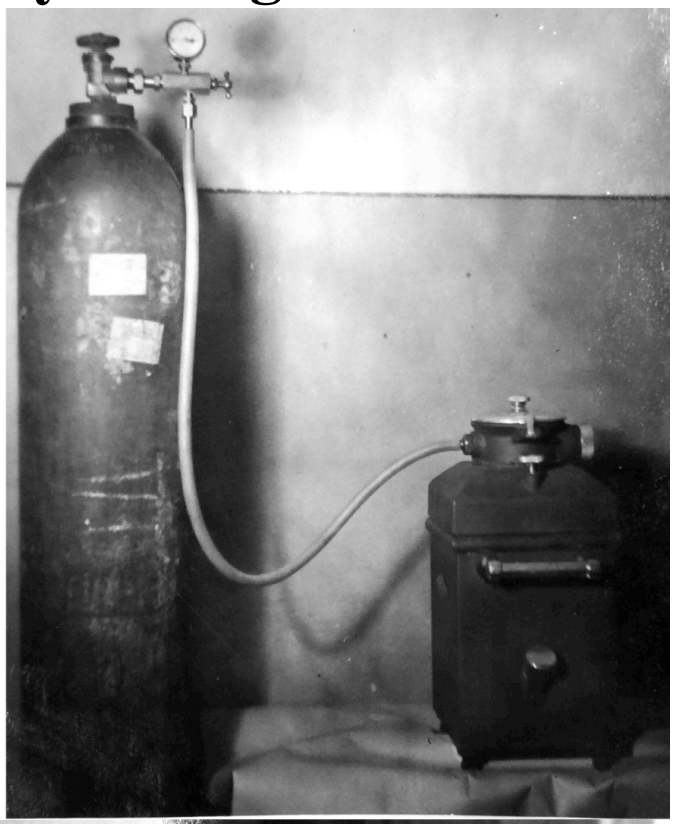


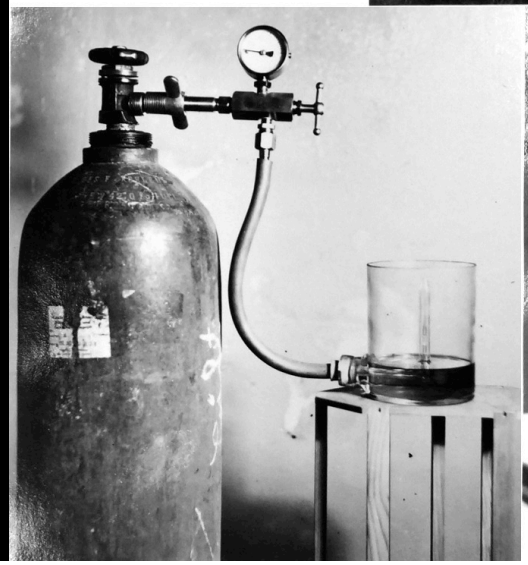
NARA RG 38, Entry P5, Box 8, Folder
ALSOS Intelligence Report B-C-H-H/305

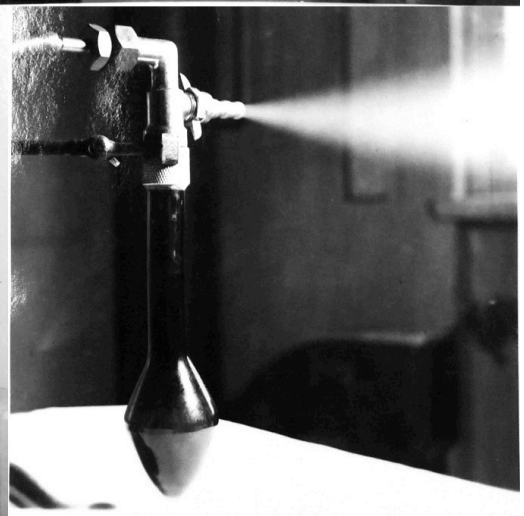
Aerosol sprayers for disseminating biological warfare agents

NARA RG 319, Entry NM3-82A, Box 4, Folder DCL-1

DECLASSIFIED
Authority NWD 75S001



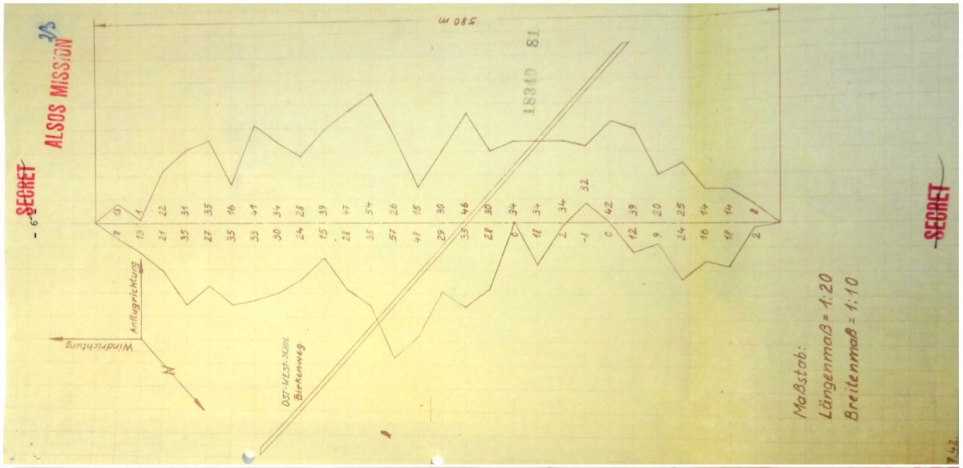


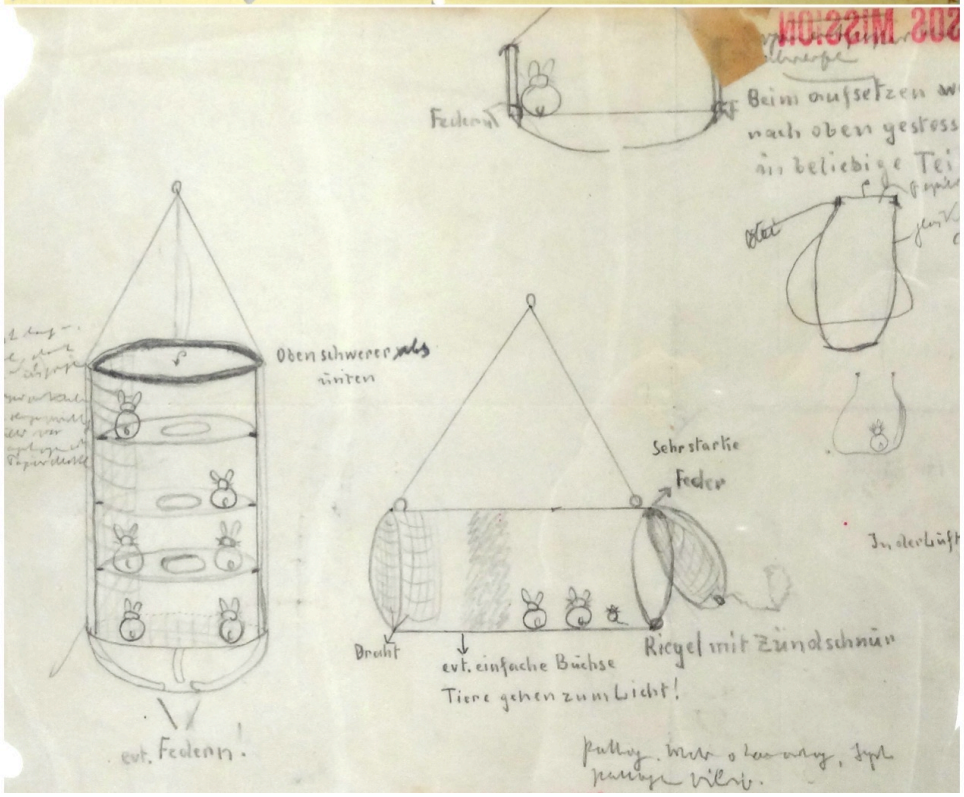


Reichsinstitut für Krebsforschung

An Advanced Biological Warfare Laboratory during the War

Wind speed & animal information for field tests
NARA RG 319, Entry NM3-82A, Box 4,
Folder Biological Warfare/BW # 25





Test results for seven biological warfare agents
NARA RG 319, Entry NM3-82A,
Box 4, Folder Data/DCC-2

O l i v e n - Oel (angesetzt am 16.7.41.)

2 ccm Oel und 1 ccm Abschw.	27.8.	24.9.	3o.11.
Staphylokokken	+	-	-
Coli	+	+	+
Typhus	+	+	+
Cholera	+	+	+
Pest	-	-	-
Milzbrand	+	+	+
Milzbrandsporen	+	+	+

M a n d e l - Oel (angesetzt am 16.7.41.)

2 ccm Oel + 1 ccm Abschw.	27.8.	24.9.	3o.11.
Staphylokokken	-	-	-
Coli	+	+	-
Typhus	+	+	-
Cholera	-	-	-
Pest	-	-	-
Milzbrand	+	+	-
Milzbrandsporen	+	+	-

S E C R E T

HEADQUARTERS
MEDITERRANEAN ALLIED AIR FORCES
Target Intelligence Section
APO 650

COUNTRY POLAND Location & Coord:

LOCALITY POSEN

TARGET Seven unidentified factories

CATEGORY SECRET WEAPONS SUB CATEGORY Electromagnetic Rocket

I. SUMMARY OF CURRENT INTELLIGENCE

The apparatus is in course of being perfected and is under the resear h by the Electric Research Society of Van Arden.

(OSS. B-3 6/900 R.G. 2.5.44)

Manufacture of electrical part will be transferred from Siemens & Halske at Siemenstadt, suburb of Berlin (Factory destroyed) to the annex of Posen. Mov ng h s been set for 22.4.44. (OSS 21.4.44)

Type Report	Date	Status & Indications

Posen Poland

1

Posen, Pld

CONFIDENTIAL

CONFIDENTIAL

ALGIERS, 31 May 1944

Source: Good
Value: B.3
Date: 10 May 1944

D. G. S. S.
DIRECTION TECHNIQUE
F.N. "OPERATIONS"

No. 7280 /R.G.

Posen Pld.

INFORMATION

FRANCE

SECRET WEAPONS

ELECTROMAGNETIC ROCKET

ELECTROMAGNETISCHE RAKETENGESCHOSS

(Reference Note No.6.900/R.G. of 22 May 1944).
This rocket is under research by the Electric Research Society of Von Arden.

The apparatus is in course of being perfected, its manufacture is being carried out on seven factories of Posen. Launching emplacements have been completed. The wave length used is 2 m 40.

Posen, Poland

Lieut Col Lucht

ELECTROMAGNETIC ROCKET
ELEKTROMAGNETISCHE TURA TOBERAKETE

It concerns a rocket of a caliber of 603 m/m, launched electromagnetically through a smooth barrel of a length of 8 meters, by the successive cutting off of the current through a coil around the barrel.

The rocket is propelled through regeneration. The closing is controlled by a cathode oscillator loading the condenser blades. The apparatus is under research by Von Ardenne.

The direction of the rocket is controlled by means of ailerons. The principal difficulty is the low speed of the rocket, estimated at 150 m/sec at the exit of the barrel, which makes it subject to atmospheric disturbances.

The construction controlled by the Navy is carried on in two groups:

1) Mechanical part: Barrel and rocket by Krupp at Ulm.
   Electrical part: by Siemens Schuckert at Nuremberg.

   This group has only been working for a few months.

2) Mechanical part: by Borsig at Borsigwald -Berlin-. Factory destroyed, Manufacture transferred to Schwartzkoff, turbine constructor (in the suburb of Berlin) not yet ready.
   Electrical part: by Siemens & Halske at Siemenstadt, suburb north of Berlin. Factory destroyed - Manufacture will be transferred to the annex of Posen. Moving has been set for the end of April 1944.

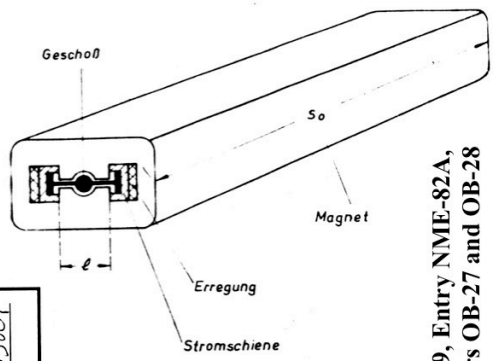
Electrical control material: constructed by the Research group Von Ardenne, is in course of being transferred to Posen.

Rocket ailerons are constructed by Karl Mahr at Esslingen (Wurtemberg).

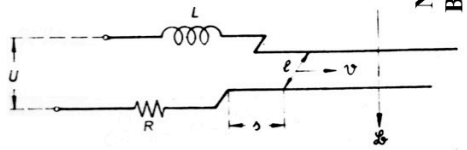
Precision material necessary for the equipment of the factories is collected in France for a total of 120 million francs at the official rate.

CONFIDENTIAL

Electromagnetic railguns



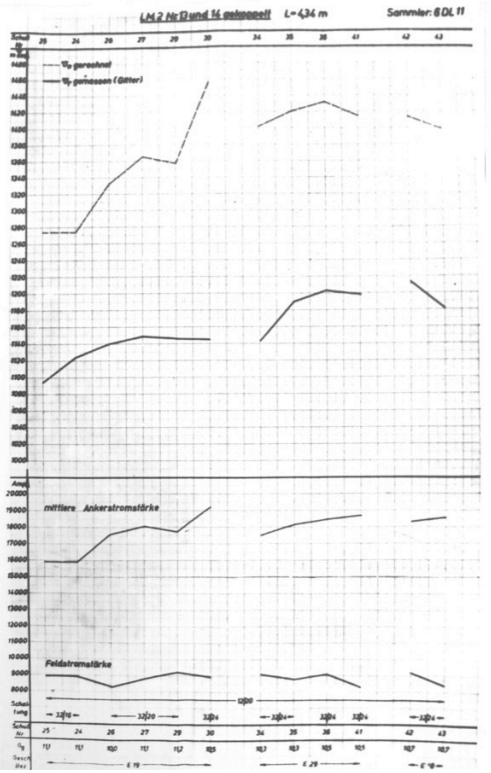
Linearmotor
Bild 1

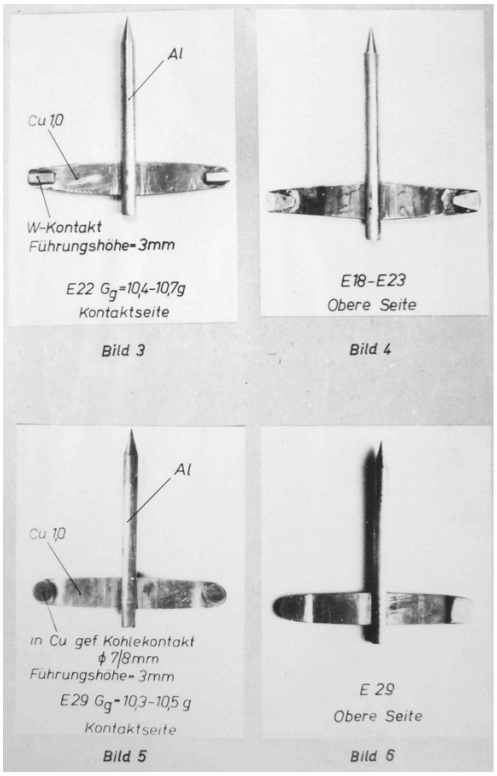


By 1945:

- **1200 m/sec velocity (Mach 3.6)**
- **Working toward >2000 m/sec**
- **Mass produced in 13 factories**
- **Launch sites built**
- **10 megawatts provided for launchers**

Stromkreis des Linearmotors
Bild 2





Joachim Hänsler (19??–19??)

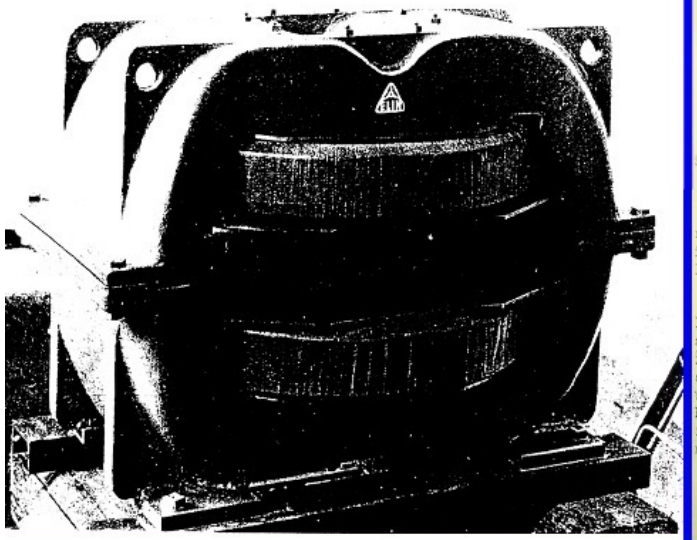
Manfred von Ardenne (1907–1997)

Many other engineers

Please see *Forgotten Creators* C.5 for more information

^{235}U Enrichment: Electromagnetic Separators/Calutrons

Prototype calutron built and demonstrated by 1941 by Manfred von Ardenne and ELIN company [Russian archive/Rainer Karlsch].



Samuel Goudsmit found 1942 reports on von Ardenne's calutrons. They are still withheld.

SECRET Copy No. 1 of 4 Copies

HEADQUARTERS
EUROPEAN THEATER OF OPERATIONS
UNITED STATES ARMY
ALSOS MISSION
APO 887

DECLASSIFIED
Authority NND 917017

NARA RG 77, Entry UD-22A, Box 166, Folder 32.22-1
GERMANY—Research—TA—(1943–June 1946)

16 June 1945

SUBJECT: Baron von Ardenne's Isotope Separation

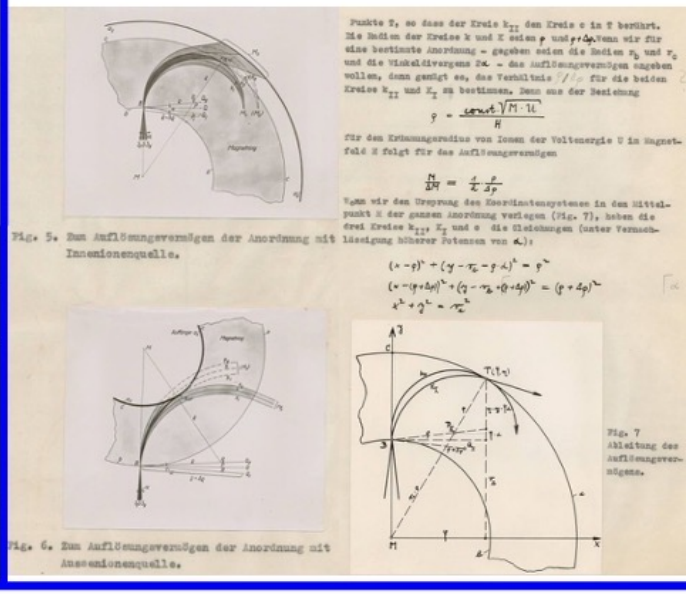
1. Among the Reichsforschungsrat papers, we have found the research report of the work which von Ardenne did for the Reichspost. The report is dated April 1942 and describes a magnetic isotope separator in detail. It was sent to the RFR by Esau.

2. Attached is also an interesting commentary by von Ardenne himself. In this, he states that isotope separation is essential to decrease the amount of uranium necessary for the uranium machine. He claims that indications regarding developments, especially in the U.S.A., which sim at a decrease of the uranium quantity in the U-machine, have recently seeped through. Further down, he claims that the method invented by him is new and that, by keeping the development work very secret, an important advantage can be gained over the high level of experimental nuclear physics in the U.S.A.

S. A. Goudsmit

S. A. GOUDSMIT
Scientific Chief

Heinz Ewald's March 1942 final report on calculations for the optimal performance of calutrons [Deutsches Museum G-139].



Manfred von Ardenne. 1990. *Die Erinnerungen.* 10th ed. Munich: Herbig. p. 159.

During visits to Dahlem and Lichterfelde in 1941, I had asked Professor Otto Hahn how many grams of pure uranium-235 would be needed to unleash a nuclear chain reaction in an instant. He answered me: "A few kilograms." In this absolutely confidential conversation, I expressed the opinion that it was technically quite possible to obtain uranium-235 in quantities of a few kilograms with the help of highly sophisticated magnetic mass separators (which we had previously designed and experimentally developed), if large electrical corporations were used for this purpose.

OSS. 9 June 1944. NARA RG 77, Entry UD-22A, Box 171, Folder 32.7003-1 GERMANY: US Wartime Positive Int. (July 42–June 44).

The Reichs Postal Administration under the direction of Pose have installed three new high tension laboratories of which the location is not known. Professors Fluegge and von Ardenne are in charge.

DECLASSIFIED
Authority NND 917017

General Henry H. Arnold. 1949. *Global Mission.* New York: Harper. p. 491.

The Germans were supposed to have perfected an electric machine which would make it possible to complete the development of the atomic bomb. I was then asked to have our bombers in England make special missions against the various branches of the Kaiser Wilhelm Institute in Berlin.

See also work on electromagnetic isotope separation by Richard Herzog, Hans Kopfermann, Wolfgang Paul, Wilhelm Walcher, etc.

How many calutrons did Germany produce and use during the war?

For more information, see *Forgotten Creators* D.4.3.

SECRET

SECRET
Auth: CG 7th Army
Init: P.K.
Date: 26 Jun 45

Ref No SAIC/PIR/31
26 Jun 45

SEVENTH ARMY INTERROGATION CENTER
APO 758

PRELIMINARY INTERROGATION REPORT

SOURCE: JANISZEWSKI, Raman, Scientist

1. PERSONAL DATA

Subject was born in 1891 in JANOWICE, Poland and studied engineering in POSEN and BERLIN. He devoted most of his life to research, ranging from mechanics to atom smashing. He had his own laboratories in WARSAW and POSEN and claims to have patented 86 inventions so far. In 1927 he was called by the President of Poland and received a secret assignment which he is unwilling to describe in any greater detail other than that it concerned research on war materials.

Source developed an apparatus to radio-activate metals, especially mercury. He claims that the rays produced by this machine black out radio waves, offset magnets, and have a deadly paralyzing effect on humans. He claims this machine is especially important in that it destroys the function of the gyroscope. Source declares his willingness to disclose all details of this machine and demonstrate it at his laboratory in the TYROL. He states that the secret of this machine has not fallen into German hands.

2. ADMINISTRATIVE DATA

Source was arrested by 103 MP Det, arrived this CENTER 24 May 45 on authority G-2, Seventh Army. Documents: blueprints and patent for tire-changing apparatus; papers on radio-activation of metals; and on invention of a special ignition coil.

3. KNOWLEDGE BRIEF

a. Details on radio-activation of metals, and atom smashing.

b. Tire-changing apparatus.

c. Other inventions.

4. INTERROGATION PLAN

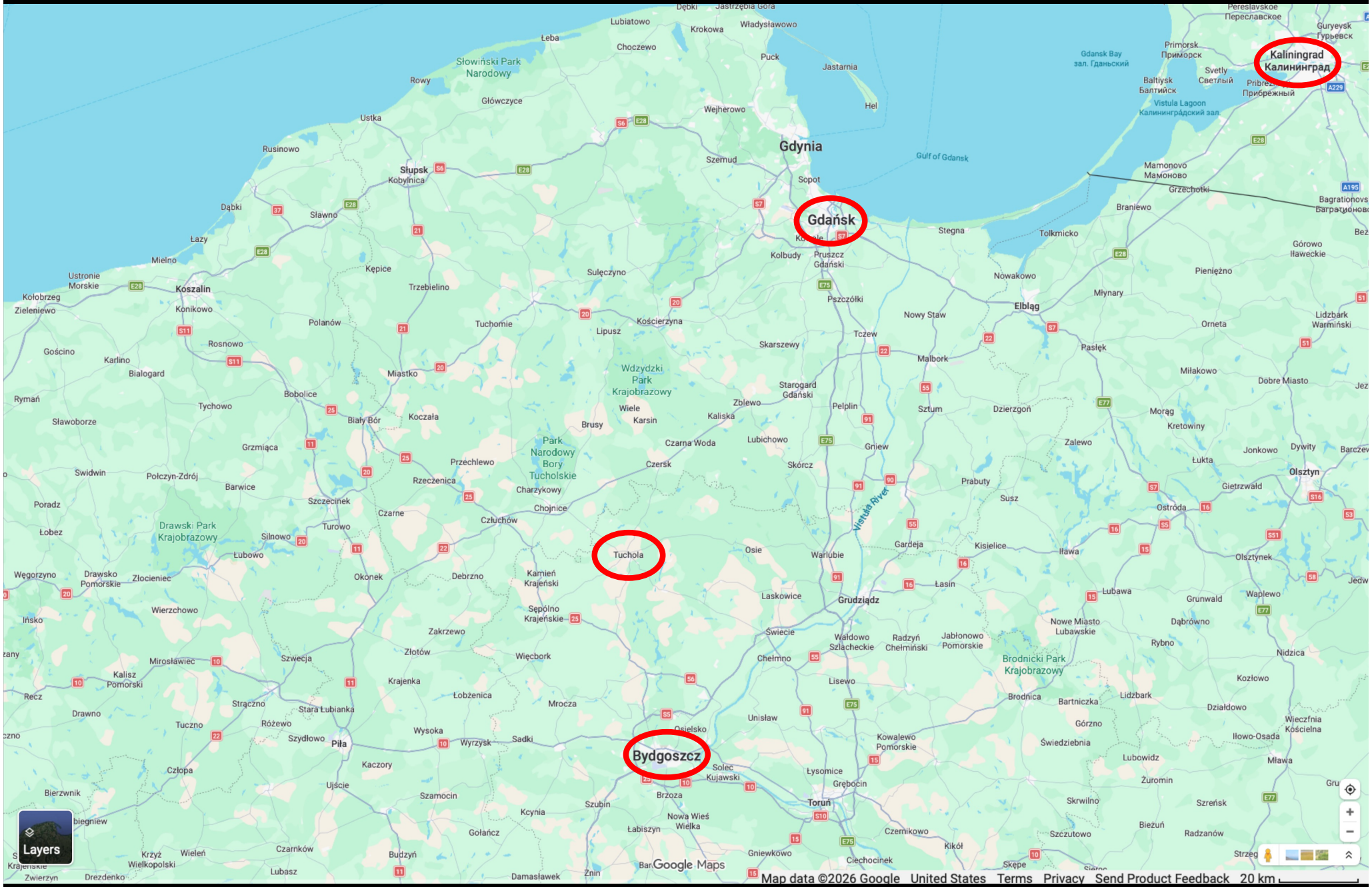
Interrogation will be withheld until an expert in his field can exploit prisoner's knowledge.

5. COMMENTS AND RECOMMENDATIONS

It is suggested that subject be interrogated by a technical expert. The recipients of this report are requested to submit special briefs of any subject upon which this man should be interrogated.

PAUL KUBALA,
Maj, MI,
Commanding.

Tucheler Heide/Tuchola Heath


Kaliningrad
Калининград
Gdynia
Gdańsk
Tuchola
Bydgoszcz
Słowiński Park Narodowy
Wdzydzki Park Krajobrazowy
Park Narodowy Bory Tucholskie
Drawski Park Krajobrazowy
Brodnicki Park Krajobrazowy
Vistula River
Gulf of Gdansk
Vistula Lagoon
Layers
Google Maps
Map data ©2026 Google
United States
Terms
Privacy
Send Product Feedback
20 km

Tucheler Heide

Truppenübungsplatz Westpreußen

Under German control September 1939 – January 1945

HEADQUARTERS
UNITED STATES AIR FORCES IN EUROPE
Office of the Assistant Chief of Staff, A-2

Ref: ABS 101

APO 633, U.S. Army
19 August 1947

BRIEF OPERATIONAL REPORT

on

SECRET

And Other Germans and Italians
Connected with PROJECT ABSTRACT:

on

Transfer by SD from TUCHELER HEIDE to Italy
of [illegible]

Containing Documents, Research Data,
Instruments and Substances Connected With
Guided Missiles and Atomic Energy:

on

German Personalities Connected with
Research and Development at TUCHELER HEIDE

and on

Likely Russian Counter-Espionage Activities in This Field
Through Paul SCHULZ and Others

(Note: For details of some personalities mentioned in this report and for background of the operation, under PROJECT ABSTRACT, called "Arrival" or "Arrivederci", see Reports by Captain R.R. SNEIDER, 702nd CIC Detachment, USAFE, dated 22 Mar 47, 12 Apr 47, 16 Jul 47, and 12 May 47)

A-8400
1/INCL

K-1

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.

SECRET

NARRATIVE

Changes of Previous Testimony.

1. On 11 August 1947 [redacted] on the Italian phase of PROJECT ABSTRACT, which, in a few previous reports, was called Operation Arrival or Arrivederci, [redacted] Headquarters, USAFE, by Captain R.R. SNEIDER of the CIC Detachment, BAD KISSINGEN. Major A. J. LEOCHA

2. [redacted]

ARMY CBI CII

3. [redacted] retracted, in writing, many of the statements made to Captain SNEIDER and to others during the last few months. Most of his knowledge of guided missiles is secondhand information, obtained at TUCHELER HEIDE [redacted] for whom he worked [redacted] as he had previously claimed. Details will be given in a fuller report.

New Facts and Re-affirmation of Statements on PROJECT ABSTRACT.

4. Thorough cross-examination has not been effective in shaking [redacted] on matters directly concerned with or related to PROJECT ABSTRACT.

a. Atomic research and development at TUCHELER HEIDE was coupled with research on guided missiles, in 1943 and 1944. (Note: In March 1947 Professor W. von BRAUN admitted that in the summer of 1943 he had been interested in atomic energy for use in V-2. Von BRAUN claimed to have dropped the project for lack of available raw materials. It may be mere coincidence that [redacted] also places the beginning of combined research and development in 1943.--In March and April 1945 the undersigned heard rumors in Germany of such a combination. The most persistent rumors in I.G. FARBEN circles had it that this combination would be linked with Chemical Warfare, especially with the new nerve gases, i.e., the TABUN series. These rumors were repeated by responsible members of I.G. FARBEN, who added that this vague plan or hope had been abandoned. At the time no progress was made in the investigation of the atomic side of the problem because all effort was concentrated on a solution of the new Chemical Warfare problems. [redacted] now reveals that the ampullae (phials) he saw in four boxes in Italy had originated with I.G. FARBEN. (See b below).

b. Four boxes, probably originating in the Luftwaffe Ministry in Berlin, were sent in March 1945 by SD, POTSDAM, to ITALY in the care of a FELDWEBEL (Sergeant) HEINZ (surname forgotten!), [redacted] and a Private (name forgotten!). The boxes contained (i) reports and research data on V-weapons and atomic research; (ii) 40-50 small ampullae (phials) "full of a whitish liquid", labeled U-234, U-235 and PLU, stamped "IG" (= IG Farbenindustrie); (iii) a new and not completely developed optical instrument probably intended for measuring speed and trajectory of guided missiles at the firing point; (iv) various small and delicate parts of guided missiles, fastened to carboard by fine wires, with full description of each item attached to the cardboard.

c. The boxes were buried near VERONA by the FELDWEBEL, [redacted] and a third soldier. (The site has been explored. Parts of wooden boxes or of a wooden box, fragments of paper an an ampullae (phial) marked U234 or U235 were seen by Captain SNEIDER and [redacted]. The rest had vanished).

d. A few months ago, at BAD KISSINGEN, a certain KOROFF, suspected by Captain R.R. SNEIDER of being a Russian agent, is alleged to have made an offer of 500,000 Marks to [redacted] for selling the four boxes to the RUSSIANS. Under cross-examination [redacted] stated that he was present in April 1945, when the mysterious FELDWEBEL discussed with an Italian member of an Underground Movement, at an inn at or near VERONA, the possible sale of the four boxes to TITO. (Note: Colonel PETERSEN has reported similar efforts by the Russians to obtain documents, instruments, machinery and models of guided missiles and jet-propelled aircraft, through German officers connected with General SEYDLITZ and other pro-Russians. The first attempt was made at RECHLIN in April 1945 by SEYDLITZ's emissaries from DANZIG, the last in October (?) 1946 through an unidentified group of Germans from LEIPZIG who visited Colonel PETERSEN in Erding/Andechs, not far from MUNICH. Diplom-Ingenieur F. W. BETHKE, who was with the Russians until recently as head of the Technical Bureau at PEENEMUNDE, stated to Major H.H. MARECHAL that they had five to eight tons of PEENEMUNDE EAST documents in their possession. BETHKE stated that Dr. von BRAUN would know what the contents of these documents were).

Possible Russian Espionage or Counter-Espionage Activities by Schulz & Others.

5. Germans other than KOROFF appear to be connected with Russian espionage at BAD KISSINGEN. Through [redacted] they may know of PROJECT ABSTRACT and its Italian operation, "Arrival", though perhaps not under those names. (For personalities connected with possible Russian espionage or counter-espionage at BAD KISSINGEN see paragraphs 12-14, 16-19, 21-22).

6. [redacted] has not been able to explain satisfactorily his recent trip to the Russian Zone. He went there on 27 June, some time after KOROFF is alleged to have made him an offer of 500,000 Marks for the sale of the four boxes in Italy to the Russians and very soon after the unsuccessful search for the boxes in Italy.

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.

and others believed that he was the most likely man to have removed, possibly through others, guided missiles documents emanating from E9 (Development Section 9) of the Luftwaffe Ministry and drawings and sketches of guided missiles from BAD SACHSA. BREE may be the same "person with a French name" (BCREU?) who worked spasmodically on "electric fuses for guided missiles" at TUCHELER HEIDE in 1943 and 1944. Thus he would know valuable details of the combined "guided missiles-atomic energy" research and development and would perhaps know where the missing documents were sent, whether they went first from TUCHELER HEIDE to BERLIN, as [redacted] vaguely stated, and thence to SD, POTSDAM, and to Italy.

24. Ingenieur KRUEGER should be traced and brought at once to ECIC. He may give us valuable information on the combined "guided missiles-atomic energy" program at TUCHELER HEIDE in 1943 and 1944 and may know exactly where documents and instruments have been sent. [redacted] obtained most of his information on activities at TUCHELER HEIDE from KRUEGER, in 1944.

25. Prof. Dr. NIELS, now said to be in the United States, was, according to [redacted] concerned with chemical and atomic problems at TUCHELER HEIDE and produced a number of atomic bombs, weighing from 1 to 5 kilograms. NIELS shouls be traced and questioned in detail.

26. Prof. Dr. HUETTEN. Present whereabouts unknown to [redacted] He should be located and brought to ALASKA for questioning. According to [redacted] he was the originator of the combined project of research and development of atomic energy and guided missiles at TUCHELER HEIDE. This project was named "Aktion HUETTEN" after him. He was transferred elsewhere, probably in 1943 (see paragraph 7).

27. Prof Dr. HOFMANN, successor of HUETTEN as chief of the combined program at TUCHELER HEIDE, is now at "ALEXANDROWKA Kolonien" near BAKU where he is continuing his former work.

[redacted] information on HOFMANN's present whereabouts and activities. Perhaps HOFMAn could be persuaded to accept an offer from the United States. He could be evacuated either via the Black Sea and Turkey or via the Caspian Sea and Persia. (See paragraph 7). (NOTE: At the beginning of March 1947 von BRAUN was visited, at LANDSHUT, by a German professor from Russia who was working on guided missiles and told him about the various Germans employed by the Russians in that field. It is not impossible that HOFMAN was this German professor from Russia and that he visited von BRAUN chiefly to discover if the United States would consider offering him a post. Von BRAUN wrote to Lt. Gen. DORNBERGER, his former chief, and possibly to others in March 1947, suggesting employment in the United States.)

28, Prof W. Von BRAUN should be re-interrogated on the following:
(a) The name of the German professor from Russia who visited him

[For information on Edmund Tilley, see pp. 5014–5015. For more information on Project Abstract, see Mills and Johanson 2019.

The German military took over Tucheler Heide in September 1939 and used it as a proving ground (Truppenübungsplatz Westpreußen or Heidekraut) for rockets, nuclear work, and other experiments until January 1945. See p. 4566.

Walter Dornberger briefly mentioned rocket testing at Tucheler Heide [Dornberger 1958, pp. 227–229].

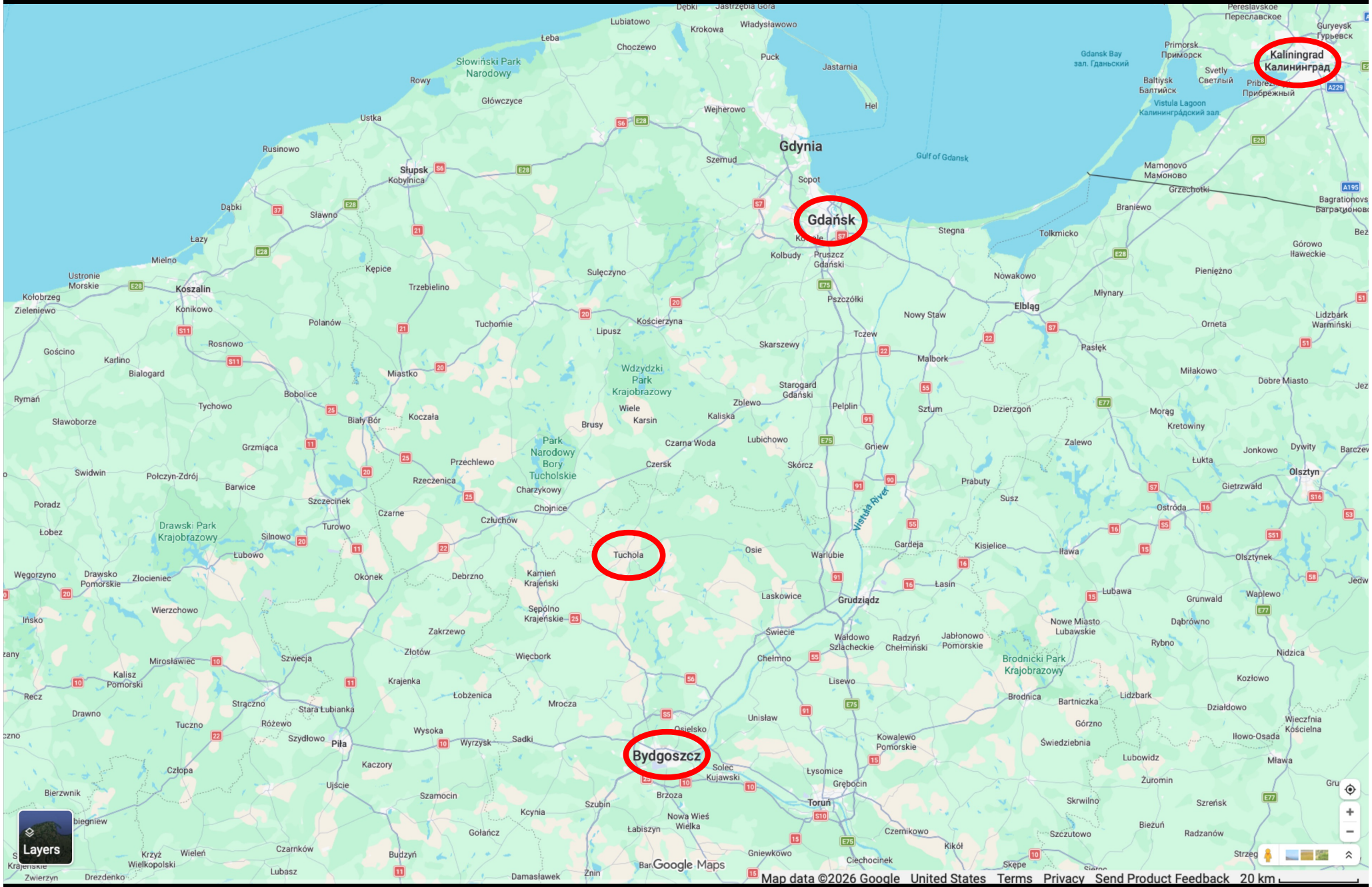
Dr. Walter Nielsch (German, 1915–20??) was an expert on chemical metallurgy [e.g., https://www.semanticscholar.org/author/W.-Nielsch/16969230] and a plausible candidate to have been involved in the purification of uranium-235, uranium-233, and/or plutonium-239. What exactly did Dr. Nielsch and/or Dr. Niels do during the war and also after the war?

Were the "number of atomic bombs, weighing from 1 to 5 kilograms" fission fuel pits for bombs?

Was this work on a nuclear-armed projectile at Tucheler Heide in Poland related to the alleged test of a nuclear-armed projectile in Poland (Section D.11)? See p. 2130 for a map of other known research sites in Poland.

The March 1947 interrogation of Wernher von Braun, mentioned in this document, is described in more detail in the document on p. 5970.]

Bromberg/Bydgoszcz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Калининград
Gdynia
Gdańsk
Tuchola
Bydgoszcz
Słowiński Park Narodowy
Wdzydzki Park Krajobrazowy
Park Narodowy Bory Tucholskie
Drawski Park Krajobrazowy
Brodnicki Park Krajobrazowy
Vistula River
Gulf of Gdansk
Vistula Lagoon
Layers
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STRATEGIC SERVICES UNIT, WAR DEPARTMENT

WASHINGTON, D. C.

INTELLIGENCE DISSEMINATION

NUMBER Q A-64999

UNTRY Poland

BJECT Explosives Factory in Bydgoszcz

ORIGINAL RPT. LS-714

DATE OF INFO. Oct.-Nov. 1945
DATE OF RPT. 29 Dec. 1945
DISTRIBUTED 4 February 19

GIN Austria, Salzburg
ATRE

URCE Z
SOURCE As stated
LUATION F-O

CONFIRMATION
SUPPLEMENT

NO. OF PAGES 1
ATTACHMENTS

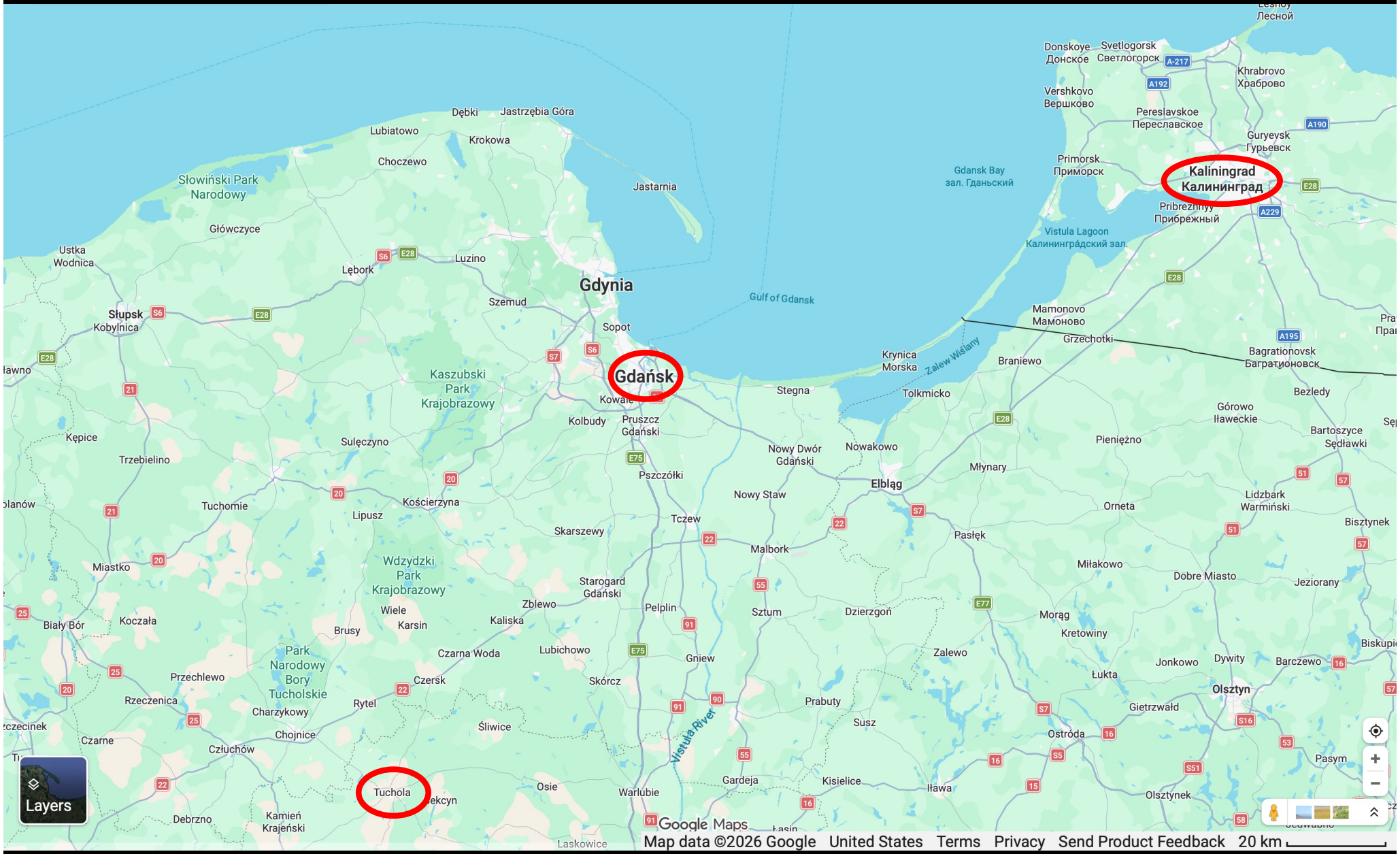
Sub-source (1): Polish DP, native of Bydgoszcz, editor of DP paper in Salzburg, known and trusted informant.

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.

Danzig/Gdansk


Kaliningrad
Калининград
Gdynia
Gdańsk
Tuchola
Layers
Google Maps
Map data ©2026 Google
United States
Terms
Privacy
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Kurt Diebner. Listing of nuclear research commissions enclosed with a letter to the president of the Reich Research Council. 18 April 1944. [English translation in Hentschel and Hentschel 1996, pp. 322–324; German in Nagel 2016, pp. 512–513]

No.	Topic	Person Responsible	Priority Level	Secrecy Specification
[...]				
11.	Isotope separation	Inst. for Phys. Chemistry at Hamburg Univ., Prof. Harteck	SS, for special purposes DE	Secret, partly top secret
12.	Isotope separation	Inst. for Phys. Chemistry and Electrochemistry, Kiel, Lec. Dr. Martin	SS	Secret, partly top secret
13.	”	KWI for Chemistry, Berlin, Dr. Klemm	SS, for special purposes DE	Secret
[...]				
15.	Preparation of gaseous uranium compounds for isotope separation	Danzig Polytechnic, Prof. Albers	SS	Secret
16.	”	Chem. Inst. at Bonn Univ., Prof. Schmitz-Dumont	SS	Secret
17.	Construction and development of a mass spectrograph	II. Phys. Inst. at Göttingen Univ., Prof. Kopfermann	SS	Open, partly secret
18.	Development of a mass spectrograph	Deutsche Reichspost, Ministerial Councillor Gerwig	SS	Open, partly secret
19.	Manufacture of an isotope sluice	Bamag-Meguin Co., Berlin	DE	Secret

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.

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: […]

Institute of Chemistry, Danzig University (Poland). Professor Albers.

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.

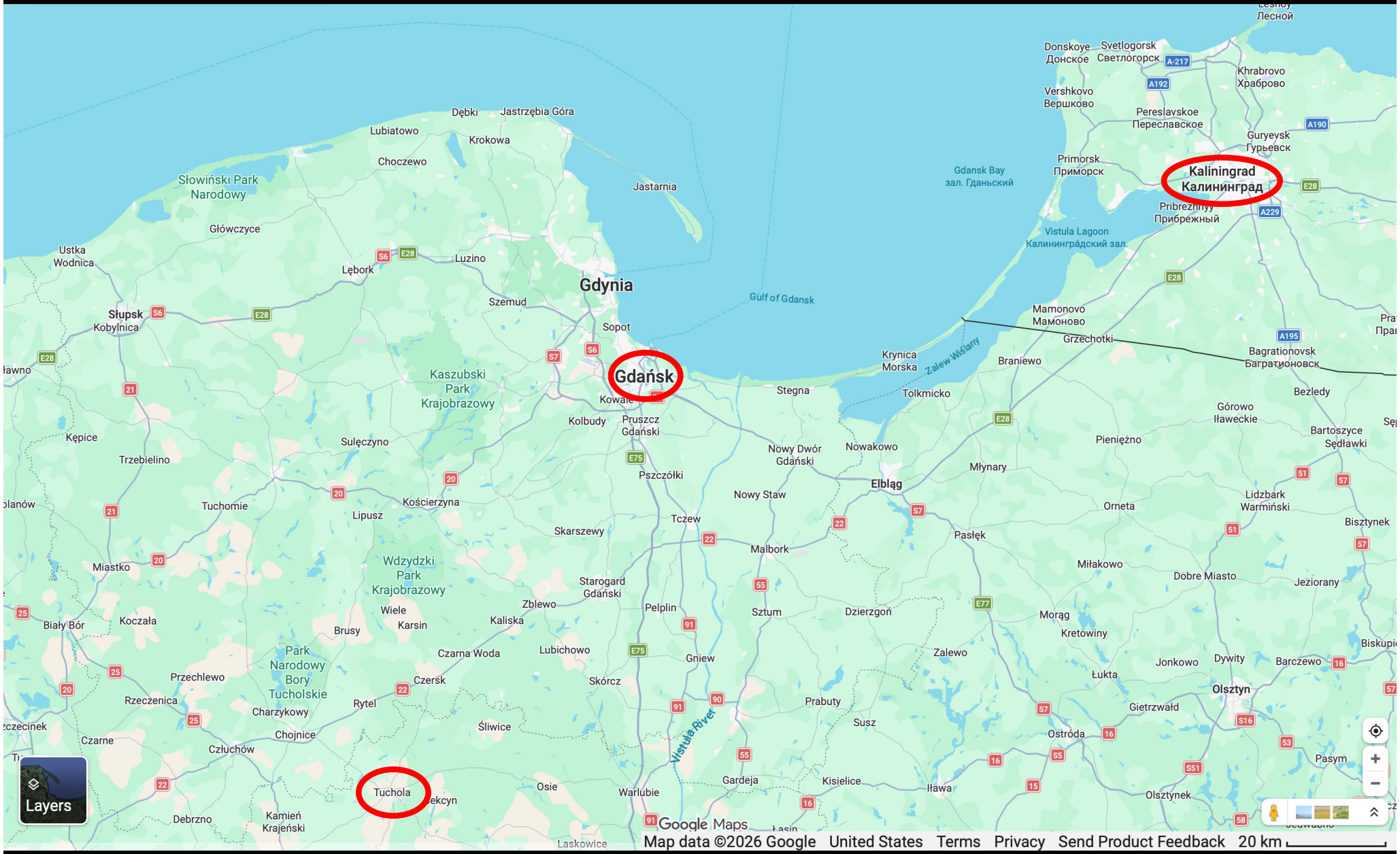
6. The above named scientists were afraid of the responsibility of putting into operation a wpn of such horrifying proportions. They deliberately stalled and had false reports given to HITLER. Some of their assistants were involved in the plot of 20 Jul 1944.

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.

Königsberg/Kaliningrad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Gerhard Dessauer to Leo Szilard. 6 July 1942. NARA RG 77, Entry UD-22A, Box 171, Folder 32.7003-1 GERMANY: US Wartime Positive Int. (July 42-June 44).

I learned that the chain reaction of the uranium isotope is now successful. It is not explosive, but there is now the prospect of technical utilization.

MED Foreign Intelligence. 3 April 1944. Activities from 13 March to 31 March 1944. NARA RG 77, Entry UD-22A, Box 170, Folder 32.60-1.

Mr. [John Hitchcock] Chapin reported successful detection experiments and requested aircraft study.

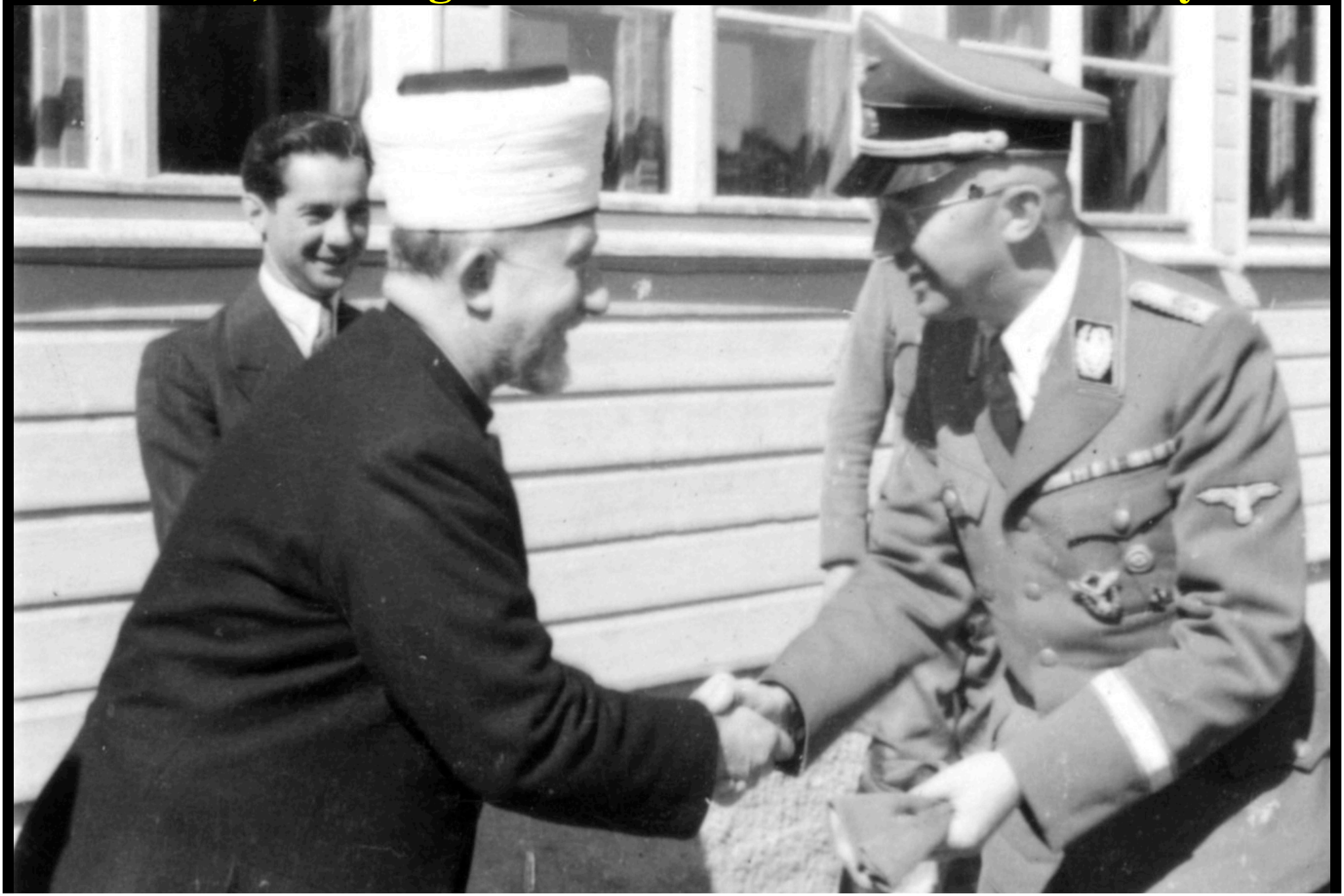
F.A.C. Wardenburg and J.A. Lane. 5 April 1945. Interrogation of Dr. Kohl, Works Manager of Degussa Plant No. 2, Frankfurt. NARA RG 77, Entry UD-22A, Box 166, Folder 32.22-1.

Metallic uranium was mixed with coal dust (carbon?) and with Tragacanth gum as a binding material and pressed into blocks, approximately 50% by weight of coal and uranium. The blocks were approximately 5 cm x 5 cm x 6 cm. About five tons as metallic uranium in total were delivered in this form.

Richard P. Fischer. June 1945. Report on German Supplies of Uranium-Bearing Raw Materials. NARA RG 77, Entry UD-22A, Box 163, Folder Australia.

About 50 to 60 tons of strongly radioactive "tarnsand" was delivered to the German Army… More likely the "tarnsand" was prepared from material in which the radioactivity has been artificially induced.

Muhammad Amin Al-Husayni, the Grand Mufti of Jerusalem, meeting with Heinrich Himmler on 4 July 1943



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

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.

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.

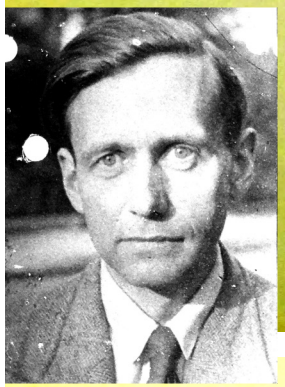
NARA RG 319, Entry A1-134B, Box 202,
Folder XE196681 Siegfried Fluegge

Siegfried Flügge

The following information was received by phone from L&S Office Marburg, Wednesday, 17 Sept 47, thru Mrs. Steinbacher:

F l ü g g e, Siegfried, Dr.

Date of birth:	16 March 1912
Place of Birth:	Dresden, Saxony, Germany
Present address:	Marburg/Lahn, Wilhelm Roser Str. 33 A
Present employment:	as professor at University of Marburg (ordentlicher Professor)
Special Field:	Nuclear Physics (Struktur der Materie)
Background information:	from 1918 - 1921: attended elementary school, Dresden
	" 1921 - 1929: " high school (Gymnasium) in Dresden
	" 1929 - 1930: attended Technical High School, Dresden.
	" 1930 - 1933: at University in Göttingen
	X 1933 Doctor of Physics at University of Göttingen.
	" 1933 - 1935: worked at University of Frankfurt as Scientific Assistant.
	" 1935 - 1937: lectured at University of Leipzig
	1937 to Berlin
	" 1937 - 1942: worked in chemical department of the Kaiser-Wilhelm-Institute in Berlin, Dahlem.
	" 1942 - 1944: assistant at the Institute of Scientific Research of the Reichspost, Berlin
	" 1940 - 1944: lectured at the University of Berlin
	" 1944 appointed professor (ausserordentlicher at the University of Königsberg.



After the surrender, he went to Göttingen, where he was employed as Professor for History of Physical Science from 1945 - 1947.

He was not called to Military Service during the War, because he worked as a Scientist of Physics for the "Heereswaffenamt", Berlin, and was later exempted of any Army Service by the Reichsforschungsrat in Berlin.

NARA RG 330, Entry A1-1B,
Box 43, Folder Flügge, Siegfried

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Serial No. 14654 O P Y

NAVY DEPARTMENT
Office of Naval Research
Washington 25, D.C.

July 18, 1947

From: Chief of Naval Research
To: Chief of Naval Intelligence

Subj: Foreign Scientists, Request for assistance on.

1. Professor Edward Teller, Physics Department, University of Chicago, is supervising under contract to this Office a research program on various phases of research in physics of the solid state. This program is of interest and importance to the national security. Professor Teller is very desirous to obtain the services of the German physicist, Dr. Siegfried Flugge, who can be of marked assistance in carrying out the aforementioned program.

2. Professor Teller has requested the Office of Technical Services, Department of Commerce, to obtain Dr. Flügge from Germany. It is requested that the Joint Intelligence Objectives Agency be informed of the Navy's interest in this case, and asked to provide such assistance as is possible to Professor Teller in aiding Dr. Flügge to come to this country.

/s/ C.M. Bolster
Capt., USN
Acting Chief of Naval Research

cc: Mr. Robert Frye, OTS, Dept. of Commerce
Professor Edward Teller, Physics Dept.
University of Chicago

Royal Air Force Bomber Command. Campaign Diary August 1944.
https://webarchive.nationalarchives.gov.uk/ukgwa/20070706054833/
http://www.raf.mod.uk/bombercommand/aug44.html

26/27 August 1944

174 Lancasters of No 5 Group to Königsberg, which was an important supply port for the German Eastern Front. The route to the target was 950 miles from the No 5 Group bases. Photographic reconnaissance showed that the bombing fell in the eastern part of the town but no report is available from the target, now Kaliningrad in Lithuania. 4 Lancasters lost.

29/30 August 1944

189 Lancasters of No 5 Group carried out one of the most successful No 5 Group attacks of the war on Königsberg at extreme range. Only 480 tons of bombs could be carried because of the range of the target but severe damage was caused around the 4 separate aiming points selected. This success was achieved despite a 20 minute delay in opening the attack because of the presence of low cloud; the bombing force waited patiently, using up precious fuel, until the marker aircraft found a break in the clouds and the Master Bomber, Wing Commander J Woodroffe, probably No 5 Group's most skilled Master Bomber, allowed the attack to commence. Bomber Command estimated that 41 per cent of all the housing and 20 per cent of all the industry in Königsberg were destroyed. There was heavy fighter opposition over the target and 15 Lancasters, 7.9 per cent of the force, were lost.

During the war, Königsberg had a large staff of inorganic chemists with world-class expertise in methods that would have been useful for reprocessing irradiated fuel from fission reactors. After the war, many of those chemists were interrogated by at least two teams from the U.S. Alsos Mission.

KO-27854

I. G. File No.

Report No. CAB/235 CONFIDENTIAL CONFIDENTIAL CLASSIFICATION

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From Alsos Mission, MIS, WD, c/o G-2 Sec. Hq USFET (Rear) APO 887 17 July 1945
Agency or Officer Station

Source Carl A. Baumann, Expert Consultant Eval. A2

Area Reported On Germany Subject Hyperuritic acid, silicon complexes; Prof. R. Schwarz of Königsberg and Böckstein.

P.R.C.

Reference III
(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.

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Alsos Mission
APO 887

HYPERURITRIC ACID, SILICON COMPLEXES;

PROF. R. SCHWARZ

OF

KÖNIGSBERG AND BÖCKSTEIN

Reported by

C. A. BAUMANN
Expert Consultant

CAB/235

17 July 1945

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UNITED STATES FORCES
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Alsos Mission

Incl 1 to KI-27854

Ref: CAB/235

Bear - APO 387
17 July 1945

SUBJECT: Hypernitric acid; silicon complexes; Prof. R. Schwarz of Königsberg and Böckstein.

LOCATION OF LABORATORY

The department of Inorganic Chemistry, University of Königsberg was evacuated to a building belonging to the Werkstatt Lathausberg, Hassfeld above Böckstein/Bad Gastein, Austria. Hassfeld in an isolated valley (cirque), high in the Alps and is connected to Böckstein by 8 kms. of steep mountain path hardly as wide as a jeep.

Other laboratories in Hassfeld are the department of aeronautics, Göttingen, Prof. Eder; department of physics, Graz, Prof. Matossi.

GENERAL DESCRIPTION

The laboratory consists of 3 rooms containing relatively little equipment. There is some special glass apparatus for preparing silicon complexes in the absence of air or moisture. Larger equipment for the studies of ceramics, etc., include electric ovens, and a unit for measuring coefficients of expansion. Two small rooms contain chemicals and library material.

Prof. R. Schwarz is a well-known inorganic chemist. He is an editor of Gmelin's Handbuch, vice-president of the Deutsche Chemische Gesellschaft, and an authority on compounds of silicon. He published 20 scientific articles during the war (list appended). He left Königsberg late in 1944 and has been in the Böckstein area since then. The Hassfeld laboratory has been operating for only a few months and the staff consists of 5 people.

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RESEARCH PROBLEMS

1. ATTEMPTS TO MAKE HYPONITRIC ACID, HNO_4

The first reaction attempted was between nitryl chloride NO_2Cl and 100% H_2O_2. (Schwarz and Schmeisser). The reaction was unsuccessful, presumably because most of the NO_2Cl formed in the preliminary reaction $NOCl + O_3 \rightarrow NO_2Cl + O_2$, had the structure $N=O$ instead of O the logical precursor of HNO_4.

$$\begin{matrix} O & & N=O \\ | & & | \\ Cl & & Cl \end{matrix}$$

The next reactions considered were between N_2O_5 or 100% HNO_3 and H_2O_2. $HNO_3 + H_2O_2 \longrightarrow HNO_4 + H_2O$

$$N_2O_5 + H_2O_2 \longrightarrow HNO_4 + HNO_3$$

When 100% H_2O_2 was used, (R. Schwarz and U. Greger), both of these reactions proved to be extremely violent at temperatures as low as -- 80 deg. C; at the temperature of liquid air, however, the reactants could be mixed without risk. As observed in a proper apparatus, the HNO_4 formed began to decompose at --80 deg C. with the liberation of small amounts of O_2. The product appeared as a light yellow pulp. On warming to --30 deg much more O_2 was evolved, and the residue proved to be pure 100% HNO_3.

Aqueous solutions of HNO_4 proved to be much more stable. A mixture of 70% HNO_3 and 30% H_2O_2 was stable at +20 deg C. With 75% HNO_3, O_2 is liberated slowly, and the temperature increases gradually to 60 degrees C over a period of 90 minutes, when there is a very sudden increase in temperature and the whole liquid explodes. When 80% HNO_3 is used, the explosion develops in 22 minutes; with 85% HNO_3, in 18 minutes. In each case great quantities of oxygen are evolved.

2. OTHER COMPOUNDS OF NITROGEN (M. SCHMEISSER).

$NO_2 + (CN)_2$ forms a yellow solid of unknown composition. The product is explosive and may also be of interest in chemical warfare. The reaction $NOCl + KCN \longrightarrow NOCN + KCl$ also yields an explosive.

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3. COMPLEX COMPOUNDS OF SILICON (R. SCHWARZ AND H. TAUBERT).

Investigations were continued of the 10 Si atom compounds discovered by Schwarz in 1937. The hydrolysis product of $Si_{10}Cl_{22}$ was finally found to be $Si_{10}(OH)_{10}O_6$, a solid white substance that burns in air. On heating in vacuum hydrogen is removed with the formation of an unsaturated compound similar to "Siloxen."

Recently a very large silicon chloride of the formula $Si_{25}Cl_{52}$ has been synthesized. This gigantic molecule (M. W. > 2500) is by far the largest inorganic compound known. It is an amorphous solid with properties like glass or rubber. It is only slightly plastic or extensible, inflammable in air, and easily hydrolyzed by moisture.

4. REFRACTORY MATERIALS (R. SCHWARZ AND H. TAUBERT).

Studies have been under way on materials intermediate between pure Al_2O_3 (Sinterkorund or Alsint) and the clays, with emphasis on the effect of mineralizing substances such as oxides and fluorides. Studies of crystal structure, coefficients of expansion and resistance to hydrofluoric acid were made of materials burnt at 1400 degrees C, 1600 degrees C, and 1800 degrees C.

C. A. HAUSER
Expert Consultant

Professor [illegible] Mansfeld
(former Königsberg) Mansfeld near Badgastein,

Report of the Investigations, made in the last time in Königsberg and Mansfeld.

(as written by Prof. Schwarz)

1) R.Schwarz and K.Schmeisser

It was tried to obtain substantially the Hypernitric acid till yet unknown in formula and behaviour. First we have taken the way of reaction between the Nitrylchlorid NO_2Cl and 100 percent. H_2O_2.

NO_2Cl was made according to

$$NOCl + O_3 = NO_2Cl + O_2$$

But the reaction of the NO_2Cl with H_2O_2, H_2O or NaOH a.s.o. shows, that the constitution is not $HO-N{=}O$ as to be expected from the chlorid of the nitriacid, Cl
but $H-O-Cl$.

In according to this result the Hypernitriacid can not be found in this manner. Probably there exists an isomerism between the two compounds, but we have not been successful in finding the true $HO-N{=}O$ Cl.

2) R.Schwarz and W.Gregor

Consequently was investigated the reaction between 100 percent. HNO_3 or also H_2O_5 and 100 percent. H_2O_2, where according to

$$HNO_3 + H_2O_2 = HNO_4 + H_2O \quad \text{or}$$

$$H_2O_5 + H_2O_2 = HNO_4 + HNO_3$$

the possibility of success is given.

We have found the following:

Between the acid or the anhydrid and 100 percent. H_2O_2 the reaction

is so impetuous that one gets an explosion even at -80°C, but working at the temperature of liquid air, it is possible to mix the two compounds without risk. Measuring the process in a proper apparatus, it was found that the reaction begins about -80° C by forming a little quantity of O_2. The product is now a light yellow pulp. In growing warm, at -30° C a lively formation of Oxygen takes place and finally the residue proves as 100 percent. HNO_3.

In this way it is demonstrated that the Hypernitricacid may be existent and steady in an interval from ~ 80° C till -30° C.

Overgoing to aqueous medium we have found that a composition of 70 percent. HNO_3 + H_2O_2 (and 30 percent H_2O) is steady at + 20° C and more. A mixture of 75 percent is slowly decomposed by forming Oxygen and increasing the temperature till 60° C during 90 minutes, whereupon the temperature increases suddenly under explosion of the whole liquid. With a mixture of 80 percent this effect runs off within 22minutes till the explosion, with 85 percent in 13 minutes, always forming great quantities of Oxygen.

3) R.Schwarz and H.Wiele

We investigate the scientific base for high refractory materials, lieing between pure Al_2O_3 (Sinterkorund or Almint) and the well known clay-products. In this way the synthesis of Mullit takes place. This effect became advanced by mineralising substances, as Oxides or Fluorids and other compounds. We investigate the effect of such mineralising substances for the formation of the crystal-structure and the behaviour of the material burnt at 1400° C, 1600° C, 1800° C special by measuring the coefficient of expansion and the resistance against Fluoricacid. A different influence of certain oxydes has been found concerning the coefficient of expansion, the resistance and the optical view of thin polished samples.

4) R.Schwarz and Chr. Sanders.

Long chains of Silicon-compounds.

The investigation of Si-compounds with 10 Si-atoms as $Si_{10}Cl_{22}$, discovered by me in 1937 was continued. The formula of the products of hydrolyses from $Si_{10}Cl_{22}$ is finally found as $Si_{10}(OH)_{10}O_6$. The solid white substance is burning in the air. On heating in vacuum Hydrogen is going away by growing of a unsaturated Silicon-compound of the manner of "Siloxen."

In the last time we have succeeded in finding a Silicon-chlorine-compound of the formula $Si_{25}Cl_{52}$. This gigantic molecule with a molecul-ht of more than 2500 is by far the largest in the whole inorganic chemistry. According to his size the compound is an amorphous solid substance with a character like glass or caout chouc. It is far plastic and extensible, inflamable on the air and easily hydrolicsed by moisture.

5) H.Schmeisser

At the reaction of NO_2 + $(CN)_2$ a yellow solid substance of an unknown formula is formed. This product is explosiv and perhaps therefore interesting as a new explosiv substance or chemical warfare agent. Also the compound formed according $NOCl + KCN \rightarrow NOCN$ is explosive.

Prof. Dr. Robert Schwarz
Director des
Chemischen Institutes
Universität Königsberg

View about my papers published during the war 1939 - 1944

1) Zur Kenntnis der Bromoxyde. II.Mitteil. (Mit H.Giele)
Journal für praktische Chemie 152, 157, (1939).

2) Einige neue Halogenide des Siliciums IV. Über ein Siliciumchlorid der Formel SiCl. (Mit U.Gregor).
Zeitschrift f.anorgan. Chemie 241, 325, (1939).

3) Die Chemie des Siliciums. Angewandte Chemie 53, 6, (1940).

4) Zur Entwicklung des Chemischen Lehrbuches.
Angewandte Chemie 53, 133, (1940).

5) Über die Formel des Kaolinits. Berichte der deutschen keramischen Gesellschaft 21, 144, (1940).

6) Über die biologische und therapeutische Bedeutung der Kieselsäure. (Fortschr.d.Therapie 16, 182, 1940).

7) Pyrogene Kohlenwasserstoffsynthesen im Abschreckrohr I.
(Mit D. Pflugmacher) Journal f. praktische Chemie 156, 205, (1940).

8) Pyrogene Kohlenwasserstoffsynthesen im Abschreckrohr II.
(Mit D.Pflugmacher) Journal f. praktische Chemie 158, 1, (1941).

9) Beiträge zur Chemie des Germaniums XVIII. Therapeutische Versuche mit Germaniumdioxyd. (Mit. H.Scholz). Berichte der deutschen chemischen Gesellschaft 74, 1676, (1941).

10) Chemisches Praktikum für Mediziner (Leipzig, Barth) (1941).

11) Die Chemie des Germaniums mit besonderer Berücksichtigung der Beziehungen zu seinen Nachbarelementen.
Angewandte Chemie 55, 43, (1942).

12) Einige neue Halogenide des Siliciums V. Über die Siliciumjodide. (Mit A.Pflugmacher). Berichte der deutschen chemischen Gesellschaft 75, 1062, (1942).

13) Kohlenstoff und Silicium, eine vergleichende Betrachtung.
Schriften Königsberger Gelehrten Gesellschaft Naturw.
Kl. 18, 5, (1942).

14) Pyrogene Kohlenwasserstoffsynthesen III.
Journal f. praktische Chemie 161, 137, (1942).

15) Beiträge zur Chemie des Germaniums XIX. Über die Polymorphie des Germaniumdioxyds. (Mit K.Haschke).
Zeitschrift f.a organische Chemie 252, 170, (1943).

16) Die pyrogene Synthese aromatischer Kohlenwasserstoffe.
Berichte der deutschen chem. Ges. 75, 2014, (1943).

17) Pyrogene Kohlenwasserstoffsynthesen IV. Die Oxydation des Äthylens. Berichte der deutschen chemischen Gesellsch, 76, (1944)

18) Pyrogene Kohlenwasserstoffsynthesen V.
Synthese des Propargylaldehyds. (Mit G.Bessel)
Berichte der deutschen chem. Ges. 76, (1944)

19) Über die Verwandtschaft von Silicium- und Kohlenstoffchemie.
Die Chemie 56, 258, (1943).

20) Einige neue Halogenide des Siliciums. VI. Mitteilung.
Formel und Konstitution eines Siliconobenzoesäurederivates.
(Mit Chr. Anders) Zeitschrift f. anorg. Chemie. (im Druck) 1944/45.

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Source Charles P. Smyth, Expert Consultant Eval. A-1

Area Reported On Germany Subject The Evacuated Chemican Institute of Königsberg Böckstein-Wassfeld. (Supplementary Report)

Reference II
(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.

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U. S. FORCES, EUROPEAN THEATER
ALSOS MISSION

Ref: CPS/291

(Rear) APO 887
7 September 1945

SUBJECT: The Evacuated Chemical Institute of the University of Königsberg Böckstein-Wassfeld. (Supplementary Report)

1. Most of the work of this Institutcis described in Alsos Report CAB/235. Additional descriptive material is attached to the original of the present supplementary report.

2. Of the seven investigations recently carried out by the Institute:

(a) An attempt to prepare pernitric acid by the interaction of hydrogen-peroxide and HO_2Cl;

(b) The reaction of 100% hydrogen-peroxide with pure nitric acid or nitrogen pentoxide;

(c) The nature and properties of refractory materials;

(d) The preparation and properties of long-chain silicon chlorides;

(e) The reaction between nitrogen dioxide and cyanogen;

(f) An investigation of sulfur monoxide (work done entirely at Königsberg);

(g) Organic syntheses in the "hot-cold tube" (see par. 3);

the first five (a) - (e) were supported by the Forschungsführung der Reichsluftfahrtministerium (RLM) and the last, (g), by the Reichsforschungsrat (RFR).

3. The "hot-cold tube" (Abschreckrohr), a water-cooled quartz tube surrounding a much smaller metal tube heated to high temperature, was used to study the polymerization of acetylene to toluene and styrene. This is without practical value because of the great need of acetylene in rubber synthesis. The catalytic oxidation of ethylene to formaldehyde and acetaldehyde and the combination of acetylene and carbon monoxide to form propionaldehyde were also studied with the same apparatus. Part of this work has already been published (Ber. d. deutsche chem. Ges., 76, 957 (1943)).

CHARLES P. SMYTH
Expert Consultant

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Chemisches Institut
der
Universität Königsberg
Aussenstelle
Böckstein - Nassfeld

0202711

Personalbestand

Name Geburtstag Geburtsort	Nr.des Frage-bogens	Wohnung	Spezialgebiet
Prof.Dr.Robert Schwarz Director 17.12.87. Berlin	1854	Nassfeld	Allgemeine u. anorganische Chemie besonders Siliciumchemie, Silicate und hochfeuerfeste Keramik, Porzellanfabrikation.
mit Frau	1855	"	
Dozent Dr.M.Schmeisser 23.11.12. Gotha mit Frau und 3 Kindern	2973	Böckstein Villa Ankogel	Chemie des Stickstoffs
Dr.Ulrich Gregor Assistent 10.4.12. Fulda	1586	Nassfeld	Siliciumchemie
Dr. Heinz Wiele Assistent 14.3.11. Posen mit Frau u. einem Kind	1105	"	Silicatchemie
Dipl. Chemikerinnen:			
Edith Haschke 5.8.21 Ebenrode/Ostpr.	1585	Nassfeld	
Christel Danders 18.7.21. Kuckerneese/ Ostpr.	493	"	
Hella Rabien 1.2.21. Kiel	1584	"	
Magdalene Wittker 10.5.22. Köslin/Pom.	1587	"	
Cand.rer.nat.			
Dorothea Beitzke 13.1.21. Freiburg	542	"	

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Name Geburtstag Geburtsort	Nr.des Frage-bogens	Wohnung	Spezialgebiet
Technische Assistentinnen:			
Margarete Barkowski 11.8.21. Birken/Ostpr.	494	, Nassfeld	
Renate Hofmann 9.2.21. Königsberg (Pr)	2735	"	
Hildburg Hofmann 21.6.24. Allenstein/ Ostpr.	2735	"	

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Prof.Dr.Robert Schwarz
Direktor des
Chemischen Institutes
Universität Königsberg (Pr)

Nassfeld/Badgastein, 9.6.45
Post Böckstein
Schliessfach 16

Übersicht

über meine in den Jahren 1939 - 1944 durchgeführten Arbeiten.

Es sind während des Krieges folgende Publikationen von mir erschienen:

1) Zur Kenntnis der Bromoxyde. II.Mitteil. (Mit H.Wiele) Journal für praktische Chemie 152, 157 1939.
2) Einige neue Halogenide des Siliciums IV. Über ein Siliciumchlorid der Formel SiCl. (Mit U.Gregor) Zeitschrift f.anorgan.Chemie 241, 325, 1939.
3) Die Chemie des Siliciums. Angewandte Chemie 53, 6 1940.
4) Zur Entwicklung des Chemischen Lehrbuches. Angewandte Chemie 53, 133, 1940
5) Über die Formel des Kaolinits. Berichte der deutschen Keram. Gesellschaft 21, 144, 1940.
6) Über die biologische und therapeutische Bedeutung der Kieselsäure. (Fortschr.d.Therapie 16, 182, 1940.
7) Pyrogene Kohlenwasserstoffsynthesen im Abschreckrohr.I. (Mit D.Pflugmacher) Journal f.praktische Chem. 156, 205 1940.
8) Pyrogene Kohlenwasserstoffsynthesen im Abschreckrohr. II. (Mit D.Pflugmacher) Journal f. prakt.Chemie 158, 1 1941.
9) Beiträge zur Chemie des Germaniums XVIII. Therapeutische Versuche mit Germaniumdioxyd. (Mit H. Scholz) Berichte d.deutschen chem.Ges. 74, 1676, 1941.
10) Chemisches Praktikum für Mediziner (Leipzig, Barth) 1941.
11) Die Chemie des Germaniums mit besonderer Berücksichtigung der Beziehungen zu seinen Nachbarelementen. Angewandte Chemie 55, 43, 1942.
12) Einige neue Halogenide des Siliciums. V. Über die Siliciumjodide. (Mit A.Pflugmacher). Berichte der deutschen chem.Ges. 75, 1062, 1942.
13) Kohlenstoff und Silicium, eine vergleichende Betrachtung. Schriften Königsberger Gelehrten-Ges. Naturw. Kl. 18, 5, 1942
14) Pyrogene Kohlenwasserstoffsynthesen III. Journal f. prakt. Chemie 161, 137, 1942.

15) Beiträge zur Chemie des Germaniums XIX. Über die Polymorphie des Germaniumdioxyds. (Mit E.Enschke) Zeitschr.f.anorg.Chemie 252, 170, 1943
16) Die pyrogene Synthese aromatischer Kohlenwasserstoffe. Berichte d.deutschen Chem.Ges. 75, 2012, 1943.
17) Pyrogene Kohlenwasserstoffsynthesen. IV. Die Oxydation des Äthylens. Berichte d.deutsch.Chem.Ges. 76, 1944.
18) Pyrogene Kohlenwasserstoffsynthesen. V. Synthese des Propargylaldehyds. (Mit G.Resenal) Berichte d.deutschen Chem.Ges. 76, 1944.
19) Über die Verwandtschaft von Silicium- und Kohlenstoffchemie. Die Chemie 56, 256, 1943.
20) Einige neue Halogenide des Siliciums. VI.Mitteilung. Formel und Konstitution eines Silicosebasinsäure-Derivates. (Mit Chr. Deuders) Zeitschr.f.anorg.Chemie. (in Druck) 1944/45.

Der wesentliche Inhalt der wichtigeren dieser Arbeiten ist folgender:

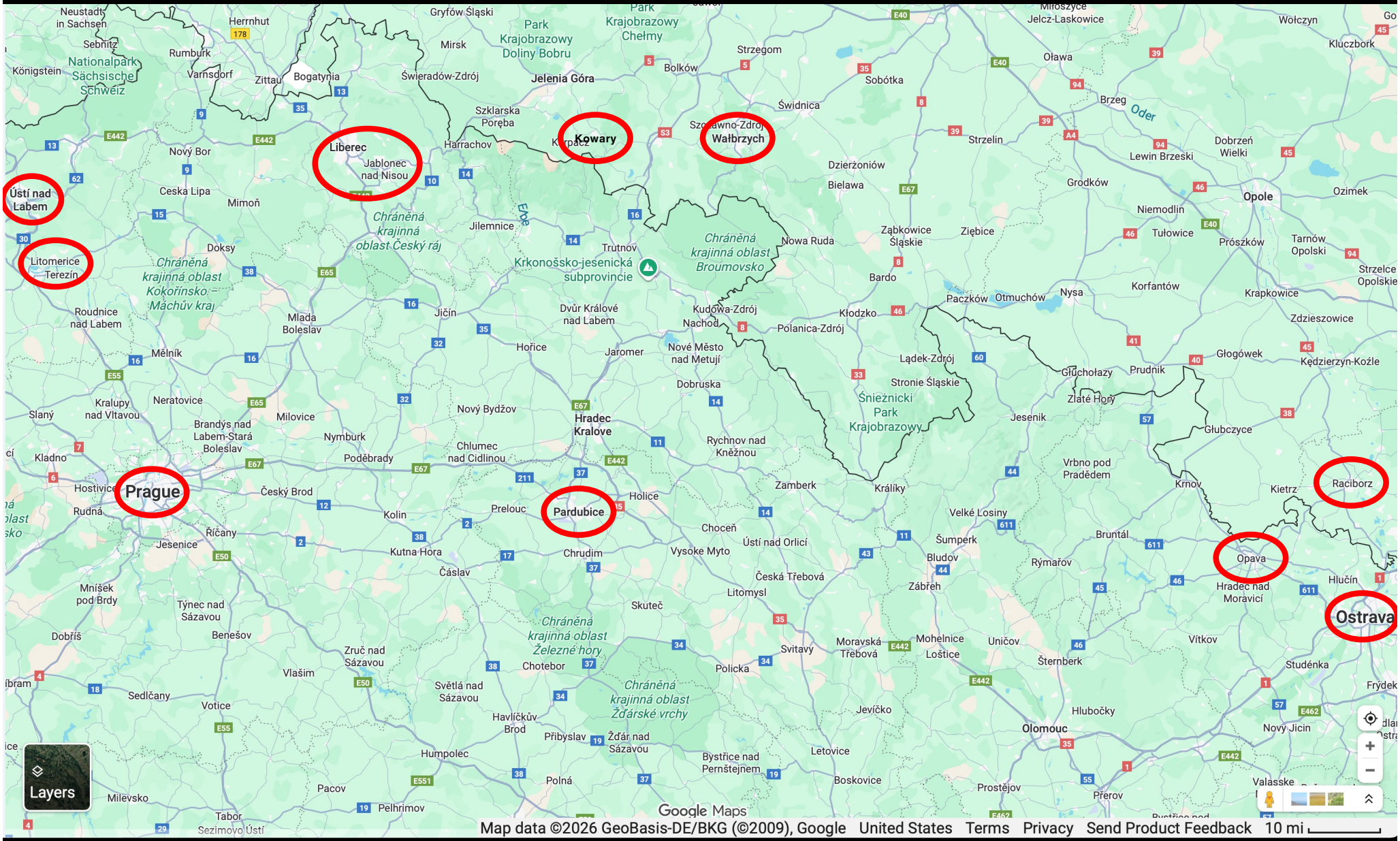
Zu 1). Das von mir 1937 entdeckte Bromoxyd BrO_2 zerfällt bei Erwärmung unter Disproportionierung in zwei neue Oxyde, von denen das eine braun gefärbte isoliert und als Brommonoxyd Br_2O festgestellt wird. Die Eigenschaften dieses neuen einfachsten Bromoxyds werden studiert.

Zu 2): Bei der Verarbeitung des 1937 von mir entdeckten hohen Siliciumchlorids $Si_{10}Cl_{22}$ unter Normaldruck bei 300° entsteht ein fester gelber Rückstand, der als Siliciummonochlorid SiCl erkannt wird. Es ist ein polymerer hochmolekularer Stoff, amorph und unlöslich in allen Lösungsmitteln. Beim Erwärmen auf 180° macht er eine reversible Farbänderung nach orangerot durch. Er wird als langkettige Verbindung mit alternierenden Doppelbindungen aufgefasst. Dementsprechend zerfällt er bei Hydrolyse und Ammonolyse unter Kettensprung in Abkömmlinge mit 6 und 8 Si-atomen, z.B. mit NH_3 in $Si_6(NH)_2(NH_2)_6$.

Zu 3): Eine Zusammenfassung meiner über 25 Jahre sich erstreckenden Arbeiten auf dem Gebiete der Siliciumchemie.

Zu 7), 8), 14), 16): Die Erfolge mit dem Abschreckrohr in der Siliciumchemie führen zu Versuchen auf organischem Gebiet.

Schmiedeberg/Kowary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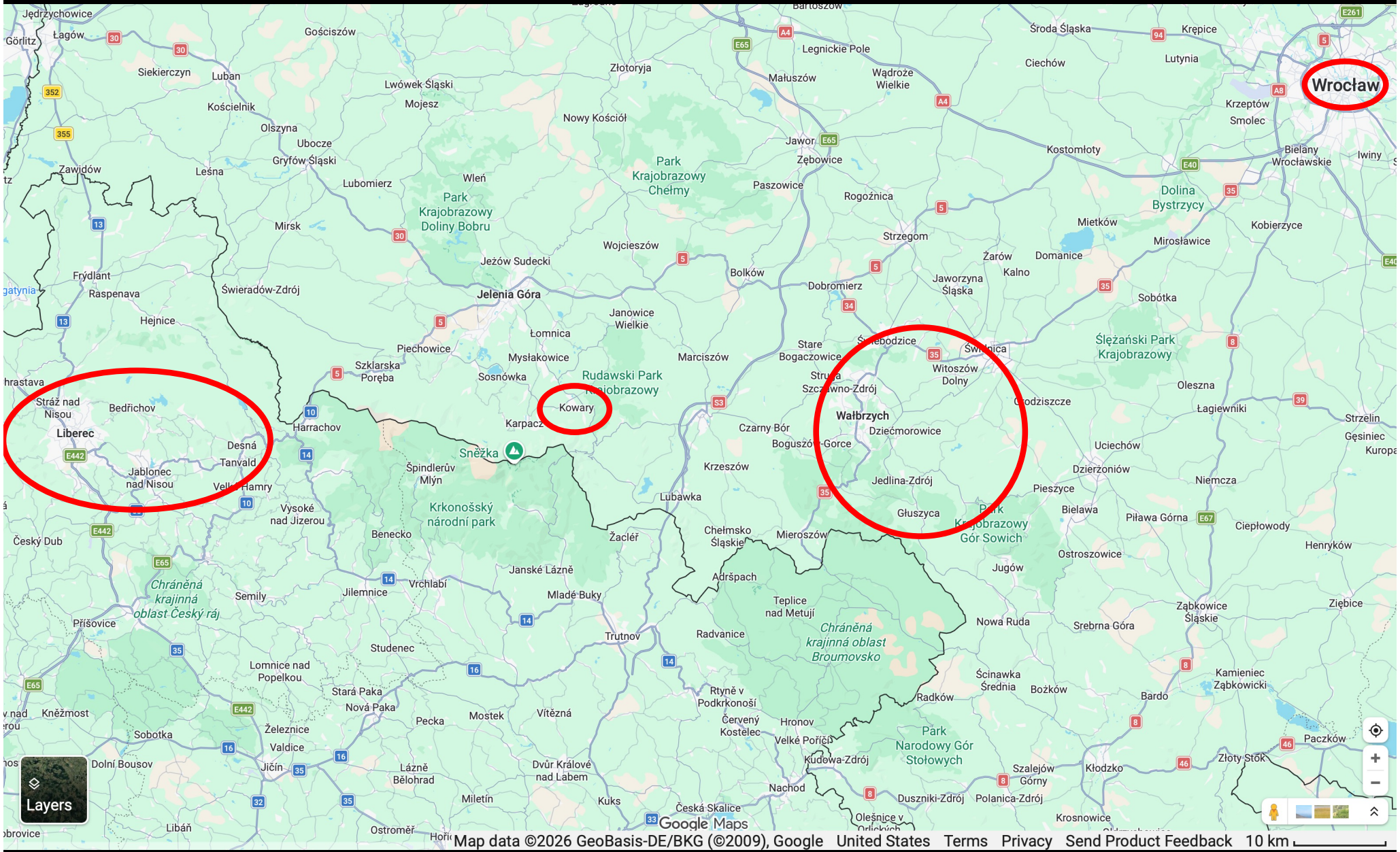
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Kowary
Wałbrzych
Jelenia Góra
Liberec
Sněžka
Rudawski Park Krajobrazowy
Park Krajobrazowy Chełmy
Park Krajobrazowy Doliny Bobru
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Park Narodowy Gór Stołowych
Ślężański Park Krajobrazowy
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Memorandum • UNITED STATES GOVERNMENT

SECRET

TO : Major F.J. Smith

DATE: 1 October 1945

FROM : H.S. Lowenhaupt

SUBJECT: OCE Report "German supplies of uranium-bearing raw materials":

1. War production at Joachimsthal was 15 to 25 tons of U_3O_8 per year. This was the only war source of new ore.

2. An unidentified mine in Portugal was bought by the Germans but resulted in no significent production.

3. There is reported some 700 tons of proved ore bearing 2% or 14 tons of U_3O_8. Attempted production by the Germans apparently failed.

4. Small veins carrying silver and uranium minerals occur in association with iron deposits at Schmiedberg. They yielded 9 tons between 1927 and 1930.

5. Pitchblende has been produced in small amounts from lead silver veins at Freiberg.

6. Pitchblende has been produced in small amounts from nickel cobalt ores at Schneeberg.

7. There has been practically no production from French continental sources.

8. Our files carry considerable more detail on each of these points.

Henry L. Lowenhaupt

Office Memorandum • UNITED STATES GOVERNMENT

TO : General Groves

DATE: 21 August 1945

FROM : Major Smith

SUBJECT: Polish Radio Broadcast - 18 August 1945.

The following intercepted radio broadcast from Lublin, Poland, is of interest:

> "At a conference in which Minister of Finance, Health and Education Debowski participated has taken place in which it was decided to raise a fund for atomic research. A committee for a fund for atomic research will be established shortly and this committee will consist of a delegate of the government and representatives of Polish science and communities.
>
> The Lord Mayor of Warsaw appealed to the people of Warsaw to raise the fund. It has been reported that uranium has been found near Krzyzowka in Lower Silesia and also large quantities of uranium have been found in zinc blend. Layers of these are found in Silesia.

S-

SMITH

TOP SECRET

TS-100842-b
cy#1

CENTRAL INTELLIGENCE AGENCY
WASHINGTON 25, D. C.

21 March 1955

MEMORANDUM FOR: Mr. Gerard C. Smith
Dr. A. K. Brewer
Col. Geo. E. McCord

SUBJECT: Section 73 (Atomic Energy) NIS 26 (USSR).

1. Attached for your review is the Atomic Energy Section of NIS 26, USSR. This is the result of the revision of a draft originally distributed to you in December 1954.

2. It is requested that any suggested changes be presented as soon as possible so that a discussion aimed at coordinating this NIS might begin on or about 6 April.

3. After coordination, an edited draft will be prepared by the Production Staff/OSI, and a copy will be distributed to you. It is requested, that the attached draft and the December draft be returned to Nuclear Energy Division at that time.

F. A. Valente
F. A. VALENTE

Attachment
Chapter 7 - NIS 26
Section 73 (Atomic Energy)
#3

SPECIAL ASSISTANT TO THE SECRETARY
S/AE
MAR 23 1955

c. Polish Sources

(1) Ore deposits -- The uranium deposits in Lower Silesia in Poland are of minor importance as a Soviet source of uranium, and constituted approximately 1 per cent of the total produced by the Soviets in 1954.

Soviet uranium mining operations were initiated in Poland in April 1947, but intensive development did not really begin until early 1948. The initial development was in the Kowary area (the old Schmiedeberg area exploited by the Germans) where uranium was produced before the war, and activities have spread to areas around Jelena Gora (Hirschberg), Miedzianka (Kupferberg), Kamienna Gora (Landeshut), Walbrzch (Waldenberg) Stronie Slaskie (Seitenberg), etc.

Exploration is also underway in other areas, but Kowary still seems to be the main producing area.

The uranium deposits in Poland are small fissure veins consisting, in some cases, of martitic iron ore with associated pitchblende. Other veins contain barite and dolomite with some uranium minerals. The extent of the mineralization appears to be somewhat limited but the thoroughness with which the Soviets exploit the deposits, regardless of cost, may produce a small quantity for several years. The quality of the ore produced is not definitely known but is assumed to be the same as that produced in East Germany.

(2) Operations -- The Soviet uranium mining operations in Poland are similar to those in East Germany. Concentrating plants are believed to be operating at Miedzianka and Ogorzelec (Dittersbach). The type of process used in these plants is not definitely known, although it is reported that the plant near Ogorzelec uses a mechanical separation process.

The uranium mining operations in Poland are administered by the Lower Silesian Mines, Kowary. This is believed to be a cover organization similar to Wismut, in East Germany, on a much smaller scale. It is estimated that from 6,000 to 10,000 workers are engaged in the uranium mining activities in Poland.

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FOREIGN INTELLIGENCE SUPPLEMENT NO.1

TO

MANHATTAN DISTRICT HISTORY

BOOK I — GENERAL

VOLUME 14 - INTELLIGENCE & SECURITY

e. The ALSOS Mission had learned that 11 tons of crude sodium uranate had been delivered to the Radium Chemie Companie, of Frankfurt, from Wirtschaftliche Forschungsgesellschaft, in July, 1943, and that information prompted a contact with the Frankfurt firm on 25 April, 1945. The Radium Chemie Companie was found to be chiefly concerned with the extraction and refining of radium and mesothorium, and the preparation of luminous compounds for delivery to the Luftwaffe. Because of war damage to the plant buildings, business was being continued on a very restricted scale. Through questioning the Deputy Director of the firm it was learned that a stock of 11 tons of uranium products, ½ ton of Schmiedeberg ore and a few drums of monazite sand were on hand. That material was confiscated. In addition to the

material obtained, this operation proved to be of interest in providing evidence that the Joachimstahl mines were being worked and that the shortage of radium in Germany made it worth while to exploit the Schmiedeberg deposits(1) (App. B-26).

(1) Poor grade pitchblende deposits allied to Joachimstahl but in Silesia.

Appendix
B-26?

Nope, that
is still
classified!

SECRET

SECURITY INFORMATION

No.	Description	File Location

CIA
b (1)
b(3)

DELETED

Vladimir Rychly, NARA RG 38, Entry 98C,
Box 9, Folder TSC #2601-2700, 11 Feb. 1946:

The Germans put [uranium] mining on a high priority and only mining was done throughout the 6 years occupation. The ore was delivered by special planes to Germany and Austria.

Vladimir Rychly, NARA RG 38, Entry 98C,
Box 12, Folder TSC #3301-3400, 5 December 1946:

During the German occupation of Czechoslovakia, the Germans continued operations in this [uranium] mine to the very last moment.

Igor Witkowski, *The Truth About the Wunderwaffe* (2013), pp. 224-225, 326

Contrary to my own expectations, this chapter is completely different from the rest of the book. Perhaps this will surprise many readers, but I will not describe the history of German work on the breaking of the atom, since in available publications there are so many missing elements and even contradictions, that a consistent representation is difficult.

Initially I intended to begin this chapter with the statement that what one usually understands by calling to mind the "German nuclear programme" slogan, in reality had very little in common with work on an atom bomb. After all, the resources designated for this objective (which we know) were very modest in comparison e.g. to the USA; in contrast to this country the Germans never passed to the industrial phase. In short, any mention of a German atom bomb seems to be a misunderstanding and suggests an unawareness of the basic facts, mainly of the fact, that there was no equivalent of the American "Manhattan Project."

It was through such optics that I saw this aspect of history, before I began to collect and analyse materials on my own. When it had already come to this I found that I would never take full responsibility for the above statement—my optics had been subject to change… Instead of writing on what the "nuclear programme" was, I decided to write rather on what it was not and to clarify some common misunderstandings.

Above all, one should take into account that German research concerning nuclear technology was carried out by many **independent groups** of scientists, acting within the confines of various institutions (from particular institutes right up to the Post Ministry). A reflection of this was the large number of laboratories and research establishments, scattered all over the Reich. The problem lies among others in the fact that for certain we don't know about many of them and because of this, we do not know the full picture of German work, and certainly will never do so. There are simply too many of these "blank spots."

From talks which I once conducted with people who had been analysing this problem for many years on the basis of intelligence materials, I recall that the town of Torgau fulfilled a very important role in the German programme, where in 1944 in all probability a plant for enriching fissionable materials was constructed. It was "legended" as a water purification station. This issue finds in the meantime no reflection whatsoever in contemporary publications.

Similarly nobody mentions the role of the underground facility in Książ (Fürstenstein bei Waldenburg), although on the German plan the designation for that time for fissionable materials appeared—three circles overlying each other.

Completely omitted is the role of the nuclear research laboratory in nearby Kowary (Schmiedeberg), where an electrolytic installation for the production of heavy water was built at the end of the war and in a nearby underground facility lead plates 20-cm in thickness were found (!) as well as a number of tin pipes, probably made of cesium.

A similar, unexplained element is contained in a report from Polish Home Army Intelligence reproduced in part three. It suggests associations with some form of nuclear weapon—the term "lead chambers" appears, for assembly of some unspecified devices (mention of production carried out in the "Mittelwerk" facility in Thuringia even before assembly of the V-2 was commenced).

Another case: in 1995 the periodical "Przegląd Techniczny" ("Technical Review") reproduced a list of post-German facilities, located on Polish territory, mainly underground.[124] This was probably a document from the Ministry of Industry and Trade. It dates from 1953. Apart from such curiosities like e.g. the description of an underground facility, in which "lighting was arranged with the aid of phosphorizing walls," mention was made of: "An underground ammunition factory, in which the Germans conducted experiments on **atomic weapons**."

This is position no. 42.

In a column referring to the location was written: "administrative district Nowogard, town Marty (Sobótka)." Nowogard suggests the region of Szczecin, but I was unable to find either the town of Marty or Sobótka in this region—in 1953 many unofficial names still functioned, sometimes being changed several times. This case may be a good example of how difficult the unravelling of such mysteries may be. Later on I managed to clarify that the town of "Marty" never existed, but the name "Sobótka" was in use for a short period after the war, with regard to the present village of "Mosty" (previously: Speck). The underground facility is however completely inaccessible—being flooded.

A similarly secret nuclear research laboratory was mentioned

Linnes: rabe	26 April 45.	Under consideration for investigation. The assessors suggest that a fierce interrogator is required.	Research on nuclear phys. could have possessed 20 million volt deuterons cyclotrons but for destruction of the lab a few weeks ago. Almost completely destroyed.

Fragment of documentation regarding the "Operation Lusty" with a short description of one of the nuclear laboratories.

in the files of the so-called operation "Lusty," described further on.[125] It was destroyed shortly before the end of the war and located in the town of Linnessrabe or Linnesgrabe (one letter is almost illegible). Short description of this "target" suggests work on thermonuclear fusion—there is a mention of "20 MV deuterons cyclotron." In the report it was emphasised only that a "fierce" officer would be needed to interrogate possible personnel. This laboratory is also not described in any generally available materials and it is unknown what activity was taking place in it. Who can assure that there were not significantly more unknown elements in the German nuclear "programme"?

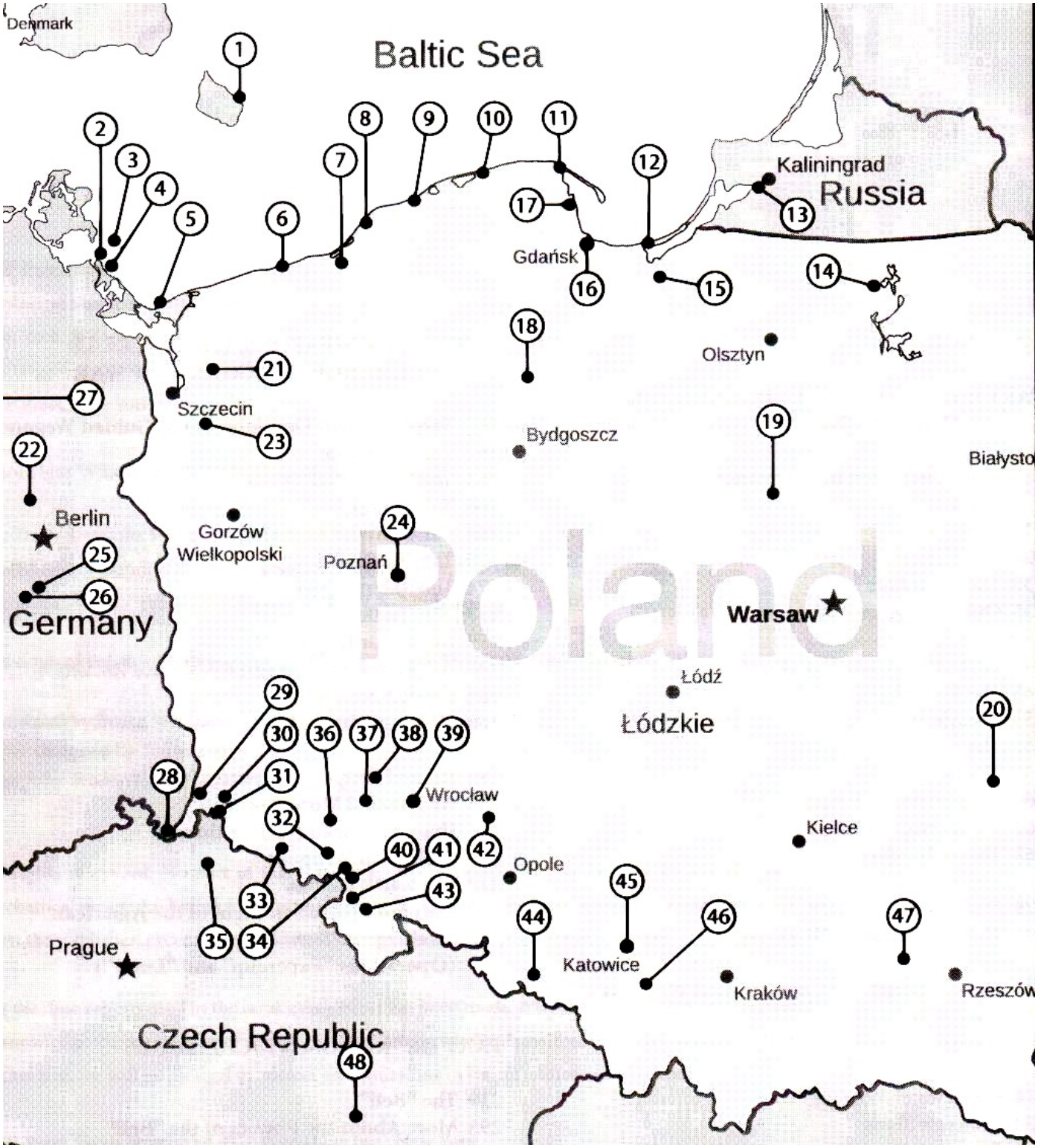
123 IPN / microfilm "Akta Bergeamt Waldenburg-Nord."

124 "Wykaz obiektów opuszczonych i niewłaściwie zagospodarowanych (stan na 13 lutego 1953 r.)," document reproduced in: "Przegląd Techniczny", June 11, 1995.

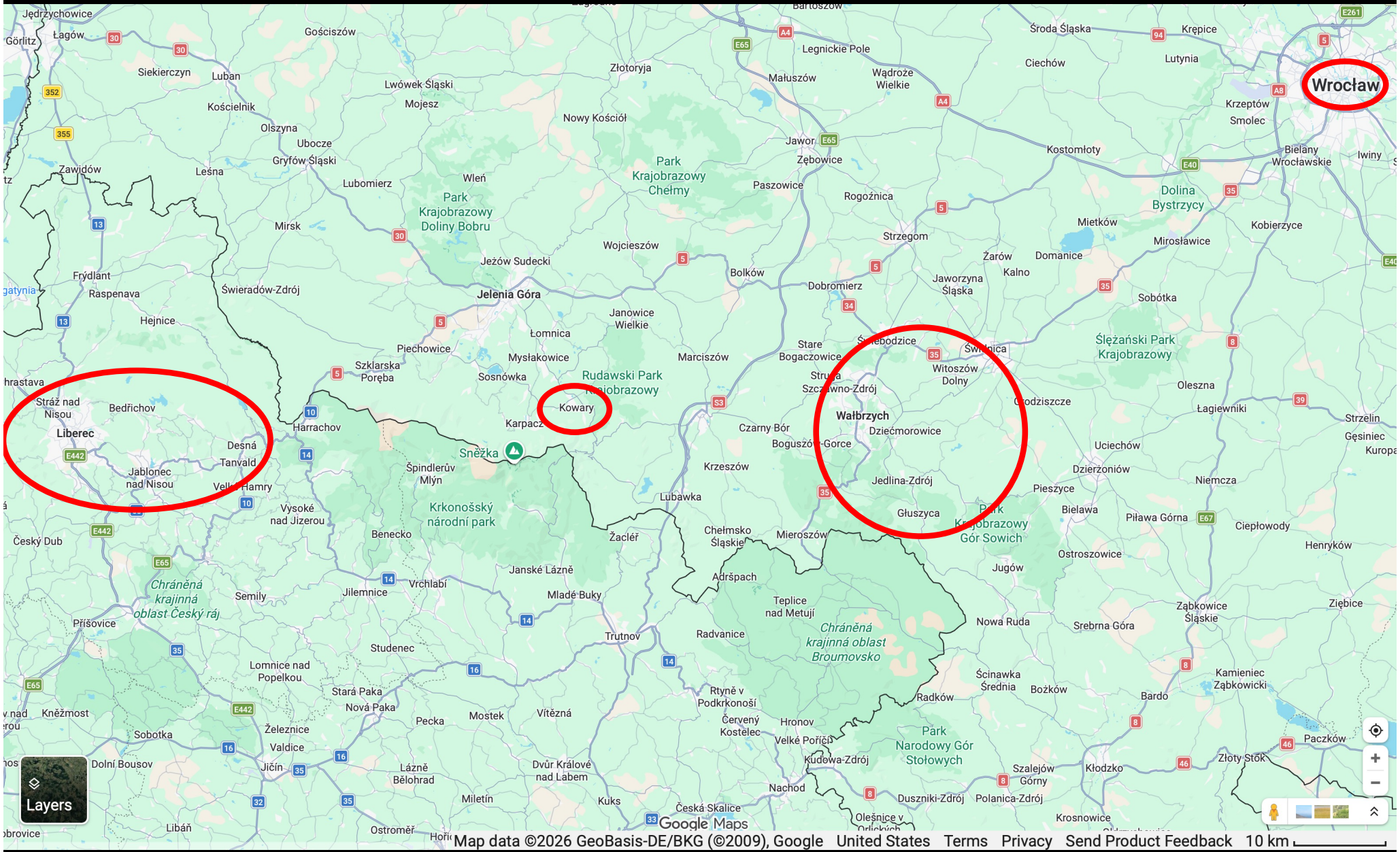
125 U.S. Air Force History Office/Bolling AFB, microfilm "Operation Lusty."

Does anyone have any additional information about R&D sites on this map from Igor Witkowski, *The Truth About the Wunderwaffe?*

1 Bornholm Island: "target" for the Rheinbote rockets
2 Peenemünde: V-1, V-2, etc.
3 Greifswalder Oie: tests of A-3 and A-5 rockets
4 Karlshagen: Elektro-Mechanische Werke, production of missiles
5 Międzyzdroje/Misdroy: V-3
6 Kołobrzeg/Kolberg: H. Coler
7 Koszalin/Köslin: long range missile schools
8 Darlowo/Rügenwalde: heaviest artillery test range, concrete ships
9 Ustka/Stolpmünde: firing range, also school for the crews of the new generation of submarines (T. XXI, XXIII)
10 Łeba/Leba: missile test range
11 Władysławowo/Grossendorf: experimental test range of the SS (detailed purpose unknown)
12 Stutthof concentration camp
13 Jesau: trials of the Hs-293 missiles
14 Kętrzyn/Rastenburg: Führer's main command post
15 Elbląg/Elbig: underwater silos for the V-2
16 Gdańsk/Danzig: stealth technology
17 Babie Doły, Oksywie/Hexengrund, Oxhöft: Kriegsmarine's evaluation centre. New types of torpedoes, midget submarines, propulsion systems
18 Bory Tucholskie/Tucholer Heide: V-1 and V-2 launch sites in the area near the Gacno village
19 The "Nord" test range: Schmetterling missiles
20 Majdanek concentration camp
21 Mosty/Speck: underground ammunition factory, also laboratory working on nuclear bomb
22 Oranienburg: nuclear laboratory (Auerwerke), also the Sachsenhausen concentration camp
23 Stargard, Miedwie Lake/Madüsee: tests of air-to-surface guided weapons
24 Pokrzywno/Nesselstadt: biological weapons
25 Kummersdorf: test range for tanks and artillery
26 Gottow: works on experimental nuclear reactor
27 Rechlin: weapon test centre of the Air Force
28 Zittau: Jägerstab
29 Zgorzelec/Görlitz, Łąki village: underground V-2 factory
30 Lubań/Lauban: GEMA-Werke
31 Leśna/Marklissa: V-2 engines factory (VDM)
32 Książ/Fürstenstein: Jägerstab's R&D dept., SS research
33 Kowary/Schmiedeberg: heavy water production plant, nuclear research facility, uranium mine
34 "Riesa" ("Riese"): underground complex, not finished
35 Zelezny Brod: command planning centre for the "guided, strategic weapons," not finished
36 Gross-Rosen concentration camp
37 Środa Śląska/Neumarkt: Wehrmacht's laboratories
38 Brzeg Dolny/Dyhernfurth: chemical weapons
39 Wroclaw/Breslau: Rheinmetall plant and other objects
40 Ludwikowice/Ludwigsdorf: underground complex dedicated to weapons of mass destruction
41 Ścinawka Średnia/Mittelsteine: production of V-1 and V-2 components
42 Namysłów/Namslau: infrared technology
43 Kłodzko/Glatz: production of components for the V-1 (AEG)
44 Racibórz/Ratibor: graphite productions for nuclear research (Siemens)
45 "Udetfeld" (Mierzęcice): ME 163
46 Oświęcim/Auschwitz concentration camp
47 Blizna: V-1 & V-2 tests
48 Brno/Brünn: SS research and development



“Der Riese”/“The Giant”
Eulengebirge/Góry Sowie/Owl Mountains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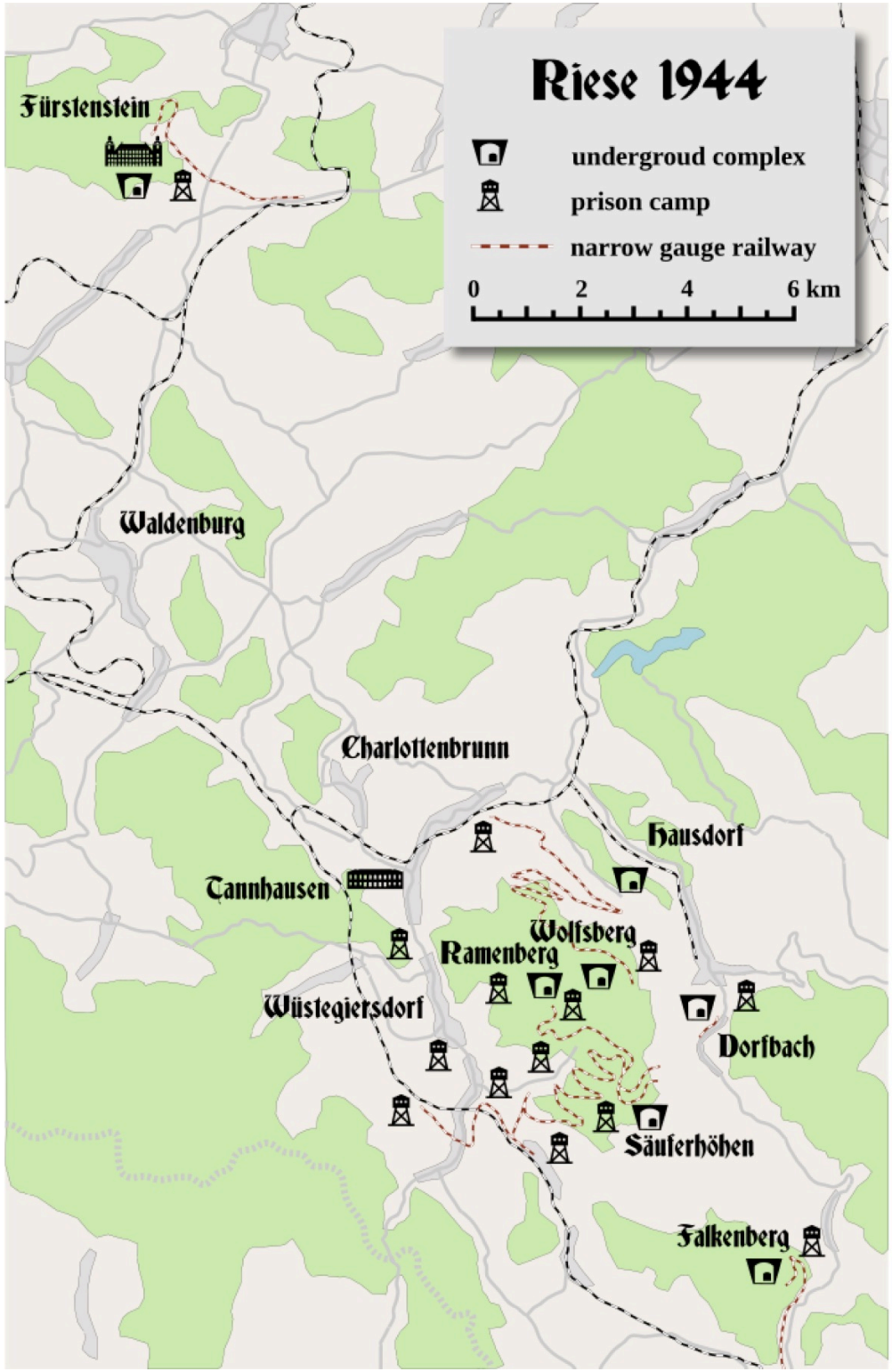
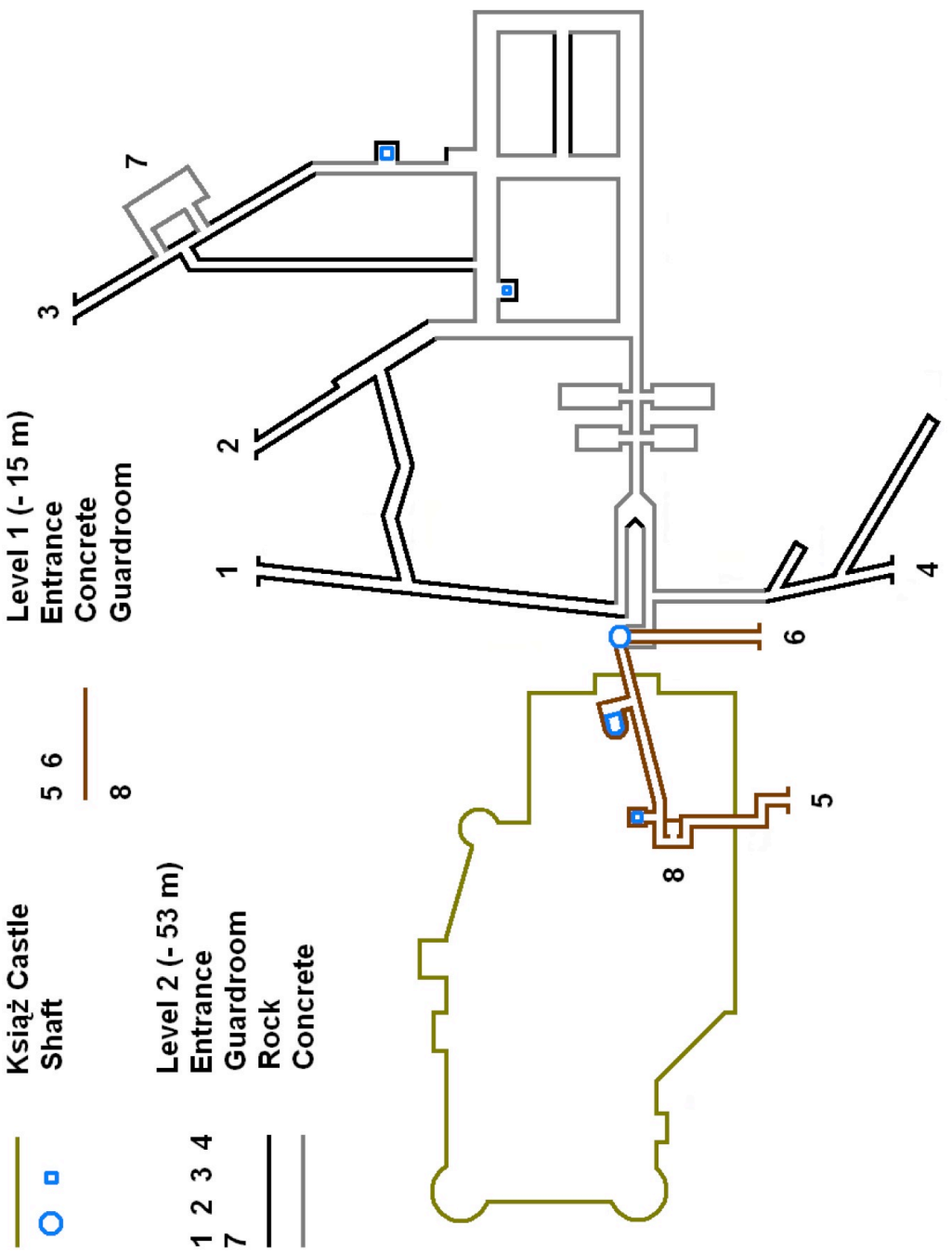
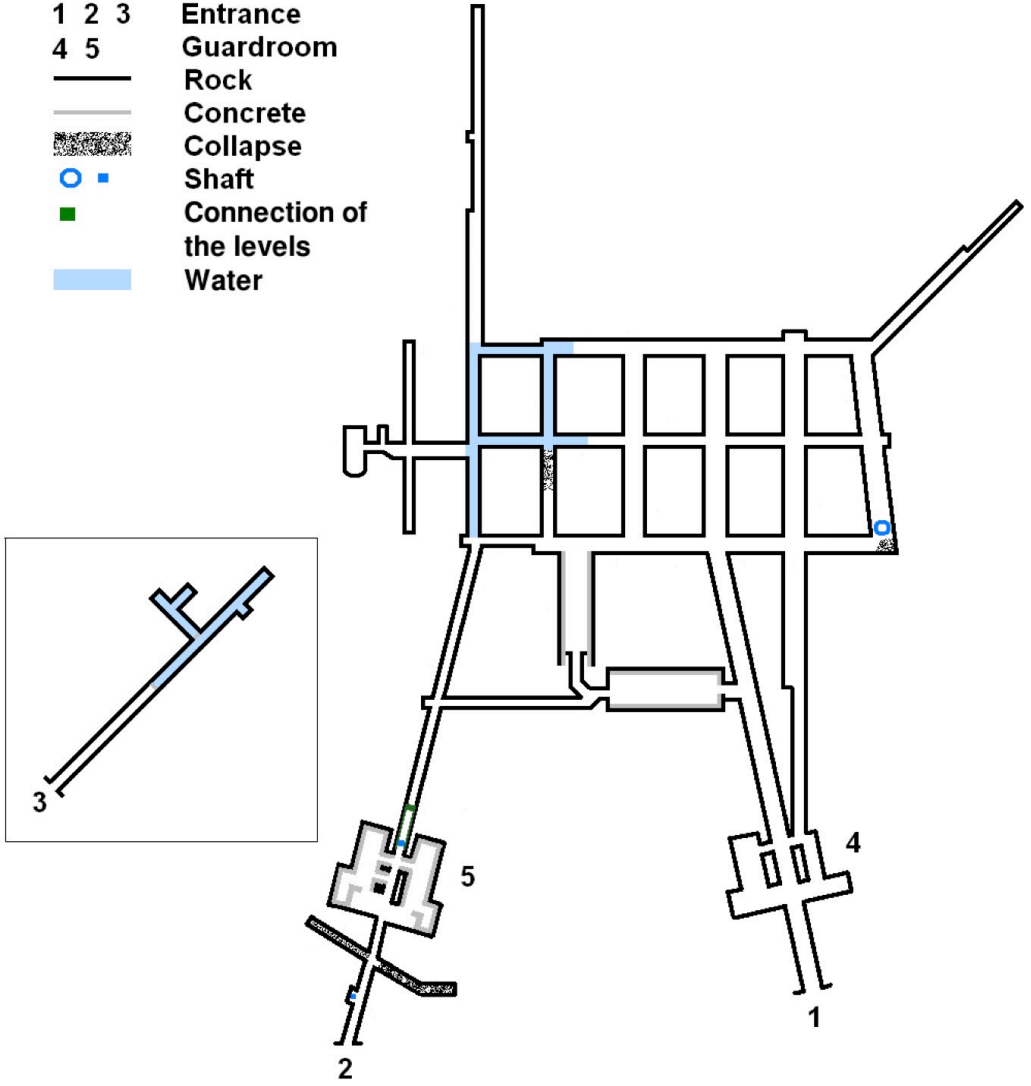
10 km


Riese 1944
undergroud complex
prison camp
narrow gauge railway
0
2
4
6 km
Fürstenstein
Waldenburg
Charlottenbrunn
Hausdorf
Tannhausen
Wolfsberg
Ramenberg
Wüstegiersdorf
Dorfbach
Säuferhöhen
Falkenberg

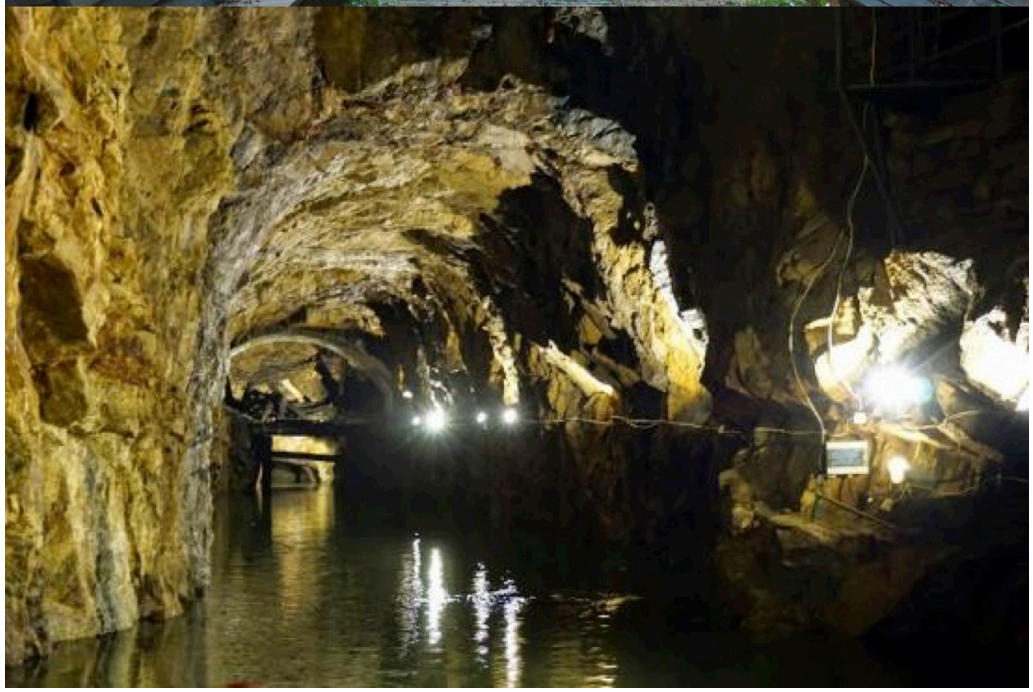
Schloss Fürstenstein/Książ Castle and Tunnel Complex

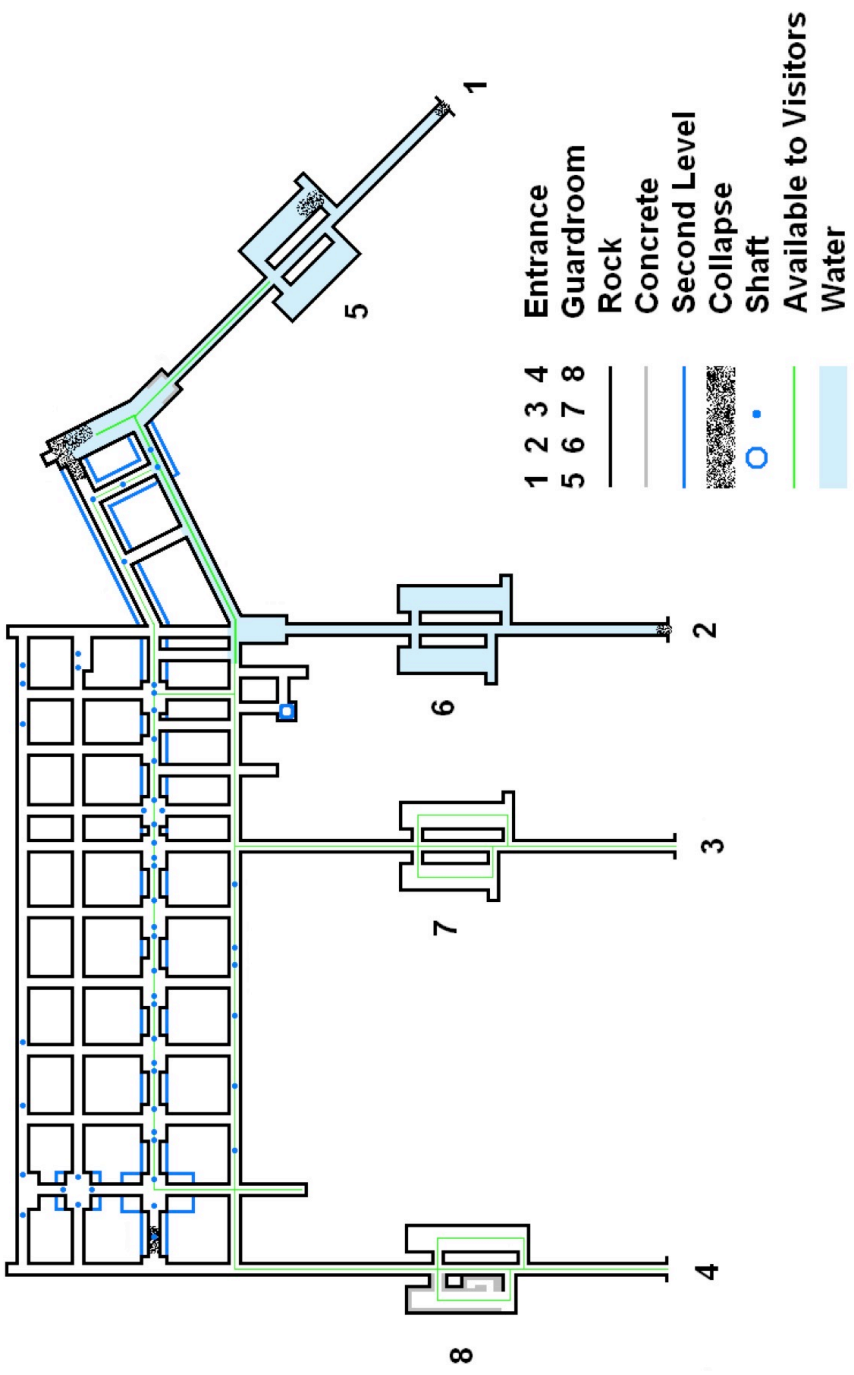


Säuferhöhen/Osówka Tunnel Complex

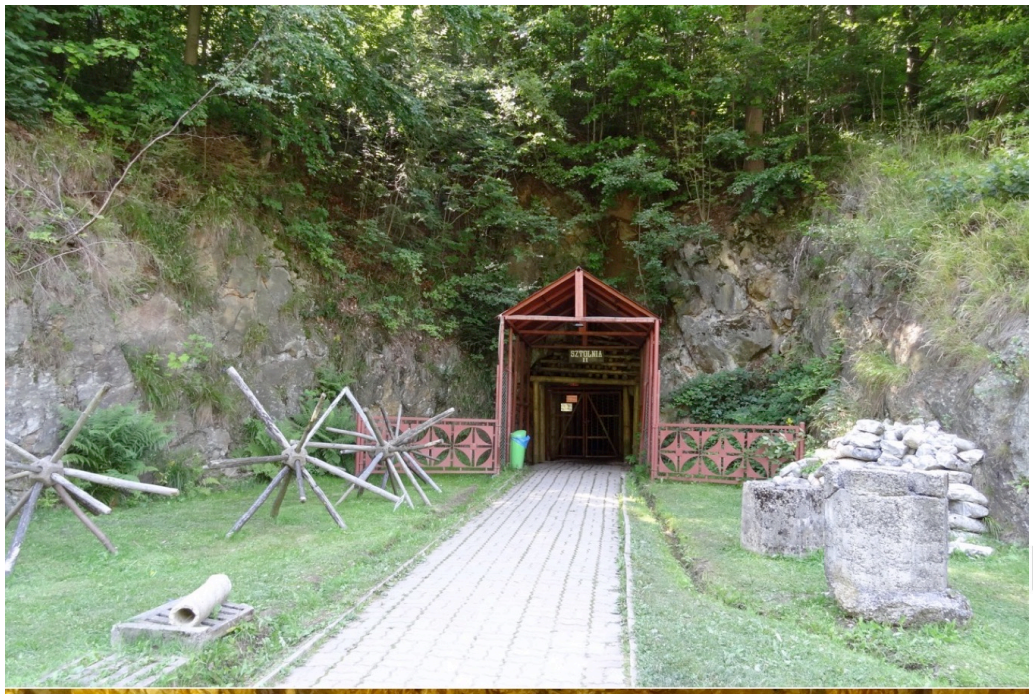


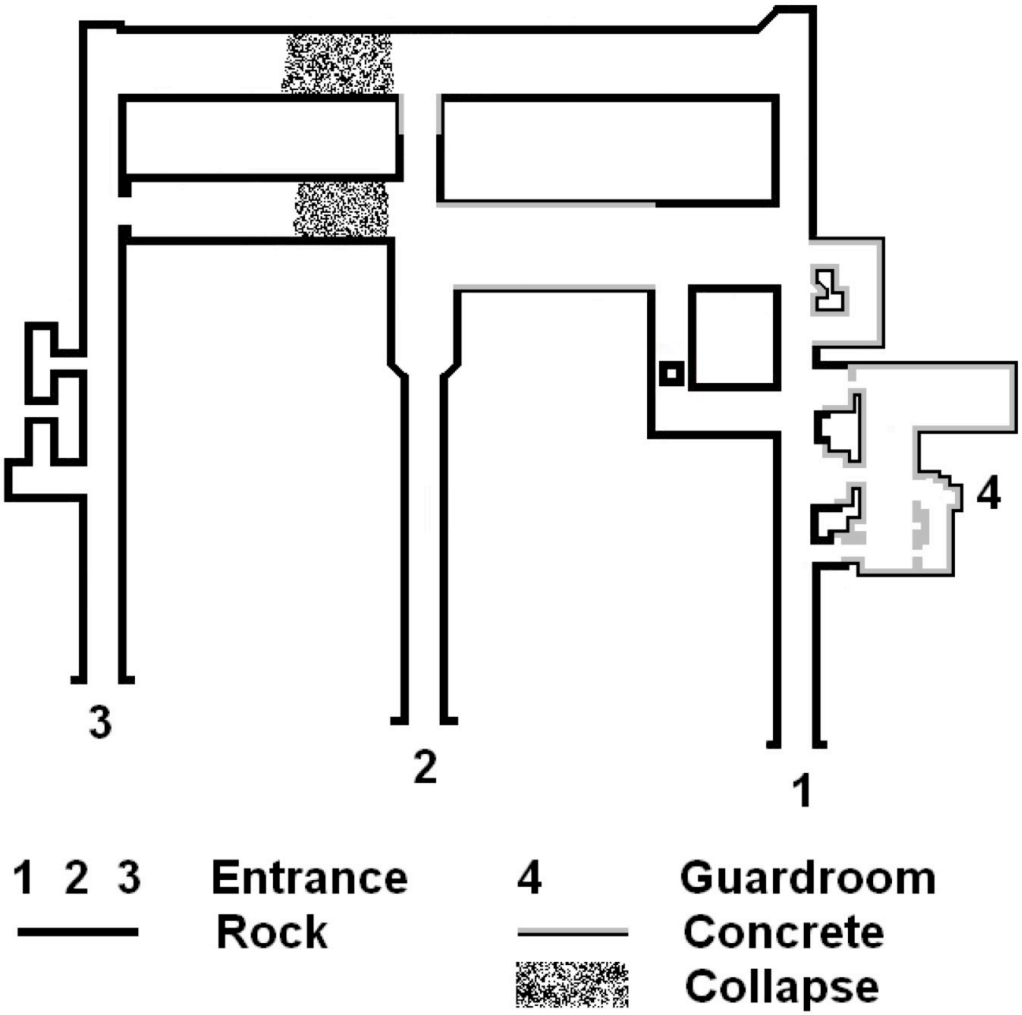
Wolfsberg/Włodarz Tunnel Complex





Dorfberg/Rzeczka/Walim Tunnel Complex





Werner Grothmann, p. 39:

Originally, Himmler had ordered that research and development work be carried out as inconspicuously as possible alongside other known projects. As more and more factories were destroyed or threatened by bombing raids, it was decided to set up underground facilities. Existing facilities that had been planned for completely different purposes were also used for this purpose. We were also very interested in mines, which were sometimes well suited to our purposes and, above all, could often be used without great expense. There was then no major outbreak that enemy aerial reconnaissance could have detected. As I recall, in 1944 there were eight facilities under our [SS] control, each working on different projects. Only two of them were above ground; all the others were located in mines or other artificial facilities. Not all of them were as large as the one you are interested in in Thuringia. "Riese" is comparable, but it was never completed either. Rüdiger [Waldenburg, Silesia] in terms of its significance, but not in terms of size, then Amt 2000 [near Gross-Rosen, Silesia?], which the Reichspost built in conjunction with us, then two facilities in the Protectorate and the Sudetenland. One of them is still completely intact today. In addition, three plants were in operation in Austria, working under our control with the most advanced technology for the "final victory." But these were all projects in which industry was involved in one way or another. Whether it was providing skilled workers or their special technical expertise. Of course, they also supplied individual parts or components for prototypes or for testing. That was no problem, because you cannot tell from a piece of metal what it is used for.

Werner Grothmann, p. 52:

When you mention Picker, I can only say that since the fall of 1944, there have been high expectations at the Führer's headquarters that the atomic project is progressing well. As far as I know, this has been reported to the Führer. [...] So if Picker actually mentions this large number of workers for the series production of the atomic bomb, I am not aware of it. I only know that there was talk of where the bombs were to be manufactured in shifts, but not exactly how many people were planned to work there. The facility was probably one of the largest underground facilities of its kind, apart from the large ones at Riese and near Mühldorf or Landsberg. It was completed very early on. Kammler's only remaining goal was to create underground connections and, when rocket production was planned, to blast out a few more caves. I believe that was also completed.

Werner Grothmann

[S. 31] Wie die im einzelnen funktionieren sollten, kann ich nicht sagen, es gab aber drei unterschiedliche Stoßrichtungen: Erstens die Uranbombe, das war Ohnesorges Leib- und Magen-Thema und an dem hat auch Diebner gearbeitet. Zweitens die Plutonium-Waffe, zu der hat Ohnesorge Grundlagen erarbeiten lassen und dazu ist auch in Österreich geforscht worden, neben anderen Richtungen. Man hat übrigens auch die Verwendung weiterer Materialien neben dem Plutonium erforscht. Drittens die Wasserstoffbombe. Zu der hat man auch gearbeitet, das war nach meiner Kenntnis eher ein akademisches Projekt und Himmler hat mal in kleinstem Kreis erwähnt, dass der erste Prototyp davon frühestens zwischen Juni und Oktober 1946 kommen könnte.

[S. 31] I cannot say exactly how they were supposed to work, but there were three different approaches: First, the uranium bomb, which was Ohnesorge's pet project and which Diebner also worked on. Second, the plutonium weapon, for which Ohnesorge had the fundamentals worked out and which was also researched in Austria, among other places. Incidentally, research was also conducted into the use of other materials besides plutonium. Third, the hydrogen bomb. Work was also done on this, but to my knowledge it was more of an academic project, and Himmler once mentioned in a very small circle that the first prototype could be ready between June and October 1946 at the earliest.

[S. 40–42] Es gab klare Erkenntnisse, dass nicht alleine das Uran als Sprengstoff dienen konnte sondern auch Plutonium und weitere Stoffe, da kenne ich mich aber noch weniger aus als bei diesen Bezeichnungen. Jedenfalls ist wohl 1943 klar geworden, dass man mit Plutonium eine große Sache machen kann. Es war aber so, dass die Erzeugung ganz schwierig sein würde. [...] Ich habe ja schon über Himmlers Kontakte zu Ohnesorge gesprochen. Wahrscheinlich hat er auch aus dieser Quelle über die besondere Bedeutung von Plutonium erfahren, das weiß ich aber nicht genauer. Wichtig ist aber, dass dann später, als wir uns in die Forschung eingeklinkt hatten, auch versucht worden ist, Plutonium herzustellen, auch ohne einen Reaktor. Ich kann dazu nur sagen, das, was ich dazu heute noch weiß, habe ich erst ganz kurz vor Kriegsende erfahren und es sind auch nur einige Teile von dieser Sache, weil mich das ja auch nicht im Amt betraf, mit Ausnahme von besonderen Maßnahmen, die ich im Auftrag von Himmler persönlich übernehmen musste. Aber da hat mich auch niemand von den Fachleuten informiert sondern ich hörte nur mal so Andeutungen.

[pp. 40–42] There was clear evidence that not only uranium could be used as an explosive, but also plutonium and other substances, but I know even less about those than I do about these terms. In any case, it became clear in 1943 that plutonium could be used to achieve something big. However, it was also clear that producing it would be very difficult. [...] I have already talked about Himmler's contacts with Ohnesorge. He probably also learned about the special significance of plutonium from this source, but I do not know for sure. What is important, however, is that later, when we got involved in the research, attempts were also made to produce plutonium without a reactor. All I can say is that what I know about this today is what I learned shortly before the end of the war, and it is only part of the story, because it did not concern me in my official capacity, with the exception of special measures that I had to take on behalf of Himmler personally. But no one from the experts informed me about this; I only heard hints here and there.

Es war jedenfalls so, dass versucht worden ist, Plutonium zu erzeugen, ohne dass man den Reaktor hatte. In der Theorie war das möglich, wie man Himmler erklärt hatte, in der Praxis so gut wie unwahrscheinlich. Zum Beispiel fehlten dazu erst mal die Geräte. Es hat aber Versuche gegeben, im Labormaßstab, also da sind in kleinstem Maßstab Versuche gemacht worden Plutonium herzustellen. Man muß sich das so vorstellen, dass die Ergebnisse, die man erzielen wollte, nur unvorstellbar geringe Mengen erbracht hätten, vielleicht so Milligramm oder noch weniger. Es ging ja erst mal auch nur darum zu sehen, ob die Theorie stimmt und ob das überhaupt klappen würde. Ich hörte dann mal, dass man das vor allem in Österreich versucht hatte, dass die Physiker aber enttäuscht waren, weil es eben nicht ging, Ich weiß nicht woran es lag, das habe ich nicht erfahren, es gab aber dazu Besprechungen: Im Sommer 1944, als sich die Uran-Geschichte schon ordentlich entwickelt hatte sind dann entschiedene Maßnahmen vorgenommen worden, weil es dann doch Hinweise darauf gegeben hatte, dass man Plutonium herstellen könnte, wenn auch mühsam und mit sehr geringen Mengen. Es hat dazu von Himmler den Auftrag gegeben, unsere technischen Möglichkeiten zu nutzen, um die ersten Geräte dafür zu bauen. Die Konstruktionszeichnungen dafür waren aber nicht von unseren Leuten. Die erste Anlage, wo dieses Material hergestellt werden sollte, ist nicht weit von Stettin eingerichtet worden. Später erfuhr ich, aber das war schon in den letzten Kriegstagen, gerade bevor wir von den Engländern festgehalten wurden, dass auch noch eine zweite Anlage für den Zweck errichtet worden war, die war nordwestlich im Harzvorland. Was aus der wurde, kann ich nicht sagen. Die Anlage bei Stettin ist nach meiner Kenntnis nicht mehr in Betrieb gegangen, weil die Geräteausstattung nicht fertig wurde und weil die Leute, die das machen sollten, nicht mehr alle zusammenzubringen waren. Außerdem gab es dann ja doch Bedenken, gerade in dem Raum die Sache zu machen, weil es bis in den Herbst hinein nicht gelungen war, den Vormarsch der Sowjets aufzuhalten. Über die Probleme, die Front zu stabilisieren ist ja offiziell nicht gesprochen worden, also ich meine von den politisch Verantwortlichen in der Öffentlichkeit, intern waren wir aber schon sehr darauf bedacht, dass wir mit allen Eventualitäten rechnen mussten. Deshalb könnte es auch so gewesen sein, dass die vielleicht halbfertige Anlage dort ganz bewusst nicht mehr an dieser Stelle fertiggestellt werden sollte, weil die Gefährdung doch langsam sichtbar wurde. Das ist aber nur eine Spekulation von mir.

In any case, attempts were made to produce plutonium without having a reactor. In theory, this was possible, as had been explained to Himmler, but in practice it was highly unlikely. For example, the necessary equipment was lacking. However, there were attempts on a laboratory scale, i.e., experiments were conducted on a very small scale to produce plutonium. One must imagine that the results they wanted to achieve would have yielded only unimaginably small quantities, perhaps milligrams or even less. At first, it was just a matter of seeing whether the theory was correct and whether it would work at all. I heard that attempts had been made primarily in Austria, but that the physicists were disappointed because it did not work. I do not know what the reason was, I never found out, but there were discussions about it: In the summer of 1944, when the uranium story had already developed considerably, decisive measures were taken because there were indications that plutonium could be produced, albeit laboriously and in very small quantities. Himmler gave the order to use our technical capabilities to build the first devices for this purpose. However, the design drawings for this were not made by our people. The first plant where this material was to be produced was set up not far from Stettin [now Szczecin, Poland]. Later, but that was already in the last days of the war, just before we were captured by the British, I learned that a second plant had also been built for this purpose, northwest of the Harz foothills. I cannot say what became of it. To my knowledge, the plant near Stettin never went into operation because the equipment was not ready and because it was no longer possible to bring together all the people who were supposed to do the work. In addition, there were concerns about doing this in that particular area, because by the fall it had not been possible to stop the Soviet advance. The problems of stabilizing the front were not officially discussed, at least not by the political leaders in public, but internally we were very aware that we had to be prepared for all eventualities. That may be why the half-finished facility there was deliberately not completed at that location, because the danger was slowly becoming apparent. But that is just my speculation.

Zu dem Standort kann ich sagen, man hat ihn ausgesucht, weil ja eine Technikerschule in der Nähe war und weil dort Leute ausgebildet wurden, die in enger Abstimmung mit ihren Lehrkräften auch sehr komplizierte Dinge zustande brachten. Dann muß man auch sehen, dass die Entfernung bis Berlin nicht so sehr weit ist. Ohnesorges Leute hätten also schnell hinkommen können. Außerdem hatte die Reichspost in der Nähe eine eigene ganz geheime Forschungseinrichtung, zu der ich aber nichts weiß. Die Maschinenanlage für die Plutonium-Sache ist von österreichischen Firmen und im Protektorat hergestellt worden. Das war so, weil es ja bessere Kontakte österreichischer Wissenschaftler zu ihren eigenen Firmen gab, die arbeiteten übrigens hervorragend. Ich erinnere mich, mir hat ein Kamerad nach meiner Entlassung aus alliiertem Gewahrsam, wie es so schön heißt, berichtet, wie die Amerikaner bei dem Besuch einer österreichischen Maschinenfabrik, wo schon Ungewöhnliches lief, ganz überrascht waren und das, was sie da sahen, nicht glauben wollten. Also, die Österreicher haben zugeliefert und Firmen im Protektorat. Wer es im einzelnen war, kann ich nicht sagen, es waren jedenfalls welche, die bei uns unter Vertrag standen. Ich hörte nur dass die gleich gesagt hatten, sie könnten keine Garantie dafür übernehmen, dass das was damit gemacht werden sollte, auch wirklich geht. Die Zeichnungen sind ja schließlich nach Angaben der Physiker gemacht worden und die sagten wohl, so ungefähr müsste es gehen. Es war aber keine Zeit mehr, erst mal alles langwierig auszuprobieren, als man festgestellt hatte, dass es grundsätzlich ja gehen würde.

As far as the location is concerned, I can say that it was chosen because there was a technical college nearby and because people were trained there who, in close cooperation with their teachers, were able to accomplish very complicated things. Then you also have to consider that it is not very far from Berlin. Ohnesorge's people could have gotten there quickly. In addition, the Reichspost had its own top-secret research facility nearby, but I do not know anything about that. The machinery for the plutonium project was manufactured by Austrian companies and in the [now Czech] Protectorate. That was because Austrian scientists had better contacts with their own companies, which, incidentally, did excellent work. I remember a comrade telling me after my release from Allied custody, as it is so nicely called, how the Americans were completely surprised when they visited an Austrian machine factory where something unusual was going on, and how they did not want to believe what they saw there. So, the Austrians and companies in the Protectorate supplied us. I cannot say who they were specifically, but they were certainly companies that we had contracts with. I only heard that they said right away that they could not guarantee that what was supposed to be done with it would actually work. The drawings were based on information provided by physicists, who said that it should work more or less as planned. However, once it had been established that it would work in principle, there was no time left to try everything out at length.

Werner Grothmann

Der Betrieb der Anlage sollte so organisiert werden, daß wir die Einrichtung stellen und auch den Bau der unterirdischen Räume. Die Techniker dort sollten sie für uns betreiben und die fachliche Aufsicht hätten Ohnesorges Leute bekommen. Wir wären am Ende für das erzeugte Material verantwortlich gewesen. Ich meine, kurz bevor die Sowjets kamen ist dann noch überlegt worden, alles abzubauen und in den Alpenraum zu bringen. Das ist aber nicht mehr gemacht worden. Vielleicht hat man die Zugänge getarnt. Das Wasser könnte dann den Rest übernommen haben. Nach dem Krieg habe ich dann mal gehört, wir hätten Material für eine oder zwei Plutonium-Bomben gehabt. Ich kann dazu nur sagen, dass ich das nicht glaube. Ich bin ja in dem Thema nicht drin. Wir haben nach meiner Kenntnis dazu nichts gehabt. Ob andere Gruppen irgendwo etwas erzeugt haben, weiß ich nicht, ich weiß aber, wie unglaublich schwierig das alles war. [...]

Ob von den Österreichern noch was konkret zum Plutonium gemacht worden ist, kann ich mir eigentlich nicht vorstellen, obwohl man manchmal so Gerüchte hörte.

[...] konnte uns die Plutonium-Waffe bessere Ergebnisse liefern, weil im Prinzip ein gleichgroßer Sprengkopf einen deutlich größeren Zerstörungsradius bringen würde.

The operation of the facility was to be organized in such a way that we [SS] would provide the equipment and also construct the underground rooms. The technicians there were to operate it for us, and Ohnesorge's people were to be responsible for technical supervision. In the end, we would have been responsible for the material produced. I think that shortly before the Soviets arrived, there were plans to dismantle everything and move it to the Alpine region. But that was never done. Perhaps the access points were camouflaged. The water could then have taken care of the rest. After the war, I heard that we had material for one or two plutonium bombs. All I can say is that I do not believe that. I am not familiar with the subject. To my knowledge, we did not have anything. I do not know if other groups produced anything somewhere, but I do know how incredibly difficult it all was. [...]

I cannot really imagine that the Austrians were successful with plutonium, although there were rumors to that effect at times.

[...] the plutonium weapon could give us better results because, in principle, a warhead of the same size would have a significantly larger radius of destruction.

[Grothmann's description certainly sounds like electronuclear breeding. It agrees well with other sources given throughout Section D.6, such as the manufacture of cyclotrons in the Czech Protectorate and Flerov's account of what may have been an electronuclear breeding facility in Silesia. (Details on both of those only came out after Grothmann's death, so his story appears to have been an independent confirmation.)

The details remembered by Grothmann are also highly consistent with the physics of electronuclear breeding, even though Grothmann was not a scientist.

Note that because of the extreme secrecy of the nuclear program, even Grothmann was unsure how much plutonium was produced by the end of the war.

As shown in Appendix C (p. 3054), numerous documents demonstrate that there was extensive work throughout the war on particle accelerators, which would have been highly suitable for electronuclear breeding.]

G. N. Frołow—Czemu interesujecie się niemieckimi badaniami atomowymi?

Flerov—Why are you interested in German atomic research?

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.

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.

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?

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—Chyba wszędzie, w Głuszycy, w Walimiu,

JR—I think everywhere, in Gluszyca, in Walim,...

GNF—Chwila, chwila, używajcie niemieckich nazw. Ja tak pamiętam, polskich nie znam.

Flerov—Wait, wait, wait, use German names. I remember it this way, I don't know any Polish names.

JR—To muszę je sobie przypomnieć: Wüstegiersdorf, Ludwigsdorf, Wüstewaltersdorf, Dörnau,

JR—Then I have to remember them: Wüstegiersdorf, Ludwigsdorf, Wüstewaltersdorf, Dörnau,...

GNF—A w miejscowości Rudolfswald byliście?

Flerov—Were you in Rudolfswald?

JR—Rudolfswald, to chyba Sierpnica. Oczywiście byłem

JR—Rudolfswald, I think it is Augustine. Of course I was.

GNF—Sierpnica? No nie wiem. W dokumentach ja potem chyba inną polską nazwę widziałem, coś od drzewa—Modrzew chyba. Powiedzcie co tam było?

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.736–D.735 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. 1024, 1025).

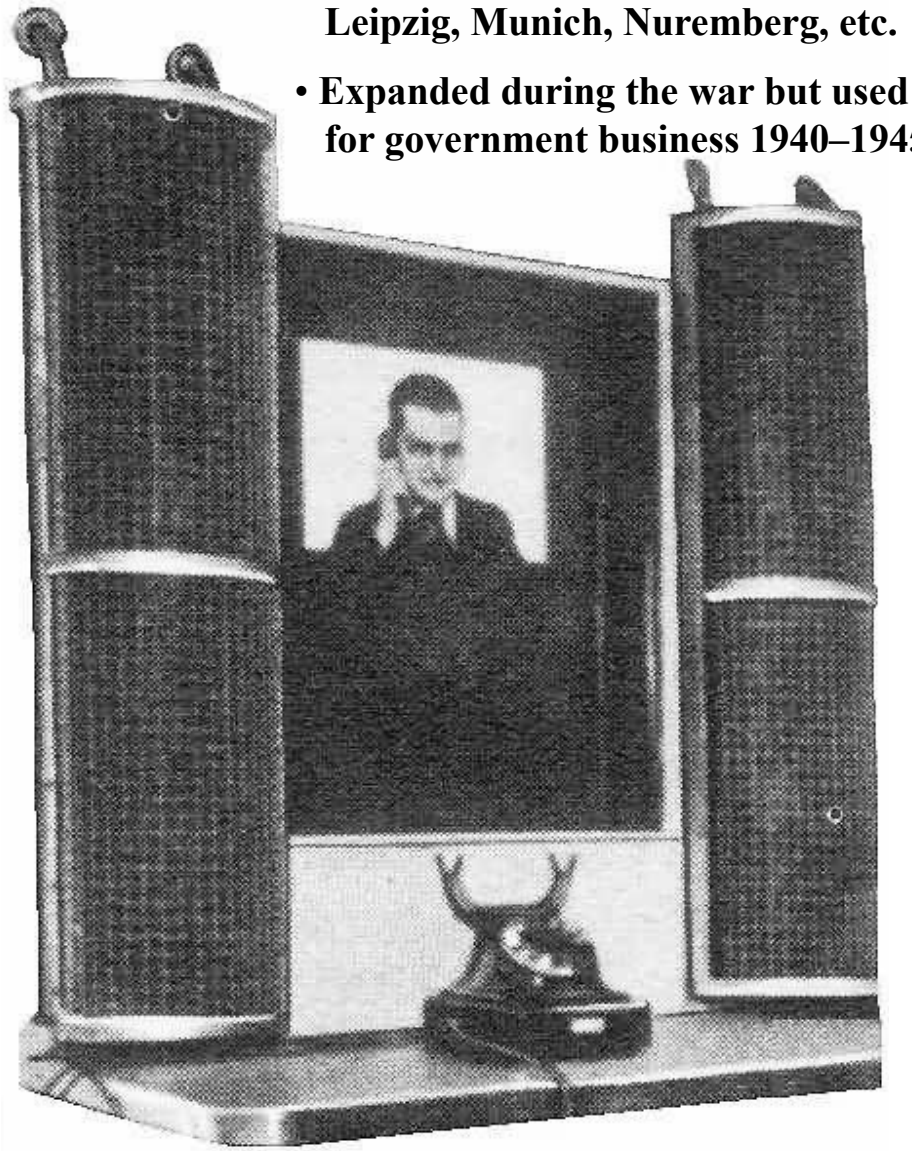
- Members of the specialized SS division that was conducting advanced nuclear work wore a strange emblem on their uniforms that even a German physicist has never seen before. Different parts of the SS had different emblems, but I am not aware of an example of what this one would have been. What was the 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?]

Georg Schubert (1900–1955) created and offered the first public video teleconferencing system (Fernseh/Reichspost, 1936–1945)

- **Two-way video and audio**
- **Broadband coaxial cable network**
- **Serving customers in Berlin, Hamburg, Leipzig, Munich, Nuremberg, etc.**
- **Expanded during the war but used only for government business 1940–1945**



Nearly three decades later, and after a massive postwar transfer of technologies from Germany, AT&T Bell Labs announced it had just then invented the "first" public video telephone system [*Look*, 11 Aug. 1964, p. 9]

A logical extension of today's telephone service...

Bell System introduces PICTUREPHONE service

Both ends of telephone conversations are pictured; people phone by appointment from family-type booths in attended centers.

■

New York (Grand Central Station), Chicago (Prudential Building), Washington (National Geographic Society Building) have service.

Bell System PICTUREPHONE service now lets callers *see* as well as talk on the telephone. And "hands-free" if they wish.

For the first time, people can make a visual telephone call to another city—the latest example of the research, invention and development that are constantly improving the communications we provide.

The new service is being offered in the cities listed at the left. Bell System attendants at each local center help callers enjoy prearranged face-to-face visits with friends or relatives in either of the other cities.

Further development of PICTUREPHONE service is still in the future. But the service is another step toward our goal of providing you with better, warmer, more nearly complete communication by telephone.

Bell System *Serving you*
American Telephone & Telegraph Co. and Associated Companies

only a general indication of the tonnage used in each.

	1938	1939	1940	1941	1942	1943	1944
Hot-Dip Galvanizing:							
Sheet:	13,000	10,000	10,000	10,000	12,000	15,000	13,000
Other:	65,360	83,020	97,670	107,490	85,900	67,250	60,430
Electro-Deposition:	1,400	1,700	2,000	2,150	1,800	1,500	1,350
Sherardizing:	120	140	165	180	150	125	110
Spraying:	120	140	165	180	150	125	110
Total:	80,000	95,000	110,000	120,000	100,000	84,000	75,000

3 CADMIUM - Supply and Consumption

SOURCES OF INFORMATION

The information on supply was obtained from the same sources as that on the supply of zinc, viz; the Reichsstelle Eisen und Metalle and the Metallgesellschaft. The production figures obtained from the former were said to be actual figures and not estimates; but it is thought that the export and import figures from the latter are estimates only.

TOTAL SUPPLY

The following table, in metric tons, shows German and Austrian production and includes that from Upper Silesia from September, 1939, from the following Smelters - Giesche (Kattowitz), Honenlohe and Schlesag:

	1938	1939	1940	1941	1942	1943	1944
PRODUCTION	437	477	531	608	484	496	404
Imports	100	253	86	1	72	10	7
TOTAL SUPPLY	537	730	617	609	556	506	411
less exports	50	47	62	37	128	108	29
NET SUPPLY	487	683	555	572	428	398	382

INDIVIDUAL SMELTER PRODUCTION

It will be observed from the above table that production rose rapidly in 1940 & 1941, but then fell again to the 1938-39 level. The following table shows that the rise was due to the incorporation of the Upper Silesian Smelters in the Reich. The fall from 1942 onwards was due to the decline in the production of Giesche (Magdeburg) together with the decline and eventual extinction of Marquart for reasons unknown to the team. The Giesche (Magdeburg) smelter is believed to have been severely damaged in air raids.

	1938	1939	1940	1941	1942	1943	1944
Berzelius	44	48	37	54	44	64	62
Giesche (Mag.)	261	240	250	240	178	200	140
Marquart	132	113	9	88	22	-	-
Unterharzer	-	-	-	-	8	12	7
	437	401	296	382	252	276	209
Giesche (Katt.)		58	149	141	159	153	129
Hohenlohe		11	60	62	43	47	40
Schlesag		7	26	23	30	20	26
	437	477	531	608	484	496	404

In the case of the last 3 smelters, the figures for 1939 represent production subsequent to their incorporation in the Reich. The following table shows their production in January - August, 1939, before their incorporation:-

Giesche (Katt.)	102
Hohenlohe	15
Schlesag	28
	145

CONSUMPTION

No figures on consumption for various purposes could be obtained, but the team was informed that the main uses before the war were alkaline accumulators for mining lamps, cadmium pigments, cadmium plating instead of nickel for bearing alloys.

During the war the main uses were in accumulators for the Forces - submarines, etc. and in cadmium alloy solders used as a substitute for tin-lead solders. At first a solder containing 85% cadmium was used, but this was replaced later by one containing only some 17% cadmium. Other uses were severely curtailed, cadmium pigments being used only for military requirements.

OFFICE OF STRATEGIC SERVICES

WASHINGTON 25, D. C.

6 April 1945

AA-172

TO: Major Francis J. Smith,
Washington, D. C.

FROM: Technical Section,
Col. H. W. Dix

SUBJECT: Cable #8127 from Bern, dated 4 April 1945

In a cable from Bern dated 4 April, the following comments are made:

An important laboratory for breaking atoms is located at Wassersau Forschungs Anstalt Walchensee.

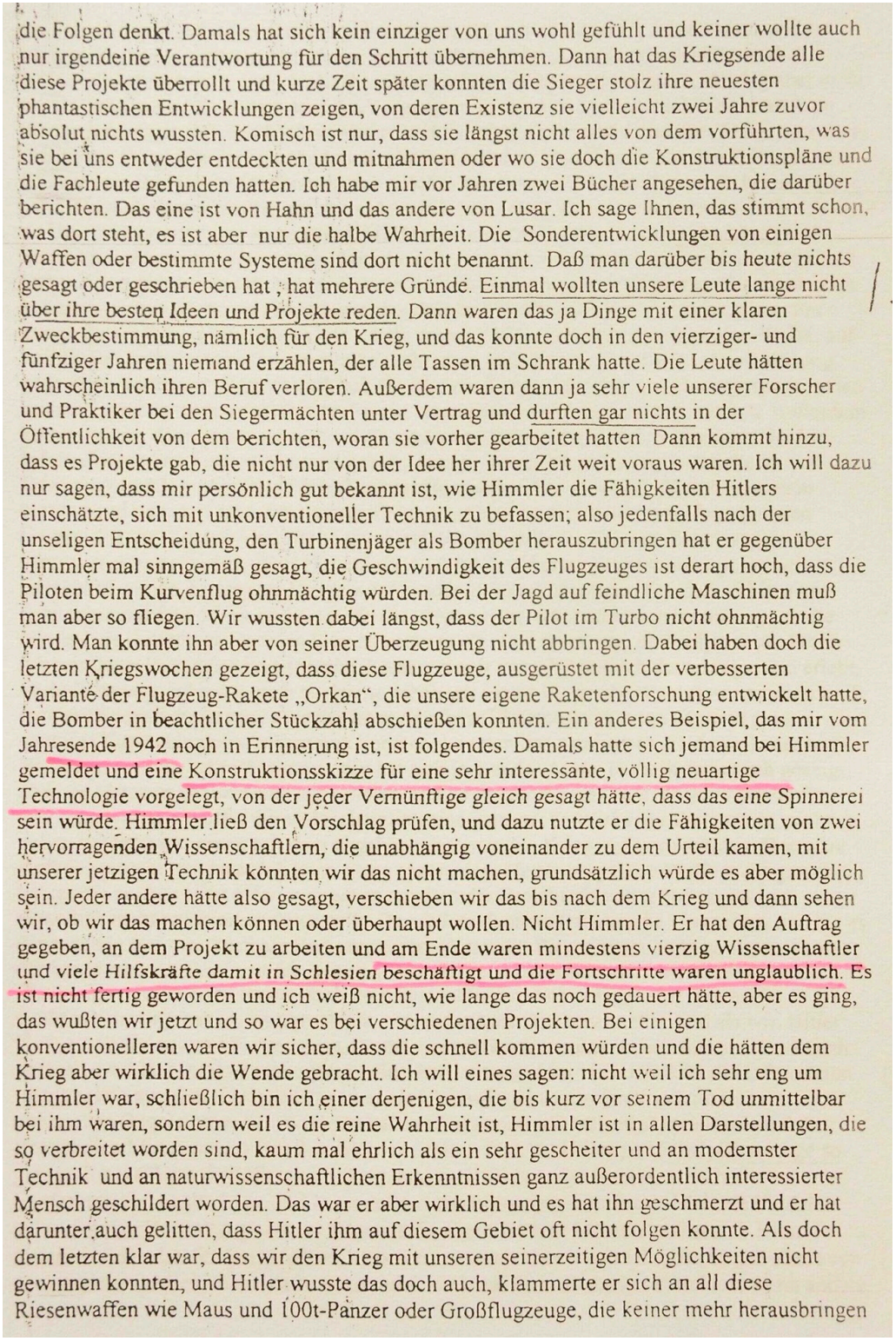
Siemens Forschungs Anstalt from Sargan, Silesia was transferred to Thurigen. Most of the equipment was lost enroute.

WASSERAU:	ca. 20 mi. SW of Pilsen (Bohemia)	49° 35' N 12° 40' E
WALCHENSEE:	ca. 30-35 mi SW of Munich	47° 35' N 11° 20' E

(Authority: Library of Congress, Map Section)

R., 7/4/45

SECRET

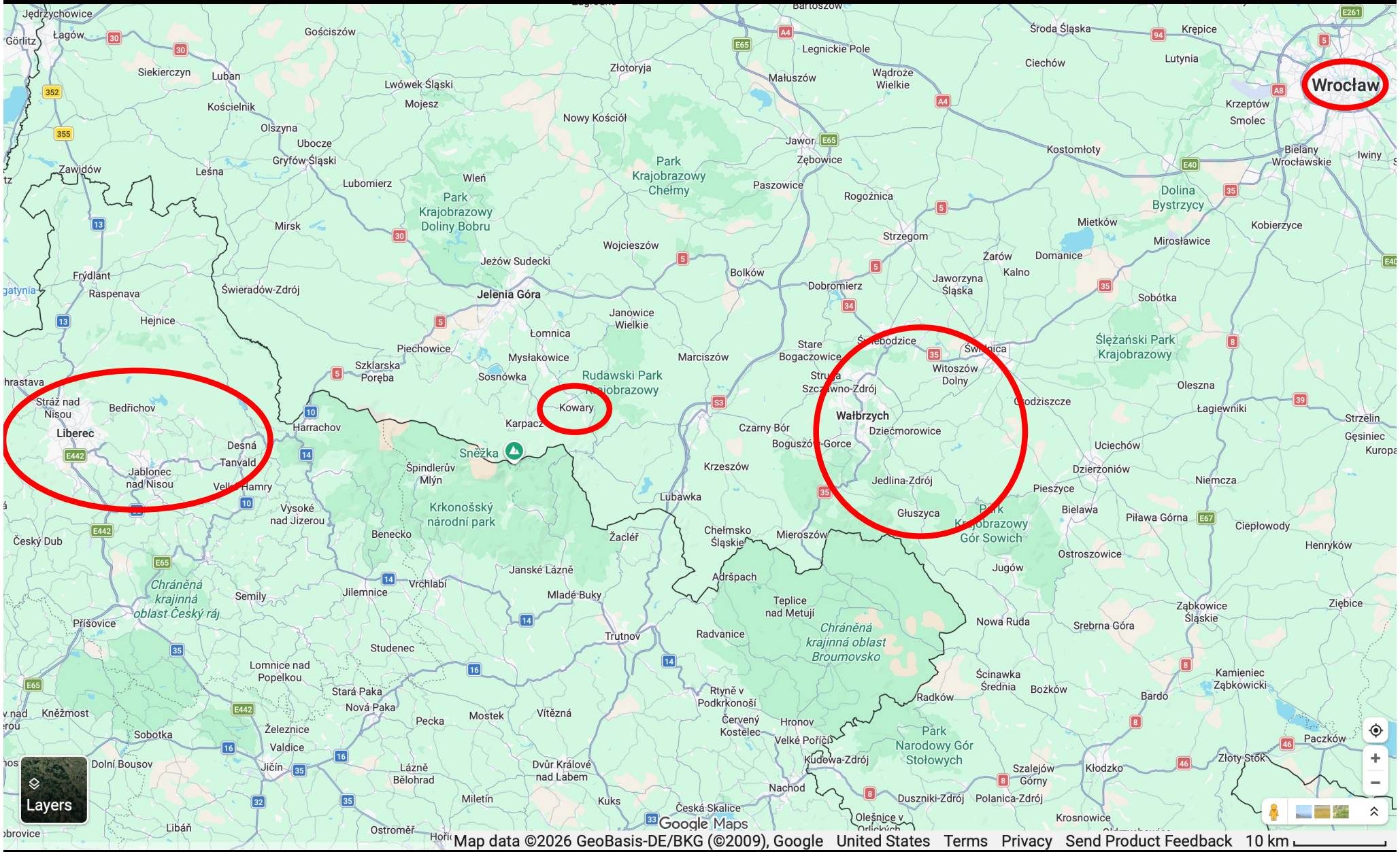


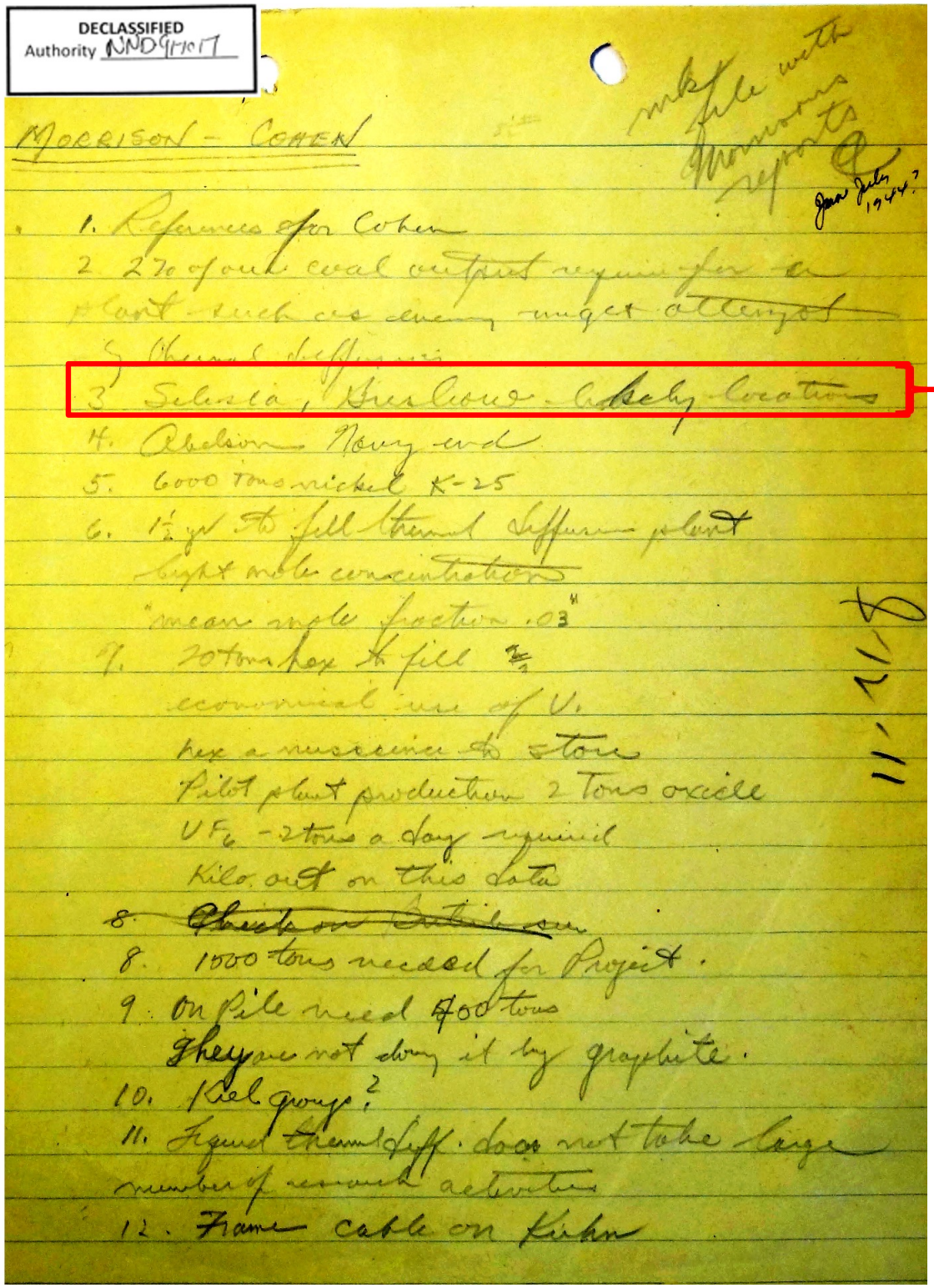
die Folgen denkt. Damals hat sich kein einziger von uns wohl gefühlt und keiner wollte auch nur irgendeine Verantwortung für den Schritt übernehmen. Dann hat das Kriegsende alle diese Projekte überrollt und kurze Zeit später konnten die Sieger stolz ihre neuesten phantastischen Entwicklungen zeigen, von deren Existenz sie vielleicht zwei Jahre zuvor absolut nichts wussten. Komisch ist nur, dass sie längst nicht alles von dem vorführten, was sie bei uns entweder entdeckten und mitnahmen oder wo sie doch die Konstruktionspläne und die Fachleute gefunden hatten. Ich habe mir vor Jahren zwei Bücher angesehen, die darüber berichten. Das eine ist von Hahn und das andere von Lusar. Ich sage Ihnen, das stimmt schon, was dort steht, es ist aber nur die halbe Wahrheit. Die Sonderentwicklungen von einigen Waffen oder bestimmte Systeme sind dort nicht benannt. Daß man darüber bis heute nichts gesagt oder geschrieben hat, hat mehrere Gründe. Einmal wollten unsere Leute lange nicht über ihre besten Ideen und Projekte reden. Dann waren das ja Dinge mit einer klaren Zweckbestimmung, nämlich für den Krieg, und das konnte doch in den vierziger- und fünfziger Jahren niemand erzählen, der alle Tassen im Schrank hatte. Die Leute hätten wahrscheinlich ihren Beruf verloren. Außerdem waren dann ja sehr viele unserer Forscher und Praktiker bei den Siegermächten unter Vertrag und durften gar nichts in der Öffentlichkeit von dem berichten, woran sie vorher gearbeitet hatten Dann kommt hinzu, dass es Projekte gab, die nicht nur von der Idee her ihrer Zeit weit voraus waren. Ich will dazu nur sagen, dass mir persönlich gut bekannt ist, wie Himmler die Fähigkeiten Hitlers einschätzte, sich mit unkonventioneller Technik zu befassen; also jedenfalls nach der unseligen Entscheidung, den Turbinenjäger als Bomber herauszubringen hat er gegenüber Himmler mal sinngemäß gesagt, die Geschwindigkeit des Flugzeuges ist derart hoch, dass die Piloten beim Kurvenflug ohnmächtig würden. Bei der Jagd auf feindliche Maschinen muß man aber so fliegen. Wir wussten dabei längst, dass der Pilot im Turbo nicht ohnmächtig wird. Man konnte ihn aber von seiner Überzeugung nicht abbringen. Dabei haben doch die letzten Kriegswochen gezeigt, dass diese Flugzeuge, ausgerüstet mit der verbesserten Variante der Flugzeug-Rakete „Orkan", die unsere eigene Raketenforschung entwickelt hatte, die Bomber in beachtlicher Stückzahl abschießen konnten. Ein anderes Beispiel, das mir vom Jahresende 1942 noch in Erinnerung ist, ist folgendes. Damals hatte sich jemand bei Himmler gemeldet und eine Konstruktionsskizze für eine sehr interessante, völlig neuartige Technologie vorgelegt, von der jeder Vernünftige gleich gesagt hätte, dass das eine Spinnerei sein würde. Himmler ließ den Vorschlag prüfen, und dazu nutzte er die Fähigkeiten von zwei hervorragenden Wissenschaftlern, die unabhängig voneinander zu dem Urteil kamen, mit unserer jetzigen Technik könnten wir das nicht machen, grundsätzlich würde es aber möglich sein. Jeder andere hätte also gesagt, verschieben wir das bis nach dem Krieg und dann sehen wir, ob wir das machen können oder überhaupt wollen. Nicht Himmler. Er hat den Auftrag gegeben, an dem Projekt zu arbeiten und am Ende waren mindestens vierzig Wissenschaftler und viele Hilfskräfte damit in Schlesien beschäftigt und die Fortschritte waren unglaublich. Es ist nicht fertig geworden und ich weiß nicht, wie lange das noch gedauert hätte, aber es ging, das wußten wir jetzt und so war es bei verschiedenen Projekten. Bei einigen konventionelleren waren wir sicher, dass die schnell kommen würden und die hätten dem Krieg aber wirklich die Wende gebracht. Ich will eines sagen: nicht weil ich sehr eng um Himmler war, schließlich bin ich einer derjenigen, die bis kurz vor seinem Tod unmittelbar bei ihm waren, sondern weil es die reine Wahrheit ist, Himmler ist in allen Darstellungen, die so verbreitet worden sind, kaum mal ehrlich als ein sehr gescheiter und an modernster Technik und an naturwissenschaftlichen Erkenntnissen ganz außerordentlich interessierter Mensch geschildert worden. Das war er aber wirklich und es hat ihn geschmerzt und er hat darunter auch gelitten, dass Hitler ihm auf diesem Gebiet oft nicht folgen konnte. Als doch dem letzten klar war, dass wir den Krieg mit unseren seinerzeitigen Möglichkeiten nicht gewinnen konnten, und Hitler wusste das doch auch, klammerte er sich an all diese Riesenwaffen wie Maus und 100t-Panzer oder Großflugzeuge, die keiner mehr herausbringen

Werner Grothmann interview, p. 23:

"Another example that I still remember from the end of 1942 is as follows. At that time, someone had contacted Himmler and presented a design sketch for a very interesting, completely new type of technology, which any reasonable person would have immediately dismissed as nonsense. Himmler had the proposal examined, and to do so he enlisted the expertise of two outstanding scientists, who independently came to the conclusion that we could not do it with our current technology, but that it would be possible in principle. Anyone else would have said, we will postpone it until after the war and then see if we can do it or even want to. Not Himmler. He gave the order to work on the project, and in the end at least forty scientists and many assistants were working on it in Silesia, and the progress was incredible. It was not finished, and I do not know how long it would have taken, but we knew now that it was possible, and that was the case with various projects."

Breslau/Wrocław


Wrocław
Kowary
Wałbrzych
Jelenia Góra
Liberec
Sněžka
Rudawski Park Krajobrazowy
Park Krajobrazowy Chełmy
Park Krajobrazowy Doliny Bobru
Park Krajobrazowy Gór Sowich
Park Narodowy Gór Stołowych
Ślężański Park Krajobrazowy
Dolina Bystrzycy
Krkonošský národní park
Chráněná krajinná oblast Český ráj
Chráněná krajinná oblast Broumovsko
Layers
Google Maps
Map data ©2026 GeoBasis-DE/BKG (©2009), Google
United States
Terms
Privacy
Send Product Feedback
10 km



Morrison - Cohen

mkt file with Memorandum report
June July 1944?

1. References for Cohen
2. 270 pounds coal output required for plant - such as during urgent attempt
3. Silesia, Breslau - likely locations
4. Oberlausitz Navy end
5. 6000 tons nickel K-25
6. 1½ yr to fill thermal diffusion plant
light noble concentration
mean angle fraction .03
7. 20 tons hex to fill
commercial use of U.
hex a musciance to store
Pilot plant production 2 Tons oxide
UF_6 - 2 tons a day required
Kilo out on this data
8. ~~Cheaper on Silesia~~
8. 1000 tons needed for Project.
9. On pile need 400 tons
they are not doing it by graphite.
10. Kiel group?
11. Found thermdiff. does not take large number of uranium activities
12. Frame cable on Kuhn

11-18

Notes from a summer 1944 meeting with Philip Morrison and Karl Cohen state: "3. Silesia, Breslau likely locations" for uranium enrichment plants [based on intelligence not recorded here].

LIMITED SECRET

Countermeasures
file

MEMORANDUM TO: P. Morrison

August 7, 1944.

FROM: K. Cohen

1. I have your memo of August 1. Pursuing your thought that we should take definite steps to counter enemy use of a device, I add the following suggestions:

2. A defense group prepared not only for scientific detective work, but also for the more obvious civil defense measures, should be set up in England immediately. It must be mobile and equipped to determine what area after an explosion is still habitable. The nucleus of specialists experienced in field tests which has been established for Site X can furnish the cadres. Adequate attention must be paid to the psychological side of the defense group. It should be given a false front of the best-publicized scientists of both countries and given a good newspaper name like "Atomic Warfare Defense Section". For morale purposes it would be most important for the public to feel that we were well prepared in advance. The "false-front" need not be notified for the present.

3. The above measures are not alarmist; they are prophylactic, and are dictated by the possibilities shown in our last report.

4. Most of the threat would disappear if Upper Silesia were neutralized. If the Russians are not able to force a rapid decision in this sector, we should urge heavy strategic bombing of all power plants in this region from Russian bases.

5. Personally, I would prefer this procedure to the bombing of Bisingen on present evidence. At any event, Bisingen should not be attacked without <u>detailed</u> reconnaissance and analysis.

6. Reflection on last week's conversations highlighted the following points

a) It is <u>possible</u> for the enemy to produce devices at a dangerous rate.
b) We have no <u>direct</u> <u>evidence</u> that he is doing so.

a) and b) together infer that the enemy is <u>probably</u> doing nothing. But this is not enough! We need a crucial experiment.

7. In this respect the reaction of the enemy to an 'accidental' (i.e. incidental to other attacks) bombing of his metal stores, or of Auer, would be most instructive.

8. We have ample evidence to justify bombing the Auer works on a strategic basis. This firm certainly has a key role in any program of consequence, and should be given special attention. Have we reconnaissance pictures of Auer?

cc: R. Furman
B. Menke
J. King
File

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.

5. Mattanch & 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 fur 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. Clisius, Breslau, said to be engaged on the problem of separating isotopes of Uranium.

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

Erteilt auf Grund des Ersten Überleitungsgesetzes vom 8. Juli 1949
(WiGBl. S. 175)

BUNDESREPUBLIK DEUTSCHLAND

AUSGEGEBEN AM 14. SEPTEMBER 1953

DEUTSCHES PATENTAMT

PATENTSCHRIFT

№ 872 936

KLASSE 12e GRUPPE 305

G 415 IV b/12e

Dr.-Ing. Hellmuth Hausen, München-Solln und
Dr. Klaus Clusius, München
sind als Erfinder genannt worden

Gesellschaft für Linde's Eismaschinen A. G.,
Höllriegelskreuth bei München

Verfahren und Vorrichtung zur Zerlegung von Gasgemischen in Zentrifugen

Patentiert im Gebiet der Bundesrepublik Deutschland vom 26. Oktober 1940 an
Der Zeitraum vom 8. Mai 1945 bis einschließlich 7. Mai 1950 wird auf die Patentdauer nicht angerechnet
(Ges. v. 15. 7. 51)
Patentanmeldung bekanntgemacht am 18. Oktober 1951
Patenterteilung bekanntgemacht am 6. August 1953

In der Patentschrift 833 487 ist ein Verfahren zur Zerlegung von flüssigen oder gasförmigen Gemischen durch Zentrifugieren beschrieben, bei dem eine besonders günstige Wirkung dadurch erzielt wird, daß das Gemisch innerhalb der Zentrifuge in einem laminaren Gegenstrom geführt wird. Der laminare Gegenstrom kann auf verschiedene Weise erzeugt werden, z. B. bei senkrecht stehender Zentrifuge durch die Schwerkraft. Er kann dabei durch Heizung verstärkt oder durch Neigung der Zentrifuge geschwächt werden. Der laminare Gegenstrom kann auch durch entsprechende Einbauten bei z. B. horizontaler Anordnung der Zentrifugenachse erzeugt werden.

Bei der Zerlegung von Gasgemischen läßt sich die Zerlegungswirkung einer solchen Zentrifuge dadurch wesentlich steigern, daß zusätzlich die Trennkräfte der Thermodiffusion angewendet werden. Der Unterschied im Vergleich zu der bereits in der Patentschrift 833 487 beschriebenen Beheizung, welche lediglich zur Erzeugung des laminaren Gegenstroms oder zur Verstärkung desselben dienen soll, wobei verhältnismäßig geringe Temperaturdifferenzen ausreichend sind, liegt darin, daß bei der Thermodiffusion sehr viel höhere Temperaturdifferenzen erforderlich sind. Bei einem Gas, welches innerhalb eines geschlossenen Raumes sehr erheblichen Temperaturunterschieden, d. h. solchen von mehreren hundert Grad, ausgesetzt ist, tritt eine Wanderung der leichten Moleküle in das Gebiet der hohen Temperaturen und eine Wanderung der schweren Moleküle in das Gebiet der niederen Temperaturen ein.

Entsprechend dem Vorhergesagten soll also eine Zentrifuge, welche nach den Angaben der Patentschrift 833 487 ausgebildet ist, eine zusätzliche Heizung bzw. Kühlung erfahren, so daß Temperaturdifferenzen von mehreren hundert Grad, z. B. von etwa 300°, erzeugt werden. Da in der Zentrifuge die schweren Moleküle entsprechend der Zentrifugalkraft nach außen, die leichten Moleküle dagegen in Richtung der Achse wandern und infolge des laminaren Gegenstroms sich die leichten Moleküle schließlich am oberen Ende der Zentrifuge und die schweren am unteren Ende der Zentrifuge ansammeln, wo sie entnommen werden sollen, so muß bei der erfindungsgemäßen Anwendung der Thermodiffusion auf die Zentrifuge das Temperaturgefälle derart zur Anwendung kommen, daß die Zerlegungskräfte unter dem Einfluß der Fliehkraft und unter dem Einfluß der Thermodiffusion gleichgerichtet sind. Hieraus ergibt sich, daß die Zentrifuge von der Mitte her, d. h. von der Achse aus oder in der Nähe der Achse geheizt werden muß. Eine zusätzliche Kühlung des Außenmantels wird in vielen Fällen zweckmäßig sein, jedoch kann die Kühlung durch die Außenluft unter Umständen schon ausreichend sein. Man kann auch daran denken, um den Außenmantel herum einen Kühlmantel anzubringen, der nicht einmal mit zu rotieren braucht, sondern fest angeordnet sein kann, wenn er dicht genug zum Außenmantel angeordnet ist.

Die Heizung kann z. B. dadurch erzeugt werden, daß die rotierende Achse hohl ausgebildet und von einem heißen Gas durchströmt wird. Man kann auch in der hohlen Achse einen elektrischen Heizkörper unterbringen oder einen solchen Heizkörper auf der Achse anbringen. Eine weitere Möglichkeit besteht z. B. darin, daß man eine Heizspirale auf die rotierende Achse aufwickelt, welche von einem flüssigen oder gasförmigen Heizstoff durchströmt wird.

Die bisherigen rechnerischen Untersuchungen haben ergeben, daß die Geschwindigkeitssteigerung des laminaren Gegenstroms unter dem Einfluß des bei zusätzlicher Thermodiffusion auftretenden Temperaturgefälles in der Regel nicht so stark ist, daß die zulässige Gasgeschwindigkeit überschritten wird. Sollte dies in Ausnahmefällen doch eintreten, so kann eine Hemmung im Sinne der Patentschrift 833 487, z. B. durch gelochte Bleche, Drahtnetze od. dgl. erfolgen.

In der Patentschrift 833 487 ist bereits gesagt worden, daß im Zentrifugenraum unter Umständen Längsrippen radial angeordnet werden sollen, welche die Richtung und Geschwindigkeit des laminaren Gegenstroms günstig beeinflussen sowie auch die Rotation der Zentrifuge auf den Gasinhalt übertragen sollen.

Im Zusammenhang mit der Erfindung kann diesen Längsrippen die weitere Aufgabe zukommen, von der Achse her auf das Gas die Wärmeübertragung und entsprechend in der Nähe des Außenmantels die Wärmeabfuhr vom Gas auf den Außenmantel zu verbessern. Unzweckmäßig aber wäre es, wenn durchgehende Rippen eine direkte Wärmeleitung zwischen Achse und Außenmantel herstellen würden. Zur Durchführung der Erfindung wird es daher, wenn durchgehende Rippen aus Festigkeitsgründen erforderlich sind, zweckmäßig sein, sie ganz oder teilweise aus solchen Stoffen herzustellen, welche genügend schlechte Wärmeleiter sind.

Die Erfindung ermöglicht eine Steigerung der Leistungsfähigkeit von Gaszentrifugen nach der Patentschrift 833 487 sowohl hinsichtlich des zulässigen Durchsatzes wie hinsichtlich der erzielbaren Trennwirkung, wenn man gleich große Zentrifugen vergleicht. Der Vorteil kann aber auch darin bestehen, daß man eine bestimmte Zerlegungswirkung mit einer kleineren Zentrifuge erreichen kann, als wenn nur die Zentrifugalkraft allein wirksam wäre.

Es wird in manchen Fällen vorteilhaft sein, statt einer verhältnismäßig großen Zentrifuge, mehrere kleinere Zentrifugen zu benutzen, welche derart hintereinandergeschaltet sind, daß das angereicherte Gas in der nächstfolgenden Zentrifuge weiter angereichert wird und das Restgas einer vorhergehenden Zentrifuge nochmals zugeführt wird.

Patentansprüche:

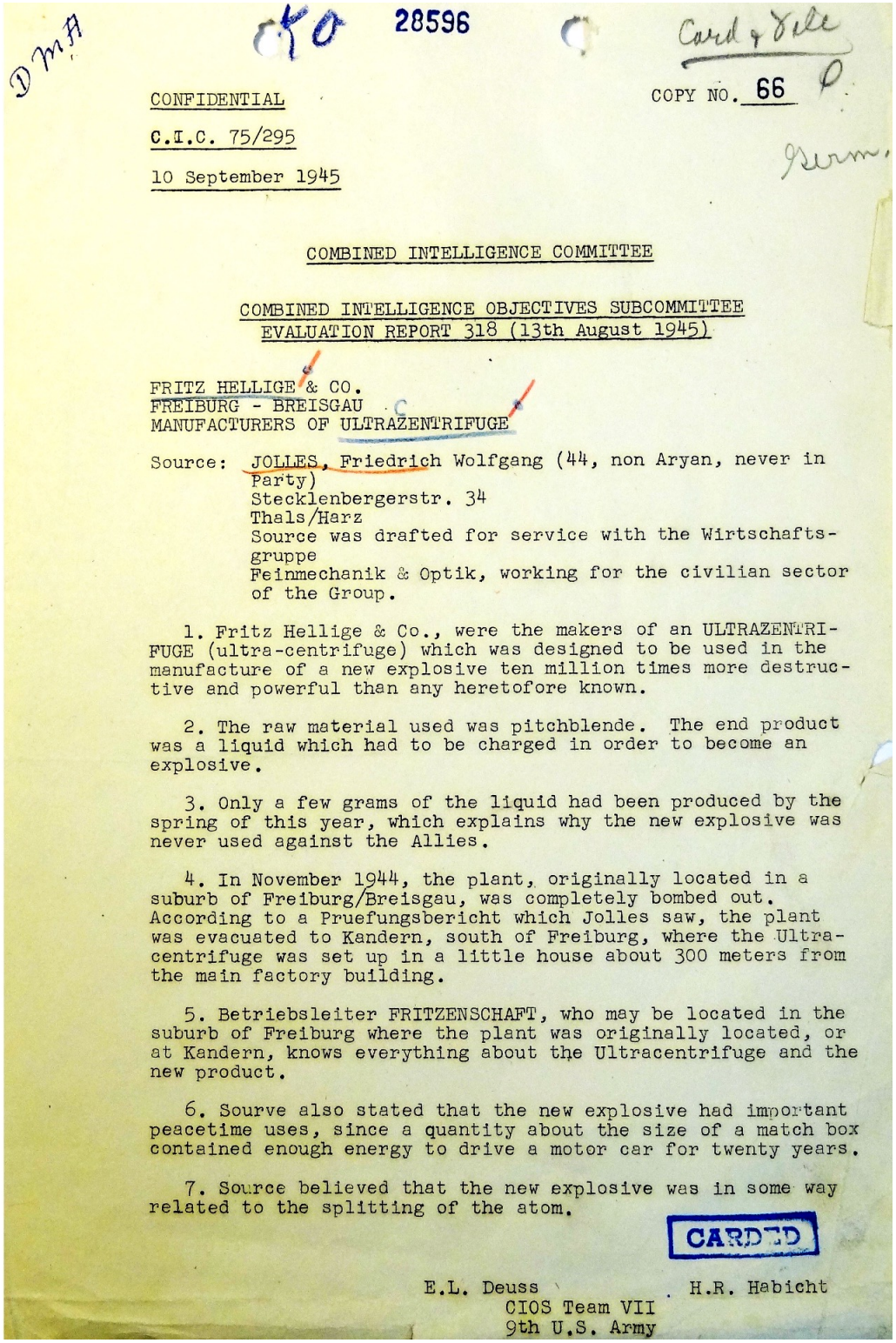
1. Verfahren zur Zerlegung von Gasgemischen in Zentrifugen, in denen ein Kreisstrom als achsparalleler laminarer Gegenstrom geführt wird, wobei Zentrifugen angewendet werden, deren axiale Länge wesentlich größer ist als ihr äußerer Durchmesser und bei denen die Ableitung der Zerlegungsprodukte aus dem Läufer der Zentrifuge an Stellen erfolgt, welche in der Projektion auf die Welle gemessen, weit voneinander entfernt sind, dadurch gekennzeichnet, daß die Zerlegungskräfte durch ein von der Zentrifugenachse zum Zentrifugenumfang gerichtetes, eine zusätzliche Thermodiffusion bedingendes, etwa mehrere hundert Grad betragendes Temperaturgefälle gesteigert werden.

2. Vorrichtung zur Durchführung des Verfahrens nach Anspruch 1, dadurch gekennzeichnet, daß die Zentrifuge bei oder in der Nähe der Achse beheizt wird.

3. Vorrichtung zur Durchführung des Verfahrens nach Anspruch 1, dadurch gekennzeichnet, daß der Außenmantel der Zentrifuge gekühlt wird.

4. Vorrichtung zur Durchführung des Verfahrens nach Anspruch 1, dadurch gekennzeichnet, daß die Zentrifuge am Außenmantel oder an Achse und Außenmantel Längsrippen hat, die radial in den Zentrifugenraum gerichtet sind.

5. Vorrichtung nach Anspruch 4 mit Längsrippen an der Achse und am Außenmantel, welche miteinander verbunden sind, dadurch gekennzeichnet, daß die Rippen entweder durch schlechte Wärmeleiter miteinander verbunden sind oder ganz aus solchem Material bestehen.



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CONFIDENTIAL

COPY NO. 66

C.I.C. 75/295

10 September 1945

COMBINED INTELLIGENCE COMMITTEE

COMBINED INTELLIGENCE OBJECTIVES SUBCOMMITTEE
EVALUATION REPORT 318 (13th August 1945)

FRITZ HELLIGE & CO.
FREIBURG - BREISGAU
MANUFACTURERS OF ULTRAZENTRIFUGE

Source: JOLLES, Friedrich Wolfgang (44, non Aryan, never in Party)
Stecklenbergerstr. 34
Thals/Harz
Source was drafted for service with the Wirtschafts-gruppe
Feinmechanik & Optik, working for the civilian sector of the Group.

1. Fritz Hellige & Co., were the makers of an ULTRAZENTRI-FUGE (ultra-centrifuge) which was designed to be used in the manufacture of a new explosive ten million times more destructive and powerful than any heretofore known.

2. The raw material used was pitchblende. The end product was a liquid which had to be charged in order to become an explosive.

3. Only a few grams of the liquid had been produced by the spring of this year, which explains why the new explosive was never used against the Allies.

4. In November 1944, the plant, originally located in a suburb of Freiburg/Breisgau, was completely bombed out. According to a Pruefungsbericht which Jolles saw, the plant was evacuated to Kandern, south of Freiburg, where the Ultra-centrifuge was set up in a little house about 300 meters from the main factory building.

5. Betriebsleiter FRITZENSCHAFT, who may be located in the suburb of Freiburg where the plant was originally located, or at Kandern, knows everything about the Ultracentrifuge and the new product.

6. Sourve also stated that the new explosive had important peacetime uses, since a quantity about the size of a match box contained enough energy to drive a motor car for twenty years.

7. Source believed that the new explosive was in some way related to the splitting of the atom.

CARDED

E.L. Deuss
CIOS Team VII
9th U.S. Army

H.R. Habicht

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.

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 ultra-centrifuge built by the above company, as well as by the Hellige company (Breslau, USSR zone).

Siegfried Knappe. 1992. *Soldat: Reflections of a German Soldier 1936-1949*. Orion. pp. 265-268.

Hitler had declared Breslau a fortress city, which meant that it was to be defended to the last man, even if it was surrounded and totally isolated… A factory for making heavy water for atomic experiments had been abandoned east of Breslau, and we had to plan and conduct a counterattack to destroy it and keep its secrets from falling into the hands of the Russians.

[S. 493:] Hitlers letzter Frontbesuch erfolgte am 11. März 1945 an der mittleren Oderfront in Schloß, Freienwalde bei der 9. Armee. Hitler beschwor den Oberbefehlshaber, General Theodor Busse, und seine Offiziere, den russischen Ansturm auf Berlin wenigstens so lange aufzuhalten, bis seine neuen Waffen einsatzbereit seien. Er verwies auf das Beispiel des Generalfeldmarschalls Ferdinand Schörner, der mit seiner "Heeresgruppe Mitte" Schlesien und den böhmischen Raum mit unverminderter Kampfkraft verteidige. Und er erklärte abschließend: "Jeder Tag und jede Stunde sind kostbar, um die fürchterlichen Waffen fertigzustellen, welche die Wende bringen!"

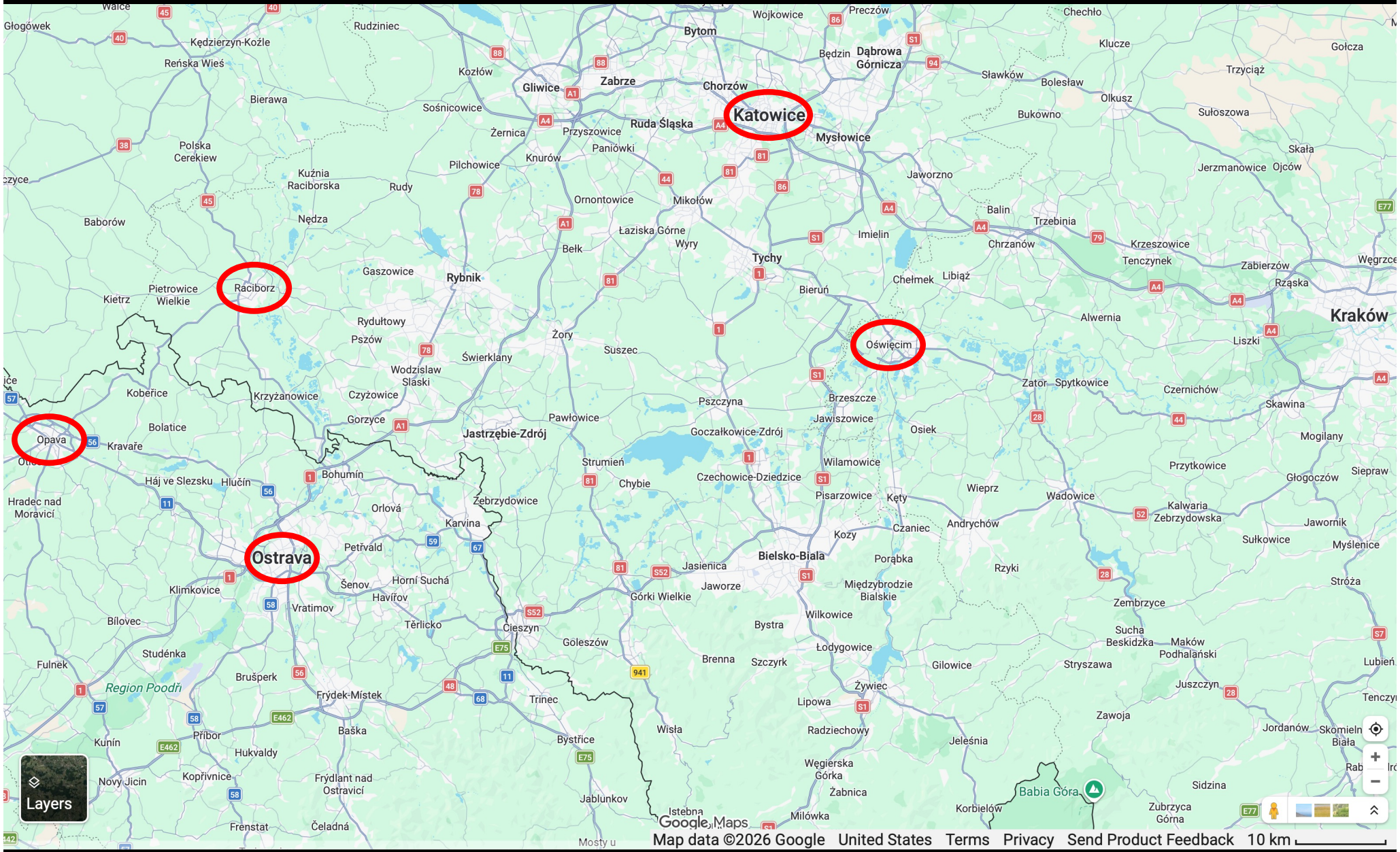
[p. 493:] Hitler's last visit to the front took place on 11 March 1945, on the middle Oder front in Freienwalde Castle with the 9th Army. Hitler implored the commander-in-chief, General Theodor Busse, and his officers to delay the Russian onslaught on Berlin at least until his new weapons were ready for use. He referred to the example of Field Marshal Ferdinand Schörner, who with his "Central Army Group" defended Silesia and the Bohemian region with undiminished fighting strength. And he concluded: "Every day and every hour is precious to complete the terrible weapons that will bring about the turnaround!"

Mit den "fürchterlichen Waffen" war nach Schaub vor allem die prototypreif durchkonstruierte "Uranium-Bombe" gemeint, die in der Größe eines kleinen Kürbis in einem unterirdischen SS-Werk im Süd-Harz (mit einer Produktionskapazität von 30 000 Arbeitskräften) hergestellt werden sollte. Das Werk wurde 1945 nach der bedingungslosen Kapitulation Deutschlands von der Roten Armee nach der UdSSR verlagert. Die gelegentliche Mitteilung des US-Präsidenten über die amerikanische Entwicklung einer Atombombe tat Stalin daher mit absolutem Desinteresse ab. Den deutschen Atom-Praktiker Manfred von Ardenne aber zeichnete er mit dem damaligen sowjetischen "Nobel"-Preis, dem "Stalinpreis", aus.

According to Schaub, the "terrible weapons" meant above all the "uranium bomb" with the size of a small pumpkin which was to be produced in an underground SS plant in the southern Harz region (with a production capacity of 30,000 workers). The plant was relocated to the USSR by the Red Army in 1945 after Germany's unconditional surrender. The statement around that time by the U.S. President about the American development of an atomic bomb was therefore dismissed by Stalin with absolute disinterest. He did, however, award the German nuclear practitioner Manfred von Ardenne with what was then the Soviet "Nobel" Prize, the "Stalin Prize."

Henry Picker. 2009. *Hitlers Tischgespräche im Führerhauptquartier.* 2nd ed. Berlin: Propyläen-Taschenbuch bei Ullstein.

Ratibor/Racibórz


Katowice
Raciborz
Oświęcim
Ostrava
Kraków
Opava
Bielsko-Biała
Rybnik
Tychy
Jastrzębie-Zdrój
Ruda Śląska
Gliwice
Zabrze
Chorzów
Bytom
Dąbrowa Górnicza
Mysłowice
Region Poodří
Layers
Google Maps
Map data ©2026 Google
United States
Terms
Privacy
Send Product Feedback
10 km

Copy for Mr. W. [illegible] Billings, War Production Board

ACHESON GRAPHITE CORPORATION
30 East Forty-second St.
New York, N.Y., U. S. A.

July 29th, 1942.

Mr. Frank Hodson, Chief
Chemical and Metallurgical Division
Industrial Engineering Branch
Board of Economic Warfare
Room 6716, Commerce Building
Washington, D. C.

SECRET

CONFIDENTIAL

Dear Mr. Hodson:

Continental European Electrode Plants

Further to my letters of July 24th and 25th, I am glad to send along what information and estimates we have in regard to commercial electrode plants in Continental Europe.

Germany

Graphite

According to estimates made by our people in Europe at the end of 1939, the graphite electrode production in Germany during that year was approximately as follows:

Siemens-Planiawerke, Meitingen	8,500 tons
Conradty, Kolbermoor	2,000 "
I. G. Farben, Bitterfeld	5,000 "
	15,500 tons

In 1939 the German industry was already substantially on war production but a fifty percent increase over the above figure might not be unreasonable for the present time. This would bring the total to about 23,000 tons.

The largest electrode producer is Siemens-Planiawerke and their largest factory is at Ratibor, Silesia. This is their plant for the manufacture of coal electrodes and they also produce gas baked petroleum coke carbons which are graphitized at Meitingen, Bavaria. This Meitingen plant is simply a graphitizing and finishing plant and, as far as we know, is the only graphite electrode plant operated by Siemens-Planiawerke. At Lichtenberg, about ten miles from Berlin, is a large Siemens plant specializing the production of brushes, light - ing and projector carbons, and finishing of miscellaneous special carbon and graphite products. Siemens' administration, Works Management,

and Sales Departments as well as the Research Department are located at Lichtenberg.

Conradty - Nürnberg

A very large plant for the production of large coal electrodes, brushes, lighting, projector, and miscellaneous small carbon products, situated about ten miles out from Nürnberg. I do not remember the name of the small village at which the plant is located and their German catalog does not give the name. The plant covers a wide area, but for many years only a small part of the total coal electrode capacity has been used. There is equipment for milling, mixing, pressing, and baking coal electrodes in the sizes used for the production of alloys and carbide. This plant also supplies the gas baked petroleum coke blanks for their graphitizing plants at Kilbermoor in Bavaria and Affoltern in Switzerland. The brush, lighting, projector, and battery carbon equipment is considered modern and complete.

Conradty - Kilbermoor, Bavaria

This plant is located between Munich and Rosenheim and is a graphitizing and finishing plant. The baked blanks are supplied by the Nürnberg plant.

I. G. Farben (German Dye Trust), Bitterfeld

This is a complete graphite plant with milling, mixing, pressing, baking, graphitizing, and finishing equipment for graphite anodes; also possibly molding equipment and baking capacity for large coal electrodes for alloy and phosphorous furnaces operated by the I. G. group. The electrode factory is situated in the large I. G. chemical plant at Bitterfeld, on the main Halle Berlin railroad, about 50 miles S. W. of Berlin and 10 miles N. E. of Halle. In recent years this electrode plant has supplied most of the graphite anodes required by the German alkali chlorine industry, a large part of which is controlled by I. G. Farben. It has always been understood that most of the magnesium metal produced in Germany is "Elektron" metal, made by the I. G. Farben process and that all of the anodes required in this process are manufactured at Bitterfeld.

Coal Electrodes

Our estimate of the production capacity of the three German firms is as follows:

Siemens-Planiawerke, Ratibor	50,000 tons
Conradty, Nurnberg	6,000 "
I. G. Farben, Bitterfeld	3,500 "
	59,500 tons

SECRET

Italy

There are three commercial electrode plants in Italy.

S. A. Elettrografite di Forno Allione, which is owned by us, is located at Forno Allione about fifty miles north of Brescia, and some six miles south of the town of Edolo. It is fairly close to the Swiss border. At the time our manager left in January, 1941, the capacity was rated at 4,800 metric tons.

Another graphite electrode factory is operated by S. A. Talco e Grafite Val Chisone at the town of Pinerolo, which is south-west of Turin. Their electrodes are made from natural graphite and we estimate their capacity at about 4,000 tons per year.

A carbon electrode plant is operated by Elettrocarboni (owned by Siemens-Planiawerke) at Ascoli Piceno, a town north east of Rome not far from the east coast. We estimate this plant to have a capacity of about 3,000 tons.

There is also a carbon plant at Narni, almost due north of Rome, which we understand is operated by Montecatini to produce anodes for their aluminum plants.

France

The graphite electrode plant in which we are interested is operated by Compagnie Industrielle Savoie-Acheson at Notre Dame-de-Briancon in the Department of Savoie. It is about four miles north-west of Moutiers. The plant has a rated capacity of about 7,000 metric tons of graphite electrodes a year.

At the same location a separate company, Societe des Electrodes de la Savoie, operates a carbon electrode plant estimated to be capable of producing 5,000 to 7,000 metric tons per year.

The latter company also has a coal carbon electrode plant at Venissieux, a town southeast of Lyons. The capacity is estimated at 5,000 to 6,000 metric tons per year.

In none of the above have we attempted to include electrode plants for the manufacture of aluminum anodes except the one at Narni, Italy. As you know, these electrode plants are generally located close to the aluminum plants.

Hoping that this information will be of some value, I am,

Yours very truly,

/s/ H.P. Martin
Vice President

H.P. Martin
wg

SECRET

GENERAL COMPARISON OF GERMAN AND U.S. CARBON AND GRAPHITE ELECTRODE INDUSTRIES

In order to give an over-all perspective of the technological comparison of the German and U.S. carbon and graphite electrode industries, the following summary briefly compares the major aspects of this type of process industry.

Materials:

When the war shut off their U.S. supplies of petroleum coke, the German electrode industry had to develop European materials. The principal substitute was pitch coke, which made acceptable quality graphite, and which did not cost appreciably more than the former price of U.S. petroleum coke.

Another substitute was an "extract" coke resulting from the synthesis of gasoline from coal. The quality of the graphite made with this coke was good, but the quantity available was relatively small, and the price about twice that of pitch coke. However, future developments in this field may make this a feasible material for electrode production.

Other electrode materials developed by the German industry were a metallurgical coke purified to an ash content of about 1% and an anthracite purified to an ash content of around 2.5%.

Processes:

The processes, equipment, and production methods of the German industry are essentially similar to those of the U.S. industry. The disparity in labor effectiveness typical of the German carbon brush and arc carbon industries is not the case for the electrode industry, which is about on a par with the U.S. industry in this respect.

Product Quality:

The many variations in metallurgical practices make it extremely difficult to draw accurate comparisons of the actual performance quality of German and U.S. electrodes. Further, the effects of air raids make the German figures even more difficult to interpret.

Based on a survey of representative electric furnace operators, considering both electrode usage figures and actual appearance after use, it seems evident that the performance quality of German electrodes made during the war ranged from perhaps nearly equal to definitely inferior to U.S. quality.

In very general terms, the consumption of graphite electrodes per ton of good ingots ranged from about 16 to 20 lb. in GERMANY, as compared with 9 to 18 lb. in the U.S.

Know-How:

Among the electrode users the general quality reputation of SIEMENS electrodes was better than CONRADTY. The discussions with the SIEMENS technical organization showed the possession of the extensive empirical know-how needed for successful operation in this industry, compounded as it must be of experience and science. Thus, as respects empirical know-how, the German industry could be rated as perhaps about equal to the U.S.

As far as scientific know-how and study of the fundamentals of carbon technology are concerned, the German industry has depended very largely upon collaboration with academic researchers, mainly with Prof. ULRICH HOFFMANN. The German industry has directed its technical work more along development lines. Based on the U.S. organization of direct industrial research in this field, it would seem that the U.S. industry has a definitely better scientific know-how than that of the German industry.

FIAT 397. *Survey of the Carbon and Graphite Electrode Industry of Germany*

PART III

PRODUCTION CAPACITIES

A.) CAPACITY FOR THE MANUFACTURE OF BASIC STOCK FOR EITHER CARBON OR GRAPHITE ELECTRODES

The following tabulation shows the total German production capacity for the baked basic stock for either carbon or graphite electrodes, comparing the installed capacity near the end of the war with that now available in the U.S. Zone. There is no other baked electrode capacity except at some of the aluminum plants which produce their own special electrodes.

The tabulation is in terms of baked weight. The indicated tons are of 1,000 kg. = 2,200 lb.

Firm	Location	Installed Production Capacity: Total at End of War	Now in U.S. Zone	
SIEMENS	RATIBOR	60,000	-	t/yr.
"	BERLIN	30,000	-	"
CONRADTY	NÜRNBERG	19,000	19,000	"
I.G.F.	GRIESHEIM	15,000	15,000	"
		124,000	34,000	"
Equivalent lb. per yr.		273,000,000	75,000,000	
% of war capacity - - - - - - - - - -			27%	

It will be noted that the capacity for basic stock has been reduced by 73% by the elimination of the plants in the Russian Zone.

The following tabulation gives some information regarding the sizes of the largest presses and dies at the two plants now in the U.S. Zone.

Firm	Largest Press: Total Pressure	Mix Cyl. Dia.	Largest Dies: Round	Rectangular
CONRADTY	5,000 t	1,600 mm	700 mm.	500x750 mm
I.G.F.	2,800	800	500	350x350

B.) CAPACITY FOR GRAPHITIZING OF GRAPHITE ELECTRODES

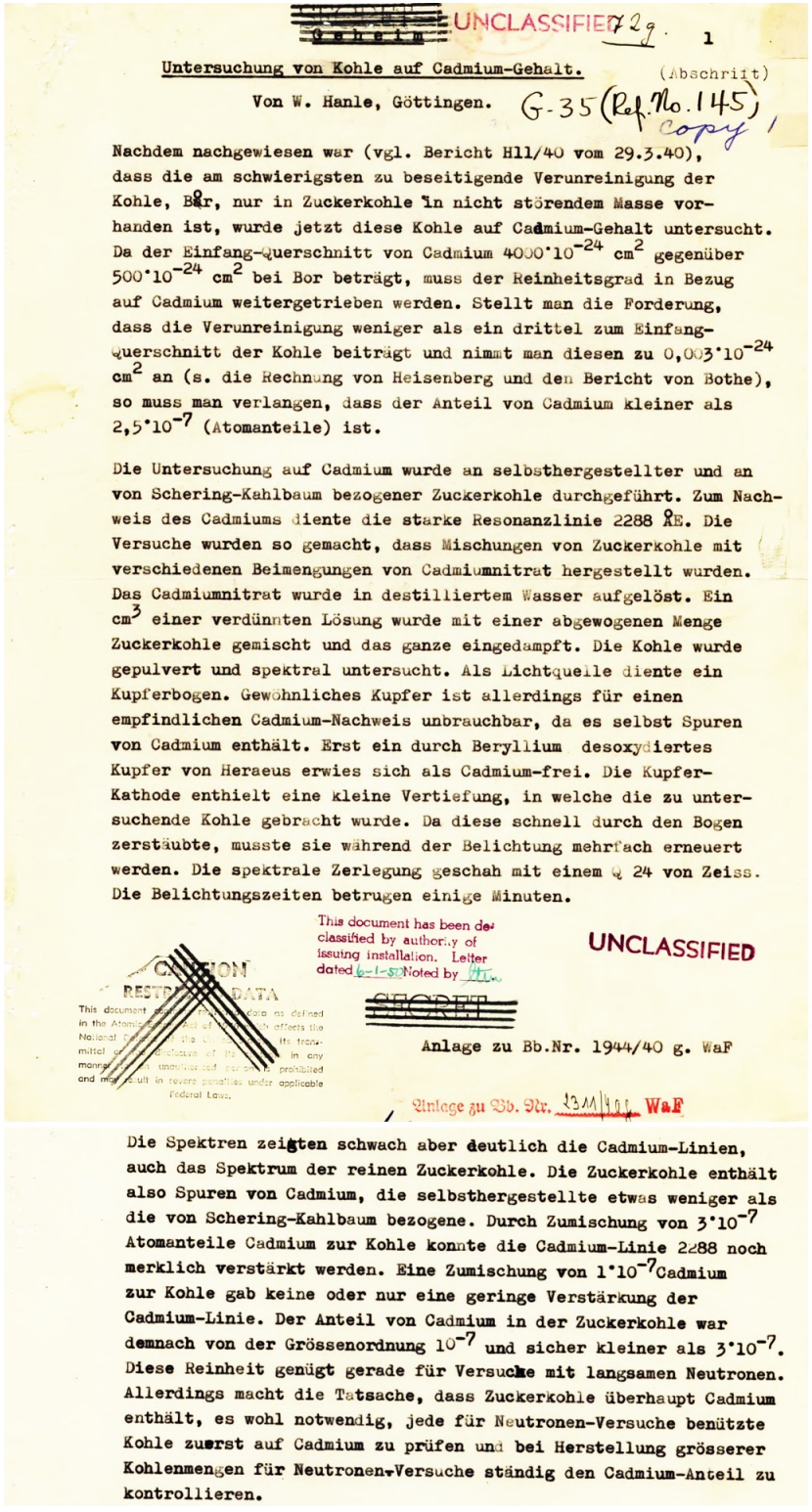
The following tabulation shows the total German capacity for the graphitizing of graphite electrodes, comparing the installed capacity near the end of the war with that now available in the U.S. Zone. The tabulation covers all of the graphitizing plants of GERMANY.

The tabulation is in terms of finished graphite weight. The indicated tons are of 1,000 kg. = 2,200 lb.

In order to figure the weight of basic stock required for a given finished graphite weight, it is necessary to allow for the machining and process losses. Add about 25% to the finished weight to obtain the basic stock weight required for steel electrodes; add about 10% for electrolytic anodes.

Firm	Location	Installed Production Capacity: Total At End of War	Now Available U.S. Zone	Available After Repairs U.S. Zone	
SIEMENS	MEITINGEN	20,000	20,000	20,000	t/yr.
CONRADTY	NÜRNBERG	4,800	2,400	4,800	"
"	KOLBERMOOR	3,000	2,400	3,000	"
"	AFFOLTERN, SWITZ. (allowing 50% of production for Swiss)	2,200	-	-	"
I.G.F.	BITTERFELD	9,000	-	-	"
		39,000	24,800	27,800	"
Equivalent lb. per yr.		86,000,000	54,000,000	61,000,000	
% of war capacity			63%	71%	

There is evidently a considerable excess of graphitizing capacity still available in the U.S. Zone. The most efficient graphitizing plant is the SIEMENS plant at MEITINGEN, but it is designed for large scale production. The advantages of the CONRADTY plant at NÜRNBERG are that it is well adapted for smaller rates of production, and that it is a complete plant combined



Geheim UNCLASSIFIED 72g. 1

Untersuchung von Kohle auf Cadmium-Gehalt. (Abschrift)

Von W. Hanle, Göttingen. G-35 (Ref. No. 145) Copy 1

Nachdem nachgewiesen war (vgl. Bericht H11/40 vom 29.3.40), dass die am schwierigsten zu beseitigende Verunreinigung der Kohle, Bor, nur in Zuckerkohle in nicht störendem Masse vorhanden ist, wurde jetzt diese Kohle auf Cadmium-Gehalt untersucht. Da der Einfang-Querschnitt von Cadmium $4000 \cdot 10^{-24}$ cm^2 gegenüber $500 \cdot 10^{-24}$ cm^2 bei Bor beträgt, muss der Reinheitsgrad in Bezug auf Cadmium weitergetrieben werden. Stellt man die Forderung, dass die Verunreinigung weniger als ein drittel zum Einfang-Querschnitt der Kohle beiträgt und nimmt man diesen zu $0{,}003 \cdot 10^{-24}$ cm^2 an (s. die Rechnung von Heisenberg und den Bericht von Bothe), so muss man verlangen, dass der Anteil von Cadmium kleiner als $2{,}5 \cdot 10^{-7}$ (Atomanteile) ist.

Die Untersuchung auf Cadmium wurde an selbsthergestellter und an von Schering-Kahlbaum bezogener Zuckerkohle durchgeführt. Zum Nachweis des Cadmiums diente die starke Resonanzlinie 2288 ÅE. Die Versuche wurden so gemacht, dass Mischungen von Zuckerkohle mit verschiedenen Beimengungen von Cadmiumnitrat hergestellt wurden. Das Cadmiumnitrat wurde in destilliertem Wasser aufgelöst. Ein cm^3 einer verdünnten Lösung wurde mit einer abgewogenen Menge Zuckerkohle gemischt und das ganze eingedampft. Die Kohle wurde gepulvert und spektral untersucht. Als Lichtquelle diente ein Kupferbogen. Gewöhnliches Kupfer ist allerdings für einen empfindlichen Cadmium-Nachweis unbrauchbar, da es selbst Spuren von Cadmium enthält. Erst ein durch Beryllium desoxydiertes Kupfer von Heraeus erwies sich als Cadmium-frei. Die Kupfer-Kathode enthielt eine kleine Vertiefung, in welche die zu untersuchende Kohle gebracht wurde. Da diese schnell durch den Bogen zerstäubte, musste sie während der Belichtung mehrfach erneuert werden. Die spektrale Zerlegung geschah mit einem Q 24 von Zeiss. Die Belichtungszeiten betrugen einige Minuten.

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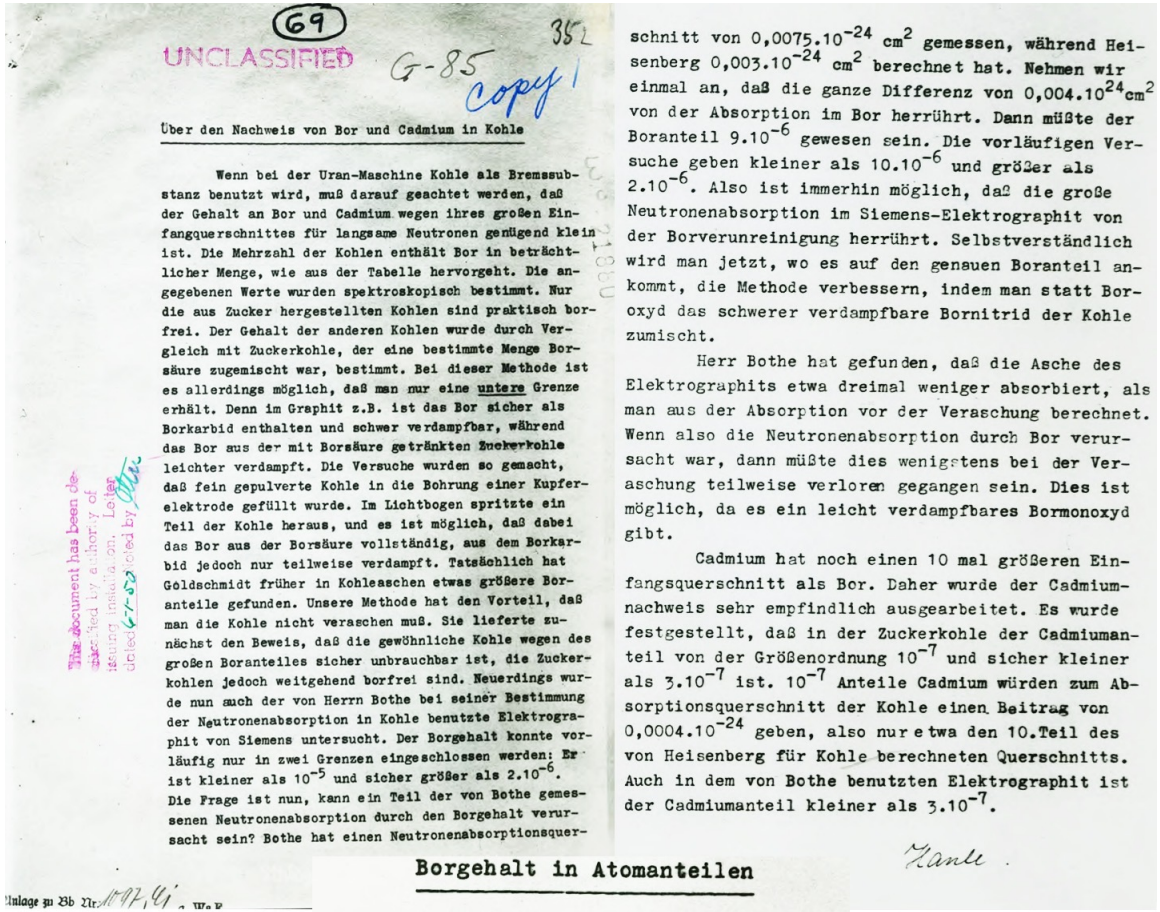
SECRET

Anlage zu Bb.Nr. 1944/40 g. WaF

Anlage zu Bb. Nr. 1311/40 g. WaF

Die Spektren zeigten schwach aber deutlich die Cadmium-Linien, auch das Spektrum der reinen Zuckerkohle. Die Zuckerkohle enthält also Spuren von Cadmium, die selbsthergestellte etwas weniger als die von Schering-Kahlbaum bezogene. Durch Zumischung von $3 \cdot 10^{-7}$ Atomanteile Cadmium zur Kohle konnte die Cadmium-Linie 2288 noch merklich verstärkt werden. Eine Zumischung von $1 \cdot 10^{-7}$ Cadmium zur Kohle gab keine oder nur eine geringe Verstärkung der Cadmium-Linie. Der Anteil von Cadmium in der Zuckerkohle war demnach von der Grössenordnung 10^{-7} und sicher kleiner als $3 \cdot 10^{-7}$. Diese Reinheit genügt gerade für Versuche mit langsamen Neutronen. Allerdings macht die Tatsache, dass Zuckerkohle überhaupt Cadmium enthält, es wohl notwendig, jede für Neutronen-Versuche benützte Kohle zuerst auf Cadmium zu prüfen und bei Herstellung grösserer Kohlenmengen für Neutronen-Versuche ständig den Cadmium-Anteil zu kontrollieren.

German production and testing of very low-boron graphite suitable for use as a moderator in a fission reactor with unenriched uranium (1940 onward)



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Über den Nachweis von Bor und Cadmium in Kohle

Wenn bei der Uran-Maschine Kohle als Bremssubstanz benutzt wird, muß darauf geachtet werden, daß der Gehalt an Bor und Cadmium wegen ihres großen Einfangquerschnittes für langsame Neutronen genügend klein ist. Die Mehrzahl der Kohlen enthält Bor in beträchtlicher Menge, wie aus der Tabelle hervorgeht. Die angegebenen Werte wurden spektroskopisch bestimmt. Nur die aus Zucker hergestellten Kohlen sind praktisch borfrei. Der Gehalt der anderen Kohlen wurde durch Vergleich mit Zuckerkohle, der eine bestimmte Menge Borsäure zugemischt war, bestimmt. Bei dieser Methode ist es allerdings möglich, daß man nur eine untere Grenze erhält. Denn im Graphit z.B. ist das Bor sicher als Borkarbid enthalten und schwer verdampfbar, während das Bor aus der mit Borsäure getränkten Zuckerkohle leichter verdampft. Die Versuche wurden so gemacht, daß fein gepulverte Kohle in die Bohrung einer Kupferelektrode gefüllt wurde. Im Lichtbogen spritzte ein Teil der Kohle heraus, und es ist möglich, daß dabei das Bor aus der Borsäure vollständig, aus dem Borkarbid jedoch nur teilweise verdampft. Tatsächlich hat Goldschmidt früher in Kohleaschen etwas größere Boranteile gefunden. Unsere Methode hat den Vorteil, daß man die Kohle nicht veraschen muß. Sie lieferte zunächst den Beweis, daß die gewöhnliche Kohle wegen des großen Boranteiles sicher unbrauchbar ist, die Zuckerkohlen jedoch weitgehend borfrei sind. Neuerdings wurde nun auch der von Herrn Bothe bei seiner Bestimmung der Neutronenabsorption in Kohle benutzte Elektrographit von Siemens untersucht. Der Borgehalt konnte vorläufig nur in zwei Grenzen eingeschlossen werden: Er ist kleiner als 10^{-5} und sicher größer als 2.10^{-6}. Die Frage ist nun, kann ein Teil der von Bothe gemessenen Neutronenabsorption durch den Borgehalt verursacht sein? Bothe hat einen Neutronenabsorptionsquerschnitt von $0{,}0075.10^{-24}$ cm^2 gemessen, während Heisenberg $0{,}003.10^{-24}$ cm^2 berechnet hat. Nehmen wir einmal an, daß die ganze Differenz von $0{,}004.10^{24}$cm^2 von der Absorption im Bor herrührt. Dann müßte der Boranteil 9.10^{-6} gewesen sein. Die vorläufigen Versuche geben kleiner als 10.10^{-6} und größer als 2.10^{-6}. Also ist immerhin möglich, daß die große Neutronenabsorption im Siemens-Elektrographit von der Borverunreinigung herrührt. Selbstverständlich wird man jetzt, wo es auf den genauen Boranteil ankommt, die Methode verbessern, indem man statt Boroxyd das schwerer verdampfbare Bornitrid der Kohle zumischt.

Herr Bothe hat gefunden, daß die Asche des Elektrographits etwa dreimal weniger absorbiert, als man aus der Absorption vor der Veraschung berechnet. Wenn also die Neutronenabsorption durch Bor verursacht war, dann müßte dies wenigstens bei der Veraschung teilweise verloren gegangen sein. Dies ist möglich, da es ein leicht verdampfbares Bormonoxyd gibt.

Cadmium hat noch einen 10 mal größeren Einfangsquerschnitt als Bor. Daher wurde der Cadmiumnachweis sehr empfindlich ausgearbeitet. Es wurde festgestellt, daß in der Zuckerkohle der Cadmiumanteil von der Größenordnung 10^{-7} und sicher kleiner als 3.10^{-7} ist. 10^{-7} Anteile Cadmium würden zum Absorptionsquerschnitt der Kohle einen Beitrag von $0{,}0004.10^{-24}$ geben, also nur etwa den 10.Teil des von Heisenberg für Kohle berechneten Querschnitts. Auch in dem von Bothe benutzten Elektrographit ist der Cadmiumanteil kleiner als 3.10^{-7}.

Zanke.

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Anlage zu Bb Nr. 1047/41 ... W.E.

Borgehalt in Atomanteilen

Deutsche Steinkohle	$10^{-5} - 10^{-6}$
" " nach Goldschmidt (Asche)	3.10^{-4}
Buchenholzkohle	10^{-5}
" nach Goldschmidt (Asche)	10^{-4}
Acheson-Graphit	$10^{-4} - 10^{-5}$
Bogenlampenkohle, geglüht	10^{-4}
Absorptionskohle, Merck	10^{-5}
Blutkohle, gepulvert	10^{-5}
Kohle aus Kandiszucker	$< 10^{-6}$
" " Speisezucker	$< 10^{-6}$
" " Traubenzucker	$< 10^{-6}$
" " Kartoffelmehl	$< 10^{-6}$
Zuckerkohle Schering	$< 10^{-6}$
Elektrographit Siemens	$< 10^{-5} > 2.10^{-6}$

German production and testing of very low-boron graphite suitable for use as a moderator in a fission reactor with unenriched uranium (1940 onward)

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Spektralanalytische Untersuchungen von Kohle, Aluminium und Beryllium. G-153

Die von Bothe benutzte Graphitkohle wurde auf Gehalt von Bor, das von Döpel und Heisenberg benutzte Aluminium und das von Haxel und Volz benutzte Berylliumoxyd auf Gehalt von Bor und Cadmium untersucht.

Wie in einem früheren Bericht und auf der ersten Tagung über P 38 erläutert, muß bei der Überprüfung, wie weit Untersuchungen mit Neutronen durch Verunreinigungen beeinflußt werden können, besonderes Augenmerk auf Spuren von Bor und Cadmium gerichtet werden.

K o h l e .

Die Versuche wurden folgendermaßen durchgeführt: Die Substanz wurde pulverisiert und in eine Höhlung von etwa 2 mm Durchmesser und 2 mm Tiefe in einen Kupferstab von 5 mm Durchmesser gebracht und im Lichtbogen gegen einen dicken massiven Kupferstab verdampft. Das Kupfer enthielt selbst Spuren von Bor. Dadurch und durch den starken Untergrund des Bogens wurde die Meßgenauigkeit beeinträchtigt. Bei den früheren Untersuchungen konnte besonders borfreies Kupfer von Heraeus benutzt werden. Leider war dieses Kupfer verbraucht und es war unmöglich, von Heraeus neues hochgereinigtes Kupfer zu erhalten, sodaß das gewöhnliche Werkstattkupfer benutzt werden mußte.

Wurde nun in die Höhlung der Kupferelektrode Graphitpulver eingeführt, so wurden die Borlinien wesentlich verstärkt. Um den Gehalt an Bor quantitativ angeben zu können, wurden Messungen mit Vergleichssubstanzen gemacht. Diese bestanden aus möglichst Borfreier Kohle, welcher Bor in bestimmtem Verhältnis zugemischt wurde.

Die Aufnahmen wurden mit einem kleinen Zeiß'schen Photometer photometriert und zwar
1. die Kohlenstofflinie 2479,
2. die beiden Borlinien 2497 und 2498,
3. der Untergrund links und rechts und in der Mitte zwischen den Borlinien.

Auf jede Aufnahme wurde eine Hansen'sche Stufenblenden-Aufnahme photographiert und mit photometriert, mit deren Hilfe die Schwärzungskurven gezeichnet und die unter 1, 2 und 3 genannten Schwärzungen in Intensitäten umgerechnet wurden. Hierauf wurde der Untergrund an der Stelle der Borlinien dadurch annäherungsweise bestimmt, daß ein Mittelwert aus dem Untergrund auf der einen Seite und in der Mitte zwischen den Borlinien gebildet wurde. Dieser Wert wurde von der gemessenen Borlinienintensität abgezogen. Die Intensität der Borlinien war stets gegenüber derjenigen der Kohlenstofflinie sehr schwach, da ja mit sehr kleinen Borkonzentrationen gearbeitet wurde. Daher waren entweder die Borlinien unter- oder die Kohlenstofflinien überbelichtet. Sie konnten also niemals zugleich im günstigen linearen Schwärzungsbereich liegen. Daher wurden die Borlinien normal belichtet und die dann zu starke Kohlenstoffintensität wurde durch einen Abschwächer soweit geschwächt, daß auch sie in den normalen Schwärzungsbereich kam. Zu diesem Zweck wurde der Spalt zur Hälfte durch ein dünnes Zellophan-Häutchen bedeckt, welches die Kohlenstofflinie gerade auf die richtige Intensität abschwächte. Man erhielt dann zwei Spektren untereinander, welche zu gleicher Zeit belichtet waren. Auf dem einen Spektrum lagen die Borlinien auf dem anderen Spektrum die Kohlenstofflinie im günstigen Schwärzungsbereich.

Zunächst wurde qualitativ festgestellt, daß der Borgehalt des mir von Bothe übersandten Graphits sicher größer als 10^{-6} und kleiner als 10^{-5} (Atomanteile Bor zu Atomanteilen Kohlenstoff) war. Alsdann wurden Mischungen von borfreier Kohle mit Bor im Verhältnis 1×10^{-6}, 3×10^{-6}, 4×10^{-6}, 5×10^{-6}, 6×10^{-6}, 7×10^{-6}, 8×10^{-6} und 9×10^{-6} Atomanteile Kohlenstoff zu Atomanteilen Bor hergestellt.

Als Ausgangskohle wurde Zuckerkohle benutzt. Früher (s.den früheren Bericht und die erste Tagung über P 38) war festgestellt worden, daß Zuckerkohle praktisch borfrei sei. Die Versuche wurden damals in Göttingen sowohl mit Kohle, welche aus dort käuflichem Kandiszucker hergestellt war, als auch mit von Merck bezogener Zuckerkohle ausgeführt. Die damals benutzten Proben waren unterdessen verbraucht. Leider stellte es sich bei der Fortsetzung der Untersuchungen in Gießen heraus, daß die Zuckerkohle scheinbar doch Bor in kleinen Mengen enthielt. Dies war sowohl der Fall bei der von Merck neuerdings bezogenen Kohle als auch bei der aus Gießen gekauften Zuckerkohle. Zunächst wurde der neue Befund dadurch erklärt, daß die Göttinger Versuche zu qualitativ gemacht waren und dadurch damals der geringe Boranteil des Zuckers dem Nachweis entgangen war. In der Meinung, daß man den Boranteil auch in der Zuckerkohle als gegeben ansehen müßte, wurde zunächst versucht, den Boranteil dadurch zu bestimmen, daß man den Borgehalt durch Zusatz von weiteren Bormengen steigerte und den Borgehalt gleich dem Anteil setzte, bei welchem eine Verdoppelung der Borintensität auftrat. Dieser Boranteil in der Zuckerkohle wurde dann bei allen Versuchen berücksichtigt. Dieses Verfahren war nicht nur recht umständlich und zeitraubend, sondern auch recht ungenau, da der Borgehalt der Zuckerkohle offenbar stark schwankte, und sich deshalb auch große Schwankungen in dem damit bestimmten Borgehalt des Bothe-Graphits ergaben. Erst nach vielen Untersuchungen gelang es, einen Zucker zu finden, welcher ebenso wie der in Göttingen früher gekaufte und die früher von Merck hergestellte Zuckerkohle praktisch kein Bor enthielt. Dieser Zucker wurde von der Firma Pfeifer & Langen, Elsdorf im Rheinland, geliefert und von dieser Firma als besonders rein bezeichnet. Die hieraus hergestellte Zuckerkohle konnte nun als Vergleichssubstanz dienen.

Als Beimischung wurde bei den ersten Versuchen Borsäure, später Borkarbid und zuletzt Bornitrid benutzt. Borsäure hat den großen Vorteil, daß man die einzelnen Mischungen dadurch herstellen kann, daß man der Zuckerkohle eine wässrige Lösung des richtigen Borgehalts beimischt und das Lösungsmittel des Breies verdampft. Es hat aber den Nachteil, daß im Lichtbogen möglicherweise ein Teil des Bors sehr schnell verdampft und dadurch ganz andere Anregungsbedingungen entstehen wie bei der Anregung des Bors im Graphit, wo das Bor als Borkarbid vorhanden ist. Daher wurde versucht, Borkarbid statt Borsäure beizumischen. Das Borkarbid ist jedoch ein grobes Pulver, welches sich wegen seiner Härte nicht feiner pulverisieren und daher nicht gut gleichmäßig mit Kohlenstoff mischen ließ. Daher wurde zuletzt Bornitrid genommen, welches fein gepulvert war und sich sicher im Lichtbogen schnell mit Kohlenstoff zu Borkarbid umsetzt, sodaß man das Bor in der gleichen chemischen Bindung wie in der Graphitkohle hat.

Es zeigte sich, daß die Ergebnisse sehr stark schwankten. Dies konnte verschiedene Ursachen haben:

1. Verschiedene Anregungsbedingungen in den bei der Abbildung auf den Spalt des Spektrographen benutzten Teilen des Lichtbogens. Um diese auszuschalten wurde der Bogen nicht auf den Spalt, sondern in das Objektiv des Kollimators abgebildet und der damit verbundene Intensitätsverlust in Kauf genommen.

2. Verschiedener Borgehalt in den einzelnen untersuchten Proben. Dazu ist folgendes zu sagen: Den Borgehalt in den Vergleichssubstanzen ganz einheitlich zu machen, war schlechterdings unmöglich. Dafür ist auch das der Kohle zugesetzte Bornitrid nicht genügend feinkörnig. Man muß immer bedenken, daß man es mit sehr kleinen Borkonzentrationen zu tun hat. Um festzustellen, ob der Borgehalt in dem von Bothe benutzten Graphit an verschiedenen Stellen verschieden ist, haben wir verschiedene Stücke verglichen. Die Schwankungen waren dabei nicht größer als sonst. Hingegen zeigte sich ein eindeutiger Unterschied zwischen dem bei der Zersägung der Stücke abfallenden feinen Staub und dem durch Mörserung aus den kompakten Stücken gewonnenen Pulver. Der Borgehalt des Pulvers war um 10-20 % größer als der des Staubes.

Ergebnis: Das Ergebnis der Mittelbildung von etwa 10 guten Aufnahmereihen war folgendes: Der Borgehalt des Staubes ist < als $0{,}7 \times 10^{-5}$ und > $0{,}6 \times 10^{-5}$. Der Borgehalt des kompakten und dann gepulverten Materials ist < $0{,}8 \times 10^{-5}$ und > $0{,}6 \times 10^{-5}$.

Kritik der Untersuchungen: Zu dem Ergebnis, daß der Borgehalt > $0{,}6 \times 10^{-6}$ und < $0{,}8 \times 10^{-5}$ sei, ist folgendes zu sagen: Die Grenzen des angegebenen Bereichs sind durch die Schwankungen der einzelnen Messungen gegeben. Was dabei nicht berücksichtigt werden konnte, sind etwaige systematische Fehler. Als solche sind zu nennen:

1. Der Einfluß des Untergrunds. Da der Untergrund bei dem Bor enthaltenden Graphit an der Stelle der Borlinien nicht bestimmt werden konnte, wurde, wie beschrieben, auf beiden Seiten der Borlinien der Untergrund gemessen und der Mittelwert als Untergrund an der Stelle der Borlinien eingesetzt. Dies muß nicht unbedingt richtig sein. Es ist möglich, daß eine schwache Verunreinigungslinie sich an dieser Stelle befindet und

German production and testing of very low-boron graphite suitable for use as a moderator in a fission reactor with unenriched uranium (1940 onward)

daß der Untergrund an dieser Stelle bei der Graphitkohle und der Zuckerkohle etwas verschieden ist, auch wenn der Untergrund auf beiden Seiten der Linien der gleiche war.

2. Verschiedene Anregungsbedingungen bei der Graphitkohle und der Zuckerkohle und dadurch verschiedene Bor- und Kohleanregung. Tatsächlich war die Verdampfung der Zuckerkohle im Bogen etwas anders als die Verdampfung der von Bothe benutzten Graphitkohle. Es ist möglich, daß dadurch auch bei gleicher Intensität der Borlinien trotzdem der Borgehalt etwas verschieden ist. Wie groß dieser Fehler sein kann, läßt sich sehr schwer abschätzen. Einen gewissen Anhaltspunkt kann man dadurch bekommen, daß man verschiedene Bereiche des Bogens bei scharfer Abbildung der einzelnen Bogenteile auf den Spalt miteinander vergleicht. Tatsächlich waren die Schwankungen bei den einzelnen Aufnahmen dann noch etwas größer, doch lagen die Werte bestimmt über 0,5 und unter 1 x 10^{-5} Boranteile auf Kohlenstoffanteilen. Daher können die oben angegebenen Grenzen für den Borgehalt, zwischen 0,6 und 0,8 x 10^{-5}, als noch nicht ganz gesichert gelten.

Sicher liegt der Borgehalt zwischen 0,5 und 1 x 10^{-5} und ziemlich sicher zwischen 0,6 und 0,8 x 10^{-5} Atomanteile Bor auf Atomanteilen Kohlenstoff. Die Bestimmung so kleiner Borkonzentrationen in Kohle dürfte an der Grenze des Meßmöglichen sein. Eine chemische Bestimmung so kleiner Bormengen ist nach Aussage der Chemiker unmöglich. Hingegen bestünde die Möglichkeit, dadurch weiterzukommen, daß man das Bor aus der Graphitkohle durch ein für Bödenuntersuchungen entwickeltes Verfahren herauszieht und die so von Bor befreite Graphitkohle unter Zumischung bestimmter Boranteile mit gleichem Untergrund von Probe- und Vergleichssubstanz benutzt. Dann könnte man vielleicht mit gleichem Untergrund von Probe- und Vergleichssubstanzen rechnen und dadurch wenigstens diese Fehlerquelle ausschalten. Dies dürfte sich jedoch nur dann lohnen, wenn die Kohle für das Problem P 38 nach dem heutigen Stand der kernphysikalischen Untersuchungen wirklich noch in Betracht kommt. Jedenfalls kann ein Teil der Neutronenabsorption in dem von Bothe benutzten Graphit durch die Verunreinigung durch Bor erklärt werden.

A l u m i n i u m .

Das Aluminium lag in Stücken vor. Eine erste Untersuchung des Lichtbogens zwischen zwei Aluminium-Elektroden zeigte keine Bor- und Cadmiumlinien. Um den Höchstgehalt an Bor und Cadmium im Aluminium angeben zu können mußte Bor und Cadmium in bestimmten Mengen zugesetzt werden. Diese Untersuchung wurde auf zweierlei Weise geführt. Bei der einen Methode wurde das Aluminium in HCl aufgelöst und das so erhaltene Al Cl_3 mit einer wässrigen Lösung von B_2O_3 und Cd SO_4 gemischt, eingedampft und im Kupferbogen untersucht. Das Ergebnis war folgendes: Auch im reinen Al Cl_3 (also ohne Bor- und Cadmiumzusatz) sind ganz schwach die Bor- und die Cadmiumlinie 2288 Å E zu sehen, weil die Kupferelektroden etwas Bor und Cadmium enthielten. Dadurch ist die Grenze der Empfindlichkeit des Nachweises von Bor und Cadmium gegeben. Durch Cadmium- und Borzusatz werden die Linien von Bor und Cadmium sehr verstärkt. Aus der Verstärkung kann man schließen, daß der Cadmiumgehalt im Aluminium kleiner als 10^{-5}, wahrscheinlich sogar wesentlich kleiner als 10^{-5} ist, der Borgehalt kleiner als 10^{-5}.
Bei der 2. Methode wurde das Aluminium als Elektrode verwendet. Damit fällt der störende Einfluß der Kupferelektroden weg. Es wurde, wie gesagt, nahezu kein Bor und Cadmium in diesem Spektrum gefunden. Hiermit wurde nun das Spektrum von Aluminiumflittern von Merck verglichen. Es war nahezu kein Unterschied zwischen den beiden Spektren zu finden. Um die Nachweisgrenzen von Bor eventuellen Bor- und Cadmiumverunreinigungen feststellen zu können, wurden die Aluminiumflitter mit metallischem Bor und Cd SO_4 (metallisches Cadmium war zu grob) gemischt. Eine Zumischung von 10^{-5} Mol Bor und Cadmium war noch deutlich nachzuweisen, während im reinen Aluminiumflitter keine Bor- und Cadmiumlinien zu erkennen waren.

Da Aluminium nicht als Bremssubstanz dienen soll, sondern nur als Stoff, aus welchem man Gefäße bei Untersuchungen mit P 38 macht, ist eine kleine Absorption von Neutronen nicht so störend. Daher dürfte es auch vollständig genügen, zu wissen, daß der Bor- und Cadmiumanteil kleiner als 10^{-5} ist.

Es sei noch bemerkt, warum Aluminium nicht als Elektroden bei den eingangs beschriebenen Kohleuntersuchungen benutzt wurde. Auch die Aluminiumelektroden haben einen Untergrund an der Stelle der Borlinien, der von der Borlinienintensität hätte abgezogen werden müssen. Allerdings enthielt Aluminium keine Spuren Bor wie die Kupferelektroden. Es hat aber einen anderen Nachteil: Die Aluminiumelektroden oxydieren im Lichtbogen sehr schnell. Bei den Kohleuntersuchungen war es nötig, ununterbrochen Kohle nachzufüllen und den Bogen jedesmal neu zu zünden. Bei Verwendung von Aluminiumelektroden hätte man zwischendurch jedesmal die Elektroden abschmirgeln oder abdrehen müssen.

B e r y l l i u m .

Das Beryllium lag in Form von Berylliumoxydpulver vor, es wurde ebenfalls im Kohlelichtbogen untersucht. Das Ergebnis war: Der Cadmiumanteil des von Haxel und Volz benutzten Berylliumoxyds ist kleiner als 10^{-5} Molanteile, der Boranteil kleiner als 10^{-3} und größer als 10^{-5} Molanteile. Da der Boranteil sicher für Beryllium als Bremssubstanz viel zu groß ist, wurde auf eine genauere quantitative Untersuchung verzichtet. Bei den Versuchen von Haxel und Volz wurde das Hauptgewicht auf den Vorgang der Streuung und Verlangsamung s c h n e l l e r Neutronen gelegt. In diesem Fall ist der verhältnismäßig große Borgehalt des Berylliums unschädlich. Es sei noch bemerkt, daß von Merck bezogenes Berylliumoxyd kein Bor in nachweisbaren Mengen enthielt.

Gießen, den 17. III. 42. Flügge

German production and testing of very low-boron graphite suitable for use as a moderator in a fission reactor with unenriched uranium (1940 onward)

TOP SECRET

HEADQUARTERS
EUROPEAN THEATER OF OPERATIONS
UNITED STATES ARMY
Alsos Mission
APO 887

5 April 1945

SUBJECT: Interrogation of Dr. Kohl, Works Manager of Degussa Plant No. 2, Frankfurt.

1. Dr. Kohl was interrogated in Frankfurt on 3 April 1945 by J. A. Lane and F. A. C. Wardenburg. Dr. Kessler, one of his assistants and also his secretary were present during the interrogation and were called on from time to time by Dr. Kohl on matters of detail.

2. Uranium metal, which was known by the code name of "Spezialmetall", was manufactured at the Degussa, Frankfurt plant. According to Dr. Kohl the material was required by the Reichsforschungsrat and all administrative matters were handled by Auer Gesellschaft in Oranienburg directly with RFR. Degussa acted as a sub-contractor for Auer. All deliveries from the Frankfurt plant were made either to Auer or to the RFR at Berlin-Dahlem. The use of the material was secret. Dr. Kohl believed that it had something to do with experiments in atomic physics. The material was manufactured in a purity of 98 to 99 percent from ammonium uranate which was converted to the oxide U_3O_8. The ammonium uranate was secured either from the Joachimstahl mines or from Katanga (Union Miniere du Haut katanga).

3. Earlier, metallic uranium was mixed with coal dust (carbon?) and with Tragacanth gum as a binding material and pressed into blocks, approximately 50% by weight of coal and uranium. The blocks were approximately 5 cm x 5 cm x 6 cm. About five tons as metallic uranium in total were delivered in this form. The material is now delivered as powdered metallic uranium, production being between one and two tons, making a total uranium production of between six and seven tons.

4. We visited the site of the plant which had been partially destroyed. The equipment was moved in December to a location in Markbrandenburg where Dr. Kohl believed the RFR had a branch. A part of the equipment was moved to the plant of the Chemische Fabrik Grunau at Grunau near Berlin. Dr. Kohl thought it might have been moved again but he did not know the exact location, but suggested somewhere in Thuringen as a probable evacuation address.

5. Dr. Kohl was emphatic in his assertion that no deliveries of uranium were made to the I. G. Farben Industrie.

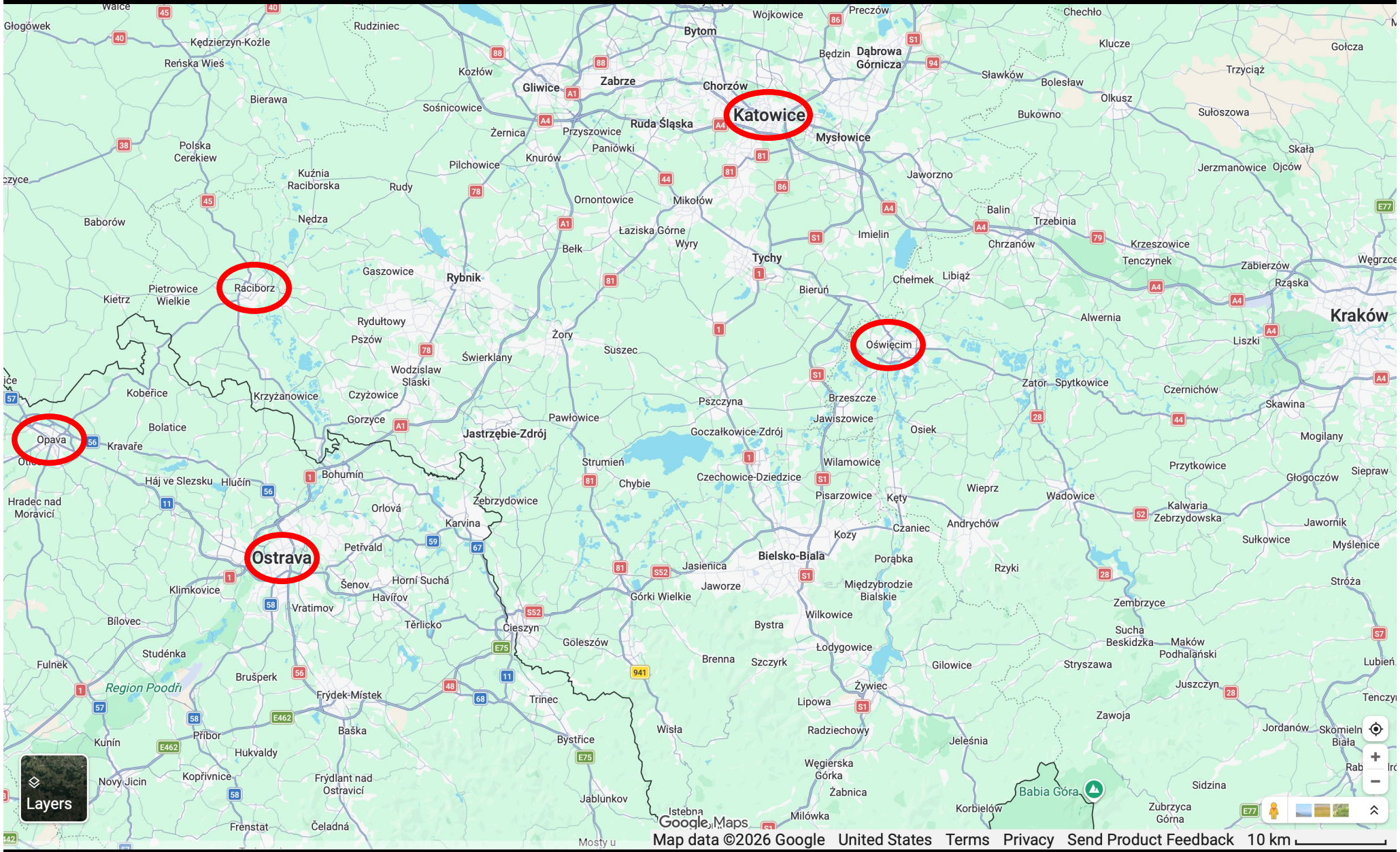
6. Before the war, approximately three tons per month of sodium uranate were used in the ceramic color business. Since 1940 the use of uranium for this purpose has been prohibited and so far as Dr. Kohl knows, none is consumed except for the scientific experiments. Approximately three tons of ammonium uranate were shipped with the equipment to Grunau.

7. The management of Degussa evacuated in March, 1944 to Waechtersbach.

F. A. C. WARDENBURG

JAMES A. LANE

Auschwitz/Oświęcim


Katowice
Raciborz
Oświęcim
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Kraków
Opava
Bielsko-Biała
Rybnik
Tychy
Jastrzębie-Zdrój
Ruda Śląska
Gliwice
Zabrze
Chorzów
Bytom
Dąbrowa Górnicza
Mysłowice
Region Poodří
Layers
Google Maps
Map data ©2026 Google
United States
Terms
Privacy
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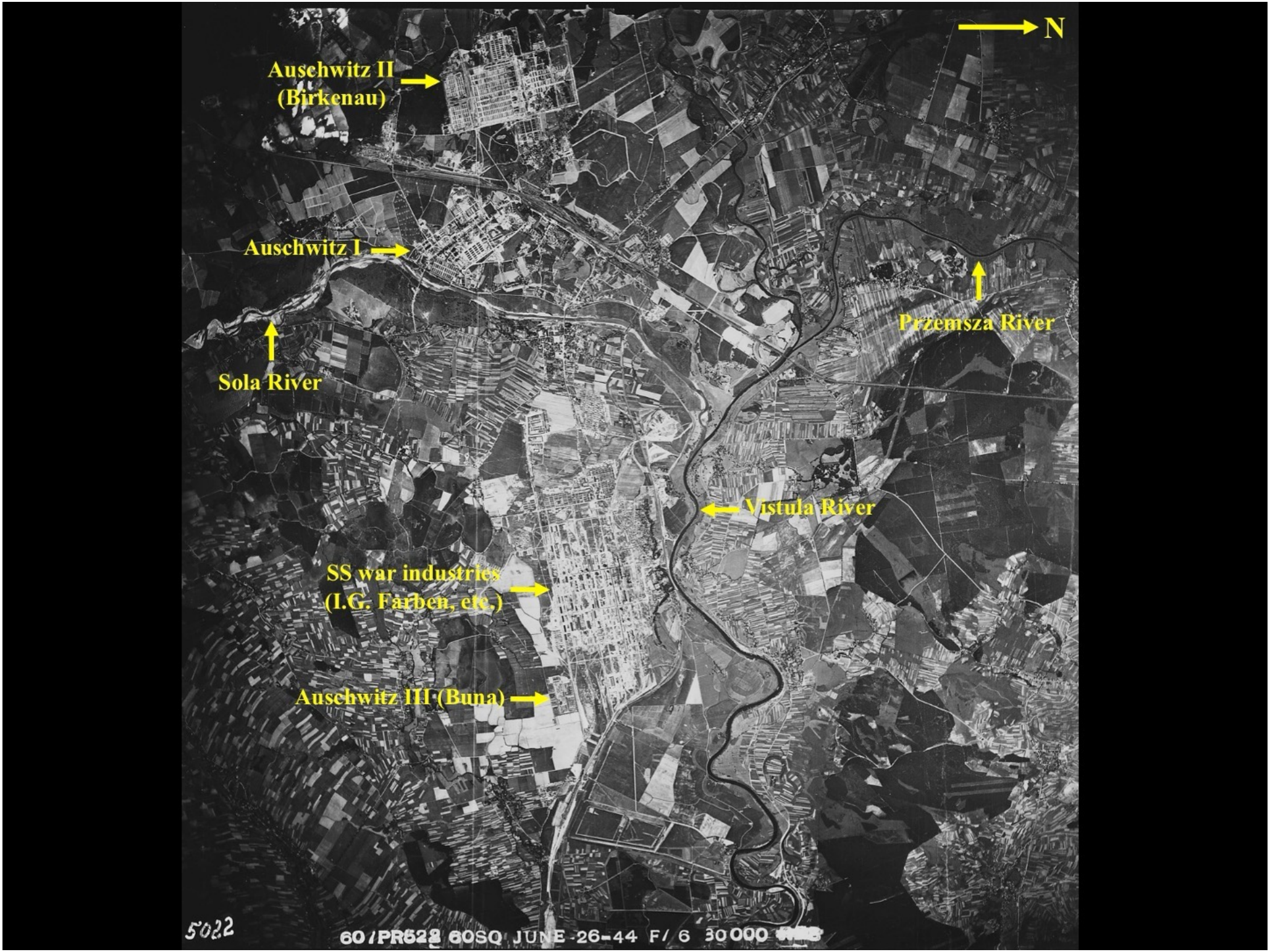
N
Auschwitz II
(Birkenau)
Auschwitz I
Sola River
Przemsza River
Vistula River
SS war industries
(I.G. Farben, etc.)
Auschwitz III (Buna)
5022
60/PR528 60SQ JUNE-26-44 F/ 6 30000

Buna IV to Otto Ambros regarding I.G. Farben Auschwitz, 11 January 1941. *Trials of War Criminals Before the Nuremberg Military Tribunals.*

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. […] 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[....]

Joseph Borkin. 1978. *The Crime and Punishment of I. G. Farben.* New York: Free Press. p. 127.

From the bare records available, 300,000 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. […] 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.

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:

SECRET

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

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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 products.

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.

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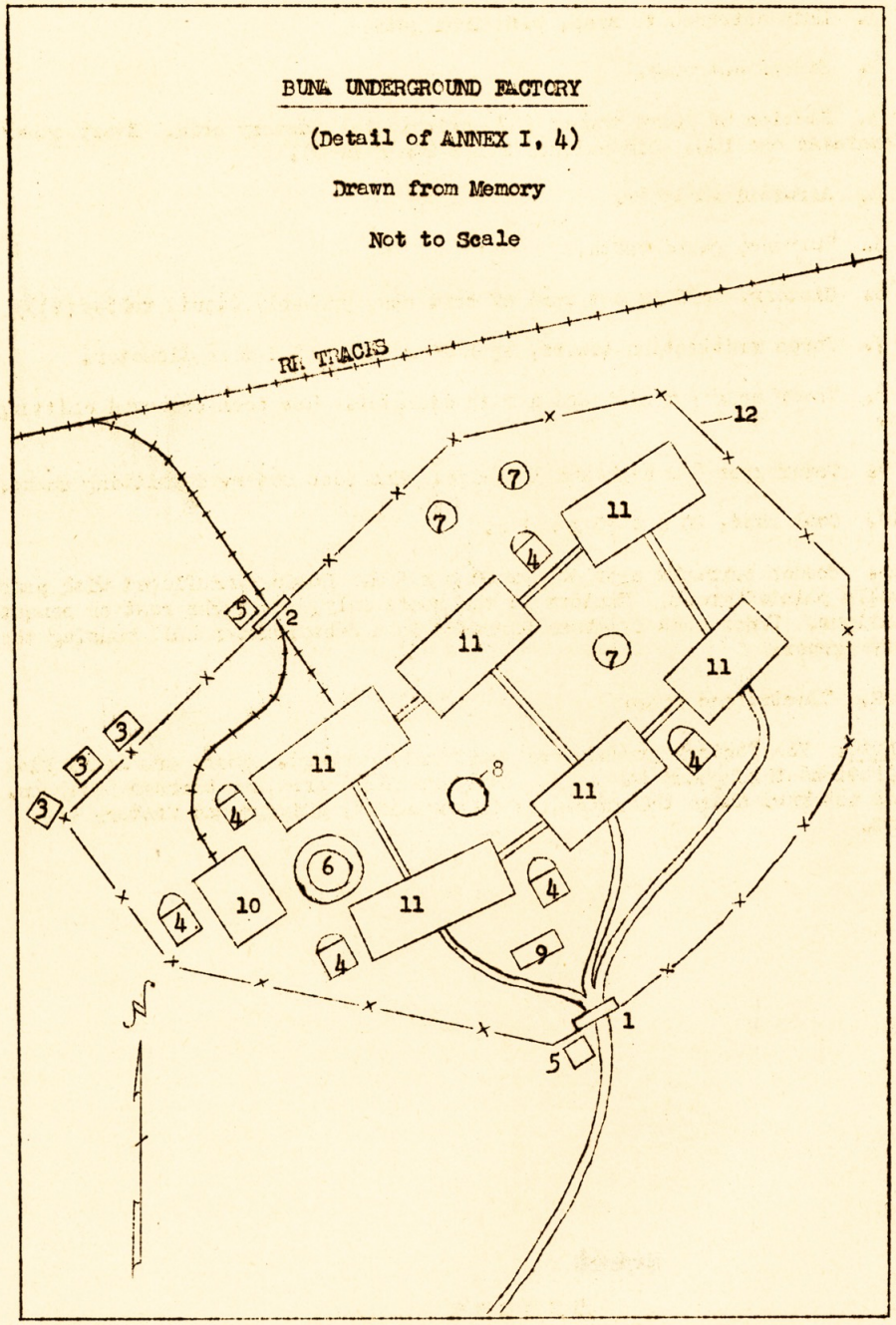
ANNEX II (Item 21)

BUNA UNDERGROUND FACTORY

(Detail of ANNEX I, 4)

Drawn from Memory

Not to Scale



SECRET

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. 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

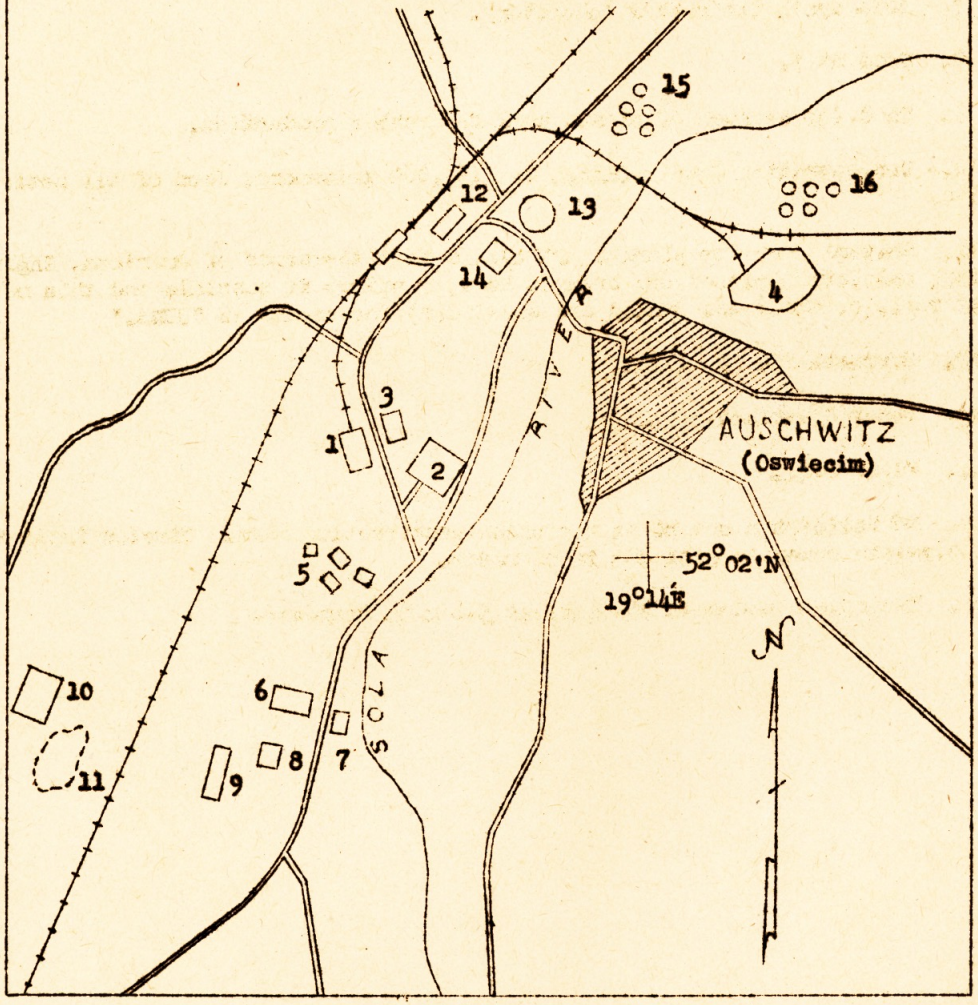
PW INTELLIGENCE BULLETIN No 2/25

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



Report No. R-107-47

SECRET

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-781
(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 1946.

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 fields 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

FILE COPY
Must be Forwarded to
INTELLIGENCE DOCUMENT BRANCH
within two weeks

RB-Nr. 0/0250/0004

AUERGESELLSCHAFT AKTIENGESELLSCHAFT

BERLIN N 65, FRIEDRICH-KRAUSE-UFER 24

Zweigniederlassungen: ESSEN / KATTOWITZ / METZ / PRAG / TEPLITZ-SCHÖNAU. Zweigstelle: WIEN

Fernspr.: Sammel-Nr. 35 66 71 Fernschreiber: 01 1416 Drahtanschrift: Auerlicht Berlin

BANKEN:

Berliner Handels-Gesellschaft, Berlin W 8, Behrenstraße 32/33 — Commerzbank Aktiengesellschaft, Berlin W 8, Behrenstraße 46-48 — Dresdner Bank, Berlin W 8, Behrenstraße 35-39

Postscheck: Berlin NW 7, 70313 Reichsbank Berlin Nr. 1/828

Auergesellschaft Aktiengesellschaft, Berlin N 65, Friedrich-Krause-Ufer 24

Herrn

Dr. Klaenhardt
Chemische Fabrik Grünau

5 Drahtbrief

Berlin-Grünau

Regattastrasse

In der Antwort gefl. zu wiederholen:	Hausanschluß Nr.	Tag
Dr.R/Ds.	174	12.März 1945

Zu Ihrer Orientierung teilen wir mit, dass wir unsere Erdenfabrik in Oranienburg beauftragt haben, alles anfallende Präparat 38 an Prof.Gerlach nach Stadtilm zu senden.

Heil Hitler!

AUERGESELLSCHAFT
AKTIENGESELLSCHAFT

ppa. Dr. [illegible]

SECRET. A.D.I.(K) Report No. 113A/1945.

THE FOLLOWING INFORMATION HAS BEEN OBTAINED FROM P/W. AS THE STATEMENTS MADE HAVE NOT AS YET BEEN VERIFIED, NO MENTION OF THEM SHOULD BE MADE IN INTELLIGENCE SUMMARIES OF COMMANDS OR LOWER FORMATIONS, NOR SHOULD THEY BE ACCEPTED AS FACTS UNTIL COMMENTED ON IN AIR MINISTRY INTELLIGENCE SUMMARIES OR SPECIAL COMMUNICATIONS.

SUSPECTED 'V' WEAPON FACTORIES - GERMANY AND POLAND.

A number of P/W and Allied nationals recently interrogated in this country and on the Continent have passed on stories about suspected 'V' weapon factories. These are not all very convincing but they may be found to tie up with rumours from other sources or be capable of proof by photographic interpretation.

UNDERGROUND WORKS OBER RADERACH. (September 1944).

2. A co-operative German P/W, who lived in the Friedrichshafen area until September 1944, said there was an underground factory between two hills to the North West of Ober Raderach village rather less than four miles North North West of Freidrichshafen at 47° 42' 18" N., 9° 26' 25" E. This pinpoint is very near that of a site described in a report from Italy dated 24th November 1944 reference 1AFIU/HQ/CSDIC/12.

3. It was locally rumoured that the Ober Raderach works was closely connected with the Zeppelin works at Friedrichshafen and that "25 ton objects" presumed to be 'V' weapons, were being produced. During the winter of 1943/1944 loud noises similar to those made by a power unit under test emanated from the plant but in about March 1944 there was a loud explosion; thereafter things quietened down more than somewhat.

4. P/W had no idea of how many workers might be employed but said they were all either P/W or German troops undergoing detention and they were never allowed outside the factory precincts.

5. These precincts were, however, extensive, as the 6 ft. wooden fence round the site enclosed both the above mentioned hills and a fairly considerable area of ground. A number of small brick office buildings and barrack huts were visible from the outside but the presence of guards operating under Gestapo supervision discouraged the curious from looking too closely.

6. With reference to the Zeppelin factory itself a French report on the interrogation of an employee of Bugatti, Molsheim, mentions that some of the Zeppelin shops at Friedrichshafen were being tooled up in 1944 for the manufacture of aircraft torpedoes and that these would be tested on Lake Constance.

GLAMERT SPINNEREI, MÄHRISCH WEISSWASSER, CZECHOSLOVAKIA. (December 1943).

7. A Czech P/W had heard from his aunt, who lived at Mährisch Weisswasser, that in December 1943 the Germans had taken over the Glammert spinning mill in that town for "finishing work of a secret nature connected with the present G.A.F. programme".

8. The village of Weisswasser (Bila Voda) lies approximately 18 miles East South East of Zamberk and the spinning mill is located immediately North of the intersection of the main railway line and the road running South through the village, on the western side of this road, at 50° 01' 02 N., 16° 44' 50" E.

UNDERGROUND FACTORY, OBRIGHEIM. (MANNHEIM AREA).

9. An undated interrogation report from a French source mentions the existence of an underground factory at Obrigheim (49° 21' 10" N., 9° 05' 40" E) where 'V' weapons or perhaps poison gases were being manufactured.

10. It was understood that this underground factory was on or near the site of a former plaster works and its personnel, who were accommodated in barrack huts, included a number of conscripted Frenchmen drafted from Strasbourg.

SUSPECTED 'V' WEAPON FACTORY, SCHÖNEBECK IN DER ELBE. (January 1944).

11. A German Army P/W had received a letter from his wife in January 1944 in which she said that a factory at Schönebeck an der Elbe was making parts for secret weapons.

12. P/W did not know the name of this factory but believed that it lay on the eastern side of the Friedrich Strasse between pinpoint 742862 and pinpoint 746866 GSGS 4414 Sheet 3936.

Groß Salze/Wieliczka (Kraków area)

SUSPICIOUS U-BOAT PEN, BREMEN. (August 1944).

13. A Luxembourg engineer interrogated on the Continent had paid a visit in August 1944 to a U-boat pen under construction on the eastern bank of the River Weser, 16 miles North-West of Bremen, at 668987 GSGS 4081, Sheet 47.

14. At the time of informant's visit the roof of the concrete pen was being increased in thickness from 15 ft. to 24 ft. and the side walls were being similarly strengthened. He heard that it was originally intended to be used for U-boat assembly but that it was probably to be handed over to the G....F. and used for the manufacture of 'V' weapons.

UNDERGROUND FACTORY, WIELICZKA, POLAND. (March 1944).

15. A Polish refugee, who had worked in the Wieliczka area until March 1944, mentioned that towards the end of 1943 the Germans had installed a plant for secret weapon production in a salt mine to the South-West of the town on the northern side of the Wieliczka-Swoszowice road at 49° 58' 50" N., 20° 3' 0" E.

16. The entrances to the site were guarded by black uniformed guards and the workers, who were all interned Jews, were never allowed to go out for air; it was understood that the mortality rate was very high as a result of these restrictions and the unhealthy working conditions.

17. Informant added that many of these workers and some of the machinery had been transferred to Wieliczka from another secret weapon factory situated to the North-East of Debica at approximately 50° 8' N., 21° 33' E. The local Poles were fairly sure that Debica was producing V.1's in 1943 as these were tested in the neighbourhood and fell in the town of Sandomierz (50° 30' 40" N., 21° 46' 00" E.)

A.D.I.(K)
& U.S. Air Interrogation.

for S.D. Felkin
Wing Commander.

Reported ~November 1944
Test Explosion in Poland

Reported ~November 1944 Test Explosion in Poland

		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**
Details	**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

For more information, see *Forgotten Creators* D.11

Werner Grothmann. 2002 interview. Jonastalverein Archive, Arnstadt. 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.

Robert Jackson to Albert Speer. 21 June 1946. avalon.law.yale.edu/imt/06-21-46.asp

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[0] to 500[0] centigrade and destroyed them without leaving any trace at all. Do you know about that experiment?

Felix Kersten. 1947. *Memoirs of Doctor Felix Kersten*. Doubleday. pp. 256-258.

Kriminalrat Obersturmfuehrer Göring… 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.

Wilhelm Wulff. 1973. *Zodiac and Swastika*. Coward McCann & Geoghegan. 160-161.

[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… 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° C at its center, the whole town and the entire population were burned to cinders in a flash.

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

DECLASSIFIED
Authority NND 917017

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.

Otto Hahn. 1968. *Mein Leben*. p. 200:

"Professor Staudinger wrote me that an officer had given him his word of honor that three German nuclear bombs had been ready for deployment in the Lüneburg Heath shortly before the end of the war."

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OFFICE OF MILITARY GOVERNMENT FOR GERMANY (US)
Field Information Agency, Technical
APO 742

2 August 1946

DI 092.-76 FIAT

SUBJECT: Periodic Intelligence Report 1.

TO : Chief FIAT (US), thru Chief FIAT (US), Berlin Office.

This report deals exclusively with Manfred von ARDENNE, Any information about other matters which came to hand during this investigation was not included in the report.

1. ARDENNE's laboratory in and near his former home address: 19, Jungfernstieg, LICHTERFELDE. The part of the house used as a laboratory is now being used as kitched by ARC who have taken over the building. The big bunker in the garden which housed most of the laboratory and equipment is completely emply and half filled with water.

a. The Electronic Microscope. The most important part of the information on this instrument is contained in ARDENNE's book "Elektronen-Mikroskopie" (Springer, 1940). Latest developments, extending the resolving power as far as 1.5mm use of highly symmetrical lenses made of Cobalt steel, and use of an atmosphere (1 mm hg) of hydrogen for cooling the object to be examined, were described in a number of articles published in various scientific periodical in 1944. I do not remember the names of these periodicals. The energy of the electrons varied from 60,000 to 80,000 volts; a new instrument for more than 2,000,000 volts was nearly finished. Research was undertaken on carbon remains of various steels for KRUPP and on variety of Organic substances.
(W 3, 6/7/46)

b. Van de Graaff Generater (Zeitschrift fuer Physik 121,236). It was run at normal pressure, up to slightly over a 1 MV. It was used for inventing a new procedure to determine the concentration of carbon in steel (Zeitschrift fuer Physik 122,740)
(W 3, 6/7/46)

c. Cyclotron was still being constructed. The plan was designed by Prof HOUTERMANS (Now in GOETTINGEN), the high frequency generator furnished by Dr. HOLLMANN (now in Thuringia), but destroyed in an air-raid.
(W 3, 6/746)

d. According to another source "ARDENNE's cyclotron did not get very far".
(W 3, 6/7/46)

d. Isotope separater using ions of 10,000 V and a circular magnetic field which let the heavier isotope hit a target film and bent the lighter one back (differences of curves). The ion source was still under construction. Apparatus devised by Prof HOUTERMAN
(W 3, 6/7/46)
Another source tells about a brass reception ring instead of target film and says about 72% U 235 were obtained.
(R1, 4/7/46)

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e. Mass spectremere based on the type described by Nier in Rev. Sci. Instr. 11, 212 using ions of 1,000 V. The main differences from the model were the following: an ion source for solid materials deposited on a tungsten strip that could be heated high enough for the evaporation of almost any substance; the entire vacuum tube after the manner of spark plugs. The target currents were automatically recorded on a linearized mass scale, the magnetizing current being gradually changed according to an appropriate time law. A new instrument using 20,000 V ions is planned at the present time. Description of the apparatus and analyses made up to masses of around 120 is contained in a paper sent to the Zeitschrift fuer Physik in about Jan. 1945.
(W 3, 6/7/46)

f. Ultra short wave experiments were undertaken in what source calls a branch establishment at DASSOW near Luebeck with Dr Eduard von WINTERFELD.
(W 3, 6/7/46)

g. In 1943 ARDENNE and HOLLMANN are reported to have worked on anti-radar devices. The idea apparently was to create a neutral field around an object with the aid of short waves.

h. After 1943 ARDENNE worked on isotope separation of Uranium with Dr BORN from AUER Gesellschaft and soure who is still available. This was done on the lines of work of Prof LAWRENCE.

i. Source describes ARDENNE rather as a measuring technician.
(R1, 4/7/46)

j. There were three electronic microscopes available:
Siemens (VEBORGES-RUSSKA) magnetic
AEG (BRUECHER-BAMSAUER) electrostatic
ARDENNE magnetic

k. WESTPHASL and von LAUE should know all about this side of ARDENNE's work and capabilities, and perhaps GEHRTS.

l. Source thinks of ARDENNE also as a measuring technician and believes that his contributions consisted mostly in impovements.
(R 2, 9/7/46)

m. Completely unreliable source described the following: ARDENNE made experiments with an atom gun (Atomkanone). About Christmas 1944, successful experiients were conducted in Pomerania with V-1 and atomic warheads, radio directed. The ensuring crafter was 2 km in diameter. Because the time for developments were too short nithing 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 statment from any other source although rumours to this effect, although with different names, have been persistent.
(SZ 5, 30/5/46)

n. In a letter from Feb. 46, ARDENNE writes: Compared to LICHTERFELDE the institute here is rather increased. the spectroscope has been somewhat improved here or rather been newly constructed for much higher measuring exactness (20,000 V anode tension). Major BOUTSCHBRUGEWITSCH is my personal Russian co-worker.
(W 3, 6/7/46)

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DI 092.-76 FIAT. Subject: Periodic Intelligence Report 1. 2 August 1946. TNA FO 1031/59.

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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"

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."

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.

and others believed that he was the most likely man to have removed, possibly through others, guided missiles documents emanating from E9 (Development Section 9) of the Luftwaffe Ministry and drawings and sketches of guided missiles from BAD SACHSA. BREE may be the same "person with a French name" (BCREU?) who worked spasmodically on "electric fuses for guided missiles" at TUCHELER HEIDE in 1943 and 1944. Thus he would know valuable details of the combined "guided missiles-atomic energy" research and development and would perhaps know where the missing documents were sent, whether they went first from TUCHELER HEIDE to BERLIN, as [redacted] vaguely stated, and thence to SD, POTSDAM, and to Italy.

24. Ingenieur KRUEGER should be traced and brought at once to ECIC. He may give us valuable information on the combined "guided missiles-atomic energy" program at TUCHELER HEIDE in 1943 and 1944 and may know exactly where documents and instruments have been sent. [redacted] obtained most of his information on activities at TUCHELER HEIDE from KRUEGER, in 1944.

25. Prof. Dr. NIELS, now said to be in the United States, was, according to [redacted] concerned with chemical and atomic problems at TUCHELER HEIDE and produced a number of atomic bombs, weighing from 1 to 5 kilograms. NIELS shouls be traced and questioned in detail.

26. Prof. Dr. HUETTEN. Present whereabouts unknown to [redacted] He should be located and brought to ALASKA for questioning. According to [redacted] he was the originator of the combined project of research and development of atomic energy and guided missiles at TUCHELER HEIDE. This project was named "Aktion HUETTEN" after him. He was transferred elsewhere, probably in 1943 (see paragraph 7).

27. Prof Dr. HOFMANN, successor of HUETTEN as chief of the combined program at TUCHELER HEIDE, is now at "ALEXANDROWKA Kolonien" near BAKU where he is continuing his former work.

[redacted] information on HOFMANN's present whereabouts and activities. Perhaps HOFMAn could be persuaded to accept an offer from the United States. He could be evacuated either via the Black Sea and Turkey or via the Caspian Sea and Persia. (See paragraph 7). (NOTE: At the beginning of March 1947 von BRAUN was visited, at LANDSHUT, by a German professor from Russia who was working on guided missiles and told him about the various Germans employed by the Russians in that field. It is not impossible that HOFMAN was this German professor from Russia and that he visited von BRAUN chiefly to discover if the United States would consider offering him a post. Von BRAUN wrote to Lt. Gen. DORNBERGER, his former chief, and possibly to others in March 1947, suggesting employment in the United States.)

28, Prof W. Von BRAUN should be re-interrogated on the following:
(a) The name of the German professor from Russia who visited him

WAR DEPARTMENT
CLASSIFIED MESSAGE CENTER
INCOMING CLASSIFIED MESSAGE

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PARAPHRASE OF STATE DEPARTMENT TELEGRAM FOR INFORMATION
WAR DEPARTMENT

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

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 8.

Prof. Dr. G. Mansfeldt

EGYETEMI ÉLETTANI INTÉZET
INSTITUTUM PHYSIOLOGICUM UNIVERSITATIS
BUDAPEST, VIII., ESZTERHÁZY-UTCA 9.
TELEFON: 135-352

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 kann. 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 Schweizer/ war vor kurzem 3 Wochen mit dem Auto dienstlich in Deutschland, suchte in München das botonische 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 Selbstetundigkeit ein, wir wählten Torwache, Küchenpersonal, ich übernahm die Apotheke auf Block 28. und

IPN GK 196/142
NTN 142, t. 59

empfanden das schon seit langer Zeit vermisste Glücksgefühl der Freiheit. Am 24. Januar geschah etwas, das nur Sie aufklären könnten. Vom Tor kam ein Laufschrift ein Häftling zu mir mit Ihrer Nachricht, ich möchte sofort ans 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 den 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 Tag 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 unzubringen. Wir wurden am Hof aufgestellt, umgeben von Maschinengewehren, dann die übliche rassenmässige Sichtung, dass selbst die grössten Optimisten auch die letzte Hoffnung auf ein Weiterleben aufgeben mussten. So standen wir etwa eine 1/4 Stunde, als plötzlich das Kommando hörbar wurde: "Alles zurück in die Blöcke!". Das Totenkommando verschwand so rasch als es kam und als Erklärung erfuhren wir noch am selben Tag, dass der russische Vormarsch die Eisenbahnlinie gefährdete, so 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 Umgebung 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 deutschen Greueltaten ihre Arbeit beendet hat. Ich war der einzig lebende

IPN GK 196/142
NTN 142, t. 59

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Budapest, 19

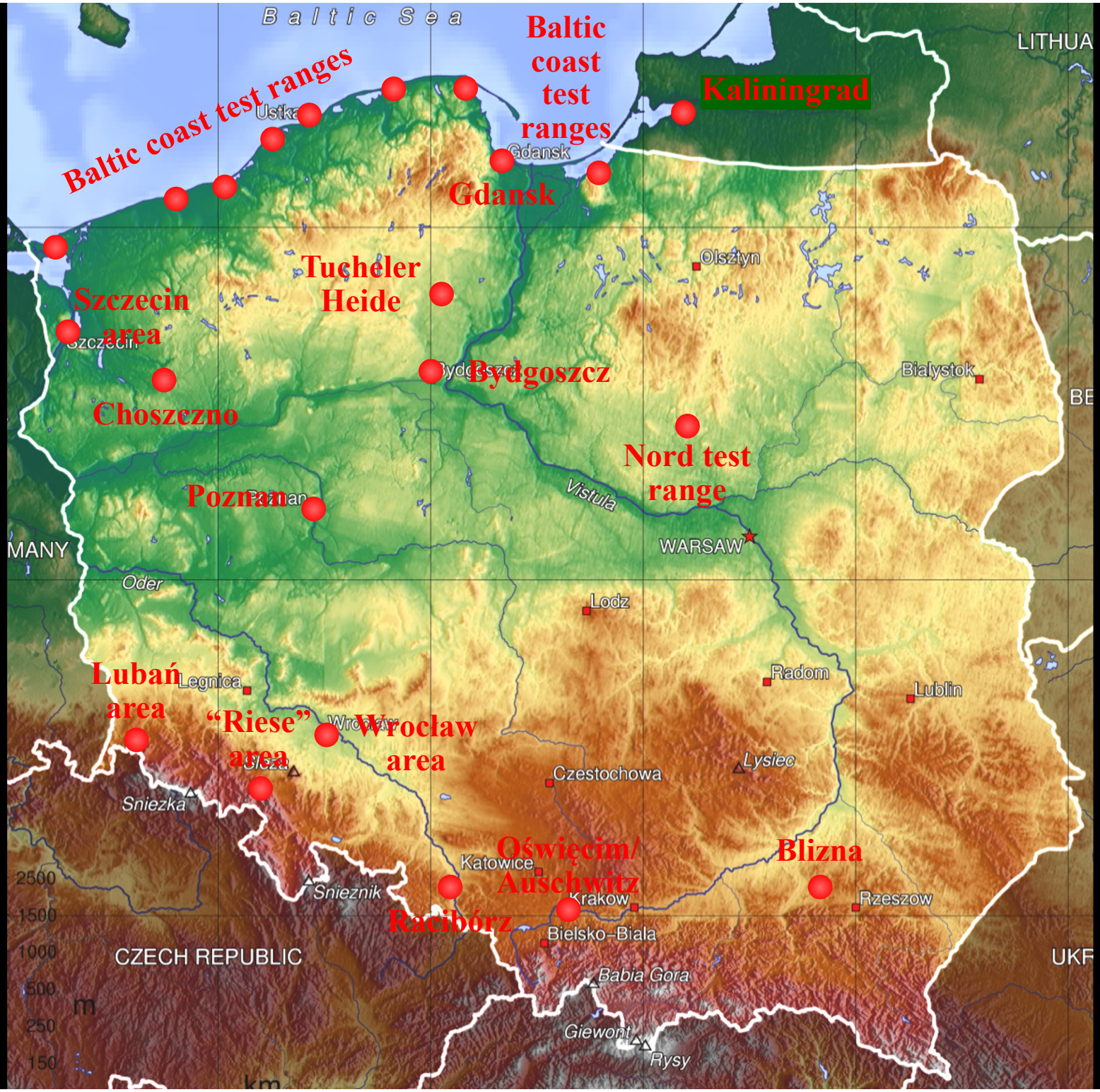
Zeuge, der über das Hygiene-Institut Bescheid wusste und so wurde ich mindestens 2-3mal wöchentlich einem Verhör unterzogen und musste freilich einigemal, aber jetzt schon im feinen Auto nach Rajsko fahren, um dort alles zu zeigen. Die verschiedenen wissenschaftlichen Kommissionen waren nur schwer davon 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 Gäste 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 glänzende Verpflegung. Ende April konnte ich dann mit einem Transport nach Ungarn fahren, wo ich freilich mit allen Ihren 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 z.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

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 8.

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.

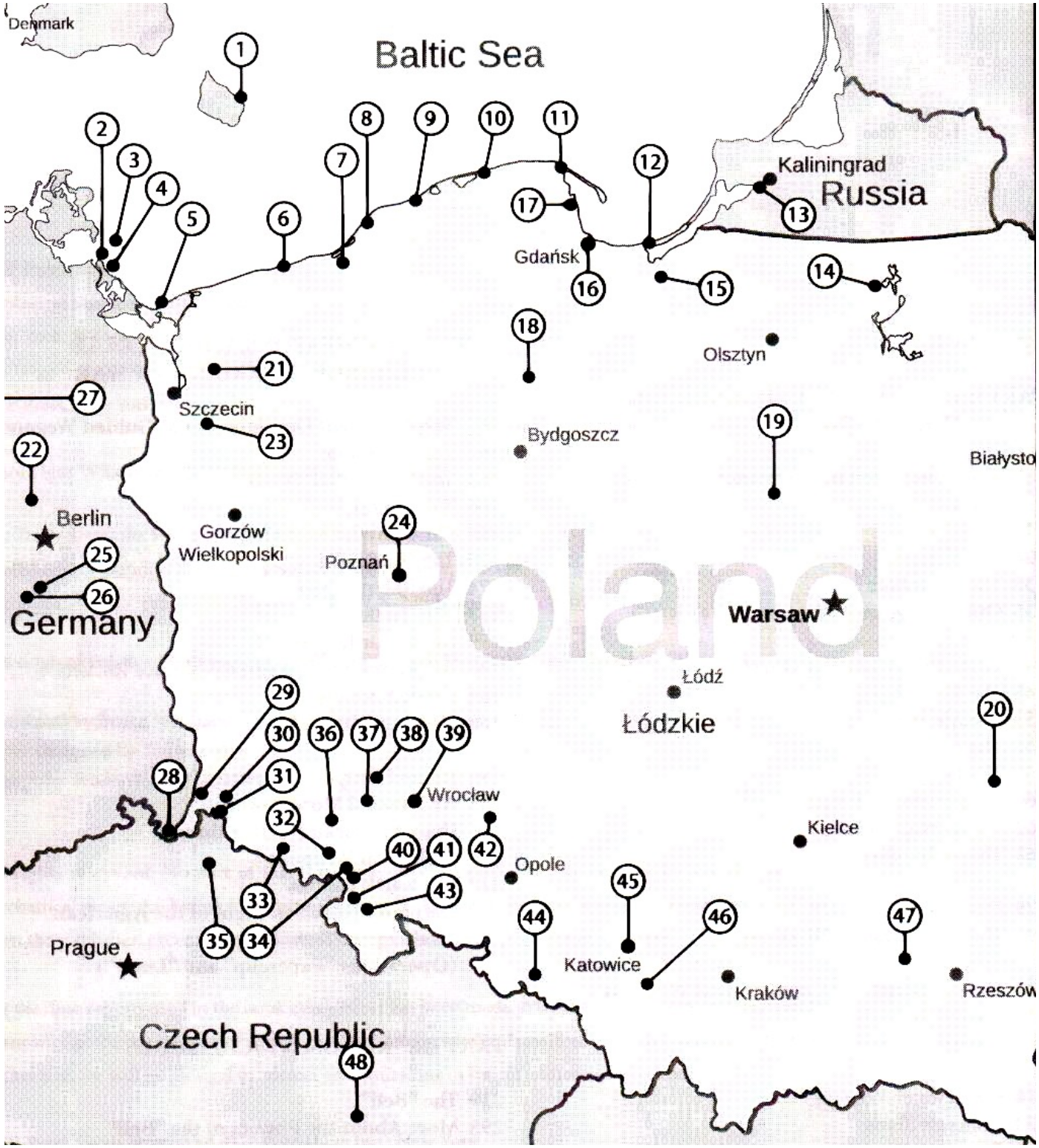
Reported ~November 1944 Test Explosion in Poland: Location?????????

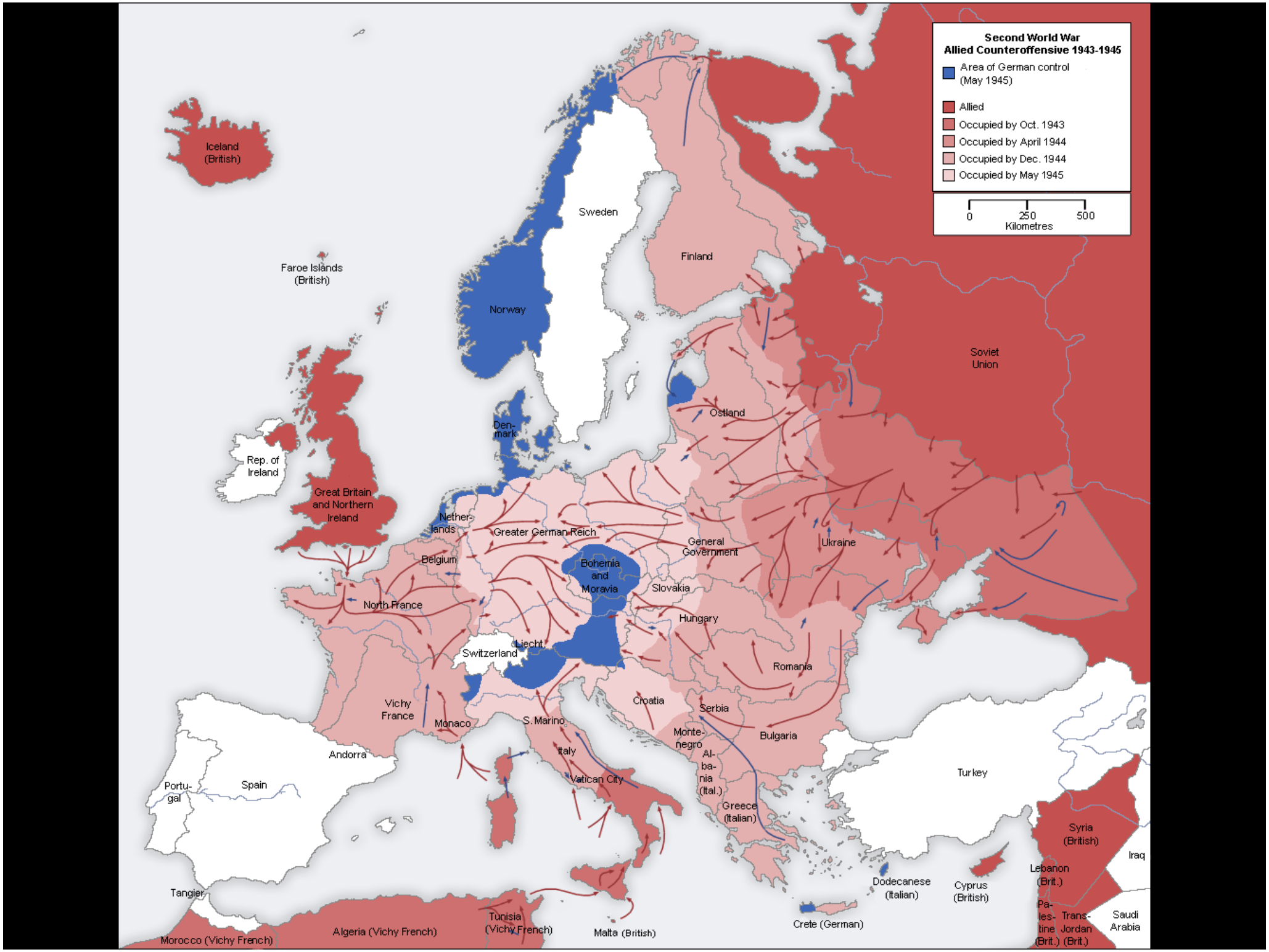


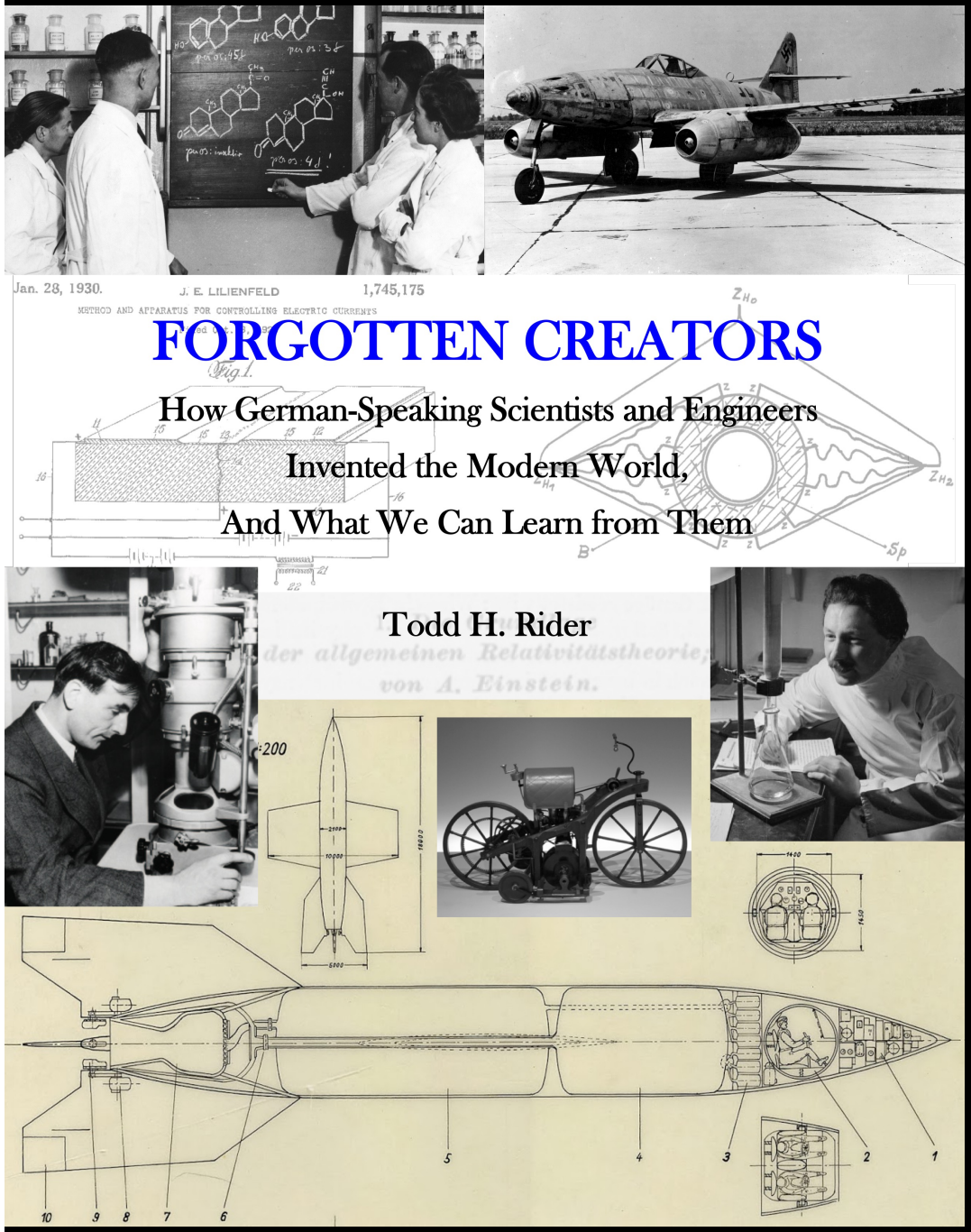
Other Sites

Does anyone have any additional information about R&D sites on this map from Igor Witkowski, *The Truth About the Wunderwaffe?*

1 Bornholm Island: "target" for the Rheinbote rockets
2 Peenemünde: V-1, V-2, etc.
3 Greifswalder Oie: tests of A-3 and A-5 rockets
4 Karlshagen: Elektro-Mechanische Werke, production of missiles
5 Międzyzdroje/Misdroy: V-3
6 Kołobrzeg/Kolberg: H. Coler
7 Koszalin/Köslin: long range missile schools
8 Darlowo/Rügenwalde: heaviest artillery test range, concrete ships
9 Ustka/Stolpmünde: firing range, also school for the crews of the new generation of submarines (T. XXI, XXIII)
10 Łeba/Leba: missile test range
11 Władysławowo/Grossendorf: experimental test range of the SS (detailed purpose unknown)
12 Stutthof concentration camp
13 Jesau: trials of the Hs-293 missiles
14 Kętrzyn/Rastenburg: Führer's main command post
15 Elbląg/Elbig: underwater silos for the V-2
16 Gdańsk/Danzig: stealth technology
17 Babie Doły, Oksywie/Hexengrund, Oxhöft: Kriegsmarine's evaluation centre. New types of torpedoes, midget submarines, propulsion systems
18 Bory Tucholskie/Tucholer Heide: V-1 and V-2 launch sites in the area near the Gacno village
19 The "Nord" test range: Schmetterling missiles
20 Majdanek concentration camp
21 Mosty/Speck: underground ammunition factory, also laboratory working on nuclear bomb
22 Oranienburg: nuclear laboratory (Auerwerke), also the Sachsenhausen concentration camp
23 Stargard, Miedwie Lake/Madüsee: tests of air-to-surface guided weapons
24 Pokrzywno/Nesselstadt: biological weapons
25 Kummersdorf: test range for tanks and artillery
26 Gottow: works on experimental nuclear reactor
27 Rechlin: weapon test centre of the Air Force
28 Zittau: Jägerstab
29 Zgorzelec/Görlitz, Łąki village: underground V-2 factory
30 Lubań/Lauban: GEMA-Werke
31 Leśna/Marklissa: V-2 engines factory (VDM)
32 Książ/Fürstenstein: Jägerstab's R&D dept., SS research
33 Kowary/Schmiedeberg: heavy water production plant, nuclear research facility, uranium mine
34 "Riesa" ("Riese"): underground complex, not finished
35 Zelezny Brod: command planning centre for the "guided, strategic weapons," not finished
36 Gross-Rosen concentration camp
37 Środa Śląska/Neumarkt: Wehrmacht's laboratories
38 Brzeg Dolny/Dyhernfurth: chemical weapons
39 Wroclaw/Breslau: Rheinmetall plant and other objects
40 Ludwikowice/Ludwigsdorf: underground complex dedicated to weapons of mass destruction
41 Ścinawka Średnia/Mittelsteine: production of V-1 and V-2 components
42 Namysłów/Namslau: infrared technology
43 Kłodzko/Glatz: production of components for the V-1 (AEG)
44 Racibórz/Ratibor: graphite productions for nuclear research (Siemens)
45 "Udetfeld" (Mierzęcice): ME 163
46 Oświęcim/Auschwitz concentration camp
47 Blizna: V-1 & V-2 tests
48 Brno/Brünn: SS research and development




Second World War
Allied Counteroffensive 1943-1945
Area of German control (May 1945)
Allied
Occupied by Oct. 1943
Occupied by April 1944
Occupied by Dec. 1944
Occupied by May 1945
0
250
500
Kilometres
Iceland (British)
Faroe Islands (British)
Sweden
Finland
Norway
Soviet Union
Ostland
Den-mark
Rep. of Ireland
Great Britain and Northern Ireland
Nether-lands
Greater German Reich
General Government
Ukraine
Belgium
Bohemia and Moravia
Slovakia
North France
Hungary
Liecht
Switzerland
Romania
Vichy France
Monaco
Croatia
Serbia
S. Marino
Monte-negro
Bulgaria
Andorra
Italy
Al-ba-nia (Ital.)
Turkey
Portu-gal
Spain
Vatican City
Greece (Italian)
Syria (British)
Iraq
Lebanon (Brit.)
Dodecanese (Italian)
Cyprus (British)
Tangier
Pa-les-tine (Brit.)
Trans-Jordan (Brit.)
Saudi Arabia
Tunisia (Vichy French)
Crete (German)
Algeria (Vichy French)
Malta (British)
Morocco (Vichy French)



Many more sites are named in the documents in *Forgotten Creators*, especially in Appendices D and E:

riderinstitute.org/revolutionary-innovation

If you have or find any additional information that you would be willing to share, please email me:

thor@riderinstitute.org

Further Work

The true, detailed, complete history of wartime German research, development, and production programs has not yet been publicly written by anyone (including me).

To do that, we must first:

- **Search for relevant documents in archives and personal collections around the world, and lobby to have all files declassified and released.**

- **Conduct industrial archaeology digs (carefully!) and laboratory analyses at all sites suspected to have been involved in the wartime German programs.**