

Julius Rosenberg ET AL.

Referral
National
Aeronautics
And Space
Administration

No. 16

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appeal to:

Mr. Miles Wagoner

Freedom of Information Officer
National Aeronautics and Space Administration
Washington, DC 20546

REFERRAL

Reviewed by:

[Signature]

Packet 16

AGENCY National Aeronautics and Space Administration

No. of Pages

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February 19, 1952

SAC, San Francisco
Director, FBI

[Redacted]

100-37418

WILLIAM PERL, aka
ESPIONAGE - R
PERJURY
(65-59312)

Re Cleveland let January 21, 1952, in the above-captioned matter wherein it was suggested that the Bureau may desire to have Robert L. Jones and his wife, Doris Jones, interviewed concerning their relationship with Perl, and the facts concerning the disappearance of the report on guided missiles from Langley Field Laboratory during November, 1944.

As was pointed out in Bulet of January 26, 1952, Mr. Robert L. Bell, Security Officer of the National Advisory Committee for Aeronautics (NACA), has expressed the opinion that Jones, who was considered an authority on the JB-2 (also known as the XM-544) guided missile, was primarily interested in the stability features of that missile. It was further mentioned by Bell that Jones, having had access to all of the exact details with respect to the JB-2, would have been in the position to have furnished accurate details and dimensions concerning any of the features of this project.

Bell recently made available to the Bureau copies of various attached memoranda submitted by Jones setting forth his itinerary and making his reports to NACA in connection with the JB-2 project. With respect to Jones' trip to Cleveland, Ohio, on August 24, 1944, it is noted from the itinerary that no information is set forth in this report or is presently available at NACA which indicates the exact length of time Jones remained in Cleveland, or the identity of any of his contacts there, other than his proposed visit to Jack and Helms Company, a subcontractor on the JB-2 project. It is possible that additional information concerning this trip may be developed by the Washington Field Division at the time Jones' expense vouchers are secured from the General Accounting Office in Washington, D. C.

A check of Bufiles as to Robert L. Jones and Doris Jones failed to reflect any identifiable subversive information other than that which was previously set forth in Bulet of November 21, 1951. The San Francisco Office

Enclosures

cc: SAC, New York (Enclosure) (65-14843)
(65-16387)
SAC, Cleveland (65-2151) (65-2730)
SAC, Washington Field (65-5615) (65-3546)

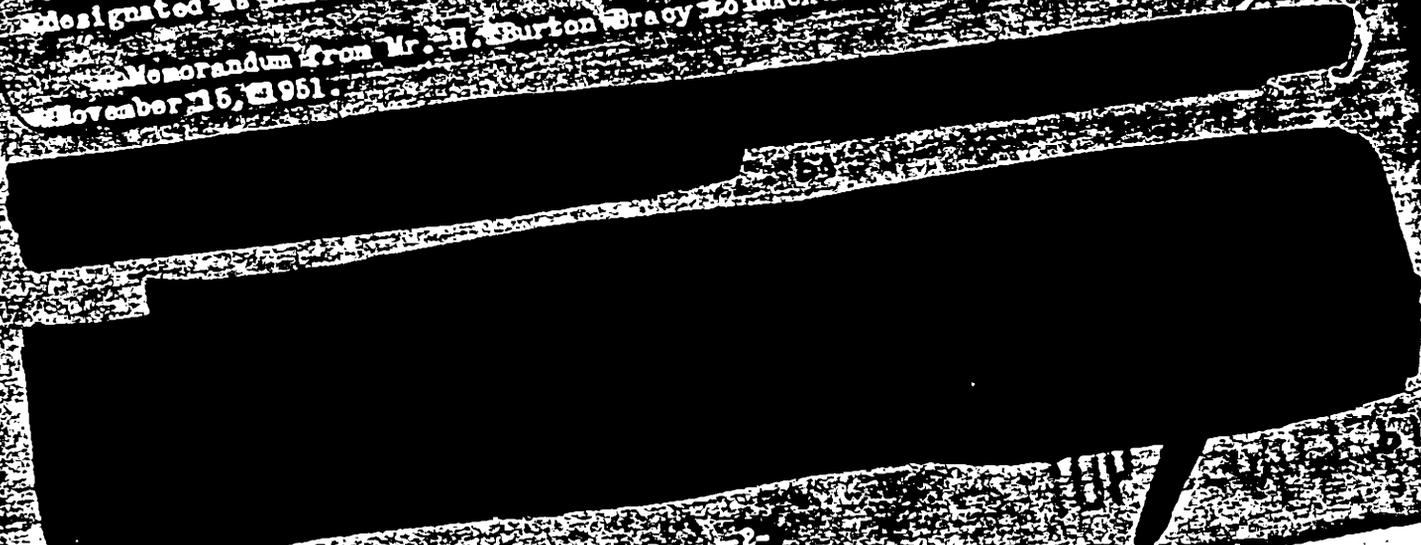
EE:ml
(121-10115)
Note on page

[Handwritten signatures and stamps]

Accordingly authorized to interview Robert and Doris Jones for full information concerning their association with and knowledge of the activities of an Perl. These interviews should be handled simultaneously but separately, as possible, and should be given early attention unless information appears in files of your office which would make such interviews undesirable at the present time. (11)

During the course of your interview with Robert L. Jones, he should be specifically interrogated concerning his participation in the NB-2 guided missile project during the years 1944 and 1946. To the extent of his travels in connection with this project and particularly the details of his visit to Cleveland on or about August 24, 1944, should be ascertained. With respect to the latter, it should be determined whether he contacted William Perl for any other persons in Cleveland in addition to his official visit at the Jack and Mints Company, the length of time he remained in Cleveland and whether he thereafter returned to Wright Field or Langley Field. You should question him as to whether he ever made the acquaintance of Andrei M. Schevchenko during his 1944 period and, if so, the circumstances of their meeting and association should be developed. He should be specifically interrogated as to whether he at any time discussed the details of the jet motor unit or the launching mechanism for the production plans for the NB-2 with Perl, Schevchenko, or any other person during the period of his visit to Cleveland during the latter part of August or the early part of September, 1944. To assist you in your interrogation of Jones, there are being transmitted herewith for your information photostats of the following reports concerning Jones which were made available to the Bureau by MACA: (11)

- Memorandum by Mr. Carlton Kemper to MACA Headquarters dated September 29, 1944, with the attachment entitled "Progress Report on Ram-Jet and Aero-Pulse Projects." (11)
- Memorandum from Mr. Charles F. Barnett to NACA Headquarters dated October 25, 1951, together with the attachments to that memorandum designated as numbers 4, 5, and 10. (11)
- Memorandum from Mr. H. Burton Bracy to MACA Headquarters dated November 16, 1951. (11)



Note:

A check of files reflects the following concerning Robert Thomas and Doris Lenore Jones. Robert Thomas Jones was born in Macon, Missouri, May 28, 1910, attended University of Missouri 1928 to 1929, and Catholic University, Washington, D. C. 1931 through 1933. Employed Langley Memorial Laboratory of NACA on October 30, 1944. Now employed at Ames Laboratory of NACA, California. His wife Doris Lenore Jones, nee Cohen, was born NYC on October 2, 1915. They resided at 840 Lincoln, Palo Alto, California. According to the LGE files, both Jones and his wife were considered liberals while at Langley Field, Virginia. Jones was President of the American Association of Scientific Workers there, which organization meets allegedly following Communist Party line and some of whose members were known associates of Communists. Jones was President of FAECT Local #15 at Langley Field in 1944, which organization reported to have been Communist infiltrated. No information indicating Jones or wife engaged in espionage and both were found eligible for employment on loyalty.

(U)

TOP SECRET

SAC, New York (65-15387)

~~TOP SECRET~~

June 2, 1952

Director, FBI (65-59312)

PERSONAL ATTENTION

~~CONFIDENTIAL~~

WILLIAM PERL, aka
ESPIONAGE - R

Classified by 5886 3/14/78
Exempt from GDS, Category 2
Date of Declassification Indefinite



b1

On the basis of this information, the Bureau has made an inquiry of Mr. Robert L. Bell, Security Officer, National Advisory Committee for Aeronautics (NACA), Washington, D. C., and he advised after research that there was no information available that any guided missiles were actually produced during 1944 which were equipped with I-16 engines. You will recall, however, that the Bureau had previously determined in connection with the investigation concerning the XP-81 fighter plane that the I-16 engine is a Whittle type turbojet engine which was manufactured by the General Electric Company. (u)

Mr. Bell advised that in making his research concerning this matter he located some information which he considered might be of significance in connection with instant case. He stated that according to the files, NACA received a letter dated August 4, 1944, from the Air Materiel Command at Wright-Patterson Air Force Base, Dayton, Ohio, requesting that a program be undertaken for the purpose of developing a pilotless guided missile to meet the following requirements:

APPROPRIATE AGENCIES AND FIELD OFFICES ADVISED BY ROUTING SLIP(S) OF	Range	400 miles
	Payload	4000 demolition bomb
	Speed	550 MPH plus
	Control	Remote or target seeking

DATE 1-17-52 According to this letter, NACA was given the responsibility of participating in the vehicle (missile or airframe) and the power supply (motor). (u)

The records of NACA reflected that by letter dated August 16, 1944, the Lewis Flight Propulsion Laboratory of NACA at Cleveland, Ohio, was furnished a copy of the Air Materiel Command's request and (u)

- Enclosure
- cc: 2 - Cincinnati (65-1744) JUN 8 1952
 2 - Cleveland (65-2730) (with enclosure)
 2 - Los Angeles (65-5075) EX-113
 2 - San Francisco
 2 - Washington Field (65-5543)

WMB
JUN 8

EFB:GAS

JUN 7 1952
COMM - FBI

~~TOP SECRET~~

was authorized to start work on this secret project which was to be designated as NACA #E-110. It was pointed out that the project was considered as a long-range planning project to supersede the JB-2 guided missile. A review of the file on project #E-110 indicated that by letter dated February 23, 1944, the Lewis Flight Propulsion Laboratory sent into NACA headquarters five copies of a secret report entitled "Preliminary Analysis for the Army Air Forces, Air Technical Command, Design Study of High-Speed Long-Range Guided Missiles." This report was dated September 20, 1944, and the authors thereof appeared thereon as William Mutterperl and Alan D. Johnson, (u) aeronautical engineers.

A Photostat of this report which was originally under a secret classification but was declassified to confidential on May 5, 1952, was made available to the Bureau, and a Photostat thereof is herewith being furnished to the New York and Cleveland Offices for their assistance and information in this matter. It is noted that as a result of the research as reflected in this report, a recommendation was made that a single over-speeded General Electric I-16 (Whittle) (u) jet engine should be used on such guided missile as being most satisfactory for the purpose desired.

According to instant NACA file, this report being classified as secret was reviewed only by top officials of NACA in Washington, D. C., and was thereafter o.k.'d by them for release to the Army on September 26, 1944. It appeared from this file that ten copies of this report were made available to the Army Air Forces liaison officer at the Lewis Flight Propulsion Laboratory in Cleveland, Ohio, four copies on September 26, 1944, five copies on November 17, 1944, and one copy on January 24, 1945. There was no indication of any other dissemination made of this report outside of NACA. (u)

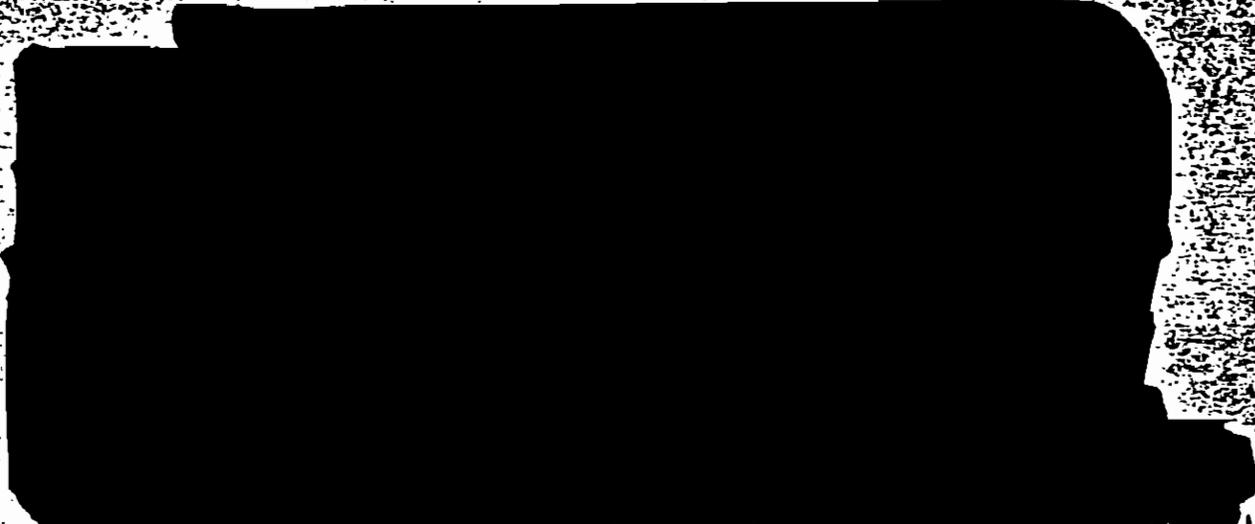
Mr. Bell advised that he had telephonically contacted Mr. H. Burton Bracey, the NACA security officer at Lewis Flight Propulsion Laboratory, and had learned that there was in existence no record indicating the exact number of copies of instant report which were originally made, and therefore, it could not be determined whether any copy or copies might be missing from their files. It was explained, however, that under normal circumstances an engineer participating in such project might retain for his own use and reference either his own notes or a copy of his report covering the research. (u)

It is noted with respect to this report which bears the written signatures of subject Perl that the Bureau's previous efforts to impute knowledge concerning the JB-2 project to subject Perl have been unsuccessful. However, from a review of instant report which was prepared by Perl it would definitely appear that he must have been in possession of certain of the details relative to the JB-2 in view of his having made reference therein to the fact that consideration was given to the German robot bomb. As you will recall, the JB-2 was patterned after the German V-1 robot bomb. (U)

It is also noted that during the period of Perl's research in connection with instant guided missile project, he is known to have been visited in Cleveland by Robert T. Jones, an NACA engineer who was especially assigned to the research of the JB-2 bomb. In view thereof, it is entirely possible that Perl may have had a conference with Jones during the latter's visit to the Lewis Flight Propulsion Laboratory around the first of September 1944, at which time there was a discussion as to the details of the JB-2 project. (U)

Mr. Bell stated that he had requested Mr. Bracey to make a thorough search of all the records available at Lewis Flight Propulsion Laboratory for any additional pertinent information concerning Perl's participation in instant guided missile project in order to determine the exact dates when Perl performed his research in this matter as well as the identity of classified material to which he may have had access during the research. Further, Mr. Bracey was to make an effort to locate any information appearing in the files of that laboratory which might reflect that Perl had access to data pertaining to the JB-2 project or attended any conferences at the Lewis Flight Propulsion Laboratory with Jones or any other engineers or officials wherein the production of the JB-2 guided missile was discussed. Mr. Bell indicated that he had instructed Mr. Bracey to forward any such pertinent material to NACA headquarters in Washington, D. C. (U)

b1



For the information of the Cleveland Office, a check of Bufiles has failed to reflect any identifiable derogatory information pertaining to Alan D. Johnson, the co-author of instant preliminary analysis report. Accordingly, you are authorized to conduct an appropriate interview with Johnson, an aeronautical engineer at the Lewis Laboratory unless information might appear in the files of your office which would make such interview inadvisable at the present time. (U)

During this interview you should bear in mind that Johnson may be in a position to furnish information as to the exact dates of participation by Perl in this project; the identity of any classified documents or reports, including those pertaining to the JB-2, to which Perl had access during his research; the conferences which Perl may have had with Jones or any other person relative to the JB-2; the number of copies of instant preliminary analysis research report which were originally made; the number of copies of the report, if any, that Perl may have retained in his possession; and any trips which he recalls Perl may have made during or immediately subsequent to instant research report. (U)

According to NACA, more positive information as to the use or contemplated use of the I-16 engine for guided missiles during the year 1944 could best be obtained by a further inquiry at the Wright-Patterson Air Force Base in Dayton, Ohio. The Cincinnati Office is therefore requested to make an appropriate inquiry through the Air Materiel Command at that base for any additional information of possible pertinence to this matter. (U)

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It is understood through information made available by NACA that the JB-1 guided missile was originally designed for the use of the I-16 jet engine, but this missile was dropped and a similar missile redesignated as the JB-10, which used a pulse jet engine, was substituted. It is requested that the Cincinnati Office obtain full information concerning the JB-1 including such data as to exact dates, identity of reports or research memoranda prepared, names of companies participating therein, and the ultimate stage of its development or production when the project was dropped. (U)

The Cincinnati Office should likewise obtain full information as to the ten copies of instant preliminary analysis report concerning high-speed, long-range guided missiles, including such data as to whether the copies were numbered, to whom the various copies were disseminated, and the ultimate disposition of any copies retained at the base. (U)

It is desired that this investigation be given immediate attention. (U)

~~TOP SECRET~~

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BERTON C. HUNSAKER, SC. D., CHIEF
 AL LANTIER WETMORE, PH. D., VICE CHIEF
 REAR ADM. DONALD C. LORINGEST, U.S.N.
 RICHARD DONALD
 MAJ. GEN. DONALD C. TUTT, U.S.A.F.
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 WILLIAM LITTLEWOOD, M. E.

**NATIONAL ADVISORY COMMITTEE
FOR AERONAUTICS**

1724 F STREET, NORTHWEST
WASHINGTON 25, D. C.

LANGLEY AERONAUTICAL LABORATORY
LANGLEY FIELD, VA.

AMES AERONAUTICAL LABORATORY
MOFFETT FIELD, CALIF.

LEVEE FLIGHT PROPULSION LABORATORY
2150 BROOKLAND BLVD., CLEVELAND 11, OHIO

May 7, 1952

TELEPHONE: LIBERTY 5-6700

Director
 Federal Bureau of Investigation
 U. S. Department of Justice
 Washington 25, D. C.

Re: William Perl w.a.
 William Mutterperl
 Espionage R
 Perjury

Dear Sir:

As of possible interest to you in the above-captioned case, I am enclosing a photostatic copy of a preliminary analysis report entitled "Design Study of High-Speed Long-Range Guided Missile" by William Mutterperl.

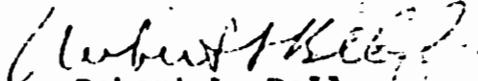
This report was originally issued as Secret but recently has been downgraded to Confidential. The dissemination by NACA of this report was quite limited.

It will be noted that this study contemplated the use of the General Electric I-16 turbojet engine. I am able to locate only one other missile which, as of 1944, was designed for that engine; that missile was the JB-1. It appears that the JB-1 missile project was dropped and a similar missile redesignated the JB-10 and using a pulse jet engine was substituted. The availability of I-16 engines may have had some bearing on this decision.

However, authoritative information on the use or contemplated use of the I-16 engine for missiles as of 1944 could best be obtained from the Wright-Patterson Air Force Base at Dayton, Ohio.

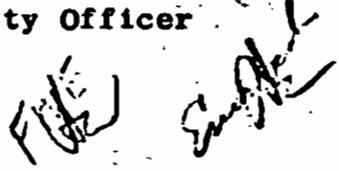
65-59312-704

Very truly yours,


 Robert L. Bell
 Security Officer

RECORDED-10
 INDEXED-101

Enclosure



MAY 10 1952

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Security Information

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS
PRELIMINARY ANALYSIS

Army Air Forces, Air Technical Service Command

DESIGN STUDY OF HIGH-SPEED LONG-RANGE GUIDED MISSILE
Aircraft Engine Research Laboratory
Cleveland, Ohio

September 20, 1944

SUMMARY

At the request of the Army Air Forces, a design study has been made of a guided missile to carry a two-ton bomb load a distance of 400 miles or more at a speed of 550 miles per hour. Several types of power plant were first analyzed to ascertain their suitability for this task. These included a 2000 horse-power conventional engine, the General Electric I-16 (Whittle) jet engine, and the German robot bomb (aeropulse) jet unit in multiples of two and four. A single overspeeded General Electric I-16 unit was found to be most satisfactory. A layout and design study of a guided missile incorporating this power plant was made.

INTRODUCTION

The Army Air Forces asked the NACA for a design study of a high-speed, long-range guided flying missile. The specifications were as follows:

- Speed: 550 miles per hour
- Range: 400 miles or more
- Bomb load: 4000 pounds
- Power plant: one which is available for immediate mass production and which is not too costly in view of the expendable nature of the missile.

Missile design: sufficiently simple and straightforward so that construction may be started immediately without the necessity for a development program

In order to choose a suitable power plant, a preliminary analysis was made of the performance of a guided missile driven by different types of power plant satisfying the specifications. A more detailed performance analysis was made of the power plant that the preliminary analysis indicated to be most satisfactory.

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Confidential
BY AUTHORITY OF A.T.S. Command
DATE 5-5-52

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where

- F_j jet thrust (function of engine speed, ram pressure and temperature at speed V from reference 1), lb
- M gas flow, a function of engine speed, ram pressure, and temperature at speed V from reference 1, slugs per second
- ρ air mass density, slugs per cubic foot
- S wing area, square feet,
- A wing aspect ratio, 4.5
- C_{Dp} profile-drag coefficient, taken as 0.018
- W total weight of missile, taken as 9800 pounds
- e airplane efficiency factor, taken as 0.75

With the aid of the data of reference 1, equation (1) was solved for the engine speed to give a speed V of 550 miles per hour at sea level. The resulting engine speed of 16,900 rpm was subsequently used in the detailed performance analysis. The jet thrust F_j at this engine speed and at the ram ratio 1.3, corresponding to a missile speed of 550 miles per hour and an inlet diffuser efficiency of 80 per cent, was about 2570 pounds, as indicated in table I. The net thrust $F_j - M_g V$ is 1500 pounds. The specific fuel consumption of 1.16 pounds per thrust horsepower-hour is about the same as that of the conventional engine. The thrust horsepower output is considerably higher however: 2200 horsepower as compared with 1500 horsepower for the conventional engine. The frontal area of the I-16 unit is about the same as that of the R-1830 or V-1710 engines.

The net thrust of the German aeropulse unit installed in the guided missile was estimated on the basis of Wright Field test data to be about 600 pounds. Two units, which have about the same over-all diameter in combination as the I-16 unit or the R-1830 engine, would therefore yield about the same thrust horsepower and high speed as the R-1830 engine. (See table I.) Four aeropulse units give a calculated high speed of 614 miles per hour. The high fuel weight of such an installation would, however, make the launching problem relatively difficult, as indicated by the take-off speeds in table I. Much of the advantage of the aeropulse unit over other power plants; namely, low cost and ease of manufacture, may be lost when four such units are compared with one I-16 unit.

As regards extension of range above 400 miles, the I-16 and conventional engine installations are most advantageous because of their higher over-all efficiencies and consequent lower additional required fuel load. It should be noted that, if

Finally a preliminary layout of the component parts of the missile was made to check balance, stability, and the general arrangement of the missile.

The choice of power plant, the performance analysis, and the missile arrangement are discussed in the following sections.

CHOICE OF POWER PLANT

The following power plants were considered in the design study:

- (1) Pratt & Whitney R-1830 air-cooled engine or an Allison V-1710 liquid-cooled engine
- (2) The General Electric I-16 (Whittle) jet-propulsion engine
- (3) The German robot bomb, or aeropulse, jet unit in combinations of two and four units

The Westinghouse jet-propulsion unit was not considered because a single unit could not develop sufficient thrust and two units tended to complicate the design excessively. Steady flow ram jets were not considered because no experimental data are available on their performance and too long a research program would be needed to provide such data. The theory of such jets together with reasonable assumptions of duct losses indicated too low efficiencies at the speeds contemplated. Similarly rockets were discarded because of too low an over-all efficiency. Low over-all efficiency results in excessive size and weight of the missile and greatly increases the problem of launching.

The calculated performance of the guided missile with each of the power plants studied is given in table I. On the basis of a wing area of 100 square feet the over-all profile-drag coefficient of the missile was assumed to be 0.018. Special care in construction may be required to achieve this drag coefficient.

In the calculations of the performance with the conventional engine installation it was estimated that the power rating of the R-1830 and V-1710 engines, with water injection, could be extended to 2000 brake horsepower for 1 hour of operation. Assuming a propeller efficiency of 75 percent, the useful thrust horsepower of the engine is 1500. The resulting calculated high speed of the missile at sea level is 469 miles per hour.

The General Electric I-16 unit, when overspeeded to 16,900 rpm (rated speed 15,500 rpm) gave a high speed at sea level of 550 miles per hour. The high speed V is given by

$$F_j - M_g V - \frac{1}{2} \rho S C_{D_p} V^2 - \frac{W^2}{\pi \rho S A_e V^2} = 0 \quad (1)$$

the over-all efficiency of the aeropulse unit can be sufficiently improved to compare with that of the I-16 unit, it would probably be the most satisfactory power plant for the guided missile application.

It was concluded from the preliminary analysis that one General Electric I-16 jet engine, operated overspeed at about 16,900 rpm, complied most satisfactorily with the specifications for the missile.

PERFORMANCE ANALYSIS

A more detailed analysis was next made of the performance of a guided missile equipped with a General Electric I-16 engine, for altitudes of 0, 10,000, and 20,000 feet and for fuel loads corresponding to ranges of approximately 400 and 1000 miles. The results are given in table II.

The high speeds V_0 were calculated by equation (1). The missile weight W used was that appropriate to the altitude considered, account being taken of the consumption of fuel during the climb to altitude. The fuel consumption and range during climb were determined by the best (maximum) rate of climb V_{cl} and the flight speed V_0 for best rate of climb. These values were determined from the rate of climb equation (2) by the condition

$$W \frac{dV_{cl}}{dV_0} = \rho_j + V_{cl} \frac{d\rho_j}{dV_0} - 2M g \frac{V_{cl}}{V_0} - V_{cl} \frac{dM}{dV_0} - \frac{3}{2} \rho S C_D V_{cl}^2 + \frac{W^2}{2 \rho S A e V_0^2} = 0$$

The range at altitude was calculated as the sum of the distance covered in the climb and the distance at the altitude required to consume the fuel. Any additional distance traversed by means of a power-off maneuver at the end of the flight was ignored. The range for a given fuel load is seen to increase with altitude at the rate of approximately 110 miles per 10,000 feet at the lower range and 275 miles per 10,000 feet at the higher range. This increase of range is a consequence of the reduced fuel consumption with altitude for a given engine speed and of the fact that the high speed increases with altitude. The maximum rate of climb at the lower fuel load decreases approximately linearly from 2140 feet per minute at sea level to 875 feet per minute at 20,000 feet. At the higher fuel load

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the maximum rate of climb decreases from 1210 feet per minute at sea level to 136 feet per minute at 20,000 feet. The ceilings are 28,600 feet and 22,600 feet, respectively. For the two missile weights.

MISSILE ARRANGEMENT

The best arrangement of control equipment, explosive, fuel, and engine on the basis of purpose of the missile, stability, power-plant performance, and ease of manufacture was found to be the one shown in figure 1. This layout is for the missile with a 400-mile range; the missile of 1000-mile range would have a longer fuselage.

Wing

Take-off was assumed to be assisted and a maximum take-off speed of 200 miles per hour was selected. With an estimated gross weight of 10,000 pounds and a wing loading of about 100 pounds per square foot, the resulting wing area was 100 square feet. Using this value the minimum flying speed at $C_L = 1.1$ was 186 miles per hour.

An NACA low-drag wing section was selected because of the high critical speed required. The sections chosen were:

- Root: NACA 65, 2 - 212
- Tip: NACA 65, 2 - 209

A slight spanwise taper was provided for structural considerations and the taper due to change in thickness was taken on the bottom of the wing to give an effective dihedral angle. The principal wing dimensions are listed in table III.

Fuselage

A section through the fuselage (see fig. 1) shows the arrangement of the components. The target-seeking equipment is mounted in the nose to prevent interference from the rest of the missile. The explosive, fuel tank, and power plant are installed behind the nose section in the order named. The location of the fuel close to the center of gravity of the airplane results in a relatively small center-of-gravity travel as the fuel is used. The axial exit for the engine and the nose intake are such as to provide the optimum combination of maximum inlet ram and minimum tail-pipe losses.

The automatic pilot is mounted in the wing root section and the tail surface controls are back of the engine. The fuselage can be built in separate sections and assembled at the launching site. The exact structural details were considered only on the basis of allowing sufficient room for the necessary structural members. The principal fuselage dimensions are included in table III.

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Tail Surfaces

In view of the prime requirements of high speed and consequent low drag, it was decided to use a T-type tail (reference 2) which has substantially less wetted area than the conventional tail for equivalent stability. The principal tail dimensions are given in table III.

A preliminary determination of the center-of-gravity position, which is required for the tail-surface design, is given in table IV for the two ranges of 400 and 1000 miles. No additional structural weight was allowed for the missile with a 1000-mile range because the structural-weight allowances for the 400-mile range missile were set higher than necessary to take care of possible increased range.

The missile was designed for almost neutral stability in order to keep the control moments small. The longitudinal and yawing stability derivatives are listed in table V and are defined in references 3 and 4. The longitudinal derivative was calculated. The yawing derivatives were determined from the data of references 2 and 3. Stability calculations were not carried beyond this point because of the preliminary nature of the design but the missile stability should not be a serious problem.

Reference 1. Ayer, E. L.: Type 1 Supercharger Test Report - Type I-16A, Unit No. 71, Ser. No. 24271. Data Folder No. 47394, Supercharger Engineering Div., General Electric Co., March 15, 1944.

Reference 2. Greenberg, Harry: Comparison of Vee-Type and Conventional Tail Surfaces in Combination with Fuselage and Wing in the Variable-Density Tunnel, NACA TN No. 815, 1941.

Reference 3. Bamber, M. J., and Chase, R. O.: Wind-Tunnel Investigation of Effect of Yaw on Lateral Stability of a Rectangular N.A.C.A. 23012 Wing with a Circular Fuselage and a Fin, NACA TN No. 730, 1939.

Reference 4. Donlan, Charles J.: Some Theoretical Considerations of Longitudinal Stability in Power-on Flight With Special Reference to Wind-Tunnel Testing, NACA ARR, 1942.

Engine Installation Research Division, Aircraft Engine Research Laboratory, National Advisory Committee for Aeronautics, Cleveland, Ohio, September 20, 1944.

W. M. Mutterperl

William Mutterperl,
Aeronautical Engineer

Alan B. Johnson,
Aeronautical Engineer

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Security InformationTABLE II.- DETAILED PERFORMANCE OF GUIDED MISSILE
Wing area, 100 sq ft; profile-drag coefficient C_D

Fuel load (lb)	Altitude (ft)	Range (miles)	High speed (mph)	Time of flight (hr)	Fuel for climb (lb)	Max rate of climb (ft/min)	Speed at max rate of climb (mph)	Take-off speed (mph)	Lift coefficient		
									Take off	Climb	Av high speed
1750	0	378	550	0.69	0	2140	316	286	1.1	0.38	0.11
	10,000	485	570	.89	193	1361	339			.44	.24
	20,000	600	580	1.14	459	675	372			.49	.29
1200	0	882	526	1.68	0	1210	325	208	1.1	.45	.24
	10,000	1173	562	2.16	365	675	356			.49	.27
	20,000	1435	566	2.77	1104	136	387			.54	.22

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MEASURED BY CASE G.E. I-16 UNIT

0.018; dry weight, 7950 lb

Thrust Jet (lb)	Thrust Net output (lb)	Air flow (lb/sec)	Fuel consumption (lb/hr)	Specific fuel consumption (lb/thrust hr)	Ceiling (ft)
2567	1500	2200	2513	1.16	28,600
2070	1226	1865	2157	1.05	
1626	978	1513	1783	.96	
2167	1165	2060	2502	1.22	22,600
2054	1223	1833	2140	1.06	
1608	985	1485	1775	.99	

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TABLE I. - COMPARATIVE PERFORMANCE OF GUIDED MISSILE WITH VARIOUS TYPES OF POWER PLANT

Sea-level operation; range, 400 miles; profile-drag coefficient C_{dp} , 0.018; wing area S, 100 sq. ft; bomb load, 4000 lb

Type of power plant	High speed V (mph)	Take-off speed b (mph)	Weight (lb)				Thrust power output (hp)	Thrust (lb)		Air flow Qlb/sec	Fuel consumption (lb/hr)	Specific fuel consumption (lb per thrust hp-hr)
			Bomb	Structure and controls	Power plant	Fuel		Total W	Jet Pj			
R-1850 or V-1710	469	194	4000	3100	2000	1450	10,550	1500	1760	41.8	1700	1.13
GE I-16	550	186	4000	3100	850	1850	9,800	2200	2567	1500	2543	1.16
Aeropulse:												
2 units	464	207	4000	3100	800	4150	12,050	1480	1644	1194	4800	3.24
4 units	614	230	4000	3100	1600	6250	14,950	3640	3352	2162	9600	2.71

a Profile-drag coefficient for four aeropulse units is 0.021.

b Maximum lift coefficient at take-off is 1.1.

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TABLE III.- PRINCIPAL DIMENSIONS OF GUIDED MISSILE

Wing	
Wing area, square feet	100
Span, feet	21.3
Root chord, feet	5.5
Tip chord, feet	4.0
Aspect ratio	4.5
Taper	1.38
Root section	65,2-212
Tip section	65,2-209
Fuselage	
Frontal area, square feet	12.57
Length, feet	25.25
Maximum diameter, feet	4
Fineness ratio	6.3
Tail surface	
Type	V
Dihedral angle, deg	35
Total area (outside fuselage), feet	12.5
Average chord (outside fuselage), feet	1.79
Semispan (outside fuselage), feet	3.5
Elevator area (outside fuselage), square feet..	2.03

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TABLE IV.- CENTER-OF-GRAVITY ANALYSIS OF GUIDED MISSILE

Component	400-mile range			1000-mile range		
	Weight (lb)	Moment arm (ft)	Moment (lb-ft)	Weight (lb)	Moment arm (ft)	Moment (lb-ft)
Power plant	840	16.5	13,850	840	23.1	19,400
Fuel	1750	10.5	18,350	4200	12.0	50,400
Bomb	4000	5.25	21,000	4000	5.25	21,000
Fuselage	1900	12.0	22,800	1900	15.30	29,100
Wing	850	10.0	8,500	850	13.0	11,050
Tail	100	24.0	2,400	100	30.0	3,000
Control equipment	200	21.0	4,200	200	27.6	5,520
Target-seeking equipment	60	.7	42	60	.7	42
Total	9700		91,142	12,150		139,512
Full-fuel load c.g. position from nose, ft		9.40			11.45	
No-fuel c.g. position from nose, ft		9.18			11.21	
Total c.g. travel, percent chord		4.6			5.1	

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TABLE V.- STABILITY OF MISSILE FOR VARIOUS FLIGHT CONDITIONS

[For definition of symbols, see references 3 and 4.]

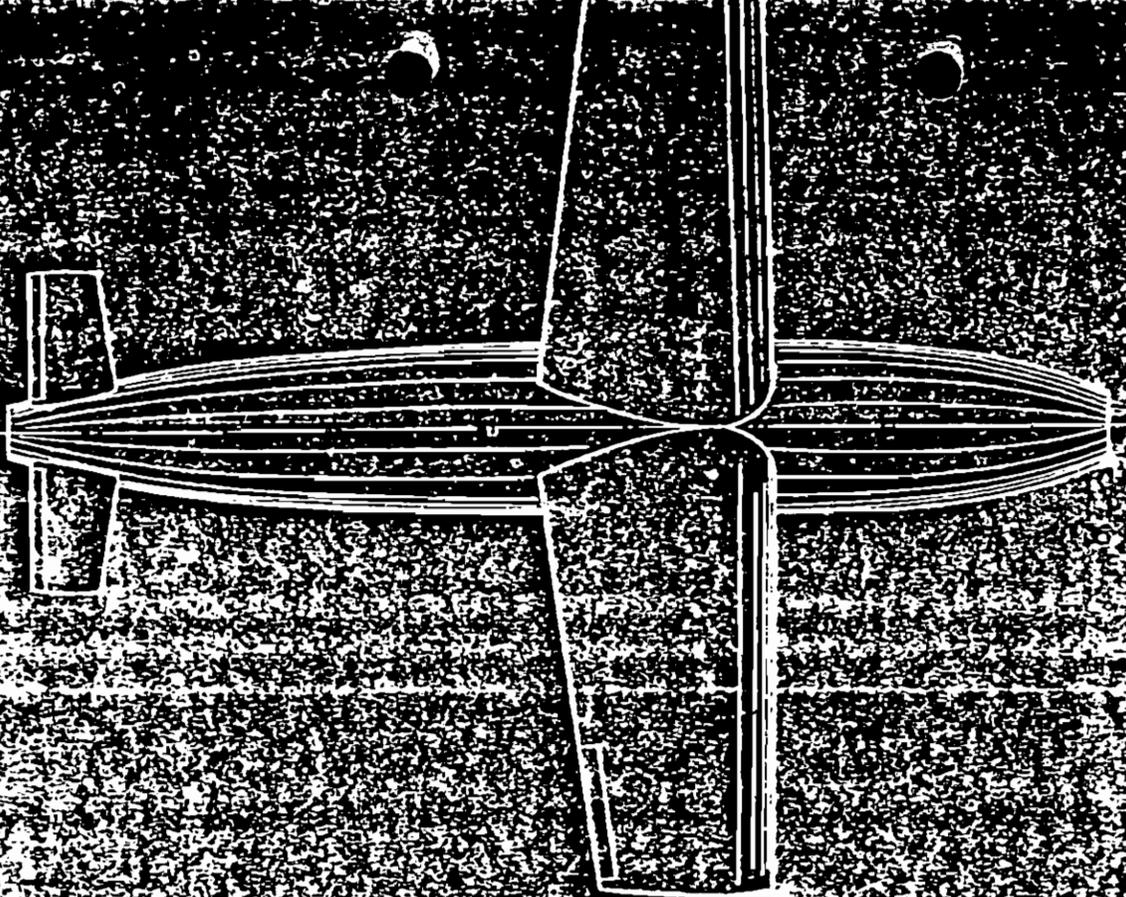
Static longitudinal stability		
Condition	$dc_{m_{cg}}/dc_L$	Elevator angle (deg)
High speed, 550 mph at 5000 feet; half fuel gone; airplane trimmed at -3.75° tail setting	-0.027	0
Take-off ($C_L = 1.1$)	-0.004	-0.43
End of climb, 385 mph, 20,000 feet; one-third fuel gone	-0.0193	-1.66
End of flight, 550 mph, sea level; no fuel	-0.05	-0.6
Static yawing derivative based on wing span		
Fuselage and wing $\frac{dc_{n_{fw}}}{dU}$		0.0033
Tail in presence of wing and fuselage $\frac{dc_{n_t}}{dU}$		-0.0055
Wing-fuselage-tail combination $\frac{dc_n}{dU}$		-0.0022

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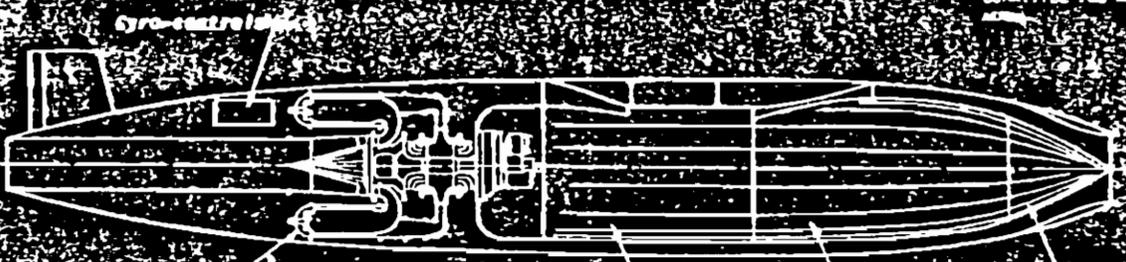
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Plan view



Side view



Cryo-control tank

General Electric
I-16 jet engine

Fuel

Explosive charges

Target-seeking
instruments

Smoking through control tank

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS
OFFICE OF TECHNICAL SERVICES
WASHINGTON, D. C.

Figure 10 - Preliminary design study for jet-propelled guided missile. Wing area, 100 square feet; wing root section, NACA 65.2-212; wing tip section, NACA 65.2-209; gross weight, 8700 pounds; explosive charges, 4000 pounds; fuel weight, 1750 pounds; maximum speed at sea level, 550 miles per hour; take-off speed, 180 miles per hour; range at maximum speed, 370 miles.

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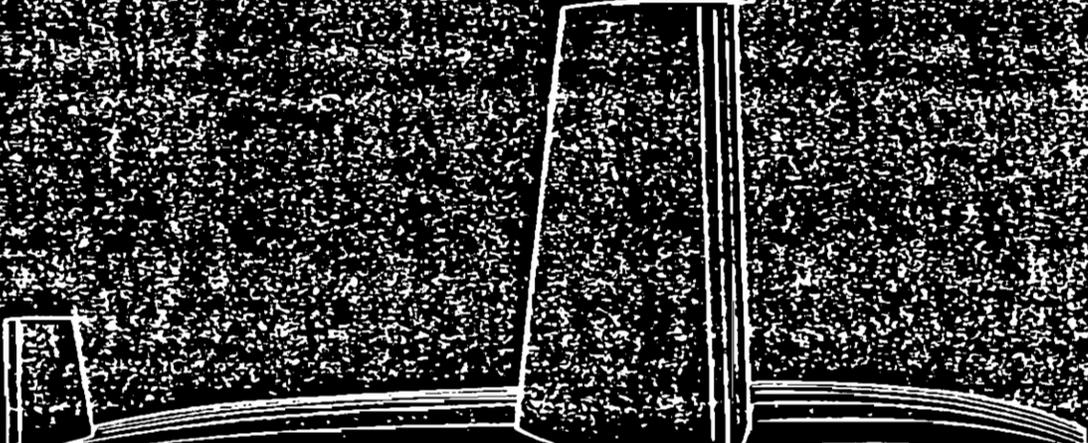
SECRET

22-45



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Front view



SAC, Cleveland (65-2730)

June 6, 1952

Director, FBI (65-59312)

WILLIAM PERL, aka
ESPIONAGE - R
FEBRUARY

ReBulet June 2, 1952, in the above-captioned matter wherein you were furnished with information relative to a preliminary analysis report prepared by subject Perl on September 20, 1944, entitled "Design Study of High-Speed Long-Range Guided Missiles" (NACA E-110).

As was pointed out therein, the NACA Lewis Flight Propulsion Laboratory, Cleveland, Ohio, has advised that it has no available record as to the exact number of copies of the above report which were printed. However, from an examination of the information contained on charge-out records of that Laboratory, Photostats of which were made available to the Bureau, it definitely appears that the various copies of this report were numbered. These records reflect that there were available at the Cleveland NACA Laboratory at least three copies identified as file number 141-A, copies 1, 2 and 3 of this report.

With respect to copy #2 of instant report, the records of the Cleveland NACA Laboratory indicate same was charged out to Abe Silverstein, Perl's immediate supervisor in the Laboratory, on September 25, 1944. It is interesting to note that on February 2, 1945, one D. Varr directed a memorandum to Silverstein to which there was attached a list of secret documents together with the dates same were charged out from the library. It was mentioned in this memorandum that the majority of these documents were overdue.

An examination of this list of documents reflects that copy #2 of 141-A (instant guided missile report dated September 20, 1944) was charged out on September 25, 1944. There also appears a notation as to this charge-out item to the effect that it was charged out "for Katterperl" and a penciled note, "See Bill." In view thereof, it can definitely be concluded that as of February 2, 1945, copy #2 of instant report which had been charged out by Silverstein had been entrusted to Perl and had not been returned to the library by him. No information is available to indicate whether it was ever returned and it is understood that no copies of the report are now available in that library.

Enclosure
cc: 2 - New York (65-15387)
2 - Cincinnati (65-1746)

MAILED JUN 9 1952 COMM-FBI

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65-59312-1714
JUN 11 1952

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JUN 6 17 PM '52

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JUN 11 1952

In view of the foregoing information, it is requested that the Cleveland Office appropriately contact Mr. H. Burton Bracey, Security Officer, NACA, Cleveland, and make an effort to determine through him any other available information concerning the various copies of instant document which were formerly maintained in the library in the Laboratory. Likewise, an effort should be made to ascertain whether there is any record as to the exact copy numbers of the ten copies of instant report which were designated to the Army Air Force, Technical Service Command, Wright-Patterson Field, Ohio. An effort should be made further, through an examination of any available charge-outs, inventory or any pertinent records, to develop any information indicating the disposition which may have been made of the various copies of this report which were previously maintained in the NACA library and particularly, to ascertain whether copy #2 was ever returned to the library by either Silverstein or Perl. With respect to the latter, you may desire to contact D. Barr, possibly a librarian, or have an appropriate inquiry made of Silverstein for the purpose of determining whether either might recall any details concerning this incident. All logical lines of investigation which might be expected to resolve the question as to the disposition of the Cleveland NACA Laboratory's copies of instant report should be vigorously pursued.

A Photostat of each of the Cleveland NACA Laboratory records previously referred to herein is being forwarded herewith for the assistance of the Cleveland Office in conducting this investigation. Your attention is particularly invited to the previously referred to P. Barr memorandum to Silverstein dated February 2, 1945, and its attachments. It will be noted that the list of various secret documents charged out to Silverstein as of the date of this memorandum appears in the attachments. It is desired that you determine whether all of the documents indicated on this list as being overdue were actually returned to the library. You should also endeavor to ascertain the exact meaning of the penciled notations appearing on the memorandum as well as the attachments.

It will also be noted that among the Photostats pertaining to copy #2 of instant report (141-A), there appears a form entitled "Special Document Circulation Record" (form C-807). There is a penciled notation on this form which indicates that "AS," undoubtedly referring to Abe Silverstein, received this copy as of June 29 (year not indicated). The purport of this notation is not readily understandable unless same is intended to reflect that Silverstein still had this copy charged out to him as of June 29, 1945, or a date subsequent thereto.

You should determine if possible the exact date the above document circulation record was executed, by whom, the identity of the person "Alca," whose name appears in the upper left-hand corner, the date this was marked declassified, and the person who placed the latter notation thereon. In this respect, you are aware that instant document pertaining to a high-speed, long-range, guided missile was never declassified and was not reclassified from secret to confidential until May 5, 1952. Thus the notation "declassified" is obviously incorrect and should never have been placed on this record.

The Cincinnati Office is being requested to expedite the investigation at the Wright-Patterson Air Base as requested in relet and to furnish the results thereof, particularly with respect to the exact number of copies of instant design study report furnished to AAF by RACA and the ultimate disposition of each copy, to the Cleveland Office in order to assist in their investigation in this matter.

RECEIPT FOR DOCUMENTS RETURNED TO NACA BY FBI

- (1) "Investigations of Jet-Propulsion Engines in the NACA Altitude Wind-Tunnel."
- (2) "Altitude Wind-Tunnel Investigations of Thrust Augmentation of Turbojet Engine. I-Performance with Tail-Pipe Burning."
- (3) "Final Report of Development of XP-59A and YP-59A Model Airplanes."
- (4) "Thrust-Augmentation Tests of Type I-16 Jet-Propulsion Engine by Bleedoff and Water and Alcohol Injection."
- (5) "The Locus of Possible Positions of a Heavy Bomber in Space after a 12-Second Time Interval."
- (6) "Calculated and Measured Turning Performance of a Navy F2A-3 Airplane as Affected by the Use of Flaps."
- (7) "Effects of Compressibility on the Maximum Lift Characteristics and Spanwise Load Distribution of a 12-Foot-Span Fighter-Type Wing of NACA 230-Series Airfoil Sections."
- (8) "Effect of Mach and Reynolds Numbers on the Power-Off Maximum Lift Coefficient Obtainable on a P-39N-1 Airplane as Determined in Flight."
- (9) "Effect of Mach and Reynolds Numbers on the Maximum Lift Coefficient Obtainable in Gradual and Abrupt Stalls of a Pursuit Airplane Equipped with a Low-Drag Wing."
- (10) "Preliminary Investigation of the Effect of Compressibility on the Maximum Lift Coefficient."
- (11) "Wing Pressure-Distribution Measurements up to 0.85 Mach Number in Flight on a Jet Propelled Airplane."
- (12) "Wind-Tunnel Tests of the Gorgon IIA and IIB Airframes. II - Power-Off Longitudinal and Lateral Stability and Control."
- (13) "Design, Construction and Preliminary Flight Tests of a 14" RESOJET Power Plant for the GORGON II-C Controlled Missile."
- (14) "AN APN-58 Status and Progress."

(continued)

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165-59312-713

JUN 23 1952

JUN 2 1952

NACA

RECEIPT FOR DOCUMENTS RETURNED TO NACA BY FBI (continued)

(15) "High-Speed Wind-Tunnel Tests of a 1/3-Scale Model of the XP-80 Airplane."

(16) "Final Report of Development, Procurement, Performance and Acceptance-XP-80-Airplane."

(17) "Wind-Tunnel Tests of a 1/4-Scale Model of the Bell XS-1 Transonic Airplane (Army Project MX-653). I - Longitudinal Stability and Control Characteristics."

(18) "Wind-Tunnel Tests of a 1/4-Scale Model of the Bell XS-1 Transonic Airplane (Army Project MX-653). II - Lateral and Directional Stability and Control."

(19) "Force and Longitudinal Control Characteristics of a 1/16-Scale Model of the Bell XS-1 Transonic Research Airplane at High Mach Numbers."

(20) "Aerodynamic Characteristics of 24 NACA 16-Series Airfoils at Mach Numbers between 0.3 and 0.8"

Lloyd W. Blankenbaker

Lloyd W. Blankenbaker
Assistant Security Officer, NACA

Date: 6/17/52

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Office Memorandum • UNITED STATES GOVERNMENT

Mr. Nichols
Mr. Belmont
Mr. Glavin
Mr. Harbo
Mr. Rosen
Mr. Tracy
Mr. Ladd
Tele. Room
Mr. Holloman
Miss Gandy

TO : DIRECTOR, FBI (65-59312)

FROM : SAC, CLEVELAND (65-2730)

SUBJECT: WILLIAM PERL, aka
ESPIONAGE - R
PERJURY

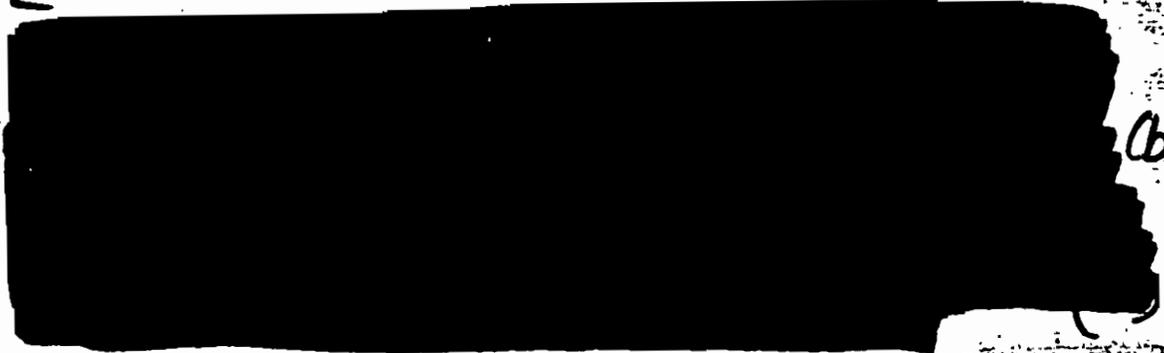
~~TOP SECRET~~

DATE: July 3, 1952

STRICTLY ~~CONFIDENTIAL~~

Rebuletts, June 2 and 6, 1952. (u)

Referenced letters indicate that previous efforts to impute knowledge of the JB-2 bomb to WILLIAM PERL have been unsuccessful; requested that ALAN D. JOHNSON be interviewed concerning PERL's participation in this project, and that investigation be conducted concerning the document prepared by JOHNSON and PERL entitled, "Preliminary Analysis, Design Study of High-Speed Long-Range Guided Missiles," dated September 20, 1944. (u)



As noted in Cleveland letter, January 21, 1952, ROBERT T. JONES, NACA scientist, assigned to Langley Field, Virginia, visited NACA, Cleveland, and attended a Ram Jet Conference on November 11, 1944, with the subject. At this time, JONES was primarily engaged in work on the JB-2 and it was shortly after his visit that copy No. 55 of "Guided Missiles, Development, Status and Availability" was first missed. PERL's position as a member of this committee, (u)

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INDEXED - 55

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- ccs: Cincinnati (65-1744) (RM)
- Los Angeles (65-5075) (RM)
- New York (65-15387) (RM)
- San Francisco (65-) (RM)
- Washington Field (65-553) (RM)

65-59312-717

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 Date of Declassification Indefinite

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DIRECTOR, FBI

plus the previously reported statements of ~~CARLTON KEMPER~~, Executive Engineer, NACA, and ~~JESSE WALL~~, Assistant Chief of Research, among others, certifies to PERL's access to any and all material concerning such a program, (u) as well as other research conducted at NACA.

ALAN D. JOENSON, Aeronautical Research Scientist, advised the writer that he well remembers preparing the "Preliminary Analysis," referred to above, with PERL during the Summer of 1944, but is unable to recall if PERL had maintained a copy of this document for his personal use. He stated that he, too, was a member of the Ram Jet Committee and although he did not specifically recall any particular documents to which he and PERL had access, he felt certain that PERL, because of the high regard in which he was held and because of his position at NACA, was furnished with all classified material of any importance. He had no knowledge of the number of copies prepared of the "Preliminary Analysis." (u)

A review of records of the NACA Library was made with the assistance of Miss ETHEL V. LYON to ascertain to whom copies of PERL's and JOENSON's report had been charged and for what periods. No copies of this document are now available in Cleveland, however, two charge-outs were located, one of which reflected that a copy had been sent to ABE SILVERSTEIN as of September 25, 1944, (copy No. 2). There were no other records of charge-outs and both copies No. 1 and No. 2 were inventoried in the library as of September, 1948, indicating SILVERSTEIN's copy was returned prior to that date. It was noted that the photostat of the charge-out for this document, furnished by the Bureau, indicated that this charge-out covered copy No. 2, however, this is an entirely different charge-out than the one maintained in the library and it is believed that, in fact, the photostatic copy refers to copy No. 3 (note the No. 3 is crossed out). This charge-out was located by H. BURTON BRACY, Security Officer, in the Supersonic Wind Tunnel Building in an office formerly used by ABE SILVERSTEIN. The notation "Alma" in the upper left hand corner was placed thereon by Mr. BRACY to indicate that this paper had been taken from files maintained by ALMA WILDY, Secretary to J. C. EVVARD, Supersonic Wind Tunnel Building, who assumed SILVERSTEIN's duties when the latter was named Chief of Research. Miss WILDY has previously been interviewed in this matter and it is noted that she merely inherited these papers in the Supersonic Wind Tunnel files (u)

DIRECTOR, FBI

and is not familiar with their origin. No record of the number of copies could be located. (u)

It was explained by Miss ~~LEE~~ that prior to 1946 the library had little or no control over a great many documents. She stated that papers of extreme importance and papers of certain projects were received in the office of the Chief of Research or the Executive Engineer and were not seen by the library, nor indexed by it. As a result, charge-out records for this period have in many instances been destroyed. This was corroborated by CARLTON KEEFER, who advised that his former Secretary, Mrs. DOLORES BARR, had maintained personal charge-outs for a great many documents and that at certain times she would "tickle" the various division chiefs for documents which had been charged out to them for a lengthy period of time. A search of files maintained by Mr. ERACY reflected a number of such memoranda directed to various division chiefs, including five or six pages to Mr. ABE SILVERSTEIN, in addition to the two photostats which were furnished with rebulet of June 6. According to Mr. KEEFER, Mr. ERACY and Miss LYON, it would be physically impossible to trace these documents at this date, since all Mrs. BARR's charge-out records have been destroyed and in view of the library's position, as outlined above. Mrs. BARR is no longer with NACA and her whereabouts are not now known. It will be recalled this same problem was faced when attempting to trace charge-outs and circulation records of the Lexington Report. (u)

Mr. ERACY confidentially advised that the NACA staff is quite upset over the condition of the library charge-out and maintenance system. As a result, the library is now undergoing a complete survey and there is a very strong possibility that Miss ~~LEE~~ may be asked to resign. (u)

It was noted in referenced letter of June 6 that a question was raised as to the meaning of the written notation "declassified," which was placed on the charge-out record, a photostat of which was enclosed with referenced letter. While searching library records, it was noticed on the two charge-outs for copies No. 1 and No. 2 of the "Design Study" that on November 29, 1948, copies of this document were sent to the Air Force Liaison Section for declassification. There was no indication that the documents had been declassified, but it was the opinion of Mr. ERACY and Mr. JESSE HALL (u)

~~TOP SECRET~~

~~TOP SECRET~~

DIRECTOR, FBI

that, in all probability, when these documents were sent to Liaison someone in the Supersonic Wind Tunnel Building had assumed the documents would be declassified and had so noted on the charge-out record in question. (u)

[REDACTED SECTION]

It is of interest to note that the Ram Jet Committee was headed by EASTMAN N. JACOBS, who is prominently mentioned in the case entitled, "HERMAN EPSTEIN, ESPIONAGE - R," (Bufile unknown), and who may be involved in Communist activities. JACOBS was employed by NACA from 1925 to 1945 and is, according to NACA officials, an engineer of world renown in the field of Aerodynamics. It is suggested the Bureau may desire to have JACOBS interviewed concerning his knowledge of PERL, as well as his own activities. (u)

OK An early interview with ABE SILVERSTEIN is planned concerning HAROLD and SIDNEY JAMES and other matters concerning WILLIAM PERL and UACB the problems posed in rebuletts will be discussed in general with SILVERSTEIN. (u)

It is felt that evidence can be secured to show PERL had access to information regarding most projects at NACA, although proving possession of a given document may not always be possible. In particular, it is not believed that NACA employees will state, though possibly true, that PERL had access to AEC restricted data unless subpoenaed before the Federal Grand Jury, since to do so would be evidence of a violation of the Atomic Energy Act against the person authorizing such access. (u)

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UNITED STATES DEPARTMENT OF JUSTICE

FEDERAL BUREAU OF INVESTIGATION

American Embassy
1, Grosvenor Square
London, W. 1

In Reply, Please Refer to
File No.

SECRET - AIR COURIER

~~SECRET~~

(ra)

Date: July 22, 1952

To: Director, FBI

(65-59312)

From: Legal Attache
London, England

(65-751)

Subject: WILLIAM PERL, aka
ESPIONAGE - R; PERJURY

Classified by 5886 3/14/78
Exempt from GDS, Category 1
Date of Declassification Indefinite

Rebuletts 3-13-52, 3-25-52, and 6-12-52. (u)

[Large redacted area consisting of several thick black bars covering the main body of the document]

(S)

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65-59312-723

JHO:CFJ

Enclosure

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Director, FBI

7-22-52

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

(S)

Director, FBI

7-22-52

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

(S)

[REDACTED]

[REDACTED]

~~SECRET~~

Director, FBI

7-22-52

[REDACTED]

(S)

[REDACTED]

(S)

[REDACTED]

(S)

There are being returned herewith the following items:

1. "NACA" Data Sheets

- 2. Report captioned "Justification of [REDACTED] for Construction for Fluid and Gas Dynamics Analysis Laboratory."
- 3. Report No. 1079, "U.S. Naval Ordnance Laboratory."
- 4. Department of Navy Secret Memorandum, dated February 6, 1952, from the Commander of U. S. Naval Ordnance Laboratory, re "Construction Diagram and Description of U. S. Naval Ordnance Laboratory, Request For."

(U)

~~SECRET~~



UNITED STATES DEPARTMENT OF JUSTICE

FEDERAL BUREAU OF INVESTIGATION

American Embassy
1, Grosvenor Square
London, W. 1

In Reply, Please Refer to
File No.

SECRET - AIR COURIER

~~SECRET~~ (rs)

Date: July 22, 1952

To: Director, FBI (65-59312)

From: Legal Attache (65-751)
London, England

Subject: WILLIAM PERL, aka
ESPIONAGE - R; PERJURY

Classified by 5886 3/14/78
Exempt from GDS, Category 1
Date of Declassification Indefinite

ReBuletts 3-13-52, 3-25-52, and 6-12-52. (u)

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Handwritten notes:
8/1/52
8/1/52
8/1/52
APP: [unclear]

Handwritten notes:
ENCLOSURE
73
8/1/52
APP: [unclear]

PENDING PROCESSING
JUL 21 1952

JFO:CFJ

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R 1 & NOV 22 1960 INDEXED - 73

165-59312-723

JUL 20 1952

Handwritten signature:
[unclear]

Director, FBI

7-22-52

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

(S)

~~SECRET~~

~~SECRET~~

Director, FBI

7-22-52

[REDACTED] (S)

[REDACTED] (S)

[REDACTED] (S)

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2. Report captioned "Justification of Need for Construction for Fluid and Gas Dynamics Analysis Laboratory."
3. Report No. 1079, "U.S. Naval Ordnance Laboratory."
4. Department of Navy Secret Memorandum, dated February 6, 1952, from the Commander of U. S. Naval Ordnance Laboratory, re "Construction Diagram and Description of U. S. Naval Ordnance Laboratory, Request For."

(u)

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0306344

65-59312

BY SPECIAL MESSENGER

Date: August 18, 1952
To: Director
National Advisory Committee for Aeronautics
1724 F Street, N.W.
Washington, D. C.

Attention: Mr. Robert L. Bell
Security Officer

From: John Edgar Hoover, Director
Federal Bureau of Investigation

Subject: WILLIAM PERL, aka.
ESPIONAGE - R; PERJURY

[REDACTED] (S)

RECORDED - 159 105-59312-725
AUG 19 1952

[REDACTED] (S)

[REDACTED] (S)

APL:ems:ra pd

SECURITY INFORMATION - ~~SECRET~~

BY SPL. MSGR.

37 AUG 19

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58 AUG 26 1952 COMM - FBI

[Handwritten signatures and initials]

[REDACTED]

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SECURITY INFORMATION - ~~SECRET~~

[REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

(S)

- 3 -
SECURITY INFORMATION - ~~SECRET~~

SECURITY INFORMATION - ~~SECRET~~

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

(S)

SECURITY INFORMATION - SECRET

~~SECRET~~
~~SECRET~~

All of the above is for your confidential information and no dissemination should be made outside of your organization. (U)

Attachment *[Handwritten Signature]*

SECURITY INFORMATION - SECRET

~~SECRET~~
~~SECRET~~

Julius Rosenberg ETAL.

Referral
National
Aeronautics
And Space
Administration

No. 17

Appeal to:

Mr. Miles Waggoner
 Freedom of Information Officer
 National Aeronautics & Space Administration
 Washington D.C. 20546

REFERRAL

Reviewed by: [Signature]

Packet: 17

AGENCY National Aeronautics and Space Administration

Subject and File Number Serial Date Document Description No. of Pages Actual Released

Subject and File Number	Serial	Date	Document Description	No. of Pages	Actual Released
1 Per1(HQ)65-59312	539	10/4/51	W.F.O Letter to HQ	1	1
2 " " " "	549	9/25/51	HQ Teletype to NY	1	1
3 " " " "	556	10/6/51	C.V. report to HQ w/COPY OF COVER SHEET	9/1	10
4 " " " "				1	1
5 " " " "	599	11/28/51	NF report to HQ w/COPY OF COVER SHEET	3/1	4
6 " " " "				1	1
7 Per1(HQ)65-59312	684	3/3/52	C.V. Letter to HQ	4	4
8 Sidorovich(C.V)65-2730	394	1/4/51	C.V. memo to file	5	5
9 " " " "	431	2/27/51	" " " "	2	2
10 Per1(HQ)65-59312	650	1/17/52	HQ Letter to NY	1	0
11 " " " "	650	1/8/52	National Advisory Committee For Aeronautics Letter to HQ	4	1
12 " " " "	668	2/5/52	National Advisory Committee For Aeronautics Letter to HQ	1	1

Office Memorandum • UNITED STATES GOVERNMENT

TO : DIRECTOR, FBI (65-59312)

FROM : SAC, WFO

SUBJECT: WILLIAM PERL, wa.
ESPIONAGE - R

DATE: October 4, 1951

Re New York tel September 24, 1951. There are being furnished the New York Office by registered mail copies of five expense vouchers executed by subject from the period of December, 1943, until his termination of employment by the National Advisory Committee for Aeronautics, along with miscellaneous papers incidental thereto. According to Mr. ROBERT BELL, Security Officer of the NACA, these documents obtained from the Lewis Laboratory, Cleveland, constitute the only vouchers submitted by PERL while at the Lewis Laboratory. BELL further advised that inquiry by him at Langley Field, Virginia, revealed no record of any travel or expense vouchers submitted by PERL while stationed at that place, and that it was unlikely that PERL's work had necessitated travel during that period. It is requested that the foregoing documents be returned to the Washington Field Office for transmittal to BELL after they have served their purpose.

RLS:cs

65-5543

cc - New York (65-15387) (Enclosure) (REGISTERED)

cc - Cleveland (65-2730)

RECORDED - 23

65-59312-539
OCT 5 1951

September 25, 1951

DEFERRED

SAC'S NEW YORK
WASHINGTON FIELD (BSM)

RECORDED - 32

65-59812-549

WILLIAM PERL, WAS, ESP R, PERJURY.

REURTEL SEPTEMBER TWENTY-FOUR, FIFTY-ONE, RE EXPENSE VOUCHERS PERL. [NACA ADVISE ALL THEIR VOUCHERS MORE THAN FIVE YEARS OLD DESTROYED BUT ORIGINALS STILL AVAILABLE GENERAL ACCOUNTING OFFICE.] WFO REQUESTED OBTAIN COPIES ALL VOUCHERS AVAILABLE NACA AND EARLIER VOUCHERS AT GAO. [NACA INDICATED NO EXPENSE VOUCHERS SUBMITTED BY PERL FOR JANUARY, FIFTY. HIS FEBRUARY, FIFTY, VOUCHER REFLECTED LEFT CLEVELAND TWO FIFTY P.M. VIA UAL FEBRUARY ONE ARRIVING NYC FOUR THIRTY P.M. REMAINED NYC UNTIL EIGHT FIFTEEN A.M. FEBRUARY SIX, WHEN RETURNED CLEVELAND, ARRIVING TEN TWENTY-FIVE A.M. VOUCHER INDICATED SPENT FEBRUARY TWO THROUGH FOUR IN NYC RECRUITING TECHNICAL PERSONNEL FOR LEWIS FLIGHT PROPULSION LABORATORY.]

HOOVER

CC: WASHINGTON FIELD (BY SPECIAL MESSENGER)

65-59812

EFE:mpm

NOTE: Above information obtained telephonically from Mr. Robert Bell, Security Officer, NACA.

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R 47 NOV 22 1960

FEDERAL BUREAU OF INVESTIGATION
U.S. DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION

SEP 23 1951

TELETYPE

OCT 20 1951

11-44

RECEIVED
FBI
U.S. DEPARTMENT OF JUSTICE
SEP 26 10 39 AM '51

SEP 26 10 39 AM '51

[Handwritten signatures and initials]

FEDERAL BUREAU OF INVESTIGATION

FORM NO. 1
THIS CASE ORIGINATED AT

NEW YORK

FILE NO.

65-2730

REPORT MADE AT CLEVELAND	DATE WHEN MADE 10-6-51	PERIOD FOR WHICH MADE 7-16, 20, 24, 26, 27; 8-6, 9-18, 20, 10-2-51	REPORT MADE BY JOHN B. O'DONOGHUE dht
TITLE WILLIAM PERL, wa.			CHARACTER OF CASE ESPIONAGE - R (PERJURY)

SYNOPSIS OF FACTS:

Leave records, NACA, failed to indicate subject absent from work 7-29-44. Total leave recorded for year is twenty-two days. However, subject indicated in personnel memo he had taken twenty-eight days as of 11-9-44. July 29, 1944, a Saturday, was official work day as were all Saturdays during 1944. ROLF W. LANDAUER not known to be associated with PERL at NACA. Mrs. JOSEPH LEVINE denies any knowledge of the subject and/or Lexington Report. Investigation 2744 Mayfield Road negative.

*MF 8-1
MF 2-2*

Q. I. R. - 2

- P -

Details:

MAX and HELENE SLITCHER have advised they had a dinner date at the Bird-In-Hand Restaurant in New York City with the subject, JULIUS ROSENBERG, and others sometime during September, 1944. They have recently, however, come to the conclusion that this dinner engagement most probably occurred toward the end of July, 1944.

*10/29/51
1cc Mr. [unclear]
1cc NACA
[initials]*

The leave records of the Bureau of Ordnance, Navy Department, Washington, D.C., reflect

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COPY IN FILE		65-59312-556	RECORDED - 50
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(See Page 1-A)			7-6
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R 47 NOV 22 1960			

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CV. F. O.
65-2730

Copies of This Report:

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- 1 - Norfolk (65-514)
- 1 - Philadelphia (65-4384)
- 1 - San Francisco
- 1 - Washington Field (65-5543)
- 4 - Cleveland

CV. F. O.
65-2730

that MAX ELITCHER was on leave in 1944 during the month of July from 3:30 p.m. on July 27th until 4:30 p.m., July 31st, and in August from August 26th to September 2nd.

Army leave records reflect that SAM PERL, who allegedly was also present at the dinner party, was on furlough from July 21, 1944, through August 4, 1944.

A review of the leave records at the Lewis Flight Propulsion Laboratory, National Advisory Committee for Aeronautics, was again made by the writer and no additional leave could be found for PERL for the year 1944 other than that previously reported. It was noted, however, in PERL's personnel file that he had directed the following memorandum to the Manager of the Laboratory:

"Cleveland, Ohio,
November 9, 1944.

"MEMORANDUM For Manager.

"Subject: Overdrawn leave.

"1. I have taken a total of 28 days leave this year. My leave is therefore 8 days in excess of the maximum time granted.

"2. The overdrawal of leave was made necessary by my marriage and the ensuing difficulty of locating a suitable place to live.

"3. It is requested that the excess leave be granted as annual leave.

/s/

William Hutterperl,
Aeronautical Engineer.

"RE:ing
AS"

CV. F. O.
65-2730

As it will be noted in this memorandum, PERL states that as of November 9, 1944, he had taken a total of twenty-eight days' leave for the current year and that his leave, therefore, was eight days in excess of the maximum time allowed. NACA records reflect that PERL took but twenty-two days for the entire year and that as of November 9, 1944, he had taken only seventeen. Attached hereto are photostatic copies of PERL's leave cards for the year 1944 which are self-explanatory.

In attempting to pinpoint any official leave taken by PERL, a review was made of his expense vouchers for the year 1944. However, only one voucher was located which was dated January and which covered his transfer from the Langley Memorial Aeronautical Laboratory to the Lewis Flight Propulsion Laboratory (then Aircraft Engine Research Laboratory).

Miss JULIA GREEN, who is in charge of Time, Leave and Payroll Records at the Lewis Flight Propulsion Laboratory, advised from a review of records in her possession that July 29, 1944, a Saturday, was a work day at NACA and a six-day work week was in effect throughout the entire year of 1944.

Mr. ROBERT BELL, Chief Security Officer, NACA, has advised that ROLF W. LANDAUER, who is employed in the Materials and Stresses Section, NACA, was recruited by WILLIAM PERL. It is noted that by recruitment BELL meant LANDAUER's services had been secured for the Laboratory.

A review of LANDAUER's file was made by SA EDWARD J. MOORE, JR. Nothing of a derogatory nature was noted.

Mr. H. BURTON BRACEY, Security Officer, NACA, Cleveland, advised the writer that LANDAUER was the only person who came to NACA as a result of PERL's recruiting program conducted at Columbia University during February, 1950. According to BRACEY, LANDAUER was brought to Cleveland specifically to assist in the development of nuclear energy as it pertains to the aircraft industry but he has been unable to be of any assistance since he has not received Atomic Energy Commission clearance. BRACEY also advised there was no indication of any association between PERL and LANDAUER while they were both employed by NACA.

ROBERT BELL, previously described, has also advised that IRVA C. LEVINE, wife of JOSEPH LEVINE, NACA, Cleveland, and a former NACA employee

CV. F. O.
65-2730

herself, had at one time acted as secretary to ALFRED BOBROWSKY and may have had access to the Lexington Report.

Mrs. JOSEPH LEVINE, 29602 Foote Road, Bay Village, Ohio, was interviewed by SA FREDERICK L. EDWARDS and the writer, at which time she advised she had no contact with the subject at any time and was not acquainted with the Lexington Report. She advised that she worked in the Lubrication and Wear Section, Engine Research Building, NACA, Cleveland, where her only contact with any matters which may have been related to the Atomic Energy Commission consisted of a project on the purification of uranium. The request was made for her to do this work by ALFRED BOBROWSKY. However, she was unable to carry her studies to any extent since a physical examination revealed her blood system would not permit close work with uranium.

She advised she also had done some work with BERT ROSENBAUM on micro-constituents in high temperature alloys which involved X-ray patterns in attempting to identify the constituents. She advised this work was done in 1948 and she worked closely with ALFRED BOBROWSKY on this although she did not know the exact work BOBROWSKY was doing. She advised that she did not act as secretary to BOBROWSKY at any time but had on several occasions done clerical work for ED ELSSON.

The following investigation was conducted by SA EDWARD J. MOORE, JR.:

On September 20, 1951, SA MOORE interviewed Mrs. ELIZABETH CSEHEK, 1840 Rock Road, Cleveland, Ohio, who was the janitress at 2744 Mayfield Road from September, 1938, until April, 1944. It will be recalled previous investigation has reflected that PERL under the name WILLIAM MUTTERPERL resided at this address from November 2, 1944, until November 6, 1944. Mrs. CSEHEK advised that she was not connected with the apartment during the subject's residence there. However, she recommended Mrs. GERTRUDE GOODMAN, who has lived at that address for approximately thirteen years.

SA MOORE contacted Mrs. GOODMAN and furnished her photographs of the subject as well as other members of the ROSENBERG espionage parallel. However, Mrs. GOODMAN was unable to recall the subject and could not identify any of the photographs presented to her.

CV. F. O.
65-2730

Mrs. ANNA DADRIDGE, a cleaning woman for all the apartments in this building for the past fourteen years, was also furnished photographs of the subject and other members of the ROSENBERG espionage parallel. However, she was unable to furnish any information of value.

- P E N D I N G -

CV. F. O.
65-2730

LEADS

No leads are being set forth in this report since all requests for investigation are being handled by teletype and/or letter.

Reference: Report of SA (A) EDWARD J. CAMILL 9-10-51, New York.
Report of SA JOHN B. O'DONOGHUE 7-20-51, Cleveland.

LEAVE CARD

William Mitterperl
 Accrued 63 0 1/4
 Current 26
 Total 89 0 1/4
 Days Hrs
 Time Clerk
 from LMA 12/23/42

Days	Hrs	FROM-	TO-	Employ. Initial	Approved	TOTAL TAKEN	RECORD
Days	Hrs	TOTAL TAKEN AT LMA		Days	Hrs	RECORD	
3		8:30am	11:30am	W.M. Mitterperl		10	5 RMB
4		1:00 PM	5:00 PM	W.M. Mitterperl		4	RMB
1/2		8:30am	9:00am	W.M. Mitterperl		4 1/2	JW
1		8:30am	9:45am	W.M. Mitterperl		5 1/2	JW
1/2		9:10	9:30	W.M. Mitterperl		6	JW
3		1:00 PM	3:35 PM	W.M. Mitterperl		1	1 JW
1		8:30am	9:30am	W.M. Mitterperl		1	2 JW
1		8:30	9:30 AM	W.M. Mitterperl		1	3 JW
1		8:30	9:30 AM	W.M. Mitterperl		1	4 JW
1		8:30	9:30 AM	W.M. Mitterperl		1	5 JW
1		8:30	9:30 AM	W.M. Mitterperl		1	5 JW
3		8:30 AM	5:00 PM	W.M. Mitterperl		4	5 JW
1		8:30 AM	9:30 AM	W.M. Mitterperl		4	6 JW
1		8:30 AM	9:30 AM	W.M. Mitterperl		4	7 JW
7		6/10/44	6/17/44	W.M. Mitterperl		11	7 JW
1		8:30	9:30	W.M. Mitterperl		12	JW
1		7-22-44	7-22-44	W.M. Mitterperl		13	9 JW
1		8:30	5:30	W.M. Mitterperl		14	9 JW
1		8-29-44	8-29-44	W.M. Mitterperl		14	9 JW
1		8:30	5:00	W.M. Mitterperl		14	9 JW
1		8-29-44	8-29-44	W.M. Mitterperl		14	9 JW
1		8:30	5:00	W.M. Mitterperl		17	9 JW
1		8:30	5:00	W.M. Mitterperl		19	9 JW
1		8:30	5:00	W.M. Mitterperl		19	9 JW

ANNUAL

Days	Hrs	FROM-	TO-	Employ. Initial	Approved	TOTAL TAKEN	RECORD
Days	Hrs	TOTAL TAKEN AT LMA		Days	Hrs	RECORD	
1		9-22-44	9-22-44	W.M. Mitterperl		20	4 JW
6		8:30	5:00	W.M. Mitterperl		21	2 JW
1		8:30	9:00	W.M. Mitterperl		21	3 JW
1		8:30	9:00	W.M. Mitterperl		21	3 JW
1		8:30	9:00	W.M. Mitterperl		21	3 JW
1		8:30	5:00	W.M. Mitterperl		21	5 JW
1		8:30	5:00	W.M. Mitterperl		21	5 JW

SICK

Accrued 34 7 1/2
 Current 15 0 0

PURCHASE
 11/27/44

LEAVE WITHOUT PAY

ABSENCE WITHOUT PERMISSION

Now.—Employee must secure approval of his superior before going on leave. Requests for leave without pay require approval of the superior for other requests approval of section head is sufficient. All requests of section heads require approval of division chief. Each leave in excess of 3 work days shall be supported by a certificate of a registered practitioner or physician. For sick leave absence of 3 work days or less, the total of which shall not exceed 12 work days in any one calendar year, the statement on this form may be accepted.

FEDERAL BUREAU OF INVESTIGATION

FORM No. 1
THIS CASE ORIGINATED AT

NEW YORK

FILE NO.
CV. 65-2730

REPORT MADE AT CLEVELAND	DATE WHEN MADE 7-6-51	PERIOD FOR WHICH MADE 7-16, 20, 24, 26, 27; 8-6, 9-16, 20; 10-2-51	REPORT MADE BY JOHN B. O'DONOGHUE dht
TITLE WILLIAM PERL, wa.			CHARACTER OF CASE ESPIONAGE - R (PERJURY)

SYNOPSIS OF FACTS:

Leave records, NACA, failed to indicate subject absent from work 7-29-44. Total leave recorded for year is twenty-two days. However, subject indicated in personnel memo he had taken twenty-eight days as of 11-9-44. July 29, 1944, a Saturday, was official work day as were all Saturdays during 1944. ROLF W. LANDAUER not known to be associated with PERL at NACA. Mrs. JOSEPH LEVINE denies any knowledge of the subject and/or Lexington Report. Investigation 2744 Mayfield Road negative.

- P -

Details:

MAX and HELENE ELITCHER have advised they had a dinner date at the Bird-In-Hand Restaurant in New York City with the subject, JULIUS ROSENBERG, and others sometime during September, 1944. They have recently, however, come to the conclusion that this dinner engagement most probably occurred toward the end of July, 1944.

The leave records of the Bureau of Ordnance, Navy Department, Washington, D.C., reflect

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~~SECRET~~ / INFORMATION - 01
FEDERAL BUREAU OF INVESTIGATION

Form No. 1
 THIS CASE ORIGINATED AT **NEW YORK**

FILE NO.

REPORT MADE AT NORFOLK	DATE WHEN MADE 11/28/51	PERIOD FOR WHICH MADE 11/13, 19/51	REPORT MADE BY FRED A. COOTS
TITLE WILLIAM PERL, wa.			CHARACTER OF CASE ESPIONAGE - R PERJURY

SYNOPSIS OF FACTS:

JOHN STACK, Assistant Head of Research, NACA, advised that according to his review of subject's written work while at NACA, Langley Field, there would be no necessity for his knowledge of Russian language. Mr. STACK advised translators have been available to scientific personnel at NACA since 1935. Library records at NACA deemed incomplete and failed to reflect that subject had signed out any material necessitating Russian translation. Investigation fails to reflect that any USSR representatives at Langley Field during period PERL and PASS employed there.

*12/10/51
 1 cc McClellan
 1 cc NACA*

APPROPRIATE AGENCIES
 AND FIELD OFFICES
 ADVISED BY ROUTING
 SLIP(S) OF *DECLASS*
 DATE *3-15-78*

RUC

DECLASSIFIED BY *4913*

ON *3/14/78* *AP/Jan*

DETAILS:

AT HAMPTON, VIRGINIA

CHARLES F. BARNETT, Security Officer, National Advisory Committee for Aeronautics, advised that according to records, there is no indication that any USSR Representatives had been at Langley Field during the period PERL and PASS were employed there. Mr. BARNETT advised that the usual procedure is to photograph all foreign visitors who might come through for inspection tours or otherwise at NACA, Langley Field.

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R 47 NOV 22 1960

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		COPY IN FILE	

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NF 65-514

Regarding the necessity for either PERL or PASS to have a knowledge of the Russian language to assist them in any scientific or mathematical translation while employed at NACA, Langley Field, Virginia, Mr. JOHN STACK, Assistant Chief of Research, NACA, Langley Field, Virginia, advised that he could see no necessity for any of his scientific men to have a knowledge of the Russian language in assisting them in their work. Mr. STACK reviewed written papers authored by subject PERL while at Langley Field and advised that from a review of these, he could see no necessity for PERL's studying the Russian language.

Mr. STACK advised that in 1945, the National Advisory Committee for Aeronautics, Langley Field, Virginia, employed one SAMUEL REISS as a Junior Aeronautical Engineer. He stated that REISS became a full time translator on January 6, 1936 and that he has personal knowledge of REISS's ability to translate Russian. Mr. STACK stated that as is the usual procedure, if one of his scientific men wishes to have a translation made from a foreign language to English to facilitate working on a problem, the person writes a written request and if deemed advisable, the supervisory person acting on the request has a translation made of the particular work. This English translation is then catalogued and made available to any of the scientists.

Doctor H. J. E. REED, NACA, advised that translators are available to all scientific men. He stated that it is possible that PERL might have wanted to study the Russian language to assist him in his work despite the availability of translators at NACA.

Through the cooperation of CHARLES F. BARNETT, Security Officer, Miss FRANCES MORELAND, Assistant Librarian, NACA, Langley Field, Virginia, reviewed all available references that subject PERL might have used during his work at NACA, Langley Field, with the object of determining whether or not subject had obtained technical books in the Russian language. Miss MORELAND advised that her records are not reliable enough to make a definite statement. She stated that on highly classified documents, the person desiring such documents would have had to sign a form that would have been written by the library section. She stated, however, that she has found no such forms. She further advised that she could find no indication that PERL either did or did not use Russian documents that had not been translated.

- REFERRED UPON COMPLETION TO THE OFFICE OF ORIGIN -

ADMINISTRATIVE PAGE

It is being pointed out that the subject's work at NACA, Langley Field, Virginia, was supervised by ABE SILVERSTEIN, now of NACA, Cleveland, Ohio, and SAM KATZOFF, NACA, Langley Field, Virginia. It is further being pointed out that KATZOFF has been contacted by subject's attorney with the object of obtaining a character statement.

Unless advised to the contrary, KATZOFF will not be interviewed to assist in arriving at an answer as to whether or not subject PERL had to have knowledge of the Russian language to assist him in scientific or mathematical translations. It is further being pointed out that no lead is being set out to Cleveland to interview former superiors at Cleveland.

REFERENCE:

New York letter to Bureau dated November 2, 1951.

- REFERRED UPON COMPLETION TO THE OFFICE OF ORIGIN -

FEDERAL BUREAU OF INVESTIGATION

Form No. 1

THIS CASE ORIGINATED AT

FILE NO.

REPORT MADE AT NORFOLK	DATE WHEN MADE 11/28/51	PERIOD FOR WHICH MADE 11/13, 19/51	REPORT MADE BY STANLEY G. CLAYTON
TITLE WILLIAM PERL, vs.			CHARACTER OF CASE ESPIONAGE - R PERJURY

SYNOPSIS OF FACTS:

JOHN STACK, Assistant Head of Research, NACA, advised that according to his review of subject's written work while at NACA, Langley Field, there would be no necessity for his knowledge of Russian language. Mr. STACK advised translators have been available to scientific personnel at NACA since 1939. Library records at NACA deemed incomplete and failed to reflect that subject had signed out any material necessitating Russian translation. Investigation fails to reflect that any USSR representatives at Langley Field during period PERL and STACK employed there.

- REC DECLASSIFIED BY **4913**
ON **3/14/78** **AP/Jan**

DETAILS:

AT HAMPTON, VIRGINIA

On **HERB F. BARNETT**, Security Officer, National Advisory Committee for Aeronautics, advised that according to records, there is no indication that any USSR representatives had been at Langley Field during the period PERL and STACK were employed there. Mr. BARNETT advised that the usual procedure is to photograph all foreign visitors who might come through for inspection tours or otherwise at NACA, Langley Field.

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Office Memorandum • UNITED STATES GOVERNMENT

TO : Director, FBI (65-59312)

DATE: March 31, 1952

FROM : SAC, Cleveland (65-1744)

SUBJECT: WILLIAM PERL, aka.
ESPIONAGE - R
PERJURY

ReBulet 2/25/52 and Cincinnati letter 3/7/52.

Mr. H. BURTON BRACY, Security Officer, NACA, Cleveland, was contacted concerning his memorandum dated November 15, 1951, and he advised that he has been unable to secure further information concerning the RUARK report. He stated that the three photostatic copies which had been in the possession of NACA, Cleveland, had been destroyed by him on February 7, 1952.

A check was made then at the Library of the Lewis Flight Propulsion Laboratory in an effort to further determine the dissemination of the RUARK report at Cleveland; however, no records were located which would furnish any more light than that set forth in BRACY's memo.

It is noted that referenced Bulet suggests that the records for a Library inventory might be helpful in this regard; however, Miss ETHEL LYONS has advised that these records are maintained only temporarily and are always destroyed at least by the next inventory, which is conducted within six months. This source, therefore, is not available.

Miss LYONS was questioned concerning the RUARK report; however, she was unable to recall the document and stated she did not feel that any of the librarians would be able to be of assistance unless a copy were shown to them to refresh their memories in view of the vast amount of material that they handle in their daily work.

It will be recalled that ~~ELEANOR~~ WILKINS during previous interviews has stated that she recalls handling no documents referring to nuclear energy and, in particular, nuclear propulsion of aircraft. This point in particular was stressed with Miss WILKINS during the investigation concerning the LEXINGTON report.

COPIES DESTROYED

R47 NOV 22 1960 It is felt that if further inquiry is desired in this matter at NACA, Cleveland, the Bureau should arrange to have a copy of the RUARK report furnished to the Cleveland Office in

JBO'D:CGP

RECORDED - 126

INDEXED - 126

7-125

65-59312-684

5 ADD C
cc: Cincinnati (65-1744)

New York (65-15387) (Enc.)

Director, FBI

order that it might be presented to those persons interviewed to refresh their memories. At this point, it will of course be necessary to have the approval of the Atomic Energy Commission before this document can be handled by persons not having Atomic Energy clearance. The bulk of the librarians at NACA do not have such clearance.

Reference Cincinnati letter indicates that Mr. BERNARD BEAMAN, Chief, Nuclear Propulsion Branch, Power Plant Laboratory, Wright Field, has stated that NACA, Cleveland, advised him that no reproductions were made of the copy of the RUARK report which he furnished to NACA. As a matter of record, it is pointed out that the copy Mr. BEAMAN furnished was in fact sent to Major V. C. RETHMAN, the Air Materiel Command Liaison Officer at NACA. This apparently was not the same copy furnished to NACA, Cleveland, by Johns Hopkins Laboratory, copies of which were made at Cleveland.

Reference is made to New York letter dated March 18, 1952, instructing the Cleveland Office to request the NACA Payroll Office to prepare from their records a listing on a yearly basis of all moneys paid to subject together with the breakdown as to gross pay, retirement, tax and net pay.

In view of the work load of the NACA Payroll personnel, this listing which is set forth below was prepared by the Cleveland Office from NACA records, photostats of which were forwarded to New York by letter dated February 15, 1952.

As to the question posed concerning PERL's payroll sheet dated 1946, please be advised that a review of NACA records has indicated that this is in error and in fact this sheet is for the second half of 1945. A photostatic copy of the first period for 1946 is enclosed which reflects the subject was paid \$22.41 gross less \$1.15 for one day's work on July 2, 1946.

Miss PAT CLARK, Payroll Clerk, NACA, Cleveland, advised that the sign-in register with PERL's name would have been the only necessary authorization for such pay. A complete review of PERL's personnel file was again made without locating any record of his having returned from leave without pay for these two days.

Director, FBI

Mr. H. BURTON BRACY advised he has been told that PERL was meticulous in his demands for exact payment for work performed and, further, stated that he will check further into this matter to ascertain the reason for PERL's being paid for these two days.

Reference New York letter also indicates that the New York Office has conducted considerable investigation in an attempt to determine PERL's activities and whereabouts during the summer of 1946. Although Cleveland is not in possession of the New York AEEA report on PERL which covered the verification of his Columbia University education, it has in the past been PERL's contention that he attended Columbia University during the summer of 1946. It would be appreciated if the New York Office would advise the exact date when PERL entered Columbia in 1946 in order that further investigation may be conducted at Cleveland if necessary. You will be advised of the results of the investigation concerning PERL's working during June and July, 1946, at NACA.

The following is a summary of payments made to WILLIAM PERL by NACA, Cleveland:

DATE	GROSS	RETIREMENT	TAX		NET
1939	\$1,461.05	\$51.20			\$1,409.85
1940	\$2,108.21	\$73.85			\$2,034.36
1941	\$2,499.90	\$87.66			\$2,412.24
1942	\$2,940.71	\$126.47			\$2,814.24
DATE	GROSS	RETIREMENT	TAX	BONDS	NET
1943	\$4,103.24	\$173.83	\$428.80	\$712.50	\$2,788.11
1944	\$4,455.42	\$190.08	\$730.23	\$662.50	\$2,872.61
1945	\$4,911.49	\$224.70	\$728.69	\$800.00	\$3,158.10
1946	\$2,635.11	\$131.88	\$308.10	\$75.00	\$2,120.13

Director, FBI

DATE	GROSS	RETIREMENT	TAX	BONDS	NET
1947	Nothing				
1948	\$3,936.51	\$228.38	\$426.40		\$3,281.73
1949	\$8,004.23	\$480.51	\$895.70		\$6,628.12
1950	\$6,955.38	\$385.89	\$798.17		\$5,771.32

A review of the file reflected that PERL was paid \$524.64 less \$79.97 tax in lieu of accrued annual leave and \$2,148.52 which was his contribution to the retirement fund.

Cleveland, Ohio
January 4, 1951

MEMO, SAC

Re: WILLIAM PERL, aka.
ESPIONAGE - R

*Rec'd 12/15, 16, 19, 28
1/20, 10*

Re Memo SAC of SA ARTHUR W. PEJEAU, 12/9/50, Bureau teletype to Cleveland 12/15/50, and New York teletype to Cleveland 12/16/50.

The following investigation was conducted by SAs THOMAS A. MAKI and EDWIN B. BIRNEY, and is a summary of the results of the investigation furnished to the Bureau and New York by teletypes dated December 20, 1950 and January 3, 1951.

On December 15, 1950 JACK BROWN, Personnel Manager, NACA, Cleveland, furnished the following information regarding KLEANORE E. WILKINS to SA MAKI:

Born:
Sisters:

August 23, 1918, Kansas City, Missouri
BOBETTE A. WILKINS, Maple Springs,
New York, telephone Bemus Point 3006
(present address 1615 Mars Avenue,
Lakewood, Ohio

Former address:
Education:

1518 Ansel Road, Cleveland, August, 1947
Webster Grove, Missouri High School
Washington University, St. Louis,
BA in English 1936-1940
Carnegie Library School, Pittsburgh,
Pennsylvania 1941-1942, BS in Library
Science

Employments:

Carnegie Library, Pittsburgh, 1942-1944
War Department, Air Force, Eglin Field,
Florida, March, 1944 to February, 1946
Carnegie Library, Pittsburgh, February,
1946 to June, 1946
June, 1946 to December, 1946 "Travelled"
Cleveland Public Library, Cleveland,
Ohio, January, 1947 to August, 1947
NACA, August, 1947 to present.
Classified as Librarian GS-7, Salary
\$3950. Last rating "Excellent".

EBB:mk
65-2730

cc 65-2726

*As per
all pp. of*

65-2730-394

SEARCHED	INDEXED
SERIALIZED	FILED
JAN 4 1951	
FBI - CLEVELAND	

O'Donoghue

MEMO, SAC

References:

HAZEL KING, American Gas Association,
420 Lexington Avenue, New York City.
Met while at Eglin Field, Florida.
MARTHA BARNES, Instructor of WILKINS
at Carnegie Library.
FRANCIS KELLEY, 4400 Forbes Street,
Pittsburgh, Pennsylvania, Head of
library school.

Mr. BROWN furnished a photograph of ELEANORE WILKINS which is being retained in the 1A jacket of subject's file.

On December 16, 1950 IVA BALDWIN, Assistant Manager, Evangeline Residence, 1518 Ansel Road, Cleveland, advised SA MAKI that ELEANORE E. WILKINS resided at the Evangeline Residence from January 26, 1947 to November 17, 1948. She was employed as of January 22, 1947 by the Business Information Bureau of Cleveland Public Library. Her parents resided at Library, Pennsylvania. Her father, O. L. WILKINS, died early in 1948 after which ELEANORE WILKINS endeavored to locate a home for her sister and mother. ELEANORE WILKINS subsequently resided at 1615 Mars Avenue, Lakewood, Ohio. Her former roommate and associate was one KATHLEEN BOLDT, residence c/o W. S. LEAPER, Landerwood Drive, ED #4, Chagrin Falls, Ohio, employed Willcraft Paper Company, 1927 East 19th Street, Cleveland. References EDITH CASE and ROSE BORNELLER, both employees of the Cleveland Public Library. Miss BALDWIN stated that due to the illness of the father of ELEANORE WILKINS, Miss WILKINS frequently visited her home in Library, Pennsylvania.

WALTER ORE, Information Officer, NACA, Cleveland, residence apartment house on the Northwest Corner, 30th and Euclid Avenue, advised that he had been informed by JOSEPHINE CASE his secretary, that WILLIAM PERL and ELEANORE WILKINS were frequently seen at lunch together at NACA.

ETHEL V. LYONS, Chief Librarian, NACA, residence 375 1/2 Riverdale, Rocky River, Ohio, residence telephone LA 1-0585, advised that she had first met ELEANORE WILKINS, Assistant Librarian, NACA, at the Cleveland Public Library in 1947 and associated closely with WILKINS since August, 1947 when WILKINS obtained her present position with NACA. Miss LYONS stated she believed that WILKINS had obtained her position at NACA through one PHYLLIS SNYDER, formerly Chief Librarian, NACA. PHYLLIS SNYDER upon leaving NACA, went to Columbia University to obtain a library degree and then accepted a position as a County Librarian in Fresno, California. PHYLLIS SNYDER is presently believed to be employed by the State of North Carolina as a librarian, possibly in public relations work. Miss LYONS stated that WILKINS was a conservative intellectual and a restless person who was not too happy, and that WILKINS desired to attend Columbia

MEMO, SAC

University to obtain an advanced degree in Library Science.

Miss LYONS stated that the sister and mother of ELEANORE WILKINS came to Cleveland for a short time in the Fall of 1947 or 1948 and then moved to a cottage near Chautauqua Lake, New York and that WILKINS' sister had worked during that time at Jamestown, New York. The mother and sister of WILKINS then returned to Cleveland about November 1, 1950. WILKINS resided at 1615 Mars Avenue, Lakewood with one JEAN SMITH SINETSKY who was formerly a library assistant at NACA until October, 1950. JEAN SMITH SINETSKY, according to Miss LYONS, is presently employed in New York City by the Public Library, and is seeking a position with the Kellax Company, an AEC facility in New York.

Miss LYONS stated that she had observed PERL and WILKINS together many times in the NACA Library and that WILKINS was very attentive to PERL and would "beat the ears off any girl who wanted to wait on him". Miss LYONS stated she had no information regarding the association of PERL and WILKINS outside of the NACA Library.

Miss LYONS stated that WILKINS had been considering attending Columbia University and seeking a job in the New York area, and that WILKINS was interested in obtaining a U. S. Fulbright Scholarship for study in a foreign school. Miss LYONS stated that WILKINS has not been "cleared" and does not have access to "secret" material or "classified AEC" material but does have access to "confidential" and "restricted" material.

Miss LYONS commented that WILLIAM PERL was like a "pack rat" in accumulating documents from the NACA Library and that some of the material apparently had not been charged out, and that they had some difficulty in having it returned.

Miss LYONS furnished the names of the following library assistants presently employed at NACA:

Mrs. ELEANOR SCADDING

Mrs. EVELYN DALZELL

Miss MARGARET MITAK

Miss JOANNE FOLK

Miss BARBARA BACON

Mrs. MARGARET NEIDENGARD

MEMO, SAC

Miss KATHLEEN BOLDT, employed at Millcraft Paper Company, 1927 East 19th Street, Cleveland, was interviewed on December 19, 1950. She stated that she had been a roommate of ELEANORE WILKINS for more than a year at the Evangeline beginning January, 1947, and that WILKINS had been a close friend of one Miss CROOKSTON who had formerly worked with WILKINS at the Cleveland Public Library. Miss CROOKSTON is presently employed by Meldrum & Fewsmith, Carnegie Hall Building, Cleveland, Ohio.

Miss BOLDT stated that WILKINS "dated" PERL occasionally and admired PERL very much. She stated that WILKINS was very close about her personal affairs but that she used to speak about PERL in connection with her work at the NACA Library and stated that she always endeavored to find the material that PERL desired in the NACA Library. Miss BOLDT stated that WILKINS on her recent trip to New York found that she could not afford the Library Science course that she wanted to take at Columbia University but that since her return to Cleveland has received "some sort of offer". WILKINS is also considering attending Western Reserve University in Cleveland. WILKINS reportedly attended a number of "lectures" while in New York. Miss BOLDT stated that WILKINS, during the first year she had known her, visited her mother and sister in Library, Pennsylvania but that her mother and sister now reside with WILKINS on Mars Avenue in Lakewood, Ohio.

On January 3, 1951 Miss BOLDT advised that on Christmas Eve, 1950, WILKINS had informed her that she had seen PERL on her recent trip to New York and that PERL had informed her that he had recently remarried his former wife.

The Cleveland indices contained no information regarding ELEANORE E. WILKINS, PHYLLIS SNYDER, or JEAN SMITH SINETSKY.

The following descriptive information regarding ELEANORE E. WILKINS was obtained from the records of NACA and the Evangeline Residences:

Born:	August 23, 1918, Kansas City, Missouri
Residence:	1615 Mars Avenue, Lakewood, (1950)
Previous residences:	1518 Ansel Road, August, 1947 The Evangeline, 1588 Ansel Road - January 26, 1947 to November 17, 1948
Race:	White
Sex:	Female
Height:	5' 10"
Weight:	130 pounds
Hair:	Dark brown
Characteristics:	Low forehead; rimless glasses; fracture of right ankle at age 15; slight limp

MEMO, SAC

Religion: Presbyterian
Occupation: Librarian
Relatives: Sister: BOBETTE A. WILKINS, Maple Springs, New York, Phone Bemus Point 3006
Father: O. L. WILKINS, Library, Pennsylvania
died early 1948

Education: Webster Grove, Missouri High School
1936-1940 Washington University, St. Louis, BA English
1941-1942 Carnegie Library School, Pittsburgh, Pennsylvania, BS Library Science

Employments: 1942-1944 Carnegie Library, Pittsburgh
3/44-2/46 War Department, Air Force, Eglin Field, Florida
2/46-6/46 Carnegie Library
6/46-12/46 "Travelled"
1/47-8/47 Cleveland Public Library, Business Information Bureau, began 1/22/47
8/47 to present NACA, Librarian

References: HAZEL KING, American Gas Association, 420 Lexington Avenue, New York. Excellent while at Eglin Field, Florida
MARTHA BARNES, Instructor at Carnegie Library
FRANCIS KELLEY, 14400 Forbes Street, Pittsburgh, Head of Library School
KATHLEEN BOLDT, c/o. W. S. LEAPER, Landerwood Drive, Route 4, Chagrin Falls, Ohio, Employed Millcraft Paper Company, 1927 East 19th Street
EDITH CASE, Cleveland Public Library
ROSE VORMELLER, Cleveland Public Library

Photograph of ELEANORE WILKINS in 1-A jacket of subject's file.

EDWIN B. HIRNEY
SA

Cleveland, Ohio
February 27, 1951

MEMO, SAC:

RE: WILLIAM PERL, wa.
ESPIONAGE - R

Re: XP - 81

In attempting to establish that PERL had access to a memo dated February 1, 1944, at Santa Monica, California, written by EDWIN P. HARTMAN, West Coast Representative, N.A.C.A., the following were interviewed:

ETHEL V. LYON, Chief Librarian, N.A.C.A., personally made a thorough search of the N.A.C.A. Library and was unable to find a copy of HARTMAN'S memo. She did, however, locate several memos pertaining to the XP-81 among them a letter written by HARTMAN; however, all of this material was dated 1945 and later. *Lyons*

CARLTON KEMPER, Executive Engineer, Office of Chief of Research, advised that HARTMAN'S memo was sent to him from Washington Headquarters in February, 1944, and was signed for by his ex-secretary, Mrs. ALMIRA ELLIOTT, now deceased. According to KEMPER, she died in 1949 of cancer. KEMPER recalled after viewing the memo that upon receipt of it he sent it directly to the Altitude Wind Tunnel and most probably to AL YOUNG, who is now in charge of one branch of the Altitude Wind Tunnel. KEMPER recalled that complete arrangements were made for testing the power plant of the XP-81 but no actual work was done.

AL W. YOUNG was interviewed and advised that he vaguely recalled the preparations for testing the power plant of the XP-81. He stated that in 1944 the Altitude Wind Tunnel was headed by ABE SILVERSTEIN and all documents which came to YOUNG would have to clear through SILVERSTEIN. He stated he had no knowledge of PERL'S being involved in the preliminary work on the XP-81 but stated that PERL was quite close to SILVERSTEIN and could have had knowledge of it. He stated he was positive PERL worked on the

JBO'D:CGP *ef*
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65-2730-431

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FEB 27 1951	
FBI - CLEVELAND	

MEMO, SAC:

preliminary plans for testing the XP-92 and recalled that all data were cleared through SILVERSTEIN on that plane also. It is to be noted that PERL has denied any knowledge of any Vultee aircraft. The XP-92 is a Vultee plane. YOUNG also stated that the XP-81 project was assigned to G. MERRITT PRESTON, who is now in the Flight Plans Room, 201 Flight Research Section, PAX telephone 4271.

It will be recalled that SILVERSTEIN in an interview with the writer advised he recalled the preparations for testing the XP-81 and was quite certain that PERL had nothing to do with it.

JOHN B. O'DONOGHUE
SA

SAC, NEW YORK

January 17, 1952

~~CONFIDENTIAL~~

DIRECTOR, FBI

RECORDED - 41

WILLIAM PERL, aka William Mutterper? (Bufile 65-59312)
ESPIONAGE - R; PERJURY (NY 65-15387)

EX-83

[REDACTED] (b)(1) (Bufile 100-360455)

[REDACTED]

[REDACTED]

Enclosure

- cc: Washington Field (Enclosure) (65-5543)
- Los Angeles (Enclosure) (65-5075)
- Buffalo (Enclosure) (65-2003)
- Cleveland (Enclosure) (65-2730)

EFE:hc

[Handwritten signature]

Classified by 49/3 AP/LL
Exempt from GDS, Category 2-S
Date of Declassification Indefinite
3-14-78

65-59312-650

MAILED
JAN 17 1952
COMM - FBI

[REDACTED]

~~CONFIDENTIAL~~

[Handwritten initials]

50 FEB 15 1952

UNRECORDED COPY FILED IN 100-360455-10

AERONAUTICAL ENGINEER, U. S. AIR FORCE
ALEXANDER WETMORE, Ph. D., VICE

DETLEV W. BRONKHORST, Ph. D.,
VICE ADM. JOHN H. CASSADY, U. S. N.
EDWARD U. CYRUS, Ph. D.
MON. THOMAS W. S. DAVIS
JAMES H. DOUGLASS, Ph. D.
RONALD H. HAZEN, Ph. D.
WILLIAM LITTLEWOOD, Ph. D.
REAR ADM. THEODORE C. LORING, U. S. N.

MON. DONALD W. PATTEN
MAJ. GEN. DONALD L. PUTY, U. S. A. F.
ARTHUR E. RAYMOND, Ph. D.
FRANCIS W. REICHELDERFER, Ph. D.
MAJ. GEN. GORDON F. SAVILLE, U. S. A. F.
WILLIAM WEBSTER, Ph. D.
THEODORE F. WRIGHT, Ph. D.

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

1724 F STREET, NORTHWEST
WASHINGTON 25, D. C.

TELEPHONE: LIBERTY 8-6700

LANGLEY AERONAUTICAL LABORATORY
LANGLEY FIELD, VA.

AMES AERONAUTICAL LABORATORY
MOFFETT FIELD, CALIF.

LEWIS FLIGHT PROPULSION LABORATORY
CLEVELAND AIRPORT, CLEVELAND 11, OHIO

January 8, 1952

Good

Mr. John Edgar Hoover
Director, Federal Bureau
of Investigation
U. S. Department of Justice
Washington 25, D. C.

Subject: William Perl aka
William Mutterperl
Espionage - R
Perjury
FBI file No. 65-59312

EXPEDITE PROCESSING
JAN 9 1952

Dear Sir:

Reference is made to your letter of
December 5, 1951.

I am transmitting herewith a translation
of the Russian notes forwarded to NACA as an
enclosure to your letter. Since the enclosed
translation was made by one familiar with
aeronautical terms, it may supplement the
translation available to you.

Very truly yours,

Robert L. Bell
Robert L. Bell
Security Officer

Enclosure

*Let D. H. ... acc,
1-17-52
etc*

2
41
65-59312

RECORDED - 41
INDEXED - 41

65-59312-650

EX-83

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

(b)(1)

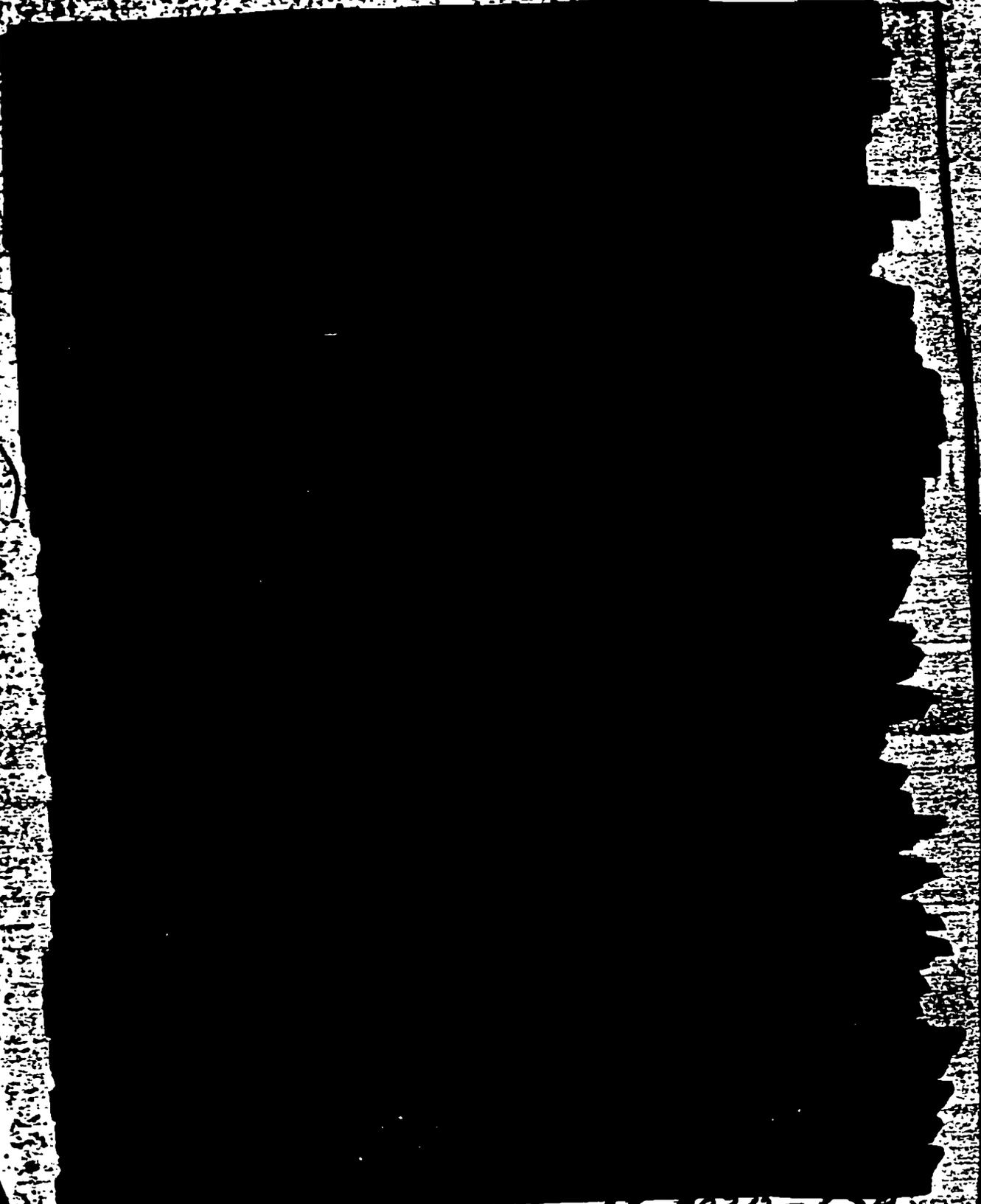
ENCLOSURE

65-59312-650

~~SECRET~~

~~Security Information~~

~~Security Information~~



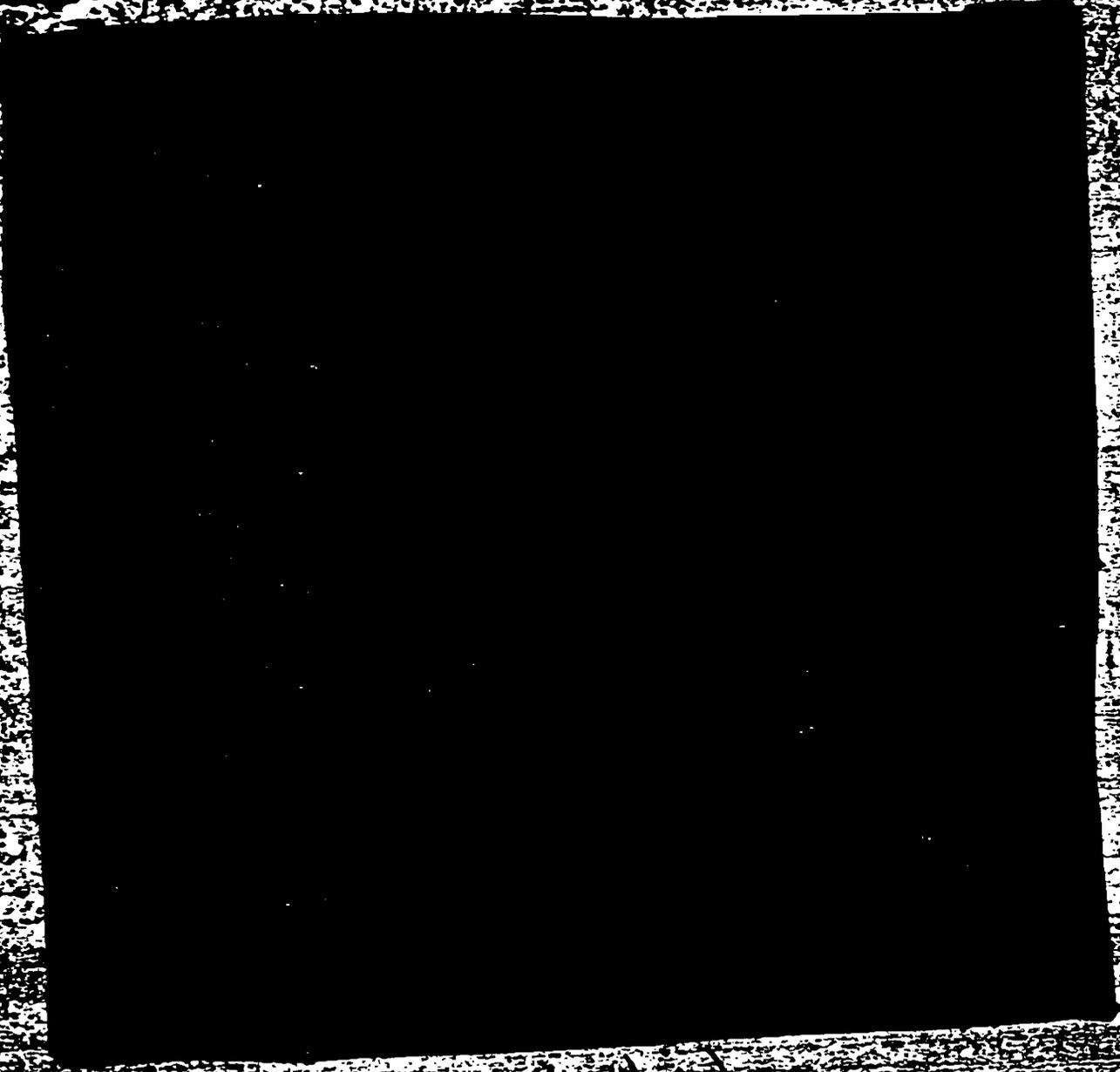
65-39312-630

~~SECRET~~

Security Information

~~CONFIDENTIAL~~

Security Information



(b)(1)

65-59312-650

~~CONFIDENTIAL~~
Security Information

~~SECRET~~
Security Information

ROBERT L. BELL, Sec. D. Chief
ALEXANDER WETMORE, Ph. D. Vice
SUTLEY W. BROOK, Ph. D.
VICE ADM. JOHN M. CASSADY, U. S. N.
EDWARD U. COLEMAN, Ph. D.
MOR. THOMAS W. S. DAVIS
JAMES H. DOOLITTLE, Sec. D.
RONALD M. MAZEN, D. S.
WILLIAM LITTLEWOOD, M. E.
REAR ADM. THEODORE C. LONGQUEST, U. S. N.

MOR. DONALD W. T. BOP
MAJ. GEN. DONALD L. PUTT, U. S. A. F.
ARTHUR E. BAYMOND, Sec. D.
FRANCIS W. REICHELDERFER, Sec. D.
MAJ. GEN. GORDON P. SAVILLE, U. S. A. F.
WILLIAM WEBSTER, M. S.
THEODORE P. WRIGHT, Sec. D.

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

1724 F STREET, NORTHWEST
WASHINGTON 25, D. C.

TELEPHONE: LIBERTY 9-6700

LANGLEY AERONAUTICAL LABORATORY
LANGLEY FIELD, VA.

AMES AERONAUTICAL LABORATORY
MOFFETT FIELD, CALIF.

LEONIS FLIGHT PROPULSION LABORATORY
CLEVELAND AIRPORT, CLEVELAND 11, OHIO

February 5, 1952

Director
Federal Bureau of Investigation
U. S. Department of Justice
Washington 25, D. C.

Dear Sir:

In response to the oral request of Special Agent Elmer Enrich, I am enclosing a copy of a memorandum dated June 15, 1945, from the Langley Laboratory Security Officer for the Engineer-in-Charge.

This memorandum concerns the loss of a Secret document entitled "Guided Missiles - Development, Status, and Availability."

Very truly yours,

Robert L. Bell
Security Officer

Enclosure

RECORDED - 51

INDEXED - 51

EX-164

59 MAR 11 1952

FEB 11 1952

65-39312-668

Robert L. Bell
William (Per)
59 ENCL
Copy of all
by letter 2/19/52
65-59312
AW

Julius Rosenberg Et Al.

Referral
National
Aeronautics
And Space
Administration

No. 18

MR. MIKES WAGGONER
FREEDOM OF INFORMATION OFFICER
NASA
WASHINGTON, D.C. 20546

REFERRAL

Reviewed by: BAK/GER

AGENCY NASA

PACKET 18

	Subject and File Number	Serial	Date	Document Description	No. of Pages Actual Released	
1	Wm. PERL (HQ) 65-59312	481	7/12/51	CLEVELAND LETTER TO HQ W/ENCLOSURES	1/99	1/99
2	Wm. PERL (HQ) 65-59312	481	7/27/51	HQ LETTER TO SAC, CLEVELAND.	5	5
3	Wm. PERL (HQ) 65-59312	EBF 939	7/16/51	LAB REPORT W/ENCLOSURES	2/100	2/100
4						
5						
6						
7						
8						
9						
10						
11						
12						

Office Memorandum • UNITED STATES GOVERNMENT

TO : Director, FBI ATTENTION MECHANICAL DIVISION DATE: July 12, 1951

FROM : SAC, Cleveland

AIR MAIL SPECIAL DELIVERY (RMRRR)

SUBJECT: [REDACTED] [TS] b1

~~TOP SECRET~~
~~STRICTLY CONFIDENTIAL~~

WILLIAM PERL, aka.
ESPIONAGE - R; PERJURY
(Bufile 65-59312)

Rebulet dated 6/19/51.

134780

There are enclosed herewith the original letter from the Army Air Force dated August 4, 1944 concerning research on pilotless guided missiles; two copies of letter dated August 16, 1944 from NACA, Washington, to NACA, Cleveland, authorizing research on said missiles; and copies of research authorization number E-110. In addition there is enclosed a folder entitled "Ram Jet Conferences Minutes," which includes the minutes of such conferences from July 24, 1944 through April 13, 1945 inclusive.

No record could be located in NACA files concerning the JB-2 bomb; however, a thorough search of Ram Jet material revealed the enclosed conference minutes and letters described above. It will be noted that these minutes are primarily concerned with the construction of robot bombs and would indicate WILLIAM PERL was well aware of all research being conducted in that field.

~~EXPEDITE PROCESSING~~

It is requested that the Bureau photograph or photostat the enclosed material and furnish copies to the New York and Cleveland Divisions as well as retain a copy for Bureau files. It is pointed out that the minutes of July 24, 1944 include calculations and curves on Ram Jet studies which were prepared by WILLIAM PERL and Mr. L. RICHARD TURNER. The handwritten analyses appear to be in PERL's handwriting and it is suggested therefore the Bureau may desire photographs of this section in the event it is more feasible to photostat the entire minutes.

THIS INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
EXCEPT WHERE SHOWN
OTHERWISE.

UNRECORDED COPY FILED IN 65-59312-481

ENCLOSURE
It is pointed out that the enclosed material has been loaned to this office and it is therefore desired that it be returned as quickly as possible.

SLIP(S) OF
DATE 2/16/78

JBO:pjf
65-2730
cc: Bufile 65-59543
2 New York (65-15387)
Cv file 65-2726
65-2751

RECORDED - 1
INDEXED - 1

65-59312-481
JUL 14 1951

~~TOP SECRET~~

Enc. (RMRRR)

COPY AND SPECIMENS RETAINED IN LAB.
FOR LAB. ACTION AND REPORT

INDEX OF FILES

7-16-51

Secret

Classified by 4913
Exempt from automatic
downgrading and
declassification on Indefinite

Title: Preliminary Design Study in Development of Special Vehicle for Army Air Forces

Projecting the Agreement: 1947

Issued: August 1947
Authority: Executive Committee, March 1947

Purpose of Investigation (Why?)

To cooperate with the Army Air Forces in the development of a vehicle meeting special Army requirements.

Brief Summary of Method (How?)

Preliminary design studies to be made of possible vehicles and propulsion systems to accomplish the performance requested by the Army Air Forces.

Remarks: Requested by the Army Air Forces, Materiel Command, 11th Center, 11th Air Force, Department 50, Wright Field, Dayton, Ohio.

Date:

Completed

CONFIDENTIAL - INVESTIGATION REPORT

65-59312-481

AERL

~~SECRET~~

Washington, D.C.
August 27, 1944

From NACA
To Cleveland

Subject: Development of guided missile for Army
Air Forces

Reference: AUSA letter of August 16, 1944, REL:in

1. There are forwarded herewith six copies of the research authorization to cover the preparation of design studies for the subject investigation. Research authorization No. E-10 has been assigned for this project.

2. Research Authorizations Nos. E-111 and E-102 have been reserved to cover the construction of experimental models and the tests of such models respectively. It was considered that this work should be done under three separate research authorizations because of the broad scope of the request of the Army Air Forces.

3. It is requested that, following the submission of preliminary design studies to the Army Air Forces for review, the laboratory submit drafts of research authorizations to cover the construction and testing phases of this project. It is requested that these drafts be in this office by September 5, if possible.

Enclosure

REL:in

[Signature]
C. V. Lewis,
Director of
Aeronautical Research

~~SECRET~~

~~SECRET~~

Washington, D.C.
August 27, 1944

Don AICL
To Cleveland

Subject: Development of guided missile for Army
Air Forces

Reference: AICL letter of August 16, 1944, AIR-14

1. There are forwarded herewith all copies of the research authorization to cover the preparation of design studies for the subject investigation. A research authorization No. 2-110 has been assigned to this project.

2. Research Authorizations Nos. 2-111 and 2-112 have been reserved to cover the construction of experimental models and the tests of such models respectively. It was considered that this work should be done under three separate research authorizations because of the broad scope of the request of the Army Air Forces.

3. It is requested that following the submission of preliminary design studies to the Army Air Forces for review, the laboratory submit drafts of research authorizations to cover the construction and testing phases of this project. It is requested that these drafts be in this office by September 5, if possible.

Don AICL
Director of
Aeronautical Research

Enc
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REFERENCE AUTHORIZATION

Title: Preliminary Design Study in Development of Special Vehicle for Army Air Forces

Approved: _____

Date: _____

Contract Number: _____

Issued: August 7, 1941

In accordance with authority of Executive Committee March 9, 1942

Purpose of Investigation (Why)

Cooperates in the Army Air Forces in the development of a vehicle meeting special Army requirements.

Brief description of method (How)

Preliminary design studies will be made of possible mechanical and propulsion systems to accomplish the performance requested by the Army Air Forces.

Requests requested by the Army Air Forces Materiel Command, in letter dated August 4, 1941, reference Department of Wright Field Dayton, Ohio.

Date of report: _____

Publication: _____

Name of: _____



The preliminary design study is
development of a special vehicle
for Army Air Forces

Army Air Force
Mandatory

Issued pursuant to request of [redacted] D. F. [redacted]
Director of Aeronautical Research

Purpose of investigation (Why?)

To cooperate with the Army Air Forces in the design
of a vehicle having special characteristics

Brief description of method (How?)

The preliminary design study will be made of possible
vehicles and personnel systems to accomplish the
purpose requested by the Army Air Forces.

Requested by [redacted] Army Air Force
Wright Field, Dayton, Ohio

Date of report

Preliminary Design Study in Support of Long Range Reconnaissance for Development of Special Vehicle for Army Air Forces

Approved

Issued

August 1, 1944

Director of Aeronautics Research

In accordance with authority of Executive Committee March 9, 1942

Purpose of Investigation (Why?)

To cooperate with the Army Air Forces in the development of a vehicle meeting special Army requirements.

Brief description of method (How?)

Preliminary design studies will be made of possible vehicles and propulsion systems to accomplish the performance requested by the Army Air Forces.

Requested by the Army Air Forces, Materiel Command, in letter dated August 1, 1944, reference Department 50, Wright Field, Dayton, Ohio.

Date of report

Completed

Final Preliminary Design Study in Development of Special Vehicle for Army Air Forces

Approved: _____
Director of Aeronautical Development

Issued: March 17, 1944

In accordance with authority of Executive Committee, March 17, 1944

Purpose of Investigation (Why?)

To cooperate with the Army Air Forces in the development of a vehicle meeting special Army requirements.

Brief description of method (How?)

Preliminary design studies will be made of possible vehicles and propulsion systems to accomplish the performance requested by the Army Air Forces.

Remarks

Requested by the Army Air Forces, Materiel Command, in letter dated August 4, 1944, reference Department 50, Wright Field, Dayton, Ohio.

Date of report: _____ Publication: _____

Form No. 10 _____

CORP

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RECEIVED AND RETURNED TO THE
HEADQUARTERS COMMITTEE FOR AERONAUTICS
Wentworth Building, Washington, D.C.

August 17, 1944

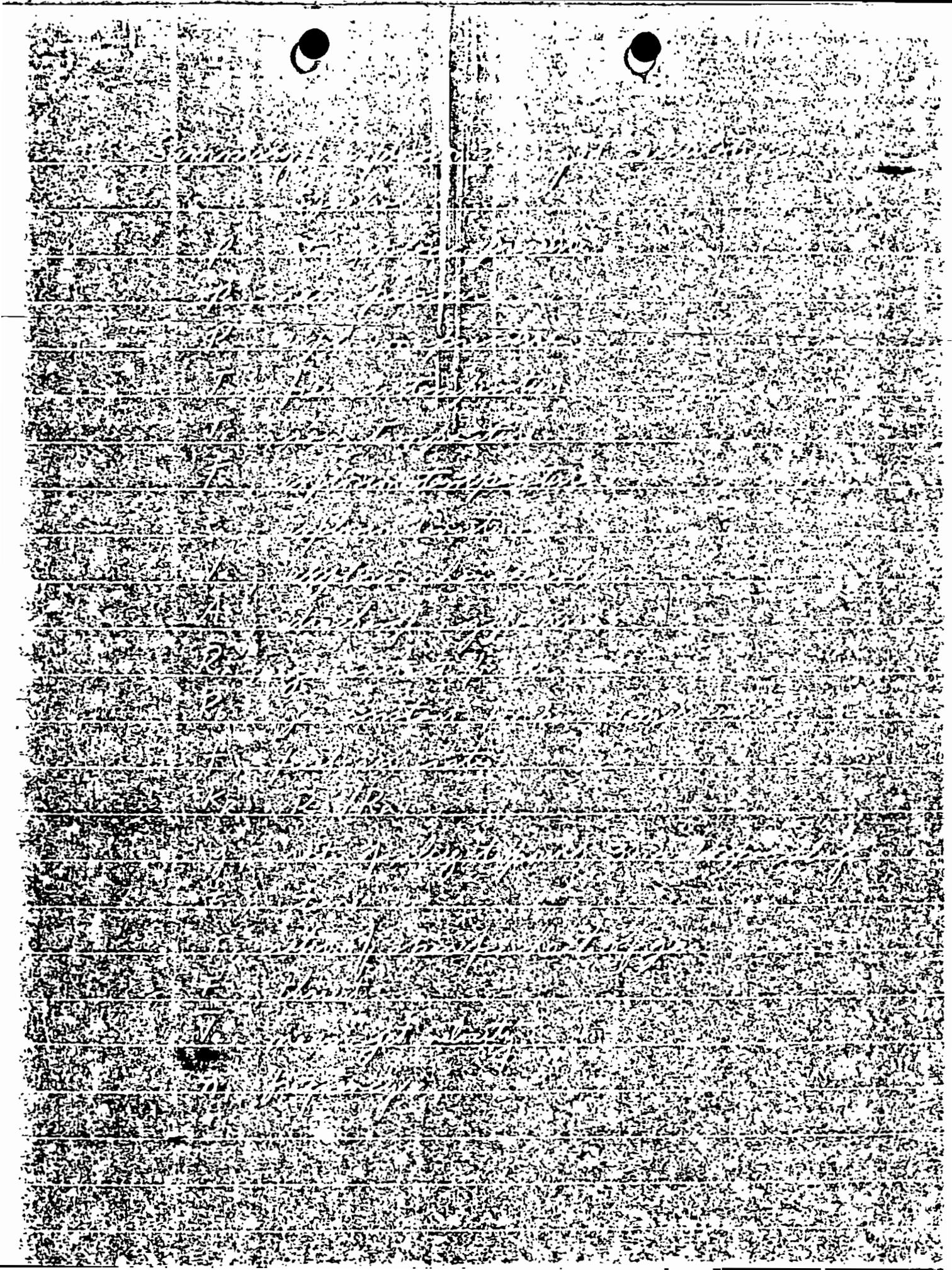
TO: National Advisory Committee for Aeronautics
FROM: Cleveland

Letter dated August 17, 1944 transmitting
Research Authorization No. 44-110 entitled
"Preliminary Design Study in Development of
Special Vehicle for Army Air Forces."

[Handwritten signature]

It is understood that the documents covered by this space contain information affecting the national defense of the United States within the meaning of the Espionage Act (USC 5015) and 32) and all responsibility is assumed for the safe handling, storage, and transmittal elsewhere of this document in accordance with security regulations of these documents.

Signed: *[Signature]*
Date: *[Signature]*



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THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

5300 S. DICKINSON DRIVE

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FAX: 773-936-3700

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The first thing I noticed when I stepped
 out of the plane was the fresh air. It felt like
 a warm blanket after a long flight. The
 ground below was a patchwork of green fields
 and brown roads. The sun was shining
 brightly, and the birds were chirping
 happily. I took a deep breath and
 smiled. It was a beautiful day, and I
 was finally home.

3. The first part of the document is a list of names and addresses. The names are written in a cursive hand, and the addresses are in a more formal, printed style. The list is organized into columns, with names in the first column and addresses in the second.

The second part of the document is a table with several columns. The columns are headed with names and addresses, and the rows contain numerical data. The data appears to be organized into a grid, with a vertical line separating the header information from the numerical entries.

The third part of the document is a list of names and addresses, similar to the first part. The names are written in a cursive hand, and the addresses are in a more formal, printed style. The list is organized into columns, with names in the first column and addresses in the second.

The fourth part of the document is a table with several columns. The columns are headed with names and addresses, and the rows contain numerical data. The data appears to be organized into a grid, with a vertical line separating the header information from the numerical entries.

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The sixth part of the document is a table with several columns. The columns are headed with names and addresses, and the rows contain numerical data. The data appears to be organized into a grid, with a vertical line separating the header information from the numerical entries.

The seventh part of the document is a list of names and addresses, similar to the first part. The names are written in a cursive hand, and the addresses are in a more formal, printed style. The list is organized into columns, with names in the first column and addresses in the second.

The eighth part of the document is a table with several columns. The columns are headed with names and addresses, and the rows contain numerical data. The data appears to be organized into a grid, with a vertical line separating the header information from the numerical entries.

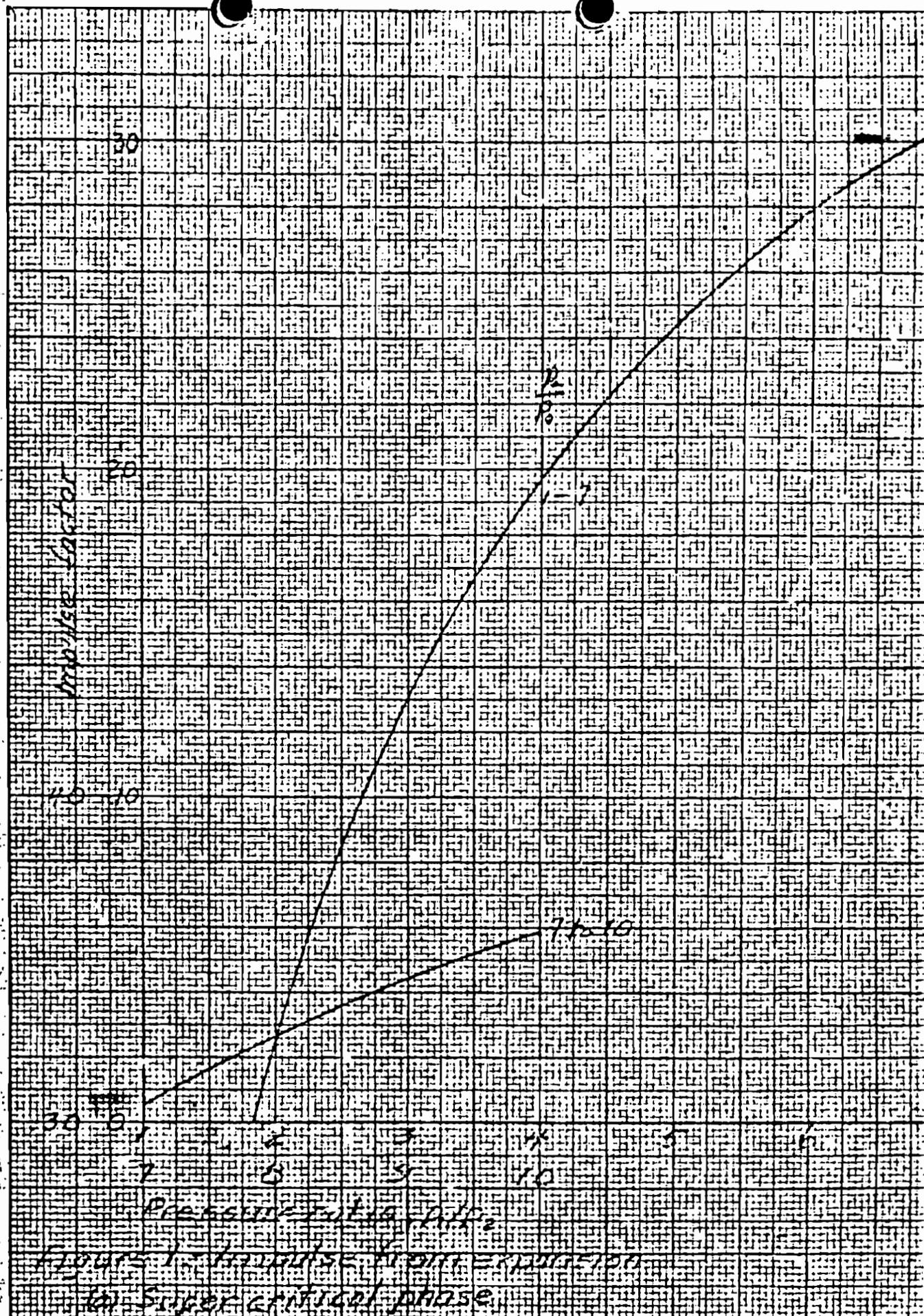
The ninth part of the document is a list of names and addresses, similar to the first part. The names are written in a cursive hand, and the addresses are in a more formal, printed style. The list is organized into columns, with names in the first column and addresses in the second.

The tenth part of the document is a table with several columns. The columns are headed with names and addresses, and the rows contain numerical data. The data appears to be organized into a grid, with a vertical line separating the header information from the numerical entries.

PL. 10/10/10

Figure 1. *Microcystis* blooms in the
Cape Fear River, North Carolina, 1998-2000.
The figure shows a time series of
microcystin concentrations (µg/L) from
1998 to 2000. The y-axis ranges from 0 to
1000 µg/L. The x-axis shows months from
January to December. The data shows
seasonal peaks in microcystin
concentrations, with the highest peaks
occurring in the summer months (June-
August). The highest peak was in
July 1999, reaching approximately 900
µg/L. Other significant peaks were
observed in July 2000 (approx. 700
µg/L) and August 2000 (approx. 600
µg/L). Concentrations were generally
low (below 100 µg/L) during the
winter and spring months.

DUPRE & ASSOC CO., N.Y. NO. 28-11
 10 X 10 to the 3/4 Inch. 1/4 Inch squares
 MADE IN U.S.A.



HEUPPEL & EBER CO., N. Y. NO. 310-11
50 - 50 No. 100 lbs. 18 1/2" x 11 1/2" heavy.
MADE IN U. S. A.

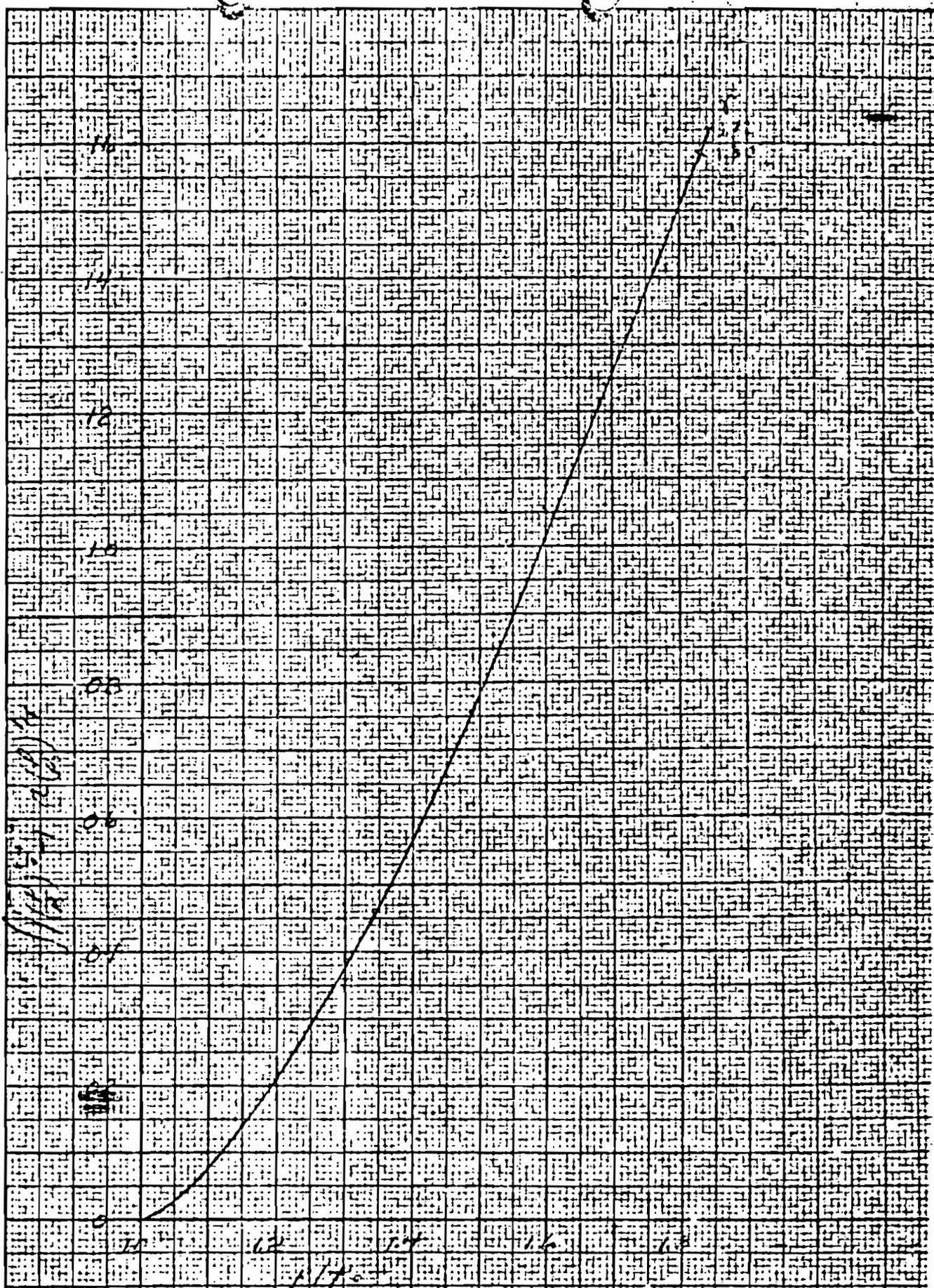


Figure 1 - Impulse from expansion

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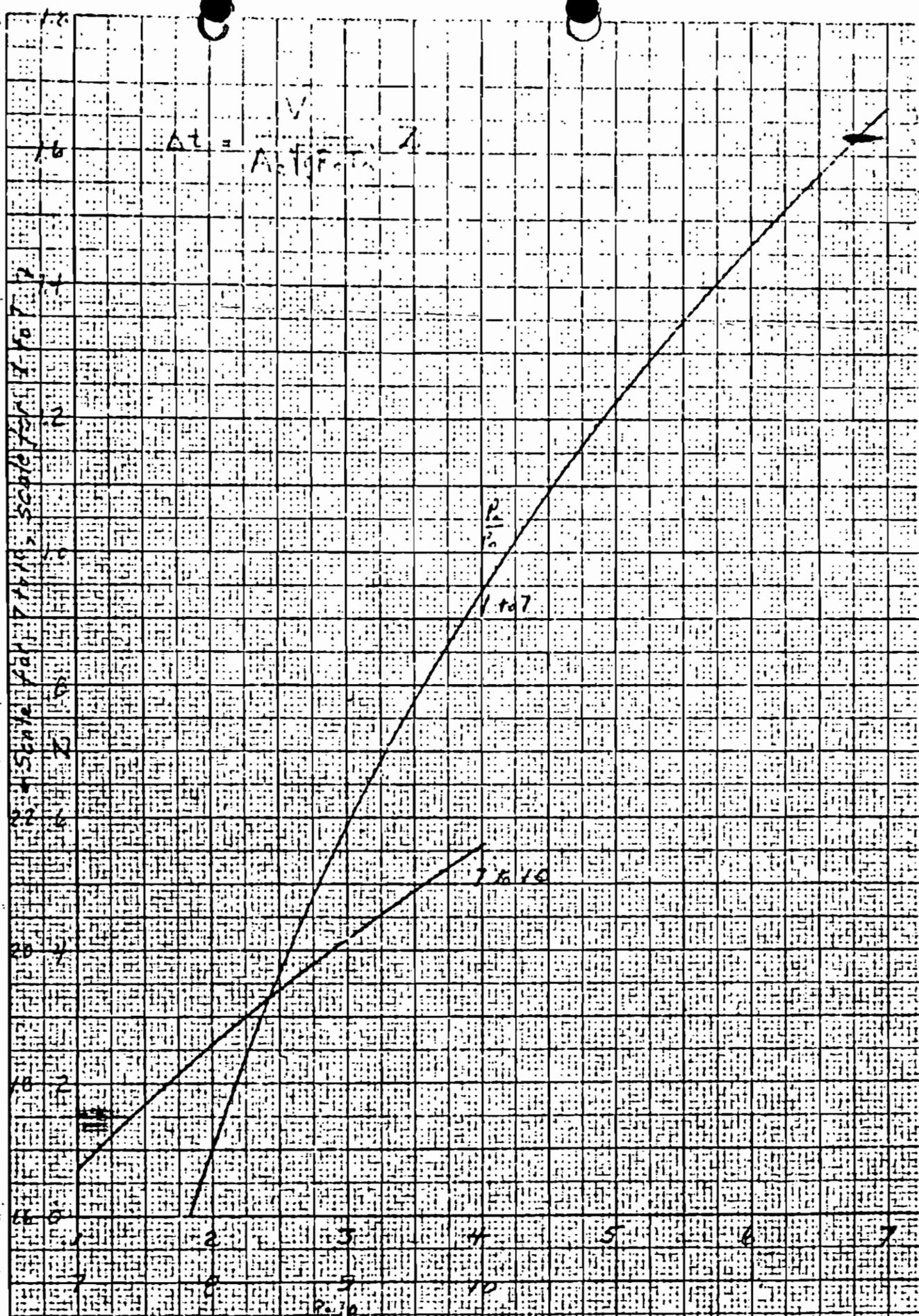
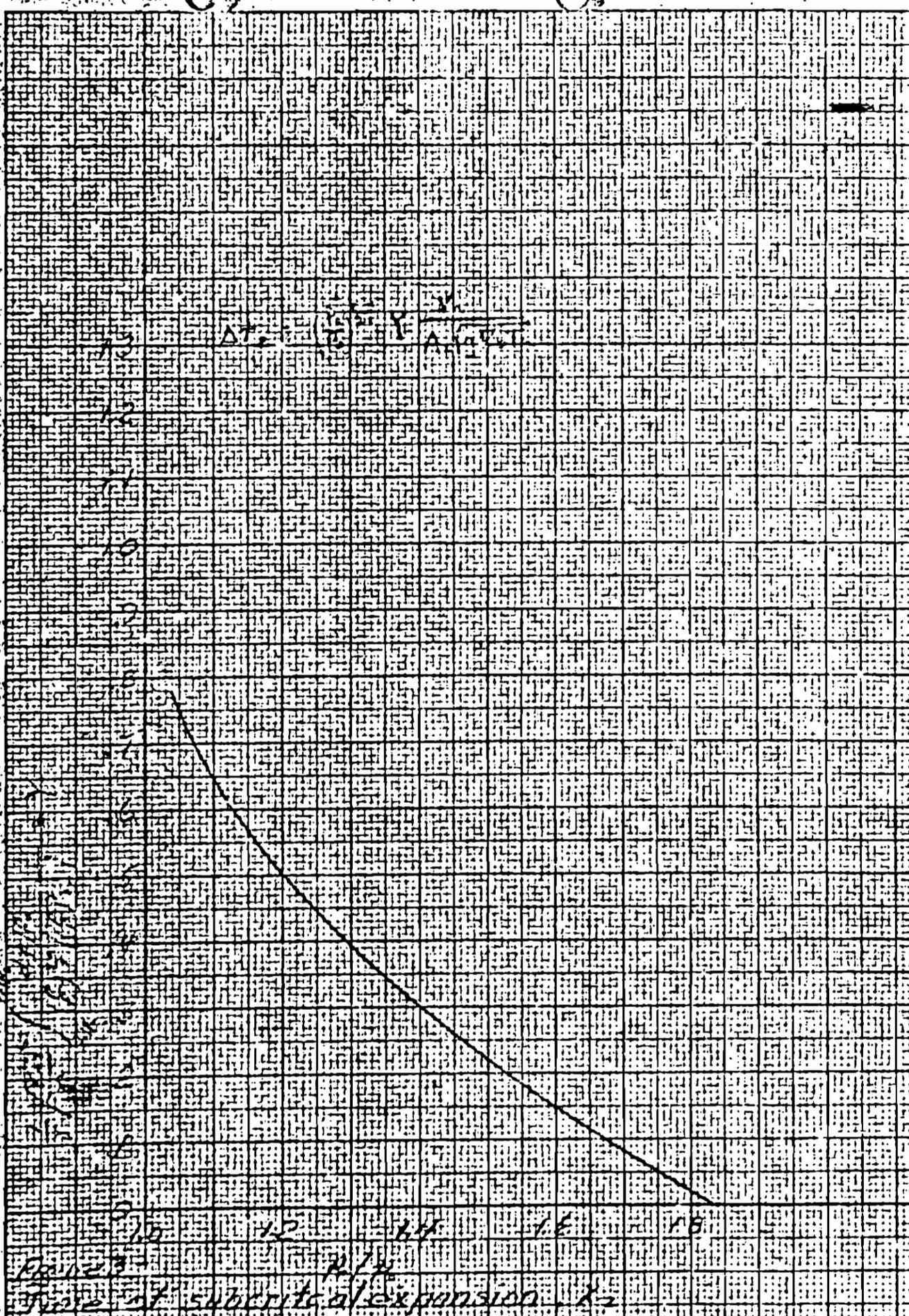
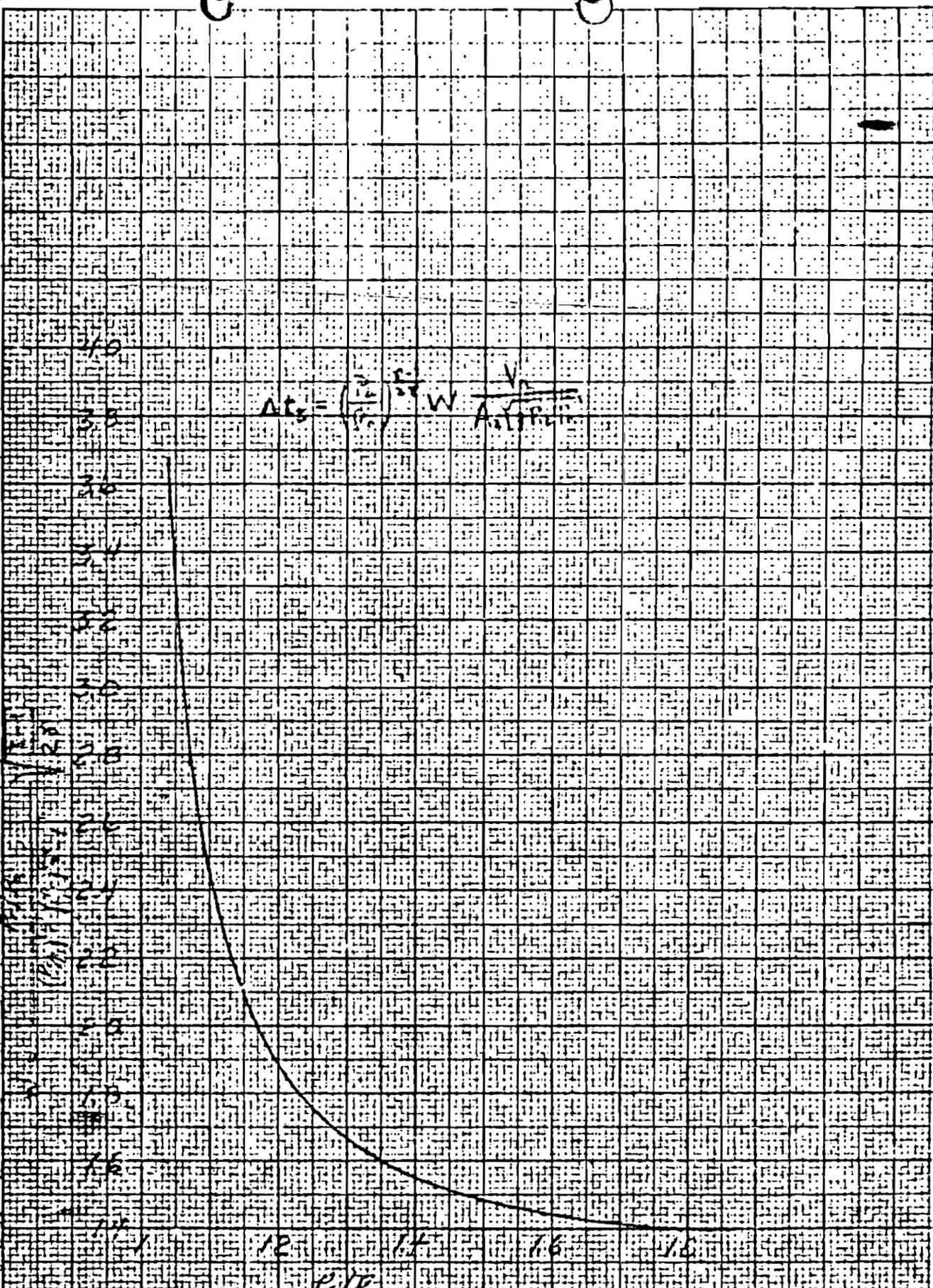


Figure 2 - Time of supercritical expansion

STEVENS & STEVENS CO. N.Y. 40-40-11
Printed in the U.S.A. by the Stevens & Stevens Co.
Copyright © 1958
No. 100-11



CURVES & TABLES, CO., N. Y. NO. 200-111
 11 X 17 IN. THE HALF POUND AND HALF BOUND
 PAPER, 7 X 10 IN.
 MADE IN U.S.A.



$$A_{cs} = \left(\frac{V}{P.V.} \right)^{1.8} W \frac{V}{A \sqrt{P.V.}}$$

FIGURE 4. TIME OF PURGE, K

GUNDEL & LIDER CO., N. Y. 30-30011
 12 1/2 in Dia 5 Inch, 100 P.S.I. max
 MADE IN U.S.A.

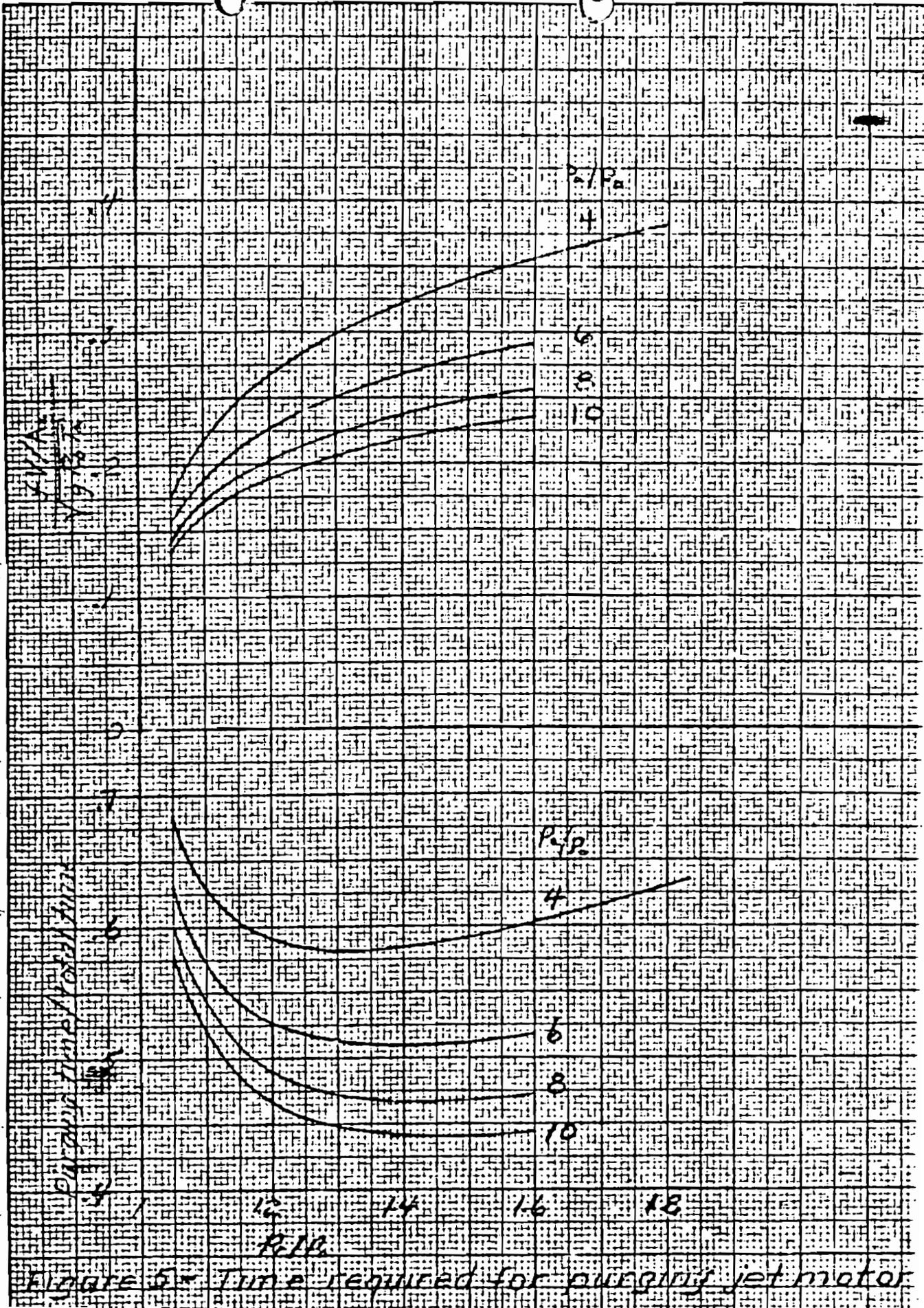


Figure 5 - Time required for purging jet motor

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was calculated to drop 2000 pounds per square foot. The maximum weight was estimated at 2000 miles per hour. The maximum weight of the bomb was estimated at 2000 miles per hour. The maximum weight of the bomb was estimated at 2000 miles per hour. The maximum weight of the bomb was estimated at 2000 miles per hour.

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Secretary, War Rel. Committee

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...stated that considerable work had been done on the design of valves and that the first thing to do was to get a rough idea of what the valves would be like mechanically strong and light and the valves in the collection...

Mr. Turner described a gas valve which was made of cast iron and impact which calculations showed that it was very strong and light and impact considerations should be taken into account for a maximum movement. Mr. Turner pointed out that the valve was of the automatic type and stated that some of the design considerations for a valve using Geneva type motion was a good result but a model for a valve was very similar to the current model except for the shape of the valve made by bending the sheet to make it in the valve.

In their discussion of valve characteristics, Mr. Turner pointed out that an opening was needed to get good area ratio between inlet and exit. Mr. Turner stated that full flow was necessary to prevent losses in connections. The rapid drop of pressure rise that might be obtained for automatic valve closure. Mr. Jacobs said that pressure rise in automation were attainable.

At this time Mr. Jacobs asked for comments as to which valves should be used in the first test. Mr. Schuy suggested that simple valves should be used for these tests could be carried out rapidly and the design was considered desirable. The group agreed with his suggestions.

In connection with the combustion part of the cycle, Mr. Jacobs stated that in his opinion, the inlet valve should stay open until combustion started to prevent a loss in pressure between valve closure and starting combustion. Mr. Jacobs also stated that combustion should start at the back of combustion chamber completed very rapidly. The group concurred with these ideas. It was suggested that a twin system be used with ignition controlled by valve timing. Mr. Jacobs said this idea had been included in one of the designs by his group.

Work for the ensuing year by the various groups is to include the work to complete the valve designs believed most promising to the point where construction of the models could be started. Great quantities of valves will be made as soon as the designs are completed and the valves can be constructed. The valves are to be static tested first to determine their characteristics. After static tests are completed, tests will be made in a device simulating a reciprocating piston down pressure on the valves of other intermittent schemes to simulate operating conditions.

The scale of the models to be used for the work was discussed. It was agreed that model sizes to be used in the tests would be determined by the practical factors involved by the particular design and that individual groups would determine what size models to provide for the general case that actual operating conditions would be simulated as closely as practicable. Drawings and sketches of combustion systems are to be made by the various groups for presentation and discussion at the next meeting of the Committee. The Chairman emphasized the...

Good to see...
...project...
...members...

The most...

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VALVE DESIGN CONFERENCE

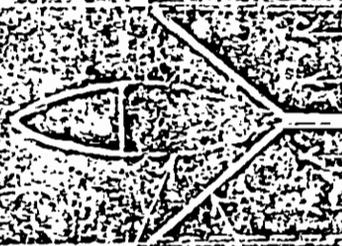
August 15, 1954

Minutes of the meeting of the Valve Design Conference held in the conference room at AEC on August 15, 1954, 9:35 AM to 12:00 PM.

Mr. G. G. G. Chairman
Mr. J. J. J.
Mr. K. K. K.
Mr. L. L. L.
Mr. M. M. M.
Mr. N. N. N.
Mr. O. O. O.
Mr. P. P. P.
Mr. Q. Q. Q.
Mr. R. R. R.
Mr. S. S. S.
Mr. T. T. T.
Mr. U. U. U.
Mr. V. V. V.
Mr. W. W. W.
Mr. X. X. X.
Mr. Y. Y. Y.
Mr. Z. Z. Z.

The minutes of the meeting of August 10, 1954, were approved as read.

Progress made on valve design and test plans was reviewed. Mr. Butterper reported on the results of the test of the group and made on their own design and the model supplied by Mr. Jacobs. The valve test made by Mr. Butterper's group was satisfactory. It was early in the test that the test results on the valves supplied by Mr. Jacobs showed comparatively high pressure losses. A valve design based on the test results was attached on the board as shown in the following sketch:



Open Closed

Mr. Butterper stated that the valve of this design would be made up and tested.

When discussed, the results of further calculations on the valve design were reviewed. The spring constant was found to be high because of the large area used in the design and revisions were made to reduce the spring force. The reduction in inertia by the moving parts was also noted. The design was promising. Mr. Jacobs advised that he would try to make the design promising. Mr. Jacobs stated that he would try to make the design promising. Mr. Jacobs stated that he would try to make the design promising.

The design of the valve was discussed in detail. The combination of valve design and test plans was reviewed. The results of the test of the group and made on their own design and the model supplied by Mr. Jacobs were discussed. The valve test made by Mr. Butterper's group was satisfactory. It was early in the test that the test results on the valves supplied by Mr. Jacobs showed comparatively high pressure losses. A valve design based on the test results was attached on the board as shown in the following sketch:

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system between the... number in this... the explosion pressure... by small motion... to the... advantages... construction of the more complicated... ready for test later in the program.

Mr. Johnson gave... details of the... design submitted by... frequency of 30... per second... Mr. Johnson raised the question as to whether a frequency of... per second in steady... tests... agreed that a valve... submitted to intermittent... tests.

Mr. Johnson discussed the design... test chamber... to utilize the reciprocating piston... the design... the valves... windows were provided... valve motion.

Progress during the week on combustion chamber design... Mr. Johnson discussed an analysis... to handle one... temperature were assumed... volume of 7 cubic feet... velocity was 200... 302... 700... 1050... efficiency of 33... efficiency of 30...

Mr. Johnson asked... discussion as to what... combustion chamber... velocity... efficiency of the... was agreed that... increase losses... combustion chamber... Mr. Johnson suggested that... flames... combustion... efficiency...

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March 22, 1944

1. The committee on the proposed research on the stability of the aircraft in the event of a stall, held a meeting on March 22, 1944, at 11:15 a.m.

- Mr. J. H. Doolittle
- Mr. G. W. Hill
- Mr. R. W. Hill

The minutes of the previous meeting were approved. A report was presented by Mr. Hill, however, that a correction to a statement in the minutes of the previous meeting, dated 2/27/44, concerning the frequency for Mr. Jacobs' valve design should have been 1000 cycles per second.

The Director of Research reviewed reports received by the Committee from the Army and Navy on research on the stability of aircraft in the event of a stall, and only one specification, which was for a stall indicator for the Navy, was noted. The Army had requested research on a stall indicator for the Army, which would be able to detect a stall at a distance of 200 miles, at 50 mph, and at a weight of 1000 pounds. The Army request was for research on a stall indicator for the Navy, which would be able to detect a stall at a distance of 200 miles, at 50 mph, and at a weight of 1000 pounds. The Army request was for research on a stall indicator for the Navy, which would be able to detect a stall at a distance of 200 miles, at 50 mph, and at a weight of 1000 pounds.

The Director suggested that the only place where the stall indicator should be surveyed for the possibility of obtaining the specific information mentioned above is to determine the approximate altitude and sea level. The estimated cost of the project is \$3000.00.

Mr. Hill stated that he had recently talked with Mr. (John) Bannister of the Army and Navy on the Royal Air Force establishment, and Mr. Hill stated that the committee had indicated on ground tests that the stall indicator should be used at the limit for their tests, which is an altitude of 10,000 feet of cooling air over the outside surface of the wing.

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The Chairman said that the... 35 percent... with a zero... to 15 percent... 189... shown... and construction of the... two... part weak... assigned... in pressure... rapid opening... the pressure... feature...

... along with other... priority projects...

... scheduled...

... Mr. Turner... design by this group... cult problem... system... efforts are being made... that... inquired as to... nozzles... on single... velocity... Mr. Turner... noted that... ratio was... pressures could... area ratio... only a small...

... The Director... from good ground... agreed that... attainable... ground operations... the Chairman...

Estimated figures on the proposed... 100 normal...
of 100 pounds gross weight... overall...
fuel consumption... no recoveries...

Calculations... 100...
100...
consumption... and...

The specific...
discussed and it was agreed...
proposals... in view of the specific...
and the... along the...
shown by...

The meeting adjourned at 11:00 a.m.

Secretary of the Committee

11/11/50

Mr. Schrey stated that the unit as designed should provide 900 shaft horsepower at 550 miles an hour at 15,000 feet altitude and that the specific weight should be approximately 475 pounds per thrust horsepower. The overall diameter of the unit was approximately 25 inches.

Mr. Schrey noted that the Navy was very much interested in the cast iron engine design. One chairman stated that it was his opinion that improvement in the Ford-built engine unit was the best chance for the NACA to make a substantial contribution. The group concurred in this opinion. A number of valves of NACA design will be tested in the Ford-built unit as soon as possible after the unit arrives.

The meeting adjourned at 11:00 p.m.

Jesse H. Hall,
Secretary, Panel Committee

WJH:lm
10/1/54

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RAMJET CONFERENCE

January 5, 1945

The Committee met in Mr. W. E. Dressman's office in the Compressor and Turbine Research Facilities Building at Dayton on January 5, 1945, at 9:45 a.m. Present:

Mr. Abe Silverstein (Chairman)

Mr. B. Pinkel

Mr. A. M. Rothrock

Mr. O. W. Schay

Mr. W. E. Dressman

Mr. E. Kuman

Mr. W. E. Howard

Mr. O. Burgess

Mr. H. Hall (Secretary)

The Ram Jet Committee met to review the design of the NACA aero-pulse unit. Mr. Dressman showed an assembly drawing of the NACA unit in which the sections were changed to facilitate changes. Two valve designs were being considered for installation; one has been evolved as a result of the reciprocating piston apparatus investigation, and the other is a hinged-type valve based on the results of the intermittent-flow apparatus. The valve design based on the reciprocating piston investigation is a flat valve with a re-entrant back stop incorporated as a streamlining body located between adjacent valves. Mr. Schay inquired if the valve had been tested. Mr. Dressman stated that the design had been tested at 35 cycles per second and found satisfactory but that the streamlining method was not satisfactory.

Mr. Dressman stated that the hinged valve (which is being prepared for tests on the reciprocating piston apparatus) is a modification of the design tested in the intermittent-flow apparatus with good results.

The chairman stated that the investigation on aero-pulse units would follow these lines: (1) investigation of the performance of existing units such as the type built by the Ford Motor Company; (2) the development of a better valve design on existing units; and (3) the development of a completely new design.

Mr. Pinkel reported on the first phase. He stated that preliminary calibrations of the apparatus were being made and the unit should be ready to run in a day or two. Mr. Silverstein inquired as to what investigations had been made concerning the effect of vibration on the building and equipment. The possibility of damage from the vibration set up by the unit, and the fire hazard were discussed by the group. Mr. Pinkel said that he would look into the problem and discuss it with the Accident Investigation Committee.

Mr. Pinkel stated that it was planned to measure thrust, airflow, temperature at the inlet, fuel flow, total heat at the inlet, static pressure in the surge tank (average), total pressure ahead of grid, and pressure variation by means of piezo electric pick-up. Motion pictures will be taken of the exhaust flame and consideration is being given to using a maximum pressure gage. It

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was stated that limited instrumentation was being used to reduce the required running time to a minimum.

Mr. Silverstein suggested that the fire department be notified when the tests were ready to start.

Mr. Silverstein stated that a new unit and two spare grills which are intended for tests in the Altitude Wind Tunnel (tests cancelled) will be available soon.

Mr. Brassman showed drawings of a valve intended for tests in a grill made up to fit the Ford unit. The valve is approximately four times the size of the German valve. Mr. Brassman stated that the hinged-rye valve will be ready for tests in the reciprocating piston apparatus in about a week. The hinged valve will be made of 101-inch Swedish-blue steel stock.

After discussion by the group it was agreed that the hinged-valve design incorporated in a grill to fit the Ford-built unit would be the first modification to be tried. Mr. Pinkel stated that the equipment will be ready for installation of the new grill in about three weeks.

Mr. Brassman stated that the valve would be ready in about one week and that it would take approximately three additional days to draw up the design for the German unit. To expedite the modification it was agreed to proceed with drawing up the best design for use in the German unit based on current knowledge and modify the design, if necessary, as a result of the tests in the reciprocating piston apparatus before construction is actually started.

Mr. Burgess showed a drawing of a small-scale unit using a smaller valve with a combustion chamber for the purpose of testing the valve under combustion conditions.

Mr. Pinkel stated that the current aero-pulse project is really a development job and on this basis the proposal of Mr. Burgess would be out of line in that it is essentially research equipment.

Mr. Pinkel stated that it was his opinion that the combustion problem involved in the design would be a difficult one. He agreed that close simulation to the actual operation as would be obtained with the unit was very desirable but that results would only be qualitative from the combustion standpoint.

In view of the fact that consideration of Mr. Burgess's proposal hinged on whether the NACA intended to go into research on aero-pulse unit, this question was discussed by the group. Since the results of modifications made in the Ford-built unit would probably be a determining factor, it was decided to hold the proposal pending test results on the Ford-built unit.

Mr. Brassman reviewed the design of the NACA aero-pulse unit which is self-feeding, has a combustion ratio of 1, and is intended to operate at 45 cycles per second. The fuel pump system designed

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for the unit incorporates an interrupter mechanism for controlling fuel injection. The interrupter mechanism has a lapped fit in the rotor for seating. Mr. Inghal suggested that a simpler system might be arrived at.

Mr. Rothpe stated that from his experience he didn't see how the interrupter could be anything but expensive. He suggested that a member of the group discuss the problem with Cleveland Diesel and other manufacturers for Diesel machines.

Mr. Schey suggested that manufacturers of hydraulic equipment might be of some assistance. Mr. Pressman said that he would discuss the problem with local manufacturers. He suggested approval of the suggested system will be made when additional information on construction of the interrupter mechanism is available.

Mr. Pressman stated that 19 fuel injection valves were incorporated in the engine and that the nozzles were pointed upstream. Low speed plugs would be used for ignition.

Mr. Pressman stated that in the valve design the free flow area in the gill was 15% of the total area as compared to 32% on the unit built by the Ford Motor Company.

Meeting adjourned at 12:15.

Wesley H. Hall,
Secretary, Ram Jet Committee

JRH:lh

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RAM JET CONFERENCE

February 13, 1945

The committee met in the Executive Conference Room at Cleveland on February 13, 1945 at 2:00 p.m. Present:

W. A. Silvers, Chairman

W. M. Schey

B. Pinkel

A. M. Rothrock

J. H. Hall, Secretary

The minutes of the previous meeting were read and approved as read.

The Chairman stated that there was increasing interest in the ram jet type propulsion unit with the guided missile program. It was noted by the Chairman that Colonel Massel had suggested the use of the ram turboless aircraft instead of guided missile.

A review of progress accomplished since the last meeting of the committee by the committee members was requested. Mr. Pinkel stated that 101 of the Ford built intermittent-flow ram jet had been made with ram pressures from 0.4 to 2.0 of water at various fuel-air ratios. Data from these tests had been furnished over to the computer and the results will probably be available before the end of the meeting.

Mr. Pinkel stated that examination of the motion pictures of the exhaust showed flames issuing from the tail pipe for 30% of the cycle and the flame appears to be sucked back at the completion of burning. It was noted that the flame shape differed from cycle to cycle. Mr. Rothrock stated that Colonel Massel had mentioned variation in the cycles observed in motion pictures taken at Wright Field. The Chairman stated that an intermittent-flow ram jet, twice the size of the Ford built unit, had been constructed at Wright Field. This unit developed a thrust of 1900 pounds with lower fuel consumption than with the smaller unit but resulted in a number of broken windows.

Mr. Pinkel stated that the Army was interested in using two of the Ford built units on the P-51 to increase the speed of that airplane. Of the ideas being considered are the use of auxiliary rocket and the use of a bypass intake or increased engine power. Mr. Pinkel stated that the single chamber combustion unit had been made to cycle and motion pictures of the flames had been taken. The Chairman inquired as to what advantages would be obtained from controlled ignition. Mr. Pinkel stated that controlled ignition would make each cycle independent and should result in an increase of maximum pressure. The motion pictures showed flames starting at the spark and moving along with the flow until the first flame sphere reaches the nozzle at which time the flame front moved upstream to complete the burning of this charge. Three ignition points per cycle were indicated.

~~SECRET~~

The first set of valves failed in a short time under cycling conditions and the second set was constructed of a thicker material with resulting longer life. The valve section is being redesigned to incorporate an improved valve design based on the results of valve tests by other groups.

Mr. Rothrock stated that it appeared desirable to get very rapid combustion or possibly detonation. The Chairman suggested the addition of an explosive to hydrocarbon fuels. Mr. Rothrock stated that this type of fuel was scheduled for investigation.

Mr. Rothrock stated that Mr. North at Wright Field is working on a fuel program including factors of ram jets to be submitted by the Army to the AEC. Mr. Rothrock stated that consideration was being given to the buying in the shock wave in a steady-flow ram jet.

Mr. Pinkel stated that the second burner design for the steady-flow ram jet unit would consist of two annuli with annular shields and fuel nozzles injecting into the shielded zones. The burner had 10% re-entrant flow at the burner section area and holes in the shields for the introduction of primary air for the burning process. When operating at approximately one pound of air per second at an air-fuel ratio of 30, a combustion efficiency of 52% with a pressure drop of 1/4" was obtained and the flame length was 3 feet. The 1/4" pressure drop is equal to approximately four inches water at the conditions.

The Chairman stated that it would be desirable to install the burner in the steady-flow ram jet unit if it was in a way to run. Mr. Pinkel stated that the burner could be installed but that he would like to obtain additional test results on the burner. It was agreed that the burner would be installed immediately and that Mr. Pinkel's group would cooperate in obtaining additional burner information as the tests progressed. It was further agreed that reports on the steady-flow ram jet performance would be prepared by the Engine Installation Research Division and reports on burner performance would be prepared by the Aerodynamica Division.

Mr. Pinkel stated that there was a favorable interference between the pressure drop due to area reduction at the burner and the pressure drop caused by combustion. It was noted that the pressure drop under operating conditions was less than the cold pressure drop plus the calculated momentum pressure drop from burning.

The Chairman stated that it would be very desirable for the laboratory to get out results on the steady-flow ram jet ahead of Professor Hottell at the Massachusetts Institute of Technology who is working on a ram jet project for the Army. Mr. Silverstein stated that with the first burner installation two of the burners didn't work but the pilot alone worked on all burners. Mr. Pinkel stated that with this type of burner if the burner was not working it was almost certain that the pilot flame was out.

SECRET

Mr. Silverstein stated that it was planned to run individual lines to each burner unit and then by adding shrouded cones at the burner entrance. Mr. Pinkel noted that the shrouded cones resulting from the fuel lines had been streamlined out when the installation was made. Mr. Pinkel stated that the burner developed on the JCA jet-propulsion unit appeared to be a good design for use in the steady flow ram jet. Mr. Silverstein described the burner developed by Professor Hotell with fuel injection normal to the stream in a flame stabilizer downstream from the fuel injection.

The data from the Ford-built unit was shown to the group by Mr. Pinkel at this time. The data showed that maximum thrust of 617 pounds was obtained with 20% water ram, 50,000 pounds of air per hour, and 2400 pounds of fuel resulting in a fuel air of 0.48. The unit operated at 40 cycles per second. Mr. Pinkel stated that the unit operated satisfactorily except for shaking the instruments.

Mr. Schey reviewed the work that had been carried out on valves. A valve had been developed that was twice the height of the German valve and operated successfully for three hours at 40 cycles. The design to incorporate this valve into the Ford-built unit was completed and is ready to go into the shop. The committee approved the construction and tests of this grill design in the Ford unit.

Mr. Schey reported that the hinged-type valve had very short life in the reciprocating piston apparatus. Mr. Silverstein pointed out that the change made in the spring details may have resulted in the short life.

Mr. Schey showed a new valve design made up with a curved and straight piece riveted together that had been constructed. He stated that other valve developments are also in progress.

Mr. Rothrock stated that two groups were working on the general combustion problem. One group, under Mr. J. C. Sanders, was working on a problem of fuel properties required for jet-propulsion units. A second group, under Mr. Irving Pinkel, was working on the fundamentals of combustion, turbulence and pressure effect at altitude. Doctors Hicks and Simon are working on the problem of mixing fuel and air and Mr. C. D. Miller was working on the problem of mixing utilizing photographic methods.

Mr. Rothrock stated that Colonel Vassel and Mr. North discussed a project request for basic research on combustion in which Mr. North stated that emphasis should be placed on ram jets.

The following list of questions to be answered as results of this work were proposed by Colonel Vassel and Mr. North:

1. What is max. heat release /cu ft./unit time.
2. What increase possible for hydro carbon fuels - other fuels.
3. What is the max. air velocity or flame speed for hydro carbon fuels.

~~SECRET~~

1. What is the limit of mixture ratio for H.C. fuels.
2. What is velocity head loss for burning.
3. What is velocity head loss for mixing fuel and air.
Comments on liquid spray, air aspirated mixing, pre-carb. mix.
4. What is meaning or correlation of flame color to rate of heat release.
5. Available energy of heat release as affected by condition of burning of the fuel (detonation wave pressures, etc.)
6. What is the relation between flame visibility and heat release.
7. What is the difference of flame (wave) in stationary fuel mixture as compared to stationary flame in moving fuel mixture assuming turbulence of same degree in both cases.
8. Is there a radiant energy transfer from the burning front to the yet unburned fuel.
9. Are there catalysts or additions for hydro-carbon fuels which will cause higher burning rates.
10. What are the condition parameters to promote detonation.
11. What is a good yardstick for measuring the desirability of a fuel.
12. How can the B.T.U./unit volume be increased.
13. What basic parameters should the fuel characteristics be described with for a jet fuel.

Mr. Rothrock stated that one group of chemists in the Fuels and Lubricants Division have started an investigation on the use of catalysts in combustion.

The meeting adjourned at 4:00 p.m.

Jesse H. Hall
Jesse H. Hall
Secretary, Pan Jet Committee

~~CONFIDENTIAL~~

RAMJET CONFERENCE

April 15, 1945

The committee met in the Executive Conference Room at Cleveland on April 15, 1945. At 2:00 p.m. present:

- Abe Silverstein, Chairman
- Mr. Pinkel
- Mr. W. R. Rockwell
- Mr. W. S. Cheney
- Mr. H. H. Hall, Secretary

The reading of the minutes of the last meeting of April 15, 1945 was dispensed with. The chairman reviewed the discussion that had taken place at the laboratory, Goss, Miller, and Kramm and in his recent visit to the laboratory concerning the "Bumblebee" project. A group of 100 made the direction of a private group at the Johns Hopkins Applied Physics Laboratory in Silver Spring, Maryland. It is being carried out by the Navy Department, Bureau of Ordnance. The project is for the development of a gyrojet missile using a steady flow ram jet as the power plant. The chairman stated that the drag obtained on the "Bumblebee" project gave results similar to those obtained at Langley. It was pointed out that cold model work had already been started using telemetering instrumentation and that of launching. Two problems expected to give some difficulty on this project are the starting problem and the fuel system. It was pointed out that the fuel system during the pressure rise across the diffuser might work in a opposite direction than the missile goes slightly from the design conditions to bring the unit back to the design conditions. Mr. Cheney suggested the possibility of adjusting the fuel flow to the flow range so that leaning out would increase the thrust. Mr. Pinkel stated that compensated fuel controls appeared necessary.

The chairman made a strong recommendation for more emphasis on the missile program at this laboratory because of the interest in it evidenced by both the Army and Navy. The question was raised as to whether the laboratory could drop other projects to allow the increased work on missiles. Mr. Rockwell stated that the laboratory projects would be reviewed with this in mind.

The chairman stated that the design of super-sonic compressors offered considerable promise if an efficient design could be worked out. He stated that Mr. Kanrovtz at MIT had done some work along this line. Mr. Pinkel suggested that the laboratory should carry the steady flow ram jet project through flight tests. The chairman pointed out that MIT was working on setting up a test station for such flight tests.

The chairman stated that the NACA Special Committee on Self-Propelled Guided Missiles was scheduled to meet on April 16 and that he would like to present a progress report covering LRI work up to date and the program of the work to be carried out. It was suggested that each member of the team write up the work under his direction by Monday, April 17, 1945.

~~CONFIDENTIAL~~

Mr. Rothrock stated that the Army had been given a directive to develop a rocket prime mover by Air Force. The fuel and turbine combustion is carrying out work on fuels and combustion problems on turbines and other problems that should be carried out in the same way. The development of centrifugal pumps for liquid fuel, nozzles and sea testing materials for cooling systems.

Mr. Schey stated that he would investigate the use of ceramics for rocket motor nozzles.

The chairman asked for a progress report on the work accomplished since the last meeting.

Mr. Rothrock stated that tests were underway on a 16 combustion chamber unit. He stated that a design had been made of a combustion chamber of the same size and number and small nozzle for an attempt to study the effect of turbulence on combustion. An apparatus is being set up to study the mixing process of the fuel and air and the turbulence. Another apparatus is being set up to study the steady combustion process by means of high speed photography. Programs are being carried out to prepare or synthesize new fuels considered of the interest in the ramjet and rocket programs. A small scale intermittent combustion chamber is being set up to study the combustion problem. The chairman suggested that the fuels and lubricants group look into the possibility of an intermittent combustion chamber test apparatus of the thermodynamic division of the fuels and lubricants group to get together to coordinate the fuels and combustion work. The chairman also suggested that the fuels and lubricants group consider the use of tracers for ignition diagram tests. It was also suggested that the use of sensitizers for reducing fuel atomization temperature be looked into.

The chairman stated that a visit by Army and Navy groups interested in ramjet work had been discussed in a telephone conversation between Mr. Kemper and Dr. Lewis and asked for comment as to a suggested date. After some discussion it was decided that April 26, 1945 would be the most advantageous date. The chairman requested that proposed items to be included in the agenda for the meeting should be turned in by Monday, April 16, in order to discuss the program with Dr. Lewis who is expected on Tuesday, April 17.

Mr. Pinkel reported on progress on the jet bomb work since the last meeting. He stated that the testing of the jet bomb had been completed and the second grid was being installed. Mr. Pinkel stated that the second grid was still in that it had not been put in yet. After the meeting Mr. Pinkel informed the secretary that actually both grids had the same diameter. The third grid to be tested will be the one designed and built by the supercharger group. Mr. Pinkel stated that with an increase from 40% to 60% water the increase in thrust by increasing ram was tapering off in this range. He stated that it was observed that at 40% water on the jet engine jet velocity was indicated to be a little higher than at 50% water. A thrust of 750 pounds per sq. ft. was obtained at a simulated speed of 350 miles per hour and with a fuel consumption of 3200 lb/hr.

~~CONFIDENTIAL~~

It was stated that the pressure-time record from a quartz crystal pickup had not been very satisfactory because of severe vibration. The maximum and minimum pressure instrumentation was also found to be not too satisfactory.

The high-speed motion pictures obtained with the intermittent combustion apparatus showed uneven cycles. A surge tank had been installed in the entrance which it is believed has improved the uniformity of the combustion cycles. More evidence will be available when the high-speed motion pictures have been developed and can be observed. Mr. Pinkel stated that the apparatus was very hard on valves since the surge chamber had been put in which indicated higher maximum pressures and a higher rate of pressure rise resulting from combustion. Indicator records are being taken on the apparatus but the piezoelectric crystal and trap pressure instruments have not been working too well. Mr. Pinkel stated that the resonance drawings had been completed.

Mr. Pinkel stated that Mr. Parker at Annapolis has shown him captured German documents on the Hidding Company reporting on all sorts of aeropulse ideas.

Mr. Schoey reported that all grill castings for the pulse bomb will be developed within a week and machining of the castings will start immediately.

Mr. Schoey stated that the group working on valves had obtained designs with a life of three hours with considerable improvement from a pressure-drop standpoint over the German valves. Mr. Schoey stated that the Ford-Baily grill equipped with an MACA two-piece valve will be completed in about a week at the best. He stated that little testing was being carried out at the present and the work would increase pending the outcome of tests on the full scale unit.

The chairman asked that a list of all reports on ram jets being worked on by the group be sent to the secretary and that the list be circulated for the information of the members.

The meeting adjourned at 4:30 p.m.

W. H. Dease, Hall
Secretary Ram Jet Committee

AERL

SECRET

Washington, D. C.
August 16, 1944

From NACA
to Cleveland

Attention: Mr. Kemper

Subject: Request of Army Air Forces to develop a
guided missile

There is enclosed herewith copy of Army Air Forces letter dated August 4, 1944, requesting that the NACA undertake a program to develop a guided missile in cooperation with the Materiel Command of the Army Air Forces. It will be noted that the Army Air Forces has requested that the NACA develop the vehicle and the jet power supply parts of the missile leaving the remote control devices and launching mechanisms up to the Air Forces.

The comments and recommendations of the laboratory are requested concerning this requested development program. The Army Air Forces is being concurrently informed that the Committee will undertake this investigation and that a conference will be arranged to discuss preliminary design studies.

Research Authorization No. E-110 has been assigned to this investigation and a copy will be forwarded to the laboratory in the near future. It should be noted that the Army desires this development to take place in a minimum period of time.

G. V. Lewis
Director of
Aeronautical Research.

SECRET

~~SECRET~~

Washington, D. C.
August 16, 1944

WASA
Cleveland

Attention: Mr. Kasper

Subject: Request of Army Air Forces to develop a
guided missile.

Enclosed is enclosed herewith copy of Army Air
Forces letter dated August 4, 1944, requesting that
the NACA undertake a program to develop a guided mis-
sile in cooperation with the Materiel Command of the
Army Air Forces. It will be noted that the Army Air
Forces has requested that the NACA develop the vehicle
and the jet power supply parts of the missile leaving
the remote control devices and launching mechanisms up
to the Air Forces.

The comments and recommendations of the lab-
oratory are requested concerning this requested devel-
opment program. The Army Air Forces is being concu-
rently advised that the Committee will undertake this
investigation and that a conference will be arranged to
discuss preliminary design studies.

Research Authorization No. E-110 has been as-
signed to this investigation and a copy will be forwarded
to the laboratory in the near future. It should be noted
that the Army desires this development to take place in a
minimum period of time.

H. N. Lewis,
Director of
Aeronautical Research

~~SECRET~~

COPY

~~SECRET~~

Address reply in ENVELOPE to:

Commanding General, ARMY AIR FORCES Materiel Command, 1515 Eisenhower
Air Materiel Command, Materiel Command, 1515 Eisenhower
Engineering Division, Office of the Commanding General, 1515 Eisenhower
Reference: Dept. 50
Wright Field, Dayton, Ohio

National Advisory Committee for Aeronautics
1200 New Hampshire Avenue, N.W.
Washington 25, D.C.

Attention: Mr. W. H. Lewis, Director
of Aeronautical Research

Dear Mr. Lewis:

The Materiel Command is at present making a thorough study of the development of long range, ground-launched, pilotless, controlled missiles. Of immediate importance is the design of a preset guided missile of 100 to 250 miles range.

The Army Air Forces desires, however, to develop in the minimum period of time a pilotless guided missile, ground-launched, which would have a range of 100 miles with the application of remote control for the accurate hitting of military objectives. The requirements for this general type missile have been prescribed, and are as follows:

- (a) Range - 100 miles
- (b) Payload - 1000 lb. demolition bomb
- (c) Speed at 100 - 550 mph.
- (d) Control - Remote or target seeking

The general requirements dictate that this missile be of the simplest construction and minimum size. It is further desired to propel this missile by means of jet propulsion. However, due to the urgency of the program, the type of motor to be used must be limited to one of the existing types or a new design which would be readily available.

In order to accomplish the development of such a missile it is felt that the program should be divided into three parts, namely: (a) the vehicle itself, (b) the jet power supply, and (c) the remote control devices and launching mechanisms.

It is requested that the NACA undertake a program in cooperation with the Materiel Command to develop parts (a) and (b). If such a proposal is feasible to the NACA it is requested that the following be taken:

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The labor portion of the NACA immediately begin a preliminary design study of possible vehicles and propulsion systems to accomplish the general requirements as stated above.

The earliest possible date a conference between representatives of the NACA and the Materiel Command be held at which time the design studies would be evaluated.

The comments of the NACA in regard to such a development program are requested.

(Sincerely yours)

(Signed) W. W. Bogert

W. W. Bogert
Major General, USA
Materiel Command Liaison Office

Materiel Command Liaison Office
NACA Lab., Langley Field, Va.
Materiel Command Liaison Office
Materiel Command Liaison Office
Materiel Command Liaison Office
Materiel Command Liaison Office
Materiel Command Liaison Office

SAC, Cleveland

~~TOP SECRET~~

July 27, 1951

Director, FBI

PERSONAL ATTENTION
~~STRICTLY CONFIDENTIAL~~

[REDACTED] [TS] b1

Cleveland file 65-2751

Reurlet July 12, 1951, enclosing the originals of certain correspondence concerning research on pilotless guided missiles, and reports entitled "Ram Jet Conference Minutes," all of which were obtained from the files of the National Advisory Committee for Aeronautics (NACA) in Cleveland, Ohio.

[REDACTED]

However, it is evident from the "Ram Jet Conference Minutes" that William Perlman actively associated with and participated in the experimentation performed by NACA with respect to the guided missiles project. However, it is rather conclusive that the information concerning the robot bomb as allegedly reported by the individual referred to under the cover name "B" was not furnished by Perl inasmuch as he was referred to under an entirely different cover name during this exact period. [TS] b1

It was of interest to note that in a conference on August 24, 1944, Perl discussed with the group the layout which he had made relative to the Whittle unit to be located in the rear and to use an annular inlet and an axial jet. [Further, at this same conference Abo Silverstein, NACA, furnished the opinion that the anticipated speed of 550 mph might be a little high even with the use of a Whittle unit.]

It might also be mentioned that in the minutes of the conference on August 22, 1944, Dr. George B. Bennett of NACA advised that he had received a call from Dr. Ignel Kohn and had been advised that the first Ford built [REDACTED] be ready in a day or two.

65-53543

cc: Detroit
New York

cc: 65-59312-48
EPE:mmp

Classified by ~~4575~~
Exempt from GDS, Category 2
Declassification Indefinite

COMM - FBI
AUG 2 1951
MAILED 20

AP/bja 2-1-78

65-59312-48

~~TOP SECRET~~

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
EXCEPT WHERE SHOWN
OTHERWISE.

RECORDED

65 AUG 7 1951

The aforementioned Whittle unit and Ford built unit are assumed to possibly refer to the jet system or installation which was to be used to propel this guided missile, known as the JB-2 bomb. It is therefore desired that the Cleveland division make an effort to ascertain through NACA the exact contemplated or actual dimensions (length and diameter) of the Whittle unit, Ford built unit, or any other jet unit under consideration for use on the JB-2 bomb prior to September 15, 1944.

The Detroit division is requested to make a similar check of the appropriate Ford Company file pertaining to their participation in the production of the jet system for the JB-2 bomb under subcontract with USAF. [From information made available through NACA it appears that a motor or jet assembly produced by Ford Company for the JB-2 bomb had the dimensions for the pulse jet plus burners of 16 inches in length and 8 to 9 inches in diameter.] It should be determined whether this was the only jet assembly or unit produced by that company for the JB-2 bomb, and the dimensional specifications with respect to any other unit made by that company for this bomb. Further, it should be ascertained whether the original specifications for this unit may have called for a shorter length and smaller diameter.

At the time of this inquiry, the Detroit division should make an effort to determine whether the Ford Company may have previously interposed any objection or hesitancy in going into production on this jet system within the designated period of 60 days subsequent to July, 1944. In the event productional figures are available, the exact number of jet units completed as of September 2, 1944, should be ascertained. Any available correspondence between the Ford Company and the Republic Aviation Company, the primary contractors for the JB-2 bomb, should be examined to determine what information relative to the number of completed units or completed bombs and the exact dimensions thereof was available to the Ford Company during the latter part of August or first part of September, 1944.

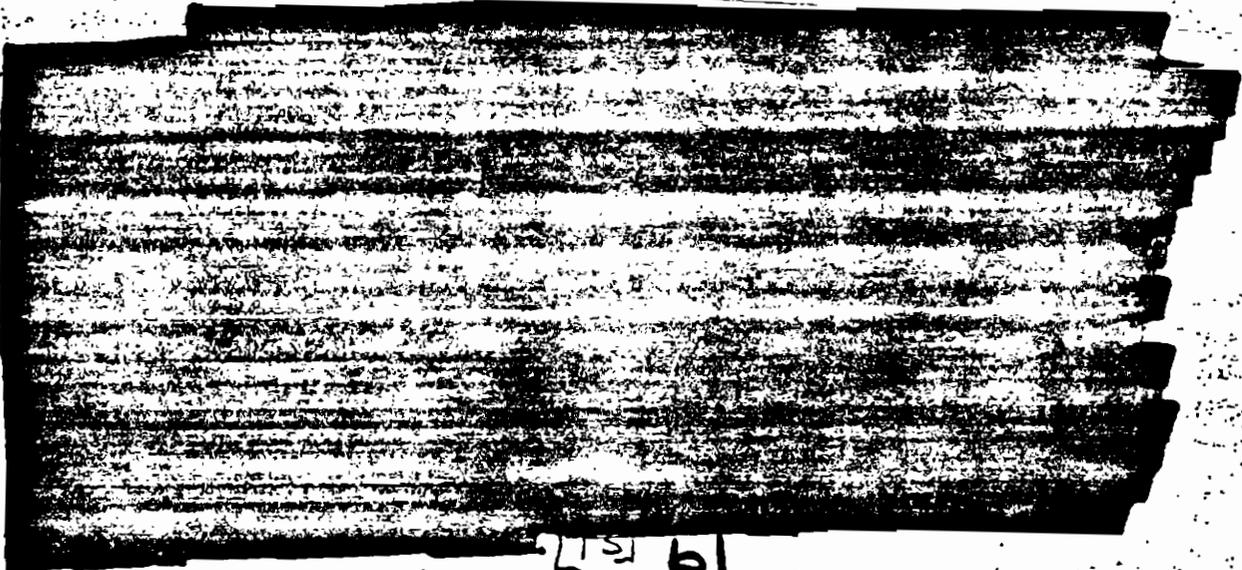
[REDACTED]

[REDACTED]	[REDACTED]	[REDACTED]

[REDACTED]

[REDACTED]

61



[S] b1

The Detroit division is further requested to thoroughly review its files and references pertaining to Andrei Scheuchenko, as well as any other individual who was known to have been employed by the Ford Motor Company and working on the JB-2 bomb project during this period and who was suspected of subversive or espionage activities. It might also be possible to determine from the records of the Ford Company the identity or identities of any employees working on this bomb project whose activities may have been reported as being suspicious. It should be borne in mind in this respect that most of the members of the Rosenberg espionage network who were similarly engaged in collecting scientific aeronautical information were graduates of CUNY School of Electrical Engineering.

In the event any suspects are developed as a result of the above, an appropriate check should be made as to Ford Company leave records pertaining to these employees during the period from September 1 to September 15, 1944.

~~TOP SECRET~~

This matter should receive your immediate and personal attention in view of the importance of identifying this known Soviet agent.

[REDACTED]

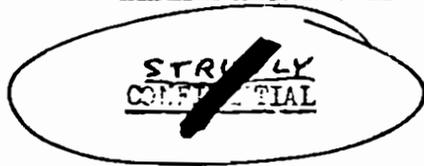
[9] 5] 61

~~TOP SECRET~~

7/16/51
DJF

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

Laboratory Work Sheet



Re: UNSUB, wa "B"
ESPIONAGE - R

File # 65-59312-481
Lab. # D-134780 BE

*William Perl aka
Espionage - R; Perjury*

LAB FILE

Examination requested by: SAC, Cleveland 65-2730

Date of reference communication: 7/12/51

Date Received: 7/16/51

Examination requested: Document

Result of Examination:

Examination by: EAMES
Dahlstrom

*Inv. in pencil on 8 pages of ruled tablet
paper in Q26 no ident. with Wm. Perl K12
& K13. No known inv. of L. Richard Turner*

Specimens submitted for examination

*- no comparison made to determine if he
prepared inv. on 8 pages of ruled paper Q26*

Q26 Original letters from Air Force dated 8/4/44, 8/16/44 concerning
research on guided missiles; copies of research authorization
#E-11C and a folder entitled "Ram Jet Conference Minutes."

return evidence

65-59312-481

Known Hw. of William Perl K12, K13
the visit & going
with to the

①26 → gas ↓ volume heat being
→ walls to → than

Title: Preliminary Design Study in Development of Special Vehicle for Army Air Forces
By: Aircraft Engine Research Laboratory

Approved: _____ 1944
Chairman: _____

Issued: August 17, 1944
by: G. W. Lewis
Director of Aeronautical Research

In accordance with authority of Executive Committee March 19, 1942
Purpose of investigation (Why?)

To cooperate with the Army Air Forces in the development of a vehicle meeting special Army requirements.

Brief description of method (How?)

Preliminary design studies will be made of possible vehicles and propulsion systems to accomplish the performance requested by the Army Air Forces.

Remarks: Requested by the Army Air Forces, Materiel Command, in letter dated August 4, 1944, reference Department 50, Wright Field, Dayton, Ohio.

Date of report: _____ Publications: _____

Form No. 15 _____ Completed: _____ 1944
65-57931-235

CONFIDENTIAL

INVESTIGATION SECRET

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

AUTHORIZATION

No. E-110

Title: Preliminary Design Study in Development of Special Vehicle for Army Air Forces

By: Aircraft Engine Research Laboratory

Approved: _____

Chairman, Subcommittee on _____

Issued: August 17, 1944

G. W. Lewis

Director of Aeronautical Research

In accordance with authority of Executive Committee, March 19, 1942.

Purpose of investigation (Why?)

To cooperate with the Army Air Forces in the development of a vehicle meeting special Army requirements.

Brief description of method (How?)

Preliminary design studies will be made of possible vehicles and propulsion systems to accomplish the performance requested by the Army Air Forces.

Remarks

Requested by the Army Air Forces, Materiel Command, in letter dated August 4, 1944, reference Department 50, Wright Field, Dayton, Ohio.

Date of report

Publications

Completed

104

Form No. 10

CONFIDENTIAL - Investigation secret

Title: Preliminary Design Study in Development of Special Vehicle for Army Air Forces

By: Aircraft Engine Research Laboratory

Approved: _____ 1944

Chairman, Subcommittee

Issued: August 17, 1944

G. W. LEWIS

Chairman, Executive Committee

Director of Aeronautical Research

In accordance with authority of Executive Committee, March 19, 1942

Purpose of investigation (Why?)

To cooperate with the Army Air Forces in the development of a vehicle meeting special Army requirements.

Brief description of method (How?)

Preliminary design studies will be made of possible vehicles and propulsion systems to accomplish the performance requested by the Army Air Forces.

Remarks:

Requested by the Army Air Forces, Materiel Command, in letter dated August 4, 1944, reference Department 50, Wright Field, Dayton, Ohio.

Date of report: _____

Publications: _____

Completed _____

104

Title: Preliminary Design Study in Development of Special Vehicle for Army Air Forces

By: Aircraft Engine Research Laboratory

Approved: _____ 1942

Chairman, Subcommittee on _____

Issued August 17, 1942

A. W. Lewis

Director of Aeronautical Research

In accordance with authority of Executive Committee, March 19, 1942.

Purpose of investigation (Why?)

To cooperate with the Army Air Forces in the development of a vehicle meeting special Army requirements.

Brief description of method (How?)

Preliminary design studies will be made of possible vehicles and propulsion systems to accomplish the performance requested by the Army Air Forces.

Remarks:

Requested by the Army Air Forces, Materiel Command, in letter dated August 4, 1944, reference Department 50, Wright Field, Dayton, Ohio.

Date of report: _____

Publications: _____

Completed: _____

AE-104

Title: Preliminary Design Study in Development of Special Vehicle for Army Air Forces

By: Aircraft Engine Research Laboratory

Approved: _____

Chairman, Subcommittee on _____

Issued August 17, 1944

H. V. Lewis

Director of Aeronautical Research

In accordance with authority of Executive Committee, March 12, 1942.

Purpose of investigation (Why?)

To cooperate with the Army Air Forces in the development of a vehicle meeting special Army requirements.

Brief description of method (How?)

Preliminary design studies will be made of possible vehicles and propulsion systems to accomplish the performance requested by the Army Air Forces.

Remarks:

Requested by the Army Air Forces, Materiel Command, in letter dated August 3, 1944, reference Department 50, Wright Field, Dayton, Ohio.

Date of reports _____

Publication _____

Completed _____

AERL

~~SECRET~~

Washington, D. C.
August 17, 1944

From NACA
To Cleveland

Subject: Development of guided missile for Army
Air Forces

Reference: NACA letter of August 16, 1944, REL:ln

1. There are forwarded herewith six copies of the research authorization to cover the preparation of design studies for the subject investigation. Research Authorization No. E-110 has been assigned for this project.

2. Research Authorizations Nos. E-111 and E-112 have been reserved to cover the construction of experimental models and the tests of such models respectively. It was considered that this work should be done under three separate research authorizations because of the broad scope of the request of the Army Air Forces.

3. It is requested that following the submission of preliminary design studies to the Army Air Forces for review, the laboratory submit drafts of research authorizations to cover the construction and testing phases of this project. It is requested that these drafts be in this office by September 5, if possible.

G. W. Lewis,
Director of
Aeronautical Research.

Enc.
REL:ln

~~SECRET~~

Handwritten notes:
112
111
110
109

~~SECRET~~

Washington, D. C.
August 17, 1944

From NACA
To Cleveland

Subject: Development of guided missile for Army
Air Forces

Reference: NACA letter of August 16, 1944, RKL:ln

1. There are forwarded herewith six copies of the research authorization to cover the preparation of design studies for the subject investigation. Research Authorization No. E-110 has been assigned for this project.

2. Research Authorizations Nos. E-111 and E-112 have been reserved to cover the construction of experimental models and the tests of such models respectively. It was considered that this work should be done under three separate research authorizations because of the broad scope of the request of the Army Air Forces.

3. It is requested that following the submission of preliminary design studies to the Army Air Forces for review, the laboratory submit drafts of research authorizations to cover the construction and testing phases of this project. It is requested that these drafts be in this office by September 5, if possible.

G. V. Lewis,
Director of
Aeronautical Research.

Enc.

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E-110

RECEIPT TO BE SIGNED AND RETURNED TO THE
CORRESPONDENCE DIVISION, NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS
1500 New Hampshire Avenue, N.W., Washington 5, D.C.

August 17, 1944

TO: National Advisory Committee for Aeronautics
From: Cleveland

Letter dated August 17, 1944 transmitting
Research Authorization No. E-110 entitled
"Preliminary Design Study in Development of
Special Vehicle for Army Air Forces".

*Original receipt to
WFO
8-22-44*

It is understood that the (documents) (containing)
information affecting the national defense of the United States within
the meaning of the Espionage Act (USC 50:31 and 32). Full responsibility
is assumed for the safe handling, storage, and transmittal elsewhere
of this document, in accordance with security regulations.
Signed *Charles Kumpf*
Date *8/17/44*

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Washington, D. C.
August 16, 1944

From WACA
To Cleveland

Attention: Mr. Kemper

Subject: Request of Army Air Forces to develop a
guided missile

1. There is enclosed herewith copy of Army Air Forces letter dated August 4, 1944, requesting that the WACA undertake a program to develop a guided missile in cooperation with the Materiel Command of the Army Air Forces. It will be noted that the Army Air Forces has requested that the WACA develop the vehicle and the jet power supply parts of the missile leaving the remote control devices and launching mechanisms up to the Air Forces.

2. The comments and recommendations of the laboratory are requested concerning this requested development program. The Army Air Forces is being concurrently informed that the Committee will undertake this investigation and that a conference will be arranged to discuss preliminary design studies.

3. Research Authorization No. E-110 has been assigned to this investigation and a copy will be forwarded to the laboratory in the near future. It should be noted that the Army desires this development to take place in a minimum period of time.

S. V. Lewis,
Director of
Aeronautical Research.

Enc.

WACA:lla

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RAM JET CONFERENCE

January 6, 1945.

The Committee met in Mr. J. R. Bressman's office in the Compressor and Turbine Research Facilities Building at Cleveland on January 6, 1945, at 9:45 a.m. Present:

Abe Silverstein, Chairman

B. Pinkel

A. M. Rothrock

O. W. Schey

J. R. Bressman

A. E. Kman

M. R. Howard

W. C. Burgess

J. H. Hall, Secretary

The Ram Jet Committee met to review the design of the NACA aero-pulse unit. Mr. Bressman showed an assembly drawing of the NACA unit in which the sections were flanged to facilitate changes. Two valve designs were being considered for installation: one has been evolved as a result of the reciprocating piston apparatus investigation, and the other is a hinged-type valve based on the results of the intermittent-flow apparatus. The valve design based on the reciprocating piston investigation is a flat valve with a re-angled back stop incorporated as a streamline afterbody located between adjacent valves. Mr. Schey inquired if the valve had been tested. Mr. Bressman stated that the design had been tested at 50 cycles per second and found satisfactory but that the fastening method was new.

Mr. Bressman stated that the hinged valve, which is being prepared for tests on the reciprocating piston apparatus, is a modification of the design tested in the intermittent-flow apparatus with good results.

The chairman stated that the investigation on aero-pulse units would follow these lines: (1) investigation of the performance of existing units such as the type built by the Ford Motor Company, (2) the development of a better valve design on existing units, and (3) the development of a completely new design.

Mr. Pinkel reported on the first phase. He stated that preliminary calibrations of the apparatus were being made and the unit should be ready to run in a day or two. Mr. Silverstein inquired as to what investigations had been made concerning the effect of vibration on the building and equipment. The possibility of damage from the vibration set up by the unit and the fire hazard were discussed by the group. Mr. Pinkel said that he would look into the problem and discuss it with the Accident Investigation Committee.

Mr. Pinkel stated that it was planned to measure thrust, airflow, temperature at the inlet, fuel flow, total heat at the inlet, static pressure in the surge tank, average total pressure ahead of grid, and pressure variation by means of piezo electric pick-up. Motion pictures will be taken of the exhaust flame and consideration is being given to using a maximum pressure gage. It

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was stated that limited instrumentation was being used to reduce the required running time to a minimum.

Mr. Silverstein suggested that the fire department be notified when the tests were ready to start.

Mr. Silverstein stated that a new unit and two spare grills which were intended for tests in the Altitude Wind Tunnel (tests cancelled) will be available soon.

Mr. Bressman showed drawings of a valve intended for tests in a grill made up to fit the Ford unit. The valve is approximately four times the size of the German valve. Mr. Bressman stated that the hinged-type valve will be ready for tests in the reciprocating piston apparatus in about a week. The hinged valve will be made of .015-inch Swedish-blue steel stock.

After discussion by the group it was agreed that the hinged-valve design incorporated in a grill to fit the Ford-built unit would be the first modification to be tried. Mr. Pinkel stated that the equipment will be ready for installation of the new grill in about three weeks.

Mr. Bressman stated that the valve would be ready in about one week and that it would take approximately three additional days to draw up the design for the German unit. To expedite the modification it was agreed to proceed with drawing up the best design for use in the German unit based on current knowledge and modify the design, if necessary, as a result of the tests in the reciprocating piston apparatus before construction is actually started.

Mr. Burgess showed a drawing of a small-scale unit using a smaller valve with a combustion chamber for the purpose of testing the valve under combustion conditions.

Mr. Pinkel stated that the current aero-pulse project is really a development job and on this basis the proposal of Mr. Burgess would be out of line in that it is essentially research equipment.

Mr. Pinkel stated that it was his opinion that the combustion problem involved in the design would be a difficult one. He agreed that close simulation to the actual operation as would be obtained with the unit was very desirable but that results would only be qualitative from the combustion standpoint.

In view of the fact that consideration of Mr. Burgess's proposal hinged on how deep the NACA intended to go into research on aero-pulse unit, this question was discussed by the group. Since the results of modifications made on the Ford-built unit would probably be a determining factor it was decided to table the proposal pending test results on the Ford-built unit.

Mr. Bressman reviewed the design of the NACA aero-pulse unit which is 14 feet long, has a combustion area to tailpipe area ratio of 4, and is intended to operate at 75 cycles per second. The fuel supply system designed

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for the unit incorporates an interrupter mechanism for controlling fuel injection. The interrupter mechanism has a lapped fit on the rotor for sealing. Mr. Pinkal suggested that a simpler system might be arrived at.

Mr. Rothrock stated that from his experience he didn't see how the interrupter could be anything but expensive. He suggested that a member of the group discuss the problem with Cleveland Diesel and other manufacturers of Diesel fuel pumps.

Mr. Schey suggested that manufacturers of hydraulic equipment might be of some assistance. Mr. Bressman said that he would discuss the problem with local manufacturers as suggested. Approval of the suggested system will be made when additional information on construction of the interrupter mechanism is available.

Mr. Bressman stated that 19 fuel injection valves were incorporated in the grill for fuel injection and that the nozzles were pointed upstream. Four spark plugs could be used for ignition.

Mr. Bressman stated that in the valve design the free-flow area in the grill was 45% of the total area as compared to 32% for the unit built by the Ford Motor Company.

Meeting adjourned at 12:15.

Jesse H. Hall,
Secretary, Ram Jet Committee.

JHH:ink

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RAM JET CONFERENCE

February 13, 1945.

The Committee met in the Executive Conference Room at Cleveland on February 13, 1945 at 2:00 p.m. Present:

Abel Silverstein, Chairman

O. W. Schey

B. Pinkel

A. M. Rothrock

J. H. Hall, Secretary

The minutes of the previous meeting were read and approved as read.

The Chairman stated that there was increasing interest in the ram-jet type propulsion unit with the guided missile program. It was noted by the Chairman that Colonel Wassel had suggested the use of the term "pilotless aircraft" instead of guided missile.

A review of progress accomplished since the last meeting of the committee by the committee members was requested. Mr. Pinkel stated that tests of the Ford-built intermittent-flow ram jet had been made with ram pressures from 0 to 20" of water at various fuel-air ratios. Data from these tests had been turned over to the computers and the results will probably be available before the end of the meeting.

Mr. Pinkel stated that examination of the motion pictures of the exhaust showed flames issuing from the tailpipe for 30% of the cycle and the flame appears to be sucked back at the completion of burning. It was noted that the flame shape differed from cycle to cycle. Mr. Rothrock stated that Colonel Wassel had mentioned variation in the cycles observed in motion pictures taken at Wright Field. The Chairman stated that an intermittent-flow ram jet, twice the size of the Ford-built unit had been constructed at Wright Field. This unit developed a thrust of 1900 pounds with lower fuel consumption than with the smaller unit but resulted in a number of broken windows.

Mr. Pinkel stated that the Army was interested in using two of the Ford-built units on the P-51 to increase the speed of that airplane. Of the means being considered are the use of auxiliary rocket and the use of nitrous oxide for increased engine power. Mr. Pinkel stated that the "single-shot" combustion unit had been made to cycle and motion pictures of the flame had been taken. The chairman inquired as to what advantages would be obtained from controlled ignition. Mr. Pinkel stated that controlled ignition would make each cycle independent and should result in an increase of maximum pressure. The motion pictures showed flames starting at the spark and moving along with the flow until the first flame sphere reaches the nozzle at which time the flame front moved upstream to complete the burning of the charge. Three ignition points per cycle were indicated.

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