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ATIC UFO BRIEFING

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which we know nothing. But at this point we enter a field of speculation so limitless that we can no longer pursue it at all.

I should perhaps also mention the space-satellite, the "artificial moon" as it is sometimes called, which involves the placing of a man-made and perhaps man-occupied object in space outside the gravitational field of the earth. Many of you may have read the article on this subject in a March 1952 issue of Collier's Magazine. It's a very good article, by the way, and scientifically sound.

The idea of the satellite also exerts a powerful pull upon man's imagination.

But, so far as our investigation is concerned, we can find no reason to believe that such a thing as a man-made satellite exists now. It may in the future, probably will. It may exist now, in the sense that anything is possible. But we can find no evidence to this effect. And lacking evidence, without proof,

we must disregard the satellite possibility in our investigation.

To come back at least a little closer to earth, we will discuss for a moment some of the other lines of inquiry that have been followed. I will give over now to Mr. \_\_\_\_\_, of the Aircraft and Propulsion Section, Technical Analysis Division, ATIC. Mr. \_\_\_\_\_ is an aeronautical engineer. He will give you an account of developments in other fields, again in consideration of all possibilities, however remote. Mr. \_\_\_\_\_

Mr. \_\_\_\_\_:

Let me speak first about guided missiles. The early history of the operational use of this weapon is now quite well known. Its first application was during World War II by Germany, with the launching of the 1944 V-1 or "buzz-bomb" attack on London. These missiles, although strange and fearful enough in many ways, did resemble aircraft in basic configuration. Their speed was about three hundred and fifty knots, and their range not more than one hundred and forty nautical miles.

The German V-2, a "ballistic" or bullet-like missile as contrasted to the aircraft-configuration type, was a much larger weapon. Its range also, however, was short, being about one hundred sixty five nautical miles.

In the United States, work on guided missiles has been going on with ever-increasing rapidity. The near-operational state of the MATADOR is probably well known to you all. This, a winged, non-ballistic missile, is given a range of five hundred nautical miles. Others of generally similar type, such as the SNARK and the NAVAHO, are projected for development between 1954 and 1958, and will have greatly increased ranges up to five thousand five hundred miles.

Also, in the U.S. program are rocket-powered ballistic missiles of the same general type as the V-2 but with much greater range. It is estimated that with continuing development effort we will have by 1960 a multi-stage ballistic missile capable of carrying a mass destruction warhead five thousand five hundred nautical miles.

Guided missile work is also going on in other countries, of course. The Soviets are known to have shown great interest in the German V-1

and V-2. It is estimated that Russian development of the V-2 may have increased its range to about 350 nautical miles. Some increase in range may be expected in V-1 development, but no details are known.

And the Soviets are conceded to have the capability to build missiles of the MATADOR and SNARK types, although there is no positive evidence that they are doing so. There is, however, considerable reason to believe that they are working hard on large rocket engines for missile application. And it is estimated they may have ready for use by 1957, a two-stage ballistic missile with a range of twenty five hundred miles. They very likely have, today, a rocket engine of 120 metric tons.

And now, no discussion such as this would be entirely complete without at least some mention of the Sanger rocket drive. Dr.E. Sanger, a German, performed his experiments on the rocket drive, or rocket-bomber as he himself calls it, during the period of 1939 to 1941. His is a highly theoretical and as yet unrealized proposal for a rocket of extremely long range and possessing, oddly enough, both ballistic

and aircraft characteristics. It cannot really be considered a guided missile at all, in fact. It has wings, and, moreover, is designed to carry a pilot and to be recoverable, that is, landed, at the end of its mission. And yet its range is so great and its methods of operation so unusual, that many of its design features come within the ballistic missile category.

What Dr. Sanger theorized was a vehicle powered by a rocket engine of some one hundred tons thrust, to be about one hundred feet long, with a wingspan of seventy feet, a takeoff weight of approximately one hundred tons, a takeoff speed of around twelve hundred miles per hour, and capable of attaining an altitude of one hundred miles. Its maximum velocity would be about 15,000 miles per hour. Its range is so great as to carry it more than half way around the earth. To explain its operation and rather than trust my interpretation, let me put it in Dr. Sanger's own words. He says, "...the rocket-bomber ... climbs at full motor drive to a height of fifty to one hundred fifty kilometers. At the end of

the climb the rocket motor is turned off and the aircraft, because of its kinetic and potential energy, continues on its path in a sort of oscillating gliding flight with steadily decreasing amplitude of oscillation. Because of its wings the aircraft descending its ballistic curve bounces on the lower layers of the atmosphere and is again kicked upwards, like a flat stone ricocheting on a water surface ....the initially big jumps steadily become smaller and finally go over into a steady gliding flight .... the bombs are released at a predetermined moment, and the craft returns to its starting place or some other landing field in a wide arc....during gliding flight the flight speed decreases from its high initial value to normal landing speed. It .... is completely independent of weather and time of day at the target, and of enemy counteraction, because of .... using astronomical navigation in the stratosphere and because of the height and speed of flight." End of quote.

I repeat that no working model of the Sanger rocket-bomber has ever been built so far as is known. But Dr. Sanger is still living, and still at work -- presently for the government of France.

To depart now from the missile field and discuss aircraft, let us consider the unconventional aircraft configurations. A great deal of interest has been shown by many designers in low aspect-ratio all-wing configurations as a means of obtaining compact, low-drag aircraft. The elimination of fuselage and tail surfaces in such designs would decrease the total surface area exposed to the airstream and thus lower the parasite drag. And the low aspect-ratio normally associated with an all-wing design makes it feasible to design an efficient light-weight structure.

Work in all wing configurations has been carried on by various designers in the United States since the early 1930's. Of all of these designs, the most interesting is probably the Zimmerman wing aircraft which was proposed by Chance-Vought in 1939.

The aircraft was to have a span of 23.3 feet and was to employ a Zimmerman wing (see NACA report TN No. 539). The aircraft was to be powered with two P&W engines of 1350 H.P. each which were mounted at the wing tips. The take-off distances of this aircraft were very low,

being 230 feet over a 50 foot obstacle. An experimental model of the aircraft was built for the Navy and designated XF5U-1. The rate of climb obtained during flight tests did not meet expectations due to the extremely high-induced drag inherent in low aspect ratio wings. The take-off distance did check out to be very low. The project was dropped with the advent of high speed jet aircraft.

The pure delta-wing in which many U. S. companies have shown an interest also appears to have a high induced drag factor although there is some evidence that this can be alleviated somewhat by rounding the wing tips. Convair is carrying on an active project (F-92) to determine the flying characteristics of a pure delta-wing aircraft. To date, fairly successful results have been obtained and they have been awarded a development contract for a delta-wing all-weather fighter.

Names always good for a look of interest in aeronautical circles are those of the Horton Brothers and Herr Lippisch. These two design teams began in the early thirties to build and fly various all-wing gliders in Germany.

The Horton Brothers are now separated, one of them being still in Germany and the other in South America. Lippisch has been in the U. S. since 1946. The rather unusual appearance of their designs accounts for much of the interest they arouse. Before I give you a quick run-down of the Horton all-wing aircraft series, permit me to make a few remarks regarding the general history of wing shapes.

It is a matter of fact that saucer-shaped airplanes are not quite as new as is sometimes thought. Quite a number of aircraft have been constructed and flown with wings of the ring or disc type which could well have been mistaken for saucers, hat brims, doughnuts, etc. Aeronautical engineers have always toyed with such queer wing shapes. Disc wings, for instance, permit certain disadvantages of conventional wings to be overcome.

When the sail-plane movement proved that slender wings were a necessity for soaring, designers began striving for "good" aspect ratios. A good aspect ratio for gliders would be in the neighborhood

of 10 and higher. The higher the better. A representative value would be 15 to 20.

While the glider enthusiasts were always striving for higher aspect ratios (and in that category fall the "all-wing" enthusiasts), the circular airfoil designers were dabbling with aspect ratios of 1 to 4. This so-called "battle of the aspect ratios" was decided in favor of slender wings (that is, high aspect ratios) in spite of the fact that Prandtl was eager to point out that his airfoil theory did not hold water for very small aspect ratios. That, in fact, the induced drag of disc wings was less than his theory suggested.

Some early tail-less airplanes had rather stubby wings and heavily reflected airfoil sections. A 1929 design by the Frenchman, Abrial, showed an aspect ratio of 2.88 with, however, substantial wing tip discs (which have the effect of increasing the aerodynamic aspect ratio). Wind tunnel experiments of this model indicated a creditable performance.

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UNIDENTIFIED AERIAL PHENOMENA

A BRIEFING

BY

**SMC**

THE AIR TECHNICAL INTELLIGENCE CENTER

Wright-Patterson Air Force Base

Dayton, Ohio

Prepared 1 April 1952

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The Lippisch delta wing designs are very similar in their basic aerodynamic aspects to those of the SF5U. Both the disc and the delta shape make for high structural rigidity and, consequently, very thin airfoil sections can be employed in these designs. Furthermore, tests have shown that wings with high sweepback plus low aspect ratio will give safer stalling characteristics. The delta wing plan form, of course, combines both the sweep angle and the low aspect ratio feature in one package.

And now here are some illustrations.

S L I D E N O. 1

This is the XF5U-1 referred to previously.

S L I D E N O. 2

This is a table summarizing characteristics of the Horton designs.

S L I D E N O. 3

This is the glider with the two-parabola plan form, referred to previously.

SLIDE NO. 4

This is the Horton H-VIII transport. It was designed to carry 60 passengers in the trans-atlantic run. The facilities at Gottingen limited the wing span to 158 feet although the original plans called for a larger aircraft.

SLIDE NO. 5

The Horton H-VIII had characteristics and performance as shown on this slide:

Wing span	158 ft
Wing area	2500 ft <sup>2</sup>
Aspect ratio	10
Sweep at leading edge	28°
Gross weight	33,000 lbs.
Wing loading	13.2 lb/ft <sup>2</sup>
Power plant	6 BMW engines rated at 600 hp each
Power loading	9.17 lb/hp
Cargo	60 passengers
Vmax	175 knots
Rate of climb	1000 ft/min
Service ceiling	15,000 ft
Range	2500 NM

S L I D E   N O. 6

We have made a projection of the Horton design which may be of interest. Development of the Horton H-XVIII. A possible development as to performance and characteristics is shown in this slide.

Assuming an aircraft with a span of 153 feet, wing area of 4000 square feet, and a gross weight of 200,000 pounds powered with 4 x 10,000 pound thrust engines, the aircraft could have a range of approximately 5000 NM.

S L I D E   N O. 7

Of the German all-wing designs, the U.S. showed the greatest interest in the Lippisch delta-wing DM-1 glider.

The DM-1 was to be used to test the flying qualities of the delta-wing planform, in preparation for construction of a supersonic fighter of that planform. The DM-1 had a span of 19.7 feet, a very low aspect ratio of 1.81, and a gross weight of approximately 1000 pounds. The pilot was housed in the root of the large vertical fin. This aircraft was to have been developed into a supersonic fighter powered with a coal fuel ram-jet.

A comprehensive wind tunnel test program was run on the DM-1 by the NACA at Langley Field. The original tests were started upon the recommendations of Theodore Von Karman in answer to a request as to whether or not it would be safe to flight test the DM-1. Considerable work was done by the NACA to find the maximum lift coefficient available for landing and to determine sinking speed of the glider.

With triangular wings of aspect ratio of about 2, maximum lift coefficients of the order of 1.2 can be obtained. The corresponding angles of attack, however, will be considerably greater than those for conventional airplanes. Furthermore, since the lift-drag ratio at high angles of attack is approaching 1, the angles of descent without power are likely to be prohibitive and airplanes using this type of wing probably will not land safely without power.

S L I D E   N O. 9

The Lippisch P-12 delta wing aircraft was designed as a high performance interceptor and was to be powered by a liquid fuel ram-jet.

There is a large air intake in the projecting nose and the pilot is seated above the combustion chamber forward of the large vertical fin. The undercarriage is composed of a single central wheel with a skid projecting downward from each wing tip.

S L I D E   N O.   9

The only known characteristics are as follows:

Wing span	13.2 ft
Wing area	130 sq ft
Aspect ratio	1.33
Power plant	liquid fuel ram-jet (rocket for initial acceleration)

(Note: At present, no country is known to have an operational liquid fuel ram-jet: The leading powers are conducting research and development on a limited scale; no immediate estimates on performance are available.)

S L I D E   N O. 10

Results of tests conducted with the DM-1 glider were to be utilized in the design and construction of the P-13 fighter.

The P-13 incorporated a delta planform with a 60° swept-back leading edge. A ram-jet power plant was proposed but no information is available regarding its development except that several coal burning types were being considered.

This slide shows another projection, of the same kind done previously with the Horton design. It is a projection of the possible of the P-13 design.

If a development of the P-13 project were actively pursued it would probably follow along the original German thinking. Such an aircraft is estimated to have the following characteristics:

Wing span	20 ft
Wing area	220 sq ft
Aspect ratio	1.8
Sweep at leading edge	60°
Gross weight	7700 lb

S L I D E   N O. 11

Assuming a typical present day installation of a 6000 lb.  
thrust jet engine, the estimated performance would be as follows:

Rate of climb at sea level	21,000 ft/min
Vmax	Mach No. 1.0
Endurance	30 min

Range for this aircraft would not be outstanding, probably  
about 300 nautical miles.

Lights on now, please.

(In-flight refueling)

Speaking as we have been of long-range possibilities, we  
might mention that we have also given consideration to in-flight  
refueling and the possibility that our aerial phenomena may be  
due to conventional aircraft from a foreign source, using the range  
extension to be gained from recent refueling techniques. It is  
quite true, of course, that in-flight refueling has greatly

extended the range of present-day aircraft. This applies to conventional aircraft, however, and since our reports indicating aircraft point to a highly unconventional type, it is felt that in-flight refueling as a possible explanation for the phenomena offers little promise.

(Jet Engine Development)

To complete our consideration of the field of aircraft development with special emphasis upon the possibilities of increased range, let us review for a moment the aircraft gas turbine.

It is a truism to refer to jet engine development as sensational, but I wonder if that tired word "sensational" really expresses just how remarkable that development has been. In some ten years we have gone from less than nine hundred pounds thrust to more than ten thousand. Turbojets with dry static sea level ratings of about ten thousand pounds thrust are already installed in aircraft and undergoing flight test. And we have currently in bench testing engines with thrust ratings of up to eighteen thousand pounds.

American and British developments have been about parallel.

Both have gone from centrifugal flow to axial flow compressors, to performance augmentation by use of afterburners and other devices, to improved operations at ever higher altitudes. The Soviets have apparently followed much the same trend. They are now developing engines of upwards of ten thousand pounds thrust, and they have at least one, the Lyulka, that is rated at eleven thousand five hundred. And we have every reason to believe that their development program is continuing at a rapid pace.

There is no indication, however, of any radically new principles in jet propulsion that would account for the reported behavior of some of the unidentified objects as to maneuverability and acceleration rates.

\_\_\_\_\_ will take over again now.  
(Briefing Officer)

PART 5

Thank you, Mr. Kobernuss.

\_\_\_\_\_  
(Briefing Officer)

As we have seen from what Mr. Kobernuss has told us, there is no real evidence pointing to unconventional aircraft, range extension techniques, or developments of known power sources, as a possible explanation of the unidentified aerial phenomena. We do not say that we cannot find any evidence to support them at present.

And now as to the present operation of the investigation, specifically as to methods of collection and methods of analysis.

*And now for a few words from Capt Campbell*  
I shall now introduce \_\_\_\_\_, an aeronautical engineer

who is project officer in charge of the investigation, who has been working with it for quite some time and is thoroughly familiar with all of the operational details. \_\_\_\_\_.





The preliminary report will give some point from which to start the investigation. First we attempt to eliminate the factor of mis-identification of known objects. We check the time and place of all weather-balloon launching or of any research balloons. And we use the Air Almanac to check the current locations of any exceptionally bright and easily visible planets. You must understand that this work is not at all an attempt to prove that sightings are misinterpretations of known objects -- we're simply checking, to see whether we should eliminate certain of the most obvious possibilities.

If a field trip is necessary, we take off as soon as we can and conduct a personal interview with the witness or witnesses.

In this connection, a very important thing is getting to witnesses quickly, while their experience is still fresh in their minds.

We also ask the local intelligence officer to make out a standard Intelligence Form 112 on the incident and forward it through channels. This gives us a pretty complete picture, as a rule.

Leaving our hypothetical airbase sighting case now, suppose the incident was reported not by a military person or organization but by a private citizen. In this case many of the procedures are exactly the same, but of course we don't have the support and assistance of the military, which means no Form 112 and often a lot more difficulty in finding the witness and getting him to hold still for questioning. In cases of civilian witnesses, we sometimes ask the assistance of other military agencies in making a fast check on the citizen's local standing as to reliability and so forth, to try to rule out any possible practical jokers or otherwise doubtful sources of information.

PART 7

ANALYSIS

And now, what do we do with the information when we get it?

Well, we make record of it, of course. We have a cross-index system of filing now in use. And we plot sightings on maps, in different ways and for different purposes, as I'll show you in a moment.

And then when we have the information organized as well as possible, we begin the analysis.

It is here that we call upon the varied talents of a considerable number of other people and other activities. The problem is passed around, so to speak, within the entire ATIC organization for everybody to have a crack at it. And since the Air Technical Intelligence Center does have a considerable number of highly qualified personnel in almost any given field relating to aircraft, the problem gets a pretty good going-over right here within our own organization.

We don't stop there, however. You will recall that when the early history of the investigation was discussed, you were told of the scientific advisors employed. The same thing is being done

now, although upon a somewhat different basis. Now, instead of dealing with individuals working apart, we have an arrangement with a civilian research institution of top standing and reputation, to handle this part of the analysis for us. This institution has a group or "panel" of scientific personnel in many differing specialities -- astronomers, physicists, chemists, even psychologists-- who work in close collaboration in considering incidents that are brought to their attention. This work is done upon a consultant contract basis. It is a relatively new departure -- one of the improved methods we are putting into operation as rapidly as possible -- and while it is not in full swing as yet, we have every reason to entertain high hopes of this analysis method.

PART 8

VISUAL ILLUSTRATIONS

You may be interested in how we make use of visual methods of analysis, as a part of our effort. I'll show you now some plots we have drawn up, and keep current. The first of these is a plot of sightings for the year of 1947 through 1951.

S L I D E N O. 12

This plot indicates only the locations of sightings during the years considered. No differentiation is made as to types of objects sighted, final evaluations, or any other consideration. The sole purpose of this and other plottings of its type, is the attempt to establish some sort of pattern as to where these things are seen, find out whether they're concentrated near key defense installations or any other significant areas. You can't tell from this map, of course, what pattern obtained for the different years, but I will tell you as I go over it. The nineteen forty-seven map showed concentrations of sightings in the Northwest. This was to be

expected, of course, since it was in that year that the phenomena first leaped into the public consciousness; during July and August of that year after Mr. Arnold's incident in June, everybody in the Northwest of the U. S., it seems, saw something similar. In 1948 the sightings were moving eastward, and were quite scattered -- that year gives us less of an indication of pattern than any other. In 1949, late in the year, and in the early part of 1950, a concentration began to show up in the Southwest. Virtually all of the indications in this area that you see on the map were put there in late 1949 and early 1950. There's a reason for this, which I will come to in a moment. In 1951 no outstanding pattern is observable, the only things of note being a continuation of the eastward movement and an increase of concentrations near centers of population. Also, during 1951 the Middle-western section of the country began to produce a greater number of sightings than previously. It is of course yet too early in 1952 for any pattern to have been established.

To go back now to the remark I made a while ago about the concentrations in the Southwest, this is as good a time as any to explain something that I believe we have not touched upon before. Ordinarily we lump all unidentified aerial phenomena together, especially necessary since there are so many variations in the size and shape and color of the objects reported seen. But there is one distinction that was made early in the investigation, and that relates especially to phenomena noted in the Southwestern part of the United States. This phenomenon is the so-called "green fireball". Occasional green fireballs have been seen for many years and in several different parts of the world, but never that we know of has there been such a concentration of them as in the Southwest in recent years, especially since late 1949 and early 1950 as stated previously. And in this phenomena, unlike other reports of unidentified objects, the description of size and shape and color and behavior is almost always pretty much the same. These "green fireballs" are similar to meteors except that they

have a definite blue-green color, appear to be much larger or lower than a common meteor, and have a horizontal trajectory. Some have been seen to explode but no pieces have ever been found. At any rate, the differences between the green fireballs and the other manifestations were so distinct that it was decided to consider the fireballs in a separate category, and have the investigation of them conducted by another organization. This job was turned over to the AF Cambridge Research Laboratories, then an activity of the Air Materiel Command and now under the Air Research and Development Command. The Air Technical Intelligence Center has accordingly had no connection with this particular investigation, although we have naturally been very interested in following it as well as possible.

I am not empowered to speak for the Cambridge Lab. and have no official knowledge of the results of their green fireball project. I wouldn't want to try to steal their thunder by talking about a project that belongs exclusively to them, anyway. But I think

I'm safe in saying that I understand informally that the project has been completed, that a report will be published soon, and that it will probably be inconclusive. I may well be wrong, but I'm afraid the green fireball phenomena is going to remain, for the time being at least, a mystery.

*not - there is a possibility that the sightings are not related to the same phenomenon as the ones mentioned in the report.*

Now to get back to our analysis methods, as another example of how we attack the problem I'd like to show you another chart.

SLIDE NO. 13

This slide shows the frequency of sightings from 1947 through 1951. You will see that there is some regularity in the peaks. The large peak in 1947 followed the first sighting, by Mr. Arnold, mentioned before.

So far, we are unable to explain an apparent seasonal increase in sightings, which you will see occurs in the spring, in the middle summer, and along about December of each year.

PART 2

HISTORY

Aerial phenomena are not new. For some three hundred years now, men have seen in the sky, at one time or another and in one place or another, almost everything imaginable. Newspaper files are filled with reports of strange objects, lights, and other phenomena seen by reliable witnesses -- but never adequately explained -- over the years.

But let us skip lightly over a few hundreds of years, and take up our more recent experiences in the field.

The present era -- if one may call it that -- of the unidentified objects began in June of 1947 when a man named Kenneth Arnold, a business man of Boise, Idaho, reported seeing from his private plane a chain of nine saucer-like objects near Mr. Ranier in the state of Washington. Mr. Arnold's report set off a sort of chain-reaction of similar reports. I think we need not dwell here on that period -- as newspaper readers, you are all probably quite familiar with it. What I would like to review briefly, is the action taken by the Air Force and the results of it.

S L I D E   N O.   14

This shows the sort of people, within certain limits, from whom these reports of sightings come. You'll note the preponderance of civilian observers, concerning whom we have attempted no separation or classification. As to military observers, however, we did think it might be useful to classify them as you see here (ad lib from chart on different classifications)

S L I D E   N O.   15

This slide shows reported shapes of objects. We had hoped to narrow down a little this matter of shapes, and learn something of real significance. But, as you see from the chart, this effort has so far not been very productive. Considering viewing angles, times of day, condition of darkness, weather, all the other factors that are involved, it is extremely difficult to establish any sort of pattern as to shape.

S L I D E S   16   &   17   I N   T U R N

(Photos. Discuss each extemporaneously)

\_\_\_\_\_ will take over again now.  
(Briefing Officer)



PART 10  
EVALUATIONS

And now for our evaluations to date. We have considered six hundred ninety-eight incidents, since the beginning of the investigation in 1947. <sup>#0-1953</sup> The breakdown or probable causes of these incidents is as follows:

- a. 237 sightings - or about 34 percent - were of celestial bodies (stars, planets, etc)
- b. 70 sightings - or about 10 percent - were balloons.
- c. 84 sightings - or about 12 percent - can be accounted for by aircraft, birds, airborne debris, etc.
- d. 35 sightings - or about 05 percent - were rockets and flares.
- e. 91 sightings - or about 13 percent - were not evaluated due to insufficient data for analysis.
- f. 181 sightings - or about 26 percent - could not be evaluated and remain unexplained.

This means that counting both the 13 percent on which we had insufficient data for analysis and the 26 percent which we could not attribute to any known cause, there have been 272 sightings of which we have record that we are unable to explain.

With these -- nearly forty percent of the total -- we have run up against a completely blank wall.

We don't know what is causing this unexplained forty percent. Since we don't know, we keep trying to find out.

And that about expresses the whole philosophy of the Air Technical Intelligence Center. We keep an open mind, and we keep trying to find out. So long as there remains even a possibility that there may be something here that could develop into a hazard to the security of the United States, we will continue the investigation.

PART 11

FUTURE PLANS

And now, in conclusion, let us describe our plans for the future.

The present methods of conducting the investigation will be continued, with special emphasis upon use of scientific consultants. In addition, however, we will soon establish -- are already in the process of doing so -- a new procedure involving both radar-scope and direct photography.

As to the radar-scope photography, we have made an arrangement with the Air Defense Command to maintain a special alert for aerial phenomena and to take radar-scope photos of any unidentified objects that may be sighted on radar screens. This is a one-in-a-million chance, and we are well aware that the probability of results from this method is very small. But we believe it is worth trying, especially since the ADC alert can be maintained without any interference with normal operations.

And there is another photographic procedure which we will soon put into use, again with Air Defense Command assistance. In this we will employ ordinary still cameras equipped with a special diffraction grid. Any photographs thus secured will be subjected to spectrum analysis in an attempt to analyze light source.

I believe that is all. We will remain here for as long as you like for questions. Are there any questions?

Thank you.

SLIDES

1. - XF5U-1 (Pancake)
2. - Table Summarizing Horton Designs
3. - Horton 2 - Parabola Glider
4. - Horton VIII
5. - Horton VIII Performance Figures
6. - Horton Design Projection Figures
7. - Lippisch DM-1 Research Glider
8. - Lippisch P-12 Delta Wing Design
9. - Lippisch P-12 Characteristics
10. - Lippisch Design Projection
11. - Lippisch Design Projection Performance
12. - Plot of Sightings
13. - Frequency of Sightings
14. - Sources of Reports
15. - Shapes of Objects
16. - Photograph
17. - Photograph

It was realized early that a special effort would have to be made by the Air Force to deal with the situation into which we had been plunged with such abruptness. Accordingly, the Intelligence Department of the Air Materiel Command -- from which the Air Technical Intelligence Center has since evolved -- set up a special project to handle the investigation. I should like to emphasize here that this investigation was undertaken without bias and in all seriousness. It was not "slanted", that is to say. Its object was not to either prove or disprove the existence of the phenomena, but rather to learn the truth of the matter. And, of course, if the truth were learned, to determine whether any possible hazard to the United States was involved.

It is perhaps worthy of note here that a particular effort was made to enlist the services of not only military and civilian governmental agencies, but also of civilian scientists and "disinterested" authorities. The consulting authorities were as follows:

1. Dr. J. A. Hynek, an astronomer of Ohio State University.
2. The Air Weather Service.

3. Dr. G. E. Valley, of the Scientific Advisory Board.
4. The Rand Corporation, Santa Monica, California.
5. The 3160th Electronics Laboratory, Cambridge Field Station,  
at that time an activity of the Air Materiel Command.
6. Dr. P. M. Fitts, of the AMC Aero-Medical Laboratory.
7. The U. S. Department of Commerce Weather Bureau.

In August 1949 an official report was published that summarized the project up to that date. It represented the final conclusions of all the agencies and individuals concerned in the investigation. This report covered some two hundred fifty separate incidents that had been reported and evaluated up to that time.

The findings stated in the August 1949 report were that the phenomena did not represent a threat to the security of the United States. This was in 1949, remember, and the report was based upon evaluation of only 250 sightings.

The general conclusions of the official report were announced publicly in December 1949, in response to a growing demand from press and public for an official Air Force statement on the subject.

PART 3

PRESENT STATUS OF THE INVESTIGATION

The original special project for the investigation of unidentified aerial phenomena was discontinued, as has been stated. However, public interest in the matter did not entirely disappear, and incidents themselves didn't stop occurring, either. So the investigation has been continued, no longer on an accelerated special project basis, but as a normal and routine part of the technical intelligence function.

This is its status today.

PART 4  
LINES OF INQUIRY

It may be of interest to you to know that we by no means confine our efforts to just the analysis of reports of actual sightings that reach us. Instead, we have deliberately enlarged the scope of the inquiry to include consideration of all possible sources for these sightings, regardless of whether any actual evidence points directly toward any of them. Statements have been made that these incidents might be caused by visitors from other planets, or developments of guided missiles, or unconventional aircraft of designs unknown to us from a foreign power, or more conventional aircraft with great range or unusual power sources. We agree that these possibilities are worthy of serious consideration, so we have gone into them carefully and in some detail. We want to leave no stone unturned to get at the cause of these phenomena. In that spirit, we will discuss some of the possibilities here.

Let us first take up, as a possible explanation, the interplanetary vehicle, the space-ship. The idea of space travel is one of the most challenging ever to occur to the imagination of man. I hasten

to say that we have considered it very seriously. Seriously enough to have asked for, and received, an authoritative report on the subject from scientific sources.

This report considered as one example the possibility of space travel from the planet Mars. Mars in particular was selected because, of all the known celestial bodies, it is thought the most likely to be able to support higher forms of life.

It is quite possible that a trip from Mars to the Earth and back could be made, using a rocket-powered vehicle and assuming the employment of nuclear energy for power. It is estimated that such a vehicle would have to be a four-stage rocket, would weigh at least fifteen thousand tons, and would have to attain a velocity of roughly ninety thousand miles per hour.

It is also theoretically possible to reach the Earth from other planets. And it is by no means left out of consideration that another "race" on another planet may have evolved another power source of