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25X1

... [redacted] was then sworn as a witness by

Judge Prettyman

MR. HOUSTON: Would you identify yourself?

[redacted]

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25X1

[redacted] Chief of Intelligence Staff,

Development Division, CIA.

25X1

MR. HOUSTON: [redacted] I have here a document. Would you examine it and tell me whether you are familiar with that document?

25X1

. . . . [redacted] then examined a document Mr. Houston handed to him

25X1

[redacted] Yes, sir, I am.

MR. HOUSTON: Does that document come within your custodian responsibilities?

25X1

[redacted] Yes, sir.

MR. HOUSTON: As an Intelligence Officer --

25X1

[redacted] Yes, sir.

MR. HOUSTON: -- would you tell us what that document is?

25X1

[redacted] It's a cable from [redacted] which is a registered cryptonym for Lockheed Aircraft Corporation. It is to the Director of CIA for the attention of Mr. James Cunningham and Colonel Geary from Kelly Johnson, who is Vice President of Lockheed Aircraft Corporation.

25X1

MR. HOUSTON: What is the nature of the communication?

25X1

[redacted] It is Mr. Johnson's conclusions after his discussion with Mr. Powers concerning the incident which occurred during his flight of 1 May.

MR. HOUSTON: Mr. Johnson has seen Mr. Powers and discussed the with hi

[redacted]

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2/22/62, [redacted]

JUDGE PRETTYMAN: When was this cable sent and received?

25X1

[redacted] The date of the cable is 21 February 1962, sent

and received the same day.

MR. HOUSTON: Judge, I would like to text this cable part

of it.

JUDGE PRETTYMAN: Marked Exhibit 17.

. . . . The document was then marked Exhibit 17 and made a
part of this record

MR. HOUSTON: The text we would like to put in the record

does not have the cable address and other items which are of a classified nature.

Are there any further questions?

25X1

. . . . [redacted] was then sworn as a witness by

Judge Prettyman

MR. HOUSTON: Can you identify yourself for the record?

25X1

[redacted] United

States Air Force.

25X1

MR. HOUSTON: [redacted] you were assigned as a pilot to

the U-2 Project.

25X1

[redacted] Yes, sir.

[redacted]

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[redacted]

25X1

[redacted]
TOP SECRET

25X1

25X1

2/22/62/ [redacted]

MR. HOUSTON: And you were stationed in Adana?

25X1

[redacted] Yes, sir.

MR. HOUSTON: From when to when?

25X1

[redacted] From the period October 7, I believe, 1957

until approximately 29 July 1960.

MR. HOUSTON: Did you fly operational missions in the U-2?

25X1

[redacted] Yes, sir.

MR. HOUSTON: Did you fly any overflights to Soviet Russia?

25X1

[redacted] There was some discussion on that. As such,

no, sir.

MR. HOUSTON: How many mission have you flown?

25X1

[redacted] I believe it was something on the order of

17 missions -- operational missions. I could be off there, sir.

MR. HOUSTON: Were you informed of the mission that was to be

flown about the end of April 1960?

25X1

[redacted] Yes, sir.

MR. HOUSTON: Tell me what you were told? How were you informed?

25X1

[redacted] I was alerted for a ferry mission into Pakistan

and this was - the purpose of this was to ferry a U-2 operational airplane to Mr. Powers at Peshawar. The flight was at night -- late taking off and after arriving there I was put on a back-up standby for Mr. Powers on his flight of May 1.

MR. HOUSTON: That meant you might be chosen for the mission

instead of Mr. Powers if there was any reason why he couldn't fly?

[redacted]

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2/22/62/

[redacted]

25X1

[redacted]

Yes, sir.

MR. HOUSTON: Were you then, as back-up pilot, briefed on the

mission?

25X1

[redacted]

Yes, sir.

MR. HOUSTON: Were you also briefed on the policy which applies

in case anything happens to the mission and you fell into Russian hands?

25X1

[redacted]

I had been briefed much earlier on this situation, sir.

MR. HOUSTON: Tell us how you were briefed?

25X1

[redacted]

I was instructed that I was to, if at all possible --

MR. HOUSTON: Will you tell us how you were briefed?

25X1

[redacted]

By reading and initialing, I believe the formal

letter and discussion within a group of the U-2 pilots and our commander.

MR. HOUSTON: And your understanding was that if you were

captured --

25X1

[redacted]

That if I were captured I was not to withhold any

information with the exception of try to hold down on the altitude capabilities

of the airplane and the range. The rest of the information as far as the

CIA, our employer, anything on this order was completely above board.

MR. HOUSTON: Were there any special briefings in connection

with this mission or any unusual aspects that you recall?

25X1

[redacted]

Special briefings as far as navigational aids,

the flight of the mission.

[redacted]

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[redacted]

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[redacted]
TOP SECRET

25X1

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2/22/62/ [redacted]

MR. HOUSTON: Did you get the same briefing as Mr. Powers got?

25X1

[redacted]

Yes, after I arrived at Peshawar. He and I went over the navigational route, and the briefings together and if he had previous briefings on the mission, which I am quite certain he did, I didn't get these.

MR. HOUSTON: Did you discuss with Mr. Powers or anyone else at that time the possibility of a failure of the mission and resulting capture by the Soviets?

25X1

[redacted]

Yes, sir.

MR. HOUSTON: You had talked with Mr. Powers?

25X1

[redacted]

Yes, sir.

MR. HOUSTON: Tell us the nature of your conversation.

25X1

[redacted]

We were primarily concerned with escape and evasion, of course, if we were to go down in any portion of the country along the mission route and this was more or less a situation where one might say, "Now which way am I going to go from this point? What am I going to try to do and look for and if at all possible to remain clear of towns or populated areas. What were we going to use for food, and through a study of the geography of the land, how are we going to live off the land." Particularly we were concerned with water and maintaining health during a trek of possibly a year and a half, or even two years it might take to walk out of the USSR, and of course there was the possibility of which border crossing we might attempt -- which one was going to be the easiest -- and I'm quite sure none of it would be easy. I think we were both adequately briefed as far as

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2/22/62/ [redacted]

escape and evasion tactics, we knew that if we were captured way then we might be able to bargain with the information for our lives.

MR. HOUSTON: You discussed specifically this possibility?

25X1

[redacted] Yes, sir.

MR. HOUSTON: Make it a little more clear exactly what you mean -- if you felt in danger you would, by volunteering information, bargain for your lives?

25X1

[redacted] Well, sir, we had both been through the survival

course of the United States Air Force, and through training there, I think we had both confirmed in our own minds that under duress a man cannot withhold information even if he wants to. With drugs and certain procedures that we found out in Korea, it is impossible to withhold information, thereby, if under possession of our own wits we could divulge any of this information, if asked, and be able to withhold some of the more important things -- such as range and altitude of the airplane -- then we might not be asked some other questions.

MR. HOUSTON: Were you in possession of any other information which you knew was regarded as sensitive besides the plane's performance, such as other flights that would be of interest to the Russians and would cause propaganda or embarrassment to this country?

25X1

[redacted] Possibly previous U-2 missions?

MR. HOUSTON: Yes.

25X1

[redacted] Yes, sir.

[redacted]

25X1

TOP SECRET

[redacted]

25X1

25X1

[redacted]
TOP SECRET

25X1

2/22/62, [redacted]

MR. HOUSTON: And did you talk about whether you would try to withhold information on those?

25X1

[redacted] I think not, sir.

MR. HOUSTON: In other words, what I am trying to get at, you knew the altitude and the range were considered something to be protected.

25X1

[redacted] Yes, sir.

MR. HOUSTON: And was there other information which crossed your mind that you also would protect?

MR. BROSS: May I ask if any particular emphasis is put on the camera equipment as a sensitive area that you weren't supposed to talk about?

25X1

[redacted] No, sir.

COL. GARY: Were you completely familiar with all the inner workings and mechanisms and the capabilities of the camera? Would you have considered yourself qualified to talk on the capabilities of this camera?

25X1

[redacted] No, sir, I would not. I knew what the camera could do. I had seen training mission results of the product but so far as what an intelligence photo interpreter might gain from photographs, I could not.

JUDGE PRETTYMAN: Are you a camera mechanic?

25X1

[redacted] No, sir.

GENERAL BULL: When you and Powers were talking this over with your Commander, did you, of your own volition, in your exchange of ideas

[redacted]

25X1

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[redacted]

25X1

25X1

[redacted]
TOP SECRET

25X1

2/22/62 [redacted]

develop any other category like the illustration of the plane's altitude capabilities -- any other category of intelligence that you felt of your own accord you would protect like personnel involved, foreign country involvements?

25X1

[redacted]

Not to my knowledge, sir. As I recall there was no other highly classified information at that time. Granted, all of it was classified and we regarded it as such. The two things that I was primarily interested in were the altitude capability of the aircraft and the range. We felt that if we could protect these then we might have a future to continue to work.

25X1

MR. HOUSTON: Another subject I would like to bring up is that [redacted] has read this report from Mr. Johnson. I asked him to read it since he is knowledgeable of the plane and its technical aspects. I wonder if the Board would like any description of this message.

JUDGE PRETTYMAN: Speaking just for myself, I don't know that any elucidation of the whole thing would, but the definitions of some of the terms in here would be helpful. Some of the questions I might ask him would be pretty elementary because I know nothing about it.

25X1

MR. HOUSTON: [redacted] you have read this, and speaking maybe from the picture up there [redacted] pointing to a picture of the U-2 [redacted] could you describe your understanding of what Mr. Johnson thought happened?

25X1

[redacted]

Down-bending of the wings from a portion outboard

[redacted]

25X1

TOP SECRET
[redacted]

25X1

25X1

[REDACTED]
TOP SECRET

25X1

2/22/62 [REDACTED]

of the fuselage of the aircraft would mean toward the ground as the airplane is flying. Normal bending of the wings flexing from the fuselage is in an upward direction, toward the sky -- toward the blue as you see here [indicating on the photograph of the U-2].

JUDGE PRETTYMAN: I have to ask some question that are pretty amateurish and probably don't make any sense but I do want to understand what that fellow was saying. Do those wings bend in normal operation?

25X1

[REDACTED] Yes they do. They are not rigid as one might say "the stick is rigid". They are built hollow and these wings flex. This is normal. We design aircraft like this for the simple reason we like to carry fuel out in these cells that we have installed in a hollow wing. Due to the fact that something that is hollow does not have rigidity then we expect it to flex. This in turn takes up some of the positive G-loading on the fuselage and the aircraft itself. You weigh, sir, 1-G sitting where you are and I weigh 1-G standing where I am. With centrifical force which can either make you weigh twice as much, which we call 2-G; three times as much which we call 3-G and so on. Negative G means that you don't weigh but half as much with half a G or that you weigh zero within minus 1-G. An aircraft in flight weighs 1-G normally in straight and level flight. As you would swing a bucket of water around your head and the water remains in an open bucket, you have to create more than one G for the water to stay in the bucket as it is on the top of its arc. As it comes around it weighs more than one G because of centrifical force.

JUDGE PRETTYMAN: Now I understand that. Now come back to

[REDACTED]
25X1

TOP SECRET
[REDACTED]

25X1

[redacted]
TOP SECRET

25X1

25X1

2/22/62, [redacted]

the down-bending then of these wings is a normal incident to flight.

25X1

[redacted] Yes, sir, it is. Up-bending is a normal incident of flight and the wings will flex. Now don-bending in a straight and level flight is not normal for this particular airplane or any airplane.

JUDGE PRETTYMAN: Now we have gotten this far. The down-bending is not normal incident to flight.

25X1

[redacted] No, sir.

JUDGE PRETTYMAN: Now what would cause down-bending?

25X1

[redacted] There are several phenomona that might cause down-bending. Vertical currents of air as the aircraft is traveling through one sea of air and moves into another sea of air that might be moving in an opposite direction, the aircraft would have a tendency to go in the direction of this other moving sea of air. As you may or may not realize there are air currents that move in opposite directions or at different speeds to one another very much like the Gulf Stream moving in the Atlantic Ocean.

JUDGE PRETTYMAN: A vertical current of air would cause the wings to down-bend.

25X1

[redacted] Slightly, sir, very slightly. In a heavy turbulence of air these wings might bend more.

JUDGE PRETTYMAN: Are the wings built straight through the plane, or are the wings attached on to the fuselage?

25X1

[redacted] The wings are tacked on to the fuselage.

JUDGE PRETTYMAN: Then when they bend they bend from the contact

[redacted]

25X1

TOP SECRET

[redacted]

25X1

[redacted]
TOP SECRET

25X1

25X1

2/22/62 [redacted]

point of the fuselage.

25X1

[redacted] Yes, sir.

JUDGE PRETTYMAN: Now I suppose too much down-bend - I suppose too much up-bend too -- but too much down-bend and those wings would tear off.

25X1

[redacted] Yes, sir, but not necessarily at the point at which

they were tacked on to the fuselage. There might be a portion very close to the fuselage that might be weaker than the actual attaching point.

JUDGE PRETTYMAN: I suppose in any airplane the wings might possibly down-bend.

25X1

[redacted] This is true.

JUDGE PRETTYMAN: Is this U-2 more subject to a down-bending of the wings than other planes in this sort of use?

25X1

[redacted] Yes, sir, quite a lot. As a matter of fact for

our normal reconnaissance work we have always used a modified fighter type aircraft which is stressed somewhere in the neighborhood of seven positive G's allowable that the pilot may actually put on the airplane and approximately a minus four G's.

JUDGE PRETTYMAN: You say he might put on the airplane. How does he do this?

25X1

[redacted] Turning, pulling up, pushing over. He can do

this allowable and still not have the airplane come apart.

Well, sir, this happens to be a very unique airplane in this portion and it is limited to a positive three G-s allowable. During my experience with the airplane I treated the airplane like I would a feather.

[redacted]

25X1

TOP SECRET

[redacted]

25X1

[REDACTED]
TOP SECRET

25X1

25X1

2/22/62 [REDACTED]

I was very careful with it and I highly respected it. Although it does have those characteristics it might come apart with very little positive G and even less negative G.

MR. HOUSTON: You mentioned one way of doing this was running into a sudden down current.

25X1

[REDACTED] Yes, sir.

MR. HOUSTON: Also, of course, any force exerted from below on the fuselage there would be the resistance to the wings causing down-bend.

25X1

[REDACTED] This is true, such as in a landing. This airplane uses two landing gears and lands just like a bicycle rolls on the ground. Once flying speed is lost a wing will drop and touch the skids on either side of the wings themselves. If the airplane happened to be dropped -- in other words, flown to a complete stall at which the airplane is no longer flying fairly high above the ground and then hit on these two skids the wings might break or the gear would come through the fuselage.

JUDGE PRETTYMAN: How about an air pocket?

25X1

[REDACTED] Sir, there are no air pockets. This is what I tried to explain to you as a virtical current and that is what you would normally associate with an air pocket.

Another thing that might tear an airplane apart, and with this down-bending peculiarity to this type of aircraft and the delicate balance, is the tail of the aircraft which is comprised of a horizontal stabilizer on either side of the fuselage and the vertical stabilizer.

[REDACTED] 25X1

TOP SECRET

[REDACTED] 25X1

25X1

[redacted]
TOP SECRET

25X1

2/22/62 [redacted]

JUDGE PRETTYMAN: Now that horizontal stabilizer is what

Mr. Johnson calls a horizontal tail.

25X1

[redacted] Yes, sir, that is correct.

JUDGE PRETTYMAN: Now is that one piece that goes all through

the plane, or is there a right and a left?

25X1

[redacted] There is a right and a left one.

JUDGE PRETTYMAN: Say the right horizontal tail was torn off.

What would cause that to be torn off?

25X1

[redacted] An increase in air speed, turbulence, exceeding the design limits of the aircraft. On this particular aircraft we know that this portion of the aircraft will fail first [indicating the horizontal stabilizers in the photograph of the U-2], or it will bend and once this has been altered it no longer works mechanically correct.

MR. HOUSTON: Other things that might do it would be some sort of internal failure or explosion or an outside force other than turbulence.

25X1

[redacted] Yes, this is quite true. If this does fail

and the tail does come off -- I say the tail -- either the right or left tail -- the pilot no longer can maintain control of the aircraft.

MR. HOUSTON: Then what does the aircraft do?

25X1

[redacted] The aircraft characteristically will pitch forward and with the stress, this down-bending of the wings, and from that point on I really don't know what the airplane is really liable to do.

MR. HOUSTON: When it noses over quite rapidly it is just the opposite of centrifical position when you pull up.

[redacted]

25X1

TOP SECRET

[redacted]

25X1

25X1

[REDACTED]
TOP SECRET

25X1

2/22/62, [REDACTED]

JUDGE PRETTYMAN: Now the use of course of the horizontal tail is to permit the pilot to control the plane up or down.

25X1

[REDACTED] Yes, sir.

JUDGE PRETTYMAN: In other words, he pulls something or other and this changes.

25X1

[REDACTED] Yes, sir.

JUDGE PRETTYMAN: Now if the horizontal fin come off and he immediately noticed, or say the plane then started down as it would do, and he pulled on the stick what would happen?

25X1

[REDACTED] Nothing, sir. He has no further control of the aircraft -- no response whatsoever.

MR. HOUSTON: He could still control.

25X1

[REDACTED] I'm not certain that he could do that. Once he has lost the tail he can no longer maintain control of the aircraft either in a yawing motion left and right, or a pitching motion up or down, or in a longitudinal motion, left and right. To turn you must maintain longitudinal flight, meaning level, which is the direction the airplane is going. To be able to control the airplane he still has to maintain control of this. If he loses control of either direction there is not much telling what it is going to do. It is an act of God.

JUDGE PRETTYMAN: Now, Mr. Johnson says in none of the pictures was there evidence to show that the horizontal tail was recovered.

25X1

[REDACTED] That is true.

[REDACTED]

25X1

TOP SECRET

25X1

25X1

[redacted]
TOP SECRET

25X1

2/22/62 [redacted]

JUDGE PRETTYMAN: What does it mean?

25X1

[redacted] It means we have seen no pictures of the

horizontal tail.

JUDGE PRETTYMAN: He means that there is nothing to show that

the horizontal tail was recovered. He indicates this horizontal tail

came off.

25X1

[redacted] Yes, sir.

JUDGE PRETTYMAN: When he says "horizontal tail" does he

mean right and left?

CAPT. SHINN: Yes, sir.

JUDGE PRETTYMAN: Here's what he said, "In none of the pictures

was there evidence to show that the horizontal tail was recovered." That

means either one of them?

25X1

[redacted] Yes.

JUDGE PRETTYMAN: Now then he says, "Shows clearly that the left

horizontal surface broke off in up-bending."

25X1

[redacted] Yes, sir.

JUDGE PRETTYMAN: What does he mean by that?

25X1

[redacted] As you would bend and break a piece of metal of

high tensile strength, it would clearly reveal and hold its jagged edges

in the same direction in which it broke. Do you agree?

JUDGE PRETTYMAN: I don't know a thing in the world about it.

You are teaching me. Don't ask me. What he means is that the photograph shows

a jagged edge on the rear part of the fuselage, right

25X1

[redacted] Yes, sir.

[redacted]

25X1

TOP SECRET

25X1

[redacted]
TOP SECRET

25X1

25X1

2/22/62, [redacted]

JUDGE PRETTYMAN: --where the left horizontal tail would have been.

25X1

[redacted] Yes, sir, that is the best way --

JUDGE PRETTYMAN: That photograph shows a jagged edge.

25X1

[redacted] It must.

JUDGE PRETTYMAN: And by looking at that an expert can tell by the shape of that edge that the tail came off due to an up-bend.

25X1

[redacted] Yes, sir.

JUDGE PRETTYMAN: Now he said, "It also appears from the position of the aft end of the fuselage in a corner that the right section of the stabilizer is also missing." Now what does all that mean? Translate that into English.

25X1

[redacted] All right, sir.

JUDGE PRETTYMAN: "The position of the aft end of the fuselage" -- I'm all right on that. That means the hind end.

25X1

[redacted] We normally say anywhere aft of the wing is normally considered to be the aft section of the aircraft. Now he says that in looking at the aft section --

JUDGE PRETTYMAN: -- aft section in the corner.

25X1

[redacted] I think he possibly means down in the corner of the photograph.

MR. HOUSTON: We haven't got this in evidence, but if you would like to see it we have a picture that could explain this. We could probably put this photograph in the record and have it available for you to look at.

JUDGE PRETTYMAN: Mark it for identification now and we will

[redacted]

25X1

TOP SECRET

[redacted]

25X1

25X1

[redacted]
TOP SECRET

25X1

2/22/62, [redacted]

identify it later.

. . . . A black and white photograph was then marked

Exhibit 18 and made a part of the record

MR. HOUSTON: The picture was taken in Moscow. You see, this is the tail end of the plane with the vertical stabilizer there, and the whole plane is pushed in the corner of the room, and he is referring to its position in the photograph.

JUDGE PRETTYMAN: Now he said something or other in this photograph that he is looking at indicates that the right section of the stabilizer is missing.

25X1

[redacted] Yes, sir.

JUDGE PRETTYMAN: He goes on and says, "I have one other photograph in which it appears that the right stabilizer --" That is the same right horizontal fin?

25X1

[redacted] Yes, sir.

JUDGE PRETTYMAN: "-- is very severely damaged." I mean one minute it's here and the next minute it isn't here.

25X1

[redacted] Yes. Could he possibly be referring to two

different photographs, in this case, revealing one portion of the right horizontal stabilizer in one and in the previous photograph, indicating that it wasn't there at all?

[redacted]

25X1

TOP SECRET

[redacted]

25X1

25X1

[redacted]
TOP SECRET

25X1

2/22/62, [redacted]

JUDGE PRETTYMAN: I can't make much sense out of that. I don't know why he would look at one photograph and say, "This right stabilizer isn't in this photograph and that shows it is missing; however, if we look at another photograph, it is very severely damaged."

MR. BROSS: He says, "The right section of the stabilizer" and down here he says, "The stabilizer is severely damaged." Is the stabilizer divided into sections?

JUDGE PRETTYMAN: This confused me. When he talks about the right stabilizer, is he talking about the right horizontal fin?

25X1

[redacted] Yes, sir.

JUDGE PRETTYMAN: And when he talks about the right section of the stabilizer what does he mean by that?

25X1

[redacted] To the best of my knowledge he must be talking about the outboard section -- the outer portion of it in the direction away from the fuselage.

JUDGE PRETTYMAN: It doesn't make any sense for a guy to look at one photograph and say, "There is nothing in this photograph," and then turn the page and say, "Here it is."

GENERAL BULL: Don't they use the term "stabilizer" in this last instance to cover both right and left?

JUDGE PRETTYMAN: He talks about the right stabilizer.

GENERAL BULL: Sometimes, but I think ⁱⁿ this last one he is speaking of the stabilizer in general.

[redacted]

25X1

TOP SECRET

[redacted]

25X1

[redacted]
TOP SECRET

25X1

25X1

2/22/80 [redacted]

JUDGE PRETTYMAN: Now, what is a [redacted]

25X1

25X1

[redacted] Sir, I don't know.

25X1

[redacted] All of the personnel at the Base knew it as a radar jammer.

25X1

[redacted] Under those circumstances, and under this name this particular device was used to jam radar and that is about all I know about it, sir. It was something that they gave us in the airplane to use. We were to turn it on and use it. It was called for in this particular mission. Now it jammed radar, what it's function was other than that I don't know, sir.

25X1

[redacted] can you explain the [redacted]

25X1

25X1

[redacted] It's a black box of an electronic nature which was installed in the tail of the U-2. It's primary purpose was to break a radar lock that might be effected by a fighter interceptor of hostile nature. As soon as it locked on to the U-2 this box would respond with a jamming effect which would cause the fighter radar to go out of commission and break the lock, whereby the positioning of the fighter aircraft would be lost. They would have to reinstitute new procedures to reestablish the lock on the U-2.

JUDGE PRETTYMAN: Do you know the possibility that this [redacted]

25X1

5X1

[redacted] would guide an oncoming fighter plane or a rocket missile?

25X1

[redacted] Only from what I read in Mr. Johnson's report did I know anything about this.

[redacted]

25X1

TOP SECRET
[redacted]

25X1

25X1

[redacted]
TOP SECRET

25X1

2/22/62, [redacted]

JUDGE PRETTYMAN: You wouldn't have any opinion of your own

5X1

whether this [redacted] was turned on.

25X1

[redacted] It was on I believe Mr. Powers said. It would

naturally be on during his flight -- turned on -- if it was called for in the operations orders and it was in this case.

JUDGE PRETTYMAN: It was turned on. Now you don't know enough

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about the [redacted] to know if there was a possibility that it might act as a guide to a missile or oncoming fighter plane.

25X1

[redacted] No, sir, I don't know that much about it, sir.

JUDGE PRETTYMAN: I think I understand this one. I don't know

why I should. "While the damage to the stabilizer could have taken place conceivably on landing, it does not seem very likely, because of the relatively undamaged status of the vertical tail itself."

Now the vertical tail is the stand-up piece that stands straight up above the rear end of the fuselage as it appears in the picture.

25X1

[redacted] Yes, and as we go back to the photograph here

[indicating Exhibit 18] you may see for yourself the vertical undamaged portion of it.

JUDGE PRETTYMAN: Here we get back to this that confuses me

over again. In the next paragraph he says, "I repeat that it is interesting that nowhere in the exhibit -- " that means the Russian exhibit " -- nowhere in the exhibit was there any sign of the horizontal tail."

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[redacted] Again, this area of the horizontal tail -- I don't

believe that there was ever a picture of the complete tail and I don't believe that they could find it.

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JUDGE PRETTYMAN: Why he just got through saying he is looking at a picture in which it appears that the right stabilizer is very severely damaged.

25X1

[redacted] What might have been left of it, sir.

JUDGE PRETTYMAN: The right stabilizer is damaged and over here he says, "It is interesting that nowhere in the exhibit was there any sign of a horizontal tail."

He didn't say "stabilizer" but from what I understand from you it is the same thing.

JUDGE PRETTYMAN: Now he says, "This photograph indicates that the fuselage probably hit on the right lower side in a manner that would not damage the lefthand stabilizer as badly as the picture indicates."

25X1

[redacted] That is true.

JUDGE PRETTYMAN: In here he is saying that a picture here indicates that the left hand stabilizer was badly damaged. He just got through saying there is no sign anywhere of the horizontal tail.

MR. HOUSTON: Maybe that is what he means by "damaged", Judge.

25X1

[redacted] Sir, might I add something here? Had the tail been on the aircraft at the time of impact I believe it would have remained crumbled and damaged but he says the horizontal stabilizer there wasn't even on the aft section of the fuselage.

JUDGE PRETTYMAN: Right here he says, "The fuselage probably hit on the right lower side in a manner that would not damage the lefthand

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stabilizer as badly as the picture indicates."

MR. HOUSTON: And the picture indicates it is damaged to the extent its gone.

GENERAL BULL: Yes, it was never found.

JUDGE PRETTYMAN: You mean to say that if the stabilizer isn't in the picture at all he would say that the picture indicates it is badly damaged?

MR. HOUSTON: He is doing a rather extreme thing. It's like saying a man who has his arm amputated has his hand damaged.

JUDGE PRETTYMAN: It may be, but I don't understand it. Here this clearly says that a picture shows that the left hand stabilizer was badly damaged and now right back here in the beginning he says, "In none of the pictures was there evidence to show that the horizontal tail was recovered." If it wasn't recovered I don't know how you could assert it was badly damaged. It doesn't add up in my mind. I think we have put enough time on this

Thank you very much, [redacted]

25X1

MR. BROSS: I would like to carry this one step further and develop the down-bending of the wings of the aircraft and how this occurs and why. I wanted to get the picture of what occurred after -- the hypothesis - assuming that the stabilizer was broken off. What happens next?

[redacted] Once the stabilizer is broken off and upsets the balance that Mr. Johnson speaks of in his wire, of course the pilot has no further control of the aircraft, conceivably. Possibly he has a little.

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25X1 2/22/62, [REDACTED]

As I said earlier he will eventually lose complete control. If the aircraft then loses its balance by virtue of most of the tail gone, its going to come down, and possibly even so far as to rotate the fuselage around the axis of the wings creating negative G's breaking the wings off through down-bending and virtually rendering the pilot incapable of doing anything.

MR. BROSS: What comes down?

25X1 [REDACTED] The nose will come down and the plane comes down

MR. BROSS: The rear part of the plane comes up and the nose goes down and it then completes a circle.

25X1 [REDACTED] This is possible. We don't know exactly what it is going to do in every case. We can't predict this completely one hundred percent without error.

COL. GEARY: What normally happens is the tail breaks off, it pitches up and about this time it begins to angle, the wings will break off, the man goes on his back and loses all lift and he starts to fall in an inverted spin. This is characteristic of this airplane.

GENERAL BULL: Is there a characteristic of this plane as to the speed of fall thereafter? In starting the spin it wouldn't plummet to the earth, would it?

25X1 [REDACTED] I couldn't say, sir. It would depend on how much was left on the fuselage, how much of the fuselage was there, if the engine remained in the aircraft in the fuselage. Depending on actually how much

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and where it broke. It would of course reach terminal velocity as fast as it is going to fall sooner or later. We don't know how far or how fast it is going to be.

MR. HOUSTON: ^{If} The plane goes into a spin it would come down slower than one that dives.

25X1

[REDACTED] That is true.

MR. HOUSTON: And without the engine it might be even slower.

25X1

[REDACTED] It might be. It might have a falling leaf effect floating down or spinning. We actually don't know and can't predict what everything is going to do at the time when this thing breaks up. Once the aircraft breaks up I would say it's pretty well time to leave, if possible.

JUDGE PRETTYMAN: I think I will ask you a hypothetical question and ask you to express your opinion in answer to the question. In your opinion as an experienced air officer and experienced with this particular plane - I'm not sure that I can recite these facts accurately, but I will try and make them clear enough so you will understand -- suppose a man is flying a U-2 and he is on flight and he is flying about 70,000 feet and his flight course calls for a turn. He makes that turn. As he gets straightened out on his flight line his right wing dips just a little bit and he corrects that easily and then at that point he feels something which he describes as a mild kind of push -- no explosion, no fire no smoke, but he feels a kind of a push and then his nose starts to dip and he pulls on the stick or whatever it is he pulls on, and there is no response. Do you have an opinion as an air officer as to what that could have been -- as to what that push or whatever it was that caused whatever happened, loss of the horizontal fin and what

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have you. If you don't have an opinion I don't want you to just guess, but if you have one what would it be? What would your opinion be?

25X1

[redacted] Normally, sir, the airplane is very stable -- well under control in the fact that it does not go pushing left or right or forward. Had there been an explosion in the engine I'm not certain that the man in the cockpit would know it unless he felt severe vibration throughout the airplane or had indications on his instrument --

JUDGE PRETTYMAN: Let's assume he had none. He had no sense of vibrations, no extreme turbulence, but this push as though something had pushed him suddenly and then when his nose started to drop he tried to pull it in and it was out of control.

25X1

[redacted] I might expect an explosion if I were on a combat mission, sir.

JUDGE PRETTYMAN: Thank you, [redacted]

25X1

MR. HOUSTON: In a slightly different vein I have one more question. If, at 70,000 feet there is a flame-out and in the first place, to restart you have to reduce altitude by how much?

25X1

[redacted] In this aircraft with this engine we were normally restarting at 45,000 feet. This meant a descent of 25,000 feet.

MR. HOUSTON: About how long would that take?

25X1

[redacted] Depending upon the situation whether you wanted to glide and in other words trade altitude for distance or whether you wanted to come down as fast as you could and get a light and go back up, and I speak of a light as starting the engine again. This could vary from initial rate of

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descent of about 1,500 feet rate of descent and gradually then increasing up to 3,000 feet per minute.

MR. HOUSTON: Is that about the maximum?

25X1

[redacted]

Yes, otherwise you would exceed the design

limits of the airplane and this is under certain configurations -- with speed brakes out and with the gear extended and with the engine flamed out no thrust comes from the engine. A characteristic of this particular aircraft with the engine in the idle position we get quite a lot of thrust from it at altitude. This might make the descent very, very slow. It takes almost an hour to descend normally from 70,000 feet to sea level.

MR. HOUSTON: But if you wanted to come down fast for a light it would get down to 40,000 feet in what -- 10 minutes?

25X1

[redacted]

I would say in excess of 10 minutes, sir.

MR. HOUSTON: And then suppose for some reason or another you failed to get a light at 45 or 40,000 and from then on you wanted to get distance so you put it into your best gliding position.

25X1

[redacted]

Yes.

MR. HOUSTON: How long would you be up then?

25X1

[redacted]

I believe from the operating procedure of the airplane it was that you could get about 240 miles from maximum altitude to the ground and I say this, the ground being sea level, under most ideal conditions -- 240. This is under no wind conditions and it might take as long as an hour and fifteen minutes to do this.

[redacted]

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JUDGE PRETTYMAN: Something else came to mind. That horizontal fin - now I want to call your attention to that. You said that this airplane's wings are so constructed that they are subject to this down-bending and could break off and throw it into a spin. This particular plane doesn't have very much margin insofar as the wings are concerned in respect to catastrophe. Now how about those horizontal fins. Is that subject to down-bending under some conditions and if so what, and going still further with the question, would it be at all possible that if you were to turn - your flight calls for a turn and you went into the turn then you rolled out of the turn back on to your flight path could that fin tear off?

25X1

[redacted] If through exceeding the limitations of the aircraft - we know that the horizontal fin is going to be the first to go.

JUDGE PRETTYMAN: Say that over.

25X1

[redacted] We know through previous accidents that the horizontal fin is the first component of the aircraft to break up.

JUDGE PRETTYMAN: Is the first to break up if what?

25X1

[redacted] If exceeding the structural limits of the aircraft -- the design limits of the aircraft.

JUDGE PRETTYMAN: Which might happen in the course of making a turn and rolling out back on your pattern?

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[redacted] I don't think so -- not normally, sir.

25X1

[redacted] But if there were some other conditions present -- two different currents of air --

MR. HOUSTON: As for instance clear turbulence.

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[redacted] Yes, we have encountered extremely heavy clear air turbulence at this altitude. I hesitate to call it heavy because I believe if we ran into extremely heavy turbulence I believe the aircraft would break up.

JUDGE PRETTYMAN: I wonder whether in this particular instance the right horizontal fin torn off could have caused the sensation of a bump -- kind of thrown forward -- and when he sought his stick he didn't have any --

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[redacted] I don't think this would be the sensation, sir.

JUDGE PRETTYMAN: Are there any further questions? Thank you

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