

Central Intelligence Agency



Washington, D.C. 20505

22 November 2021

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Reference: EOM-2019-00293

Dear Requester:

This letter is a final response to your 24 January 2019 Mandatory Declassification Review request referenced above and submitted under Executive Order 13526 (hereafter, "the Order") for:

- (DELETED) UFO PHENOMENA (DELETED) Document Number (FOIA) /ESDN (CREST): 0000015274

We completed a thorough search for records responsive to your request and located the enclosed document which we previously released in segregable form with deletions as marked on the basis of Sections 3.3(b)(1) and 6.2(d) of the Order.

As the CIA Information and Privacy Coordinator, I am the CIA official responsible for this determination. You have the right to appeal this response to the Agency Release Panel within 90 days from the date of this letter. Please explain the basis for your appeal. You may address appellate correspondence to:

Information and Privacy Coordinator  
Central Intelligence Agency  
Washington, DC 20505

If you have any questions regarding this response, you may seek assistance by calling this office at 703-613-1287.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark Lilly".

Mark Lilly  
Information and Privacy Coordinator

Enclosure

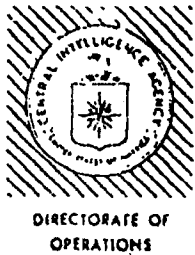
This document is made available through the declassification efforts  
and research of John Greenewald, Jr., creator of:

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Domestic Collection Division  
Foreign Intelligence Information Report

COUNTRY	USSR	DCD REPORT NO.	OO-B-321/33474-76
SUBJECT	Combating Fatigue in Crewmembers/ Aeroflot Work Cycles/Use of Drugs/ Biological Effects of Aircraft Noise/ Radiation Research/UFO Phenomena/ Prototype Pilot Biological Psychomotor Testing Equipment/Celestial Navigation/ Night Vision Testing	DATE DISTR.	10 November 1976
		NO. PAGES	4
		REFERENCES	[Redacted] 6.2(d)
			[Redacted] 6.2(d)
DATE OF INFO.	[Redacted]		3.3(b)(1)
<b>THIS IS UNEVALUATED INFORMATION</b>			
SOURCE	[Redacted]		6.2(d)
			3.3(b)(1)
			6.2(d)

SUMMARY: Aeroflot officials are actively involved in aerospace medical research. They are concerned with the medical aspects of physical conditioning which impinge upon crewmember performance and have perfected several devices which test pilot biological functioning and motor response ability. Dr Inal Georgiyevich Akoyev, a noted radiation biologist explained cosmic ray particles (phosphenes) which are causing Aeroflot pilots to "see" flashes of light during night flying. Dr [fnu] Akutin, cyberneticist at the Civil Aviation Institute of Leningrad showed [Redacted] prototype pilot biological psychomotor testing equipment which measures blood pressure, pulse rate, cardiovascular function and motor ability. The equipment is automatic and testing is completed in approximately three minutes.

6.2(d)  
3.3(b)(1)  
6.2(d)

1. The Soviets deal with crewmember fatigue in several ways. First, they emphasize and promote physical conditioning. If a crewmember is physically fit, he will be less prone to fatigue and will recover sooner after tiring flights. Aeroflot provides exercise facilities at all major airports, and these facilities are supervised by a well known athlete. The second thing they do is to thoroughly test each crewmember prior to flight to insure his physical fitness and mental alertness. At the present time, these tests are conducted by a medical team headed by a doctor, usually a woman. A crewmember is not allowed to fly if he fails the examination. These tests are now being automated and will take only 1-3 minutes when the prototype equipment becomes operational. Finally, there is a third approach Aeroflot is using--a prophylactorium. Each major airport has one, a 3 to 4 story building set off from the main airport buildings, but easily accessible by foot. These facilities are well landscaped and are designed to provide total rest and relaxation for transient crewmembers. They have a large kitchen

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which caters to special orders, a recreation area on each floor with ping pong, billiards and card tables, and an individual room for each crew-member. Each floor is supervised by a lady who insures that the crewmembers are not disturbed if they wish to rest or sleep in their rooms. The crewmembers may sleep when they want (the rooms can be "blacked out" with heavy curtains), eat when they want, and enjoy complete peace and quiet. They neither drink liquor nor engage in "raucous" activities. These facilities are free for crewmembers.

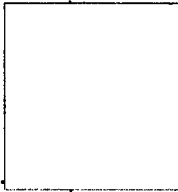
- 2. The Soviets also minimize crewmember fatigue by work cycle management. By and large, they are horrified by work cycles in US civil aviation. Their crewmembers normally have 24 hours of post-flight crew rest, although there are a few instances where a crew can only rest 10 or 12 hours before resuming flight duty, eg, in a foreign city. They are very sensitive to fatigue and have an excess of manpower to counter this problem. The crews also use the prophylactorium for pre-departure crew rest.
- 3. The Soviets do not approve of the use of drugs to combat fatigue. They discourage their use, and numerous articles on this subject are published in the magazine "Civil Aviation." Crewmembers are enjoined against self-medication and instructed to see the doctor for medical problems.
- 4. Aeroflot officials are very worried about aircraft noise. Their aircraft engines generate noise levels comparable to US engines 15 years ago. All three airports in Moscow, Kiev and Leningrad were extremely noisy.

[redacted] Comment: When an airplane taxis up to the ramp, no one can talk normally; they scream at each other to be heard. The compressor whine in the front of the engine is deafening, and the stream of hot exhaust air rumbles. They have not quieted their engines as we have. I also did not observe any ground servicing personnel wearing ear protection, although they could have been wearing small ear plugs. The noise level was so high that ground personnel did not approach the aircraft until after it parked and shutdown.)

3.3(b)(1)  
6.2(d)  
6.2(d)

- 5. Soviet biologists are doing extensive radiation studies. They have a device which their supersonic pilots wear to keep track of their total radiation exposure. Aeroflot pilots are now seeing little flashes of light in their retinas such as the US astronauts experienced, though they do not see them as frequently. [redacted] Comment: The phenomenon is a subjective sensation of a flash of light which you get when you dark adapt under dark conditions. Otherwise, the normal light attenuates it. It is a distinctive flash of light in the retina due to a heavy cosmic ray particle (phosphene) going through the cells of the retina and putting off enough radiation to excite these cells. There are two theories: one, that it goes through and does not damage the cells, and the other one, accepted by the Soviets, that it kills a few cells each time it goes through. Dr Inal Georgiyevich Akoyev, one of the Soviet Union's foremost radiation biologists, made the presentation. He said that their pilots are now seeing the flashes of light, particularly on dark adapted arctic-type flight. He explained that the nucleus of an atom is charged because it is not neutralized by electrons. The ray comes through the retina and other cells, but the retina is particularly sensitive, and the threshold of discharge of the retinal cells is exceeded; the retinal cells damaged by this energy put off a discharge which is carried through the optic nerve to the brain. The brain does not know what is going on; all it knows is that previously when that cell went off, it was interpreted as a certain amount of light, but the brain sees an exceptional load, a flash. I think this is of significance, especially since they are recording them in their pilots.]

3.3(b)(1)  
6.2(d)



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6. Dr Akoyev asked for [redacted] personal opinion of the UFO phenomenon. He was told that 99 percent of these occurrences were traceable to either natural or man-made phenomena such as celestial movement, aircraft or artificial satellites, and that the other one percent cannot be explained--possibly an hallucination. Akoyev then asked, "Do you think it is possible...could there be something coming from outer space?"

3.3(b)(1)  
6.2(d)

7. Dr [redacted] Akutin, a cyberneticist at the Civil Aviation Institute of Leningrad, has developed several prototypes of pilot testing equipment. The equipment is planned to replace most of the current duties of medical personnel who examine pilots prior to flight. The automatic devices will be installed in all airport flight operations facilities. Akutin and his associates demonstrated [redacted] a set of instruments which automatically measure a pilot's blood pressure and pulse rate, record his cardiovascular functioning with an electrocardiogram, and test his motor reaction process.

3.3(b)(1)  
6.2(d)

8. The device is activated by inserting a small metallic plate into the testing machine. The plate, one of which is carried by each crewmember, contains a biological baseline on that particular individual. His normal blood pressure, pulse rate, electrocardiogram, and motor ability are coded into the metal plate. This plate is updated annually, or more often if required. After the plate is inserted into the machine, the pilot places the middle finger of each hand into two little holes and rests his wrists on two small metal plates on a table. Small, automatic pneumatic cups close around the fingers and inflate. The machine then measures the blood pressure and pulse rate by comparing the two fingers, computing a mean, and then comparing the result with the encoded information on the pilot's plate. The systolic and diastolic blood pressure and pulse rate are then displayed on the face of the machine in an electronic digital form. At the same time the machine automatically administers an electrocardiogram "across the heart" and displays this on a cathode-ray tube. If any of these values are outside the normal standard for that particular individual, a light illuminates and further examination is required by a medical doctor. If no light illuminates, the pilot is passed.

6.2(d)

9. The pilot then faces a panel of red and green colored lights. On the panel are green and red colored buttons. The lights begin to illuminate in a random fashion, with the pilot being required to press the corresponding color button immediately to extinguish the colored light. This test continues for approximately 20-30 seconds, during which the lights flash in a random sequence. At the end of the testing period, the machine scores the pilot's performance and digitally displays his score in the number of correct and wrong responses. If he scores as high or higher than his standard, he is passed; if his score is lower, a light illuminates and further examination is required by a medical doctor. There are three separate programs which are randomly selected, making it impossible to memorize the sequence of the lights.

10. Finally, the pilot is seated before a miniature cockpit with a control stick and an attitude indicator. The control stick must be moved to keep the attitude indicator (artificial horizon) straight and level. The indicator pitches up and down and from side to side and very closely duplicates actual instrument flying conditions. The control stick also closely approximated necessary pilot skills. At the end of this test, the score is again displayed and, depending upon his standard, a pilot passes or fails. The entire sequence of testing, from taking blood pressure to the control stick evaluation, takes approximately three minutes. If a pilot passes all phases, his personal profile plate along with a certificate card is returned to him. He must present the certificate card to the flight dispatcher before he is allowed to board the aircraft.

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11. The Soviets administered the testing procedure [redacted] using a 3.3(b)(1)  
 "standard" biological profile for his age group [redacted] who is also 6.2(d)  
 a pilot. [redacted] was impressed by the pre-flight "biological/psychomotor" testing system  
 observing that the red and green light test was very difficult and required great  
 concentration. He stated that he felt that a pilot who was excessively tired or  
 "hung over" would fail this test. [redacted] also found it most 3.3(b)(1)  
 difficult to "beat" the control stick procedure and observed that this test 6.2(d)  
 would probably also identify pilots whose motor ability was degraded.  
 An associate who has not flown with consistency in several years failed  
 several phases of the pre-flight test.
12. The Soviets emphasize celestial navigation and night flying operations  
 because of the lack of navigational radio aids, and the vast un-  
 inhabited regions of Siberia. Every Aeroflot flight carries navigators  
 who are highly proficient in celestial navigation. In order to test a  
 crewmember's night vision, Akutin and his associates have developed a  
 device which is similar to an old stereoscopic  
 viewer. This device is placed over the eyes, and approximately 15 seconds  
 is given to the subject to "dark adapt." Light is then slowly increased  
 on a small chart containing broken rings. The crewmember being tested  
 must be able to start distinguishing the break on the rings which become  
 smaller and smaller as the light increases. If he is able to distinguish  
 within the prescribed period, he passes the test. If not, he fails and  
 is not allowed to fly at night until his night vision improves.

-end-

6.2(d)