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PROJECT TWINKLE

FINAL REPORT

Director Aerospace Studies Inst ATTN: Archives Branch Maxwell AFB, Alabama	RETURN TO:	KJH3.6012 27 Nov. 1951
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L. ELTERMAN

27 November 1951

APPROVED:

1. TWINKLE, Project

P. H. WYCKOFF
Chief, Atmospheric Physics Laboratory

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ABSTRACT

Early in 1950 the Geophysics Research Division received a directive to investigate peculiar light phenomena that had been observed in the skies of the southwestern United States. Project Twinkle was established to check into these phenomena and their explanation.

The gist of the findings is essentially negative. The period of observations covers a little over a year. Some unusual phenomena were observed during that period, most of them can be attributed to such man-made objects as airplanes, balloons, rockets, etc. Others can be attributed to natural phenomena such as flying birds, small clouds, and meteorites. There has been no indication that even the somewhat strange observations often called "Green Fireballs" are anything but natural phenomena.

Our recommendations are in essence that there is no use in sinking any more funds into this at the present time and that we will keep in connection with one of our meteor studies a sharp eye on anything unusual along this line.

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AIR MAIL

R-114-16S

11 Dec 1951

CRNTO

SUBJECT: Transmittal of Final Report of Project Twinkle

TO: Director of Research and Development
Headquarters, USAF
ATTN: AFDRI-RE, Colonel John Tucker
Washington 25, D. C.

1. Inclosed is a copy of the Final Report on Project Twinkle, forwarded at your request.

2. As there is interest in this matter outside of the Department of Defense, we have recommended to Hq., ABDC, that consideration be given to its declassification, particularly in view of the fact that nothing of a security nature has been discovered.

FOR THE COMMANDING GENERAL:

1 Incl
a/s

EPHRAIN RADNER
Chief, Operations Section
Plans and Operations Branch
Geophysics Research Division

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1. Background

In accordance with instructions contained in a classified letter from Chief of Staff, USAF to CG, AMC, subject "Light Phenomena", on 14 September 1949, Lt. Col. Frederic C.E. Oder of CRD attended a conference at Los Alamos, 14 October 1949 on the subject of "Green Fireballs" observed in the Northern New Mexico area. Since the phenomena had been observed only in this area and only since 1947, it had caused considerable concern among security agencies in the area. It was the conclusion of the scientists present at this meeting that the information available was not sufficiently quantitative. Instrumental observations - photographic, triangulation, and spectroscopic were considered essential.

Dr. L. La Paz of the Department of Meteoritics of Univ. of New Mexico was present at the Los Alamos meeting and subsequently was invited to submit proposals for studying this phenomena under GRD sponsorship. On 2 February 1950, Dr. La Paz advised that due to difficulties with academic arrangements, he was unable to undertake this study.

During February 1950, the frequent reports of unexplained aerial phenomena in the vicinity of Holloman Air Force Base and Vaughn, New Mexico prompted the Commanding Officer of Holloman Air Force Base to initiate a program to gather factual data.

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2. Contractual period - 1 April 1950 to 15 September 1950.

Some photographic activity occurred on 27 April and 24 May, but simultaneous sightings by both cameras were not made, so that no information was gained. On 30 August 1950, during a Bell aircraft missile launching, aerial phenomena were observed over Holloman Air Force Base by several individuals; however, neither Land-Air nor Project personnel were notified and, therefore, no results were acquired. On 31 August 1950, the phenomena were again observed after a V-2 launching. Although much film was expended, proper triangulation was not effected, so that again no information was acquired. On 11 September, arrangements were made by Holloman AFB for Major Gover, Commander 93rd Fighter Squadron at Kirtland AFB, to be on call so that aerial objects might be pursued. This would make possible more intimate visual observation and photography at close range. Major Gover was not authorized to shoot at the phenomena.

Generally, the results of the six-month contractual period may be described as negative. Although the photographic theodolites functioned continuously, the grating cameras functioned very little, since the military personnel assigned to operate them had been withdrawn due to the needs concerned with the Korean situation. The

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facilities for the electromagnetic frequency measurements that were to be provided by the Signal Corps Engineering Laboratories were not utilized due to the fact that the frequency of occurrence of these phenomena did not justify the \$50,000 a year transfer of funds to the Signal Corps which would be required to carry out such a monitoring facility. However, the phenomena activity over Holloman AFB 150 miles south of Vaughn, N. Mexico during the latter part of August 1950 was considered sufficiently significant so that the contract with Land-Air (Askania cameras only) was extended for six months ending 31 March 1951.

3. Contractual Period - 1 October 1950 to 31 March 1951

Because of the diminution of phenomena activity in the vicinity of Vaughn and the resumption of activity near HAFB, the Askania cameras again were overhauled and installed at HAFB. This installation was completed about 5 November 1950. On 16 October 1950, arrangements were made by Lt. Albert of HAFB that Northrup Aircraft pilots engaged in frequent flying of B-45 and QF-80 aircraft in the Holloman vicinity would report all observations of aerial phenomena.

During this period, occasional reports were received of individuals seeing strange aerial phenomena, but these reports were sketchy, inconclusive, and were considered to be of no scientific value. No sightings were made by the Askania cameras. Nothing whatsoever was reported by the Northrup pilots. Popular interest seemed abated, at least in the southwest. On 31 March 1951, due to the expiration of the contract, Land-Air ceased constant vigilance at the two Askania stations. In summary, the results during this period were negative.

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4. Post Contractual Inquiry

In view of the unproductive nature of the contract with Land-Air, it was decided to make further inquiry concerning recent aerial object developments in New Mexico. On 9 August 1951, the situation was discussed with Lt. Col. Cox of the 17th OSI District (Kirtland AFB). Until 15 March 1950 the District had been diligent in forwarding copies of their reports on aerial object phenomena. Since then, no reports have been received by the Geophysics Research Division. Colonel Cox advised that reports of strange aerial phenomena were still received by the 17th OSI office, at the rate of once or twice a month but little attention was being given to this matter. Most of the reports originated from personnel at Los Alamos. The OSI files were reviewed. (A summary covering recent reports is attached.) It was learned that representatives from LIFE and also from ARGOSY were interested in publishing articles on aerial object phenomena.

On 27 August 1951, developments concerning aerial phenomena were discussed at Holloman AFB. Lt. John Albert previously associated with the project had now been transferred from Holloman. Therefore, the project was discussed with Major Edward A. Doty who had assumed responsibility. Major Doty, who seemed to be thoroughly acquainted with the situation, advised that there have been very few reports of

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aerial phenomena in the vicinity of Holloman since September 1950. The populace around HAFB seem to have lost their sensitivity as observers. Even during the meteor shower of 11-12 August 1951, no alarming reports were received. However, on 14 March 1951, nine Bell personnel reported sighting between fourteen and twenty bodies "not unlike a flock of geese". On 9 July a "red glowing ball" was sighted by a sergeant stationed at the Corona Experimental Radar Site at Corona, New Mexico. (Copies of both reports are attached). More recently, a pilot reported some aerial objects which, after investigation, were identified as planets.

Mr. B. Guildenberg, who is an assistant to Major Doty and an active amateur astronomer, commented that he has been spending several hours at his telescope almost every night for the past few years and never once observed an unexplainable object; that on one occasion, an excited acquaintance was pacified when a "strange object" showed up as an eagle in the telescope; that Clyde Tombaugh, discoverer of the planet Pluto and now engaged in activities at White Sands, never observed an unexplainable aerial object despite his continuous and extensive observations of the sky; that Fred Whipple in his work photographing meteors at Las Cruces, never detected a strange aerial object with his Schmidt cameras; and that the A and M College at Las Cruces engages in astronomical observations but had never observed strange aerial phenomena.

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It was learned from Major Doty, that Col. Baynes, C. O. at HAFB, no longer felt there was any justification for the allocation of funds for maintaining systematic investigation. Rather, he provided that the project be maintained on a standby basis and without official Air Force status. This entails assignment of an officer (Major Doty) to collect incoming reports, make periodic review of the files "for patterns or persistent characteristics in the reports", maintain liaison with OSI, Provost Marshall's Office and any other agencies whose activities may serve to provide information concerning future aerial phenomena developments. Land-Air has agreed to report and if possible photograph any abnormal sightings made during their scheduled periods of operation (about eight hours each day). The weather station will function similarly. Also, all pilots have been briefed to report any unusual observations. If necessary, the project can be activated very quickly, even to the extent where funds will be made available, for the purchase of equipment.

Major Doty also arranged a conference with Mr. Warren Kott, who is in charge of Land-Air operations. Mr. Kott pointed out that a formal report covering the year's vigilance period had not been issued since the contract contained no such provision. Actually, a time correlation study should be made covering the film and verbal recordings at both Askania stations. This would assure that these records did not contain significant material. However, such a study is quite laborious, and would require about thirty man days to complete. Again, no provisions are contained in the contract for this study, but Mr. Kott felt that

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this could be done by Land-Air at the additional expense in the near future when the work load diminished. Mr. Kott requested formal authorization to do this and Major Doty agreed to issue this letter of authorization. It was arranged further that at such time when the study is completed all photographic and tape recordings would be sent to the Geophysics Research Division. Prior to departing HAFB, the project files were reviewed. Major Doty advised that access to the files had not been requested by any periodicals.

On 28 August 1951, the subject was discussed informally with Dr. Lincoln La Paz, who expressed disbelief in all aerial phenomena except for the green fire-balls. The red fire-ball occasionally reported he believed was the visual after-effect of the green. Their recent origin (1947) and peculiar trajectories did not permit, according to Dr. La Paz, them to be classed as natural phenomena. The most recent that has come to his attention occurred over Detroit on 7 July 1951. It crossed the city from Northwest to Southeast with a sharply descending trajectory which leveled out and was observed by many residents of the city. Dr. La Paz expressed the opinion that the fireballs may be of our own military origin, but if not, they are a matter of serious concern.

5. Conclusions

Undoubtedly, a good many of the observations reported are attributable to ordinary man-made objects such as airplanes, balloons, smoke rockets, etc. It appears that balloon observations especially are responsible for a large number of the reports. The possibility of small

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emissive clouds issuing from atomic installations also has been proposed.

Many of the sightings are attributable to natural phenomena such as flight of birds, planets, meteors, and possibly cloudiness. Dr. Fred L. Whipple of Harvard, in a memorandum to this laboratory dated 9 August 1950 relative to this problem, indicated that he had observed a tendency for the occurrence of small detached clouds in New Mexico which might have been mistaken for an aerial object when illuminated by the reflected light of the moon. Dr. Whipple investigated the possibility of a correlation between the frequency of aerial phenomena observations and weather conditions -- specifically cloudiness. A rough analysis of available weather data, indicated that on the 53 nights (between 5 December 1948 and 5 March 1951) when observations were reported, 10 were clear, 24 partially cloudy, 5 completely overcast and 14 had no record. The number of cloudy nights involved seems unusually high for New Mexico. The weather reports were for the Las Cruces Area only whereas many of the observations were a considerable distance from Las Cruces. Further investigation is therefore necessary to determine correlations with cloudiness.

Dr. Whipple also conducted a study as to whether the age of the moon was related to the frequency of aerial phenomena observations. The results did not indicate that the phenomena were observed largely at full moon. The statistics show that of the 72 observations reported, 45 occurred when the moon was up and 27 when it was down with many of the observations occurring at the time of the moon's first quarter. From the statistical study, Dr. Whipple suggests that the existence of moonlight is correlated with the phenomena. Dr. Whipple's frequency diagram of observations vs. age of moon is included in this report.

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It should be noted that Dr. Whipple made a careful study of meteor photographs taken in New Mexico on 35 nights when observations were reported. None of the photographs revealed the presence of unusual sky phenomena.

Finally, the overall picture obtained from the year of vigilance and inquiry does not permit a conclusive opinion concerning the aerial phenomena of interest. The comparatively high incidence of the phenomena since 1948 does not necessarily indicate that the objects are man-made. It is conceivable that the earth may be passing through a region in space of high meteoric population. Also, the sun-spot maxima in 1948 perhaps in some way may be a contributing factor.

6. Recommendations

Since the findings to date cannot be considered conclusive, it appears that the following recommendations would be pertinent:

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(1) No further fiscal expenditure be made in pursuing the problem. This opinion is prompted partly by the fruitless expenditure during the past year, the uncertainty of existence of unexplainable aerial objects, and by the inactive position currently taken by Holloman AFB as indicated by the "stand-by status" of the project. The arrangements by HAFB for continued vigilance by Land-Air, the weather station as well as the briefing of pilots on the problem in part relieves the need for a systematic instrumentation program.

(2) Within the next few months, Dr. Whipple will have completed the installation of two 18-inch Schmidt cameras for meteor studies. The cameras will be stationed about 20 miles apart in the vicinity of Las Cruces, New Mexico. Since these studies will be sponsored by the GRD, arrangements can be made for examining the film for evidence of aerial object phenomena.

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These data then would be used to demonstrate the need for initiating a study of the phenomena. On 21 February 1950, an observation outlook post was set up at Holloman Air Force Base manned by two personnel. Observations with theodolite, telescope and camera were undertaken between the hours of sunrise and sunset.

On 5 March 1950 a conference was held at Wright-Patterson Air Force Base which included Holloman Air Force Base and GRD personnel. Action was taken to initiate a three point program which was confirmed by AMC in the form of a letter directive on 16 March 1950, subject "Light Phenomena".

- a. Askania instrument triangulation by Land-Air Inc.
- b. Observations with Mitchell camera using spectrum grating by Holloman Air Force Base personnel.
- c. Electromagnetic frequency measurements using Signal Corps Engineering Laboratory equipment.

Under contract to GRD, Land-Air Inc. was required to maintain constant watch at two Askania stations for a six-month period. Since an abnormal number of reports had been received from Vaughn, New Mexico, it was decided to install the instrumentation at Vaughn.

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12 Mar. 1951 - Report from Albuquerque, N.M. by two individuals

of ball-shaped object, shining-white appearance.

The object descended rapidly to the horizon.

- Report from a Los Alamos employee. Oblong shaped object moving slowly both in horizontal and vertical directions. Bright appearance.

7 June 1951 - Report from a Los Alamos employee. Pointed cylinder in vertical position. Cloth-like construction.

Fell in canyon at 11:10 A.M. Search party was unable to find the object or any remains.

8 June 1951 - Report from a Los Alamos employee. Large reddish dot, dull appearance which turned bright green. Observed for three seconds.

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Summary of Recent Aerial Phenomena Reports from 17th OSI District

- 11 Nov. 1950 - Reports of a large-sized balloon. It was determined that this was released by General Mills. The balloon subsequently was recovered.
- 12 Jan. 1951 - Report from ten Los Alamos employees. Tear shaped object with small tail; very bright appearance; descended slowly; sky lighted up for about 1 sec; observation time 05:00. *The confirmed reports were dropped by military pilot who was lost to the level*
- 16 Feb. 1951 - Aerial object reported in the vicinity of Holloman AFB. This turned out to be a General Mills balloon functioning for Project "Skyhook".
- 19 Feb. 1951 - A C-54 pilot reported a green flare or rocket observed in the vicinity of Rodeo, N.M. Its motion was vertical and passed the plane at 9000 ft. Investigators believed this to be a meteor.
- 6 Mar. 1951 - Report from four Los Alamos personnel of very bright object crossing sky. Also observed by two Kirtland AFB pilots who reported this as a meteor; time - 14:30; reported by Dr. La Paz to be a detonating fire-ball. No fragments recovered.

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