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ALBUQUERQUE, NEW MEXICO

16 May 1949

REPORT OF AN UNUSUAL (?) NATURAL (?) PHENOMENON

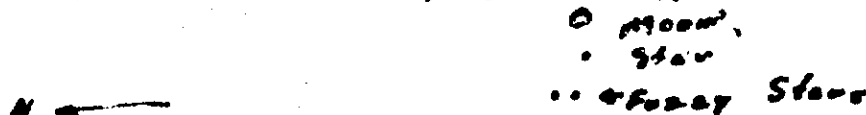
TO: WHOM IT MAY CONCERN

On the night of May 12, 1949, while enroute from Holloman Air Force Base to Alamogordo, New Mexico, in a two-door sedan, I noted an atmospheric or celestial (?) phenomenon that I have been unable to explain. I am still not entirely convinced that what I saw may not have been an optical illusion of an unusual character.

Shortly after leaving Holloman Base, I looked out toward the Sacramento Range, to the East. The time was about 9:30, possibly as early as 9:15. I was watching the moon rise. At the moment, the moon had an altitude of perhaps 15°-16° above the top of the Sacramento ridge. The moon was nearly full and the sky was bright. I was interested, therefore, to see a bright star, perhaps 6°-8° East from the moon. I wondered what the star was. When the sky is so bright that the fainter stars do not show, I find it hard to locate the constellations. The star had a faint reddish color.

As I watched for a minute or two, I became conscious of another star considerably nearer the horizon. The star had a fuzzy appearance, caused, I thought, by low-level atmospheric haze. As I watched I noted, within half a minute, a second star about three degrees to the South of the first. I think the Northernmost star appeared first, but am not completely sure.

My first impression was that the stars were Castor and Pollux, of Gemini. Both increased in brightness rather slowly, which was not, surprising for a pair of stars rising. I watched for perhaps another minute and suddenly became conscious of the fact that the stars couldn't have been Castor and Pollux, because Gemini is in the West rather than the East. Furthermore, the size of the fuzzy images bothered me. They were, as far as I could tell, very nearly identical in diameter, which was about one-fourth the diameter of the full moon. The following picture, drawn from memory about 12 hours later, depicts the approximate circumstances:



The fuzzy stars were three or four degrees above the horizon as defined by the mountain range.

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 DR. FREDLUND, JR., DIRECTOR, UTID
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two. The patches remained. I was still unaware that the phenomenon was exceptional until the southern object suddenly disappeared. I then asked the driver to stop the car, but the northern object vanished at that moment. The northern one had been slightly brighter. At maximum brilliance the patches must have been of zero to first stellar magnitude. The color was white possibly with a greenish tinge. They endured for about 4 minutes, during which time the car, travelling at 50 miles per hour, covered at least 3 miles. During that period, I am sure that the direction of the object did not change by more than 2° . I would prefer to say that the change was not more than 1° . With a base line of 3 miles, this latter figure indicates that the objects were at least 180 miles away, that their separation in space was at least 9 miles and that the diameter was about $3/4$ of a mile.

There is a bare possibility that the patches were clouds, but the behavior was unusual, to say the least. The whole phenomenon is puzzling. It may have some simple explanation, but there seems to be no completely satisfactory theory available. I report the event for future records.

DONALD H. MENZEL
Harvard Observatory
Cambridge 38, Mass

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SUMMARY OF INFORMATION

DATE
2 July 1949

PREPARING OFFICE
Office of the AG of S, G-2, Headquarters Fourth Army, Fort Sam Houston, Texas

SUBJECT
Summary of Observations of
Aerial Phenomena, Camp Hood, Texas

CODE FOR USE IN INDIVIDUAL PARAGRAPH EVALUATION	
OF SOURCE:	OF INFORMATION:
COMPLETELY RELIABLE A	CONFIRMED BY OTHER SOURCES 1
USUALLY RELIABLE B	PROBABLY TRUE 2
FAIRLY RELIABLE C	POSSIBLY TRUE 3
NOT USUALLY RELIABLE D	DOUBTFULLY TRUE 4
UNRELIABLE E	IMPROBABLE 5
RELIABILITY UNKNOWN F	TRUTH CANNOT BE JUDGED 6

SUMMARY OF INFORMATION

Beginning 6 March 1949, a series of aerial phenomena has been observed in the vicinity of the restricted area at Camp Hood, Texas. For want of a better appellation, this phenomena has by common consent been tagged "Balls of Fire." The phenomena has recurred at Camp Hood on the average of every nine days since it began. Complete reports of each incident have been reported in detail to the Commanding General Air Materiel Command, by direction of the Director of Intelligence, 25 March 1948. Detailed reports of numerous similar phenomena at Sandia Base, Albuquerque, New Mexico, and Los Alamos, New Mexico, have already been made direct to the Director of Intelligence.

Observations made at Camp Hood indicate:

The "fire balls" are highly luminous "lights" usually greenish-white but sometimes orange-red in color.

They are usually round but are sometimes of diamond or oblong shape.

Some move and some appear to be fixed "bursts"—described as like the turning on and off of an electric switch. The movement has been reported as in an arc, vertical, and zig-zag.

Observations always occur on the same or consecutive nights—the shortest observation period being one night and the longest three. The smallest number of individual phenomena reported during any period of manifestations has been 4 and the largest 50.

When artillery observation and plotting methods were used, the following data was obtained by triangulation: On 7 May 1949, from 1940 hours to 2105 hours. Weather was clear and a bright moonlight night.

Diamond shaped fireball, red to greenish white, 15 yards in diameter and 1,000 feet high, moved approximately 100 yards horizontally in 57 seconds and appeared to "go out."

Diamond shaped fire ball, 24 yards in diameter and 1,300 feet high, moved approximately 120 yards horizontally in 40 minutes and then appeared to "go out."

Diamond shaped fire ball, 16 yards in diameter and 1,600 feet high, moved horizontally in 9 minutes and then appeared to "go out."

DISTRIBUTION DI, GS, USA; CG, AMC, Wright Patterson Air Force Base; File.

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S/I, Office of the AC of S, G-2, Headquarters Fourth Army, Fort Sam Houston, Texas, 2 July 1949, subj, "Summary of Observations of Aerial Phenomena, Camp Hood, Texas"

No sound or odor has ever accompanied the phenomena.

All observed groups of phenomena have "bracketed" the restricted area.

Over 100 men and officers have observed and reported the phenomena (including field ranks and college graduates).

Flights of aircraft and all firing and training schedules have been checked and rechecked without a single such incident having been found that coincides in time and place with any of the observed phenomena.

No explanation of this phenomena is known to nor has any been presented to this headquarters. In the absence of scientific equipment and observers, it appears that no explanation is foreseeable.

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R/D-tw
8-10-49

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AN ATTEMPT TO COLLECT AIRBOURNE PARTICLES ASSOCIATED WITH THE FIREBALL OF JULY 24, 1949.

by W.D. Crozier & Dan K. Seely; New Mexico School of Mines

METHOD

A fireball was reported to have passed over the general neighborhood of Socorro, New Mexico, at 8:26 p.m., July 24, 1949. I was aware of equipment, developed in connection with the aerosol research project of the New Mexico School of Mines, was available, and it was decided to make systematic collections of airbourne material in the hope of obtaining material that could be associated with the fireball. For the present report, it is sufficient to state that the equipment processed air at the rate of about 34 litres per minute, the particles being separated from the air by impactment against an adhesive-coat de plato in an open jet, approximately ninth percent of airbourne particles with diameters greater than one micron are collected.

The adhesive used on the following plates (microscopic slides) was a glycerine-gelatin mixture with an addition of rubonic acid (dithioxamide). This reagent was used to enable identification of nickel, copper or copper compounds; it also enables identification of nickel and cobalt. After making the collections, the slides were covered with a Saran film, after which they were exposed to strong (illegible) vapor for fifteen minutes to effect partial solution of any copper or copper oxide particles.

RESULTS

The first collection was made at 10:00 a.m., July 25, about thirteen and one-half hours after the fireball was seen. The air was taken about thirty feet above ground level on the campus of the School of Mines. The first run was for three minutes processing about 102 litres of air. Several large particles were found in it that gave positive copper tests. In at least some of this copper, reaction was seen before the ammonia treatment indicating the presence of at least a trace of a soluble copper compound. The size of particles found in the first collection ranged up to over one hundred microns (illegible) size. The largest particles gave the impression of being (illegible) ... with the smaller dimension of the particle being twenty to thirty microns. There were no small... (illegible to end of paragraph. Original of extremely poor quality.)

The accompanying (illegible) summarises the conditions and copper amounts for all the collections, including the first one described above. A number of the runs were for periods longer than three minutes, but the counts have, in these cases, been reduced to the three-minute equivalent. One collection showing large copper indications, taken July 25, is omitted from the table because it was damaged in course of a test for radioactivity by exposure of a nuclear track plate (with negative results) and a definite count could not be made.

The counts are exhibited in target size classifications, and attention is directed to the fact that particles in the smallest size group (1-15 microns) are practically absent from the early collections

* The word here may well be "table", but there was no table accompanying this report as released. Ed.

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while in the later collections particles in the largest (over 30 microns) and middle (15-30 microns) groups have become quite scarce. At the same time, the counts have become quite large in the smallest group.

SIGNIFICANCE OF RESULTS

If it were possible to say that particles giving a copper test are generally very rare in collections near ground level in this locality, the above facts would be highly significant. It happens, however, that collections have been made at Socorro only over a short period and not much attention has been given to identification of copper compounds. However, after the copper indications had been found in the present series of collections, some collections were found on file that had been made on plain glycerine-gellatin on July 14, 1949. These were covered with Saran film and ruboanic acid and ammonia was applied with fusion through the film. A few copper indications were found, almost all the particles being in the 30 micron size group. Some other collections were made early in July that will be examined for copper when they are freed from other tests. In addition, occasional collections will be examined for copper in the future, and it may be possible eventually to add something to the information now presented.

CONCLUSIONS REGARDING COPPER

In view of the above facts, it seems very hazardous to draw any definite conclusion associating the copper-bearing particles collected with the fireball of July 24. There is still, however, a reasonable possibility of such an association when it is considered that particles of the smallest size group did not appear in large numbers until some 35 hours after the passing of the fireball.

Attention is called particularly to the large number of small particles in one of the 145-1 2-hour collections. The actual number in the collection was 140, for the five minute run. Most of these were in the size range of 2 to 5 microns and the principal difficulty in associating them with the fireball is that a five-micron particle cannot fall much more than 10,000 feet in 145.5 hours. These particles could have come down from a greater height only if some downward motion had taken place in part of the air involved.

It should be mentioned that collections were taken during the afternoon of July 27, at several points south and east of Socorro, the farthest being near Bingham. These collections contained particles giving copper indications, the particles being in the same range of sizes as those collected in Socorro at about the same time.

It is perhaps noteworthy that the copper-bearing particles in all those collections were of opaque material. Most of the copper minerals that have previously come to our attention in collections from the air have been of colored material, blue, green, red or yellow.

COBALT AND NICKEL TESTS

In the 2:00 p.m. collection of July 26, three quite remarkable particles were found that gave very strong cobalt indications. The particles were apparently perfect spheres (at least they were perfectly circular in cross section), twelve microns in diameter. The reaction with ruboanic acid after ammonia treatment, produced a dense yellow-tan halo, sixty microns in diameter. The color was not quite so clear as

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with pure cobalt, the appearance suggesting a high-cobalt composition with some other metal present. Such particles are quite unique in the experience of the present investigators. If these particles were of meteoric origin they could, in the absence of vertical air movement, have fallen a distance of 20,000 feet in an interval of 41.5 hours.

Two particles giving nickel indications were found. This is quite normal, however. If anything, the number is smaller than might have been expected in material of surface origin. The collections were not given acid treatment; additional nickel indications might have been found if this had been done.

A SUGGESTION

While the results of the present investigation should be regarded as negative or inconclusive, it is desired to call attention to the fact that a means is at hand that should make possible a definite demonstration of the presence or absence of copper particles associated with events of the July 24th type.

Particle collection equipment operating on the same principle as that used in the present investigation, and designed for airplane installation, is on hand and its successful operation has been demonstrated in numerous flights. Provision could easily be made for quickly mounting this equipment in an airplane capable of ascending above the 40,000 foot level, which could take off soon after an event of the July 24th kind, and fly in pattern that would include with reasonable certainty some of the material originating at the meteor trajectory. A quick approximate determination of the trajectory would be required, of course, and if winds aloft were of considerable strength it would be necessary to take due allowance for them in planning the flight.

NOTE ADDED ON AUGUST 10, 1949:

As this report was being finished, an attempt was made at an airplane collection following the event of August 6. The collecting equipment was installed in a B-25 from Kirtland Field and on the afternoon of August 6, a flight was made which it was hoped might intercept some of the meteoric material.

An interval of 41 hours had passed before the take-off and the maximum altitude reached was 23,000 feet. A rough attempt was made to include air that was under the trajectory, but distances of several hundred miles were involved. A few copper indications were obtained, but they seemed definitely to be associated with material of surface origin. No nickel or cobalt indications were found. An elaborate study, which may require more upper air data than is available, should be made before it is decided whether or not the flight actually did include air that should have borne particles from the meteor trajectory.

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Dr. Lincoln LaPaz
Institute of Meteorics
University of New Mexico
Albuquerque, NM

10 August, 1949

Dear Lincoln:

I am enclosing two copies of the report you asked for, and hope that they serve their purpose.

We have made preliminary examination of the eighteen collections taken at nine locations on my Monday-Tuesday trip. There was a significant number of copper-bearing particles on one collection (R-104L) taken on Hwy. 84, seventeen miles north of Hwy. 66, and scattered occasional particles throughout the series. The collection taken at the same location immediately following R-104L shows practically no copper. A large part of the R-104L collection is of a granular material unfamiliar to us, and the copper indications originate principally in what are apparently aggregations of finely (one-micron) granular material of overall sizes in the neighborhood of thirty microns. Some copper particles, however, appear to be solid and opaque. The passing of two automobiles while this collection was being made is a complicating factor. It is hard to see how they might have been a source of copper, however, unless it was a question of stirring up some from dust on the pavement.

We intend to do some further chemical work with these collections, but I doubt if much new relevant information will be obtained.

My tentative conclusion is that no widespread significant dispersion of copper-bearing particles was present in the atmosphere in the region covered at the time the collections were made. No definite statement is possible about the one heavy copper collection. It should be presumed to be of local origin until some evidence to the contrary is found.

The route of my collecting trip included Pastura, Santa Rosa, junction of routes 66 and 84, and Las Vegas on Monday afternoon. On Tuesday morning it included Las Vegas, Canoncito, Glorieta and Pecos.

Yours very truly,

D. Crozier

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Unclassified by authority of
R.R. Fredlund, Jr., Dir. CTTD/AL
10/13/82.



20-10-52

August 17, 1949

To: Colonel Doyle Rees

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FROM: Lincoln LaPaz

SUBJECT: Anomalous Luminous Phenomena. Sixth Report
(Attempts to collect volatilization products from green fireballs)

1. In an earlier report it has been pointed out that in spite of air and ground searches in early February along the well-traced earth-trace of the green fireball of 1949, January 30th no fragments of this fireball were recovered. There remained the possibility that this fireball had been so completely volatilized during flight that only fine dust from it filtered down thru the atmosphere. Since, for several reasons, it seemed more probable that such dust would consist chiefly of copper or copper alloy rather than of the ferruginous substances found from ordinary meteorites, the methods habitually employed by meteoricists for the collection of "cosmic dust" (separation of the dust from the air by use of electromagnets or permanent magnets) would not be appropriate for use in connection with the green fireballs. It was therefore decided to enlist the aid of Dr. William Crozier, who was known to have developed a novel impactment dust collector for use on the Arsenal Project of the New Mexico School of Mines. (The writer had been closely associated in 1943-44 with Dr. Crozier at New Mexico Proving Grounds while working on saboted and proximity fused shells and knew that he had satisfactory clearance). Dr. Crozier naturally agreed to participate in a ground-level search for dust possibly put down by the fireball of January 30th but made the valuable suggestion that dust collections be made on plane flights routed back and forth at high altitudes through the air beneath green fireball paths as soon as possible after a fireball fall. In this manner contamination of the dust collections by terrestrial particles would be reduced to a minimum. No immediate application was made of Dr. Crozier's dust collection techniques, in part because of the writer's return to full time academic work at the UNM on February 8th and in part because of Dr. Crozier's other research activities and the interruptions in Research and Development Division work incident to the A. E. G.'s taking over the Albuquerque quarters of the Division.

2. When it was determined that the green fireball of July 24th had descended in the immediate vicinity of Socorro, it was decided to ask Dr. Crozier to attempt collections even though he and his staff were then engaged in the final stages of moving from Albuquerque to their new quarters on the Campus of the New Mexico School of Mines. A long distance call to Dr. Crozier on July 25th brought the welcome news that he had been alerted by an appeal for observations issued by the Institute of Meteorites on the evening of July 24th and had already made dust collections on the Campus at Socorro on the morning of July 26. These collections, to Dr. Crozier's evident surprise, were found to contain not only the first copper particles he had found in air dust collections but these particles were of unusually large size -- up to 100 microns in maximum dimensions. On receipt of this exciting information, a party

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... Officer of Kirtland #11, R. Paul Taft of the U. S. Weather Bureau in Albuquerque; S/A Jack Boling; and the undersigned. A conference with Dr. Crosier and Mr. Ben Seely was held on the School of Mines Campus in Socorro between 10:00 - 12:00 A.M. on July 26th. At this conference it became apparent that Dr. Crosier was inclined to attribute the unusually large copper fragments collected on July 25 at 10:00 A.M. ("which because of their size could not have been blown very far by surface winds") to particles blown off the roof or out of the gutters of the Assaying Building on the Campus. In answer to a question from the writer, Dr. Crosier replied that he would consider this possibility ruled out if copper particles showed up in collections made in the open country at considerable distances from the Campus. It was therefore recommended that such collections be made and Dr. Crosier and Mr. Seely rigged up a storage battery combination and small D. C. motor driven impactment collector which were loaded into the O.S.I. staff car and driven out through San Antonio, Carthage and Bingham, New Mexico (this route passing, in Mr. Taft's opinion, through the region where particles from the fireball of July 24th would most probably have been carried by the very light winds prevailing in the region since the incident). Four of the collections made on this trip were examined on the evening of July 26th by Mr. Ben Seely and all were found to contain copper particles indistinguishable from those collected in Socorro at about the same time.

3. Full details on the methods of collection employed by Dr. Crosier and Mr. Seely and on later examinations of the dust particles collected after the green fireballs on both July 24th and August 6th are given in Dr. Crosier's report (R/D - tw, 8-10-49) copies of which are hereto appended. Dr. Crosier's tentative conclusion from study of the collections made not only in connection with the incident of July 24th but also that of August 6th is that "the results of the present investigation should be regarded as negative or inconclusive." From analysis of his report (R/D - tw, 8-10-49) and from several phone conversations with Dr. Crosier, it is the writers belief that Dr. Crosier was led to the above conclusion by the following facts listed below in decreasing order of importance, and accompanied by critical comments:

a. The discovery by tests made on or about August 1 of "a few copper indications" in dust collected at Socorro on July 14, 1949, i.e. ten days before the green fireball incident of July 24th. (Dr. Crosier has informed the writer that the collections of July 14th was carefully wrapped up and could not have become contaminated by copper dust which blew in through the open windows of the R.D.&D. Building at Socorro after the incident of July 24th. However, there remains the possibility that an unobserved or unreported green fireball occurring in the Socorro neighborhood shortly before July 14th put down the copper dust found in the July 14th collection. To one familiar with the almost uninhabited country

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August 17, 1949

To: Colonel Doyle Kees

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FROM: Lincoln LaPas

SUBJECT: Anomalous Luminous Phenomena. Sixth Report
(Attempts to collect volatilization products from green fireballs)

1. In an earlier report it has been pointed out that in spite of air and ground searches in early February along the well-tracked earth-trace of the green fireball of 1949, January 30th no fragments of this fireball were recovered. There remained the possibility that this fireball had been so completely volatilized during flight that only fine dust from it filtered down thru the atmosphere. Since, for several reasons, it seemed more probably that such dust would consist chiefly of copper or copper alloy rather than of the ferromagnetic substances found from ordinary meteorites, the methods habitually employed by meteoricists for the collection of "cosmic dust" (separation of the dust from the air by use of electromagnets or permanent magnets) would not be appropriate for use in connection with the green fireballs. It was therefore decided to enlist the aid of Dr. William Crozier, who was known to have developed a novel impactment dust collector for use on the aerosol Project of the New Mexico School of Mines. (The writer had been closely associated in 1943-44 with Dr. Crozier at New Mexico Proving Grounds while working on sabot and proximity fused shells and knew that he had satisfactory clearance). Dr. Crozier naturally agreed to participate in a ground-level search for dust possibly put down by the fireball of January 30th but made the valuable suggestion that dust collections be made on plane flights routed back and forth at high altitudes through the air beneath green fireball paths as soon as possible after a fireball fall. In this manner contamination of the dust collections by terrestrial particles would be reduced to a minimum. No immediate application was made of Dr. Crozier's dust collection techniques, in part because of the writer's return to full time academic work at the UNM on February 8th and in part because of Dr. Crozier's other research activities and the interruptions in Research and Development Division work incident to the A. E. G.'s taking over the Albuquerque quarters of the Division.

2. When it was determined that the green fireball of July 24th had descended in the immediate vicinity of Socorro, it was decided to ask Dr. Crozier to attempt collections even though he and his staff were then engaged in the final stages of moving from Albuquerque to their new quarters on the Campus of the New Mexico School of Mines. A long distance call to Dr. Crozier on July 28th brought the welcome news that he had been alerted by an appeal for observations issued by the Institute of Meteoritics on the evening of July 24th and had already made dust collections on the Campus at Socorro on the morning of July 26. These collections, to Dr. Crozier's evident surprise, were found to contain not only the first copper particles he had found in air dust collections but these particles were of unusually large size -- up to 100 microns in maximum dimensions. On receipt of this exciting information, a party

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... have gone almost unreported, it seems quite likely that a green fireball that fell after midnight or during the daytime or while most of the sky was overcast might go entirely unreported.)

b. The discrepancy between the computed and observed rates of descent of very fine copper particles (As Dr. Crosier notes, such discrepancies are understandable "if some downward motion had taken place in part of the air involved." Precisely such downward motion occurred in the air near the real paths of the fireballs of July 24th and August 6th for these falls were nearly vertical. Furthermore the best observations of the endpoints of these fireballs place that of July 24th at a height of 10-12 miles and that of August 6th at 5 - 6 miles. The downward directed ballistic head wave therefore could very easily have carried Dr. Crosier's 145 hour particles to within 10,000 feet of the earth at the time of the fall. Since we cannot assume complete stagnation of the air masses in the Socorro neighborhood for 145 hours, it must be supposed that such air motions occurred were approximately compensating and resulted in the return of Dr. Crosier's tiny "five-micron particles" to the Socorro neighborhood in approximately 145 hours. (Only a detailed study of air mass motions for the time interval involved can settle this point).

c. The long continued appearance of copper particles (however, as Dr. Crosier emphasizes, smaller and smaller in size) in the Socorro collections. (Precisely such a decrease in particle size has repeatedly been observed in connection with dust collections believed to be of meteoritic origin and is attributed to the slower and slower rate of descent of the particles as their average size increases. Thus, L. Hudaux's results strongly indicate that particles from the Glacovoid shower of 1933, October 9 filtered down in smaller and smaller sizes for 100 hours or more. Furthermore, for the green fireballs of July 24th and August 6th, the nearly vertical real paths extended from altitudes of 100 miles or more down almost to ground level and therefore optimum conditions for long continued infall of dust particles were approached in these falls.)

d. Failure of the airplane collection of August 6th to detect airborne copper particles definitely not of terrestrial origin. (However, the airplane collections were all made at great distances (hundreds of miles) from the Vaughn region in which the fireball of August 6th fell; and, as Dr. Crosier points out, at the moment it can not be determined whether or not the flight did actually include air that should have borne particles from the meteor trajectory." In this connection the results alluded to in paragraph 4 below may be of considerable significance.)

4. At the time the airplane collections of August 6th was planned the writer recommended not only that the flight traverse the area from Vaughn northward to Raton and then westward into the Durango, Colo. region (a recommendation based on advice received from Mr. Paul Taft of the U.S. Weather Bureau) but also that simultaneously a ground search with the

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run from Vaughn through Pastura to Santa Rosa. The latter part of this recommendation was followed by Dr. Crosier who reported on the results obtained in his letter to me under date of August 10, copies of which are hereto attached. Dr. Crosier's letter makes clear that ground collections in the subfinal regions of the fireballs of both August 6th and July 24th resulted in the detection of unusual aggregations of copper particles. Apparently the copper particle aggregate obtained in collection R-104L, within the subfinal region of the August 6th fall was the only such aggregate found in Dr. Crosier's lengthy ground search of August 8-9. It seems particularly significant to the writer that Dr. Crosier suspects that the copper dust found in this particular collection R-104L may have been stirred up from the pavement on Highway 34 - a likely catchment surface for dust put down by the green fireball of August 6th, in view of the information given me by Mr. Taft in regard to the wind direction prevailing during the hours immediately following this incident.

5. In spite of the critical comments made in paragraphs 3 and 4 above, the writer has no quarrel with Dr. Crosier's conclusion that the results so far obtained in the investigation of volatilization products possibly put down by the green fireballs are negative or at best inconclusive. However, I do wish to stress most emphatically that if future more detailed work shows that the numerous copper particles found by Dr. Crosier and Mr. Seely are indeed floating down from green fireballs, then the fireballs are not conventional meteorites. Copper is one of the rarest of the elements found in meteorites (See G.P. Merrill, Comptes Rendus National Academy of Sciences, vol 14 (1925), Table facing p. 27; and Harrison Brown, Journal of Geology, vol 56 (March 1948, Table 1, p. 87). In fact, I know of no case in which ever the tiniest particle of copper has been reported in a dust collection supposedly of meteoritic origin. In view of present concern in regard to the true nature of the green fireballs, nothing could exceed in importance attainment of a definite conclusion in regard to the origin of the copper particles detected in the subfinal regions of the fireballs of July 24th and August 6th.

6. The writer therefore wishes to make the following recommendations:

a. That arrangements be made for dust collections on airplane flights at altitudes of 40,000 ft. or more through the region of the atmosphere lying beneath the real paths of green fireballs as soon as possible after the occurrence of such fireball incidents. Such arrangements presuppose a well coordinated observing network permitting the speediest possible determination of the location of the real paths in the atmosphere. (Dr. Crosier and Mr. Seely have both agreed to cooperate in carrying out dust collection at the highest altitudes attainable. In Dr. Crosier's opinion a B-36 or B-50 should be made available for such work.)

b. That ground-level dust collections be made along the well determined earth-trace of the green fireball of January 30th, using the

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... by Dr. Crozier ... Mr. Seely and used in the ground searches of July 27th and August 8-9th. If copper particles can be recovered along this earth-trace but do not appear in collections made 50 miles or so away from the trace, the result would be of much significance if not indeed decisive.

Lincoln LaPas, Director
Institute of Meteoritics

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Form 45 (C- 51)

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20 Oct 54

THE UNIVERSITY OF NEW MEXICO
ALBUQUERQUE ~~SECRET~~

INSTITUTE OF METEORITICS

August 17, 1949

TO: Colonel Doyle Rees

From: Lincoln LaPas

Subject: Anomalous Luminous Phenomena. Fifth Report.

1. This report covers anomalous luminous phenomena reported to and/or investigated by the Institute of Meteoritics during the months of June, July, and the first ten days of August 1949. Incidents occurred on Sunday, June 4, 7:55-8:17 P.M. (El Capitan, New Mexico); Monday, June 20, 8:10 P.M. (New Mexico); Wednesday, June 29 (Flagstaff, Arizona rocket incident); Sunday, July 24, 8:26 P.M. (Socorro, New Mexico); Sunday, July 31, 7:47 P.M. (Vaughn, New Mexico); and Saturday, August 6, 8:00 P.M. (Vaughn, New Mexico).

2. For these incidents, it was possible to carry out reasonably satisfactory field investigations only for those occurring on June 5, July 24 and August 6. A small amount of field work was also done on the incidents of June 20 and June 29. Detailed reports on certain of these incidents are attached below on appendices.

3. Certain general impressions have resulted from the investigations alluded to in the previous paragraph:

3.1 Many of the green fireballs now appearing descend on nearly vertical paths, whereas, in earlier months almost all of the green fireballs observed moved almost horizontally.

3.2 There appears to be a concentration of New Mexico incidents near weekends, especially on Sunday and near the hour of 8.00 (in the interval from 7:30 P.M. to 8:30 P.M.).

3.3 Unlike the fireball incidents of December, 1946-January, 1949, most observations of recent incidents have been obtained from stations remote from the fireball path. Stations near the path either failed to report any observations or the testimony obtained is conflicting. This situation may arise from the fact that a fireball descending almost vertically through the zenith of a given station is an extremely difficult object for which to estimate elevations and azimuths.

3.4 As in all the green fireball incidents reported on in earlier months, the characteristic green color continues to be observed by the great majority, but by no means all, of the observers; and the failure to observe any sounds (meteoritic detonations) persists.

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THIS DOCUMENT CONTAINS OF 2
NO. 1 OF THE SERIES

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4. Recommendations.

- 4.1 A recommendation made many times in the past will again be repeated here. All eye witness accounts of which I have knowledge fall in the unwarned category. It is strongly recommended that a systematic observing program be instituted which will provide something besides accidentally obtained data.
- 4.2 Some decision should be arrived at in regard to the nature of the interrogation which are to be carried out by representatives of the Office of Special Investigations in the future. Several reasons namely newspaper and radio publicity in the area is much more curious and concerned about fireball incidents now than he was last December. As a result, the interrogated frequently has the experience of being himself interrogated. If he refuses to answer any of the questions asked him (for example, in regard to the possibility that guided missile experiments are responsible for the fireball incidents), then he may not be able to obtain any information from eye witnesses who almost certainly have something of value to relate. It is the writer's conviction that very few people any longer take seriously the story that the Air Force is interested in the meteoritic aspects of the fireball incidents.
- 4.3 It would seem desirable to take steps to widely publicize in the New Mexico area the occurrences of such rich annual meteor showers at the Perseids of early August. At this time, investigators will be flooded with reports concerning fireball shooting stars.

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Set 12 (1-10)

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~~CONFIDENTIAL~~

Basic ltr fr Hq. 2d Armored Division, Camp Hood, Texas, AG 452.1 AKDCB,
15 Jun 49, subject, "Aerial Phenomena"

AFQAI-DA

4th Ind

Department of the Air Force, Hq. USAF, Washington 25, D. C. **F 1 SEP 1949**

TO: Director of Intelligence, General Staff, United States Army,
Washington 25, D. C.

1. An evaluation of the light phenomena incidents in the southwestern area of the United States, particularly those described as "green fireballs", has been made by Dr. Joseph Kaplan, a member of the USAF Scientific Advisory Board. From interrogations of observers in that area and from inferences obtained in laboratory experiments, Dr. Kaplan has concluded that natural phenomena were observed.

2. The Directorate of Intelligence, Hq. USAF, has tentatively accepted these incidents as natural phenomena. "Fireball" reports are being considered by the Geophysical Sciences Branch of the Directorate of Research and Development, Hq. USAF, as a matter of possible interest in upper atmosphere research. If the findings of the Geophysical Sciences Branch substantiate this tentative conclusion, reports that fall in the "fireball" category will no longer be included in Hq. Air Materiel Command and Directorate of Intelligence, Hq. USAF, investigative activity on unidentified aerial incidents. The Department of the Army will be advised as to the final conclusion and subsequent disposition of such reports.

3. It is believed that the USAF upper air research station in the Sacramento mountains near Almagordo, New Mexico, has adequate facilities for the observation and study of celestial phenomena in the southwestern United States. Therefore, the USAF has no requirement for the establishment of additional facilities as requested by the 2d Armored Division, United States Army, in basic letter.

FOR THE CHIEF OF STAFF:

1 Incl
n/e

JOHN W. SCHWEILKE, JR.
Colonel, USAF
Executive
Directorate of Intelligence

R/S. coty

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15 Jan 49 (25-Mar-48)
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~~CONFIDENTIAL~~

Sci/Major Eckstein/75121/b1

per

CSGID ITSci 43-000-92

5th Ind

SUBJECT: Aerial Phenomena

Intelligence Division, General Staff, United States Army, Washington 25, D. C.

19 SEP 1948

TO: Commanding General, Fourth Army, Fort Sam Houston, Texas ATTN: G-2

The Intelligence Division, GSUSA, concurs in the findings of the Air Force in their 4th Indorsement.

FOR THE DIRECTOR OF INTELLIGENCE:

1 Incl
n/c

copy of int. already filed in Report Section

GEORGE S. SMITH
Colonel, GSC
Chief, Intelligence Group
Intelligence Division, GSUSA

MEMO FOR RECORD: This appeared to be the first series of unexplained aerial phenomena that were persistent enough for scientific study and evaluation, thru I.D. 2nd Ind, which concurred with Fourth Army for a scientific study. However, the I.D. has always held that these "Aerial Phenomena", "Fire-balls", etc., were the results of natural phenomena, and not of hostile action or that they could cause any damage. The 4th Ind, of the Air Force substantiates I.D. findings of long ago. Thus the I.D. concurrence back to the Fourth Army in the Air Force's 4th Ind.

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13 OCT 1949

THE INSPECTOR GENERAL USAF
17TH DISTRICT OFFICE OF SPECIAL INVESTIGATIONS
KIRTLAND AIR FORCE BASE, NEW MEXICO

11-93

SUMMARY OF INFORMATION NO. 2

12 October 1949

1. This is a comprehensive summary of all observations of unidentified phenomena possessing similar characteristics which have been observed in the West Texas-New Mexico area. The common characteristics of most of the incidents are:

- a. Green color, sometimes described as greenish-white, bright green, yellow-green, or blue green.
- b. Horizontal path, sometimes with minor variations.
- c. Speed less than that of a meteor, but more than any known type of aircraft.
- d. No sound associated with observations.
- e. No persistent trail or dust cloud.
- f. Period of visibility from one to five seconds.

2. All of the incidents reported do not possess all of the above characteristics, but in each case one or more are present. In none of the reported incidents has any natural or man-made object been determined to be responsible.

3. The body of this summary # 2 consists of a tabulation of observations, with notes attached to clarify or amplify certain of the more important observations. Note # 1 is a report by C. B. Moore, General Mills Aeronautical Research, of a daytime phenomena. Note # 2, # 3 and # 5 are reports of Dr Lincoln LaFaz, University of New Mexico. Note # 4 is a report by Dr W. D. Crozier and Ben E. Soely, New Mexico School of Mines. Dr Crozier is well known for the development of a technique for tracking airmasses and the collection of atmospheric dust. Note # 6 is a recent report on the second maneuverable phenomena.

4. The tabulation of sightings is not a complete record of all reported observations, but comprises only those in cases where interviews were conducted by OSI personnel, plus a number of remarkable sightings by personnel at Killeen Base, Texas, Los Alamos, New Mexico, and Sandia Base, New Mexico. Many other persons were interviewed by Dr LaFaz and his colleagues but inasmuch as complete data is not available, these interviews were not taken into account in this summary. In addition, many reports have been received from individuals who could not provide sufficient information to warrant inclusion of such facts as they did possess.

Any interview where the veracity of the interviewee was doubted was discounted in the preparation of reports for transmittal.

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1 Incl
Tabular Summary w/notes

DOYLE REES
Lt Col, USAF
District Commander

#6

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<u>Date</u>	<u>Time</u>	<u>Color</u>	<u>Course</u>	<u>Seen from</u>	<u>Seen by</u>
7 Mar 49	1810	Red, blue edges	E to N	Window Rock, Arizona	Civilians
18 Apr 49	0148	Greenish blue	ENE	Williams, Ariz	Civilians
25 Apr 49	0630	Silvery white	EAST	Springer, N.M.	Civilians
26 Apr 49	1020	Whitish	North East	Arroyo, N.M.	General "I" Research Engineer
26 Apr 49	1745	Silver	NE-SE-SW in curved line	Tucson, Ariz	Civilian
9 May 49	1130	Silver	SW-NE	Tucson, Ariz	Airman
16 May 49	1700	Black	E to W	Tucson, Ariz	Airman
2 Jun 49	0040	Green	E to N	Los Alamos, N.M.	AESS Inspec- tor
11 Jun 49	2057	Green	SE to NW	Los Alamos	AESS Inspec- tor
20 Jun 49	2010	Green	W to E	Los Alamos	AESS Inspec- tor
27 Jun 49	0140	Whitish orange	W to E	Kirtland AFB	Airman
30 Jun 49	1630	Dull grey	S to N	Seligman, Ariz	Civilian
11 Jul 49	2110	Pale red	WSW	Killeen Base	Field Ar- tilleryman
24 Jul 49**	2026	Green	E to W	Socorro, N.M.	Civilian
28 Jul 49	2045	White, tint of blue green	N to S	Camp Hood	Soldier
30 Jul 49	2135	Frosty blue	SE to NW	Camp Hood	Soldier
6 Aug 49**	2000	Bluish green	10° from vertical	Las Cruces, N.M.	Civilian
				Kirtland AFB	Airman
				Crest Organ Mountain	Civilian
20 Aug 49	2130		N to S	Douglas, Ariz	Civilian
26 Aug 49	1345		E to W	Tucson	Weather Officer
6 Oct 49	1750	Green	E to W	Kirtland AFB	Control Tower Operator Jet Pilot Officer, US
				Alamogordo Walker AFB	Airman
				Mescalero, N.M.	Civilian (15 yrs) Indian
7 Oct 49	2200	Green	E to W	Roswell, N.M. Kirtland AFB	Civilians Control Tower Operator
10 Oct 49	0406	White	SW to NE	Los Alamos	AESS In- spector
11 Oct 49	2010	Green, then orange	ENE	Tinie, N.M.	Civilian

On 24 April 1947, ~~about~~ 17 miles north of Arroy, New Mexico, 4 Navy enlisted men from White Sands Proving Ground (Chief Akers, Davidson, Fitzsimmons and Hoerman) and I saw a rapidly moving object while making a pibal wind run. We released a 350 gram balloon at about 1020 MST and were following it with a standard ML-47 David White Theodolite. After the 1030 reading, Davidson took over the theodolite, and Akers and I looked up to find the balloon with naked eye. We thought we had the balloon when we picked up a whitish spherical object right along the direction the theodolite (45° elevation and 210° azimuth) was pointing. The object was drifting east rapidly (5°/sec. as estimated by stopwatch and width of fingers) but we had thought to encounter similar winds on the balloon. When the difference in angle between the theodolite and supposed balloon became apparent, I took over the theodolite and found the true balloon still there, whereupon I abandoned it and picked up the object after it came out of the sun (This gives another good bearing and if you wish to work out a sun shot at 1033 MST at Arroy). The object was moving too fast to crank the theodolite around, therefore one of the men pointed the theodolite and I looked.

The object was an ellipsoid about $2\frac{1}{2} : 1$ slenderness ratio, length about .02 subtended angle. White in color, except for a light yellow of one side as though it were in a shadow. I could not get a hard focus on the object due to the speed at which the angles changed. Therefore I saw no good detail at all.

The Azimuth angle continued to decrease as the object continued on a north heading, growing smaller in size. At around 20° - 25° azimuth, the Azimuth held constant and the elevation angle began increasing from the 25° minimum to about 29°. The object then apparently disappeared due to distance after a total time of observation of about 60 seconds.

The object was not a balloon and was some distance away. Assuming escape velocity, a track is enclosed which figures elevation above the station of about 300,000 feet over the observed period. If this is true, the flight would have probably gone over the White Sands Proving Ground, Holloman Air Force Base and Los Alamos.

We made another pibal wind run 15 minutes later. This balloon burst after an 88 minute flight of 93,000 feet only 13 miles due south of us. Therefore this object could not have been a free balloon moving at such angular speed below 90,000 feet.


NOTE:
No clouds in sky, no haze.
No noise. Very quiet in area.
No cars, planes or other engines running.
No smell.
No odor.

Note #1

C. B. MOORE
General Mills Aeronautical Research
2010 E. Hennepin Avenue
Minneapolis 13, Minnesota
Genava 0371 X 386

~~SECRET~~

250 1 19 20 10



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON

THE INSPECTOR GENERAL USAF
1775 DISTRICT OFFICE OF SPECIAL INVESTIGATIONS
KIRTLAND AIR FORCE BASE, NEW MEXICO

12 October 1949

MEMORANDUM FOR: File

The following information was called in by S/S Paul A. Ryan, Walker AFB Detachment, Roswell, New Mexico, on the morning of 12 October 1949:

Date: 11 October 1949 Time: 2010 hours
Place: 33° 22' 30" North; 105° 14' West
Six (6) people saw this.
Size: Object about size of baseball; round.
Color: Light green and turned to orange.
Direction from Observer: 40° due north. Disappeared about 48° due north. It appeared to be moving to north and angling slightly to the east. NE by N.
Time in sight: About 45 minutes.
No sound or odor.
Trail: Faint, dim trail at one time, green in color.
Maneuvers: It maneuvered going up and down.
Observers: Mr & Mrs A. D. Guest
 Mr & Mrs John Raymond
 Mr J. D. Raymond
 Mr T. D. Jones
 All of Tinnie, New Mexico (near Hondo)

Note 6



100-10124

INCIDENTS OF 17 FEBRUARY AND 27 MARCH:

In each of these incidents the following description applies:

- a. Color - Red, orange, pink, or amber
- b. Shape - Elongated, about five to ten times as long as wide.
- c. Consistency - Apparently solid, but flexible. Did not appear to be vapor or smoke trail.
- d. Luminosity - Appeared to be self luminous, and the varying attitude of flight and changes of position caused no change either degree or color of emitted light.
- e. Flight - Both objects performed various maneuvers, consisting of climbing and diving, with turning movements.
- f. Speed - Not accurately estimated, due to variation in time factors
- g. Termination - Both objects appeared to disappear in the distance.
- h. Location - The 17 February incident was observed from the area of Albuquerque, New Mexico. The 27 March observations were made from the Tucumcari-Clovis area.
- i. Course - The 17 February object appeared to move from west to east; that of 27 March, from east to west.
- j. Sound - No sound was reported in conjunction with either incident.
- k. Remarks - In each case, reports indicated that the objects flowed around corners in vertical maneuvers, rather than swinging around as would a rigid object. In neither case did investigation produce any evidence of a jet-propelled aircraft in the area. Observers in each case were found whose credibility is above average.



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INCIDENT OF 8 MARCH 1949:

This incident was reported by an AECU Inspector on duty at Los Alamos. The object appeared to be an elliptical, rather stubby, aluminum body surrounded or covered with billowy flaps. There may have been projections similar to stubby control surfaces and wings, but the observer could not be sure of this. The observer described the object as looking rather like the part of a war time German airplane from the cockpit aft. It disappeared behind the clouds. The path was slightly descending; there was no noise.

~~SECRET~~

PERSONNEL PARTICIPATING IN SPECIAL JOINT MEETING OCTOBER 14, 1949

900-72

Joseph Kaplan, Operational Analysis, Air Materiel Command, USAF

Lincoln La Paz, Professor of Meteoritics, University of New Mexico

Captain Melvin E. Neef, 17th District, OSI, USAF

Lt. Col. Doyle Reese, Commanding Officer, 17th District OSI, USAF

Major L. C. Hill, CWP, BIO, 4th Army

Major F. C. E. Oler, Geophysical Research Division, USAF

Major George M. Sander, Intelligence Officer, 12th Air Force

Phil Claridge, Special Agent, FBI, Albuquerque

Jerry Maxwell, Resident Agent in Charge, FBI, Los Alamos

Carroll L. Tyler, Manager, SFOO

William J. McElreath, Acting Director, Security Division, SFOO

Sidney Newburger, Jr., Chief, Security Operations Branch

Kino Morgan, Assistant Manager, SFOO

H. E. Bradbury, Director, Los Alamos Scientific Laboratory

John Smiley, Technical Associate Director, LANS

Edward Teller, Assistant Director for Weapon Development, LANS

George Gamov, Staff Member, LANS

Prof Reines, Group Leader, T Division, LANS

Stanislaus Ulam

20

Office Memorandum • UNITED STATES GOVERNMENT

TO : Carroll L. Tyler, Manager
(THRU: N. J. McElwraith, Acting Director of Security) DATE: OCT 25 1949

FROM : Sidney Newburger, Jr., Chief, Security Operations Branch

SUBJECT: JOINT MEETING, AERIAL PHENOMENA, OCTOBER 14, 1949

REFER TO
SYMBOL: DO

A meeting was held at Los Alamos at 1:30 p.m. October 14 for the purpose of discussing new developments on the subject, which is known by the Air Force Materiel Command as Operation Grudge. The meeting was called by N. E. Bradbury, Director, Los Alamos Scientific Laboratory, at the request and upon recommendations of Dr. Joseph Kaplan, formerly of the Operational Analysis Branch, Air Materiel Command, USAF. It is understood that Dr. Kaplan is presently a consultant to AMC. Present at the meeting were the following individuals:

Joseph Kaplan
Lincoln La Paz, Professor of Meteoritics, University of New Mexico
Capt. Melvin E. Neef, 17th District OSI, USAF
Lt. Col. Doyle Reese, Commanding Officer, 17th District OSI, USAF
Major L. C. Hill, BIO, 4th Army
Major F. C. E. Oder, Geophysical Research Division, USAF
Major K. K. Kolster, AFSWP, Sandia
Phil Claridge, FBI, Albuquerque
Jerry Maxwell, FBI, Los Alamos
Sidney Newburger, Jr., AEC, Los Alamos
N. E. Bradbury, Director, Los Alamos Scientific Laboratory
John Manley, LASL
Edward Teller, LASL
George Gamow, LASL
Fred Reines, LASL
Stanislaw Ulam, LASL

It was indicated at the outset of the meeting that there is no change in the interest of the Air Force and other military agencies of the Government in the aerial phenomena, and all material being gathered will continue to be classified, including the use of the code word "Grudge."

Lincoln La Paz opened the meeting by reviewing previous observations and the previous meeting early in 1949. This meeting did not contain as much data of scientific interest as previously reported and was based primarily on two premises, if the phenomena observed are of natural sources or man made.

Office Memorandum • UNITED STATES GOVERNMENT
- 2 -

TO : Carroll L. Tyler
(THRU: W. J. McElwreath)

FROM : Sidney Newburger, Jr.

DATE: OCT 25 1949

SUBJECT: JOINT MEETING, AURORAL PHENOMENA, OCTOBER 14, 1949

REFER TO
SYMBOL: DO

Kaplan was supporter of the natural theory, stating it was more or less similar to auroral phenomena, of which there is considerable evidence; however, Kaplan's arguments were not accepted by the people involved in view of the fact that it is only in this particular locality, i.e., the Southwest, that these observations have been made, whereas normally observations of the aurora are made much farther north. Furthermore, the almost horizontal path of the observations weakened Kaplan's theory. In view of the fact that this could not be explained to be of natural sources, it was the consensus of those present and qualified to make such observations that until more definite proof of natural sources could be set forth, it would be necessary to continue investigations. In view of this, it will be Kaplan's recommendation to the Air Force that a project be set up at the earliest date in order to make photographic, sound, and mathematic observations on a continuing basis.

Due to previous commitments, Teller, Gamow, Ulam, and Reines found it necessary to leave the meeting, but they indicated they would be interested in any new developments in which they could assist. Ulam has privately mentioned the fact that he has a theory that this could be a high velocity projectile fired from a so-called "needle gun," throwing the said projectile into the higher strata above the atmosphere of the earth. When questioned as to the purpose of such a weapon, Ulam indicated that it would only be for scientific research and/or morale effect on the part of any potentially hostile nation. Ulam further indicated that this could possibly be fired from a floating platform such as a submarine or freighter off the shores of the continental United States, rather than the land mass of the nation inventing such a weapon.

While it is not desired to indicate any lessening of interest on the part of Los Alamos scientific personnel in this matter, it is quite evident that all concerned felt that this was a matter of primary interest to the Air Force or other Government and scientific agencies rather than this laboratory.

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~~THIS INFORMATION CONCERNS THE NATIONAL DEFENSE~~

~~SECRET~~

Office Memorandum • UNITED STATES GOVERNMENT
- 3 -

TO : Carroll L. Tyler
(THRU: W. J. McElwreath)
FROM : Sidney Newburger, Jr.

DATE: OCT 25 1949

SUBJECT: JOINT MEETING, AERIAL PHENOMENA, OCTOBER 14, 1949

REFER TO
SYMBOL: DO

The meeting was not recorded as the previous meeting and was devoted primarily to the receipt of information concerning recent sightings and the consideration of natural sources vs. man made sources. The meeting adjourned at 4:30 p.m. No indications were given of any further meetings at Los Alamos on this matter.

The Commanding Officer, 17th District OSI, USAF, furnished four (4) copies of Summaries of Information dated April 19, 1949, and October 12, 1949, three (3) copies of which have been furnished personnel in the Laboratory and will be subsequently returned to this office. The fourth copy is attached herewith for forwarding to Washington if you so desire.

Encl:
As indicated above

~~SECRET~~

8

SECRET

This document consists of 1 pages,
No. 1 of 2 copies. Series B.
28 Nov. 1949

30NOV49

AFOAI-DA

Mr. Francis Hammack, Acting Director
Division of Security
U.S. Atomic Energy Commission
Washington 25, DC

Dear Mr. Hammack:

I have received your letter of 14 November 1949, concerning luminous aerial phenomena.

The investigative activities of the Department of the Air Force have revealed nothing that would indicate that the luminous aerial phenomena observed in New Mexico and elsewhere in the Southwest, represent an actual or potential hazard to Atomic Energy Commission installations.

An evaluation of the light phenomena incidents in the southwestern area of the United States, particularly those described as "green fireballs", has been made by Dr. Joseph Kaplan, a member of the USAF Scientific Advisory Board. From interrogations of observers in that area and from inferences obtained in laboratory experiments, Dr. Kaplan has concluded that natural phenomena were observed. The Directorate of Intelligence has tentatively accepted these incidents as natural phenomena.

"Fireball" reports are being considered by the Geophysical Sciences Branch of the Directorate of Research and Development, Hq. USAF, as a matter of possible interest in upper atmosphere research. If the findings of that branch substantiate the tentative conclusions, reports that fall in the "fireball" category will no longer be considered Directorate of Intelligence investigative activity on unidentified aerial incidents.

The Atomic Energy Commission will be advised as to the final conclusion concerning these phenomena.

Sincerely,

John M. Schweitzer, Jr.
Colonel, USAF
Executive
Directorate of Intelligence

SECRET

UNCLASSIFIED

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~~CONFIDENTIAL~~
~~SECRET~~
NOV 9 0 1949

Office Memorandum • UNITED STATES GOVERNMENT

TO : Carroll L. Tyler, Manager, SFOO
 THRU: W. J. McElwreath, Acting Director, Security Division
 FROM : Sidney Newburger, Jr., Chief, Security Operations Branch
 SUBJECT: AERIAL PHENOMENA

REFER TO SYMBOL: DO

A group of scientists and technicians from the Los Alamos Scientific Laboratory have become extremely interested in the observations of the aerial phenomena observed at various times in this vicinity, on which reports have been rendered periodically. This group is headed by Richard Taschek and is composed of the following additional personnel:

- Homer T. Gittings, Jr.
- George A. Jarvis
- J. Fred Kalbach
- Stan H. Simmons
- Jud Nicholas
- Harold Agnew
- W. J. Masilum
- Howard Parsons
- Robert Potter

All of the foregoing have been appropriately cleared under the provisions of the Atomic Energy Act and therefore would have access to any and all information on this subject which might be developed by the National Military establishments, principally the U. S. Air Forces.

This group, working entirely independently and outside of their regularly assigned tasks with the Laboratory, will conduct observations from vantage points of this project through the use of equipment made available to them, such as personally owned cameras and home-made electronics instruments, augmented by additional equipment they might be able to obtain from the Laboratory, this latter type of equipment will consist mainly of Fastex movie camera. The operations of the group will be conducted in the evenings when they will set up various observation points and spend considerable time in observations and gathering of data. The first observations were conducted November 25 and have continued each night up to the present date. So far, several observations have already been made and data recorded.

~~SECRET~~

(4)

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~~SECRET~~

STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO: Carroll L. Tyler
THRU: W. J. McElwreth
FROM: Sidney Newburger, Jr.
SUBJECT: AERIAL PHENOMENA

DATE: NOV 30 1949

REFER TO
SYMBOL: DO

In the group are trained personnel who have an interest in Astronomy, Meteoritics, and Physics, and other natural phenomena. It will be their purpose to approach this problem from a scientific standpoint and attempt to prove or disprove the following two points:

- a. If the phenomena is of natural sources.
- b. If the phenomena is of man-made origin.

They hope to be able to establish either one or the other of the foregoing and then proceed to establish the why's and wherefor's of the phenomena.

It is believed that such people, working independently and utilizing their spare time, may obtain more satisfactory answers to the question which has been bothering the National Military Establishment for some time. Some of the personnel so engaged hold reserve commissions in either Army, Navy, or Air Force and we believe this will be of great benefit in this problem.

The Commanding Officer of the 17th District OSI, Kirtland Field Air Force Base, has been verbally advised of this situation, as well as the FBI, and a similar letter to this will be directed to the Commanding Officer of the 17th District OSI in order that he might inform his higher headquarters.

It is believed that within the next ten to fourteen days sufficient data will have been gathered that those people so engaged might be able to talk in an intelligent manner to Air Force personnel on this subject.

~~SECRET~~

5

Office Memorandum • UNITED STATES GOVERNMENT

TO : Carroll L. Tyler, Manager, SPOO

FROM : Brigadier General James McCormack, Jr.
Director of Military Application

SUBJECT: WEATHER SERVICE AT LOS ALAMOS

DATE: DEC 2 1949

Refer to
Symbol: MATG:GFS

Over the past few months various conferences and discussions have been held on the subject of weather service at Los Alamos. These discussions have involved representatives of the U. S. Weather Bureau, the Air Weather Service and Atomic Energy Commission personnel, including representatives of both the Los Alamos community (Santa Fe Operations Office) and Los Alamos Laboratory. Agreement between the U. S. Weather Bureau and the Air Weather Service as to the assumption by each of certain fundamental responsibilities appears to have been reached.

Quoted for your information is the policy agreement to which the Air Weather Service and the Chief, U. S. Weather Bureau have agreed:

- a. That the Weather Bureau has general climatological and forecasting responsibility for the protection of the general public at all atomic energy installations in the United States.
- b. That Air Weather Service has primary responsibility for meeting all requirements for weather information related to the military application of atomic energy at Los Alamos, but recognizes the basic responsibilities of the Weather Bureau in the protection of the public and will call on the Weather Bureau as necessary for general climatological studies and forecasts."

In order to obtain practical results, it now appears that a conference would be desirable, probably at Los Alamos, between the two weather organizations and representatives of both your office and the Laboratory. Such a conference might be expected to consider the itemized weather requirements submitted by both you and Dr. Bradbury, to determine the division of these items between the two weather organizations and to provide a working agreement under which the Weather Service would operate. Attached for your information is a copy of my letter to the Weather Bureau and to the Air Weather Service.

~~CONFIDENTIAL~~

#1 - #12

#1

~~CONFIDENTIAL~~

Office Memorandum • UNITED STATES GOVERNMENT

TO : Carroll L. Tyler, Manager, SFOO
Los Alamos, New Mexico

DATE:

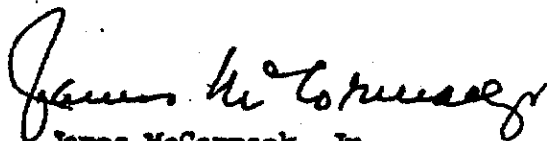
FROM : Brigadier General James McCormack, Jr.
Director of Military Application, Washington, D. C.

SUBJECT: WEATHER SERVICE AT LOS ALAMOS

Refer to
Symbol: MATG:GFS

You will note that I have offered a tentative agenda, have invited recommendations as to an appropriate date and have stated that your office will prepare the formal agenda together with an itemized list of community and technical weather requirements. I would appreciate your recommendations on these subjects in order that the proposed conference can be scheduled. The purpose is, of course, to obtain a practical working agreement satisfactory in all respects to you and Dr. Bradbury which will effectively furnish the weather information you both require.

I shall proceed on this matter according to your recommendations and will appreciate any further suggestions you may have.



James McCormack, Jr.
Brigadier General, AUS
Director of Military Application

Attachments:

Cy Ltr to Weather Bureau
and Air Weather Service
Cy Itemized Weather Reqs.

cc: Dr. N. E. Bradbury W/Attachments

~~CONFIDENTIAL~~

ADU, USUS, 2

February 20, 1950

RECEIVED
 AIR FORCE RESEARCH LABORATORIES
 CAMBRIDGE, MASSACHUSETTS
 4 DEC 1975

Dr. P. H. Wyckoff, Chief
 Atmospheric Physics Laboratory
 Base Directorate for Geophysical Research
 Air Force Cambridge Research Laboratories
 230 Albany Street
 Cambridge 39, Massachusetts

UNCLASSIFIED

Attention: ERMH

Dear Dr. Wyckoff:

Your informative letter of February 6, mailed on February 10, concerning the high-speed balloons and the interesting reports of Geophysical Research Directorate seminars given by Leonard B. Loeb and Dr. Benjamin Iax, have come to hand. This note is written to thank you for all of this material. I am greatly obliged for the trouble you have taken to obtain and transmit so much detailed and helpful information concerning the cost of the polyethylene balloons and for the valuable suggestions made in regard to their launching. I feel sure that in the event a fireball project materializes, the high-speed balloon technique suggested by you will become a part of its S.O.P.

As a preliminary to setting down the project recommendations which you requested, I have very carefully reviewed all available fireball data (observers' reports, transit measurements, calculated real paths, etc.) covering incidents from those of December 5, 1948 to the extraordinary incident of February 7, 1950, which has been under intensive investigation for the last two weeks. As a result of this comprehensive review, particularly as it relates to the incident of February 7, 1950, I feel compelled to write you in somewhat different terms concerning my own part in the proposed fireball project than I had in mind when we last discussed this matter. In brief, I have come to the conclusion that, on the basis of the evidence now available to me, I would not be justified in recommending a fireball project. In my opinion, this evidence proves conclusively that the fireballs reported on fall into one of two categories: Those of the first category (the majority) are meteorite falls of unusual, but certainly not of impossible, magnitude, frequency and other characteristics; those of the second category (the minority) are U. S. guided missiles undergoing tests in the neighborhood of the sensitive installations they are designed to defend. This interpretation of the latter category is the one that I proposed in answer to a question raised by Dr. Teller at the first Los Alamos conference on February 17, 1949. It was not taken seriously then and I doubt that it will be taken seriously at the present time. However, even if my interpretation of the unconventional fireballs is the correct one, it is obvious that those in position to confirm it should refuse to do so.

[Redacted]

Dr. P. H. Wyckoff

- 2 -

February 20, 1950

The location and behavior of the bright green fireball of February 7, 1950 seems to me to furnish final confirmation of the interpretation given above, for it was the fifth unconventional fireball observed since June, 1949, of which the real path emanated from what I can roughly describe as the Vaughn, New Mexico area. Furthermore, in the same time interval, three other unconventional fireballs have had real paths emanating from an area north and west of Socorro, New Mexico. Finally, it is precisely in these areas that top secret U. S. installations, apparently radar in nature, were installed last June, installations from which, in spite of their highly favorable location, we have never had a single green fireball report.

Only one other point need be stressed, namely, that if I am wrong in interpreting the guided missiles as of U. S. origin, then certainly intensive, systematic investigation of these objects should not be delayed until the termination of the present academic year. Recent international developments compel one to sense the imperative necessity of immediate investigation of the unconventional green fireballs, in case you are in possession of information proving that they are not U. S. missiles.

If such an immediate investigation were to be undertaken, I would recommend that Dr. Fred L. Whipple, of Harvard College Observatory, be placed in charge of the photographic phase of the investigation; that Dr. Peter M. Millman, of the Dominion Observatory, be placed in charge of the spectrographic phase of the investigation; that Dr. L. A. Manning, of Stanford, and Dr. Millman be placed in charge of the radar investigation; and, finally, that Dr. William Crozier, of the New Mexico School of Mines, be placed in charge of dust collection and identification. On the basis of many intensive field surveys, I do not anticipate that ground search will lead to any recoveries, but in case such ground search is to be attempted, it should be carried out on the scale stressed in my conversations with you and Major Oder last month.

In conclusion, may I offer to serve, if needed, as consultant, as suggested in Major Oder's letter to me under date of November 29, 1949, with the stipulation, however, that my service be on a voluntary basis rather than on the \$40 per day contract specified in Major Oder's letter.

With pleasant recollections of the visit I had recently with you and Major Oder, and with highest personal regards, I remain

Sincerely yours,

/s/ Lincoln LaPaz, Head
Department of Mathematics
and Astronomy

CONFIDENTIAL

MCREEP-4/ADC
Mar. 20, 1950

SUBJECT: Light Phenomena Information
TO: United States Atomic Energy Commission
Santa Fe Operations Office
Los Alamos, NM
Attn: Chief, Security Operations Branch

1. Reference is made to your letter of 17 February 1950, DO-1. The United States Air Force has already initiated a project to investigate "light phenomena" in the northern New Mexico area. This project was recommended after attendance of Major F.C.E. Oder of this command at a conference (covering this subject) at Los Alamos during October, 1949. Among those attending were Dr. Bradbury and Mr. Newburger of your laboratory.

2. The tentative plans for this investigation which will be carried out under the supervision of Air Force Cambridge Research Laboratories of the Air Materiel Command follow. The project will be conducted in cooperation with Holloman AF Base at Alamogordo, N.M., and observations will be taken at either (or both) Vaughn or Datil, N.M., where field installations of Holloman AF Base are already located, and where a fairly high frequency of occurrence of the "light phenomena" has been noted. Initially, only remote observations will be taken. Photo theodolites, cameras with suitable diffraction gratings, radio noise spectrum analysers, and if possible, suitable radars will be used. It is hoped to place this equipment in operation within about two months and to continue its operation for at least half a year. Any further investigations will depend upon the results of those described above.

3. It is expected that a project scientist from this command will visit Holloman within the next month. When the exact date of this trip is known, you will be informed by TWX so that, if desired, arrangements for a conference with your personnel can be arranged. At that time any ideas you may have toward a solution of this problem, or any ways in which you might actively participate can be discussed.

4. In order to fulfill Dr. Froman's request that this command make available the information it has accumulated on the subject, a review of the files has been undertaken. A brief summary of occurrences of the "greenlight" phenomena will be prepared, and will be forwarded to you. The size of the files and the great amount of extraneous material contained in them precludes their being forwarded in toto. These files are those which were assembled for project GRUDGE, and have for the most part been declassified, as has been the project. It is believed that if you desire to make an exhaustive study of all the information available here, it can best be accomplished through a visit of your personnel to this headquarters.

FOR THE COMMANDING GENERAL:

JAMES H. ROTHROOK
Colonel, USAF
Chief, Plans Office
Electronic Subdivision
Engineering Division

CONFIDENTIAL

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON

THE INSPECTOR GENERAL
15TH DISTRICT OFFICE OF SPECIAL INVESTIGATION
AIRFIELD AIR FORCE 28TH AIR WING

CLASSIFICATION CANCELLED
BY AUTHORITY OF THE
BY [redacted] Capt, USAF
Historian
DATE 4 DEC 1975

File No: (24-8)-28

SUBJECT: Summary of Observations of Aerial Phenomena in the New
Mexico Area, December 1948 - May 1950

TO: Brigadier General Joseph F. Carroll
Director of Special Investigations
Headquarters USAF
Washington 25, D. C.

UNCLASSIFIED

1. In a liaison meeting with other military and government intelligence and investigative agencies in December 1948, it was determined that the frequency of unexplained aerial phenomena in the New Mexico area was such that an organized plan of reporting these observations should be undertaken. The organization and physical location of units of this District were most suitable for collecting these data, therefore, since December 1948, this District has assumed the responsibility for collecting and reporting basic information with respect to aerial phenomena occurring in this general area. These reports have been distributed to the Air Materiel Command, USAF, in accordance with Air Intelligence Requirements No. 4, and to other interested military and government agencies.

2. There is attached, as a part of this summary, a compilation of aerial phenomena sightings that have occurred mostly in the New Mexico area and have been reported by this District Office subsequent to December 1948. This compilation of sightings is not a complete record of all reported observations, but includes only those in which sufficient information was available to justify their inclusion. The observers of these phenomena include scientists, Special Agents of the Office of Special Investigations (IG) USAF, airline pilots, military pilots, Los Alamos Security Inspectors, military personnel, and many other persons of various occupations whose reliability is not questioned. This compilation sets forth the most important characteristics with respect to each observation and evaluates each sighting into one of three classifications, (1) green fireball phenomenon, (2) disc or variation, and (3) probably meteoric.

3. There is also attached an analysis of the green fireball occurrences in this area made by Dr. Lincoln LaPaz. Dr. LaPaz is the

UNCLASSIFIED

CONFIDENTIAL

File No: (24-6)-28

Subj: Summary of Observations of Aerial Phenomena in
the New Mexico Area, December 1948 - May 1950

25 May 1950

Director of the Institute of Meteoritics and Head of the Department of Mathematics and Astronomy at the University of New Mexico. He was Research Mathematician at the New Mexico Proving Grounds under an OSRD appointment in 1943 and 1944, and Technical Director of the Operations Analysis Section, Headquarters, Second Air Force, 1944-45. Since 1948, Dr. LaPas has served on a voluntary basis as consultant for this District in connection with the green fireball investigations.

4. On 17 February 1949 and again on 14 October 1949, conferences were held at Los Alamos, New Mexico, for the purpose of discussing the green fireball phenomena. Representatives of the following organizations were present at these meetings: Fourth Army, Armed Forces Special Weapons Project, University of New Mexico, Federal Bureau of Investigation, U. S. Atomic Energy Commission, University of California, U. S. Air Force Scientific Advisory Board, Geophysical Research Division, Air Material Command USAF, and the Office of Special Investigations (IO) USAF. A logical explanation was not proffered with respect to the origin of the green fireballs. It was, however, generally concluded that the phenomena existed and that they should be studied scientifically until these occurrences have been satisfactorily explained. Further, that the continued occurrence of unexplained phenomena of this nature in the vicinity of sensitive installations is cause for concern.

5. The Geophysical Research Division, Air Material Command, Cambridge, Massachusetts, has recently let a contract to Land-Air, Inc., Holloman AFB, Alamogordo, New Mexico, for a limited scientific study of green fireballs. The results of this scientific approach to the problem will undoubtedly be of great value in determining the origin of these phenomena.

6. This summary of observations of aerial phenomena has been prepared for the purpose of re-emphasizing and reiterating the fact that phenomena have continuously occurred in the New Mexico skies during the past 18 months and are continuing to occur, and, secondly, that these phenomena are occurring in the vicinity of sensitive military and government installations.

Doyle Rees

DOYLE REES
Lt Colonel, USAF
District Commander

4 Encls

1. Summary of Sightings
2. Photo of Sighting No. 173
w/comments
3. Ltr fr Dr. LaPas to Lt Col
Rees, dtd 23 May 50
4. Graph indicating maximums

File No: (24-8)-28

Subj: Summary of Observations of Aerial Phenomena in
the New Mexico Area, December 1948 - May 1950

25 May 1950

DISTRIBUTION:

- 6 cys, Director of Special Investigations, Headquarters USAF
- ~~1 cy, CG, Air Materiel Command, Wright-Patterson AFB, Ohio~~
- ~~ATTN: Director of Technical Intelligence~~
- 1 cy, CG, Special Weapons Command, Kirtland AFB, New Mexico
- 1 cy, CG, Armed Services Special Weapons Project, Sandia Base,
New Mexico. ATTN: J-2
- ~~1 cy, CG, Headquarters, Fourth Army, Ft. Sam Houston, Texas~~
- ~~ATTN: W-2, S-2, G-2~~
- 1 cy, CG, Hillman AFB, New Mexico
- ~~1 cy, CG, Air Force Cambridge Research Laboratories, Cambridge, Mass~~
- 1 cy, Director, Security Division, U. S. Atomic Energy Commission,
Los Alamos, New Mexico. ATTN: Mr. B. O. Wells
- 1 cy, Federal Bureau of Investigation, El Paso, Texas
- 1 cy, Federal Bureau of Investigation, Albuquerque, New Mexico
- ~~1 cy, Air Force Scientific Advisory Board, Pentagon Building~~
- ~~ATTN: Dr. Joseph Rappert~~
- ~~1 cy, Research and Development Board, Pentagon Building~~
- ~~ATTN: Dr. H. E. Landsberg, Executive Director, Committee on
Cosmology and Geography~~
- 1 cy, File

TO : D. M. Ladd

DATE: August 23, 1950

FROM : A. H. Belmont

SUBJECT: SUMMARY OF AERIAL PHENOMENA IN NEW MEXICO MISCELLANEOUS - INFORMATION CONCERNING

Mr. Tolson	
Mr. E. A. Tamm	
Mr. Clegg	
Mr. Glavin	
Mr. Ladd	
Mr. Nichols	
Mr. Rosen	
Mr. Tracy	
Mr. Egan	
Mr. Gurnea	
Mr. Harbo	
Mr. Hendon	
Mr. Pennington	
Mr. Quinn	
Mr. Nease	
Miss Gandy	

PURPOSE

To advise that: (1) OSI has expressed concern in connection with the continued appearance of unexplained phenomena described as green fireballs, discs and meteors in the vicinity of sensitive installations in New Mexico. (2) Meteor Expert of the University of New Mexico, reported that the phenomena does not appear to be of meteoric origin. (3) OSI has contracted with Land-Air Inc., Alamogordo, New Mexico, to make scientific study of the unexplained phenomena.

NATURE OF PHENOMENA

Observations of aerial phenomena occurring within the vicinity of sensitive installations have been recorded by the Air Force since December, 1948. The phenomena have been classified into 3 general types which are identified as follows:

1. Green fireballs, objects moving at high speed in shapes resembling half moons, circles and discs emitting green light.

2. Discs, round flat shaped objects or phenomena moving at fast velocity and emitting a brilliant white light or reflected light.

3. Meteors, aerial phenomena resembling meteoric material moving at high velocity and varying in color.

The above phenomena have been reported to vary in color from brilliant white to amber, red and green.

Since 1948, approximately 150 observations of aerial phenomena referred to above have been recorded in the vicinity of installations in New Mexico. A number of observations have been reported by different reliable individuals at approximately the same time.

KFD/mp

RECORDED - 2

INDEXED - 2

52 SEP 18 1950

Handwritten signatures and initials, including a large 'S' and 'D'.

RESULTS OF AN INQUIRY BY PROFESSOR LINCOLN LA PAZ

D. Lincoln La Paz

[redacted] Institute of Meteoritics, University of New Mexico, submitted an analysis of the various observations on May 23, 1950. He concluded, as a result of his investigation, that approximately half of the phenomena recorded were of meteoric origin. The other phenomena commonly referred to as green fireballs or discs he believed to be U.S. guided missiles being tested in the neighborhood of the installations. [redacted] pointed out that if he were wrong in interpreting the phenomena as originating with U.S. guided missiles that a systematic investigation of the observations should be made immediately. [redacted] pointed out that missiles moving with the velocities of the order of those found for the green fireballs and discs could travel from the Ural region of the USSR to New Mexico in less than 15 minutes. He suggested that the observations might be of guided missiles launched from bases in the Urals.

On the basis of the investigations made by [redacted] and the Air Force, it was concluded that the occurrence of the unexplained phenomena in the vicinity of sensitive installations was a cause for concern. The Air Force entered into a contract with Land-Air, Incorporated, Alamogordo, New Mexico, for the purpose of making scientific studies of the green fireballs and discs. It was pointed out in the summary furnished by OSI on July 19, 1950, that the unexplained green fireballs and discs are still observed in the vicinity of sensitive military and Government installations.

RESULTS OF AIR FORCE INVESTIGATION

The Air Force together with Land-Air, Incorporated, have established a number of observation posts in the vicinity of Vaughn, New Mexico, for the purpose of photographing and determining the speed, height and nature of the unusual phenomena referred to as green fireballs and discs. On May 24, 1950, personnel of Land-Air, Incorporated, sighted 8 to 10 objects of aerial phenomena. A 24-hour day watch is being maintained and has been designated "Project Twinkle."

CONCLUSIONS

The Albuquerque Office, in a letter dated August 10, 1950, advised that there have been no new developments in connection with the efforts to ascertain the identity of the strange aerial phenomena referred to as green fireballs and discs. The Albuquerque Office advised that [REDACTED] Project Engineer, had been informed of the Bureau's jurisdiction relative to espionage and sabotage and arrangements have been made so that the Bureau will be promptly advised in the event additional information relative to this project indicates any jurisdiction on the part of the Bureau.

ACTION

None. The above is for your information.

JHM
[Signature]

Office Memorandum • UNITED STATES GOVERNMENT

TO : THE DIRECTOR

FROM : MR. D. M. LADD

SUBJECT: *OK*
FLYING SAUCERS
FLYING DISCS
GREEN FIREBALLS

DATE: October 9, 1950

Tolson _____
Ladd _____
Clegg _____
Glavin _____
Nichols _____
Rosen _____
Tracy _____
Harbo _____
Mohr _____
Tele. Room _____
Nease _____
Gandy _____

PURPOSE

To advise you of the most recent information known to the Bureau concerning the captioned aerial phenomena.

BACKGROUND

You will recall that on August 23, 1950, I furnished to you a memorandum regarding Project Twinkle set up by the Department of the Air Force, with the assistance of Land-Air, Inc., at Vaughn, New Mexico, for the purpose of obtaining data regarding these unusual aerial phenomena which had been seen in the vicinity of sensitive installations in New Mexico. To date the Air Force has not advised us of any new developments in connection with this project.

[Redacted] Project Engineer of Project Twinkle, has been contacted by the Albuquerque Office and arrangements have been made in order that the Bureau will be advised in the event any information relative to these phenomena indicates any jurisdiction on the part of the Bureau.

According to Bureau files, an average of approximately three or four complaints have been received per month from June through September. These complaints were brought to the attention of OSI. A review of Bureau files does not indicate that there has been any increase in the sightings of these phenomena during or as a result of the war in Korea.

JURISDICTION FOR INVESTIGATION OF THESE PHENOMENA

You will recall the investigation to obtain information concerning these aerial phenomena is the jurisdiction of the Department of the Air Force. The Department of the Air Force is aware of our jurisdiction in matters relating to espionage, sabotage and internal security, and we have contacted OSI and requested them to advise us of any developments in connection with these phenomena which would be of interest to us as a result of our jurisdiction.

EHM:de

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OCT 10 1950

EHM

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POSSIBLE ORIGIN OF THESE AERIAL PHENOMENA

The Bureau has been advised in the past by OSI that many of the sightings reported to them were determined by investigation to have been of weather balloons, falling stars, meteorological phenomena and other air-borne objects.

INFORMATION OBTAINED BY BUREAU LIAISON FROM OSI, WASHINGTON, D. C.
RE THE CAPTIONED MATTERS ON OCTOBER 9, 1950.

Bureau liaison determined on the morning of October 9, 1950 from OSI headquarters that the investigations of these aerial phenomena are being handled by OSI, Wright Field, Ohio. Their investigation of these phenomena fails to indicate that the sightings involved space ships or missiles from any other planet or country.

According to OSI, the complaints received by them have failed to indicate any definite pattern of activity. OSI further advised they are closely following the investigation of the captioned matters, and they will advise this Bureau of any matters of interest.

ACTION

None. The above is for your information.

OSI carried on after Grudge, so no special group to investigate, but investigations continued anyway!

~~SECRET~~

Office Memorandum • UNITED STATES GOVERNMENT

TO Chief of Staff *(2) 5-2*
FROM AC of S, G-2

DATE: 25 October 1950

SUBJECT: Investigation of reports from Oak Ridge regarding unidentified objects over the AEC

(93) 28-2 452.1

1. Attached file (TAB B) is relative to reported objects over AEC installation, Oak Ridge, Tennessee.

2. To determine the reliability of witnesses, attitude of concerned personnel, and to get a first hand opinion on the subject, a representative of the G-2 section was sent to Oak Ridge 19, 20 and 21 October. Report resulting from investigation is herewith, TAB A.

3. There is substantial evidence that unidentified objects have been sighted over the AEC installation. It is further evident that officials of the AEC and investigative agencies are concerned with the situation and it is not viewed with levity. The possibility of radio controlled objects cannot be dismissed.

4. Recommendations: That the complete file be forwarded to Director of Intelligence, Department of Army, for information, comment, and coordination with other government agencies.

25 Oct. 50

JA
JOHN MEADE
Colonel, GSC
AC of S, G-2 *aud*

- 2 Incls
1. Tab A) Not Att R/S
2. Tab B)

Appel - rec Action
gms

PERMANENT RECORDS COPY

(25) Mar 48

~~SECRET~~

Office Memorandum • UNITED STATES GOVERNMENT

TO : DIRECTOR, FBI

FROM : SAC, ALBUQUERQUE

SUBJECT: VITAL FACILITIES
 NATIONAL MILITARY ESTABLISHMENT
 INTERNAL SECURITY - R
 Bufile: 65-58300

DATE: 12-1-50

Re Boston letter dated 11-7-50, pertaining to an interview with [redacted] who was contacted by the Boston Office, and who furnished some information pertaining to green fireballs in the northern part of the state of New Mexico.

This letter also suggested that this office consider the advisability of obtaining Bureau approval for an interview with Dr. LINCOLN LA PAZ of the University of New Mexico.

This is to advise that the Albuquerque Office and the El Paso Office, prior to the opening of the Albuquerque Office on December 27, 1949, has received considerable information concerning green flares or fireballs or unknown aerial phenomena in the northern part of New Mexico since December 5, 1948.

Most of the information has been received from Dr. LA PAZ, who is Head of the Meteoritics Department at the University of New Mexico, Albuquerque, New Mexico. Considerable information has also been received from the 17th District Headquarters of the Office of Special Investigations, all of which has been furnished to the Bureau previously, under the title "GREEN FLARES IN THE VICINITY OF LAS VEGAS, NEW MEXICO, December 5, 1948."

No active investigation is being conducted in this respect, since the Air Force is more or less the gathering agency for the accumulation of information pertaining to these unknown aerial phenomena; however, liaison is being maintained with the 17th District Headquarters, OSI at Albuquerque, New Mexico, and although no pertinent developments have occurred recently, any that may be received, will be immediately reported to the Bureau.

Opinions of Vital C. Installation

AGG
 100-122

cc: Boston (100-22795)

*Consol.
 wrong caption
 file 65-58300*

221024
 ALL INFORMATION CONTAINED
 HEREIN IS UNCLASSIFIED
 DATE 2/8/83 BY SP-10SK/18K

65-58300-139X
 21

Complete

Flying Disc Found In US

THE STRAITS TIMES

22 DEC 1950

ALBUQUERQUE, NEW
MEXICO, Thurs.

Dr. Lincoln Lapaz was surprised yesterday to face four claimants to a strange disc he had been trying to identify for a month.

The U.S. Navy Research Department was first to lodge a claim, saying they wanted it to gather information on cosmic rays.

Then the University of Minnesota said the object must be part of a research project the university sponsored in New Mexico a year ago, when they sent discs aloft attached to balloons.

Then came a terse, sinister message from White Sands Weapons Proving Ground in New Mexico demanding that Dr. Lapaz return the disc to them immediately.

Finally a group of "military experts who cannot be identified" also laid claim to the disc.

The 18-inch sphere was found last month by deer hunters in an area where witnesses had reported seeing a green fireball or meteor fall.

Dr. Lapaz said it contains photographic film marked Ilford, Ltd., London, England.
-A.P.

The Straits Times, Singapore, Malaya, Asia. 22 Dec. 1950.

Reliability of information is unknown.

OP

~~CONFIDENTIAL~~

UNCLASSIFIED

PROJECT TWINKLE

FINAL REPORT

RETURN TO: Director Aerospace Studies Inst ATTN: Archives Branch Maxwell AFB, Alabama	X 773.6013 27 Nov. 1951
---	----------------------------

L. ELTERMAN

27 November 1951

APPROVED:

1. TWINKLE, Project

P. H. WYCKOFF
 Chief, Atmospheric Physics Laboratory

DOWNGRADED AT 3 YEAR INTERVALS;
 DECLASSIFIED AFTER 12 YEARS.
 DOD DIR 5200.10

UNCLASSIFIED

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Security Information

ELNaton/elf

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AIR MAIL

11 Dec 1951

R-114-16S

CRNTO

SUBJECT: Transmittal of Final Report of Project Twinkle

TO: Director of Research and Development
Headquarters, USAF
ATTN: AFDRL-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

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

DOWNGRADED AT 3 YEAR INTERVALS;
DECLASSIFIED AFTER 12 YEARS.
DOD DIR 5200.10

UNCLASSIFIED

(Security Information)

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~~CONFIDENTIAL~~

~~Security Information~~

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.

DECLASSIFIED AT 3 YEAR INTERVALS;
DECLASSIFIED AFTER 12 YEARS.
DOD DIR 5200.10

~~CONFIDENTIAL~~

~~Security Information~~
UNCLASSIFIED

~~CONFIDENTIAL~~

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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DOD DIR 5200.10

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~~CONFIDENTIAL~~

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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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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