RESTRICTED

GUIDE TO INVESTIGATION OF UNIDENTIFIED AERIAL OBJECTS

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Incident No. 306

1. Date of Observation 24 April Date of Interview

2. Exact time of observation (local) BETWEEN 1030 - 1035 MST

3. Place of Observation: (Map Coordinates) 32° 53' N 107° 20' W

4. Position of observer (air, car, bldg, location of - give details): GROUND, OPERATING A THEODOLITE ~~FOR OPT~~ TRACKING BALLOON

5. What attracted attention to object: TURNED TO LOOK at Balloon with NAKED EYE

6. Number of objects and sketch of formation or grouping: ONE

7. Apparent size (compare to known object, i.e., sun, moon, thumb or fist at arms length): ~.02° (SIZE of balloon 350 gm size at 15000 feet distance)

8. Color of object: White

9. Shape (give graphic description - compare with known objects): ELLIPTICAL, around 2½:1 slenderness ratio

10. Altitude (angle of elevation above horizon - 0 degrees at horizon, 90 degrees overhead): Came in from 210° at 45° elevation passed through the sun, ~~[illegible]~~ was about 35° when disappeared, at 25° elevation at about 250 east of north east then

11. Direction from observer (Angle clockwise from North):

12. Distance from observer (Distance to town, bldg, etc., over which object appeared to be): UNKNOWN

EE1

13. Direction of flight of object (s): SEE BACK

measured

14. Time in sight: around 60 seconds

Winds Missing

15. Speed (time to cover given angular distance): ~~[illegible]~~ measured to be 5° Azimuth/sec

16. Sound and odor: NONE — Quiet — No Trucks or Planes near at time

17. Trail (color, length, width, persistence, etc.) NONE

18. Luminosity (visible by reflection, incandescence, other - degree of brilliance): [illegible] Reflection

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19. Projections (fins, wings, rods, antennae, canopies, etc.):
NONE Visible, Focus not good

20. Maneuvers (turns, climbs, dives, etc. - sketch of flight path):
See BACK

21. Manner of disappearance: Climed GREW smaller rapidly then disseapeared

22. Effect on clouds:
No Clouds, No effect

23. Additional information concerning object:
See report

24. Weather conditions and light at time of sighting: Clear except for 1/10 Cummulus towrst, No Dust, Bright Desert day

25. Did observer wear glasses, especially polaroid glasses, at time of sighting, or was object viewed through canopy, window, or other transparent material?
No

Name and address of observer:

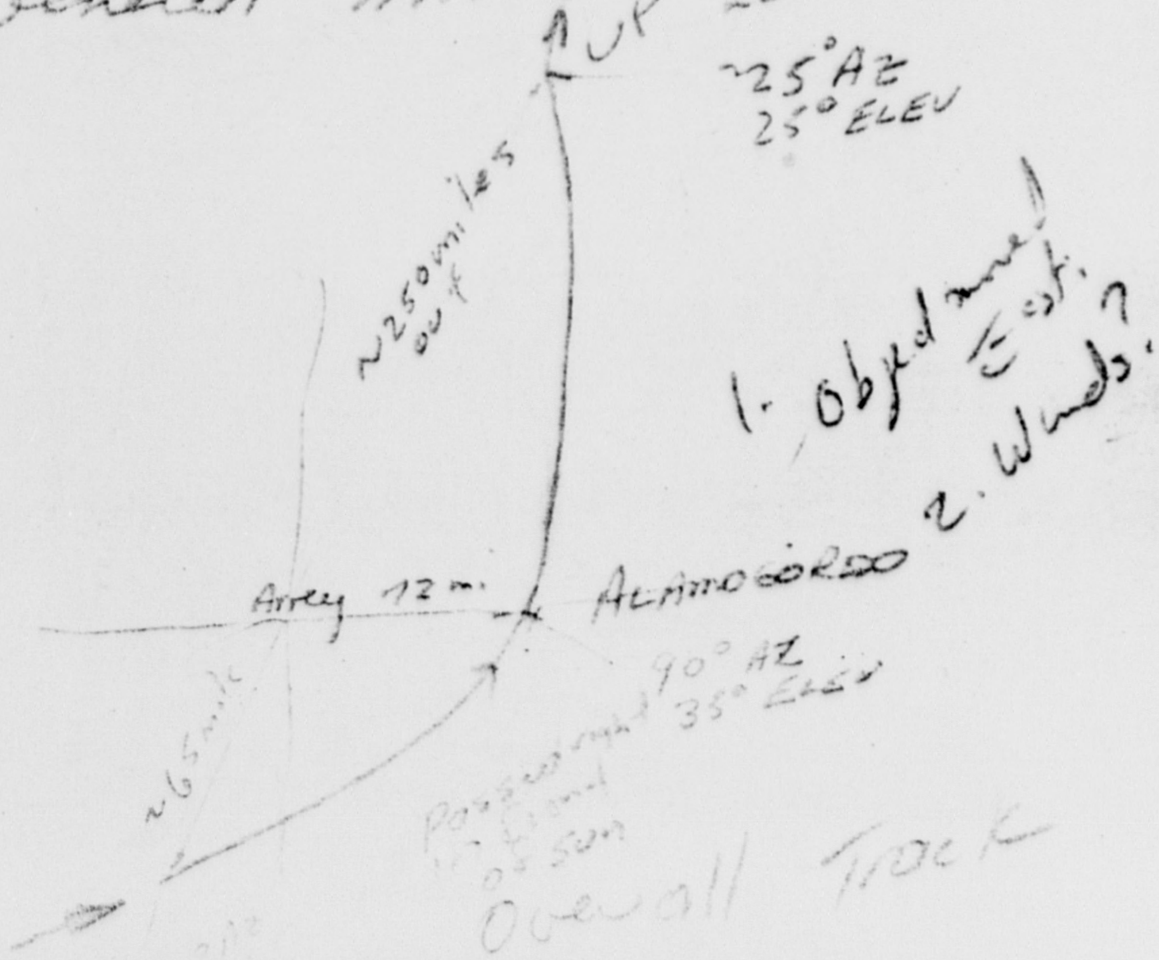
[redacted]

Occupation and hobbies:

Chemical Engineer
Meteorological Training (Equipment & balloons)
Member BALLOON Crew General M.I.T.

Minneapolis Minn

Hobbies, Astronomy



OVER

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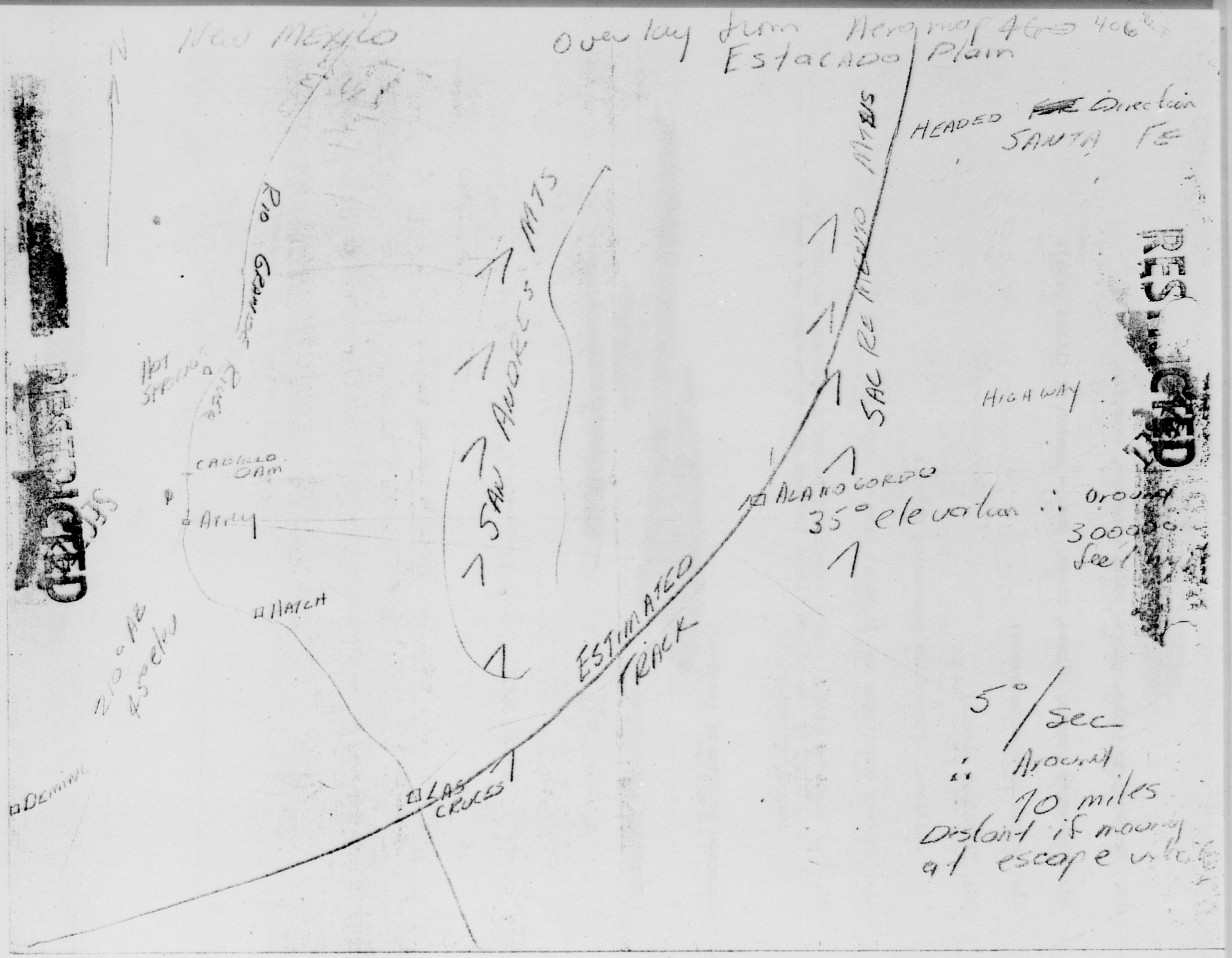
New Mexico
Overlay from Aerogram 406
Estacado Plain
HEADED direction
SANTA FE
HIGHWAY
Rio Grande
Pot Spring
CADILLO OAM
Arry
MATCH
DEMING
LAS CRUCES
ESTIMATED TRACK
SAN AUGUSTIN MTS
SAC RE MENTO MTS
ALAMOGORDO
35° elevation ∴ Around 300000 See
5°/sec
∴ Around 70 miles
Distant if moving at escape velocity
210° AZ 45 elev
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Pertinent Information

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Object: Cellophed

$2\frac{1}{2}:1$ length to width ratio

.02° subtended length

white - light yellow on side

velocity: 5°/sec

first seen: 45° elevation

210° azimuth

elevation angle increased to 25° at

20°-25° [illegible] the [illegible]

to 27°

time in sight: 60 seconds

Orange Ball
Obj Sun-Ele

210° SW

.02
.004
.0202

2.5

$\frac{1}{2\frac{1}{2}}$

$\frac{2}{5}$

2.5°

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UNCLASSIFIED [redacted] UNCLASSIFIED

SAVE

HEADQUARTERS

AIR MATERIEL COMMAND

IN REPLY ADDRESS BOTH COMMUNICATION AND ENVELOPE TO COMMANDING GENERAL, AIR MATERIEL COMMAND, ATTENTION FOLLOWING OFFICE SYMBOL:

MCIAXS/EWS/amc

WRIGHT FIELD, DAYTON, OHIO

MAY 5 1949

SUBJECT: Project "Grudge"

TO: Commanding Officer
3160 Electronics Station
Cambridge Field Station
230 Albany Street
Cambridge 39, Massachusetts
ATTN: ERH

1. Reference is made to your letter 000.92, dated 18 April 1949, subject: "Analysis of Project 'Grudge' Reported Incidents".

2. Information provided in referenced letter has been very helpful in analysis of Project "Grudge" incidents.

3. The following additional information is requested:

a. Do atmospheric research balloons ever carry lights or luminescent materials that might be visible at night?

b. Lists of balloons released since No. 101 on 17 Nov. 1948 and lists of future releases.

c. Photographs and descriptions of equipment carried aloft by these balloons.

d. Further information as to the altitudes attained by the balloons and their size at various altitudes.

4. Your recommendations for improvement of our incident check list are appreciated. A copy of the revised collection guide form is inclosed for your information.

5. Project "Grudge" is classified "Restricted". Therefore, this correspondence may be downgraded and future correspondence classified consistent with material relative to research balloons but not lower than "Restricted".

BY COMMAND OF GENERAL McNARNEY:

W. R. CLINGERMAN
Colonel, USAF
Chief, Analysis Division
Intelligence Department

1 Incl:
Questionnaire Form,
"Guide to Investigation"

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Z-883 S-39252

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000.92 ERHT 1st Ind (contd)
Subject: Project "Grudge"

discussed with Dr. Peoples of this station the problems encountered in obtaining reliable information when observing unidentified objects. Mr. [redacted] sent to Dr. Peoples an information copy of his observations near Arrey, New Mexico on April 24, 1949. It is felt that although the theodolite and stop-watch were of great assistance in making estimates, the principal factor responsible for the unusually specific information contained in this report, is that Mr. [redacted] was made aware in advance of what factors should be observed in case such an object were sighted. Therefore, it is urged that your office issue detailed advance observation instructions to people who might be in a position to make observations and turn in reports.

3. It is felt that insufficient observing instructions are implied in the inclosed questionnaire. Item #12 is especially misleading, because an observer cannot possibly determine what town or building the object may be over, unless the object descends to a low enough altitude so that it can be determined to be on either the near or far side of a known object.

FOR THE COMMANDING OFFICER:

Joseph O. Fletcher

JOSEPH O. FLETCHER
Major, USAF
Director, Base Directorate
for Geophysical Research

1 Incl
w/d Incl 1
2. Cy of Rep,
Mr. [redacted]

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B/ltr, CG, AMC, to CO, CFS, Subject: Project "Grudge"

000.92 1st Ind ERHT/JAP/rc

3160 Electronics Station, CFS, 230 Albany Street, Cambridge 39, Massachusetts, 18 May 1949.

TO: Commanding General, Air Materiel Command, Wright-Patterson Air Force Base, Dayton, Ohio, ATTN: MCIAXS

1. Additional information requested in basic letter is as follows:

a. Reference 3a. The balloons used by the Base Directorate for Geophysical Research do not carry lights or luminescent materials, nor is it anticipated that such equipment will be carried on future flights.

b. Reference 3b. An up-to-date list of balloon flights will be prepared and sent in the near future. Project plans call for launching of 20 ft. diameter plastic balloons at the following bases during the coming summer:

Clovis, New Mexico
Enid, Oklahoma
Phoenix, Arizona
Las Vegas, Nevada

The total number of launchings from all of these sites will not average more than three per week. It is also planned to launch eight 20 ft. diameter balloons from Omaha, Nebraska, between July 15 and August 15, 1949. The dates of other flights are indefinite at this time.

c. Reference 3c. Photographs and detailed descriptions of equipment would serve no useful purpose, because of the number of different projects being conducted. The most conspicuous gear included on the balloon flight train is a brightly colored flag of approximately 6' x 4', and one or two standard meteorological parachutes. At times, antenna wires as long as 150 ft. are flown. The scientific equipment is generally rather compact and is less than 1 cu. ft. in volume. As a general rule, a reward notice is attached to each balloon identifying the agency launching it.

d. Reference 3d. The 20 ft. plastic balloons fly at constant level between 40,000 to 60,000 ft. depending upon the load and other conditions. A few 70 ft. plastic balloons have been flown which reached altitudes of 80,000 to 100,000 feet. Occasionally, rubber meteorological balloons are flown using clusters of not more than three balloons.

2. Several months ago, Mr. C. B. Moore, now of General Mills, Inc., but formerly associated with the balloon project at New York University,

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

Supplemental Information

Power of Theodolite (ML-47 [redacted]) mentioned in report is 3-3½ power.

All Angles of less than one (1) degree must be estimated as instrument measures only down to degrees. (Loose mechanisms can throw instrument off one degree)

A 350 gram balloon at 15,000 feet is approximately 8 feet in diameter

1. ~~Figure actual size at 10,000, 20,000, 60,000~~ Assume 20,000, 40,000 & 60,000' alt from the figure out speed, distance from observer, size of object.

60' per degree

$$\frac{.3'}{60} = .005$$

File (Press Relations) Hq Dpt.

Unclassified

24 April 1949

In Pub Relations 72135

?

1. The incident where theodolite measurements were made of an unidentified aerial object and to which the article by Commander McLaughlin apparently refers, was reported by several persons engaged in the measurement of wind velocities by balloon releases in ~~[illegible]~~ New Mexico.

2. The report of the incident gave the following information:

~~X~~On 24 April 1949, 3 miles north of Arrey, New Mexico, five persons saw a rapidly moving object ~~[illegible]~~. These persons had released a balloon and were following it with a theodolite. After taking a reading at 1030 MST, one observer continued to follow the balloon while two others observed a whitish spherical object with the naked eye right along the direction that the theodolite was pointing. The object observed with the naked eye was drifting east rapidly (5°/sec. as estimated by stopwatch and width of fingers) but the observers had expected to encounter similar winds on the balloon.

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000.92 ERHT 1st Ind (contd)
Subject: Project "Grudge"

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FOR THE COMMANDING OFFICER:

JOSEPH O. FLETCHER
Major, USAF
Director, Base Directorate
for Geophysical Research

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added (2nd
2. Cy of Incl's Rep

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OBJECT REPORT

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On 24 April 1949, at 3 miles north of Arrey, New Mexico, (107° 19½'W 32° 52½'N) 4 Navy enlisted men from White Sands Proving Ground (Chief [redacted]tz-simmons and [redacted]) and I saw a rapidly moving object while making a pibal wind run. We had 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, [redacted] 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 saw 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 that true balloon was still there, whereupon I abandoned it and picked up the object after it came out of the sun. (The computed bearing of sun was 127° azimuth and elevation 60°) 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 2½ : 1 slenderness ratio, length about .D2° subtended angle, and white in color, except for a light yellow of one side as though it were in 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 was figured which put the 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.

Information is desired if this was some new or experimental aircraft or for any explanation whatsoever.

[redacted]
Minneapolis 13, Minnesota
[redacted]

NOTE:
No clouds in sky, no haze.
No noise, very quiet in area
(no cars, planes or other engines running)
No trail, no exhaust visible.
No odor.

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When a difference in the angle between the theodolite and supposed balloon became apparent, one person observing with the naked eye took over the theodolite and found the true balloon still there. The balloon was then abandoned and the other object picked up just after it came out of the sun. The object was moving too fast to crank the theodolite around, therefore one of the observers pointed the theodolite while another looked through it. The object appeared to be ellipsoid about 2½:1 slenderness ratio, lenght about .02° subtended ~~xxx~~ angle, and white in color, except for a light yellow of one side as if it were in shadow. A hard focus on the object was not obtained at any time due to the speed at which the angles changed. Therefore, no good detail was seen. 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 observation time of about 60 seconds.

One observer, ~~[illegible]~~ by assuming that the object was traveling at escape velocity of 2500 ft per second, calculated that the object was at an elevation of some 300,000 ft (about 58 miles).

Nelson Gill

3. After examination of the data available and consideration of all factors involved, USAF consulting specialists consider that neither speed, altitude nor size of the object ~~could~~ can be used with any knowledgeable degree of reliability and that it is possible that a small object was seen at much less range than the observers suspected.

4. In support of this, it must be noted that the object was never clearly in focus through the theodolite and that details were not discernable either through the theodolite nor with the naked eye. ~~[illegible]~~ To be able to solve the equation:

s (distance object traveled) = 2 times the distance from point of observation to the object times the sin of $\frac{1}{2}$ the angle subtended.

~~There are three values which are~~ Where two variables ~~Two of these~~ must be known to solve for a third. In the case of this observation only one known value was available, i. e. the angle subtended. The observers had no possible way to determine either the speed of the object nor its distance from them.

The observers ~~arbitrarily~~ arbitrary selected 2500 ft per second (1700 mph) and solved the equation. This is how the altitude of 300,000 ft was obtained. We may just as easily select 70 mph for the speed of the object and find that it would have been at a distance of 800ft. The size in the first instance equals 105 ft in length, in the latter an object of less than one half foot length. These values can be calculated using the following formulae:

$$\frac{2}{360^\circ} \times .02^\circ = .00035 \text{ radians}$$

.00035 radians times the distance of object from point of observation equals the length of the object.

5. The consultants of the AMC Aero-Med laboratory state that reliable estimates of distance can only be made when the object is identified as some known object or type of object by the observer. It is interesting to note that the observers at first thought the object was the balloon which they had released. When they ~~became aware~~ realized that it was not, there was no way to judge distance except by assuming that it had ~~xxxxxxxxxxxxxxxx~~ a fantastic speed.

The questionable data in this incident, the extremely short time of observation ~~xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx~~ and the overwhelming evidence of misidentificatinn in other cases, leads to the conclusion that the object seen ~~in this case~~ was misidentified ~~xxxxxx~~ by the observers. There is nothing in the evidence to refute that the object, ~~xxxxxx~~ small, at much closer range and traveling at reasonable speed. ~~The~~ ~~xxxxxx~~ Since the observers themselves could not observe any detail, it is not possible to ~~xxxxxxxxxxxxxxxxxxxxxxxxxxxx~~ give a positive identification for the object.