PROJECT 10073 RECORD CARD

1. DATE	2. LOCATION	12. CONCLUSIONS
[illegible] October [illegible]	Laredo, Texas	☐ Was Balloon ☐ Probably Balloon ☐ Possibly Balloon
3. DATE-TIME GROUP Local _____ GMT 11/0722Z	**4. TYPE OF OBSERVATION** ☐ Ground-Visual ☐ Ground-Radar ☐ Air-Visual ☐ Air-Intercept Radar	☐ Was Aircraft ☐ Probably Aircraft ☐ Possibly Aircraft
5. PHOTOS ☐ Yes ☐ No	**6. SOURCE** Military	☐ Was Astronomical Meteor ☒ Probably Astronomical ☐ Possibly Astronomical
7. LENGTH OF OBSERVATION 22 seconds	**8. NUMBER OF OBJECTS** two	**9. COURSE** not given
		☐ Other _____ ☐ Insufficient Data for Evaluation ☐ Unknown

10. BRIEF SUMMARY OF SIGHTING

A radar target was picked up at a range of 454 nautical miles & at 462 nautical miles at a height of 64 nautical miles. The targets lasted for a total of 22 seconds.

11. COMMENTS

Probably a meteor.

ATIC FORM 329 (REV 26 SEP 52)

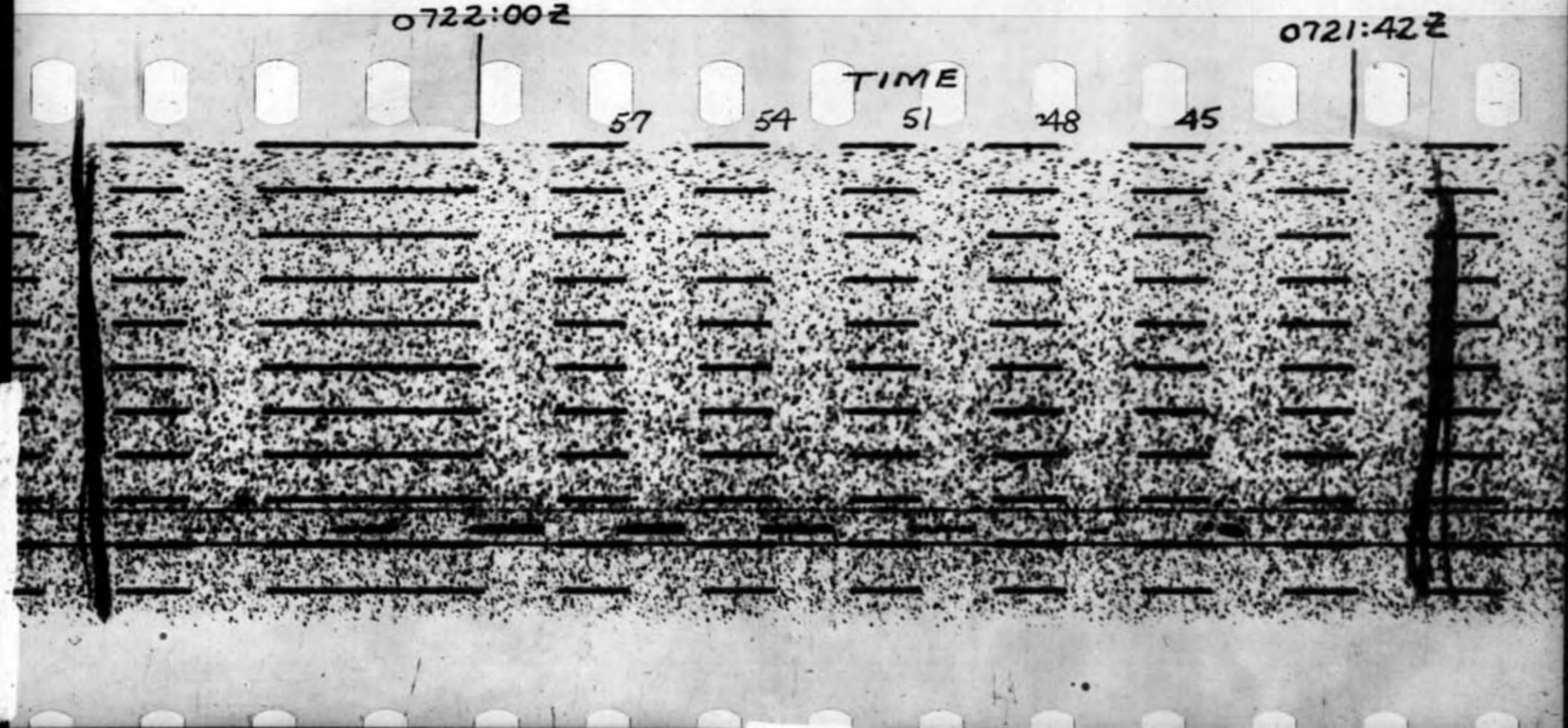
File 6102

October 11, 1958

Laredo, Texas

2 photos

UNIDENTIFIED TARGET
11 OCTOBER 1958 (XW-2)
Time Switching - Beams 1Lo+2Lo
(1Lo when range marks are on)
Range reference (upper continuous line)
= 504 nmi
Range marks are 100 nmi apart
Lincoln G.O. #2



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UNCLASSIFIED

310-0461-1731

INTERIM LETTER REPORT

CONTRACT NO: AF30(602)-1741

UNIDENTIFIED TARGET OF AN/FPS-17(XW-2) RADAR MISSION 164

I. INTRODUCTION

The AN/FPS-17(XW-2) radar at the Laredo Test Site, Laredo, Texas was in operation on 11 October 1958. The expected target was 1958 Δ 2, the instrumented portion of the third Russian satellite, Sputnik III. A target was observed, but the characteristics of the intercept would make one believe that the object observed was not the one expected. Other possible explanations are discussed below.

II. CONCLUSIONS

The object observed was most probably:

(a) a meteor showing both a head echo type reflection and a specular type reflection from the trail, or

(b) two meteors occurring in the same portion of space at very nearly the same time.

III. ANALYSIS

A. FACTS RELATED TO THE UNIDENTIFIED TARGET

The known facts related to the intercept of this unidentified target are:

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

UNCLASSIFIED

Classification Cancelled
(or changed to UNCLASSIFIED)
Auth. Quintanilla, LT COL, USAF
By FDPI (UFO)
Date 27 Jan 69
AFR 205-1 para 1-126

[redacted]

[redacted]

(a) the target was observed on 11 October 1958 beginning at 07h 21m 44.0s Universal time and lasting until 07h 22m 12.0s, an overall duration of 28.0 seconds.

(b) the target as displayed on film recordings of the radar signal consisted of two unusually distinct sections. The first of these lasted for approximately 0.75 seconds, showing a range change from 454 to 473 nmi. The second portion began where the first left off and lasted for 27.3 seconds. The range of this target changed from 462 to 467 nmi in that time. Absolute range as indicated here is accurate to within 5 nmi, but relative to each other they are accurate to within 2 nmi.

(c) the target was observed in three of four beams being energized as follows:

Beam 1 Low	No target
Beam 2 Low	0721:44.3 to 0722:03.0
Beam 1 High	0721:45* to 0721:55.5
Beam 2 High	0721:44.0 to 07:22:12.0

* May have entered prior to this time, but beam was not energized because of Beam Switching.

(d) No doppler frequency information was available because the range gate was set so that only targets between 504 and 1178 nmi would alarm the Lincoln Coded Pulse doppler system.

(e) An intercept of the Russian satellite, 1958 Δ2 had been expected at about 0733Z at a range of 700 to 900 nmi.

(f) No other targets were observed by the radar between 0701Z and 0800Z.

B. POSSIBLE TARGETS

A signal such as that received by the radar could, at first glance, have been reflected from any one of the following:

(a) A rocket launched from the vicinity of the White Sands Proving Grounds.

(b) A satellite passing through the beams in a northeasterly direction.

(c) A meteor or meteors.

(d) Some unknown and unexpected object.

C. INTERPRETATION OF THE FACTS

A knowledge of the location and path of the observed object is desirable if one is to distinguish between the above possibilities. The range of about 470 nmi would position the observed object somewhere in the vicinity of the White Sands Proving Grounds. The observation of the object simultaneously by three of the four beams energized allows us to estimate the angular coordinates more exactly than if reflections were seen in only one beam. If the possibility of side lobe reflections are neglected, the object observed must have been at an elevation angle between 3.5 and 4.5 degrees and an azimuth angle from the radar between 312.5 and 313.5 degrees.

Conversion of these radar coordinates to a more meaningful form places the observed target probably within 5 nmi of a point in space defined as follows:

Origin: at the Air Force Missile Development Center, Holloman Air Force Base, New Mexico

Coordinates:

West	10 nmi
South	2 nmi
Height	64 nmi

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The path (direction and speed) of the target cannot be resolved to any great degree of accuracy. The sudden appearance of the signal in three beams indicates that the object suddenly appeared at this position in space and didn't gradually move into one beam and then another. The target should be considered as two separate parts, that which lasted for 0.75 seconds and the other, which had a duration of 28 seconds in Beam 2 High. The first target had a range rate of change of about + 25 nmi per second. The second target had an average range rate of change of 0.2 nmi per second.

The accompanying photographs show that the signal died out of Beam 1 Hi before it died out of Beam 2 Hi. This could be explained by the passage of the target from one beam into the other, or by a decrease in the strength of the reflected signal. If the target were closer to the center of Beam 2 Hi, we would expect to get the stronger signal in that beam.

D. ELIMINATION OF POSSIBLE TARGETS

Consideration of the facts available indicates that several of those objects listed as possible targets would not give rise to a signal such as that received.

(a) A rocket launched from the White Sands Proving Ground would have been picked up in a low beam about 30 to 40 seconds before it was seen in the high beams, and it normally is seen for longer than 28 seconds. No such phenomena as that demonstrated by the early portion of the target has been observed on previous rockets launched at White Sands.

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(b) Only one satellite was known to have been in the vicinity at the time of observation. This one should have passed through the beams over 200 nmi to the northwest about 12 minutes later. The prediction bulletins are subject to some error, but they are seldom far enough off in either position of the orbit or time of passage for this observed object to have been the satellite.

All previous observations of satellites on south-to-north passes have shown similar range rate characteristics. But they have also gradually moved into Beam 1 and then Beam 2, which is not the case here. No satellites in orbit come so close to the earth as the indicated 64 nmi. If they did, they would soon fall out of orbit or burn up in the atmosphere.

One should note that there may be several pieces of satellites in orbit which nobody is keeping track of. These pieces could, at times, be observed, but the sudden appearance in three beams and a rate of change of range of 25 nmi per second are not characteristics of satellite intercepts.

(c) The observed target height, 64 nmi, is in the meteor band. A very sudden appearance of a strong signal is characteristic of meteors. The appearance of the signal suddenly in three beams is quite possible in the case of a meteor. Although there is much yet to be learned about meteors, it is known that not all meteors in a beam are detected by a radar. There are requirements regarding the orientation of the meteor trail with respect to the radar beam which must be met.

Then, too, the exact height at which a meteor trail becomes detectable varies. Either one or both the orientation of the trail and the ionization formation, could explain why the meteor was not seen until such a time as it reached a position within the beams.

The first portion of the observed trail might well have been an echo from the so-called meteor head, thus giving us the very high rate of change of range (the meteor head moves with the speed of the meteor itself). Meteor velocities vary over a wide range, but they may be as high as twice that range rate of change observed.

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The second portion of the trail is characteristic of meteor trail echoes, where the echo actually comes from the ionized trail left behind the meteor. This type of echo has a very little change in range, since once the trail exists its only movement is caused by expansion of the trail or movements of the air in which the trail lies.

IV. RECOMMENDATIONS

Two possible sources of information pertaining to this target have not been approached as yet. The first of these is the White Sands Proving Ground. They ordinarily notify the Laredo Test Site of any rockets they plan to fire, which may pass through the radar beams. The absence of any firings on 11 October 1958 should be verified by contacting the authorities of the White Sands Proving Ground.

The Harvard College Observatory has two cameras recording pictures of meteors which occur in the vicinity of the White Sands Proving Ground. There is a possibility that they would have observed any meteor, or other phenomena which created visible light, at the time and location of this unidentified target.

KBCross/r
3 November 1958

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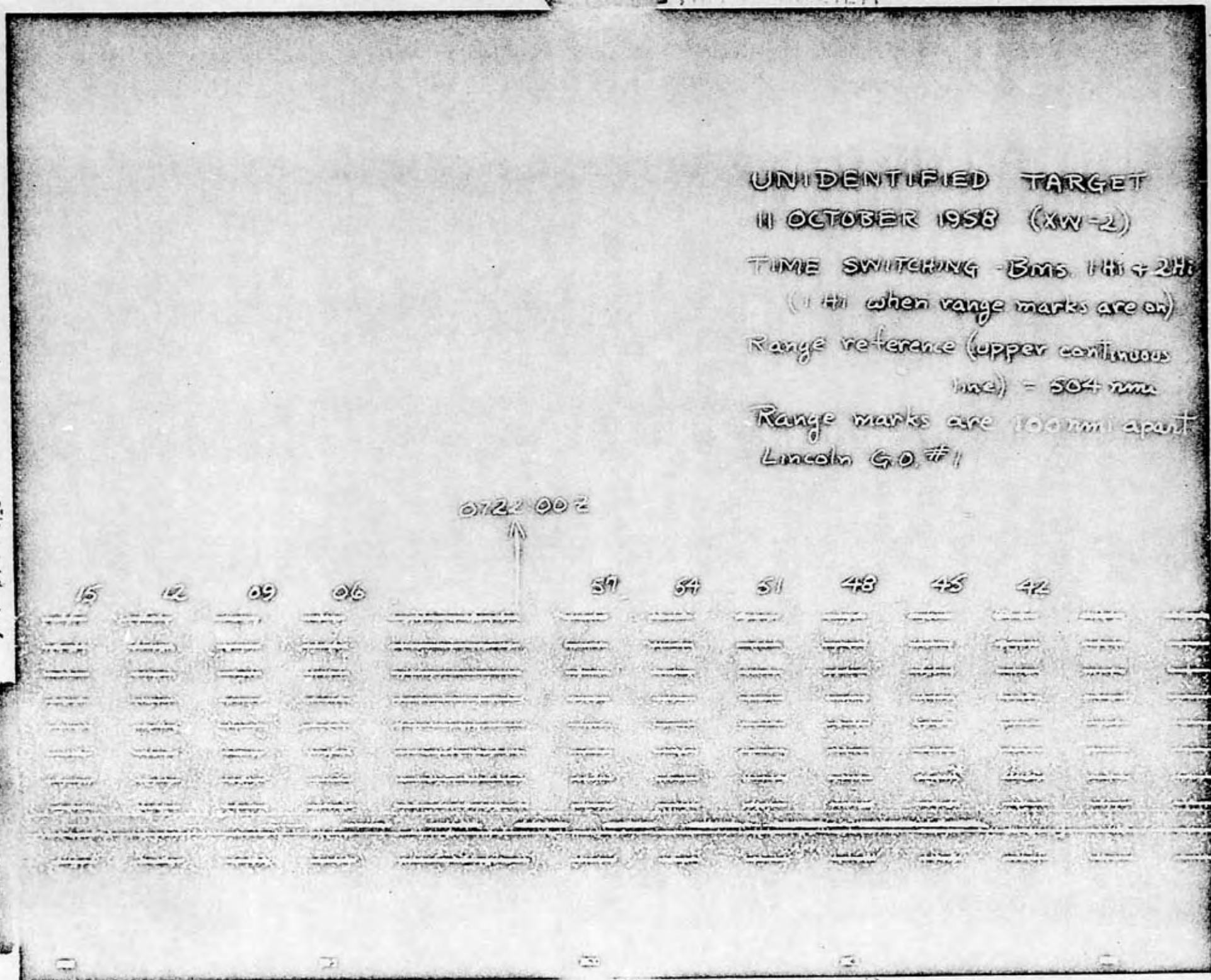
DOD DIR 5200.10

58-4601



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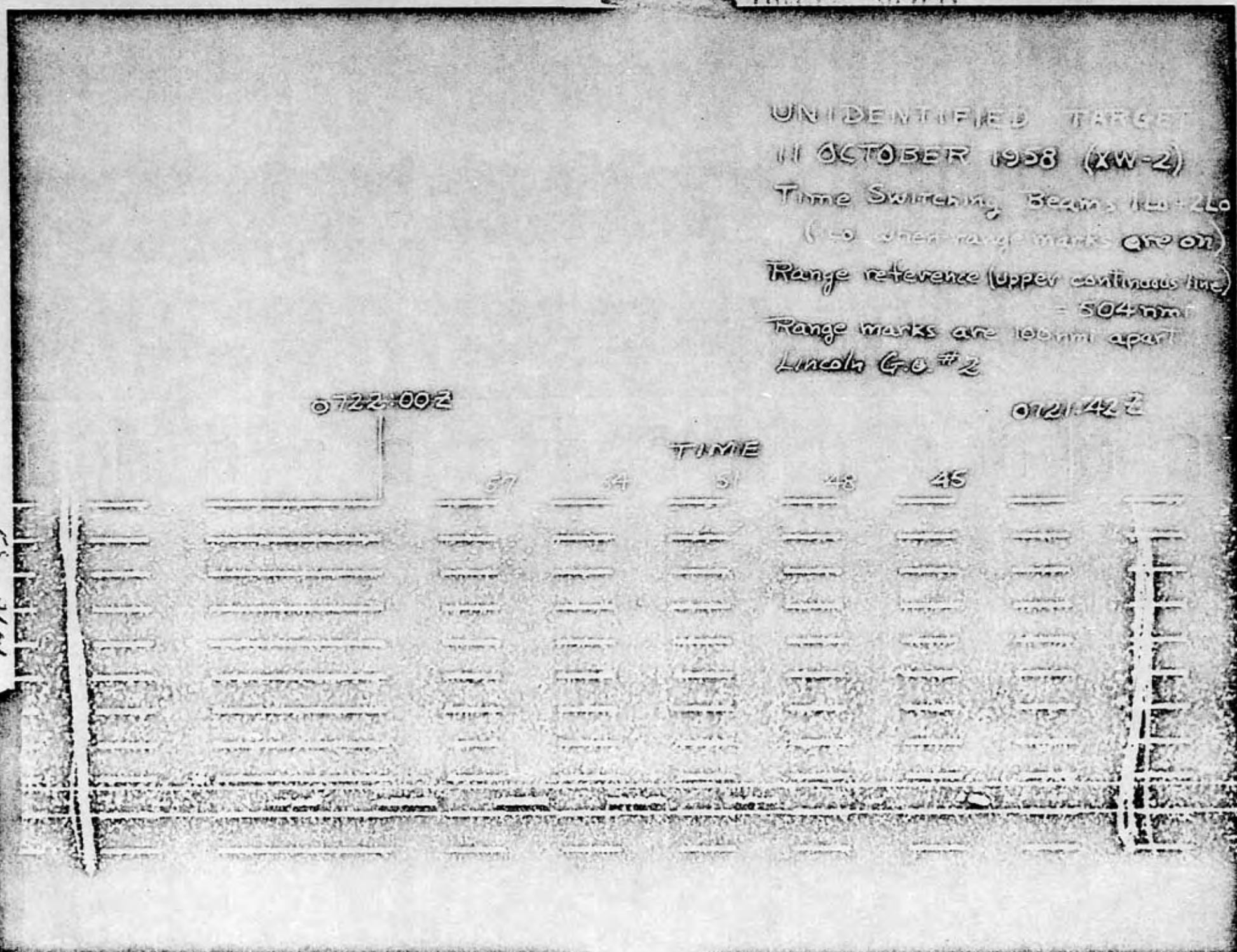

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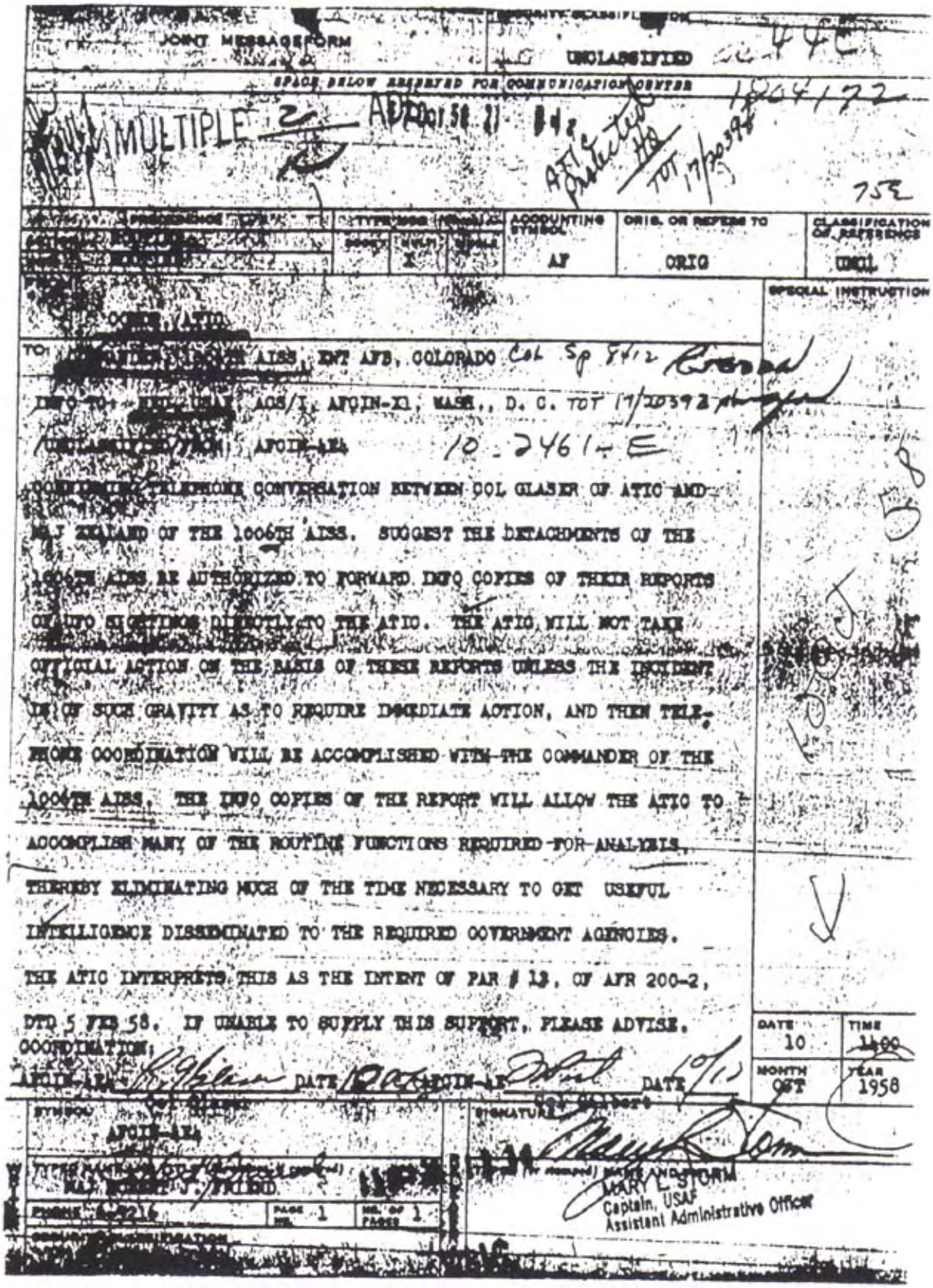
ATIC is authorized to received UFO case information faster. (See below)



JOINT MESSAGEFORM

UNCLASSIFIED

SPACE BELOW RESERVED FOR COMMUNICATION CENTER

MULTIPLE

ACCOUNTING SYMBOL: AF

ORIG. OR REFERS TO: ORIG

CLASSIFICATION OF REFERENCE: UNCL

SPECIAL INSTRUCTION

TO: [redacted] AISS, ENT AFB, COLORADO

INFO TO: [redacted] AOS/I, AFOIN-X1, WASH., D. C.

[redacted] AFOIE-AE4

CONFIRMING TELEPHONE CONVERSATION BETWEEN DOL GLASER OF ATIC AND MAJ ZELAND OF THE 1006TH AISS. SUGGEST THE DETACHMENTS OF THE 1006TH AISS BE AUTHORIZED TO FORWARD INFO COPIES OF THEIR REPORTS OF UFO SIGHTINGS DIRECTLY TO THE ATIC. THE ATIC WILL NOT TAKE OFFICIAL ACTION ON THE BASIS OF THESE REPORTS UNLESS THE INCIDENT IS OF SUCH GRAVITY AS TO REQUIRE IMMEDIATE ACTION, AND THEN TELEPHONE COORDINATION WILL BE ACCOMPLISHED WITH THE COMMANDER OF THE 1006TH AISS. THE INFO COPIES OF THE REPORT WILL ALLOW THE ATIC TO ACCOMPLISH MANY OF THE ROUTINE FUNCTIONS REQUIRED FOR ANALYSIS, THEREBY ELIMINATING MUCH OF THE TIME NECESSARY TO GET USEFUL INTELLIGENCE DISSEMINATED TO THE REQUIRED GOVERNMENT AGENCIES. THE ATIC INTERPRETS THIS AS THE INTENT OF PAR # 13, OF AFR 200-2, DTD 5 FEB 58. IF UNABLE TO SUPPLY THIS SUPPORT, PLEASE ADVISE.

COORDINATION:

AFOIE-AE4 DATE AFOIN-A1 DATE

DATE: 10 TIME: 1400

MONTH: OCT YEAR: 1958

SYMBOL: AFOIE-AE4

MARY L. STORM
Captain, USAF
Assistant Administrative Officer