RETURN TO
The Albert F. Simpson
Historical Research Center
Maxwell AFB, AL 36112

PROJECT

BOOK

1 FEBRUARY 1966

STATISTICS FOR 1965

(Compiled 18 Jan 1966)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
ASTRONOMICAL	10	8	11	4	2	10	27	82	30	27	22	12	245
AIRCRAFT	11	8	14	11	14	7	32	61	20	13	14	5	210
BALLOON	3	2	1	3	0	3	7	6	2	7	0	2	36
INSUFFICIENT DATA	5	4	2	4	4	2	16	24	15	5	3	1	85
OTHER	11	8	7	8	5	6	9	42	7	9	11	3	126
SATELLITE	4	5	5	5	15	5	42	41	24	3	0	3	152
UNIDENTIFIED	1	0	2	1	1	0	2	4	4	0	1	0	16
PENDING	0	0	1	0	0	0	0	2	2	6	4	2	17
TOTAL	45	35	43	36	41	33	135	262	104	70	55	28	887
ASTRONOMICAL CASES													
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Meteors	6	6	8	2	2	4	14	26	13	6	9	5	101
Stars and Planets	3	1	3	2	0	5	10	55	16	20	13	7	135
Other	1a	1b	0	0	0	1c	3d	1e	1a	1f	0	0	9
TOTAL	10	8	11	4	2	10	27	82	30	27	22	12	245

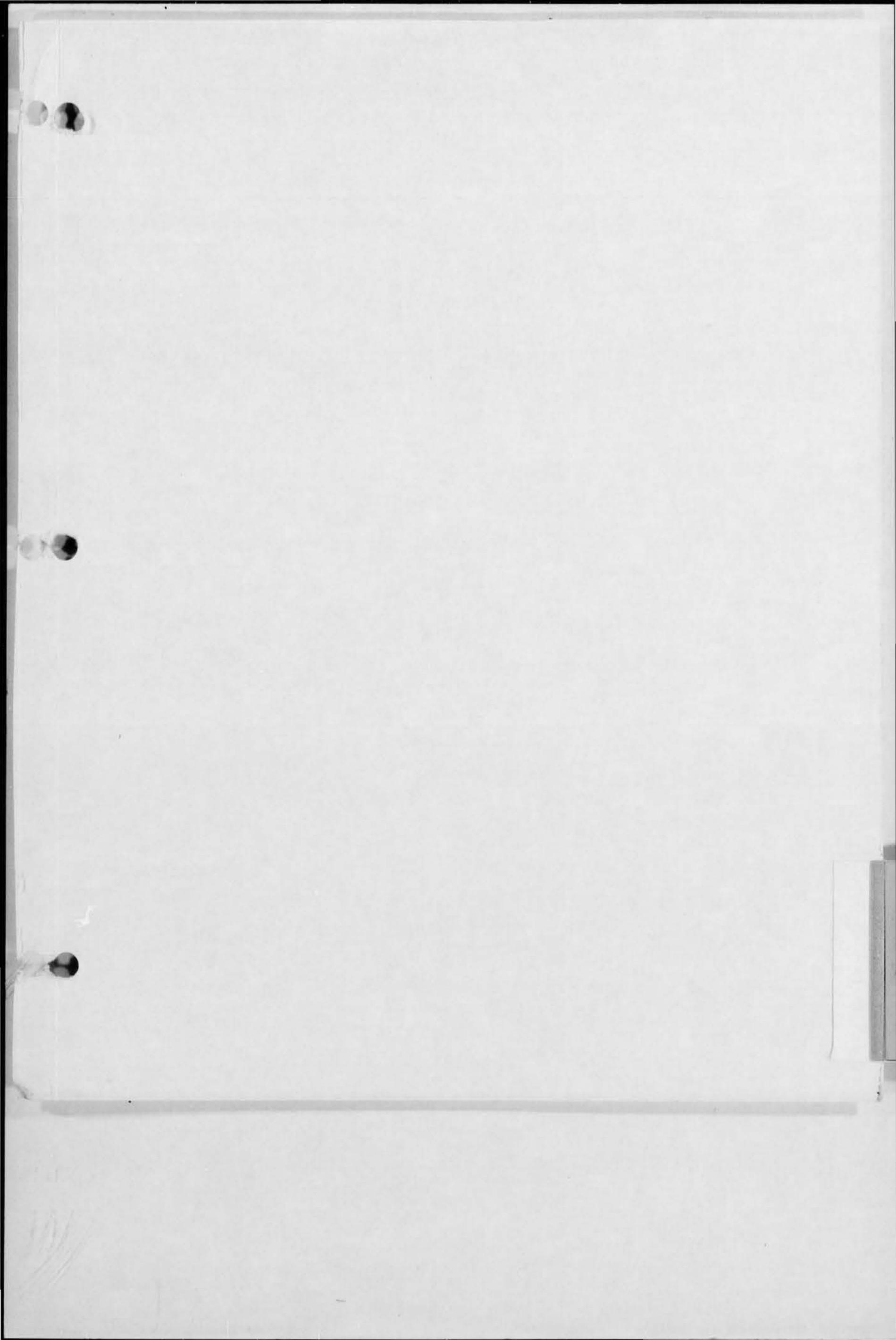
(a) Solar Image (b) Moon (c) Sun (d) Reflected Moonlight, Parhelia, Moon (e) Reflected Moonlight (f) Comet Ikeya-Seki

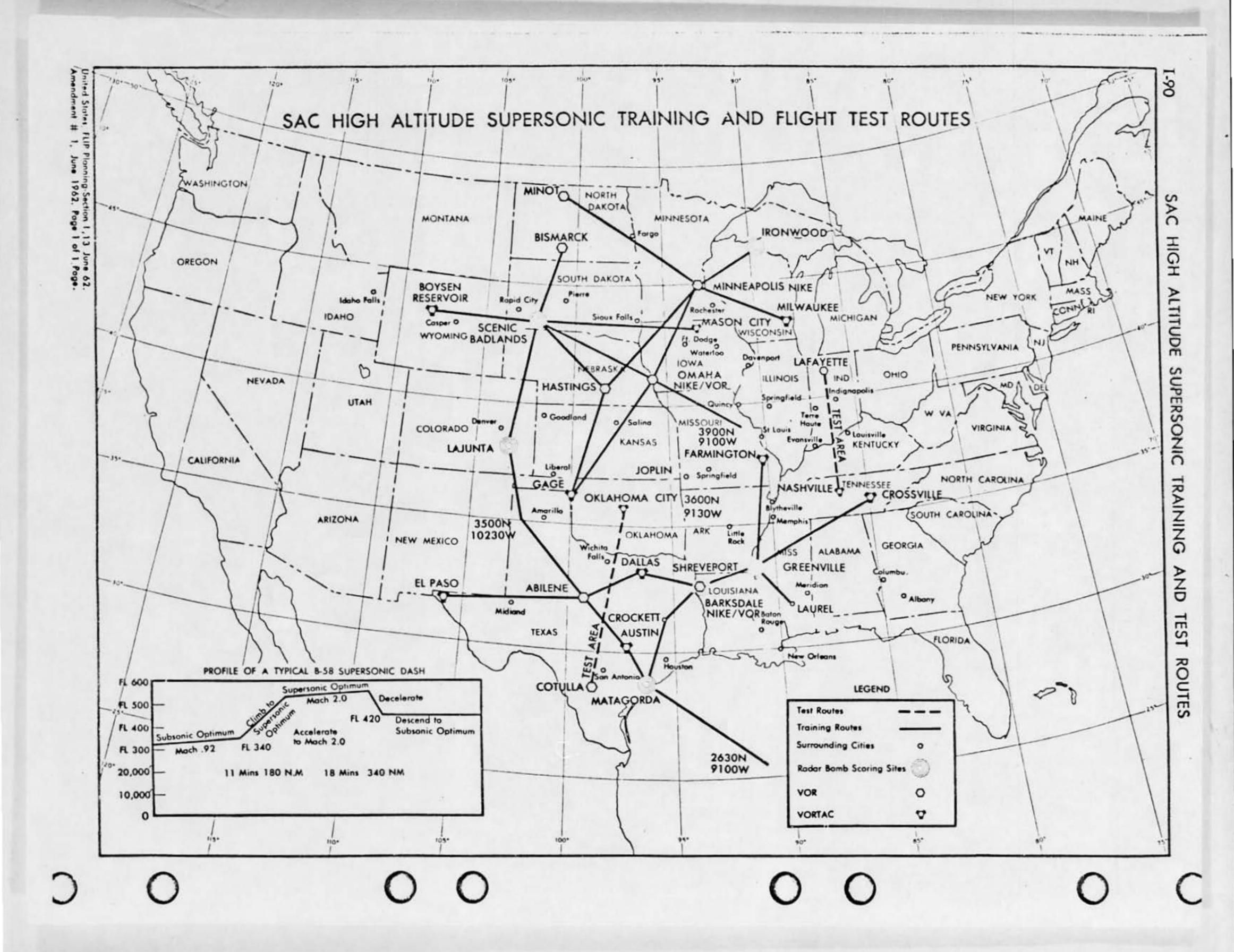
OTHER CATEGORY

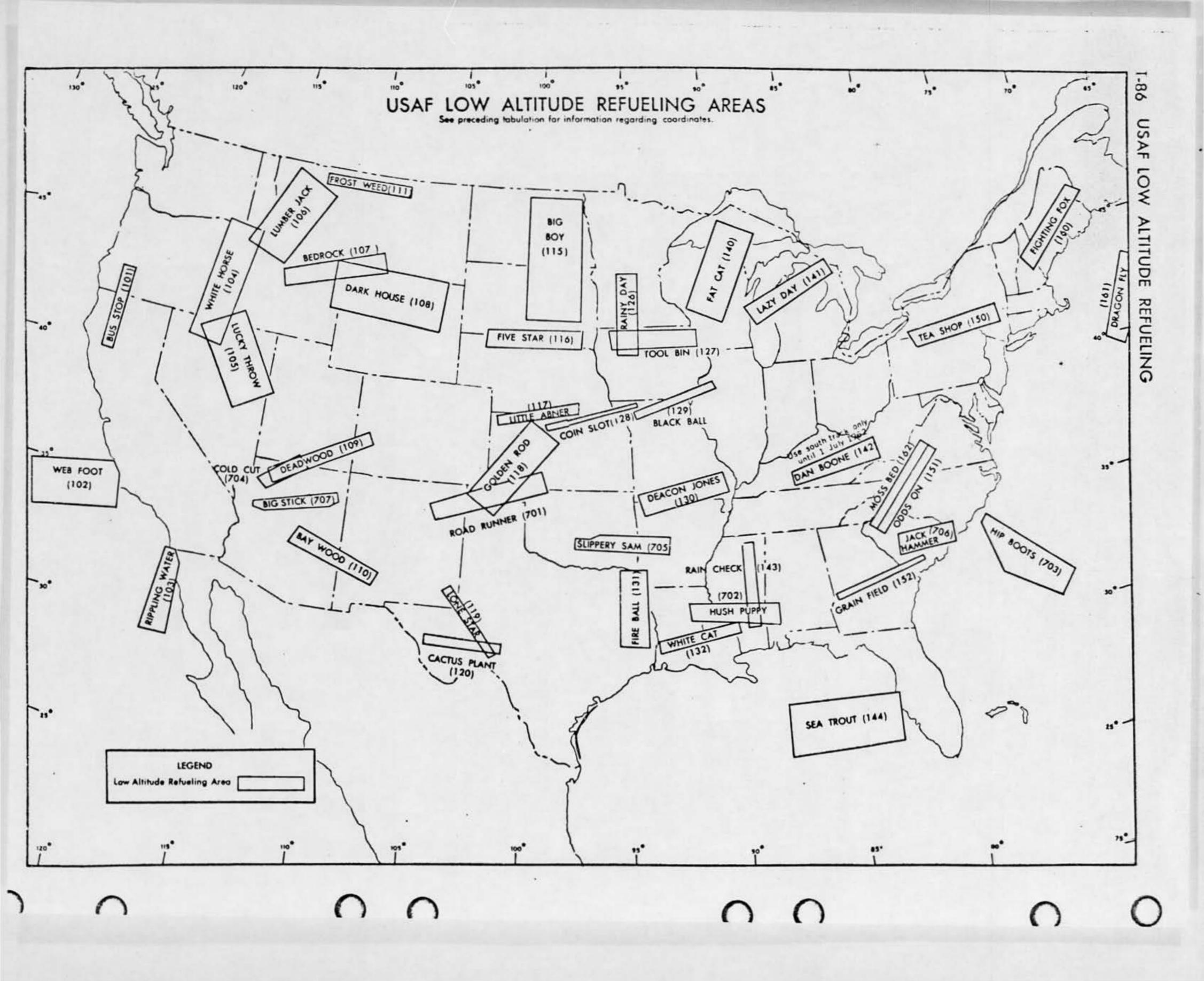
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Hoaxes, Hallucinations,													
Unreliable Reports and													
Psychological Causes	5	3	4	1	2	1	2	12	1	3	0	0	34
Missiles and Rockets					1			3	1	1	3	1	10
Reflections						1	1	2	1	1	1		7
Flares and Fireworks					1		1	1			1		4
Mirages and Inversions							2	3					5
Search and Ground Lights	2	1	0	1	0	0	1	2	0	0	2	0	9
Clouds and Contrails	1							1	1				3
Chaff												1	1
Birds	1	2		2				3	1	1	1		11
Physical Specimens	. 8	1c						1r	1w				3
Radar Analysis		-20		1e		1g		3gmn	27/2//-	1 m			6
Photo Analysis			2d1		1d	1j	2kj	5x	11				12
Satellite Decay	0	1	1	1	0	1	0	2	0	1	0	1	8
Miscellaneous	2ab	102000	7.	2bf		1h		4sbbb		1h	3tuv		
TOTAL	11	8	7	8	5	6	9	42	7	9	11	3	$\frac{13}{126}$

⁽a) Tracer Bullets (b) Misinterpretation of Conventional Objects (c) Metal Ball (d) Developer Smear (e) Anomalous Propagation (f) Kites (g) Electronic Counter Measures (h) Debris in Wind (j) No Image on Film (k) Poor Photo Process (l) Free Falling Object (m) False Targets (n) Weather Returns (p) Emulsion Flaws (r) Plastic Bags (s) Man on Ground (t) Lightning (u) Chemical Trails from Research Rocket (v) Missile Launch Activity (w) Gourd

UCT			







USAF LOW ALTITUDE REFUELING AREAS

USAF aircraft conduct refueling operations throughout the continental United States below 24,000 feet MSL. Although these refueling operations may be conducted anywhere in the United States, they are generally confined to the areas listed below. The following points are emphasized in connection with refueling operations below 24,000 feet MSL:

(1) Refueling aircraft have right of way over other aircraft in accordance with CAR 60.14(b).

(2) Normally, these operations are conducted VFR (or VFR conditions on top); however, they may be conducted on IFR flight plans at assigned altitude/s including altitude reservation flight plans.

	STRATEGIC AIR	COMMAND	No.	Name	Area Coordinates	No.	Name	Area Coordinates
No. 101	Name Bus Stop	Area Coordinates 43°16', 123°43' 43°16', 123°14'	118	Golden Rod	35°49', 101°47' 36°35', 103°07' 39°48', 100°03' 38°57', 98°41'	150	Tea Shop	41°35′, 79°24′ 42°24′, 79°32′ 42°45′, 74°25′ 41°55′, 74°21′
102	Web Foot	40°00′, 123°15′ 40°00′, 123°43′ 33°42′, 120°42′ 35°10′, 121°02′	119	Lone Star	30°00′, 101°42′ 30°13′, 101°24′ 32°37′, 104°02′	152	Grain Field	33°16′, 80°50′ 33°01′, 80°45′ 31°50′, 85°04′ 32°04′, 85°10′
		35°27′, 121°25′ 34°45′, 125°08′ 32°59′, 124°33′	120	Cactus Plant	32°49', 103°44' 30°16', 101°07' 30°36', 101°05' 30°26', 104°46'	160	Fighting Fox	43°37′, 71°47′ 44°10′, 72°28′ 46°35′, 68°27′
103	Rippling Water	32°32′, 118°00′ 32°31′, 117°30′ 32°10′, 117°10′ 29°19′, 117°10′ 29°14′, 118°26′	126	Rainy Day	30°47', 104°49' 42°33', 95°35' 42°33', 94°24' 45°51', 95°37'	161	Dragon Fly	46°01′, 67°48′ 40°00′, 68°50′ 39°38′, 67°52′ 43°10′, 66°45′
104	White Horse	41°21', 117°30' 41°33', 119°15' 46°17', 116°28' 46°29', 118°22'	127	Tool Bin	45°51', 94°24' 42°48', 91°13' 43°37', 91°12' 42°44', 95°58'			42°47′, 65°45′
105	lucky Throw	38°50′, 116°00′ 39°52′, 114°00′ 41°50′, 118°48′ 42°55′, 116°37′	From	Coin Slor 42 nm NE of Hill City m SW of Lamoni VOR.	43°34', 96°02' VOR via V1522 to			
106	Lumber Jack	45°00′, 114°58′ 45°49′, 117°20′	129	Black Ball	41°00′, 90°27′ 41°20′, 90°35′		TACTICAL AIR	COMMAND
		49°07′, 115°00′ 48°14′, 112°32′			39°57′, 94°37′ 40°15′. 94°47′	701	Road Runner	36°58′, 99°10′ 37°47′ 99°33′
107	Bedrock	44°50′, 114°55′ 46°03′, 109°15′ 44°03′, 114°35′ 45°13′, 108°56′	130	Deacon Jones	36°00', 94°20' 36°50', 90°00' 36°50', 94°37' 37°40', 90°13'	702	Hush Puppy	36°17′, 105°08 35°31′, 104°43 31°24′, 88°00′ 32°07′, 88°00′
108	Dark House	43°15′, 105°20′ 45°04′, 105°03′ 45°27′, 111°50′	131	Fire Ball	33°40′, 95°30′ 30°35′, 95°30′ 30°35′, 94°15′	703	Hip Boots	32°10′, 92°16′ 31°32′, 92°13′ 31°20′, 73°30′
109	Deadwood	45°38′, 111°51′ 36°35′, 113°48′ 36°04′, 113°27′ 38°44′, 108°50′	132	White Cat	33°40′, 94°15′ 30°19′, 93°48′ 30°39′, 93°53′ 31°00′, 89°55′	703	riip doors	30°06′, 74°37′ 31°55′, 77°12′ 34°05′, 77°42′ 34°17′, 77°35′
110	Bay Wood	38°12′, 108°31′ 33°50′, 112°05′ 34°31′, 111°48′ 33°12′, 107°25′	140	Fat Cat	31°20′, 89°59′ 43°43′, 89°41′ 44°28′, 91°48′ 47°11′, 87°20′	704	Cold Cut	36°15′, 114°15′ 35°56′, 113°50′ 37°18′, 112°08′ 37°00′, 111°45′
111	Frost Weed	32°31', 107°45', 49°00', 113°20', 49°00', 108°00', 48°30', 108°00',	141	Lazy Day	47°55′, 89°33′ 43°30′, 87°53′ 45°08′, 83°08′ 45°54′, 83°38′	705	Slippery Sam	35°00′, 97°44′ 35°00′, 96°43′ 35°07′, 96°30′ 35°00′, 93°06′
115	Big Boy	48°30′, 113°20′ 43°58′, 97°44′ 43°58′, 100°37′	142	Dan Boone Use South track only until 1 July 1962	44°14′, 88°25′ 37°27′, 82°08′ 36°40′, 86°42′ 37°27′, 86°57′			34°24′, 93°08′ 34°31′, 96°30′ 34°38′, 96°44′ 34°39′, 97°43′
116	Five Star	48°58', 97°36' 48°58', 100°47' 42°40', 97°43' 43°29', 97°39'	143	Rain Check	38°16′, 82°21′ 31°14′, 89°34′ 31°14′, 89°00′	706	Jack Hammer	33°30′, 79°10′ 33°30′, 82°00′ 34°10′, 82°00′ 34°10′, 79°10′
	46	42°40', 102°45' 43°29', 102°48'			34°41′, 89°34′ 34°41′, 89°00′	707	Big Stick	35°17′, 114°15′ 34°55′, 114°15′
117	Little Abner	39°31', 101°55' 39°50', 102°00' 40°04', 97°40' 40°24', 97°43'	144	Sea Trout	28°00', 83°00' 26°00', 83°00' 26°00', 88°00' 28°00', 88°00'			34°55′, 113°30′ 35°37′, 110°12′ 35°49′, 109°53′ 36°10′, 110°00′

EFFECTIVE 22 APRIL 1962

Tobe, Colorado VORTAC Entry

1050

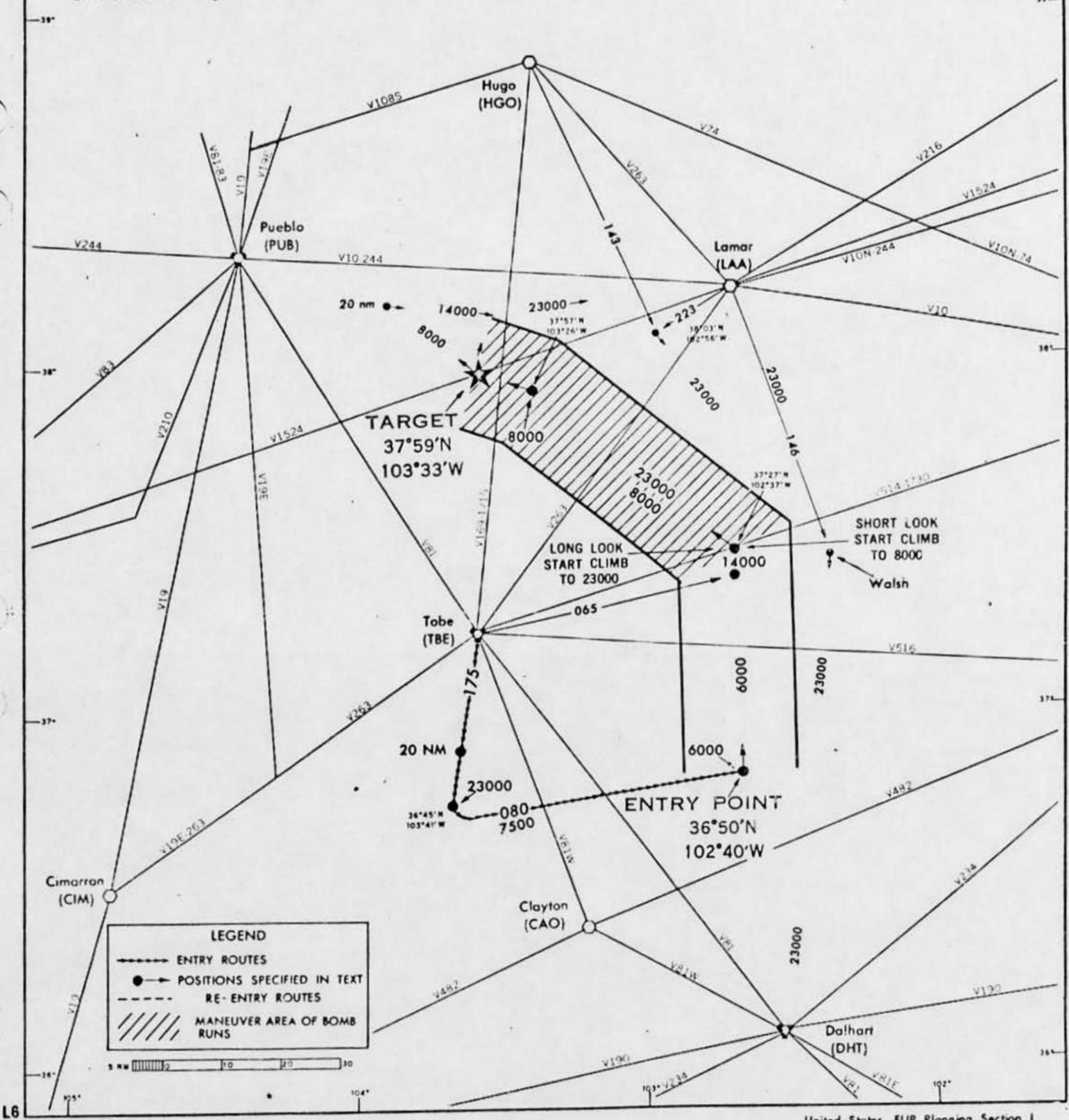
Aircraft shall enter at the Tobe VORTAC (reporting point) at assigned altitude/flight level, then proceed outbound on the Tobe VORTAC 175 radial at assigned altitude/flight level, until 20 NM south of the Tobe VORTAC, then descend outbound on the Tobe VORTAC 175° radial so as to reach 23,000' MSL or below at 36°45'N 103°41'W. At this point, aircraft shall start standard rate left descending turn to a true course of 080°, descending so as to reach 7500' MSL prior to reaching V81; aircraft shall then maintain 7500' MSL until clear of V81; then continue descent to the entry point of the law level route at 36°50'N 102°40'W at 6000' MSL maintain 6000' MSL direct to 37°27'N 102°37'W.

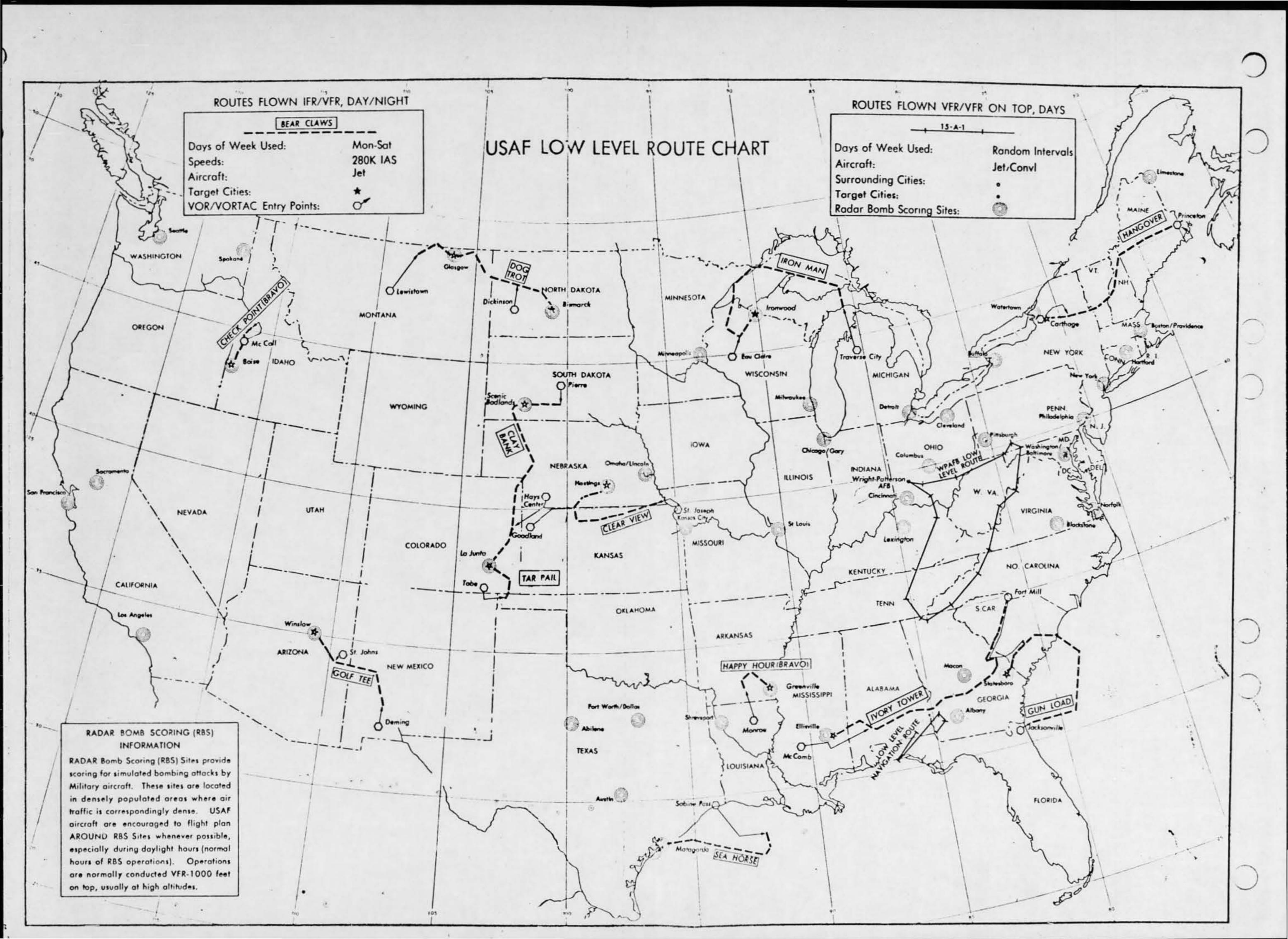
SHORT LOOK: After passing 37°27'N 102°37'W aircraft shall climb so as to reach 8000' MSL prior to crossing 37°57'N 103°26'W; aircraft shall then make bomb run at 8000' MSL to the 'arget at 37°59'N 103°33'W. After leaving target aircraft shall continue on NW heading at 8000' MSL for not more than 20 NM; then make a right turn and proceed direct to 38°03'N 102°56'W.

(intersection of Hugo, Colo. VOR 143° radial and Lamar, Colo. VOR 223° radial) then direct to Walsh, Colo. maintaing 8000' MSL until clear of V10; then climb to maintain at or below 14,000' MSL until clear of V1524 then climb so as to reach 23,000' MSL north of V1730; then at 23,000' MSL to Walsh, Colo. (Reporting point) direct to Dalhart, Texas VORTAC.

LONG LOOK: Aircraft shall start climb from 6000' MSL immediately after crossing the Tobe. Colo. VORTAC 065° radial maintain at or below 14,000' MSL until north of V1730; then climb so as to reach 23,000' MSL prior to entering V1715 and V1524. Long Look missions shall then maintain 23,000' MSL to the target area, making right turn after bomb run direct to Lamar. Colo. VOR; then at 23,000' MSL via the Lamar VOR 146° radial to Walsh, Colo. (reporting point); then at 23,000' MSL direct to the Dalhart, Texas VORTAC (reporting point).

The hours of operation on this route are 0000 - 2359Z Mon - Sat.







FEDERAL AVIATION AGENCY Washington 25, D.C.

MAY 2 1961

Maj. William T. Coleman, Jr., USAF Public Information Division Office of Information Department of the Air Force Washington 25, D. C.

Dear Major Coleman:

Your letter dated April 7, 1961, regarding sighting of white light rotating beacons on aircraft has been forwarded to this office for reply.

Approved anti-collision lights required for night flight on aircraft having a maximum gross weight of more than 12,000 pounds and used on many lighter aircraft are red rotating beacons.

Special Civil Air Regulation SR-392B which is scheduled to terminate February 25, 1962, provides for limited experimental use of types of lighting systems which do not comply with the relevant specifications contained in the CARs.

A number of different types of lights are being evaluated by the Federal Aviation Agency Bureau of Research and Development and various operators and manufacturers. The majority of these lights are of the strobe condenser discharge type which produce a brilliant blue-white light. One type of installation consists of "swinging" wing lights in green and red and a "bobbing" white tail light. The periodic discharge flash or the "bobbing" effect may not be distinguishable from a rotating flash at a distance, which may explain the impression that white rotating beacons have been observed.

Since approvals of experimental operation in accordance with SR-392B are granted in the field, the number and types of lights presently in operation are not readily available.

Maintaining a current list of aircraft with experimental lighting would be impractical as it is subject to frequent changes.

If we may be of additional assistance, please advise.

Sincerely,

Jack W. Hydson, Chief

Air Carrier Operations Branch Bureau of Flight Standards

DEPARTMENT OF THE AIR FORCE HEADQUARTERS STRATEGIC AIR COMMAND OFFUTT AIR FORCE BASE, NEBRASKA, 68113



REPLY TO

DXIP-2

SUBJECT: Night Photography - Air Refueling

15 NOV 1965

Foreign Technology Division
Wright-Patterson AFB, Ohio 45433

The attached film is of a night refueling of a B-52 and a KC-135. It was photographed from a T-39 chase aircraft. Separation between subject and chase aircraft was the minimum permissible distance of 2,000. The film shows only several lights moving on a dark background. The film was processed using the best known methods of increasing the film speed.

FOR THE COMMANDER IN CHIEF

JOHN R. RUEHLE, Lt Col, USAF

Chief, Production and Policy Division

Directorate of Information

1 Atch
Roll of film
Project Number 7-52/612
Roll Number M32D 1 & 2

FLARES USED WITH REFUELING OPERATIONS:

SOURCE: NCOIC of REFUELING SQUADRON AT WPAFB

No flares are carried for operations except on KC-97s.

KC-97s carry M-4 flares for emergency use. These are used primarily when communications by radio are out or the A/C to be refueled cannot locate the tanker A/C. The normal color is a two-ball yellow and green flare fired out of the rear of the A/C. The flare looks like a roman candle and falls in an arc descending. The duration can be up to 30 seconds. Red flares are carried also, but these are used in emergency only and not for identification or refueling operations.

FIREBALL REPORT

Persons observing a fireball or meteor should report the information to the American Meteor Society. The information desired is contained below.

A very brilliant meteor or fireball is reported to have passed in your vicinity on at the hour of Will you please answer as fully as possible the following questions, which are asked on behalf of the American Meteor Society in order that permanent records of such phenomena may be obtained. When these reports are published each contributor whose report is fairly complete will be mentioned, if

possible, and due credit given. It is only by the help of those who can give personal information that data can be secured for the computation of the orbits of meteors. These data are of great scientific value and all reasonable efforts should be made to obtain them. You will be unable probably to answer all questions below, but answer those you can, as they may be of the greatest importance.

ARMCO STEEL CORPORATION

GENERAL OFFICES . MIDDLETOWN, OHIO 45042

WALTER C. PAGUE MANAGER AIR TRANSPORTATION



November 26, 1965

Major Hector Quintanilla, USAF Chief Project Blue Book Wright-Patternson AFB Ohio 45433

Dear Sir:

In reply to your letter of 15 November, 1965, with reference to your investigation of an unindentified flying object, I am submitting the following information:

The pilots aboard the Armco Steel Corporation Gulfstream -437-A were Donald Swanson and the undersigned, who are employees of the company.

- a. There were no unusual lights or other aircraft observed during the approach to the airport.
- b. The time of landing was 1840 EST(2340Z).
- c. The approach path of the aircraft was from the northeast over the field after which a right turn was executed and the aircraft then proceeded westbound until entering a downwind leg on the southwesterly heading in preparation for landing to the northeast on the runway heading 052 degrees.
- d. There is no afterburner used on the engines.

Insofar as there are wing tip and tail flashing strobe lights installed on the aircraft which we operated at the time, as well as top and bottom fuselage rotating beacons, we feel this might help in your investigation.

We hope that the above will be of some assistance to you.

Very truly yours,

E. E. Minglewich

E. E. Winglewich

Pilot

EEW; mew

1	(296)	5 1000	ORTED C	BULCIS	HVALUAY	ED A	S SEE	CIPIC AIRCRAFT OF	JE	T OR COM	VINEEONAL TYPE)				13				
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25 1/21 URBAN HIGHT 1 A H HEMBANN 1 200-2 HO 1 D/R N/R CHERR 1 1/R CORRESPONDED 1 A 10 HEMBANN 1 200-2 HO 1 D/R N/R CHERR 1 1 A 500 CHERR 1 A	- 20	B	e e	8	Ei to			MESS DATA			REFORETING	DAT			- Constitution of the Cons			OBJECT DATA		
33. 544 8/16 URBAN NIGHT 1 A F UNEMPLOYED 1 FORM NO 2 G/V NO CLOUDY 1 4 MIN RED, GREEN, WHITE LIGHTS, TWO TURN 34. 566 8/20 AFB NIGHT 3 A M MILITARY 1 200-2 NO 5 G/R NO N/A 1 30 MIN RETURNS SIMILAR TO A/C CONTROLL 35. 584 8/23 URBAN NIGHT 1 A F HOUSEWIFE 1 FORM NO 4 G/V NO CLEAR 1 7 MIN 2 HEADLIGHTS, INCL HOVER, MOTOR 36. 641 9/02 URBAN NIGHT 1 A M INSUREANCE AGNI 1 200-2 NO 5 G/V BX CLEAR 1 2-3 MIN RD, RED WHITE, YELLOW, SEVERAL T 37. 646 9/03 RURAL NIGHT 1 Y M UNEMPLOYED M 200-2 YES (FOLDER) M G/V NO CLEAR 1 N/R LIGHTS. MOTION INCL HOVERING 38. 701 9/19 JAPAN DUSK 1 A M MILITARY 1 200-2 NO 4 G/V BX CLEAR 1 5-10MIN RD, WHITE YELLOW, NW 39. 721 9/25 O'SEAS NIGHT 1 A M MILITARY 1 200-2 NO 3 G/V NO OVERCAST 9 10-15 S. "V" FORMATION ROUND DOTS OF LICHTS AND SEVERAL T 1 SOME SEVERAL T 1 SOME SEVERAL T 200-2 NO 3 G/V NO OVERCAST 1 3 MIN BLINKING LIGHTS, FLAT HAT	10 12 13 13 14 15 16 17 18 19 19 19 19 19 19 19 19 19 19 19 19 19	18 25 35 67 68 87 00 0 132 143 196 190 211 252 258 144 152 145 146 146 1721 185 185 185 185 185 185 185 185 185 18	1/25/25/25/25/25/25/25/25/25/25/25/25/25/	URBAN URBAN RURAL URBAN RURAL URBAN	DAY NEGHT DUSK DAY DAY NEGHT	11212222211111321 311131131131222661311111	A M B M B M M B M M B B M M M B B B A A A A	NEWSMAN CRANE OPR PHONE CRANE OFR MILITARY MILITARY MILITARY POLICE GEOLOGIST FOLICE RADIO ANNOUNCER STUDENTS H'WIFE POLICEMAN DUMPER RADAR OBSERVERS MILITARY TELEPHONE OPR RR ENGNRS UNEMPLOYED MILITARY HOUSEWIFE INSUREANCE AGNT UNEMPLOYED MILITARY MILITARY MILITARY MILITARY MILITARY		200-2 200-2 PHONE 200-2 PHONE 200-2 PHONE 200-2 200-2 PHONE PHONE PHONE PHONE PHONE 164 200-2 PHONE 160-2 PHONE 160-2 PHONE 160-2 PHONE 160-2 PHONE 160-2 PHONE 160-2 PHONE 160-2 200-2 200-2 200-2 200-2 200-2 200-2 200-2 200-2 200-2 200-2 200-2 200-2 200-2 200-2 200-2 200-2 200-2	NO (AFGP) NO NO LETTER PHONE NO LETTER NO PHONE TWX LETTER TWX NO	THE COURT OF A COURT O	DEPENDED DE DES DE LA CONTRADA DE DES DE	NO N	CLEAR CLEAR CLEAR CLEAR CLEAR CLOUDY CLEAR CLOUDY CLEAR CLOUDY CLEAR	1131111281116111111111111111111111111111	4 SEC 10 MIN 2-3 MIN 2 MIN 3 MIN 15 MIN 15 MIN 30 SEC 17 MIN 10 MIN 2 MIN 10 MIN 2 MIN 10 MIN 2 MIN 10	BRIGHT OBJECTS CIGAR SHAFED, JET BRIGHT YELLOW BRIGHT, CIGAR SHAPE VAPOR TRAILS/FORMATIC ALUMINUM, CIGAR SHAPE ROTATING BRAGCM BLINKING LIGHT DOME SHAPED 5 LEGS BIG EAGLE 4, POINTS YELLOW BRN SEMI-CIRCH LIKE SATELLITE, STRAIC BRIGHT WHITE LIGHT SPHERE W/FLAME OVAL LIGHTS, WEDGE RD WHITE FLASHING LIGH IDENTIFIED WHILE CALL SILVER CIGAR A/C LANDING LIGHT FLASHING RED & BLUE I (16S A/C IN AND OUT C LIKE STAR ROUND, WHITE & BLUE O BRIGHT CIGAR SHAPED I LIKE SATELLITE MULTI COLORED OBJ RADAR RETURNS, HIGH & MANTA RAY ROUND, WHITE, RED RD, DULL SILVER, DIAMON LIKE STAR AMBER, BELL SHAPED RED, GREEN, WHITE LIGHT RETURNS SIMILAR TO A/ 2 HEADLIGHTS, INCL HO LIGHTS. MOTION INCL H RD, WHITE YELLOW, LIGHTS. MOTION ROUND	STRAIGHT STRAIGHT/FADE ERRATIC ACCELARATED HOVERED, CIRCLE CLOSE TRAIL FOR E FORMATION HT FLIGHT STRAIGHT ERRATIC HTS STRAIGHT JING AS THE GOOD! STRAIGHT JING AS THE GOOD! STRAIGHT JET STRAIGHT JET SOUND SLOW/STRAIGHT FAST STEADY S	FAA CONV F-102*S FAA KC-135 B-52 D KC-135 RM F-100 *S B-47 CONV SAC B. C-130 FAA F-4C YEAR BLEEP C-135 FAA N/S Y RADAR MIL FAA JET F-104 MIL FAA JET FAA JET F-104 MIL FAA JET FAA S2,KC-13 5

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44455555555555666666666677777777778888888	56.78.901.23.45.901.23.45.9	22732555665835518121111111111111111111111111111111	1/22/25/25/25/25/25/25/25/25/25/25/25/25/	URBAN ALASKA URBAN RURAL CAMADA O'SEAS URBAN RURAL OCEAN URBAN	DUSK NIGHT DUSK NIGHT	213112111 1121131111122213111 21431134121	AYAYYAAYA ABYYABAAAY YY AY A AYYAAAYAA	FULL MANNE MENNINGERMANNING BMMM BMBMMFBBMBF	LO YR ODD INTLITARY UFO FAN STUDENT PILOTS MILITARY MILITARY STUDENTS LO YR OLD HOUSEWIFE PIO FARMER STUDENT STUDENT STUDENT STUDENTS PAINTER, NURSE STUDENT MILITARY MILITARY MILITARY MILITARY MILITARY MILITARY MILITARY TEACHER	111111111111111111111111111111111111111	LETTER LETTER 1ETTER 200-2 200-2 LETTER 200-2 LETTER 1ETTER 1ETTE	LETTER NO N	2712246421241414145514513221242451585343		HO H	CLEAR	111111111211111111111111111111111111111	2-3 MM 35-60 S 10 MM 1 MM 1 MM 25 MM 1 MM 25 MM 10 SEC 10 MM 10 SEC 10 MM 10 SEC 10 MM 10	LIKE PALLING STAR VAPRO TRAILS/FLAME JET W/AB OBJ W/EXHAUST TRAIL BLINKING LIGHT NOT SATELLITE NE OVAL, METALLIG, MOTION HOVER 3 MIN FADING NEED OBJ, FAST LARGE UNSTEADY PLASHING LIGHT FATODJ, LEVEL FLIGHT SILVER-GREY, METALLIC, ERRATIC MOTION SHINT, RED & GREEN, ROUND, MANUVERED C/J BALL OF LIGHT, MOTION INCL HOVER C/J BALL OF LIGHT, STRAIGHT FLT C/J CHOMENC DISC, SPEED BET METEOR/SATELLITE C/J BO, FEM, WHITE, STRAIGHT FLT C/J OVAL RED LIGHT, STRAIGHT FLT C/J OVAL RED LIGHT, LEVEL FLIGHT C/J CHAMBERS FOINT OF LIGHT, STRAIGHT FLT C/J CHAMBERS FOINT OF LIGHT, STRAIGHT FLT C/J CINCULAR WHITE LIGHTS, ZIG-ZAG C/J WHITE STAR, HIGH & CLIMBING FLAT TRIANGLE, WHITE, LINEAR PATH C/J SILVER, ORANGE GLOBE FLT DOWN INCR SPEED C/J BLONGATED, GLEAMED, STRAIGHT FLT C/J STAMBLKE BLINKING LIGHT C/J LICHTS, SPEED FAST C/J LIKE F-104 ON SIDE, SILVER W/BLACK STRIPE C/J LIGHTS, HORSE SHOE PATH C/J LIGHTS, SHARP TURN, ROAR C/J FLYING WING AIRLINER C/J FLYING WING AIRLINER C/J FLYING WING AIRLINER C/J MINN BRIGHT RED OBJ, MANUVERED, HOVER C/J MINN BRIGHT RED OBJ, MANUVERED, HOVER C/J

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                                                                                           1. 5-7 HIN SHORF FLASHING LIGHT, STRAIGHT FET
    235 7/02 RUBAL HARRY 2 A M
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                                                                        1 G/V NO N/R
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                                                  1 LEFTER 10
                                                                                           1 3 MIN SMALL RED LIGHT, MAST
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              TAINAN NEGRE L. A M MITTERNEY
                                                  3 200-2 INTER
                                                                        3 G/V NO GREAR
                                                                                           A 45 MIN (T) BOUND, DUMINIOUS, STRANGER FEET
    245 7/06 URBAN ENGHT 2 A B REFERED ARMY MAJ 2 200-2/LER PHONE/LER 6 G/V BX OVERGAST 2 10 HIN (T) Int MAG STAR, MOTION INCL. HOVER
     265 7/31 RERAL NEGET I A M
                                                  L PHONE HO
                                                                        4 G/V BX, TX CLEAR 1 2% HOW TRATEGUE, PKG UNDERWEATH, VERY FAST
     273 7/12 UNDAN NEGRT 2 A B
                                                  1 PHONE
                                                                          G/V NO CLEAR
    269 7/16 URBAN NEGHT 3 A B
                                                   2 200-2 1/27/164
                                                                                           1 10-15 MIN CYMI, FLASHING GRN, RED, SLOW FIX
                                                                       12 G/V BX HAZE
97: 290 7/16 URBAN NIGHT 3 Y B IMAGINATIVE
                                                   1 PHONE
                                                                                           1 22 MIN CIRC, MHITE BALL, POINTED, ERRATIC FLT
                                                                        4 G/V NO CLOUDE
98; 301 7/18 URBAN NIGHT 5 X M
                                                  1 PHONE LTR/164
                                                                        5 G/V NO CLEAR
                                                                                           2 3 MIN BRIGHT STARS, STRAIGHT FLT
99: 309 7/20 URBAN DAY 1 Y M
                                                  1 LETTER LER/164
                                                                                           1 1 MIN BALLOUE LIKE OBJ, ZIG-ZAG, FUZZY, REFL
                                                                        5 G/V NO CLOUDY
100. 312 7/20 URBAN NIGHT 2 Y M
                                                  1 PHONE
                                                            164
                                                                                           2 3-4 MIN LIKE STAR, YELLOW, HADE "U" TURN
                                                                          G/V NO CLEAR
101: 316 7/21 URBAN NIGHT 1 Y M
                                                    200-2
                                                            LETTER
                                                                        4 G/V G/S GOOD
                                                                                           2 2-5 MIN TRIANGLE, WHITE LIGHT AFT, FLASHING
102; 322 7/22 URBAN NIGHT M Y M
                                                   1 LETTER LETTER
                                                                                           1. 1-2 MIN RD DISC W/YELLOW TINT, STEADY FIR
                                                                        2 G/V NO N/R
    324 7/24 AFB
                   NIGHT & A B MILITARY
                                                     200-2
                                                           NO
                                                                          G/V NO CLEAR
                                                                                           2 4-5 MIN EA, ROUND LIGHT, FLASH, STRAIGHT FITT
104: 328 7/25 URBAN DUSK 2 Y F STUDENTS
                                                   2 LEITERS LETTERS
                                                                       10 G/V NO CLOUDY
                                                                                           1 FEW MIN, RD SILVER, RISING
105: 330 7/25 URBAN NIGHT M B B
                                                    PHONE
                                                                          G/V NO CLOUDY
                                                                                           1 15 MIN BRIGHT LIGHT, MANUVERED
106. 349 7/27 URBAN NIGHT 1 A M SALESMAN
                                                  1 200-2
                                                            NO
                                                                        2 G/V NO OVERCAST 1 1 MIN FLASHENG LIGHT
107: 353 7/27 RURAL NIGHT 1 Y M
                                                  1 LETTER LTR/164
                                                                                  CLEAR
                                                                                            5 2 MIN GROUP OF STARS, FORMATION, STRAIGHT FLT C/J
108, 372 AUG URBAN NIGHT 5 A B
                                                   1 LETTER
                                                            LTR/164
                                                                                            1 10 MIN LIKE PITH HELMUT, CONTRAIL, MANUVERED C/J
                                                                        8 G/V BX CLOUDY
109. 383 8/02 URBAN DAY
                           3 Y M STUDENTS
                                                                                           1 10 MIN DARK BLIE DISC, STRAight HLT
                                                     PHONE
                                                            164
                                                                        9 G/V NO
                                                                                  FOG
110: 389 8/02 RURAL NIGHT 1 A M DRIVER
                                                     200-2
                                                                          G/V NO CLEAR
                                                                                            1 12-2 MIN RD CBJ, ORANGE, STRAIGHT FLT, DBL CONTRAIL CA
111, 400
         8/03 URBAN NIGHT 3 Y M STUDENTS
                                                            LTR/164
                                                   1 LETTER
                                                                          G/V NO
                                                                                  CLEAR
                                                                                                   A/C WITHOUT WINGS, FAST, SLIGHT RISE C/J
112. 402 8/03 URBAN NIGHT 1 A F TELEPHONE OPR
                                                     200-2
                                                                        4 G/V NO
                                                                                  CLOUDY
                                                                                           1 5 MIN ROUND, REE & BLUE, FLASHINGBLUE STREAKS C/J
113. 431 8/04 URBAN NIGHT 1 Y F
                                                   1 FORM
                                                                          G/V NO
                                                                                  CLEAR
                                                                                           1 N/R
                                                                                                     ROUND FLASHING BLUE LIGHT
         8/05 URBAN NIGHT 3 A B
114. 439
                                                  1 PHONE
                                                                          G/V NO
                                                                                  HZY
                                                                                            1 10 MIN FLYING WING, FLASHING, HORSESHOE PATH
115. 440 8/05 URBAN NIGHT 1 A M
                                                     200-2
                                                                                           1 4-5 MIN 4 LIGHTS LIKE POINTED STAR, STRAIGHT
                                                                          G/V NO
                                                                                  CLEAR
116. 442 8/05 URBAN NIGHT 2 A B PHYSICIST
                                                     PHONE
                                                                                  N/R
                                                                              NO
                                                                                           1 25 SEC LIKE STAELLITE, STEADY FLT, HIGH SPEED
    449 8/05 URBAN NIGHT 2 B F HOUSEWIFE
                                                     200-2
                                                                          G/V NO N/R
                                                                                                     STAR LIKE FLASHING, BLINKING LIGHTS
                                                                                            2 N/R
118: 458 8/06 URBAN NIGHT 2 Y M STUDENTS
                                                            LTR/164
                                                   1 LETTER
                                                                          G/V BX,TX CLEAR 4 10 MIN (TO & LIGHTS, INVERTED STREETLIGHT,
119. 465 8/07 RURAL NIGHT 3 Y F STUDENTS
                                                     200-2 NO
                                                                          G/V NO CLEAR
                                                                                           1 5-10 MIN SILVER CIGAR SHAPED, STRAIGHT FLT
              URBAN NIGHT 1 Y M STUDENT
    470
         8/03
                                                     FORM
                                                            LETTER
                                                                          G/V NO
                                                                                  N/R
                                                                                                     BLUE GREY OBJ W/RED & GREEN REVOLVE LTS C/J
                                                                                            1 1 MIN
         8/09
    479
              RURAL NIGHT 2 Y M STUDENTS
                                                            LTR/164
                                                     FORM
                                                                          G/V NO CLEAR
                                                                                            3 42 MIN FLOURESCENT YELLOW SAUCERS, FORMATION
122.
    482
         8/10
              AFB
                     NIGHT 3 Y M STUDENTS
                                                     200-2
                                                                          G/V NO
                                                                                  CLEAR
                                                                                           1 30-40 SEC SHLVER STAR, STRAIGHT LEVEL FLT
    484 8/10 URBAN NIGHT 2 A B MANAGER
123:
                                                     200-2
                                                                          G/V NO CLEAR
                                                                                            1 3-5 MIN TREMNGLE, RED GLOW ABOVE OBJ, LEVEL FLT C/J
              RURAL NIGHT 1 A M MILITARY
124. 487
         8/10
                                                     LETTER NO
                                                                           G/V NO
                                                                                  N/R
                                                                                           1 45 SEC WHITE LIGHT, MADE FIGURE "S"
    491 8/11
               URBAN NIGHT 1 A F RETIRED
125.
                                                     LETTER
                                                            LTR/164
                                                                           G/V NO CLEAR
                                                                                           2 90 SEC 4 LEMF CLOVER, ONE DIPPED
126: 493
         8/11
              URBAN NIGHT 1 A M PHYSICIST (442)
                                                   1 PHONE
                                                            NO
                                                                              NO
                                                                          G/V
                                                                                  HAZE
                                                                                              N/R
                                                                                                     SATELLITE, SMOOTH FLIGHT
127: 495 8/11 URBAN NIGHT 1
                              N
                                                     PHONE
                                                           LTR/164
                                                                               TX N/R
                                                                                              10-15 MIN ELONGATED WHITE OBJ, FAST, JERKY, REVERSE C/J
128. 498
        8/11 URBAN NIGHT 1 A M
                                                     LETTER NO
                                                                               NO
                                                                                  N/R
                                                                                            1 N/R
                                                                                                     OBJ TRAVELLED VERY FAST
                     NIGHT M A M MILITARY
     503
129:
         8/11-12 "
                                                    LETTER LETTER/164
                                                                          G/V
                                                                              NO
                                                                                  CLEAR
                                                                                           1 2 MIN
                                                                                                     OVAL OBJ, STRAIGHT FLIGHT
130;
         8/12 URBAN NIGHT 1 A M FREIGHT ROUTER
                                                   1 FORM
                                                            NO
                                                                          G/V NO
                                                                                  CLEAR
                                                                                           1 90 SEC YELLEW, TRIANGULAR, STRAIGHT FLT TURN
131.
        8/12
              URBAN NIGHT 1 Y M STUDENT
                                                   1 LETTER NO
                                                                           G/V NO CLEAR
                                                                                            1 5 MIN
                                                                                                     WHITE STAR CIRCLING THE MOON
132;
     516 8/12
                          5 Y B STUDENTS
              URBAN NIGHT
                                                                           G/V TX
                                                   1 LETTER NO
                                                                                  N/R
                                                                                            2 N/R
                                                                                                     DISC WITH 5 WHITE & YELLOW LIGHTS
133%
         8/12
     518
              URBAN NIGHT
                           4 Y M STUDENTS
                                                   1 PHONE
                                                                          G/V
                                                                              NO CLOUDY
                                                                                              15 MIN STAR, STRAIGHT FLT, FADE & REAPPEAR
134.
    519
         8/13
              URBAN NIGHT 1 A M PHYSICIST (493)
                                                  1 LETTER LTR/164
                                                                                           1 25 SEC BRIGHT SATELLITE, FLIGHT TO WEST
1 90 SEC RD OBJ, STRAIGHT FLT, LOW, BIG, FAST
                                                                              NO
                                                                                  CLEAR
              URBAN NIGHT 1 A M ELECTRICIAN
135.
    526 8/13
                                                                                  CLEAR
                                                   1 200-2
                                                                               NO
                                                            NO
                    NIGHT 1 A M UNEMPLOYED
         8/15
              URBAN
                                                  1 FORM
                                                                               NO
                                                                                  CLEAR
                                                                                            1 5 MIN
                                                                                                     DARE GREY SAUCER, SLOW, BRIGHT, FLASHING LTS CA
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(MULTI, PSYCH)
               URBAN DAY
                            1 A F
                                                        200-2
                                                               NO
                                                                                       CLOUDY
                                                                                                          SMALL, ROUND, WHITE, FAST, CIRCLED
                                                                                                1 1 MIN
          8/15 URBAN NIGHT
138: - 537
                            3 A B
                                                               164
                                                        PHONE
                                                                                                1 15 MIN STAR, ERRATIC MOTION
                                                                                   NO
                                                                                       CLEAR
               URBAN
     542
          8/16
                      NIGHT
                                                                                                   SHORT TIME, SILVER, 3 WINDOWS, LOW
                            2 B
                                     HOUSEWIFE
                                                        PHONE
                                                               NO
                                                                                   NO
                                                                                      CLOUDY
                           2
          8/16
               URBAN
                                                                                                2 30 SEC WHITE SATELLITES, FORMATUON, JET SOUND
     543
                      NICHT
                                                                                   NO
140:
                                                        LETTER NO
                                                                                       N/R
          8/16
141;
     545
               URBAN
                      NIGHT
                            2 A B
                                                        LETTER
                                                                                                1 N/R
                                                                                   NO
                                                                                      CLEAR
                                                                                                          WHITE LIGHT, ERRATIC MOTION, ZIG-ZAG
          8/16
               URBAN
                      NIGHT
                                                        PHONE
                                                               164/(NOT RET)
     547
142:
                                                                                                          DULL SILVER, CIRCLINGPERIODICALLY
                                                                                       HAZY
                                                                                                   15 MIN
                      DAY
                                                        200-2
                                                                                                          RD FLAT DISC CIRCLING, RAPID ACCELER
          8/20
               AFB
                             1 A M MILITARY
143.
                                                                LETTER
                                                                                       CLOUDY
          8/20
               URBAN
                      NIGHT
                             1 Y M STUDENT UFO HOBBY 1
1440
     569
                                                        200-2
                                                                                       HAZY
                                                                                   NO
                                                                                                1 25-20 SEC ORANGE, OBLONG, 90 DEG TURN
          8/22
               URBAN
                      DAY
     575
                             l A M
                                     SERVICE ENGR
                                                        200-2
                                                                                   NO
                                                                                      HAZE
1450
                                                                                                2 1-3 MIN, 2-1 MIN RD WHITE, WING SHAPE, SOUND
                                                                                       N/R
      579
                      DAWN
                                                        LETTER
                                                               LETTER
                                                                                   NO
1460
                RURAL
                                                                                                          ONE LARGE, ONE SMALL IN FORMATION
      583
               URBAN
                      NIGHT
                            1 Y F
                                                        200-2
147.
          8/23
                                     STUDENT
                                                                                      CLEAR
                                                                                                1 15 MIN ROUND, MOVED DOWN TO HORIZON
148.
     597
          8/25
                RURAL
                      NIGHT
                                     STUDENTS
                                                               LETTER
                                                                                   NO
                                                                                      N/R
                                                                                                   N/R
                             6 Y
                                                        LETTER
                                                                                                          LIKE SATELLITE, FLT TO NW
                             9 A M MILITARY
                ARMYB
                      NIGHT
                                                                                   N/R CLEAR
                                                                                                   N/R
                                                        200-2
                                                                                                           SHMI CIRCLE, FAST, JET NOISE
149.
                                                                NO
      606
                            M A M MILITARY
150:
          8/26
                ARMYB
                      NIGHT
                                                        200-2
                                                                                   BX CLEAR
                                                                                                          LIKE NORTH STAR, IN FORMATION
                                                                                                                                              JETS
151;
          8/26
                ARMYB
                      NIGHT
                            3 A M MILITARY
                                                         200-2
                                                                                   N/R CLEAR
                                                                                                   N/R
                                                               NO
                                                                                                           MULTI COLORED GROUP OF LIGHTS, STR FLT A/C
                                                        LTR/FORM LTR/164 (N/R) 4 G/V NO
          8/27
                URBAN
                      NIGHT
                                                                                                9 10 SEC STAR LIKE IN FORMATION (REGARDED AS ONE OBJ) C/J
152;
      608
                             1 A M CLERK
                                                                                       CLOUDY
                                                                                                1 5-10 MIN CIGAR SHAPED, LEVEL FLT
153:
                URBAN
                      DUSK
                                                                                       CLOUDS
                             1 A M MINISTER
                                                        200-2
                                                               NO
                                                                                   NO
                            1 A M
154.
                URBAN
                      NIGHT
                                                        FORM
                                                                                   BX
                                                                                       CLEAR
                                                                                                2 2 MIN EA EGG SHAPED, HORIZON TO H. E-NW
      630
          8/31
                URBAN
                      NIGHT
                                                                                   TX
                                                                                       N/R
                                                                                                M N/R
                                                                                                          LIGHTS OVER ONE WEEK PERIOD, FAST
155.
                                                        LETTER
                                                               LETTER
          9/01
                RURAL
                      NIGHT
                            1 A F
                                                                                                1 N/R
                                                                                                           TWO LIGHTS REVERSED DIRECTION (PHOTO)
156.
                                                                                   NO
                                                               LETTER
                                                                                       N/R
                                                        LETTER
          9/01
                URBAN
                                                                                                   FEW MIN THREE LIGHTS TRIANGLE FORMATIONRED/G.
1576
                      NIGHT
                             1 A M UFO FAN
                                                                LETTER
                                                                                                           ROUND CHANGED COLOR, ERRATIC, FADE
          9/03
               URBAN
                      NIGHT
                            1 AM
                                      INSUREANCE AGNT 1
                                                        LETTER
                                                                LETTER
                                                                                       CLEAR
                                                                                                1 2 MIN
                                                                LTR/164 (N/R)
      662
          9/05
               NAS
                      NIGHT
                                                                                       CLEAR
                                                                                                1 5 MIN
                                                                                                           ROUND OBJ, RED & WHITE
159:
                            1 A M MILITARY
                                                     1 200-2
          9/06
                      NIGHT
                                                                                       CLEAR
                                                                                                1 25 MIN
                                                                                                           LARGE, RED, PORT HOLES
160;
                URBAN
                             3 A B
                                                                LTR/164
                       NIGHT
                             1 A F CLERK
                                                                                   NO
                                                                                       CLEAR
                                                                                                           OVEL, WHITE, FORMATION, HUM
161;
                URBAN
                                                        200-2
                                                               LETTER
                                                                                                           DIAMOND, MULTI COLORED, PULSATING, CIRC
162.
                URBAN
                      NIGHT
                             5 B B INSUREANCE AGNT
                                                        LETTER
                                                                                   BX
                                                                                       CLEAR
                             3 Y M STUDENTS (UFO FANS) 1 LETTER LETTER
                                                                                                 2 10 MIN OVAL SILVER, STRAIGHT FLIGHT
1.63;
          9/16
                URBAN
                                                                                       CLEAR
                      DAY
                             2 A M LAB TECHNICIAN
                                                                                       CLEAR
                                                                                                           BLUE-WHITE, ELONGATED, MADE LOOP&TURNS
                       NIGHT
                                                         200-2
                                                                                                           ROUND MULTI-COLORED SMALL ARC
                                                                LTR/164
                                                                                   BX
                                                                                       ELEAR
                      NIGHT
                                     ARTIST
                                                                                       CLEAR
                                                                                                          ELONGATED, STRAIGHT FLT, DISAPPEARED&REA C/J
                                                        PHONE
                      NIGHT
                                                      1 200-2 NO
                                                                            4 G/V NO CLEAR
                                                                                                1 4 MIN SATELLITE, STRAIGHT FIT TO WEST
167: 740 10/02 RURAL DAWN 1. A M MILLTARY
                                                                                                 1 30-45 SEC SILVER FLAT BOTTOM, STRAIGHT FLT
                                                      1. 1.64
                                                                NO
                                                                            4 G/V NO CLEAR
168; 742 10/02 URBAN DAY 2 Y M STUDENTS
                                                     1 LETTER LER/164
                                                                            9 GAN NO CTORDA
                                                                                                          ERIGHT, OVAL SHAPE, STRAIGHT FLT, REFLECT C/J
                            J. Y M STUDENT
169: 757 10/08 URBAN DAY
                                                                                                1 1 MIN
                                                                            2 G/V NO N/R
                                                                                                 1. N/R
                                                                                                           TWO LIGHTS GREEN & WHITE, FAST, TURN
170; 761 10/10 URBAN NIGHT 6 B B INSUREANCE AGNT
                                                     1 LETTER
                                                               LETTER
                                                                                                           ORANGE, LIKE VENUS, 30 DEG TURN
                                                                            F GA NO CTOUDY
                                                                                                 3 4 MIN
171; 762 10/10 URBAN NIGHT 3 A B ENGINEER
                                                     3. PHONE
                                                                NO
                                                                                                          SATELLITE, LOOP, HOVERED, CHANGED SHAPE
                                                                IRR/1.64
                                                                            6 G/V NO CLEAR
172; 763 10/11 URBAN NIGHT 1. A F
                                                      1 FORM
                                                                                                 1. 5 MIN
                                                                            3 G/V NO N/R
                                                                                                 1 N/R
173, 768 10/14 URBAN NEGHT 1. Y M STUDENT
                                                                                                           REDENHITE, CIRCULAR, BLINKING
                                                      1. LETTER LETTER
                                                                                                 1 15-20 SEC DESC, STOPPED MADE TURN, ROSE
                                                      1. PHONE
                                                               LTR/164
                                                                            6 G/V NO CLEAR
174: 800 10/29 RURAL NIGHT I A M FOLICE
                                                                            2 G/V NO CLEAR
                                                                                                          PINHEAD OF LIGHT, RAPID FIR
175; 801 10/30 URBAN DAWN I A M REFORTER
                                                     1. PHONE
                                                               NO
                                                                            2 G/V EX CLEAR
                                                                                                 1. 45 SEC ROUND YELLCH, ERRATIC FLT
176; 805 10/31 URBAN NIGHT 1 A M STUDENT
                                                      1 FORM
                                                                                                          DIM LIGHT OFFSON ERIGHT, FADE, HOVER
                                                                            2 G/V NO GLEAR
                                                                                                 1. 5 MIN
                                                      I. FORM
177; 810 11/02 URBAN RECHT 1. A F HOUSEWEFE
                                                                                                          MINGHT LIGHT OF OFF, NED WHITE, SPANIS
                                                      3. PHONE LTR/PHONE
                                                                            2 G/V NO H/R
                                                                                                 2 2 1011
178; BL7 11/CL RURAL NEGHE 2 B B PHONE
                                                                                                 3 A MEN CHNTER WHETE, EDGE RED, PERFECT FORMATION C/J
179; 623 11/05 U COAH MUCHE I A M STUDIER
                                                                            2 G/V NO CHEAR
                                                      J. LEGITTOR LEGITER
                                                                             I G/V N/R N/R
                                                                                                 3 15 MIN (T) LANCE PHISARING LIGHTMANUVERING
                                                      1. I THER NO
1805 825 11/05 URBAN LEUHT A A B MECH ENGER
                                                                                                 1. 5 DIM HEAD OF HALL, SHARP TURN, VATOR TRAIL C/F
                                                     1 DECEMBER HIP/LC.
                                                                            6 G/F EO CTEAR
181; 829 11/09 UTBAN DUGGE 2 OF M STUDY IS
                                                                            2 C/V NO GVENCARY I 5 MIN BRIGHT COLD, SHARE MACHY, A/C SOUND
162; 833 11/12 URBAN DAY J. A F INSERTER DECOR
                                                     I FORM MO
                                                                            5 C/V NO SC CLOUDS 1. 5 MEN BULL STLYER, STRAIGHT FIR. EGG
                                                      1 JETTER BER/16.
     SAS TIVE UNION HERE I Y IN
                                                                            I, CAN RE CEEAR I. 5 MEN FLASHENG RED LICHT, SHOOTERS LICHT
326, 855 11/21 BUAN MICHE 2 B H
                                                      1 INTER LEGISR
                                                                                               1 CO SEC SPHERE, PULSATING LICHT
                                                                            2 G/V BY GLOROX
185, 874 12/11 U. W. MIGHT 2 X II
                                                      1. POHM NO
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387	883 3	2/17	RURAL	DECEMB	1	A		LOT EAL	1	CIRVIS PHONE 200-2	NO	1.	G/V	110	CLOUDY	1	2-3 MIN	Che RED LEGHT COC 3 CHELL LES PINK ORANGE WHITE, PICKED UP ST	C\2 (3VII)
THE F	FLOME	ng res	olds c	OWFAIN	6BJ]	ECT	EVAN	DATED AS HELEC	01.29	ins									
190; 191, 192; 193; 194; 197,	37 292 347 355 764 661	1/27 7/16 7/26 7/28 0/12 9/04	URBAN URBAN URBAN URBAN URBAN RURAL	DUSK NIGHT NIGHT NIGHT NIGHT	1 1 2 4 1 3	A B A Y	H ENG F HOT B TE M ST Y HO	USEMEFE CACHER CUDENT	11111	200-2 LETTER	DESTER NO LESTER LAR/164 NO LESTER	33364		NO NO NO	CLEAR OVERCAST CLEAR CLEAR	11111	90 MIN 45 SEC FEW MIN 15 MIN 10 MIN	MEDICENE CAPSULE, SHORT WINGS 3-7 RED LIGHTS, MOTION INCL H. ORANGE LGTS ON EDGE, LIKE HELO RED LIGHT, CIGAR, SLOW, FLASHING FIRSTA BALLOON, ERRATEC, NOISE RED WHEEL, CIRCLE, WHITEE RED LIGHT, ERRATEC FLASHING	H=3 #49921 EVAL BY INVEST'R CHARACTERISTIC CHARACTERISTIC 3H=3C
195° 196°	371 748 1	AUG .0/03	URBAN O'SEA	NIGHT NIGHT	1	A A	M M MI	LITARY	1	LETTER 200-2	LETTER NO	2 2	G/V A/V	NO NO	CLEAR CLEAR	1	FEW MIN	SLOW A/C LRGE LIGHT, NOISE BRIGHT FLASHES	INFRA RED STRORE
THE F	THOMI	NG RE	PORTS C	ONTAIN	OBJ	DCT	EVAL	JUATED AS AIRCE	AFT	ON REFU	ELING MISSION	S							A 20.70 A
199;	592	8/24	URBAN	NIGHT	1	Α	F	IRDRESSER	1	200-2	NO NO LETTER	54	G/V G/V	NO NO	CLEAR CLEAR MIST	M 12 6	1 HOUR N/R N/R	PERIOD BRIGHT FLASHING LIGHTS FORMATION OF LIGHTS SEPARATING BRILLIANT LIGHTS, SHIFTING	BORDER TOWN IVORY SNOW SPEEDWAY
THE F	OLLOW	NG RE	PORTS C	CONTAIN	OBJ	ECT	EVAL	UATED AS ATROR	AFT	WITH AD	VERTISING BAN	NER	S OR	TOWE	D LIGHTED	SIG	MS.		*
202: 203: 204: 205: 206: 207: 208:	464 468 481 563 656 807 811	8/07 8/08 8/10 8/20 9/04 1/06 1/04	URBAN URBAN URBAN URBAN RURAL URBAN URBAN	NIGHT NIGHT DUSK NIGHT NIGHT NIGHT NIGHT	2 8 1 2 M 2 1	A B A Y B A	B DR B HO M MI M ST B B HO	C ENGINEER	111111		NO NO NO LETTER	44258622	G/V G/V G/V G/V	NO NO NO NO NO NO	OVERCAST OVERCAST N/R N/R HAZY CLEAR CLEAR CLEAR	1 6 1 1 1	3 MIN 3 MIN 10 MIN 2 HR PE 33 MIN 10 MIN 30 MIN 30 MIN	SLOW DRIFTING SIMILAR DERIGIBE ROUND CIRCLED LIGHTS, BUZZING ROW OF BRIGHT LIGHTS RIOD MULTI COLORED LIGHTS FERRIS WHEEL 2 PLATES, SQUARE LIGHTS IN MID (T) TILTING LIGHTS BACK&FORTH (T) 10-2 PARTS FLT SQUARE PATTE LIGHTS FLASHING ON&OFF	E ELECT " " " CHARACTERISTIC CHARACTERISTIC CHARACTERISTIC NEON CONFIRMED

THE ELLINGTON AFB FOLDER ASSOCIATED WITH THE MIDWEST INVERSION FLAP CONTAINED FIFTY-ONE (51) OBJECTS EVALUATED AS POSSIBLE AIRCRAFT AND ONE (1) HELICOPTER REPORT NONE OF THESE ARE INCLUDED IN THE STATISTICS AS AIRCRAFT SIGHTINGS.

the state of the s

February 5, 1965

Balloons Launched at Wallops

Routinely every morning Monday through Friday at about 8:00 a.m. we release a balloon which is about 6-feet in diameter (buff color) carrying a radiosonde (3" x 8" x 8") on a 50-ft. string. These balloons rise until they burst (approximately 100,000 ft. altitude). There is a paper parachute between balloon and radiosonde (which weighs a couple of pounds) that brings the radiosonde back to earth after the balloon bursts. This is a meteorological balloon which collects information on temperature, pressure, and density of the atmosphere.

Also through the day and night whenever a rocket launching is scheduled, one of these 6-ft. balloons is launched about one hour before launch. Same purpose as above.

In connection with the rocket firings, at about T-3 hours we launch one of these 6-ft. balloons carrying corner reflectors covered with silver foil (instead of a radiosonde) to determine winds aloft. These balloons may catch someone's eye occasionally due to the bright reflectors.

For special firings such as Nike-Cajuns, Aerobees, and Scouts, we launch little 3-ft. balloons (some buff color and some red) as frequently as every 5 minutes during the last hour of the countdown (no attachment), to obtain data on wind direction and velocity. As many as 30 or 40 may be released during a countdown due to holds, etc. These do not go as high as the 6-ft. balloons.

About 90 percent of the balloons released from Wallops (and Norfolk area also) end up over the water due to prevailing winds. Sometimes during the summer when prevailing winds are easterly, a few do end up over land.

Some other things launched at Wallops which may be visible to the public (probably not the Norfolk area) are:

Arcas rockets which have a 15-ft. orange and white parachute to lower the payload from an altitude in the neighborhood of 200,000 ft. Sometimes it takes 3 hours to impact in the water.

Arcas-Robin rockets which have a payload consisting of a 1-yard diameter sphere which is inflated to obtain meteor-ological data.

						Sec.			1	0.	W. Commercial			CONTRACTOR N		21	e follow	0					Marie Land			
									6-1	TOW IN	53	NOIT			8	ECTIO		TUDE	TION	Ed of	TI C	CAL		TI)		
	DEW	[+]	ATIO	63	# AGE	SEX	88	#	TYPE	FOLI	PAGE	PE SERVA	TICAL		SPE	DIR	#	ESTI	DORA	SHAP	DIRE	PHTS1 SPECI	RADAR	FO L		
	DIC	DAT	LOC	TIM	OBSER	VER D	ATA	RE	PORTING	DATA		OB	AI	SKY	WINDS		OB	JECT DATA			MOTION	2 : E	EVIDENC	E		COMMENT
T	E FOLL	OWING P	REPORTS	CONTAIN	OBJEC	TS EV	ALUATED AS UPP	ER 1	AIR RESE	ARCH BALI	LOONS	AND ARE	ASSOCIATED	WITH A SI	PECIFIC) LAUNC									LAUNCH SITE	
2.	49	2/02	2 WIDE AREA	DAY	M A	(B)	WX OBSERVER	M		WPAFB PHONE		RADAR A/G VIS	THEODOLITE	UNL VIS		FROM WEST	1	145,000		CONE, BALLOON, SILVER	STRAIGHT EASTERLY	NO :	YES NO		PAGE, ARIZONA (NCAR)	NCAR, PACKAGE CUT DOWN OVER ARKANSAS
2.	256	7/06			M A		BRITISH	1	TWX	NO			THEODOLITE	N/R	45K	FROM EAST		(EST)	27.5		STRAIGHT WEST 45K		ио ио		INDIA (NCAR)	NCAR. OBSERVED FROM 3 LOCATIONS ON ISLAND
	INFO		(FOR)						NEWSPAP											CYLINDRICAL, WHITE	STRAIGHT WEST				INDIA (NCAR)	TRANSPARENT PLASTIC STOPPED CLOCKS
4.	269		STATES	DAY			CIVILIAN		200-2	PHONE		G/RADAR			207	FROM EAST		100		BALLOON W/PACKAGE	STATIONARY SLOW HOVERING, TO WEST			(CHURCHILL, CANADA (ONR)	PHOTO, RADAR & SATELLITE TRACKING DATA
5.	282		TWO STATE				CIVILIAN		200-2	WPAFB		A/G VIS G/RADAR			60K	FROM			27 M(R)	BALLOON W/GONDOLA	160 KNOTS TO WEST		YES NO	(CHURCHILL, CANADA (ONR)	RADAR ANALYSIS BALLOON TRACK
							STUDENTS			PHONE	027	GD VIS	OBJECT RECOVERED		1000			Accession with			N/A HIT POWER LINE AND EXPLODED				(MISSILE ACTY)	(BALLOCN RETURNED)
						(F)	NOT REPORTED		INV.	USAF/ WPAFB WPAFB	0	GD VIS	OBJECT RECOVERED	N/ A	N/A	M/ A		Particular Control		PACKAGE FROM RESEARCH BA	LANDED AT SNOW HILL MARYLAND			1	WALLOPS IS. NASA NOT STATED IN	MFG BY G.T. SCHJELDAHL (BALLOON RETURNED) MFG BY G.T. SCHJELDAHL
8,	INFO	10/23	RURAL	N/A	1		(FOREIGN)	1	IWA	WIAID						- 1			,	THORNOLD PROTECTION DAY	LLOON FOUND ON GROOM	D IN	11(1313/013		REPORT.	(PACKAGE TO NORTHFIELD)
TH	E FOLLA	OWING R	EPORTS C	ONTAIN	OBJECT	rs eva	ALUATED AS BALI	LOON	NS (WEATH	HER/RADIO	SOND	E/RAWINS	ONDE) AND H	AVE AS TH	EIR OR	IGIN A	SPE	CIFIC LAUNCE	i.							
9.	268	7/12	2 URBAN	DAY	м в	(B)	CIVILIANS	1	O.D.	164	7	GD VIS	NO	CLEAR	YES	YES		VERY HIGH	20 MIN	CIRCULAR, WHITE	ERRATIC RISING TO SOUTHWEST	NO 1	10 NO		SULPHURGROVE,	FLIGHT CORRESPONDS TO LOCAL BALLOON LAUNCH
10,	367	7/33	L URBAN	NIGHT	1 A	(M)	MILITARY	1	200-2	LOCAL		G/RADAR GD VIS	NO	CLEAR		YES .				SMALL, BLUISH-WHITE LIGHT WITH RED HAZE	WITH WIND	NO 3	YES NO	YES I		RADIOSONDE. SEE RADAR ANALYSIS (MIDWEST FLAP)
	453								200-2		2	GD VIS		.7 CC VIS 15/		FROM -				BLUE-GREEN	RISING ERRATIC TO NORTHEAST	NO 1	10 NO	NO S	SIOUX CITY AB	OBSERVER ON AIR BASE. OBJ DISAPPEARED INCLIDS
12.	505						HOUSEWIFE														OVERHEAD RISING					(OBSR LOOKING FOR UFO'S)
	688	120 800 100 200					TV REPAIRMAN		200-2			GD VIS		VIS 15M C 2500		SW			MIN	EXPANDING	HOVERED OVERHEAD FLIGHT TO HORIZON	110 1			LOCAL AIR BASE	OF SIGHTING (ERROR IN D.
			TOWN				MINISTER		*	NO		GD VIS	NO	CLOUDY	15-20 MPH					SPHERE, 4' DIAMETER STEEL GREY FOR DETAILS)	RISING TO WNW		NO NO		BEMIDJI MUNI AIRPORT	WX BALLOON LAUNCH.
										F COMPLE			4 × 20	VTC 3.51	VEC	1					MADE LOOP IN NORTH				L.G. HANSCOM	WITH WX BALLOON LAUNCH WX BALLOON RELEASED
5	10 0								200-2			GD VIS	BINOCS				1	*			AND DISAPPEARED				FIELD, BEDFORD	NEAR TIME OF SECHTIME
THE	FOLLOW	WING CA	SES CONT	AIN RE	PORTED	OBJEC	CTS EVALUATED .	AS I	PROBABLE	UPPER A	IR P	SEARCH O								ION AND MOTION CHARACTER	STICS. NO SPECIFI	LAUNC	OH HAS	BEEN D	ETERMINED.	
3.7.	29	01/23	ARMY	NIGHT	3 A	(M)	ARMY M.P. 1S	1	ARMY REPORT	NO		GD VIS		2000 C		100			22 MIN	SILVER-BLUE	RISING SPIRAL AND HOVERING	NO	NO D	OR 110	PROB WEATHER B	ALLOON
			CTI						200-2			G/RADAR GD VIS		VIS UNL		1.60		EL MI	3H/(V)	2 TEARDEOPS, SILVER	RADAR RATE 20-24				(ALASKA FLAP FI	(SEE RADAR ANALYSIS)
19.	34	01/2	5 RURAL	DAY	2 A	(B)	RR EMPLOYEE HOUSEWIFE	1	200-2	NO		GD VIS		NO CLOUD		270°		N/R	3 MIN	ROUND, BRIGHT, LIGHT BULB, ALUMINUM COLOR LIKE A/C WITHOUT WINGS	SOUTH (OBSERVER H	S NO	NO N	O NO	PROB WEATHER R.	ALLOCM. POSSIBLE 25/1200Z
							HOUSEWIFE	1	2002	NO		GD VIS			1.014	200		CONTRALLS			ING TO WEST				OF FLAP IN ARE	R AIR. REPORTED BECAUSE
2]	94	03/20	O RURAL	DAY	3. A	(M)	50 NR	1	1.64	NO .		GD VIS		HAZE	NO	NO NO		300YDS		COLOR.	EARED IN BRIGHT I	TASH			WY BALLOOM BURG	
22	1.30	04/0	5 IRAN	DAY			USN		TWX	NO			SEXTANT	N/R	N/R		1	5,000 FT		VERTICAL CAPSULE, SILVER	CONTROLLED				REFORTING OFFIC	
			B URBAN			40 85	N/R		PHONE			GD VIS		OLEAD	NO	NO	1	HIGH OVER A/C	MINUTE	S 5' DIAMETER	CIRCLING TO NORTH					
									200-2			AIR VIS		CLEAR	N/R	11 2		at 44,000 N/R		ROUND WHITE OBJECT	140 DEGREES				OBJECT AS BALLA	AJR BALLOON. PILOTS REGA ON. LOCATION MINNESOTA.
			5 SMALL TOWN						LETTER			GD VIS	TELESCOPE 6 X 30 BX					N/R	15-20 MIN 20 MIN	ANTENNAS ON BOTTOM	IN NW					AIR BALLOON WITH PACKAGE
							RADIO ANN.			PHONE		GD VIS	7 X 50 BX		11/11			N/R		CHROME ROUND SMALL STEADY LIGH	APPARENTLY TO NW				MOVING ONTO EA	PER AIR. DISAPPEARED BY
27	237	06/2	8 URBAN	NIGH	3 A	(M)	PHYSICIST		200-2							110		10-15M		2d MAGNITUDE, WHITE ROUND LIGHT, BRIGHTER	AMPLITUDE. TO EA ERRATIC, CLIMBING	T		10 NO	BEYOND MOUNTAI	ER BALLOON. DISAPPEARED
							3 TOWER OFR 2 CIVILIANS		U			GD VIS			N/R					THAN STARS BRIGHT, STAR-LIKE	FROM LOW TO HIGH	W.			WITH RADIOSOND	
							MILITARY		200-2	PHONE				8000 B UNL VIS						OBLONG, SILVER, 2X AS	OVERHEAD, STATION. ZIG-ZAG TO SE.				MAJOR ASTRO EO	OF A HOVERING LIGHT. NO DY IN REPORTED POSITION.
					17.0	1 D I	3 CHILDREN		200-2	164		GD VIS	CLEAR	CLEAR	20	YES	2	1200000		BRIGHT AS NORTH STAR ROUND, BASEBALL, BRIGHT					WITH TIME. PAL	E TOGATHER SEPARATING ESTINE LAUNCH REMOTE POSS
						(M)	NOT STATED	(E	CLLINGTON			G/RADAR		N/A		NO		55,0001		RED AND YELLOW SMALL BLIP	UP SLOW RANDOM				BECAUSE OF FLAN	P. POSSIBLE WX BALLOON
			5 URBAN				RADAR		200-2			GD VIS		CLOUDY	NO	NO				SILVER WITH OBJECT	CLIMBING TO WEST		NO N		AIR ON BASIS OF	INDICATES BALLOON. UPPER F ALTITUDE AND DURATION.
			6 URBAN				15 YRS		200-2				7 X 50 BX	VIS 15M		FROM	1	CLOUDS N/R		DANGLING FROM BOTTOM	RISING S-N RANDON				TRANSMITTER, (1	CONDE OR RAWINSONDE WITH REPORT LATE) LLOON. OBJECT REPORTED
							3721000000000000000000000000000000000000		200-2			GD VIS		UNL VIS		WEST YES	1	N/R	1 MIN	SILVER COLOR TUBULAR, 3-5' SILVER	INCL HOVERING WEST TO EAST WEAT				TO BE OVER AIR	BASE. SONDE OR RAWIN WITH RADAR
			3 RURAJ						LETTER				7 X 50 BX	CLEAR	NO	NO	1	HIGH		ANTAENNAS ON BOTTOM SMALL SILVER SPHERE	CONTINUOUSLY DESCENDINGOBJECT		NO D		REFLECTORS.	ING BY PARACHUTE. POSS
			O SMALL	DUSK					200-2			GD VIS		N/R	45K	FROM	1	N/R	15 MIN	EXPLODING CIRCULAR SILVER DISC	FROM EXPLOSION				UPPER ATR OR R	DIOSONDE. (GOOD DRAWING) OBJECT IN A/C FOR 50 MI
							PILOT MD & WIFE					GD VIS			NO	NO	1		15-20	WITH BLUISH TINT BLACK OBJECT WITH 2	EAST SE STATIONARY OR				PROBABLE UPPER	AIR RATHER THAN WX BALLOS S OBJECT AS SOME SORT OF
						,					550								Min	ORANGE CONES BELOW	CLIMBING				BALLOON. (JOHN	S HOPKINS IN PA.?)
TH	E FOLL	OWING (CASES CO	ITAIN F	EPORTE	D OBJ	ECTS EVALUATED	AS	BALLOON	S OTHER	THAN	UPPER AJ	R RESEARCH			DONS									TYPE	
			00 RURA				STUDENT	1	LETTER	164		GD VIS	FIELD GLASS	N/R	NO	NO	1 2	4 N/R		DISC SHAPED, SIZE OF BALLOONS, SHINY	WX HOVERING NAW	N	0 NO	NO NO	CLUSTER	OBSERVER IS A BELLEVER IN "FLYING SAUCERS"
							CHILDREN		200-2		- 171	GD VIS		CLOUDY		1700		1 RELOW CLOUDS		ROUND, SMALL, SILVER AND BLACK	FLIGHT TO WEST				TOY BALLOOMS	ADDITIONAL WITNESSES SA
		2000					NOT REPORTED					GD VIS			NO			12 5-600 FT		CONCERNED THAT OBJECT	TOY BALLOONS TIED T MIGHT BE AIR TRAFF	OGATHE C HAZ	R WITH	27 DIA	METER OBJECT SUS	PENDED BENEATH. WAS
4							FARMER & WIF					GD VIS		FOG	NO	NO		1 400 FT MILES	2 1/E	GREEN OBJECT, SMOOTH	EAST TO NW AND UP INTO CLOUDS			NO NO	UNUSUAL	TRIPOD EFFECT ON BOTTOM
												The second secon														

- (1) Give your name and address.
- (2) Where were you when you saw the meteor? (If the town is small please give county as well.)
- (3) Give the date, hour and minute when the meteor appeared; also kind of time used.
- (4) In what direction did it appear (or in what direction was it first seen)? This is not asking in what direction it was going!
- (5) In what direction did it disappear (or in what direction was it last seen)? For questions 4 and 5, simply N, E, S, or W is not accurate enough, unless these were the exact directions. If compass is used, state it; also if magnetic correction has been applied to compass reading.
- (6) At what height did it appear? (Use degrees in answering.)
- (7) At what height did it disappear? (Use degrees in answering.)
- (8) Did it pass directly overhead (i.e., through the zenith)?
- (9) If not, to which side of the zenith did it go, and how far from it? (Use degrees in answering.)
- (10) Did it appear to reach the horizon? What sort of a horizon have you?
- (11) What angle did the path of the meteor make with the horizon and in which direction was it then going?
- (12) If you are familiar with constellations describe the path of the meteor through the sky with reference to stars.
- (13) Did the meteor appear to explode?
- (14) What was the duration of its flight in seconds?
- (15) Describe the train if one was left. If it lasted long enough to show drift, most carefully tell in what direction train drifted. Give sketch, if possible, showing this with regard to horizon.
- (16) What was the duration of the train in seconds?
- (17) Did you hear any sound? How long after seeing the meteor was it before you heard this sound?

Did you hear an actual explosion? How long after seeing the explosion was it before you heard it?

- (18) Of what color was the meteor?
- (19) What was the size of the meteor? (Compare it with the Moon or with a planet or star.)
- (20) Was more than one body seen before the explosion (if any)?
- (21) What was condition of sky at time?
- (22) Give names and addresses of others who saw the meteor.
- (23) Please mail this reply to

Charles P. Oliver
AMERICAN METEOR SOCIETY
521 N. Wynnewood Ave
Narberth, Pennsylvania 19072

#	<u>ITEM</u>
1	BALLOON LAUNCH LOCATION
2	EFFECTS OF SUNLIGHT ON BALLOON AT DAWN/DUSK
3	ROAB (WEATHER BALLOON)
4	WEATHER BALLOON WITH RADAR REFLECTOR
5	RADIOSONDE BALLOON
6	MOBY DICK (UPPER AIR)
7	UPPER AIR WITH ATTACHMENTS
8	PILLOW BALLOON
9	CLUSTER BALLOON
0 - 11	SCHJELDAHL MYLAR PLASTIC BALLOON
12	SCHJELDAHL MYLAR PLASTIC BALLOON WITH FINS

for the same

ASTRONOMICAL SIGHTINGS

101 Cases contained objects evaluated as meteors. Evaluation is performed by analysis personnel within the section on the basis of description, motion, and duration. These analysis are reviewed periodically by Dr. Hynek and concurrance is mandatory for final evaluation. These reports are then forwarded to Dr. Charles P. Olivier of the American Meteor Society for whatever action he deems advisable.

135 Cases contained objects evaluated as stars/planets. These reports are evaluated by analysis personnel within the section on the basis of the reported characteristics of the object, duration, the position of the object in the sky and its motion. Again Dr. Hynek must concur with the analysis prior to evaluation of a report as astronomical in nature.

The astronomical (other) category can best be explained by an examination of those cases evaluated and placed in this category. Some of these cases are evaluated by local astronomers having a knowledge of the particular phenomena because of the locale and atmospheric conditions. Examples: Tab A - Comet, Tab C - Moonlight. The remainder are evaluated by analysis personnel within the section and the evaluation is concurred with by Dr. J. Allen Hynek (Project Consultant). Cases of sun-dogs and parhelia are forwarded to Dr. Donald Menzel because of his particular interest in these case studies.

TAB ITEM

A. LETTER FROM DR. OLIVIER DATED 28 DECEMBER 1965

B. COMET

C. MOON

D. REFLECTED MOONLIGHT

E. SUN

F. PARHELIA

G. SOLAR IMAGE (FROM GROUND)

H. SOLAR IMAGE (FROM A/C)



UNIVERSITY of PENNSYLVANIA

PHILADELPHIA 4

Flower and Cook Observatory

1965 Dec. 28

Major Hector Quintanilla, USAF Chief, Project Blue Book. Wright Patterson, AFB, Ohio.

Dear Major Quintanilla:

Thank you for your letter of Dec. 20, bringing a set of reports from Miss Ochipa. Having read them over, when you designated them as "very unscientific", you were very charitable.

Nevertheless I am glad to have them for our files and did find one one definite statement about the Geminid meteors we can use. The good lady means well and I will send her Bul.17 in hopes she can get into her head what we need in a fireball report.

of 1965, you kindly sent me in August, Two now been gone over in detail and 17 had enough to justify their being entered on fireball eards, and one more refers to a fireball we alread had a card for. The rest of the reports are too uncertain for our card file; none however need any comment of value to you, so far as I see.

Those of your reports which have the small altitude and azimuth diagrams on last page are the ones most likely to be of value in any possible computations of heights and paths. The diagrams are very good. They help visualize what one has seen and makes it easier to get the results on paper so they are intelligible.

It is a mystery to me that so many educated people can say so much on a fireball and leave out the essential data, namely where in the sky it started and where ended, giving angular coordinats. Every report would be valuable if these were given, but regretfully they are not. But extensive use of the diagrams should help greatly.

Again thanking you for your valuable help to the A.M.S. in our work, and with best wishes for 1966, I am

Sincerely yours,

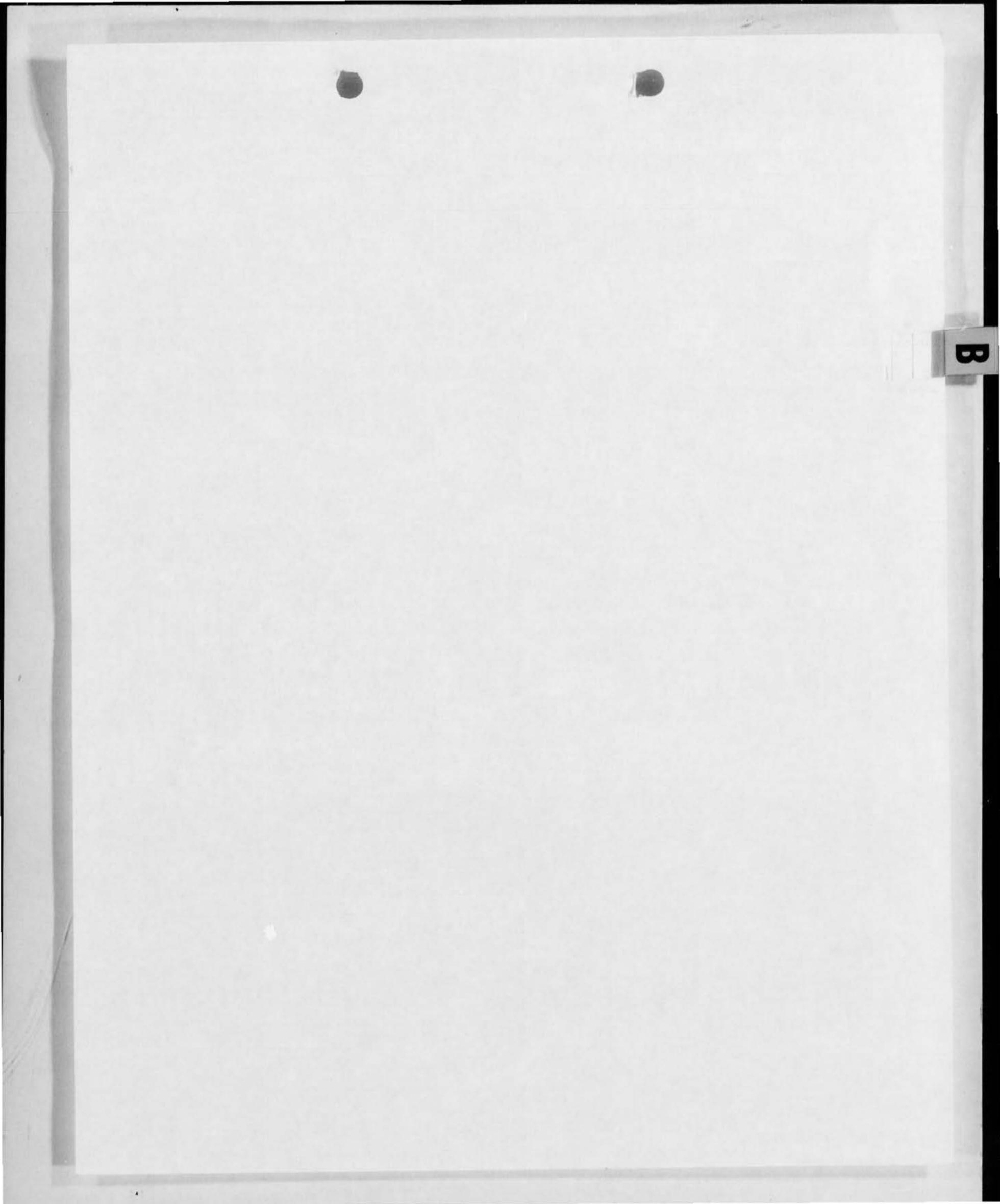
Charles P.Olivier.

C. P. OLIVIER

AMERICAN METERIA SHOULT

521 II. MARKENTER PA
NARRENTER TA

Charles P. Olivin



HISTORY OF PROJECT

Following the Kenneth Arnold sighting on 24 June 1947, wide news coverage of public reports of "flying discs or saucers" created sufficient concern at high military echelons to authorize AMC to conduct a preliminary investigation into these reports. Early correspondence indicates that U. S. Military Leaders were concerned that the objects reported were an aircraft configuration more advanced than these possessed by the United States Armed Forces. A letter, 23 September 1947, from Lt. General Twining of AMC to the Commanding General of the Army Air Forces, expressed the opinion that there was sufficient substance in the reports to warrant a detailed study.

On 30 December 1947, a letter from the Chief of Staff directed AMC to,...
"set up a project whose purpose was to collect, collate, evaluate and distribute to interested Government Agencies and contractors all information concerning UFO sightings and phenomena in the atmosphere which can be construed to be of concern to the National Security. . ."

The Technical Intelligence Division of AMC issued Hq AMC Technical Instruction No 2185, 11 February 1948, and the project was inaugurated with a code name of "SIGN." The code name "SIGN" was changed to the code name "GRUDGE" on 16 December 1948. A report released in February 1949 covering analysis of the first 273 incidents concluded that, while no definite and conclusive evidence existed, evaluation of reports of unidentified objects was a necessary activity of Military Intelligence Agencies.

After the Project "SIGN" Report, work continued along the same lines and a Project "GRUDGE" Report was published and released in August 1949 by AMC. This report contained analysis of 244 cases and concluded that Unidentified Flying Objects reports resulted from: a) misinterpretation of conventional objects, b) mass hysteria or "War Nerves", c) hoaxes and/or d) Psychopathelogical persons. Based upon these conclusions AMC recommended that investigation and study of this type of report be reduced in scope. Major portions of this work were performed under contract by Ohio State University, Professor Hynek (Present Consultant to AF on Project Blue Book), The Rand Corporation, Dr. G. Valley, Dr. Paul Fitts, Air Weather Service, 3610th Electronic Section and the U. S. Weather Bureau.

Following publication of the "GRUDGE" Report, the Air Force continued to investigate sightings, inasmuch as it is an Air Force responsibility to identify and analyze Aerial Phenomena that could possibly be a menace to the United States. Much of the Scientific and Technical work during 1950 and 1951 centered around Project "Twinkle" and the Green Fireball studies of Dr. LaPaz in the Southwestern United States. Project "Twinkle" Final Report was completed on 27 December 1951. During December 1951 Colonel Kirkland and Lt. Ruppelt made a visit to to discuss the feasability of a scientific study from the data collected since the program's inception. Thus, Project Blue Book's Special Report #14 came into being.

During the phase in which Special Report #14 was in preparation (1952 - 1954) the project attracted a Public Relations aspect that remains with it today. This came about through a National interest in reported sightings, Science-Fiction publications of alleged contacts with visitors from outer space, formation of psuedo-scientific organizations, hobby clubs, and self-appointed individuals who investigated UFO sightings. The radar sightings in Washington D. C. during July 1952 tended to give substance to UFO reports. News coverage during this period was extremely high and General Samford conducted a press conference on 29 July 1952 to explain the situation.

With the increased volume of reports pouring in, a Scientific Advisory Panel on UFO was established in late 1952. At a meeting held during 14 - 18 January 1953 all available data was examined. Conclusions and recommendations of this panel were published in an unclassified report, and made public. The panel concluded that UFO's did not threaten the National Security of the U.S. and recommended that the "Aura of mystery" attached to the project be removed.

By 1953 Air Force responsibility for the UFO program had become firmly established. It was now apparent that some directives were necessary in order to standardize investigative procedures and formulate policy. AFR 200-2 was written and the final publication was distributed in August 1954. This regulation states the purpose, investigative procedures and policies relating to release of information. Special Report #14 was completed on 17 March 1954. It concluded that on the basis of the observations reported to the Air Force it was highly improbable that any of these reports represent observations of technological developments outside the range of present day scientific knowledge. In accordance with the recommendations of the Scientific Panel and provisions for release of information outlined in AFR 200-2 the report was declassified and released to the general public on 5 May 1955.

After 1955 the project concerned itself with investigation of sightings, evaluation of the data and release of information to proper news media. This information is given to the public in the form of a news release called the "FACT SHEET". These, or similar releases have been made periodically since 1955. All data collected has been in accordance with the conclusions of the Scientific Panel in January 1953. Still, the "Flying Saucer Myth" has remained in the public eye, and has necessitated many conferences and briefings among Military, Civilian, Scientific, and Congressional members. Among the most significant of these are: a) 4 October 1956, The General Lewis Special Briefing, b) 16 September 1957, Defence Science Board Briefing, c) 31 January 1958, McClellan Sub-Committee Briefing, d) 8 August 1958, McCormack Sub-Committee Briefing, e) February 1959, Washington D. C. Policy Meetings and f) 11 - 15 July 1961, Congressional Briefing (Mr. Robert Smart).

As far back as 1952 recommendations have been made to discontinue the project or transfer it to civilian agencies or contractors. However, continuation of the project under Air Force auspices is likely. A letter from General Watson on 7 July 1955 to General Samford expressed factors that are still pertinent,". . . is the fact that complete reliance on a contractor would not reduce the responsibility of and therefore the load carried by the Air Force. . ." Also, various studies have been made to transfer the project to other organizations within the Air Force.

CURRENT SITUATION: Personnel associated with the project are engaged in receipt of UFO reports, investigation, analysis, and evaluation of these reports and maintenance of research and correspondence files. In addition, information is supplied to SAFOI-CC upon which to base a reply to the more than 2,000 letters a year from individuals requesting information on the UFO program. From 1962 - 1965 the files were reviewed and placed in a standard format. Statistics were recomputed on the bases of the actual case files. The fact sheet was revised to provide information most often requested by individuals and to disseminate the yearly statistics. Periodic case summaries on cases of public interest are released. The current AFR 200-2 is under revision. Present Project Officer is Major Hector Quintanilla, Jr...

Intelligence Activities

UNIDENTIFIED FLYING OBJECTS (UFO)

This regulation establishes the UFO Program to investigate and analyze UFO's over the United States. Such investigation and analysis are directly related to Air Force responsibility for the defense of the United States. The UFO Program provides for the prompt reporting and rapid identification needed for successful "identification," which is the second of the four phases of air defense—detection, identification, interception, and destruction. All commanders will comply strictly with this regulation.

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SECTION A—GENERAL

- 1. Explanation of Terms. To insure proper and uniform usage in UFO screenings, investigations, and reportings, an explanation of the objects follows:
 - a. Familiar or known objects:
- (1) Aircraft, balloons, kites, birds, searchlights, astronomical bodies (meteors, planets, stars, comets), pilotless aircraft, missiles, satellites in orbit, and others identified by the observer as normal appearing objects.
- (2) Flying objects determined to be aircraft. These generally appear as a result of ADIZ violations and often prompt the UFO reports submitted by the general public. They are readily identifiable as, or known to be, aircraft, but their type, purpose, origin, and destination are unknown. Air Defense Command is responsible

for reports of "unknown" aircraft, which should not be reported as UFO's under this regulation.

- (3) Aircraft flares, jet exhausts, condensation trails, blinking or steady lights observed at night, lights circling or near airports and airways, and other phenomena or objects known to be emanating from, or to be indications of, aircraft. These should not be reported under this regulation, as they do not fall within the definition of a UFO.
- b. Unidentified Flying Objects. Any aerial phenomena, airborne object or objects which are unknown or appear out of the ordinary to the observer because of performance, aerodynamic characteristics, or unusual features.
- 2. Objectives. Air Force interest in UFO's is three-fold. First, as a possible threat to the security of the United States and its forces; sec-

This regulation supersedes AFR 200-2, 14 September 1959, as amended.

OPI: AFCIN

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ond, to determine the technical or scientific characteristics of any such UFO's; third, to explain or identify all UFO sightings as described in paragraph 1b.

- a. Air Defense. The great majority of flying objects reported have been conventional, familiar things of no great threat to the security of the United States and its possessions. However, since the possibility exists that UFO's reported may be hostile or new foreign air vehicles of unconventional design, it is imperative to report sightings rapidly, factually, and as completely as possible.
- b. Technical and Scientific. The Air Force will continue to collect and analyze reports of UFO's until all are scientifically or technically explained or until the full potential of the sightings has been exploited. In performing this task the following factors are of great importance:
- (1) To measure scientific advances, the Air Force must have the latest experimental and developmental information on new or unique air vehicles or weapons.
- (2) The possibility exists that foreign countries may develop air vehicles of revolutionary configuration or propulsion.
- (3) There is need for further scientific knowledge in such fields as geophysics, astronomy, and physics of the upper atmosphere which the study and analysis of UFO's and similar aerial phenomena may provide.
- (4) The reporting of all pertinent factors will have a direct bearing on scientific analyses and conclusions of UFO sightings.
- c. Reduction of Percentage of UFO "Unidentifieds." Air Force activities must reduce the percentage of unidentifieds to the minimum. Analysis thus far has explained all but a few of the sightings reported. These unexplained sightings are carried statistically as unidentifieds. If more immediate, detailed, objective data on the unknowns had been available, probably these, too, could have been explained. However, because of the human factors involved, and the fact that analyses of UFO sightings depend primarily on the personal impressions and interpretations of the observers rather than on accurate scientific data or facts obtained under controlled conditions, the elimination of all unidentifieds is improbable.

3. Responsibilities:

a. Reporting. Base commanders will report all information and evidence of UFO sightings, including information and evidence received from other services, Government agencies, and civil-

ian sources. Investigators are authorized to make telephone calls from the investigation area direct to the Foreign Technology Division (FTD), of the Air Force Systems Command, Wright-Patterson Air Force Base, Ohio (CLearwater 3-7111, ext. 69216/66378). The purpose of the calls is to report high priority findings. (See section C.)

- b. Investigation. The commander of the Air Force base nearest the location of the reported UFO sighting will conduct all investigative action necessary to submit a complete initial report of a UFO sighting. The initial investigation will include every effort to resolve the sighting. An Air Force base other than that closest to the scene of a reported UFO sighting will refer the sighting immediately to the commander of the nearest Air Force base for appropriate action. (See paragraph 5.)
- c. Analysis. The Air Force Systems Command Foreign Technology Division will analyze and evaluate:
- (1) Information and evidence reported within the United States after the investigators of the responsible Air Force base nearest the sighting have exhausted their efforts to identify the UFO.
- (2) Information and evidence collected in oversea areas.

EXCEPTION: The AFSC (FTD), independently or in participation with pertinent Air Force activities, may conduct any additional investigations necessary to further or conclude its analyses or findings.

- c. G. Findings. AFSC (FTD) will prepare a final report on each sighting after collection and analysis of data, and will forward a copy of the report to HQ USAF (AFCIN).
 - e Public Relations and Information Services. The Office of Information, Office of the Secretary of the Air Force, will be responsible for releasing information on sightings, and, in coordination with AFSC (FTD), answering correspondence from the public regarding UFO's. (See paragraphs 7 and 8.)
 - f. Congressional Inquiries. The Office of Legislative Liaison will:
 - (1) In coordination with the AFSC (FTD) and/or the Office of Information, when necessary, answer all congressional mail regarding UFO's addressed to the Secretary of the Air Force and Headquarters USAF.
 - (2) Forward those inquiries which are scientific and technical to the FTD for information on which to base a reply. The FTD will re-

turn this information to the Office of Legislative Liaison for reply to the inquiry.

- (3) Process requests from congressional sources in accordance with AFR 11-7.
- g. Cooperation. All Air Force activities will cooperate with Air Force UFO investigators to insure the economical and prompt success of investigations and analyses. When feasible, this cooperation will include furnishing air or ground transportation and other assistance.
- 4. Guidance. The thoroughness and quality of a report or investigation of UFO's are limited only by the skill and resourcefulness of the person who receives the initial information and/or prepares the report. The usefulness and value of any report or investigation depend on the accuracy and timeliness of its contents. Following are aids for screening, evaluating, and reporting sightings:
- a. Careful study of the logic, consistency, and coherence of the observer's report. An interview with the observer by personnel preparing the report is especially valuable in determining the source's reliability and the validity of the information given. Factors deserving particular attention are the observer's age, occupation, and education, and whether his occupation involves observation reporting or technical knowledge. A report stating that a witness is completely familiar with certain aspects of a sighting should indicate his or her specific qualifications.
- c-A b. Theodolite measurements of changes of azimuth, and elevation and angular size.
 - c. Interception, identification, or air search, if appropriate and within the scope of air defense regulations.
 - d. When feasible, contact with local aircraft control and warning (ACW) units, and with pilots and crews of aircraft aloft at the time and place of sighting. Also, contact with any other persons or organizations that may have factual data on the UFO or can offer corroborating evidence—visual, electronic, or other.
 - e. Consultation with military or civilian weather forecasters for data on tracks of weather balloons released in the area and any unusual meteorological activity which may have a bearing on the UFO.
 - f. Consultation with navigators and astronomers in the area to determine whether any astronomical body or phenomenon would account for the sighting.
 - g. Contact with military and civilian tower operators, air operations units, and airlines to

- determine whether the sighting could have been an aircraft. Local units of the Federal Aviation Agency (FAA) are often of assistance in this regard.
- h. Contact with persons who may know of experimental aircraft of unusual configuration, rocket and guided missile firings, or aerial tests in the area.
- i. Contact with photographic units or laboratories. Usually, these installations have several cameras available for specialized intelligence or investigative work. Photography is an invaluable tool for use, where possible, in investigating and analyzing UFO sightings. (See paragraph 18).
- j. Whenever possible, selecting as a UFO sighting investigator an individual with a scientific or technical background as well as experience as an investigator.
- k. Submission of reports on all sightings even though identification may be assumed by the preparing officer under paragraph 16 of this regulation.
- 5. Reporting UFO Information. Both the Assistant Chief of Staff, Intelligence, Headquarters USAF, and the Air Defense Command have a direct and immediate interest in the facts pertaining to UFO's reported within the United States. All Air Force activities will conduct UFO investigations to the extent necessary for their required reporting action (see paragraphs 14, 15, and 16). No activity should carry an investigation beyond this point, unless the preparing officer believes the magnitude (intelligence significance or public relations aspects) of the case warrant full scale investigation. The officer may contact the FTD of AFSC (CLearwater 3-7111, ext 69216/66378) at Wright-Patterson Air Force Base, Ohio, to obtain verbal authority for continued investigation.

SECTION B—PUBLIC RELATIONS, INFORMATION, CONTACTS, AND RELEASES

- 6. Maintaining Public Relations. The Office of Information is responsible for:
- a. In coordination with the AFSC (FTD) when necessary, maintaining contact with the public and the press on all aspects of the UFO program and its related activities.
- b. Releasing information on UFO sightings and results of investigations.
- c. Periodically releasing information on this subject to the general public.

- d. Processing, answering, and taking action on correspondence received from the general public, pertaining to the public relations, interest, and informational aspects of the subject. (See paragraph 8.) This office will forward correspondence and queries which are purely technical and scientific to AFSC (FTD) for information on which to base a reply.
- 7. Releasing Information. The Office of Information, Office of the Secretary of the Air Force, will release to the public or unofficial persons or organizations all information or releases concerning UFO's, regardless of origin or nature. This includes replies to correspondence (except congressional inquiries) submitted direct to the AFSC (FTD) and other Air Force activities by private individuals requesting comments or results of analyses and investigations of sightings.
- 8. Exceptions. In response to local inquiries regarding any UFO reported in the vicinity of an Air Force base, the commander of the base concerned may release information to the press or the general public only after positive identification of the sighting as a familiar or known object. The commander must exercise care not to reveal any classified aspects of the sighting or names of persons making reports. (See paragraph 17.) If the sighting is unexplainable or difficult to identify, because of insufficient information or inconsistencies, the only statement to be released is the fact that the sighting is under investigation and information regarding it will be available at a later date. After completion of investigative action, the commander may release the fact that the AFSC (FTD) will review and analyze the results of the investigation. He will then refer any further inquiries to the local Office of Information.
- 9. Release by Non-Air Force Sources. If newsmen, writers, publishers, or private individuals desire to release unofficial information concerning a UFO sighting, Air Force activities will make every effort to assure that the statements, theories, opinions, and allegations of these individuals or groups are not associated with or represented as official information.
- 10. Contacts. Private individuals or organizations desiring Air Force interviews, briefings, lectures, or private discussions on UFO's will direct their requests to the Office of Information, Office of the Secretary of the Air Force. Air Force personnel, other than those of the Office of Information, will not contact private individuals on UFO cases, nor will they discuss their operations and functions with unauthorized persons unless so directed, and then only on a "need-to-know" basis.

SECTION C—PREPARING AND SUBMITTING REPORTS

11. General Information:

- a. Paragraphs 2 and 5 will serve as aids and guidance to screenings, investigations, and reportings. Paragraph 14 contains an outline of the reporting format. Activities initially receiving reports of aerial objects and phenomena will screen the information to determine whether the report concerns a valid UFO within the definition of paragraph 1b. Reports not within that definition do not require further action under the provisions of this regulation.
- b. To assist activities and personnel responsible for handling, screening, and processing initial, incoming UFO information, a summary follows of the general sources and types of reports:
- (1) Generally, initial UFO reports originate from two sources:
- (a) Civilian (airline, private, and professional pilots, tower operators, technical personnel, casual observers, and the public in general), by correspondence, telephone or personal interview;
- (b) Military units and personnel (pilots, observers, radar operators, aircraft control and warning units, etc.), by telephone, electrical message, or personal interview;
- (2) Generally, UFO reports received from civilian sources are of two types:
- (a) Those referring strictly to an observed UFO, containing either detailed or meager information;
- (b) Those referring only in part to an observed UFO, but primarily requesting information on some aspect of the UFO program.
- Reports considered to fall primarily in a public relations or information service category (see paragraphs 7, 8, 9, and b(2) above) are of primary interest to the Office of Information. UFO data sufficient for investigation and/or analysis may be extracted before referral to that office.

12. Methods for Transmitting Reports:

- a. Together with any necessary screenings and investigations preparatory to reporting, report all information on UFO's promptly. Electrical transmission with a "Priority" precedence is authorized for reports under 3 days from date of sighting. Electrically transmitted reports over 3 days old should carry a "Routine" precedence.
- b. Submit written reports of sightings over 3 days old on AF Form 112, "Intelligence Report,"

PROJECT BLUE BOOK

The United States Air Force has the responsibility under the Department of Defense for the investigation of unidentified flying objects (UFOs). The name of this program, which has been in operation since 1948, is Project Blue Book. It has been identified in the past as Project Sign and Project Grudge.

Air Force interest in unidentified flying objects is related directly to the Air Force responsibility for the air defense of the United States. Procedures for conducting this program are established by Air Force Regulation 200-2.

The objectives of Project Blue Book are two-fold: first, to determine whether UFOs pose a threat to the security of the United States; and, second, to determine whether UFOs exhibit any unique scientific information or advanced technology which could contribute to scientific or technical research. In the course of accomplishing these objectives, Project Blue Book strives to identify and explain all UFO sightings reported to the Air Force.

HOW THE PROGRAM IS CONDUCTED

The program is conducted in three phases. The first phase includes receipt of UFO reports and initial investigation of the reports. The Air Force base nearest the location of a reported sighting is charged with the responsibility of investigating the sighting and forwarding the information to the Project Blue Book Office at Wright-Patterson Air Force Base, Ohio.

If the initial investigation does not reveal a positive identification or explanation, a second phase of more intensive analysis is conducted by the Project Blue Book Office. Each case is objectively and scientifically analyzed, and, if necessary, all of the scientific facilities available to the Air Force can be used to assist in arriving at an identification or explanation. All personnel associated with the investigation, analysis, and evaluation efforts of the project view each report with a scientific approach and an open mind.

The third phase of the program is dissemination of information concerning UFO sightings, evaluations, and statistics. This is accomplished by the Secretary of the Air Force, Office of Information.

The Air Force defines an unidentified flying object as any aerial object which the observer is unable to identify.

Reports of unfamiliar objects in the sky are submitted to the Air Force from many sources. These sources include military and civilian pilots, weather observers, amateur astronomers, business and professional men and women, and housewives, etc.

Frequently such objects as missiles, balloons, birds, kites, searchlights, aircraft navigation and anticollision beacons, jet engine exhaust, condensation trails, astronomical bodies and meteorological phenomena are mistakenly reported as unidentified flying objects.

The Air Force groups its evaluations of UFO reports under three general headings: (1) identified, (2) insufficient data, and (3) unidentified.

and AF Form 112A, "Supplement to AF Form 112" (see paragraphs 14 and 15); however, keep the use of these forms to a minimum in reporting initial sightings. The delays often involved in processing and transmitting AF Form 112 through channels may make followup investigations difficult, producing only limited usable information. This factor is a necessary consideration. Reporting by electrical means will eliminate delays. If requested by the AFSC (FTD), AF Form 112 will provide a followup and/or complete report of all sightings initially reported electrically.

13. Where To Submit Reports:

- a. Electrical Reports. Submit multiple addressed electrical reports to:
- (1) Air Defense Command, Ent AFB, Colorado
- (2) Nearest Air Division (Defense) (For United States only)
- (3) Air Force Systems Command, Foreign Technology Division, Wright-Patterson AFB, Ohio
- (4) Headquarters, USAF (AFMIN), Wash
- (5) Secretary of the Air Force (SAFOI), Wash 25 DC
- b. Written Reports (Basic letters and AF Form 112):
- (1) Basic Letters. Submit all letter reports direct to the AFSC (FTD). The AFSC (FTD) will distribute the reports to interested Intelligence activities in the United States and to the Office of Information, if necessary.
- (2) AF Form 112. Submit original report, as prescribed in "Intelligence Collection Instruction (ICI)," June 1954, direct to HQ USAF (AFCIN) Wash 25 DC, and a copy to AFSC (FTD).
- c. Reports from Civilians. Where possible, advise civilian sources contemplating reporting UFO's to submit the report, for processing and transmission, to the nearest Air Force base.
- 14. Basic Reporting Data and Format. Show the abbreviation "UFO" at the beginning of the text of all electrical reports and in the subject of written reports. Include the required data in all reports, in the order shown below:
 - a. Description of the Object(s):
 - (1) Shape.
 - (2) Size compared to a known object (use

one of the following terms: Head of a pin, pea, dime, nickel, quarter, half dollar, silver dollar, baseball, grapefruit, or basketball) held in the hand at about arm's length.

- (3) Color.
- (4) Number.
- (5) Formation, if more than one.
- (6) Any discernible features or details.
- (7) Tail, trail, or exhaust, including size of same compared to size of object(s).
 - (8) Sound; if heard, describe sound.
 - (9) Other pertinent or unusual features.

b. Description of Course of Object(s):

- (1) What first called the attention of observer(s) to the object(s)?
- (2) Angle or elevation and azimuth of object(s) when first observed.
- (3) Angle or elevation and azimuth of object(s) upon disappearance.
- (4) Description of flight path and maneuvers of object(s).
- (5) How did the object(s) disappear? (Instantaneously to the North, etc.)
- (6) How long (were) the object(s) visible? (Be specific, 5 minutes, 1 hour, etc.)

c. Manner of Observation:

- (1) Use one or any combination of the following items: Ground-visual, air-visual, ground-electronic, air-electronic. (If electronic, specify type of radar.)
- (2) Statement as to optical aids (telescopes, binoculars, etc.) used and description thereof.
- (3) If the sighting occurred while air-borne, give type of aircraft, identification number, altitude, heading, speed, and home station.
 - d. Time and Date of Sighting:
 - (1) Zulu time-date group of sighting.
- (2) Light conditions. (Use one of the following terms: Night, day, dawn, dusk.)
- e. Location of Observer(s). Give exact latitude and longitude of each observer, and/or geographical position. In electrical reports, give a position with reference to a known landmark also, such as "2mi N of Deeville"; "3mi SW of Blue Lake." Typographical errors or "garbling" often occur in electrically transmitted messages, making location plots difficult or impossible.

Example: 89 45N, 192 71W for 39 45N, 102 21W.

- f. Identifying Information on Observer(s):
- (1) Civilian—Name, age, mailing address, occupation, and estimate of reliability.
- (2) Military—Name, grade, organization, duty, and estimate of reliability.
- g. Weather and Winds—Aloft Conditions at Time and Place of Sightings:
- (1) Observer(s) account of weather conditions.
- (2) Report from nearest AWS or U. S. Weather Bureau Office of wind direction and velocity in degrees and knots at surface, 6,000′, 10,000′, 16,000′, 20,000′, 30,000′, 50,000′, and 80,000′, if available.
 - (3) Ceiling.
 - (4) Visibility.
 - (5) Amount of cloud cover.
- (6) Thunderstorms in area and quadrant in which located.
 - (7) Vertical temperature gradient.
- h. Any other unusual activity or condition, meteorological, astronomical, or otherwise, which might account for the sighting.
- i. Interception or identification action taken (such action is authorized whenever feasible, and in compliance with existing air defense directives).
- j. Location, approximate altitude, and general direction of flight of any air traffic or balloon releases in the area which might possibly account for the sighting.
- k. Position title and comments of the preparing officer, including his preliminary analysis of the possible cause of the sighting(s). (See paragraph 16.)
- Existence of physical evidence, such as materials and photographs.
- 15. Negative or Inapplicable Data. Even though the source does not provide, or an interviewer has not asked for specific information, do not use the words "negative" or "unidentified" before exhausting all logical leads to obtain the information outlined under paragraph 14. For example, information on weather conditions in the area, as requested in paragraph 14g, is obtainable from the local military or civilian weather facility. Use the phrase "not applicable (N/A)" only when the question does not apply to the particular sighting under investigation.

- 16. Comments of Preparing Officer. The preparing officer will make a preliminary analysis and a comment on the possible cause or identity of the object he is reporting, together with a statement supporting his comment and analysis. He will make every effort to obtain pertinent items of information and to test all possible leads, clues, and hypotheses concerning the identity or explanation of the sighting. (See paragraph 5) The preparing officer who receives the report initially is in a much better position to conduct an "on-the-spot" survey or followup than subsequent investigative personnel and analysts, who may be far removed from the area, and who may arrive too late to obtain vital data or the missing information necessary for firm conclusions.
- 17. Classification. Do not classify reports unless data requested in paragraph 14 require classification. Classify reports primarily to protect:
- a. Names of sources reporting UFO's and other principals involved, if so requested by these persons or considered necessary;
- b. Intelligence, investigative, intercept, or analytical methods or procedures;
- c. Location of radar and other classified sites, units, and equipment;
- d. Information on certain types, characteristics, and capabilities of classified aircraft, missiles, or devices that may be involved in the sighting.
- 18. Reporting Physical Evidence. Report promptly the existence of physical evidence (photographic or material). Mark all physical evidence forwarded to the AFSC (FTD) for the attention of TD-E, Aerial Phenomena Branch.
 - a. Photographic:
- (1) Still Photographs. Forward the negative and two prints. Title the prints and the negatives, or indicate the place, time, and date of the incident.
- (2) Motion Pictures. Obtain the original film. Examine the film strip for apparent cuts, alterations, obliterations, or defects. In the report comment on any irregularities, particularly those received from other than official sources.
- (3) Supplemental Photographic Information. Negatives and prints often are insufficient to provide certain valid data or to permit firm conclusions. (See AFM 200-9—a classified document receiving limited distribution.) Information that will aid in plotting or in estimating distances, apparent size and nature of object, probable velocity, and movements includes:

(a) Type and make of camera,

(b) Type, focal length, and make of lens,

(c) Brand and type of film,

(d) Shutter speed used,

(e) Lens opening used; that is, "f" stop,

(f) Filters used,

(g) Was tripod or solid stand used,

(h) Was "panning" used,

- (i) Exact direction camera was pointing with relation to true north, and its angle with respect to the ground.
- (4) Other Camera Data. If supplemental information is unobtainable, the minimum camera data required are the type of camera, and the smallest and largest "f" stop and shutterspeed readings of the camera.
- (5) Radar. Forward two copies of each stillcamera photographic print. Title radarscope photographic prints in accordance with AFR

BY ORDER OF THE SECRETARY OF THE AIR FORCE:

OFFICIAL:

R. J. PUGH Colonel, USAF Director of Administrative Services 95-7. Classify radarscope photographs in accordance with Section XII, AFR 205-1, 10 June 1960.

NOTE: If possible, develop photographic film before forwarding. Mark any undeveloped film conspicuously to indicate this fact, to avoid destruction by exposure during examinations en route through mail channels to final addressees.

- b. Material. Each Air Force echelon receiving suspected or actual UFO material will safeguard it in a manner to prevent any defacing or alterations which might reduce its value for intelligence examination and analysis.
- c. Photographs, Motion Pictures, and Negatives Submitted by Individuals. Individuals often submit photographic and motion picture material as part of their UFO reports. All original material submitted will be returned to the individual after completion of necessary studies, analyses, and duplication by the Air Force.

CURTIS E. LeMAY Chief of Staff AIR FORCE REGULATION NO. 200–2A POSTED 1/27/66 H.J.

DEPARTMENT OF THE AIR FORCE Washington, 30 March 1964

Intelligence Activities

UNIDENTIFIED FLYING OBJECTS (UFO)

AFR 200-2, 20 July 1962, is changed as follows:

3d. Findings. AFSC (FTD) will prepare a final report on each sighting after collection and analysis of data. When final report contains information of significant intelligence value, AFSC (FTD) will forward a copy of the report to HQ USAF (AFNINDE), Wash DC 20330.

3e. Change references to paragraphs "7 and 8" to "6 and 7."

4b. Change "or" to "of."

tions desiring Air Force interviews, briefings, lectures, or private discussions on UFOs will be instructed to direct their requests to the Office of Information, Office of the Secretary of the Air Force. Air Force personnel, other than designated investigators (see paragraph 3b) and those of the Office of Information, will not contact private individuals on UFO cases, nor will they discuss their operations and functions with unauthorized persons, unless so directed, and then only on a need-to-know basis.

11a. Change references to paragraphs "2 and 5" to "1 and 4."

11c. Change references to paragraphs "7, 8, 9, and b(2)" to "6, 7, 8, and b(2)(b)."

12b. Submit reports of sightings over 3 days old by letter; however, keep the use of letter reports to a minimum in reporting initial sightings. The delays often involved in processing and transmitting correspondence through normal channels may make followup investigations difficult, producing only limited usable information. This factor is a necessary consideration. Reporting by electrical means will eliminate delays. Submit a followup and/or complete report on all sightings initially reported electrically, if so requested by AFSC(FTD).

13a(4). Change "AFCIN" to "AFNIN."

13b. Written Reports. Submit all letter reports (basic letters and followup or complete reports) direct to AFSC (FTD), Wright-Patterson AFB, Ohio, 45433. AFSC (FTD) will distribute the reports to interested intelligence activities in the United States and to the Office of Information, if necessary.

13b(1). Delete.

13b(2). Delete.

16. Change reference to paragraph "5" to "4."

18. Change "TD-E" to "TDEW."

BY ORDER OF THE SECRETARY OF THE AIR FORCE

OFFICIAL

R. J. PUGH Colonel, USAF Director of Administrative Services CURTIS E. LeMAY Chief of Staff

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DEPARTMENT OF THE AIR FORCE HEADQUARTERS UNITED STATES AIR FORCE WASHINGTON 25, D.C.

ATTNOS AFBSA

22 December 1965

SUBJECT: Ad Hoc Committee on Unidentified Flying Objects (UFOs)

To Members of Committee

- 1. You are invited to attend a meeting of the USAF Scientific Advisory Board Ad Hoc Committee on UFOs at the Foreign Tech-nology Division, Wright-Patterson AFB, Ohio, on 3 February 1966. An agenda is attached (Atch #1).
- 2. In 1948, the Air Force initiated Project Blue Book whose objectives were twofold: (1) to determine whether UFOs pose a threat to the security of the United States, and (2) to determine whether UFOs exhibit any unique scientific information or advanced technology which could contribute to scientific or technical research. The objectives of the Ad Hoc Committee are to review the resources, methods, and findings of Project Blue Book and to advise the Air Force as to any improvements that should be made in the program in order to carry out the Air Force's original responsibility. Correspondence from the Secretary of the Air Force Information Office relating to this meeting as well as other pertinent documentation is attached for your information. (Atchs 2, 3, and 4).
- 3. Quarters for attendees will be available at the Wright-Patterson Visiting Officers Quarters. Please let me know at your earliest convenience when you plan to arrive so that transportation can be provided. My phone is Area Code 202 697-8845/697-8404.

HAROLD A. STEINER, Major, USAF

Assistant Secretary

USAF Scientific Advisory Board

Atch

- 1. Agenda
- 2. SAFOI Memo 28 Sep 65
- 3. SAFOI Memo 16 Dec 65
- 4. Excerpt fr Wall Street Journal 13 Dec 65

Cy to: Dr. Cacciopo

AD HOC COMMITTEE ON UNIDENTIFIED FLYING OBJECTS (UFOs)

MEMBERS

Dr. Brian O'Brien (Chairman)

Dr. Launor F. Carter

Mr. Jesse Orlansky

Dr. Richard Porter

Dr. Carl Sagan

Dr. Willis H. Ware

AD HOC COMMITTEE ON UNIDENTIFIED FLYING OBJECTS (UFOs)

AGENDA

Thursday, 3	February 1966	
. 0800	Welcoming Remarks	Commander or Vice Commander, FTD
0805	Introduction	Dr. O'Brien, SAB
0810	Briefing on Project Blue Book	Major Quintanilla, FTD
1000	Break	
1015	Review of Selected Case Histories	FTD
1145	Lunch	
1315	Executive and Writing Session	

APPROVED:

HAROLD A. STEINER, Major, USAF Assistant Secretary USAF Scientific Advisory Board

22 December 1965

atch #1

DEPARTMENT OF THE AIR FORCE WASHINGTON

OFFICE OF THE SECRETARY

DEP 8 & 1965

MEMORANDUM FOR MILITARY DIRECTOR, SCIENTIFIC ADVISORY BOARD

SUBJECT. Unidentified Flying Objects (UFOs)

In keeping with its air defense role, the Air Force has the responsibility for the investigation of unidentified flying objects reported over the United States. The name of this project is Blue-Book (Attachment 1). Procedures for conducting this program are established by Air Force Regulation 200-2 (Attachment 2).

The Air Force has conducted Project Blue Book since 1948. As of 30 June 1965, a total of 9267 reports had been investigated by the Air Force. Of these 9267 reports, 663 cannot be explained.

It has been determined by the Assistant Deputy Chief of Staff/
Plans and Operations that Project Blue Book is a worthwhile program
which deserves the support of all staff agencies and major commands
and that the Air Force should continue to investigate and analyze
all UFO reports in order to assure that such objects do not present
a threat to our national security. The Assistant Deputy Chief of
Staff/Plans and Operations has determined also that the Foreign
Technology Division (FTD) at Wright-Patterson Air Force Base should
continue to exercise its presently assigned responsibilities concerning UFOs.

To date, the Air Force has found no evidence that any of the UFO reports reflect a threat to our national security. However, many of the reports that cannot be explained have come from intelligent and technically well qualified individuals whose integrity cannot be doubted. In addition, the reports received officially by the Air Force include only a fraction of the spectacular reports which are publicized by many private UFO organizations.

Accordingly, it is requested that a working scientific panel composed of both physical and social scientists be organized to review Project Blue Book -- its resources, methods, and findings -- and to advise the Air Force as to any improvements that should be made in the program in order to carry out the Air Force's assigned responsibility.

alch # 2

Doctor J. Allen Hynek who is the Chairman of the Dearborn Observatory at Northwestern University is the scientific consultant to Project Blue Book. He has indicated a willingness to work with such a panel in order to place this problem in its proper perspective.

Doctor Hynek has discussed this problem with Doctor Winston ... Markey, the former Air Force Chief Scientist.

E. B. LeBAILLY

Major General, USAF

Director of Information

2 Attachments

1. Blue Book Report

2. AFR 200-2

UNIDENTIFIED FLYING OBJECTS

by Carl Sagan

Department of Astronomy, Harvard University; and Smithsonian Astrophysical Observatory, Cambridge, Massachusetts

Copyright 1963 by The Encyclopedia Americana Reprinted for private circulation Identified reports are those for which sufficient specific information has been accumulated and evaluated to permit a positive identification or explanation of the object.

Reports categorized as <u>Insufficient Data</u> are those for which one or more elements of information essential for evaluation are missing. Some examples are the omission of the duration of the sighting, date, time, location, position in the sky, weather conditions, and the manner of appearance or disappearance. If an element is missing and there is an indication that the sighting may be of a security, scientific, technical, or public interest value, the Project Blue Book Office conducts an additional investigation and every attempt is made to obtain the information necessary for identification. However, in some instances, essential information cannot be obtained, and no further action can be taken.

The third and by far the smallest group of evaluations is categorized as <u>Unidentified</u>. A sighting is considered unidentified when a report apparently contains all pertinent data necessary to suggest a valid hypothesis concerning the cause or explanation of the report but the description of the object or its motion cannot be correlated with any known object or phenomena.

TYPES OF UFO IDENTIFICATIONS AND EVALUATIONS

There are various types of UFO sightings. Most common are reports of astronomical sightings, which include bright stars, planets, comets, fireballs, meteors, auroral streamers, and other celestial bodies. When observed through haze, light fog, moving clouds, or other obscurations or unusual conditions, the planets, including Venus, Jupiter, and Mars have been reported as unidentified flying objects. Stellar mirages are also a source of reports.

Satellites are another major source of UFO reports. An increase in satellites reported as UFOs has come about because of two factors. The first is the increase of interest on the part of the public; the second is the increasing number of satellites in the skies. Positive knowledge of the location of all satellites at all times enables rapid identification of satellite sightings. Keeping track of man-made objects in orbit about the earth is the responsibility of the North American Air Defense Command Space Detection and Tracking System. This sophisticated electronic system gathers complex space traffic data instantly from tracking stations all over the world.

Other space surveillance activities include the use of ballistic tracking and large telescopic cameras. ECHO schedules are prepared by the NASA Goddard Space Flight Center at Greenbelt, Maryland, and schedules of the South/North equator crossings are prepared by the Smithsonian Institution at Cambridge, Massachusetts. From the data produced by these agencies, satellites mistakenly reported as UFOs can be quickly identified. Some of these are visible to the naked eye.

Aircraft account for another major source of UFO reports, particularly during adverse weather conditions. When observed at high altitudes and at some distance, aircraft can have appearances ranging from disc to rocket shapes due to the reflection of the sun on their bright surfaces. Vapor or condensation trails from jet aircraft will sometimes appear to glow fiery red or orange when reflecting sunlight. Afterburners from jet aircraft are often reported as UFOs since they can be seen from great distances when the aircraft cannot be seen.

The Project Blue Book Office has direct contact with all elements of the Air Force and the Federal Aviation Agency civil air control centers. All aerial refueling operations and special training flights can be checked immediately. Air traffic of commercial airlines and flights of military aircraft are checked with the nearest control center, enabling an immediate evaluation of aircraft mistakenly reported as UFOs. However, since many local flights are not carried, these flights are probable causes of some reports.

Unidentified Flying Objects: a generic term for atmospheric phenomena, detected visually or by radar, of a nature not immediately understood. The principal interest in these objects stems from the speculation that some of them are of intelligent extraterrestrial origin, and from the psychological insights into contemporary human problems which this interpretation provides.

Current popular interest in unidentified flying objects began on June 24, 1947, when a set of rapidly-moving, glistening objects were observed from the air in daytime, near Mt. Rainier, Washington, by Kenneth Arnold, a Seattle resident, who dubbed them "flying saucers." The sighting received extensive publicity, and somewhat similar sightings have been reported ever since. The diversity of these observations, however, is as striking as the observations themselves. Unidentified flying objects (or UFOs) have been described variously as rapidly-moving or hovering; disc-shaped, cigar-shaped, or ball-shaped; moving silently, or noisily; with a fiery exhaust, or with no exhaust whatever; accompanied by flashing lights, or uniformly glowing with a silvery cast. A simple listing of the observations suggests that all UFOs do not share a common origin. Indeed, the use of generic terms such as "UFOs" or "flying saucers" has served to confuse the issue by the implication of common origin.

Because of its air defense responsibility, the United States Air Force has undertaken to investigate all reports of unidentified flying objects over the United States. The number of sightings reported and investigated between 1947 and 1960 is shown in the accompanying Table.

Evaluation of these reports is difficult. The observations are frequently fragmentary, and reports by different observers of the same phenomenon are often dissimilar, or even irreconcilable. There is an understandable tendency for the observer to exaggerate the spectacular aspects of his observations. In many instances, statements are made concerning distance, size, and velocity which are without foundation. A small object, close by, may appear larger than a large object far away. Also, many deliberate hoaxes have been perpetrated (for example, involving double-exposure photography). After allowances are made for these possibly confusing factors, the accepted scientific procedure is to attempt an explanation of the observations in terms of natural phenomena. Only if an observation is not readily explicable in terms of known phenomena does the scientist

introduce, ad hoc, another phenomenon in explanation.

Confirmed identifications of UFOs have been made with the following: unconventional aircraft; aircraft under uncommon weather conditions; aircraft with unusual external light patterns; meteorological and other high-altitude balloons; artificial earth satellites; flocks of birds; reflections of searchlights or headlights off clouds; reflection of sunlight from shiny surfaces; luminescent organisms, including one case of a firefly lodged between two adjacent panes of glass in an airplane cockpit window; optical mirages and looming; lenticular cloud formations; ball lightning; sundogs; meteors, including the rare green fireballs; planets, especially Venus; bright stars; and the Aurora Borealis. Radar detection of unidentified flying objects has also occurred occasionally. Many of these sightings have been explained in terms of radar reflection off temperature inversion layers in the atmosphere, and other sources of radar "angels."

Considering the difficulties in tracing out the visual and radar sightings, it is remarkable that all but about 1% of the reported UFOs have been identified as naturally-occurring -- if sometimes unusual -- phenomena. In October, 1957, Sputnik I, the first earth-orbiting artificial satellite, was launched. Of the 1,178 sightings in that year, 701 occurred between October and December. There is a clear

implication that Sputnik and its attendant publicity was responsible for many "UFO" sightings.

In July, 1952, a set of visual and radar observations of unidentified flying objects over Washington, D. C. caused some public hysteria. Government concern was reflected in the establishment, by the Office of Scientific Intelligence of the Central Intelligence Agency, in November, 1952, of a special panel chaired by Professor H. P. Robertson, of the California Institute of Technology, to evaluate these reports. The Robertson panel thoroughly investigated the UFO reports to that date, and concluded that all were very probably natural phenomena, erroneously interpreted.

There have been strange objects seen in the sky ever since men first looked upwards. But the testimony of greatest reliability should be that of the professional astronomer. Professor J. L. Greenstein, of Mt. Wilson and Palomar Observatories, California Institute of Technology, has pointed out that a vehicle 100 feet in diameter, at an altitude of 50 miles, would leave a broad track on photographic plates taken of the sky with large telescopes, a track easily distinguishable from those of ordinary astronomical objects such as stars, meteors, and comets. Nevertheless, the 5,000 plates of the Palomar Sky Survey and some half-million wide-angle, fast-lens photographs taken

at Harvard College Observatory have never indicated the existence of any such object.

Repeated sightings of UFOs, and the persistence of the Air Force and the responsible scientific community in explaining the sightings away, has suggested to some that a conspiracy exists to conceal from the public the true nature of the UFOs. Might not at least a small fraction of the residual 1% of the sightings be space vehicles of intelligent extraterrestrial origin, observing the Earth and its inhabitants? Let us examine this possibility.

It now seems quite clear that the Earth is not the only inhabited planet. There is evidence that the bulk of the stars in the sky have planetary systems. Recent research concerning the origin of life on Earth suggests that the physical and chemical processes leading to the origin of life occur rapidly in the early history of the majority of planets. The selective value of intelligence and technical civilization is obvious, and it seems likely that a large number of planets within our Milky Way galaxy — perhaps as many as a million — are inhabited by technical civilizations in advance of our own. Interstellar spaceflight is far beyond our present technical capabilities, but there seem to be no fundamental physical objections to

it, and it would be very rash indeed to preclude, from our present vantage point, the possibility of its development by other civilizations. If each of, say, a million advanced technical civilizations in our galaxy launched an interstellar spacecraft per year (and even for an advanced civilization, the launching of an interstellar space vehicle will not be a trivial undertaking), and even if all stars in the galaxy can be explored with equal facility, then our solar system should, on the average, be visited only once every hundred thousand years.

UFO enthusiasts have sometimes castigated the skeptic for anthropocentrism. Actually, the view that the Earth is daily visited by interstellar spacecraft is far more anthropocentric. If even a small fraction of the residual UFOs are interstellar spacecraft, this would imply an overriding significance to our small planet; as if all the professional anthropologists in the world converged on one of the Andaman Islands because the fishnet had recently been invented there. Anthropologists have other interests. Only a few specialize in the cultures of the Andaman Islands. If our views on the frequency of intelligence in the galaxy are correct, there is no reason for the Earth to be singled out for interstellar visits. A somewhat greater frequency of visits

could be expected if there were another intelligent civilization within our own solar system, but at the present
time there is no evidence for the existence of such a civilization on Mars or on any other nearby planet.

Related to the UFO report is the contact tale, a contemporary report of the landing of an extraterrestrial space vehicle on Earth. Unlike the UFO descriptions, these tales display a striking uniformity. The extraterrestrials are described as humanoid, differing from us only in some small characteristic such as teeth, speech, or dress. The aliens -- so the "contactees" report -- have been observing Earth and its inhabitants for many years, and express concern at "the present grave political situation." They are fearful that, left to our own devices, we will destroy our civilization. The contactee is then selected as their "chosen intermediary" with the governments and inhabitants of Earth (The contactee's qualifications for this position are not always evident.). He is taken on voyages in the spacecraft, sometimes to the visitors' home planets, but somehow the promised political or social intervention never materializes.

C. G. Jung has pointed out that the frequency and persistence of these contact tales -- not one of which has been confirmed by the slightest objective evidence -- must be of

substantial psychological significance. What need is fulfilled by a belief that unidentified flying objects are of extraterrestrial origin? It is noteworthy that in the contact tales, the spacecraft and their crews are never reported to be hostile. It would be very satisfying if a race of advanced and benign creatures were devoted to our welfare. The interest in unidentified flying objects derives, perhaps, not so much from scientific curiosity as from unfulfilled religious needs. Flying saucers serve, for some, to replace the gods that science -- for good or otherwise -has deposed. The old mythological frameworks have evaporated, but, with their reports of distant and exotic worlds and their pseudo-scientific overlay, the contact accounts are acceptable to many people. These tales, and their attendant ritual, comprise one of the few viable contemporary cult movements of more than passing interest and local relevance. But precisely because people desire so intensely that unidentified flying objects be of benign, intelligent, and extraterrestrial origin, honesty requires that, in evaluating the observations, we accept only the most rigorous logic and the most convincing evidence.

YEAR	NUMBER OF REPORTED SIGHTINGS*	YEAR	NUMBER OF REPORTED SIGHTINGS
1947	79	1954	429
1948	143	1955	404
1949	186	1956	778
1950	169	1957	1,178
1951	121	1958	473
1952	1,501	1959	364
1953	425	1960	173

^{*}Tabulated by Tacker, 1960.

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- E. J. Ruppelt, "The Report on Unidentified Flying Objects" (Doubleday: New York, 1956).
- C. G. Jung, "Flying Saucers: A Modern Myth of Things Seen in the Skies" (Harcourt Brace and Company: New York, 1959).
- Lt. Col. L. J. Tacker, "Flying Saucers and the U.S. Air Force" (D. Van Nostrand Company: Princeton, 1960).
- D. H. Menzel and L. G. Boyd, "The World of Flying Saucers: A Scientific Examination of a Major Myth of the Space Age" (Doubleday: New York, 1963).

AIRCRAFT

Aircraft evaluations are made on the basis of description and flight characteristics. In the majority of reports attributable to aircraft no object is observed and the evaluation is made primarily on the timemotion sequence. The lighting and visual characteristics as well as the time motion sequence may differ with the type of aircraft and/or its mission. Local military installations are contacted for flights or military aircraft operating in the area of a sighting. ACIC provides the section with maps showing low and high level air corridors and flight restricted areas. They also publish the "Flight Planning Guide" which lists all refueling areas and their control agency. Special low-level military training areas are included in this publication and a map showing the routes is distributed periodically. ASD provides support on aircraft lighting configurations and the 17th Bomb Wing provides the project with local schedules. The 922 Air Refueling Squadron at WPAFB provides information of visual characteristics of night refueling operations. SAC recently photographed a refueling mission so that the visual characteristics of a refueling operation might be observed by analysis personnel. Civilian and military agencies known to be engaged in night photography are contacted in cases of suspected photographic missions. No case is evaluated as an A/C if the reported maneuvers are not consistant with aircraft flight.

CONVENTIONAL

a) Regular scheduled airliners - Fly in air corridors, and are usually controlled by FAA. Lighting will probably be typical red and green wing lights with rotating beacon (Grimes). These A/C use landing lights on takeoff as well as while in landing pattern. Visual characteristics may include period of time reported as hovering or stationary if the aircraft is in a turn or approaching the observer. Total duration should be consistant with flight maneuvers. Not likely that duration will exceed 5 minutes unless some series of maneuvers is being performed. Most often reported at night and reported as single light (landing light blots out the red and green flashing lights). Lighting configurations are not necessarily standard. Experimental and unusual lighting effects can vary with the lighting configuration of each aircraft. (See attached letters from FAA and ARMCO.) Color most often reported as white, can be red. Those objects in straight flight at altitude can be checked against local flight corridors. FAA can be checked if there is some doubt that the object is an aircraft or if positive identification as to a specific flight is required. May or may not have sound associated with the report. If near an airport, this type of object is not regarded as a UFO since moving lights in and around airports which could be caused by aircraft are regarded as aircraft (definition included in AFR 200-2).

Balloons continue to be reported as UFOs. Several thousand balloons are released each day from military and civilian airports, weather stations, and research activities. There are several types of balloons - weather balloons, rawinsondes, radiosondes, and the large research balloons which have diameters up to 300 feet. At night, balloons carry running lights which cause an unusual appearance when observed. Reflection of the sun on balloons at dawn and sunset sometimes produce strange effects. This usually occurs when the balloon, because of its altitudes, is exposed to the sun. Large balloons can move at speeds of over 100 miles per hour when moving in high altitude jet windstreams. These balloons sometimes appear to be flattened on top. At other times, they appear to be saucershaped and to have lights mounted inside the bag itself due to the sun's rays reflecting through the material of the balloon. The Balloon Control Center at Holloman Air Force Base, New Mexico, maintains a plot on all Military Upper Air Research Balloons.

Another category of UFO evaluations labeled Other includes missiles, reflections, mirages, searchlights, birds, kites, spurious radar indications, hoaxes, fireworks, and flares.

Aircraft, satellites, balloons, and the like should NOT be reported since they do not fall within the definition of an unidentified flying object.

b) Private or non-scheduled flights - Same characteristics as conventional airliner. Speeds of light aircraft may be slower and the duration longer. Usually at lower altitude. Sound will not be heard if the wind is blowing away from the observer. Duration should not exceed 7 or 8 minutes unless maneuvers can account for additional time period. Normal flight is VFR from some local airport. Not carried on RADAR plots through FAA. Hardest type to check for positive identification. Evaluation made on flight characteristics consistent with A/C.

JET AIRCRAFT

Visual characteristics depend upon the type of mission:

- a) Airliner and high altitude missions are similar to conventional flights in visual characteristics with the following exceptions: (1) The color is most often reported as red. (2) No sound is associated with the object.
- (3) Flight is usually straight or with one turn. Duration is about 3-5 minutes depending upon the degree of arc through which the object passes. The FAA has designated airways along which these flights are flown.
- b) Special low level missions (military). Mission flown at 2,000 ft. in known air corridors. Sighting is usually brief (one minute or less). description will consist of an object which may appear to be hovering if the approach is directly toward the observer. May include a sudden burst of speed. No sound if wind is away from observer. More than one light may be observed but object is usually reported as a single light. Flights are at night. These aircraft are not misinterpreted during the day since wings, tail, and/or other features can be noted. (Sample route attached)
- c) Special tests or training missions Characteristics will depend on the number of A/C, formation, type of A/C, etc. Can vary from a single A/C to multiple flights or major air operations. These lights can be determined by contact with local, regional, or major air commands.
- d) Jet with afterburner Afterburner operation viewed from the side may give the appearance of a short flame. Color usually reported as blue, shape tapering. If afterburner is cut off object may be reported as disappearing completely by just vanishing or the witness may believe that the object zoomed off into space. Duration usually brief. Object frequently in a climb. As viewed from the rear as the object is going away from the observer the color reported may be red or orange with some yellow and shape will not be ascribed to the object. Again disappearance may be sudden. If at high altitude may be reported as a light only, and characteristic same as for other A/C except that motion is faster.

REFUELING MISSIONS

Differ from other missions in that lights on the tanker and miltiple A/C engaged in the operation add visual characteristics not normally associated with aircraft flight. Reports are night time only since daylight operations can be recognized by the observer. May be both low and high altitude. Refueling missions involve multiple lights moving around, in formation, going on and off, etc. Flight of the basic light formation will be straight until the end of a specific run, then 180 degree turns can be made. Duration in an area may run as high as 15 minutes but each observed single pass should not run more than 4-5 minutes. Lights may appear going one way then appear on their return path at a later time. Operations are controlled and refueling is conducted in specific areas. ACIC planning guide contains the location of these areas and the agency to contact for use of the specific area. Phone calls to the controller of the area will provide information as to whether the area was in use or not. SAC at Offutt Air Force Base maintains refueling schedules for all areas used during a specific month, but these are destroyed on the first day of each month and new schedules maintained. Old records must be obtained from the squadron flying specific mission. The controller can tell which missions were flown, when, and by whom. Specific time of entry and exit must be obtained from the squadron flying the mission. The best procedure is to contact the controller and if the area was in use then contact the squadron for the number and type of A/C flown and their entry and exit times.

PHOTO AIRCRAFT

- a) A/C using flare drops--More often reported as flares rather than A/C engaged in photo work.
- b) A/C using strobes for illuminating the target. Can be low level or high altitude missions. Only the strobe light is visible and the A/C is reported as a series of evenly spaced flashes. Duration of these sightings usually less than two minutes, more frequently 30 seconds.
- c) Infra Red--These aircraft are specially equipped with turbine generators to drive the equipment. The generator makes a noise similar to a whine and can be heard above the noise of the aircraft. Many are on classified projects and the agencies doing this work are limited. The A/C utilized are relatively slow (less than 125 mph.) Much of the work is done early in the morning and landing lights are used because of the low altitudes flown. The A/C will be low, sound will be associated with the object and the landing light should be observed. No portion of the infra red equipment will be observed.

ADVERTISING AIRCRAFT

Fall basically into two types:

- a) Those towing targets or banners of some sort visible during daylight hours. Those are not usually misinterpreted unless the aircraft remains at a range sufficient for the observer to see only outlines and not details of the plane and sign being towed. Frequently reports are accompanied by drawings with the towed banner assumed to be a part of the object itself. Duration is longer than usual A/C sightings—and flight generally marked by maneuvers. Frequently loud speakers are utilized but when heard the A/C should be within range for identification as a known object. Local investigators can check for these aircraft since FAA regulations require that a permit be obtained for those flights
- b) Electrical lighted signs Same essential characteristics except that normally viewed at night. On occasion these signs have been regarded as windows of a much larger craft. Flights again are relatively slow and maneuvering back and forth in one area is characteristic of the flight. An aircraft usually operates in an area for more than one day and can be viewed on successive nights, weather permitting.

HELICOPTERS

Motion slow. Flight may or may not include hovering. Should be far enough away from the observer that positive identification cannot be made during the day. May be reported as a black speck moving back and forth, up and down, etc. During the night wierd effects can be obtained from the red rotating beacon flashing through the canopy. Again motion will be erratic if the flight includes hovering. Positive identification usually simple to obtain by checking the flight schedules of military and civilian helos in the area.

A sighting is considered unidentified when a report apparently contains all pertinent data necessary to suggest a valid hypothesis concerning the cause or explanation of the report but the description of the object or its motion cannot be correlated with any known object or phenomena.

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	259	7/06	RURAL	NIGHT	ONE	DAU ADULT (F)	HOUSEMIFE	1	LETTER	PHONE (HYNEK)	5
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CONCLUSIONS

To date, the firm conclusions of Project Blue Book are: (1) no unidentified flying object reported, investigated, and evaluated by the Air Force has ever given any indication of threat to our national security; (2) there has been no evidence submitted to or discovered by the Air Force that sightings categorized as unidentified represent technological developments or principles beyond the range of present day scientific knowledge; and (3) there has been no evidence indicating that sightings categorized as unidentified are extraterrestrial vehicles.

The Air Force will continue to investigate all reports of unusual aerial phenomena over the United States. The services of qualified scientists and technicians will continue to be used to investigate and analyze these reports, and periodic reports on the subject will be made.

The former Chairman of the House Armed Services Committee, Mr. Carl Vinson, recently commented on the conduct of the UFO program by the Air Force and stated that Congressional hearings on this subject are unnecessary.

The Air Force does not deny the possibility that some form of life may exist on other planets in the universe. However, to date, the Air Force has neither received nor discovered any evidence which proves the existence and intra-space mobility of extraterrestrial life. The Air Force continues to extend an open invitation to anyone who feels that he possesses any evidence of extraterrestrial vehicles operating within the earth's near space envelope to submit his evidence for analysis. Initial contact for this purpose is through the following address:

PROJECT BLUE BOOK INFORMATION OFFICE SAFOI WASHINGTON, D C 20330

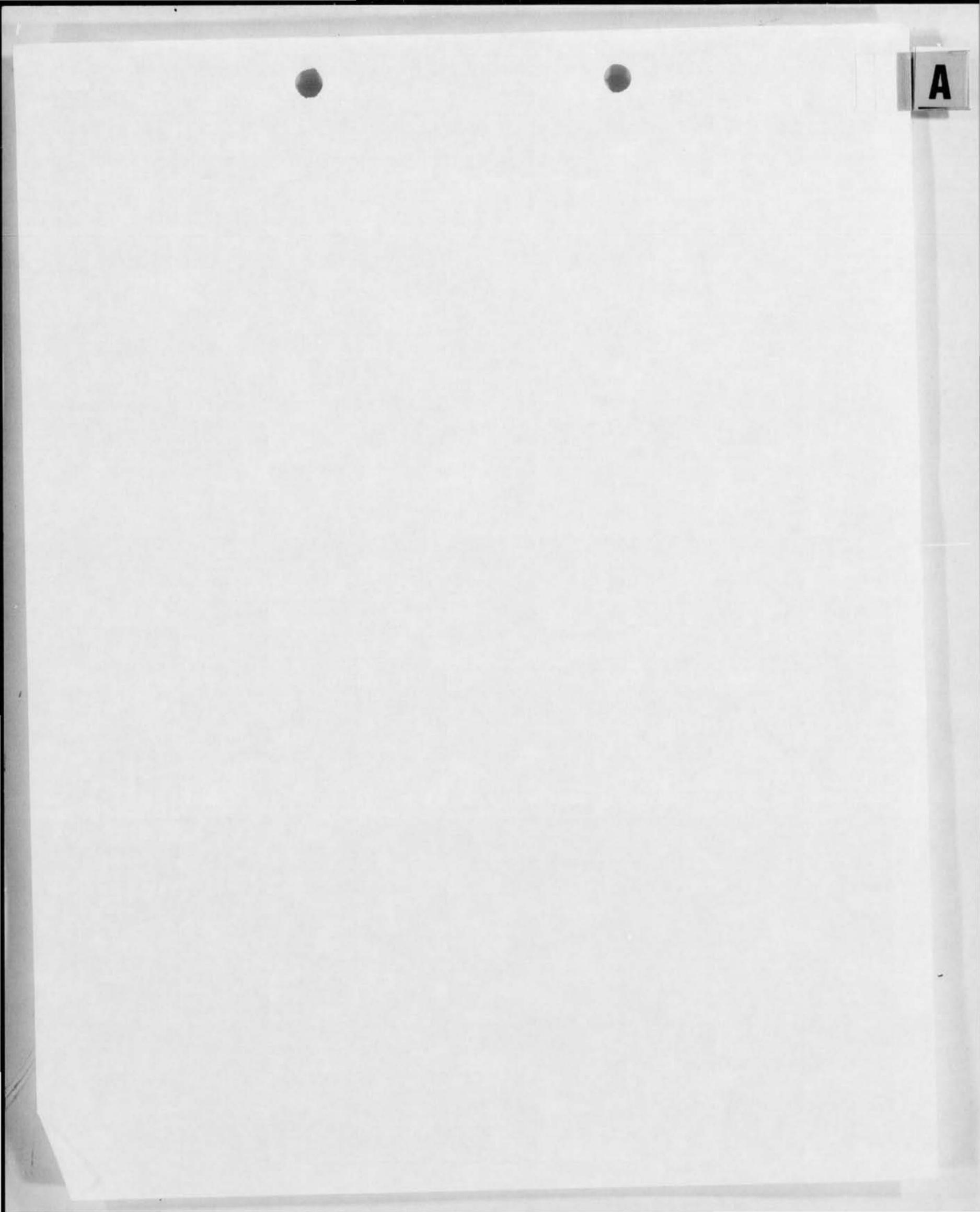
Anyone observing what he considers to be an unidentified flying object should report it to the nearest Air Force Base. Persons submitting a UFO report to the Air Force are free to discuss any aspect of the report with anyone. The Air Force does not seek to limit discussion on such reports and does not withhold or censor any information pertaining to this unclassified program.

THE FOLLOWING PHYSICAL SPECIMENS WERE SUBMITTED FOR ANALYSIS OR IDENTIFICATION IN CONNECTION WITH THE UNIDENTIFIED FLYING OBJECTS PROJECT DURING THE YEAR 1965.

#	IN#	DATE	LOCATION	INVESTIGATION	ANALYSIS	DISPOSITION	EVALUATION
	57	6 Feb.	Liberty, Ohio	Local	Air Force Materials Lab	Return to Source	Metal Ball (Not Foreign)
	82	3/02	Brooksville, Fla	Local	Institute of Paper Chem	Return to Source	Paper (Lens/Stencil Tissue)
	86	3/04	Corvallis, Ore	Local	Air Force Materials Lab	(Dirt Sample)	Oil in Dirt (Not Foreign)
	190	5/25	Thailand	Local	Allegheny Ballistics Lab	To Manufacturer	Scout Rocket
	558	8/19	Cherry Creek, NY	Local	Local Analysis	(Dirt Sample)	3-1 Oil and Genitian- Violet/Vio-Stringent
	588	8/24	Fayetteville, Ar	k Local	Local Analysis	In File	Plastic Bags (Garment)
	732	9/27	Reno, Penna	WPAFB	WPAFB (Section Analysis)	In File	Gourd (Plant)
,	776	10/19	Vero Beach, Fla.	WPAFB	WPAFB (Section Analysis)	Returned to Source	Balloon (Cape Kennedy)
,	777	10/20	Snow Hill, Md	Local	Local/WPAFB/USAF	Returned to Project	Balloon (Wallops Island)
1	INFO	10/21	Greece	Air Attache	None	Sent to Manufacturer	Instrument Package

TAB	CASE	ITEM
A	Liberty, Ohio	Metal Ball (Not Foreign)
В	Brooksville, Fla	Paper (Lens/Stencil Tissue)
C	Corvallis, Ore	Oil in Dirt (Not Foreign)
D	Thailand	Scout Rocket
E	Cherry Creek, NY	3-1 Oil and Gentian Violet/Vio-Stringent
F	Fayetteville, Ark	Plastic Bags (Garment)
G	Reno, Penna	Gourd (Plant)
H	Vero Beach, Fla	Balloon (Cape Kennedy)
I	Snow Hill, Md	Balloon (Wallops Island)
J	Greece	Instrument Package

4 5



PTD (TDEW) Wright-Patterson AFB, Ohio 45433 2 April 1965

Her James Cannon 8405 Forney Road Her Lebenon, Ohio

Deer Sir,

The ophere that was submitted to the Air Force at Wright-Patterson AFB, Ohio was tested at the Air Force Materials Laboratory. A copy of their report is attached. While no specific identification of the object was made, tests conducted, confirmed that the object was of American origin and did not exhibit evidence of space residence. The sphere is being returned to you under separate cover.

We appropriate your patriotic duty as an American citizen in submitting this object to the Air Force for analysis.

Sincerely,

HAGTOR CUMMEANTILLA, Jr Major, USAF Chiof, Project Blue Book

AIR FORCE MATERIALS LABORATORY

RESEARCH AND TECHNOLOGY DIVISION AIR FORCE SYSTEMS COMMAND UNITED STATES AIR FORCE WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433

ATTN OF MAAE (W. P. Conrardy)

subject Analysis of Metallic Sphere

9 MAR 1985

TO TDEW (Sgt Moody)

- 1. On 17 Feb 1965 Sgt Moody of the FTD delivered a metallic sphere to the Materials Engineering Branch for analysis. Examination of the sphere disclosed the following:
- a. Consists of two hemispheres held together with 4 setscrews.
 - b. Approximately 9" in diameter (OD).
 - c. Weighs 23.99 pounds.
 - d. Wall thickness approximately 1".
 - e. Density is such that it would readily sink in water.
- f. Sphere is an aluminum (195 casting alloy) casting that has been rough machined at both ends and at the equator. External finish was a black paint. Set screws are steel, 1/4 diameter, 28 threads per inch with Allen wrench head fitting, recognized as Standard American. Steel alloy is of the 4100 series type.
- g. This container was apparently designed for compressive type loads. The design is such that it would not be suitable for internal gas pressures because of the relatively weak method of closure.
- h. There are no external connections, hooks, eyes, entry ports or markings other than the machining tool marks.
- i. There is evidence that a gasket had been used at the closure flange although no gasket material remained.

- j. Internal surfaces are severely corroded, indicating a more corrosive environment internally. The lack of corrosion on the outside (even though paint was in poor condition) is indicative that the sphere had not been in a corrosive environment for very long. Analysis of the corrosion products did not provide any clue to the possible contents.
- k. A survey for residual alpha, beta or gamma radiation was negative.

2. Discussion.

We have not been able to establish the intended use of this device. The following possible applications were considered but not confirmed.

- a. Waste disposal container for radioactive materials. The design is such that it would sink readily if dumped at sea, and could take very high external pressures. However it would not be an efficient container from a payload point of view since only half (one hemisphere) could be loaded because of the method of closure. Discussions with the Mound Laboratory indicated that this was not comparable to any radioactive waste containers they are familiar with.
- b. Protective shell for instrumentation exposed to shock wave and blast, for example from nuclear blast. Some years ago the University of Dayton Research Institute manufactured containers something like the one now under consideration, in support of atomic tests in Nevada. However the project engineer on that program examined the sphere we now have and he discounted it as being one of the type used by them.
- c. Deep submersible test device. Not a likely application since there are no external connections for anything.
- 3. The sphere is available for pick up if you so desire. No additional tests are contemplated without further instruction from your office.

W. P. CONRARDY, Chief

Materials Engineering Branch Materials Applications Div 1 Atch Photos (2) •

AIR FORCE STATEMENT ON BROOKSVILLE, FLORIDA, UFO SIGHTING, 2 MARCH 1965 The alleged landing of a vehicle from outer space at Brooksville, Florida, on 2 March 1965, was apparently a hoax according to information obtained by Air Force investigators from MacDill AFB, Florida, and Ly Dr. C. W. Bemiss, Pan American Airways technical staff member of the Eastern Test Range, who conducted an additional investigation. The report submitted to the Air Force investigators by the alleged eyewitness contained several statements which cannot be confirmed as facts. The spacecraft allegedly took off straight up at 5000 miles per hour and was out of sight in ten seconds. It is extremely doubtful that a twenty to thirty-foot object could have been seen for more than five seconds at which time the object would have reached an altitude of 36,430 feet. The blast-off from a vehicle taking off at this speed would have disturbed the sand and soil in the immediate area. There was no evidence of any abnormal disturbance in the area. The sketch of the alleged spacecraft showed four stilt poles as the landing gear. These poles protruded from the spacecraft at an angle. The holes which were purportedly caused by the landing gear were straight and appeared to have been scooped or dug as opposed to indentations caused by an object of any sizeable weight. There was no radioactivity in the area. Two papers which contained unreadable · hieroglyphics were reportedly dropped by an occupant of the spacecraft. An analysis was made of these papers by the Institute of Paper Chemistry in Appleton, Wisconsin. This analysis indicated that the paper is composed of fibers which are common worldwide. The fiber composition corresponds to that used in lens and stencil papers. The hieroglyphics on one of the papers was deciphered by means of simple substitution and was determined to be the work of an amateur. The deciphered hieroglyphics

reads as follows: "Planet Mars - Are you coming home soon - We miss you very much - Why did you stay away too long". Since no other implications were apparent, it was not feasible for the Air Force to expend further time and money in deciphering the second sheet. Based on the above, it is the opinion of the Air Force that an attempt was made to perpetrate a hoax.

Man Recounts Run-In With 'Saucer, Robot'

BROOKSVILLE CTD-"It made a whistling noise and went straight up at 5,000 miles an hour or even faster." retired longshoreman John F. Reeves said yesterday in describing a flying saucer he claims to have stumbled onto: while on a walk in the woods near here.

Reeves, who admits to being "past 60," told a story Wednesday of coming onto the "flying saucer" in the woods, between here and Weeki Wachee on Tuesday afternoon and. of a robot-type creature that appeared to take his picture.

REEVES, WHO LIVES ALONE at a trailer park west; of here, told of breaking through some bushes about a mile and three-quarters off Highway 50 at mid-afternoon and, seeing the flying saucer about 700 yards away.

He said he worked his way to within about 100 feet of " the object when the robot-type creature appeared and walked toward him, stopping less than 15 feet away.

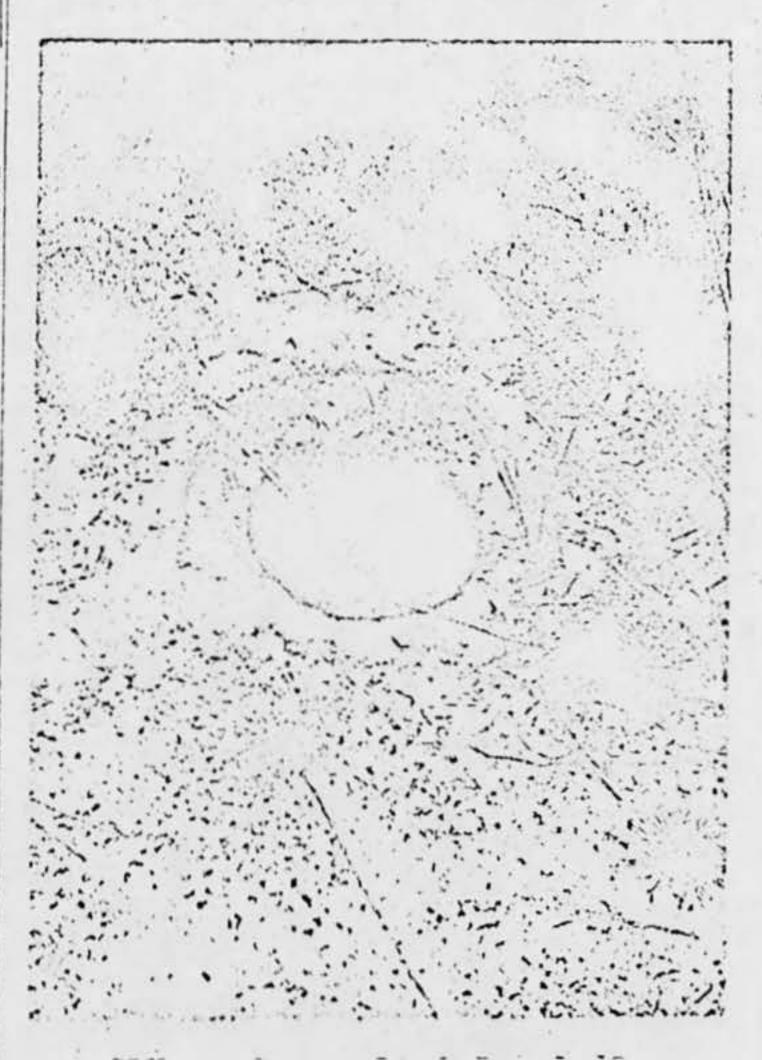
Reeves said the robot wore a gray canvas-type suit with a glass dome helmet. He described it as being about 5-feet tall and stocky.

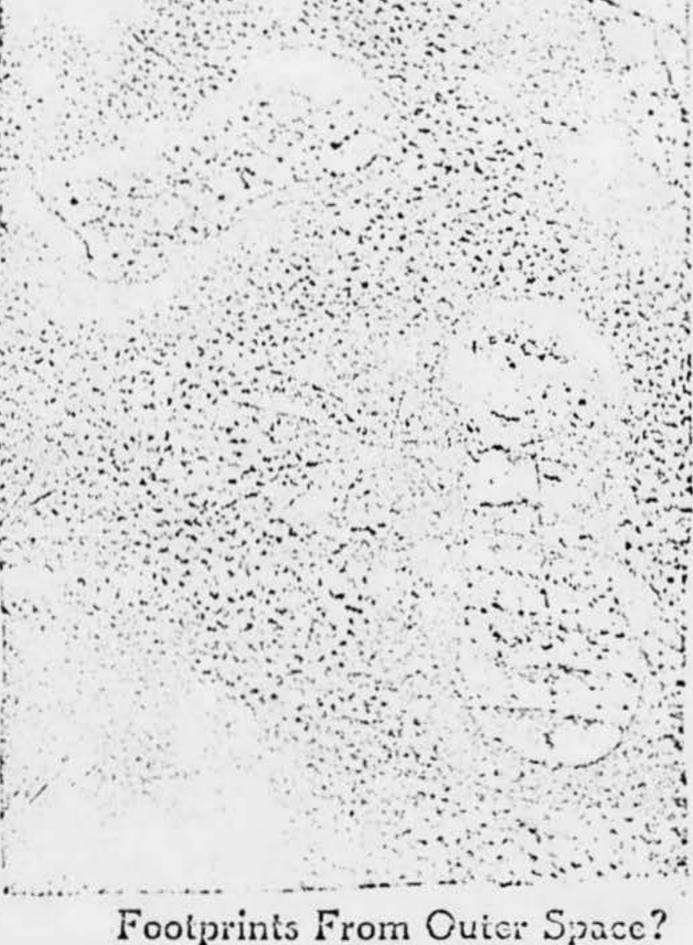
"He walked over to within 15 feet of me and looked right at me," Reeves said. "I stared back at his glass dome."

He described the creature as appearing to have dark tan flesh, and added that everything except the face was covered. He said it had eyes farther apart than a normal human's and had a more pointed chin.

"IT DIDN'T MAKE A SOUND, it just stared at me," he said.

"I couldn't even blink an eye I was so scared." Reeves said the creature then lifted what he believes





Footprints From Outer Space?

to have been a camera to chin level, pointed it at him and it flashed.

"He flashed again and I took off from the bushes," Reeves said.

Reeves said the creature flashed a third time and then returned and entered the machine. He said the thing that flashed was black and about six to seven inches in diameter.

The flying saucer was described as 20 to 30 feet in diameter and six feet high and stood on a four-legged landing gear.

"It was bluish-green and reddish-purple in color with two windows on top," Reeves said.

Reeves said he saw only one robot and it dropped two pieces of cloth-like paper as it headed back to the saucer. Reeves said he retrieved the paprs and they had "very queer writing" on them.

"THEY WERE FROM outer space," he said.

He said that after the robot entered the machine, some blades on the rim started to move like venetian blinds, working open and shut.

"Then the rim started going around counterclockwise," Reeves said. "It made a whistling and rumbling noise and then started straight up. It was out of sight in 10 seconds."

Reeves said he walks through the woods in this West Central Florida area often and this was the first time he had seen or heard anything unusual.

The two pieces of paper were turned over to an investigating team from MacDill Air Force Base in Tampa.

OFFICIALS AT MacDILL said the investigation is a routine one made whenever any "acrial phenomenon" is reported. The Air Force team talked to Reeves and visited the wooded area.

The base said the team will send its report directly to Project Bluebook at Wright-Patterson Air Force Base, Dayton, Ohio.

This unit investigates all reports of unidentified flying objects.

NON AVAILABILITY OF MATERIALS

The following items are for internal use only and are not available for distribution to the public. These concern internal management and procedures for forwarding UFO reports to the appropriate agency:

- 1. Air Force Regulation 200-2
- 2. JANAP 146

The Air Force has no films, photographs, maps, charts, or graphs of unidentified flying objects. Photographs that have been submitted for evaluation in conjunction with UFO reports have been determined to be a misinterpretation of natural or conventional objects. These objects have a positive identification.

The Air Force no longer possesses, and thus does not have for distribution, outdated reports on Project Sign, Project Grudge, Blue Book Special Report No. 14, and outdated Project Blue Book press releases. Non-military UFO publications should be requested from the publisher, not the Air Force.



THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

54910

April 5, 1965

Special Number 50,072

Your Ref: TDEW/UFO

Dr. J. Allen Hynek Northwestern University Evanston, Illinois

Dear Dr. Hynek:

The following summarizes our analyses, interpretations, and suggestions on the specimen submitted to us recently by Major Quintanilla. This is the material allegedly dropped by a visitor from outer space. Much of this information was reported previously but is included and supplemented here for the sake of completeness. We have divided our comments into several categories.

1. Composition of Fiber

The sample is composed of plant fibers from the bast or the leaf of one or more of a number of plants. A wide variety of plants of this general type grow in this country and abroad, and some species are not distinguishable from one another in fiber form. Of the more common ones, we believe the submitted sample is not jute, mitsumata, gampi, flax, or ramie; it could be fiber from abaca, sisal, kozo, hemp, or a similar but less common plant.

Exhibit A includes photomicrographs showing botanical similarities of fibers from the unknown sample and from two commercial papers (described below). It also includes photomicrographs from our files of a number of known fibers in the TAPPI Fibrary maintained as reference materials for the Technical Association of the Pulp and Paper Industry.

Although the United States paper industry is based principally on fibers derived from trees, the use of bast or leaf fibers in this country, and in foreign countries, is not uncommon, and we see no reason to believe that these fibers have any unusual origin. In foreign countries, such fibers are grown specifically for papermaking; this practice is not as common in this country, but such fibers can be imported for papermaking or can be (and are) recovered from old rope, cordage, and similar products containing fibers of this type.

2. Paper Identification

The sample itself is of the type used for lens paper or stencil tissue (sometimes called Japanese tissue). The sample submitted had a basis weight of 5.5 lbs. (for a ream of 500 sheets, 24 x 36 inches), a thickness of approximately 0.0013 inches and was soft, bulky and of open structure. Formation was very uniform, indicating a high quality operation. There was no evidence of any special treatment to impart water repellency or wet strength.

3. Possible Origin

Of the samples which were readily available to us for comparison, one approximating the unknown sample quite closely was taken from "Paper-Japan 1960" published by Japanese Paper & Pulp Association and Japan Paper Exporters Association. This sample, identified as "Machine-made Tengujo (stencil) Paper" was essentially indistinguishable from the unknown. Japanese tissues are imported into this country and it is quite probable that similar materials are available in various commercial channels, or possibly as souvenirs brought from a foreign country by an individual. Similar papers are also manufactured in this country by a number of companies; we believe that a sample matching the unknown could be manufactured by these mills but we do not know whether they actually make such materials at the present time.

A second sample similar to the unknown, identified as "Speed-O-Print Carbon Cushion Sheet No. 700", is used with mimeograph stencils and obtained from a local office supply house. Obviously this is readily available, but we do not know whether it is imported or an item of domestic manufacture.

Exhibit B includes transmitted light photographs at approximately 3.5 diameters magnification, showing similarities in structure between the unknown, the Japanese tissue and the commercial stencil tissue.

Exhibit C includes specimens of the two commercial papers for comparison with the unknown.

4. Suggestions for Further Exploration

In case additional information on the possible availability or the actual history of the specific sample is desired by the Air Force, or by some other appropriate agency, we suggest the following contacts.

A. Domestic Paper Manufacturers

There are several companies in this country which are capable of making products very similar to the unknown. We feel that discussion with these companies, including an opportunity for them to examine the sample, would be helpful in determining whether or not any of these companies do, in fact, manufacture a product identical to the unknown. Companies active in this particular segment of the paper industry would be able to comment on the present status of domestic production versus imports of products of this type and the probable channels of distribution. For primary contacts we suggest the following:

John A. Manning Paper Co., Inc., P. O. Box 328, Troy, New York (C. E. Lanyon)

C. H. Dexter & Sons, Inc., 100 Canal St., Windsor Locks, Conn. (Geo. D. Knight)

Crystal Tissue Co., Middletown, Ohio

Peter J. Schweitzer Division of Kimberly-Clark Corporation, 261 Madison Ave., New York, New York

Ecusta Paper Operations, Packaging Div., Olin Industries, Pisgah Forest, North Carolina

In turn, discussion with each of these companies may develop further contacts worth investigating.

B. Users and/or Distributors

At least two types of organizations would be interested in handling papers comparable to the unknown: for lens tissue and for use as stencil tissue. We suggest that the following be contacted as converters or distributors of paper for lens tissue: Eastman Kodak Company, Rochester, New York Lensclean, Inc., 123 W. 25th Street, New York, New York

Among the companies handling mimeograph supplies, we suggest the following be contacted for information on their sources of supply (whether domestic or imported) and on methods of distribution:

A. B. Dick Company, 5700 W. Touhy Avenue, Chicago, Illinois
Speed-O-Print Business Machines Company, 1801 W. Larchmont St., Chicago, Illinois
Milo Harding Company, Monterey Park, California

In addition we have recently noticed an article (House Beautiful for November, 1964) suggesting use of various papers for art work and noting that a kit of Japanese papers is available from:

Craft Studios, 118 Evans St., New Hyde Park, New York

C. Importers

In addition to general importers or specific contacts developed as a result of the above discussions, the following may be able to contribute useful information:

Nelson-Whitehead Company, New York, New York

This company is listed as a sales agent for one of the Japanese manufacturers of handmade paper but we have been unable to
locate a New York address for them. It is
possible that the firm has been reorganized
since issuance of the directory in which
they were mentioned. The following companies,
listed as paper merchants in the New York
area, might or might not be related to this
possible contact:

A. G. Nelson Paper Company, Inc., 420 W. Broadway, New York 12, New York
Whitehead and Alliger Company, Inc.,
11 Thomas St., New York 7, New York

The following is an importer of various materials from Japan:

C. T. Takahashi Company, Inc., 220 Third Ave., South, Seattle 4, Washington (Mr. T. M. Iwata)

The following is an importer of pulps and possibly papers of this general type:

H. Reeve Angel, Inc., 9 Bridewell Place, Clifton, New Jersey

5. Further Speculation

We have made no chemical analysis of the markings and do not intend to do so. In my previous letter I commented that brief microscopic examination had suggested the possibility that the markings were placed upon the paper by stamping or printing rather than by an instrument such as a pencil which would tend to disrupt the fiber structure. Some of my colleagues feel that the markings could have been made with a special type of pencil used in photographic touchup work and other graphic arts procedure. One example is: The Mars-Lumograph Duralar pencil made in Germany and available thru J. S. Staedtler in this country.

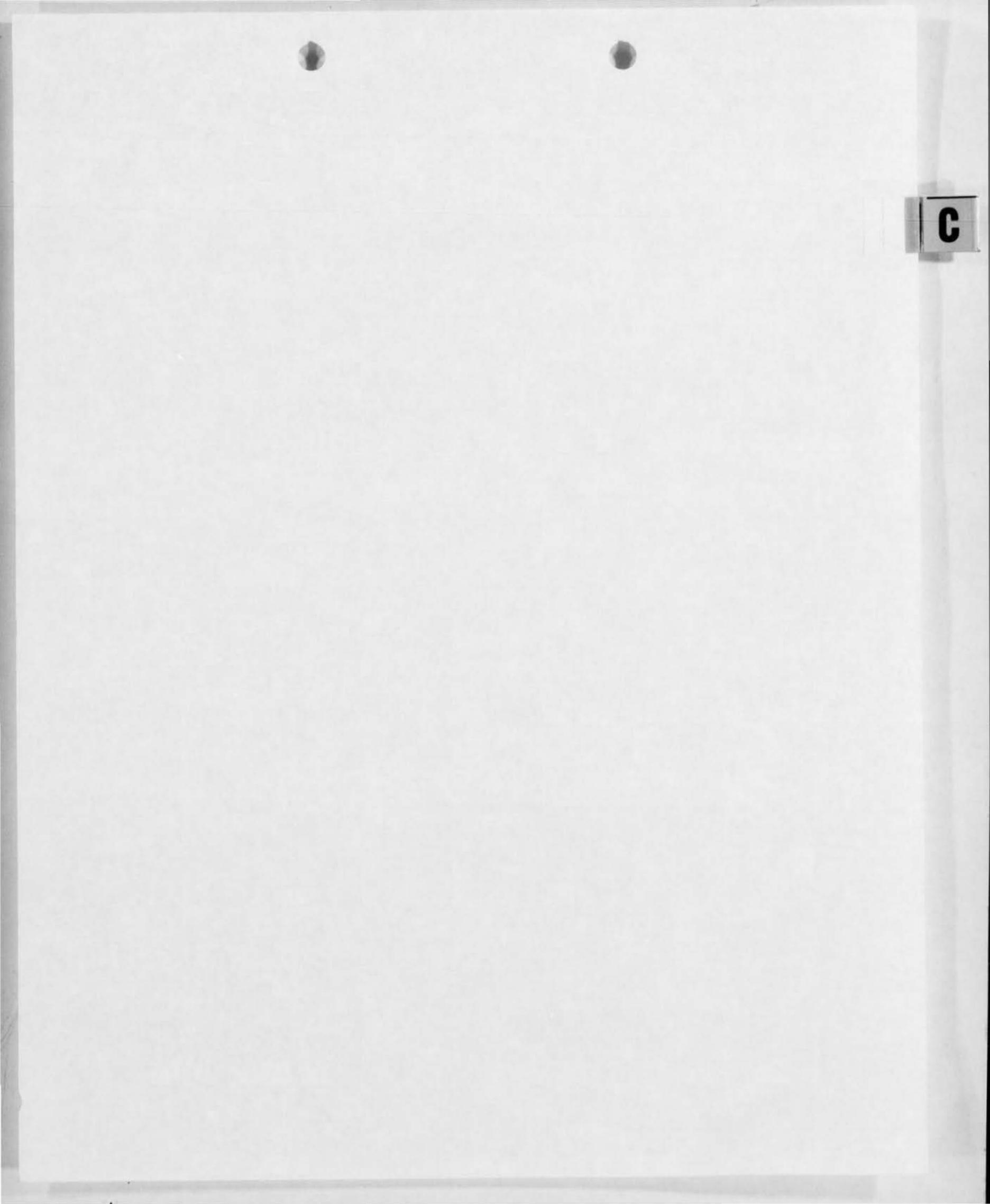
Further speculation about the nature of the markings brought out the comment that these markings appear to have been made by a person with skilled hands and confidence in his ability. In other words, they were not made by someone who was painstakingly and hesitatingly following a set pattern with no previous experience. This again suggests the possibility that a commercial artist, or someone with similar skills, may have been involved in preparation of the coded message, either for the incident under consideration or for some previous occasion.

If there is any way in which we can be of further assistance to the Air Force or to any agency investigating related aspects, please feel free to call on us.

Very truly yours,

T. A. Howells, Chairman

Technology Section



AERONAUTICALXSYSTEMS XXIVISION

AIR FORCE MATERIALS LABORATORY, RESEARCH AND TECHNOLOGY DIVISION WRIGHT-PATTERSON AIR FORCE BASE, OHIO

MATERIALS PHYSICS DIVISION AF MATERIALS

LABORATORY

EVALUATION REPORT

Analysis of Earth Sample

REPORT NR: MAY 65-13

DATE: 14 April 1965

PROJECT NR:

TYPE EVALUATION:

MANUFACTURER:

SPEC NR:

SUBMITTED BY: FTD (Sgt. Moody)

ITEM SERIAL NR:

I. PURPOSE

To analyze the sample for organic components that would be foreign to the sample.

II. FACTUAL DATA

A sample of dirt was submitted to the Analytical Branch and assigned Analytical Branch number #5-628.

Approximately half the sample (105 grams) was extracted with carbon tetrachloride. The solvent was evaporated and an infrared spectrum obtained of the residue. The spectrum showed the residue to be a petroleum hydrocarbon base oil. About 10 c.c. of residue was extracted from the sample showing the dirt contained an appreciable amount of oil.

III. CONCLUSION

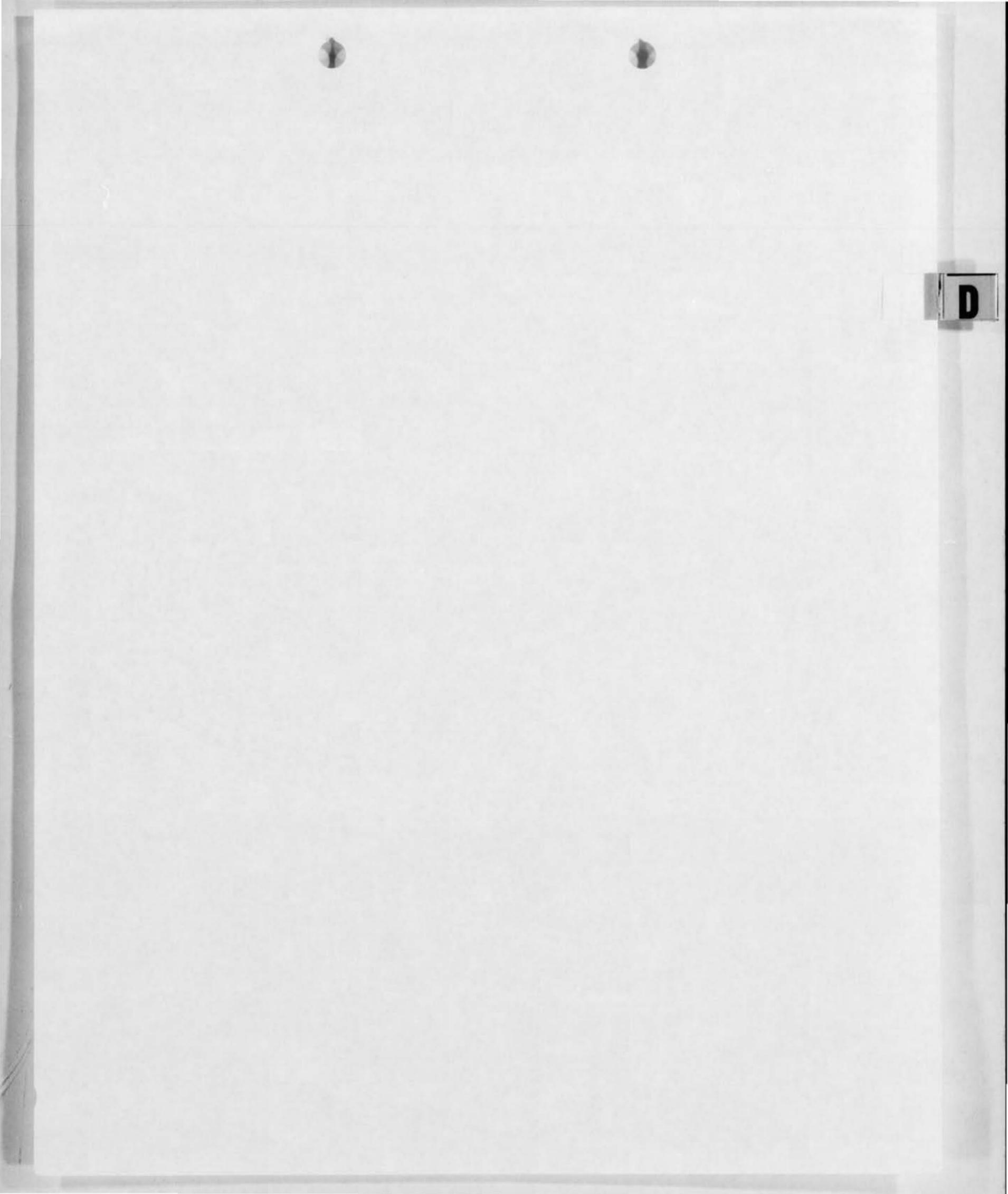
The dirt sample was analyzed and found to contain a petroleum hydrocarbon base oil.

PREPARED BY:

nd MAYA

hm (

THIS REPORT IS NOT TO BE USED IN WHOLE OR IN PART FOR ADVERTISING OR SALES PROMOTION PURPOSES



ALLIGANY BALLISTICS LABORATORY

OPERATED BY

HERCULES POWDER COMPANY

INCORPORATED

P. O. BOX 210 · CUMBERLAND, MARYLAND 21501

TELEPHONE:
ROCKET CENTER
RIDGELEY, WEST VIRGINIA
304 RE 8-9000

September 29, 1965

In Reply

Refer to: 3698-340

Headquarters
Foreign Technology Division
Air Force Systems Command
United States Air Force
Wright-Patterson Air Force Base, Ohio

Attention: TDEW -- Colonel Eric T de Jonckheere

Dear Sir:

Components from 4th Stage Scout Recovered in Thailand

Reference your letter of 28 July 1965, Hercules Powder Company is pleased to advise that the components returned to us therewith were part of a rocket motor manufactured at the Allegany Ballistics Laboratory for the National Aeronautics and Space Administration, Langley Research Center, on Contract NAS 1-3698. Pertinent data on this rocket motor are as follows:

- (1) Motor Description -- Jato 24DS-5850 X258
- (2) Motor Manufacturer -- Hercules Powder Company, Allegany Ballistics
 Laboratory
- (3) Date of Manufacture -- 13 November 1964
- (4) Motor S/N -- RH-75
- (5) Mission -- 4th stage propulsion on Scout Vehicle S-137, San Marco Mission
- (6) Payload -- Air density
- (7) Orbit -- Perigee 115 miles; Apogee 350 miles
- (8) Payload Life -- Expected six months
- (9) Launch Date -- 16 December 1964
- (10) Launch Station -- Wallops Island, Virginia
- (11) Date of Re-entry of 4th Stage Parts -- Approximately May 1964
- (12) Place of Re-entry of Motor Parts -- Sisakit Province, Thailand

The subject components are presently being retained at Allegany Ballistics Laboratory.



Colonel Eric T de Jonckheere - 2 Wright-Patterson Air Force Base, Ohio Components from 4th Stage Scout Recovered in Thailand

If additional information on these components becomes available from the Joint Military Advisory Group in Thailand, we would appreciate receiving same.

If we can be of further assistance, feel free to call upon us.

Very truly yours,

J. I. SHROUT, MANAGER SPACE MOTORS PROGRAM OFFICE

JLS:jrp

cc: Major Hector Quintanilla, Jr., Wright-Patterson AFB Mr. D. D. Welder, HPC/Wilmington Mr. D. E. Guthrie, NASA/LRC Mr. L. B. Johnston

SMPO File

SUGGESTED READING MATERIAL

Books listed below deal with facts and theories about our solar universe, the sun, planets, comets, meteorites, the universe, stars, constellations and galaxies; telescopes, the computation of time as it relates to astronomy, star maps and charts, and the history of astronomy.

SKY & TELESCOPE, by Sky Publishing Corporation, Harvard College Observatory, Cambridge, Mass. 02138. Monthly Magazine, 60 cents per copy.

WEATHER ELEMENTS, by BLAIR, published Prentice Hall. Has an excellent chapter on often misidentified weather phenomena.

PLANETS, STARS, AND SPACE, by CHAMBERLAIN, JOSEPH M. & NICHOLSON, THOMAS D. An illustrated, non-technical explanation of the earth, planets, stars, and the universe. Prepared in cooperation with the American Museum of Natural History.

JUNIOR SCIENCE BOOK OF STARS, by CROSBY, PHOEBE. An easy-to-read, exciting story of what scientists know about the stars, planets, the moon, and the MILKY WAY.

CHALLENGE OF THE UNIVERSE, by HYNEK, J. ALLEN & ANDERSON, NORMAN. Discusses the nature of the universe; astronomy and cosmology, published by Scholastic Press.

THE STORY OF THE STARS, by MALONEY, TERRY. An introduction to the universe; our solar system, our galaxy, and other galaxies. Many interesting illustrated analogies help build concepts of size and distance. Includes references to the Van Allen radiation belts and zodiacal light observation of 1960.

THE WORLD OF FLYING SAUCERS, by MENZEL & BOYD. A scientific examination of the classic UFO reports.

THE MOON, METEORITES, AND COMETS, Dtd 1963, by MIDDLEHURST & KUIPER. Continuous analysis of Soviet moon photos. Chapter on Siberian meteorite and photos or comets computation of various comet orbital photos.

THE NATURE OF LIGHT AND COLOR IN THE OPEN AIR, by MINNAERT, Dover Publications. This is an excellent paperback written in understandable lay language.

METEORS, by OLIVIER. Standard text by foremost authority on meteors.

PHOTOGRAPHIC HISTORY OF MARS, 1905-1961, by SLIPHER, E. C., published by Lowell Observatory.

ANATOMY OF A PHENOMENON, by VALLE, JACQUES.

FIRST MAN TO THE MOON, by VON BRAUN, WERNHER.

AL'EGANY BALLISTICS | ABORATORY

OPERATED BY

HERCULES POWDER COMPANY

INCORPORATED

P. O. BOX 210 · CUMBERLAND, MARYLAND 21501

TELEPHONE:
ROCKET CENTER
RIDGELEY, WEST VIRGINIA
304 RE 8-9000

October 27, 1965

In Reply

Refer to: 3698-371

Headquarters
Foreign Technology Division
Air Force Systems Command
United States Air Force
Wright-Patterson Air Force Base, Ohio

Attention: TDEW -- Colonel Eric T de Jonckheere

Reference: HPC/ABL 1tr 3698-340, dtd 29 September 1965

Dear Sir:

- Erratum -

Components from 4th Stage Scout Recovered in Thailand

Please make the following correction to the referenced letter:

Item (11) of the pertinent data reads, "Date of Re-entry of 4th Stage Parts -- Approximately May 1964". Change to read, "Date of Re-entry of 4th Stage Parts -- Approximately May 1965."

Very truly yours,

J. L. SHROUT, MANAGER SPACE MOTORS PROGRAM OFFICE

JLS:jrp

cc: Major Hector Quintanilla, Jr., Wright-Patterson AFB

Mr. D. D. Welder, HPC/Wilmington

Mr. D. E. Guthrie, NASA/LRC

Mr. L. B. Johnston

SMPO File





UNCLASSIFIED

STAFF MESSAGE BRANCH INCOMING MESSAGE

AF IN: 16105 (23 Aug 65)

Page 2of2

CONVINCED THAT THE SIGHTING WAS NOT A HOAX OR FABRICATION. ONE TECHNICIAN REMAINED UNCONVICNCED.

PAGE 2 RUCIEKA7233 UNCLAS

3. THE OBSERVERS MAINTAINED THEIR STORY EXACTLY AS REPORTED
IN THE INITIAL REPORT UNDER POLITE BUT VIGOROUS CROSSQUESTIONING.
HAROLE BUTCHER MADE A ROUGH DRAWING OF THE UFO WHICH IS ON FILE
AT NIAGARA AIR BASE. HE INDICATED A DISK 50° DIAMETER, 20°
THICK WITH RED GLOWING STREAMERS PROJECTING DOWNWARD FROM THE
ENTIRE PERIMETER PLUS A TRAIL OF RED TO YELLOW COLOR.

4. NO PHYSICAL EVIDENCE OF A VEHICLE OR LANDING WAS FOUND
EXCEPT AN OILY PURPLE SUBSTANCE WHICH APPEARS TO BE A COMBINATION
OF VIO STRIGENT OR GENTIAN VIOLET PLUS 3-IN-ONE OIL, WHICH
IS NOT BELIEVED CONNECTED WITH THE SIGHTING.

BT

NNN NOTE: Reference not identified in SMB.

N

UNCLASSIFIED



CONFIDENTIAL CONFIDENTIAL

HEADQUARTERS 43D BOMBARDMENT WING (SAC) LITTLE ROCK AIR FORCE BASE, JACKSONVILLE, ARKANSAS, 72077

UNCLASSIFIED

REPLY TO ATTN OF

43DC0I/6683

30 August 1965

BUBJECTI

(U) Investigation of Unidentified Flying Object

825Cmbt Spt Gpy (BC)

THRU: 43DCO 52W V 43C

- 1. (U) The following information is the result of an investigation conducted by Captain Howard D. Lowrey, A0944986, Combat Intelligence, Intelligence Division, 43rd Bombardment Wing (M), on 26 and 27 August 1965. Investigation was conducted in accordance with AFM 200-2 concerning the report of an Unidentified Flying Object (UFO).
- 2. (U) Description of the object: Nine (9) light blue plastic bags approximately 36 inches in length, each bearing the inscription: "WARNING! To avoid chances of suffocation keep away from babies and children. Do not use in cribs, beds, carriages or play pens. This bag is not a toy." The bags were tied together with a string that extends approximately 36 inches below the bags. Attached to the string is a mercury type battery wired to a flashlight type bulb, #605, by two wires, numbers X-228 and X-232. Enclosing the battery and bulb were pieces of cellophane colored blue, orange, green and purple. The plastic bags appear to be the type utilized by commercial cleaning establishments to enclose clothes for customers.
- 3. (C) Investigation information: Mr Jack E. Page, 1549 Stubblefield Road, Fayetteville, Arkansas, age 50, self-employed Asphalt Broker, reported observing the UFO approximately 0525L hours, on 24 August 1965. He had just arisen from bed and saw the object in a field approximately 150 yards back of his house. He estimated the wind to be very light from a northeasternly direction at the time of first seeing the object. Mr Page took the UFO to Mr Glenn Estes, Chief of FAA, Drake Airfield, Fayetteville, Arkansas, who in return notified Little Rock AFB officials. Subsequently Mr Estes was interviewed by a reporter from the Northwest Times newspaper of Fayetteville, Arkansas and the UFO received front page open coverage in the Northwest Times plus TV coverage in Little Rock, Arkansas.

Weather conditions at Fayetteville, Arkansas during the period from 2200L, 23 August to 0800L, 24 August was:

a. Wind - Surface calm until 0800L, 24 August

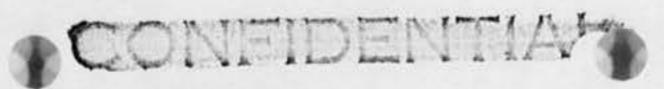
Classification Cancelled - Clear

OR Changed to war Audit: 054 - 205-1 PACA 125

UNCLASSIFIED

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

Peace . . . is our Profession



UNCLASSIFIED

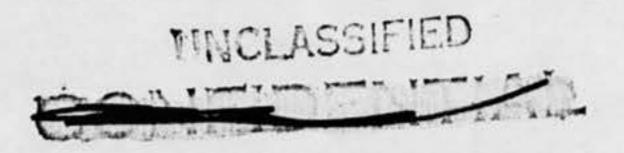
- c. Visibility 15 miles or better, never below 7 miles
- d. Cloud coverage None
- e. Thunderstorm Towering cumulus north with lightening in northwest
- 4. (U) Additional Information: Washington County Sheriff's office and Fayetteville City Police office advised there were no reports of UFO activities during the period from 22 to 24 August 1965.
- 5. (U) Comments of Investigation Officer: It is the belief of the investigation officer that the UFO was made by person(s) for a prank or for amateur meteorology observations. Due to the wind currents, temperatures and the unknown amount of gas in the plastic bags, it is unknown as to where this object may have been originally launched. Per telephone conversation with the Foreign Technology Division, Wright-Patterson AFB, Ohio, the UFO is being forwarded under separate cover to the FTD, TDE (UFO), Wright-Patterson AFB, Ohio.
- 6. (U) With the acceptance of this report under provisions of AFR 200-2, no further action is required. The above information is submitted for your information and will be retained in the files of 43DCOI.

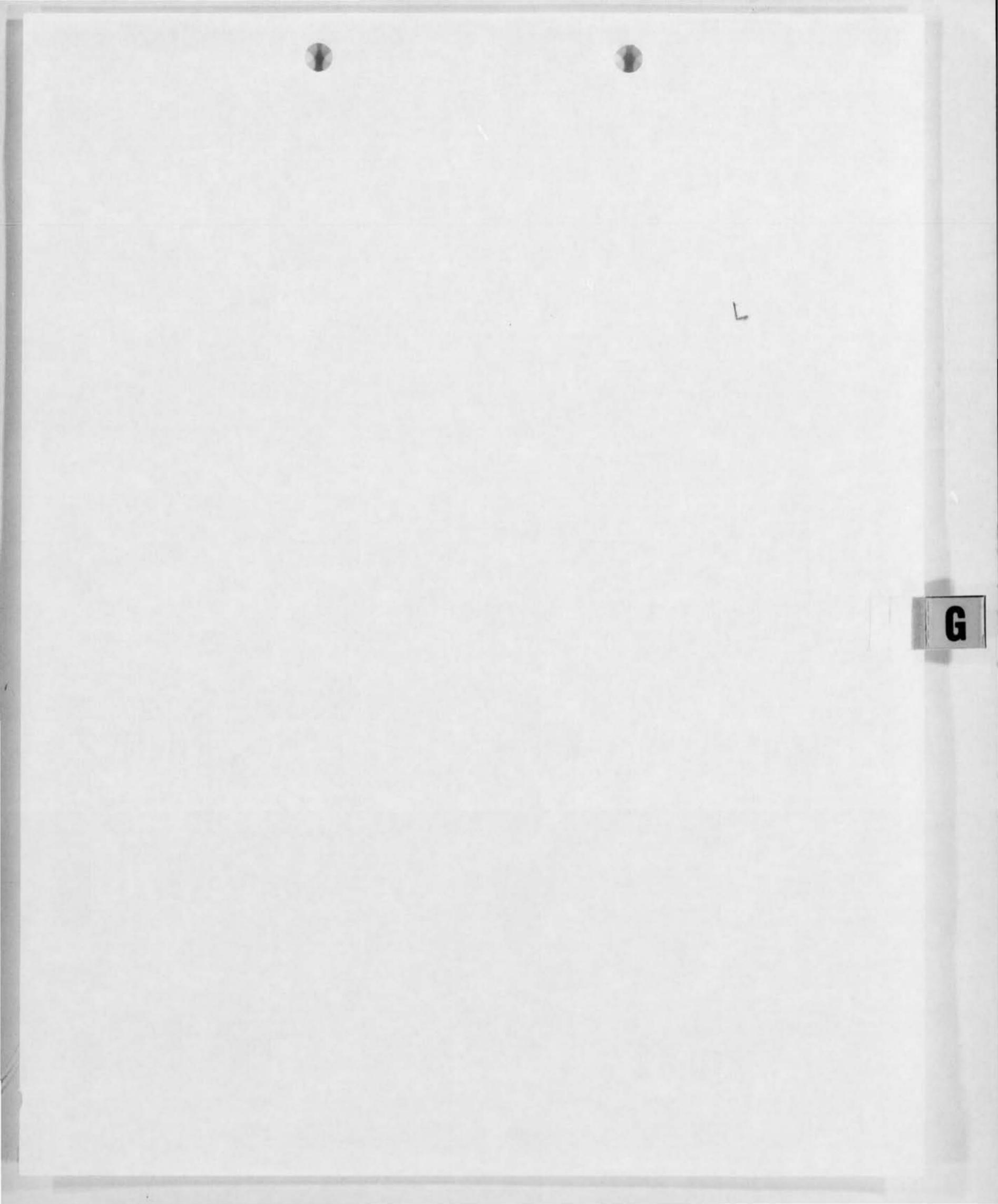
7. (U) This letter is classified Confidential in accordance with paragraph 17a, AFR 200-2. (Gp-4)

RALPH I. GEESLIN Lt Colonel, USAF

Chief, Intelligence Division

Classification Cancelled
OR Changed ->
Auto:





0130 29 Sept 65

Call received from

Major Allan F Livers
Senior Director on Duty
Detroit Air Defense Sector (NORAD)
Battle Creek, Michigan

He explained that a meteor siting occured on the 28th day of Sept, and that a man,

Harold Karnes #2 9hh Street Reno, Pennsylvania 677-5235 (Code 814 through 011 City)

and his wife had been painting a house when the object dropped near them. It frightened them, and they left the scene, returning later to find an object roughly the size and shape of a child's football. It is apparently hollow with rubbery walls approximately 1/16 inch thick. It was cracked, but all pieces were recovered. This is near Oil City, Pennsylvania.

Mr Karnes reported this to bhe:

662 Aircraft Control & Warning Squadron, Oakdale, Pennsylvania and they are waiting to pick up this object for delivery to FTD if this is desired. They are going to wait for a caal from FTD.

MEMO FOR RECORD:

On 7 October Major Quintanilla went TDY to Pennsylvania and obtained the object from Mr Karnes. Object was a gourd of some sort, not a meteor.

OBJECT IN PHYSICAL SPECIMEN FILE

The News Tribune

VERO BEACH BUREAU . 1002 20TH PLACE . VERO BEACH

CHARLOTTE CAFFREY
VERO BEACH BUREAU CHIEF
567-5803

Nov. 24, 1965

MISS SARA HUNT Community Relations SAFOI Pentagon, Washington, D.C.

Dear Miss Hunt:

Got my aluminum "light Bulb" back from Wright_Patterson Air Base, but no explanation of whose, from whence, whither headed, or why.

Not to mention what is is.

May I expect a report on same from your office?

Very sincerely yours,

THE NEWS TRIBUNE,

Charlotte E. affrey,

Clippings enclosed

TOTAL UFO (OBJECT) SIGHTINGS

(Compiled 17 Jan 66)

YEAR	TOTAL	UNIDENTIFIED	SOURCE
1947	122	12	Case Files
1948	156	7	Case Files
1949	186	22	Blue Book, page 108
1950	210	27	Case Files
1951	169	22	Case Files
1952	1,501	303	Blue Book, page 108
1953	509	42	Case Files
1954	487	46	Case Files
1955	545	24	Case Files
1956	670	14	Case Files
1957	1,006	14	Case Files
1958	627	10	Case Files
1959	390	12	Case Files
1960	557	14	Case Files
1961	591	13	Case Files
1962	474	15	Case Files
1963	399	14	Case Files
1964	562	19	Case Files
1965	886	16	Case Files
	10,147	646	

HEADQUARTERS FOREIGN TECHNOLOGY DIVISION AIR FORCE SYSTEMS COMMAND

UNITED STATES AIR FORCE WRIGHT-PATTERSON AIR FORCE BASE, OHIO



FFTLY TO

ATTN OF: TDEW/UFO

SUBJECT: Balloon, Vero Beach

DEC 2 1965

to: Hq USAF SAFOICC (Mrs Hunt)

Reference the balloon which was recovered at Vero Beach, Florida. It can be stated that the balloon was manufactured by the G T Schjeldahl Company, Northfield, Minnesota. This particular balloon was probably launched from Cape Kennedy just prior to the Gemini 6 mission. The Schjeldahl Company has supplied approximately 1,500 of these metallic mylar balloons to the Marshall Space Center for launch at the Cape. These are meteorlogical balloons which collect information on temperature, pressure, and density of the atmosphere prior to a launch. At times, some of these balloons are launched as frequently as every five minutes during the last hour of the countdown in order to obtain data on wind direction and velocity. Most of these balloons would probably end up over the water due to the prevailing winds.

FOR THE COMMANDER

Tice J. Le miletiere ERIC T de JONCKHEERE, Colonel, USAF Deputy for Technology and Subsystems

YOU - THE NUCLEUS OF SECURITY!



HEADQUARTERS

1607TH AIR TRANSPORT WING (MATS)

UNITED STATES AIR FORCE DOVER AIR FORCE BASE, DELAWARE, 19901

REPLY TO

ATTS OF: ODOTI

SUBJECT: UFO Recovered at Dover AFB, Delaware

27 October 1965

TO: FTD (TDEW) (UFO)

- 1. Reference Telecon between Sgt Moody and MSgt Fernandez on 25 October 1965 in which FTD requested further information on the identification and return of balloon to NASA.
- 2. After notifying FTD (UFO) on 21 October 1965 that the object would be sent to them for identification, we received a phone call from Mr. Robert Ladd, Washington representative of the G.T. Schjeldahl Co. of Northfield Minn. From our description, Mr. Ladd identified the object as a test balloon manufactured by the Schjeldahl Co. He requested we retain the balloon until Mr. Kenneth Witt, company engineer, arrived to make positive identification.
- 3. On 22 October we received a call from Mr. Bob Long of NASA Operations, Wallops Island Station, Va. Mr. Long heard of the balloon through the news media and stated NASA had launched similar ones manufactured by the Schjeldahl Co. He said a check of the winds for 20 October indicated the balloon could possibly be one launched by NASA from Wallops Island. When we informed Mr. Long that a representative from the Washington office of the Schjeldahl Co. was coming to Dover to identify the balloon, he requested we have Mr. Witt call him when he arrives. Mr. Witt arrived at Dover on the 22nd of October and positively identified the balloon as one manufactured by the Schjeldahl Co. for NASA. He called Mr. Long at NASA Operations, Wallops Island Station, Va. and coordinated the return of the balloon which was to be delivered to NASA on Monday or Tuesday of the following week.
- 4. Further information on the return and ownership of the balloon can be obtained by calling Mr. Bob Long at NASA, Wallops Island Station, Va. phone 703 (824-3411 ext 2354).

FOR THE COMMANDER

CHARLES R. GANT

Major, USAF

Chief of Airlift Training

3 atch

Press Releases on UFO

MIODENIII ICU

An unidentified inflatable, feet. The only marking is SN7 (will be released, he said. winged object claimed by Dov- and the firm name of G. T. Dover officers and the Naor Air Force Base officials from Schjeldahl Co.

Thursday will be sent to Wright- what it is, but suggestions made Island, Va., both say it doesn't :Patterson Ohio, for investiga- include a gunnery target or a belong to them. tigotion.

. The valved object resembles ators. columniaum but is plastic. It Maj. Robert Steele, Dover Air | Capt. Richard Young of the landed Wednesday in a field be- Force Base information officer, Office of Safety at the base said hind the hatchery of Mrs. said it appears to be some type he was "not sure" of the ob--George Hopkins of Snow Hill, of test vehicle. When identifi- ject's origin. He said it was The object is 12 to 14 feet cation is made by Wright-Pat- "some kind of tow target, I'm

device for training radar oper- Two men from Dover AFB

long and has a wingspan of 10 terson officials, the information not sure what."

tional Aeronautics and Space 5 Snow Hill, Md., resident last | Mrs. Hopkins doesn't know | Agency installation at Wallops

claimed the object yesterday.

Strange object called balloon

Md. mystery deflated

SNOW HILL, Md. — The object which fell from the sky behind a Snow Hill, Md., hatchery Wednesday afternoon may be a weather balloon, a spokesman for the manufacturer said last night.

Robert Ladd, manager of the Washington office of the G. T. Schjeldahl Co. of Northfield, Minn., said he based his theory on a description of the find—an inflatable, winged object 12 to 14 feet long, with a wingspan of 10 feet. Ladd said he would begin an investigation at once.

MRS. George Hopkins; owner of the hatchery, said the object landed in a field behind a hatchery building. The markings were SN7 and the name of the company.

It was equipped with five valves, Mrs. Hopkins said. Four

of these appeared designed to

Mrs. Hopkins said heat appeared automatically to cause the thing to expand and when it was carried into the hatchery office it quickly floated to the ceiling.

A team from the Dover Air Force Base picked up the object and returned it to the base. A base spokesman said it will be taken to Wright Fatterson Air Force Base in Ohio for positive identification.

Representatives of the National Aeronautics and Space Administration at Wallops Island, Va., said it did not originate there.

Schjeldahl was the firm that produced the Echo I satellite which cut a brilliant trail through the skies in 1960.

LADD said Schjeldahl balloens

are used in tests at Wallops Island and also are used by the Army in tests in the Washington-Virginia area.

"It's entirely possible one of them got loose," Ladd said. "Balloons of various types are flying around the country all the time in various test projects."

Ladd said many of the balloons are made of aluminized plastic.

MRS. HOPKINS said the object resembled aluminum.

Throughout Wednesday afternoon and night scores of persons flocked to the scene to view the object before it was removed.

Mrs. Hopkins said many theories were expressed about its origin and use, the most prevalent being that it was a gunnery target or a device for training radar operators. MEMO FOR THE RECORD

19 November 1965

Major Quintanilla called Mr Curtis of the G T Schjeldahl Co in reference to the balloon which was recovered in Greece. He read a message to Mr Curtis saying that a reward was to be given to the person recovering the balloon. Mr Curtis said that the message was correct. Mr Curtis referred Major Quintanilla to Mr Cliff Merrill. Major Quintanilla read the same message to Mr Merrill. Major told Mr Merrill to address his letter to:

Exicutive Agency for Military Attache
Office of U S Army Attache American Embassy
APO New York 09223

Major told him to address the indide of the letter to the:
Office of the Air Attache
American Embassy
Athens, Greece

This pertains to the reward for the recovery of the package.

OFFICIAL BUSINESS

EXECUTIVE AGENCY FOR MILITARY ATTACING SEPARTMENT OF THE ARMY OFFICE OF THE US ARMY ATTACHE AMERICAN END SSY APO NEW YORK 00223

FTD-TDAOH Wright-Patterson AFB Ohio, 45433

DA label 18, 1 Apr 59 PREVIOUS EDITIONS OF THIS LABEL ARE OBSOLETE.

16-78643-1

	100										SECURIOR
	INCIDENT		ATION	ort.	8	HE	ER OI	TION		1965 CASES CONTAININ	G RADAR R
***	NCI	DATE	OCA	TYPE	SCOPE PHOTOS	ISUAL	NUMBER	DURA	BLIP		
#		Д	1	HE	SH	> v	20	Δ	д σ	MOTION	ANALYS
1.	30	1/24	ALASKA	ACW	NO	YES	1 RADAR 2 VISUAL	40 MIN	FTR A/C	24 K AT 26,500' HOVERED	LOCAL CC
2.	49	2/02	4 STATES	AIR PPI	NO	YES	1	N/R	N/R	EAST	LOCAL
3. :	137	4/10-1	L4 JAPAN	F-102 PPI ASR, ASPR	NO	NO	MULTIPLE	3 SEC TO 5 MIN	F-100	140-240 K, NO INVERSION	LOCAL AN TDEED
4.	171	5/05-0	07 PHILIPPINES	SPS 6-C SHIP RADAR	NO	YES	4 MAX	6 MIN		22 MI, 3,000 MPH, MANU- VERED AND STATIONARY	TDEW CON
5.	207	6/08-0	O9 TURKEY	FPS-88	NO	YES.	SINGLE 8 TIMES	N/R 1 HR INTER	N/R	FROM 290 MI OUT IN TO SCOPE. 3,000 MPH	TDEAM
6.	269	7/12	EAST U.S.	ACW SATELLITE TRAC		YES	1	4 HOURS	BALLOON	WEST 60 K 100,000 FT	NO
7.	282	7/13	EAST U.S.	ACW, ARMY AIR DEF MISSILE		YES	1-2	27 MIN	SINGLE	80 MI RANGE, HOVERING ERRATIC MOTION	TDEED
8.	335	7/25	WISCONSIN	ADA, LOW POWER	NO	NO	1	10 MIN		1,000 K, 100,000 FT.	TDEED
9.	360	7/30	EAST COAST	BACKSCATTER GD ELECTRONIC	NO	NO	1 TWICE	F/SEC	GEMINI	100 MI ALT. 200,000 (1) 100,000 RETURN	TDEED
10.	367	7/31	TINKER, OKLAHOMA	ACW	NO	YES	1		N/R	SOUTH VARIED TO 101,000	LOCAL CO
11.	367	7/31	OKLAHOMA CITY	ACW	NO	YES				10,000 FT 205°AZ FROM 15-29 MI	TDEED
12.	367	8/02	WICHITA, KANSAS	GCI	NO	YES	MULTIPLE	SEVERAL HOURS	VARIES	MULTIPLE RETURNS	TDEED
13.	373	8/01	W. TOPEKA, KANSAS	AIR PPI	NO	NO	12-15	N/R	N/R	50 MI SCOPE, FORMATION	TDEED
14.	(INFO)	8/04	CALUMET AFS, MICH	ACW	NO	NO	NEWSPAPER	CARRIED AR	TICLE OF	ALLEGED CONTACT. COMMANDER	OF STATI
15.	445	8/05	CHICAGO, ILL	GD ELECTRONIC SEARCH & HEIGH	NO	NO	POSS 2	45 MIN	H/R	100,000'. SLOW. NO INVERSION	TDEED
16.	500	8/11	WHITEMAN AFB, MO.	AN/CPS 9	YES	YES	3-5	5 ½ HOURS	N/R	INVERSION	LOCAL
17.	565	8/20	PLATTSBURG, N.Y.	GCA	NO	YES	1	3-5 MIN	N/R	WEST OF SCOPE, JAMMING	LOCAL
18.	566	8/20	PEASE AFB, N.H.	CPN-18	NO	NO	ONE OR MORE	30 MIN	N/R	7 MI WEST OF TOA TO 8 MI NW	LOCAL
19.	628	8/31	TOMOPAH, NEVADA WINNEMUCCA AFS, NE	ACW	NO	NO	1	3 HR 15 MI	N N/R	STOPPING, STARTING, CLIMBING, FADING	LOCAL/TD
20.	727	9/26	LICKING COUNTY, OH		NO	YES	1	3-5 MIN	N/R		LOCAL
21.	756	0/06	EDWARDS AFB, CALIF	SEARCH & HEIGH	T YES	YES	MULTI	4 1/2 HOUR	S N/R	SEE SCOPE PHOTOS	TDEED
22.		7/09	Arlington, Texas		NO	YES		15 MIN	A/C	EASTERLY	L OCAL

			100	-				6					
		INCIDENT		TION			VISUAL	TS C	TION		1965 CASES CONTAINING	RADAR REPORTS	
		CI	DATE	OCAT	TYPE	SCOPE	SUA	NUMBER (OBJECTS	DURAT	日日			
2	#	Ä	DA	្ន	E A	SC	SI	N O O O	Da	BLIPSIZE	MOTION	ANALYST	EVALUATION
	1.	30	1/24	ALASKA	ACW	NO	YES	1 RADAR 2 VISUAL	40 MIN	FTR A/C	24 K AT 26,500' HOVERED	LOCAL CONTROLER	BALLOON
	2.	49	2/02	4 STATES	AIR PPI	NO	YES		N/R	N/R	EAST	LOCAL	BALLOON (NCAR)
	3. 1	137	4/10-	L4 JAPAN	F-102 PPI	NO	NO	MULTIPLE	THE STREET, ST. LEWIS CO., LANSING, MICH.	F-100	140-240 K, NO INVERSION	LOCAL ANALYSIS	WX RETURNS
	4.	171	5/05-0	7 PHILIPPINES	ASR, ASPR SPS 6-C SHIP RADAR	NO	YES	4 MAX	5 MIN 6 MIN		22 MI, 3,000 MPH, MANU- VERED AND STATIONARY	TDEW CONSULTED	A.P. INSUFFICIENT DATA
	5. 2	207	6/08-0	O9 TURKEY	FPS-88	NO	YES	SINGLE 8 TIMES	N/R 1 HR INTER	N/R	FROM 290 MI OUT IN TO SCOPE. 3,000 MPH	TDEAM	ELECTRONIC
	6.	269	7/12	EAST U.S.	ACW SATELLITE TRACE		YES		4 HOURS	BALLOON	WEST 60 K 100,000 FT	NO	BALLOON (ONR)
	7.	282	7/13	EAST U.S.	ACW, ARMY AIR DEF MISSILE		YES	1-2	27 MIN	SINGLE	80 MI RANGE, HOVERING ERRATIC MOTION	TDEED	BALLOON (ONR)
	8.	335	7/25	WISCONSIN	ADA, LOW POWER	NO	NO	1	10 MIN		1,000 K, 100,000 FT.	TDEED	A/C
	9.	360	7/30	EAST COAST	BACKSCATTER GD ELECTRONIC	NO	NO	1 TWICE	F/SEC	GEMINI	100 MI ALT. 200,000 (1) 100,000 RETURN	TDEED	INSUFFICIENT DATA
	10.	367	7/31	TINKER, OKLAHOMA	ACW	NO	YES	1		N/R	SOUTH VARIED TO 101,000	LOCAL CONTROL	BALLOON
	11.	367	7/31	OKLAHOMA CITY	ACW	NO	YES				10,000 FT 205°AZ FROM 15-29 MI	TDEED	GROUND TARGET
	12.	367	8/02	WICHITA, KANSAS	GCI	NO	YES	MULTIPLE	SEVERAL HOURS	VARIES	MULTIPLE RETURNS	TDEED	INSUFFICIENT DATA
	13.	373	8/01	W. TOPEKA, KANSAS	AIR PPI	NO	NO	12-15	N/R	N/R	50 MI SCOPE, FORMATION	TDEED	FALSE TARGETS
	14.	(INFO)	8/04	CALUMET AFS, MICH	ACW	NO	NO	NEWSPAPER	CARRIED AR	FICLE OF	ALLEGED CONTACT. COMMANDER	OF STATION CONTA	CTED. NO RETURNS.
	15.	445	8/05	CHICAGO, ILL	GD ELECTRONIC SEARCH & HEIGH		NO	POSS 2	45 MIN	H/R	100,000'. SLOW. NO INVERSION	TDEED	BALLOON
	16.	500	8/11	WHITEMAN AFB, MO.			YES	3-5	5 ½ HOURS	N/R	INVERSION	LOCAL	INVERSION EFFECTS
	17.	565	8/20	PLATISBURG, N.Y.	GCA	NO	YES	1	3-5 MIN	N/R	WEST OF SCOPE, JAMMING	LOCAL	A/C W/ECM
	18.	566	8/20	FEASE AFB, N.H.	CPN-18	NO	NO	ONE OR MORE	30 MIN	N/R	7 MI WEST OF TOA TO 8 MI NW	LOCAL	A/C
	19.	628	8/31	TONOPAH, NEVADA WINNEMUCCA AFS, NE	ACW	NO	NO	1	3 HR 15 MI	N N/R	STOPPING, STARTING, CLIMBING, FADING	LOCAL/TDEED	WX RETURNS
	20.	727	9/26	LICKING COUNTY, DH		NO	YES	1	3-5 MIN	N/R		LOCAL	SAC MC-135
	21.	756	0/06	EDMARDS AFB, CALIF	SEARCH & HEIGH	T YES	YES	MULTI	4 1/2 HOUR	S N/R	SEE SCOPE PHOTOS	TDEED	ATMOSPHERIC COND
	22.		7/09	Arlington, Texas	GCA	NO	YES		15 MIN	A/C	EASTERLY	L OCAL	LIGHT A/C

PHOTOGRAPHS ASSOCIATED WITH UFO REPORTS DURING 1965

INCIDENT	DATE	LOCATION	PHOTOGRAPHER	TYPE	ANALYSIS	EVALUATION
1. 41	1/30	Mecca, Calif	Bates (C.S.	NO	ORIGINAL NOT SUBMITTED
2. 52	2/02	Spring Lake, N.J.	Hallgarth		NO	ORIGINAL NOT SUBMITTED
3. 99	3/15	Laos	Pomeroy		TDD	PART OF A/C
4. 103	3/20	Sloan, Nevada	Pierce		DPA, DPP	DEVELOPER SMEAR
5. 124	APR	Montana	Keller		NO	NEGATIVE NOT SUBMITTED
6. 197	5/30	N.Y. Worlds Fair	Lorentzen	C.S.	DPA, DPP	PROCESSING DEFECT
7. 217	6/24	Washington Is, Wisc	Weisner			NO IMAGE
8. 269	7/12	Athens, Ohio	Stewart			UPPER AIR BALLOON
9. 295	7/17	Burbank, California	Conroy		DPP	REFLECTION
10. 341	7/26	Cumberland, Md	Diehl		DPA, DPP	POOR PHOTO PROCESS
11. 354	7/28	Aquada, Puerto Rico	Hernandez		DPP	NO IMAGE ON FILM
12. 396	8/03	Santa Ana, Calif	Heflin		DPA	HOAX
13. 434	8/05	San Antonio, Texas	Frost		DPA	NO IMAGE ON FILM
14. 450	8/05	Sioux City, Iowa	Perrin		NO	NOT SUBMITTED
15. 462	8/07	San Pablo, Calif	Cardoso (18mm)	M.P.	DPA,DPP	MAN, DOUBLE EXPOSURE
16. 555	8/18	Traverse City, Mich	Heller		LOCAL	BLACKED OUT, NO IMAGE
17. 570	8/21	Cape Kennedy, Fla	Peek		LOCAL	EMULSION FLAWS
18. 598	8/26	France	Greenbaum		EW (UFO)	CLOUDS
19. 368	8/29	Houston, Texas	Moore		NO	NOT SUBMITTED
20. 632	SEPT	Fayetteville, Ark	Higgins		NO	NOT SUBMITTED
21. 637	9/01	Manistee, Michigan	Modjeski		NO	NOT SUBMITTED
22. 674	9/06	Northport, N.Y.	McCabe		DPA, DPP	PROCESSING DEFECT
23. 728	9/27	Swan Lake, N.Y.	Cooper			PENDING
24. 736	OCT	Northern Hemisphere	Schuetz		EW(UFO)	COMET IKEYA-SEKI
25. 778	10/20	Oregon	Air Force		DPA	PROBABLY STAR (CAPELLA)
26. 781	10/21	New Ulm, Minnesota	Strauch		DPA	ORIGINAL NOT SUBMITTED
27. 804		Efland, N.C.	Stubblefield Me	ovie	DPA	STAR (CAPELLA)
28. 808 Mid	Nov	Mexico	Zimmerman S	lide		PENDING
29. 824	11/05	Bellingham, Mass	Davidson		NO	NOT SUBMITTED
30. 872	12.09	Pontiac, Mich	Champine		EW (UFO)	METEOR TRAIL

THE FOLLOWING PHOTOGRAPHS WERE TAKEN AND APPEARED IN VARIOUS UFO LITERATURE OR NEWS MEDIA BUT WERE NOT SUBMITTED TO THE AIR FORCE FOR EVALUATION.

DATE	LOCATION	PHOTOGRAPHER	SOURCE	COMMENT
17 Mar 30 June 03 July 15 July 18 July 03 Aug 08 Aug 29 Aug 28 Sep 08 Oct	Australia Hershey, Pennsylvania Antarctic Bahia Blanca, Argentina Argentina Sherman, Texas Brighton, Pa Warminster, Wiltshire, Eng Norwick, Connecticut South Bay, Calif	Jacobs Noll Chilean Station Palma News Photo Campbell Lucci Faulkner Skinner Gillis	UFO Literat News Media UFO LIT News Media	(REQUEST DECLINED) (UFO LIT) (REQUESTED) (REQUEST DECLINED) (REQUEST DECLINED)

DEARBORN OBSERVATORY NORTHWESTERN UNIVERSITY EVANSTON, ILLINOIS 60201

January 13, 1966

Major Hector Quintanilla USAF Chief, Aerial Phenomena Branch Wright-Patterson Air Force Base Dayton, Ohio 45433

Dear Major:

This is to report to you that Sergeant Moody and I are hard at it for these three days. I think that we will be able to clean up all of 1965.

As I go over the 900 or so cases of '65, I am once again impressed by the inadequate quality of the data upon which the evaluations must be based. In some cases the term "insufficient data" is really a misnomer; there is enough data but it is of such poor quality that the cause of the sighting is unidentifiable rather than unidentified. To use the category "insufficient data" overly much weights the statistics so that our critics then say that this is just a handy catch-all to which we put everything that we can't find a ready explanation for. On the other hand, to say the case is "unidentified" is even worse because this is interpreted by our reading public to mean that something really mysterious is going on. The reason for its being unidentified is that the data do not permit any logical explanation. I would prefer the term "unidentifiable" or, better, "unidentifiable because of poor data" to either of the terms "insufficient data" by itself, or "unidentified" by itself. I rather agree with public opinion that the term "unidentified" should be reserved for those cases which really do puzzle us even though we have reasonably good data, by; which I mean largely that there was more than one observer, and that we have some time-space sequence of the reported events.

Should there ever be any official inquiry from the Pentagon about the conduct of our Project, I think it might be well to bring up the above points. I have for years, as you know, pleaded for immediate capability in the gathering of data so that evaluations could be placed on a much firmer foundation than they have been in the past, not because of any inherent incompetence in the evaluating office butsimply because of the inherent paucity of the data.

Sincerely yours,

Director

JAH:ar

STATISTICAL DATA FOR YEARS 1953-1964

TOTAL CASES BY CATEGORY											(Co	mpiled	1 Nov 65)
	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	TOTAL
Astronomical	175	137	135	222	341	231	144	235	203	136	85	123	2167
Aircraft	73	80	124	148	218	106	63	66	77	68	73	71	1167
Balloon	78	63	102	93	114	58	31	22	37	19	28	20	665
Insufficient Data	79	103	95	132	191	111	65	105	115	94	59	99	1248
Other	62	58	65	61	120	93	75	94	77	65	58	88	916
Satellite	0	0	0	0	8	18	0	21	69	77	82	142	417
Unidentified		46	The state of the s	14	14	10	12	14	13	15	14	19	237
TOTAL	42 509	487	24 545	670	1006	627	390	557	591	474	399	562	6817
ASTRONOMICAL SIGHTINGS													
Meteors	70	92	79	88	179	168	100	187	119	95	57	61	1295
Stars and Planets	101	44	52	131	144	56	40	45	78	36	23	55	805
Other	4	1	4	3	18	7	4	3	6	5	5	7	67
TOTAL	175	137	135	222	341	231	144	235	203	136	85	123	2167
OTHER CASES													
Hoaxes, Hallucinations, Unreliable Reports and													
Psychological Causes	15	6	18	16	37	29	14	13	17	11	16	34	226
Missiles and Rockets	2	1	1	3	2	6	14	12	13	9	13	7	83
Reflections	4	6	4	3	2	7	11	9	3	3	0	2	54
Flares and Fireworks	1	4	8	6	8	3	5	7	4	3	3	7	59
Mirages and Inversions	3	2	4	1		2	4	5	6	3	0	2	37
Search and Groundlights	9	6	14	9	12	8	5	6	1	3	2	6	81
Clouds and Contrails	6	3	2	1	9	5	3	4	5	4	5	0	47
Chaff	0	2	0	1	2	6	1	4	3	5	2	1	27
Birds	4	7	2	6	1	1	0	3	2	2	2	4	34
Radar Analysis	15	7	1	8	27	3	8	6	9	0	1	2	87
Photo Analysis	1	1	2	4	1	7	4	6	3	2	3	6	40
Physical Specimens	1	6	5	3	5	10	3	7	4	15	3	8	70
Satellite Decay	0	0	Õ	0	0	1	0	9	3	3	4	3	23
Other	1	7	4	0	9	5	3	3	4	2	4	6	48
TOTAL	62	58	65	61	120	93	75	94	77	65	58	88	916

THE INITIAL REPORT OF THE FOLLOWING CASES DID NOT CONTAIN SUFFICIENT DATA FOR EVALUATION. REPLIES TO LETTERS REQUESTING THIS INFORMATION HAVE NOT BEEN RECEIVED AS OF THIS DATE. IF THIS INFORMATION IS FURNISHED AN ANALYSIS WILL BE PERFORMED AND AN EVALUATION CONSISTANT WITH THE DATA ASSIGNED

	CIDENT	CATION	ME	#	AGE	SEX	990	#	TYPE	FOLLOW-UP	PAGES	TYPE	OPTICAL	P.S.	RADAR	PHOTO	SJECTS	RATION	
	A	70 03	17		C	BSER	VER DATA		REPO	RTING DATA		E4 03	OA	EV	IDEN	Œ	Ö	ă	COMMENTS
1.	8	1/05 URBAN	DUSK	2	A	(M)	NASA PROJ ENGNR	1	200-2	LETTER	9	G/V	NO	NO	193.000	NO	1	8-9 8	UFO LIT. OPJ RISING
2.	22	1/05 URBAN	NIGHT	1	Y	(M)		1	LETTER	R/164	3	G/V		NO	NO	DR	1	N/R	BRIGHT LIGHT NNE, SLIGHT TURN
3.	46	FEB N/R	N/R	1	Y	(M)		1	LETTER	R/164	3						1		OBSR REQUESTED FORM TO REPT
40	52	2/03 RURAL			A			1	LETTER	R/NEG	2			NO	NO	YES			NEGATIVE REQUESTED
5.	88	3/02 USAFB	NIGHT	1	A	(M)	MILITARY	1	LETTER	R/164	2	G/V	NO	NO	NO	NO	2	5 S	WHITE FAST NR AB CONTROL TOWER
6.	107	3/25 URBAN	NIGHT	1	Y	(M)		1	LETTER	R/164	3	G/V	Verei	NO		NO	?	1H,25M	SOME OBJECTS, WX OVERCAST
7.	112	3/30 RURAL	NIGHT	1	A	(M)	ENGINEER (?)	1	LETTER	R/164	3	G/V	NO	NO		NO	1	1.5 S	COOL WHITE OBJ, SPIRAL DIVE, GLOW
8.	123	APR URBAN	DUSK	1	Y	(F)	8 yr OLD	1	LETTER	R/164	3	G/V	NO	NO	NO	NO	1	N/R	HOVERING, MULTI-COLOR, 2 ANT
9.	124	APR APRIL	DAY	1	A	(M)	DOTE GOOTING	1	LETTER	R/NEG	2	0/11	NO	NO		YES	M	N/A	OBJS NOT VISIBLE TO EYE.
10.	157	4/30 S.TWN	DUSK	3	Y	(M)	BOY SCOUTS	1	LETTER	R/164	3	G/V	NO	NO	NO	NO	1	2M	SILVER OBLONG, ENE, JERKY FLIGHT.
11.	172	5/06 S.TWN	N/R	-	I	(M)	FEW OBSERVERS	1	L/PRES	R/164 R/164	2	G/V	NO	MO	MO	NO	1	N/R	WILLIAM IN CHARE DITANTANO D C
12.	209	6/10 S.TWN	N/R	7	٨	(M)	P DEALTON COM &	1	LETTER	R/164	2	G/V	NO	52000		NO	1		WHITE V SHAPE BLINKING F.S.
130	242	7/03 URBAN 7/04 URBAN	DUSK	2	v	(M)	F REALTOR SON &	1	PHONE	R/164	5	G/ V	NO	NO	INC	IVO	1	15M /	TOP SHAPED BRIGHTLY LIGHTED
14.	243 250	7/05 LAKE	N/R	1	A	(M)		1	LETTER	R/164	3	G/V	NO	NO	NO	NO	1	N/R	BLINDING LIGHT SAUCER SHAPE H.
16.	255	7/06 RURAL	DAY	2	В	(M)	MAN & 8 YR SON	1	200-2	TWX R/164	7	G/V	NO	NO		NO	_	2M	SLOW SW, CIGAR SILVER SIDE/SIDE
17.	270	7/12 URBAN	DUSK	ĩ	ם	(M)	Tam a o in bon	î	PHONE	R/164	4	G/V	BX	NO		NO	1	1 H	SLOW SE, COLORED LITES REVOLVE
18.	280	7/13 URBAN	NIGHT	2	Y	(M)	(UFO FAN)	ī	LETTER	R/164	3	G/V	221	NO		NO	ī	15 M	MYSTERIOUS CRAFT APPEAR SUDDEN
19.	315	7/21 S.TWN		ĩ	Ÿ	(F)	(0.0)	ī	CARD	R/164	í	-, .		NO		NO		N/R	UFO VERY HIGH, INCREDIBLE SPEED
20.	327	7/25 URBAN	NIGHT	ī	A	(M)	IGY OBSERVER	ī	PHONE	R/164	2	G/V		NO		NO		N/R	WEST, RISING, REFLECTED LIGHT
21.	340	7/25 URBAN	NICHT	1	A	(M)		1	OD	PHONE/164	4	G/V		NO	NO	NO	1	5M	LIKE STAR, BLUE, 10°3-4M, NORTH
22.	369	AUG S.TWN	NIGHT	1		(F)		1	LETTER	R/164 (HYNEK)	3	G/V	NO	NO	NO	NO	1	15M	STATIONARY STAR, THEN MOVED NNE
23.	370	AUG S.TWN	NIGHT	M	Y	(B)	DRIVE-IN-MOVIE	1	LETTER	R/164	2	G/V		NO	NO	NO	2	45M	OBJ FALLING & SPLITTING.
24.	394	8/03 URBAN			Y	(M)		1	LETTER	R/164	1								THOUGHT HE SAW UFO, REQ FORM
25.	430	8/04 URBAN	NIGHT	3	A	(B)	MIL & CIV	3	PHONE	2-R/164	3	G/V			12500 000		1	N/R	WHITE LIGHTS IN WEST. (FLAP)
26.	438	8/05 URBAN	NIGHT	3	Y	(M)		2	PHONE	R/164	8	G/V	2021	NO	NO	NO	-		ERRATIC, HIGH IN EAST, RED FUZZY
27.	463	8/07 URBAN	DAY			(M)		1	LETTER	R/164 & NEG	6	G/V	NO	NO	NO	YES	1	20 M	SLOW THEN FAST, SQUARE, BIG W/TAI
28.	474	8/08 URBAN	NICHT	3	В	(B)	LAWYER WIFE SON	1	L/CONG	R/164	5	G/V	TX	NO	NO	NO	1	10M	IN SW, MOVED BEHIND TREES, STAR.
29.	632	SEP URBAN	NIGHT	1	A	(F)	NEWS REPORTER	1	LETTER	LETTER R/NEG	2		110	NO		YES		N/R	NEGATIVE REQUESTED.
30.	633	9/01 URBAN	NIGHT	43777		(B)		1	200-2	R/164	7	G/V	NO			NO		45M P	STAR, BEHIND TREES, TO EAST.
31.	667	9/05 URBAN	NIGHT		A	(M)	EX-NAVY PILOT	1	200-2	LETTER R/NEG	0	G/V	BA	NO	NO	YES	2	3M EA	5 MIN APART, WEST FADING, RD WHIT
32.	675	9/10 URBAN	NIGHT			(M)		1	PHONE	R/164	1	C/V	NO	NO	MO	MO	,	22 0	UFO FORM REQUESTED.
33.	689	9/12 URBAN	NIGHT			(F)	POT TOP HENTER	1	200-2 LETTER	R/164 R/164	1	G/V	NO	NO	NO	NO	1	33 S	TWO CIRCLES SPINNING, COLORFUL BEAMS OF LIGHT, SILVER, OVAL
34.	692	9/14 STOWN	NIGHT	4	V	(B) (M)	POLICE, H'WIFE (UFO FAN)	1	LETTER	R/164	1	G/V	NO	NO	NO	NO	3	N/R 20 S	DOTS, FORMATION, HORIZON TO HORIZ
35.	700 799	9/18 RURAL 10/29 S.TWN	NIGHT	6	1	(F)	UFO FAN / 5	1	PHONE	R/164	3	G/V	110	NO	NO	NO	1	5 M	BULLET, HURT EYES SO BRIGHT,
36.	177	TO/ 27 D. I MIN	DAL	0		(1)	OLO LIM F J	-	THOMA	14 204	-	-/ -					-	2 11	Dozani, mone in inches

	INCIDENT	DATE	LOCATION	TIME	#		XHS OBSEI	8 RVER DATA	#	AL REPORTIN	IN-MOTTON DATA	PAGES	SIGHTING	OPTICAL	WX(SKY)	EVI EVI	DEN RADAR	PHOTO	OBJECTS	DURATION	COMMENT
72	145	4/20	S.TWN	NIGHT	2	A	(B)	GAME WARDEN	1	LETTER	164	8	G/V	NO	CLEAR	NO	NO	NO	1	14SEC	DATA TOO POOR FOR EVALUATION
73		5/28	RURAL	NIGHT	1	A	(F)		1	PHONE	NO	3	G/V			NO	NO	NO	1	N/R	PSYCHOLOGYCAL
74	77527	7/11	URBAN	DAY	1	A	(F)	HOUSEWIFE	1	PHONE	164	5	G/V			NO	NO	DR	2	1.5 M	DATA TOO POOR FOR EVALUATION
75	100000000000000000000000000000000000000	7/30	N/R	DAY					1	TWX	R/AN AL	5	G/R			NO	YES	NO	1		(SEE RADAR ANALYSIS)
76		7/31	RURAL	NIGHT	2	Y	(B)		1	PHONE	164	4	G/V	NO	CLEAR	NO	NO	NO	3	15 M	(HYNEK)
77		8/05	URBAN	DAY	1	Y	(M)	13 STUDENT	1	200-2	NO	10	G/V	NO	CLOUDY	NO	NO	YES	1	30 - 40S	NO IMAGE ON PHOTO
78		8/12	URBAN	NIGHT	2	Y	(M)	13 STUDENTS	2	(?)	164's	11	G/V	NO	CLOUDY	NO	NO	NO	3	10 M	DATA TOO POOR FOR ANALYSIS
79		8/22	URBAN	DUSK	1	A	(F)	45	1	200-2	NO	2	G/V	NO		NO	NO	NO	2	1 MIN	DATA TOO POOR FOR ANALYSIS
80		8/23	RURAL	NIGHT	3	В	(M)	FARMER & SONS	1	200-2	LOCAL	3	G/V	NO		NO	NO	NO	2	4-5M	1 OBJ VENUS, 2d OBJ INSUFF.
81		8/26	RURAL	DUSK	4	В			1	L/FORM	NO	1	G/V	NO	CLEAR	NO	NO	NO	1	10 MIN	(SEND FORM)
82		9/04	URBAN	NIGHT	3	A	(B)	SHIIPIN CLERK	1	200-2	164	10	G/V	BX	CLEAR	NO	NO	NO	1	10 MIN	DATA TOO POOR FOR EVALUATION
83	The state of the s	9/05	URBAN			A	(B)	MILITARY & WIFE	1	LOCAL	NO	7	G/V	BX	CLEAR		NO			15 MIN	(ADDRESS (UISSING)
84		10/21	RURAL	NIGHT	2	A	(M)	POLICE	1	LETTER	LETTER		G/V	SPEAN	CLEAR		NO			N/A	(SEE PHOTO ANALYSIS)
85		11/11	RURAL	DUSK	1	A	(M)	MILL WORKER	1	200-2	NO	4	G/V	BX	RAIN	NO	NO	NO	1	20 MIN	(SEND FORM)

0.

THE F	OLLOW	ING RE	PORTS C	ONTAIN	OBJ	FCT	S E	ALUATED AS	SATELI	TTES AND	THE REI	ORT	ED OB	JECT	WAS	s CONSIST	PANT WITH PASSAGE	OF A SPECIFIC VEHICLE.	(82)
1	Sec.				020			NO	011222	2220 1012	8			0201	CIS	0011020	THE THEOLOGY	A DINGILLO VINIZONO	(02)
	#		NOI		E			PAT	æ		17	-	Ď		3.EX	N			
	NE NE	6-3	MI	(~)	MB	AGE	M	99	NUMBER	置	FOLIC	8		CAI	OB	TI			
*	CI	AT	90	IME	NU	AC	SEX	8	N	E	E	PA	YPE	INS	OF	URA			
**	Ä	Д	н	H	_		OBSE	RVER DATA		REPORTI	NG DATA		E 12	0 A	#	A	DESCRIPTION	MOTION	OBJECT
1.	5	1/03	OCEAN	NIGHT	. 1	A	M	MILITARY	1		NO	2		NO	1	9 MIN	SMALL, ILLUMINATED		ECHO II
2.	24	1/21	A SKA	NIGHT	4	A	M	MILITARY	1	PHONE	NO	1	G/V	NO	1	20 MIN	LIKE STAR	SE, STRAIGHT	ECHO II
3.	50	2/01	URBAN	NIGHT	Ţ	Y	M	STUDENT	1	LETTER	164	12		NO	1	2 MIN	BLUE-WHITE LIGHT	E, STRAIGHT	ECHO I
4.	69	2/18	URBAN	NIGHT	1	A	M	MECH ENGR MILITARY	1	200-2 200-2	NO NO	1	G/V	NO NO	1	10 MIN	N/D	N, STRAIGHT	ECHO II
2.	72	2/20 3/04	A SKA	NIGHT	+	Α	M	MILITARY	1	200-2	NO	7	A/V G/V	NO	1	N/R 5 MIN	N/R LIKE SATELLITE	N/R S, STRAIGHT	ECHO II
7.	92	3/10	RURAL		1	Δ	M	DELIVERER	ī	200-2	NO	2	G/V	NO	ī	10 MIN	LIKE STAR	S, STRAIGHT	ECHO II
8.	93	3/10		NIGHT	ī	A		MILITARY	ī			2	A/V		ī	N/R	1 MAG STAR	N/R	ECHO I
9.	97	3/12			ī		М		ī	LETTER		4	G/V	NO	2		LIKE STAR	NE, SE, STRAIGHT	ECHO I,II
10.	104	3/22		NIGHT				MILITARY	1			i	G/V	BX			BLUE-GREEN	STRAIGHT	ECHO II
11.	139	4/14	URBAN	NIGHT	2	Y	M	STUDENTS	1	LETTER	NO	1	G/V	NO	1	11 MIN	.5 MAG	SE STEADY	ECHO I
12.	151	4/28	URBAN	NIGHT	1	A	M	SALESMAN	1	200-2	NO	1	G/V	NO	1	18 MIN	BLUE-WHITE NE,	STEADY W/WAVER	ECHO II
13.	153	4/29	URBAN		J. 2011		F	STUDENTS	1	PHONE	164	8		NO	1	4 MIN	LIKE STAR	E, ZIG-ZAG	ECHO I
14.	161	5/01		NIGHT	11.75	A	73.53	TEACHER	1	PHONE	164	8	G/V	BX	1	6 MIN	LIKE STAR	E, STRAIGHT	PEG I
15.	162	5/01	URBAN	NIGHT	0.00			STUDENTS	1	LETTER	LETTER		G/V	NO			VERY BRIGHT	SE, STRAIGHT	ECHO I
16.	163	5/02		NIGHT			В	A CONTRACTOR OF THE CONTRACTOR	1	PHONE	OD164	6	- 1	NO	1	20 MIN	ORANGE-RED STAR	N, STRAIGHT	PEG I
17.	165	5/02	URBAN URBAN	NIGHT		A		N/R SELF EMP	1	PHONE 200-2	0D164 NO	2	G/V	NO BX	3	30 M/T 4 MIN	SATELLITES RED-ORANGE STAR	NE, ZIG-ZAG (ECHO :	ECHO I
18.	166	5/03	URBAN	NIGHT		A		SELF EFIF	2	PHONE	PHONE	9	- 1		1	3 MIN	LIKE STAR	S, STRAIGHT	ECHO II
20.	168	5/04	RURAL			Y		STUDENT	ĩ	LETTER	164	2		- Section 1		10 MIN	ROUND, SHINY	CONFUSED	ECHO I
21.	180	5/10	OCEAN	NIGHT	-	-	270	MILITARY	ī	MERINT	NO	ĩ	G/V	- PERE -	1527.9	N/R	LIKE STAR	140°	ECHO II
22.	187	5/21	URBAN	NIGHT	1		M	N/R	1	PHONE	NO	7	G/V	NO	1	5 MIN	LIKE STAR	S. STRAIGHT	ECHO II
23.	189	5/23	URBAN		1	A		N/R	1	PHONE	PHONE	7	G/V	NO	1	8-10 MI	N LIKE STAR	S, STRAIGHT	ECHO II
24.	212	6/13	RURAL	NIGHT	1	Y	M	STUDENT	1	PHONE	OD164	7	G/V	TX	1	2 MIN	LIKE STAR	NE, STRAIGHT	PEG I
25.	223	6/27	URBAN	NIGHT	1				1	LETTER	LETTER		G/V				LIKE STAR	E, STRAIGHT	ECHO I
26.	224	6/27	URBAN	NIGHT					1	LETTER	LETTER	2	G/V	NO		4 MIN	LIKE STAR	E, STRAIGHT	ECHO I
27.		7/02	URBAN					MINERS	1	FORM	NO	3	G/V			15 MIN	LIKE STAR	E, ZIG-ZAG	ECHO I
28.	239	7/03	URBAN	NIGHT					1	200 - 2	NO ODJ (1	3	G/V				LIKE STAR	N/R, STRAIGHT	ECHO II, (SPADATS)
29.	244	7/04		NIGHT				N/R HOUSEWIFE	1	PHONE 200-2	NO	1	G/V			15 MIN 1 MIN	LIKE STAR SATELLITE	E, JERKY E, STRAIGHT	ECHO I
30.	253 263	7/05	URBAN URBAN	NIGHT	17.550				1	PHONE	OD164	6	G/V			5 MIN	LIKE GOLD STAR	E, STRAIGHT	ECHO II
31.	266	7/11		NIGHT			D	11/11	2	PHONE	LETTER						LIKE STAR	E, STRAIGHT	ECHO I
33.	271	7/12	AND AND ASSESSMENT OF THE PARTY				В	STUDENTS		L/L	164'5						LIKE STAR	E, STRAIGHT	ECHO I
34.	272	7/12		NIGHT	1000	1000	2.00	N/R		PHONE			17.00	0000000		N/R	LIKE STAR	SE	ECHO I
35.	284	7/14				A	M	STUDENTS	1	200-2	NO		G/V			5 MIN	LIKE STAR	E, ZIG-ZAG	ECHO I
36.	285	7/15	URBAN	NIGHT	M	В	В		4	PHONE	164'3	28	G/V	BX	1	1-30 MI	N LIKE STAR	EASTERLY, STRAIGHT	
37.	286	7/15	URBAN	NIGHT					1	200-2	NO		G/V				LIKE VENUS	E, ERRATIC	ECHO I
38.	296	7/17	RURAL	NIGHT	1	A	M	FARMER	1	200-2	NO	2	G/V	NO	1	10 MIN	LIKE STAR	SE, STRAIGHT	ECHO I

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7/17
                 URBAN
                        NIGHT
                                        N/R
                                                                                      (2) N/R
                                                                                                   LIKE STAR
                                                           200-2
                                                                   NO
                                                                                                                                          ECHO I
                                                                                                                       SE, STRAIGHT
      299
           7/18
                                                                   164
                        NIGHT
                                                                              G/V
                                                                                   NO (2) 5 MIN
                 URBAN
                                                           PHONE
                                                                                                   LIKE STAR
                                        LABORER
                                                                                                                       SE,N,STRAIGHT
                                                                                                                                          ECHO I
      300
           7/18
                        NIGHT
                                                                                          5-10 MIN LIKE STAR
                                                                                                                       E, STRAIGHT
41.
                 URBAN
                                                           PHONE
                                                                   OD164
                                                                              G/V
                                                                                                                                          PEG II
      302
           7/18
                        NIGHT
                                                           PHONE
                                                                   OD164
                                                                          16
                 URBAN
                                                                                          10 MIN
                                                                                                  YELLOW-ORANGE STAR
                                                                                                                       SE, STRAIGHT
                                                                                                                                          ECHO I
                        NIGHT
      303
           7/18
                 URBAN
                                                           PHONE
                                                                   OD164
                                                                                          10 MIN
                                                                              G/V
                                                                                   TX
                                                                                                   LIKE STAR
                                                                                                                       E, STRAIGHT
                                                                                                                                          ECHO I
                        NIGHT
      305
           7/19
                                                                   OD164
                 URBAN
                                        N/R
                                                           PHONE
                                                                              G/V
                                                                                          2 MIN
                                                                                                   LIKE STAR
                                                                                   NO
                                                                                                                                          PEG II
                                                                                                                       NE, STRAIGHT
      306
           7/19
                        NIGHT
                                                           PHONE
                                                                              G/V
                                                                                                                       E, ZIG-ZAG
 450
                 URBAN
                                        N/R
                                                                   OD164
                                                                                   NO
                                                                                       1 10 MIN
                                                                                                   LIKE STAR
                                                                                                                                          ECHO I
      311
                        NIGHT
                                                                              G/V
           7/20
                 URBAN
                                        CIVIL AIR P.
                                                           PHONE
                                                                   00164
                                                                                          30 SEC
                                                                                                   BANANA SHAPED
                                                                                                                       N/R
 46.
                                                                                                                                          ECHO I
                                                                                   NO (2) 2 MIN
      331
           7/25
                 URBAN
                        NIGHT
                                                                              G/V
                                                                                                   LIKE STAR
                                                           200-2
                                                                   NO
                                                                                                                                   PEG I, ECHO I
                                                                                                                       SE, ARC
      332
                        NIGHT
                                                           PHONE
                                                                   OD164
                                                                                                  LIKE STAR
                                                                                                                       N/R
           7/25
                 URBAN
                                                                                          10-15M
                                                                                   NO
                                                                                                                                          PEGIII
      343
                        NIGHT
                                                           200-2
                                                                                                  LIKE STAR
                 RURAL
                                                                   NO
                                                                                       1 15 MIN
                                                                                                                                     ECHO I, PEG II
 49.
           7/26
                                        TELEPHONE OPR
                                                                                                                       SE, STRAIGHT
                        NIGHT
      381
           8/02
                                        MILITARY
                                                           200-2
                                                                              G/V
                                                                                       1 3 MIN
                 URBAN
                                                                   NO
                                                                                   NO
                                                                                                  LIKE STAR
                                                                                                                       N, STRAIGHT
                                                                                                                                          ECHO II
                                                                                                   NOT STATED
      444
           8/05
                        NIGHT
                                        NICAP MEMBER
                                                           PHONE
                                                                                       1 5 MIN
                                                                                                                       NOT STATED
                                                                                                                                          PEG I
                                                                   NO
                 URBAN
      471
                        NIGHT
                                                           200-2
                                                                              G/V
                                                                                   BX
                                                                                          1 MIN
                                                                                                                                          ECHO I
           8/08
                 URBAN
                                        MACHINE OPR
                                                                   NO
                                                                                                   LIKE STAR
                                                                                                                       N, STRAIGHT
 520
                                                                                                  LIKE STAR
      473
           8/08
                 USAFB
                        NIGHT
                                                           200-2
                                                                                          20 MIN
                                                                                                                                          ECHO II
 53:
                                        MILITARY
                                                                                                                       N, STRAIGHT
      478
           8/09
                 URBAN
                        NIGHT
                                                           LETTER
                                                                   164
                                                                              G/V
                                                                                                                                          ECHO II
                                        DRIVER
                                                                                   NO
                                                                                          3-4 MIN LIKE STAR
                                                                                                                       NE, STRAIGHT
                        NIGHT
                                                           200-2
                                                                                                                       NE, STRAIGHT
                                                                                                                                          ECHO II
      504
           8/12
                 URBAN
                                                                                       1 10 MIN
                                                                                                  LIKE STAR
                                                                   NO
 55.
                                                                                                   LIKE STAR
                                                                                                                                          ECHO II
                        NIGHT
                                                           200-2
                                                                                       1 40-50 S
                                                                                                                       NE, STRAIGHT
      515
           8/12
                 URBAN
                                                                   NO
                                                                                   NO
      531
                                                                                                                                          ECHO II,
           8/14
                        NIGHT
                                                           200-2
                                                                                                   BIG STAR
                 URBAN
                                                                              G/V
                                                                                       1 4 MIN
                                                                                                   BRIGHT
                        NIGHT
                                                           PHONE
                                                                   NO
                                                                              G/V
                                                                                                                       N,N,NW,STRAIGHT
                                                                                                                                          ECHO II
      538
           8/15
                 URBAN
 58.
                                                                                                                                          ECHO II
                                                                              G/V
                                                                                          3-4 MIN LIKE STAR
      548
                                                                   LETTER
           8/16
                 URBAN
                        NIGHT
                                        CAR DEALER
                                                           LETTER
                                                                                   BX 1
      549
556
                                                                                                                       SE, STRAIGHT
                                                                                                                                          ECHO I
           8/16
                        NIGHT
                                                           PHONE
                                                                   OD164
                                                                                   TX 1 15 MIN
                                                                                                  OVAL RED-GREEN
                 URBAN
                                        STUDENTS
                                                           P/TWX/200-2
                                                                                                                                          ECHO II
                        NIGHT
                                                                                   BX 1
                                                                                          5-8 MIN LIKE STAR
           8/18
                 URBAN
                                                                                                                       NE, STEADY
                                                                              G/V
                                                                                                                                          ECHO II
                        NIGHT
                                                           LETTER
                                                                                                                       NORTH
      559
           8/19
                                                                   LETTER
                 URBAN
 62.
                                                                                                                      N, STEADY
                                                                                                                                          ECHO II
      577
                        NIGHT
                                                           200-2
                                                                   NO
                                                                                                   BRILLIANT WHITE
           8/22
                 URBAN
                                                                                   NO
                                                                                       1 10 MIN
                                                                                          5 MIN
                                                                                                   BRIGHTER THAN STAR
                                                                                                                                          ECHO II
                                                           200-2
                                                                                                                       N, STRAIGHT
      587
           8/23
                 URBAN
                        NIGHT
                                         STUDENT
      590
                                                                                       1 3 MIN
                                                                                                                                          ECHO II
                                                                                   NO
                                                                                                   LIKE STAR
           8/24
                        NIGHT
                                        MECHANIC
                                                           200-2
                                                                                                                       NE, STRAIGHT
                 NFLD
                                                                                                                                          GEM V
      609
                                                                                                   WHITE
                                                                                          2 MIN
                        NIGHT
                                                           CIRVIS
 66.
           8/27
                                        MILITARY
                 OCEAN
                                                                                                   ROUND GLOWING WHITE
                                                                                                                                          ECHO II
                                                                                       1 1 MIN
                        NIGHT
                                                           200-2
                                                                                                                       NE, STRAIGHT
      611
           8/27
                                                                   NO
                 URBAN
                                                                                                                                          ECHO II
                                                           PHONE
                                                                   OD164
                                                                              G/V
                                                                                       1 10 MIN
                                                                                                  LIKE SATELLITE
                                                                                                                       NNW. STRAIGHT
                        NIGHT
                                         STUDENTS
           8/28
                 URBAN
                                                                                                                                          ECHO II
                                                                   OD164
                                                                                          3-5 MIN YELLOW STAR
                                                                                                                       NE, STRAIGHT
                                                           PHONE
                        NIGHT
                                         STUDENTS
                                                                                                                       N, STRAIGHT
                                                                                                                                          ECHO II
                                                           LETTER
                                                                   LETTER
                                                                           2 G/V
                                                                                   NO
                                                                                                   LIKE VENUS
      621
           8/30
                        NIGHT
                                                                                          5 MIN
 70.
                 RURAL
                                                                                                                                          ECHO II
                                                                                   NO 1 20-25M AUTO LIGHT
                                                                                                                       N, ERRATIC
                                                                   NO
                                                                              G/V
                        NIGHT 3 Y M
                                        STUDENTS
                                                           LETTER
      634
           9/01
                 URBAN
 71:
                                                                                                                                          ECHO I
                                                                                                                       S, STRAIGHT
                                                                   OD164
                                                                                   NO 1 5 MIN
                                                                                                  LIKE STAR
                                                                              G/V
      635
           9/01
                        NIGHT
                                        STUDENT
                                                           PHONE
                 URBAN
 72.
                                                                                   NO 1 10 MIN
                                                                                                                       N, ERRATIC
                                                                                                                                          ECHO II
                                                                                                  LIKE PLANET
                                                                              G/V
      643
                        NIGHT
                                                           200-2
                                                                   NO
           9/02
                 URBAN
                                                                                                  CIRCULAR RED/GREEN
                                                                                                                                          ECHO II
                                                                                   BX 1 15 MIN
                                                                                                                       N, STRAIGHT
                                                                              G/V
                                                           200-2
                                                                   NO
           9/02
                        NIGHT
      644
                                        FARMER
                 URBAN
 74.
                                                                                                                                          ECHO II
                                                                           2 G/V
                                                                                   NO 1 10 MIN
      653
666
                                                                   LETTER
                                                                                                  STEADY WHITE LIGHT
                                                                                                                       NE, STRAIGHT
                                                           LETTER
           9/04
                        NIGHT
                 URBAN
 75.
                              5
                                 В
                                                                                                                       N, STRAIGHT, ZIG-ZAG ECHO II
                                                                   OD164
                                                                              G/V
                                                                                   NO 1 13 MIN
                                                                                                  LIKE STAR
                                                           PHONE
                        NIGHT
 76.
           9/05
                 URBAN
                                  B B
                                                                                                                                          ECHO II
                                                           L/P/200-2 LTR
                                                                              G/V
                                                                                   BX 1 3 MIN
                                                                                                  BRIGHT STAR
                                                                                                                       NE, ERRATIC
      673
                                                                          22
                        NIGHT
           9/06
                 URBAN
 77.
                                                                                                                                          ECHO II
                                                                                   NO 1 3-4 MIN LARGE STAR
                                                                                                                       N, STRAIGHT
                                                                           4 G/V
      677
           9/06
                 URBAN
                        NIGHT
                                                           200-2
                                                                   NO
 78:
                                                                                   TX 1 5-6 MIN LIKE VENUS
                                                                                                                                          ECHO II
                                                                                                                       N, SMOOTH
                                                                           4 G/V
                                                           200-2
                        NIGHT
                              1 A M DOCTOR
      678
           9/06
                 URBAN
                                                                                                                       N, STRAIGHT
                                                                                                                                          ECHO II
                                                                                                  WHITE
                                                           PHONE
                                                                   OD164
                                                                              G/V
                                                                                   NO
                                                                                      1 SEC'S
                        NIGHT 1
                                                                          14
      699
           9/17
                 URBAN
                                                                                                                                          ECHO II
                                                                                   NO 1 10 MIN
                                                                          12 G/V
                                                                                                  LIKE STAR
                                                                                                                       NE, STRAIGHT
                                                                   OD164
                                                           PHONE
                        NIGHT M
      705
           9/20
                 RURAL
                                                                                                                                          ECHO II (NE)
                                                                                                                       SSE
                                                                                   NO 1 3 MIN
                                                                                                   STARLIKE
                                                                   OD164
                                                                           3 G/V
                                                           PHONE
                        NIGHT
      546
           8/16
                 URBAN
                              1 A F
 82.
                                                                                                                                          HR 50 MIN
                                                                                   BX M N/R
                                                                                                                       SE (PASSES EVERY 1
                                                                           2 G/V
                                                                                                  SATELLITE BCHO II
                                                           PHONE
                A'SKA
                        NIGHT M A M MILITARY
           1/24
154.
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THE FOLLOWING REPORTS CONTAIN OBJECTS EVALUATED AS SATELLITES BY THE REPORTING OFFICIAL, DR. HYNEK, OR REPORTED AS SATELLITES BY THE OBSERVER (13)
           2/18 OCEAN
                                                         200-2
                                                                                                                   105° STRAIGHT
                        DUSK
                                     M MILITARY
                                                                                                LIKE STAR
                                                                                                                                         HYNEK
           MAY 5-7 0'S
                        NIGHT
                                        MILITARY
                                                                                     N/R N/R
                                                         MERINT
                                                                                                LIKE SATELLITE
                                                                                                                   S, STRAIGHT
                                                                                                                                        LOCAL EVAL
      176
           5/07
                        NIGHT
                                                         LETTER
                 URBAN
                                        ELECT ENGR
                                                                                        4 MIN
                                                                                 NO
                                                                                                LIKE STAR
                                                                                                                                        HYNEK
      177
           5/07
                 HAWAII NIGHT
                                                         MERINT
                                       MILITARY
                                                                                                LIKE STAR
                                                                                                                                        LOCAL EVAL
                                                                                                                     STRAIGHT
      279
                        NIGHT
                                                         L/FORM
                 URBAN
                                        TOOL MAKER
                                                                                        15 MIN
                                                                                                CIGAR SHAPED
                                                                                                                   SE, STRAIGHT (NEG E, P)OBSERVER
      281
                 URBAN
                        NIGHT
                                  A B
                                        PILOT
                                                         200-2
                                                                                                LIKE STAR
                                                                                                                   SSW (ASSUMED ERROR)
                                                                                                                                       OBSERVER
      429
           8/04
                 URBAN
                        NIGHT
                                                         PHONE
                                                                 LETTER
                                                                                                BLUISH WHITE STAR
                                                                                                                               (NEG E,P)OBSERVER
      561
           8/19
                        NIGHT
                 RURAL
                                                         200-2
                                                                                                LIKE STAR
                                                                                                                               (ECHO II) LOCAL EVAL
                                                                                        10 MIN
                                                                                                                   STRAIGHT
      513
                              1 (SENT FORM NOT RET)
                 URBAN
                        NIGHT
                                                         PHONE
                                                                 LETTER
                                                                                        10 SEC
                                                                                                SATELLITE
                                                                                                                   NNE, STRAIGHT
                                                                                                                                        HYNEK
      567
           8/20
                 USAFB
                        NIGHT
                                                         200-2
                                                                                                WHITE, SOME RED
                                  A M MILITARY
                                                                                                                   SE, LEVEL
                                                                                                                                        LOCAL EVAL
           9/04
                        NIGHT
                 URBAN
                                        STUDENT
                                                         LETTER
                                                                                                WHITE TRIANGULAR
                                                                                                                   NE, STRAIGHT
                                                                                                                                        OBSERVER
           9/04
                        NIGHT
                                                                                                                                        OBSERVER(NO E, P)
                                                         LETTER
                                                                                                SATELLITE
                 URBAN
                                                                                        4 SEC
                                                                                                                   E, LIKE SATELLITE
                                                                                                1 MAG STAR
                        NIGHT
                                        MILITARY
                                                         MERINT
                                                                                                                   E, S
                                                                                                                                        LOCAL EVAL
 THE FOLLOWING REPORTS CONTAIN OBJECTS CHARACTERISTIC OF SATELLITES BUT THE DATE/TIME WAS MISSING AND CHECK FOR A SPECIFIC OBJECT WAS NOT MADE (7)
                                                                                     N/R N/R
                                                                                                                   UP, DOWN, SIDEWAYS
                 URBAN
                        NIGHT
                                        HOUSEWIFE
                                                                                                LIKE STAR
                                                                                                                                        DATE MISSING
                                                                                                                   s, N/R, N/R
      156 APR/MAY URBAN
                       NIGHT
                                                                                                BLUE-WHITE STAR
                                                                                                                                        TIME MISSING
          7/08 URBAN
                                                                                       15 MIN
                        NIGHT
                                                         LETTER
                                                                 LETTER
                                                                                                LIKE STAR
                                                                                                                   NE, STRAIGHT
                                                                                                                                        TIME MISSING
                                                                                                STAR W/RING
         7/16-17 0'5.
                        NIGHT
                                                         200-2
                                                                                                                   NE, ZIG-ZAG
                                                                                                                                        TIME MISSING
                                                         PHONE
                                                                 OD164
                                                                                                                      (2d Object)
          8/25 URBAN
                        NIGHT
                                                                                                                                        TIME MISSING
                        NIGHT
                                                         LETTER
                                                                                                                                        MULTIPLE REPTS
      631 8/31-9/7 URB
                                                                                       5 MIN
                                                         200-2
                                                                                                STAR SHAPED
                        NIGHT
                                 A M MILITARY
                                                                                                                                        TIME GARBLED
102.
          9/07
                URBAN
                                                                                                                   E, N, STRAIGHT
THE FOLLOWING REPORTS CONTAIN OBJECTS CHARACTERISTIC OF SATELLITES BUT SCHEDULES FOR THAT DAY WERE NOT AVALIABLE FOR A SPECIFIC OBJECT CHECK
                                                                                                                   122° STRAIGHT
                                                                                                BLUE-WHITE STAR
                                                                                    1 4 MIN
                                  A M MILITARY
                                                      1 200-2
                                                                NO
103. 149
          4/27
                O'SEA
                       DUSK
                                                                         4 G/V NO 3 5 MIN EA STAR LIKE
                                                     1 200-2
                                                                                                                   EAST, STRAIGHT
104. 267
          7/12
                       NIGHT
                                  A M MILITARY
                O'SEA
                                                                         2 G/V
                                                                                                2 MAG STAR
                                                      1 LETTER LETTER
                                                                                NO 1 2 MIN
                                                                                                                   N, STRAIGHT
                 (FOR)
                      NIGHT 1
                                 A M STUDENT
          8/13
105.
THE FOLLOWING REPORTS CONTAIN OBJECTS CHARACTERISTIC OF SATELLITES. ECHO AND PEGASUS SCHEDULES FOR THE REPORTED TIME OF THE SIGHTING CHECKED NEGATIVE (49)
                                                                                 NO 1. 1.5 MIN ROUND, SMALL, RED & BLUS EASTERLY
                                                      1 LETTER
                                       STUDENTS
                                                                164
          1/17
                O'SEA
                       DUSK
106.
      19
                                                                           G/V
                                                                                                                   EAST STRAIGHT
                                                                                 BX 1 60 SEC LIKE STAR
                                                                 164
                                        AIR TRAFFIC C. 1
      48
          2/01
                 URBAN
                       NIGHT
107.
                                                                                                                   SE, STRAIGHT
                                                                        10
                                                                                    1 2.5 MIN YELLOW STAR
     164
                              2 Y M
                                                      1 LETTER
                                                                YES
          5/02
                 URBAN
                       NIGHT
                                        STUDENTS
108.
                                  A M
                                                      1 MERINT
                                                                                     1 7 MIN
                                                                                                LIKE STAR
                                                                                                                   EAST
                HAWAII NIGHT
           5/07
                                       MILITARY
     175
109.
                                                                 OD164
                                                         PHONE
                                                                                        10 MIN
                                                                                                LIKE STAR
                                                                                 NO 1
                                                                                                                   NE, STRAIGHT
     222
           6/24
                 RURAL
                       NICHT
                             2 A F
110.
                                                                 OD164
                                                                                                LIKE STAR
                                                                                    1 12 MIN
                                                         PHONE
     230
           6/29
                       NIGHT
                 URBAN
111.
                                                                            G/V
G/V
                                                                                                                   NE, INCLUDE HOVER
                                                                                    1 4 MIN
                       NIGHT M B B
NIGHT 2 Y B STUDENTS
                                                                                                BLUE-WHITE STAR
                                                         200-2
                                                                                 NO
     254
249
           7/05
                 URBAN
112.
                                                                                TX 1 3 MIN
                                                                                                SATELLITE
                                                                                                                   E, STRAIGHT
                                                         LETTER
                                                                 LETTER
                 URBAN
113.
           7/04
                                                                                                                                        1st OBJ ECHO I
                       NIGHT 1 A F
                                                                                 BX (2) N/R
                                                                                                LIKE STAR
                                                                                                                   SE, STRAIGHT
                                                         200-2
                 URBAN
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7/18
115.
      299
                 URBAN
                        NIGHT
                                        LABORER
                                                       1 PHONE
                                                                  OD164
                                                                                        5 MIN
                                                                                                 LIKE STAR
                                                                                                                   SE, N (Lst OBJ ECHO II)
           7/19
      307
                 URBAN
                        NIGHT
                                                       1 LETTER
                                                                  LETTER
                                                                         2
                                                                            G/V
                                                                                     1 15 MIN
                                                                                                                    E, JERKY
      310
           7/20
                        NIGHT
                 URBAN
                                                                  OD164
                                                         PHONE
                                                                                     1 5-7 MIN ORANGE /WHITE LIGHT E, STRAIGHT
                                                                        12
      313
           7/20
                        NIGHT
118.
                                                                  NONE
                 URBAN
                                        HOUSEWIFE
                                                          200-2
                                                                                     1 6 MIN
                                                                                 NO
                                                                                                LIKE STAR
                                                                                                                    STRAIGHT
      323
           7/23
                        NIGHT
                                                                          2
                                                         LETTER
                                                                 LETTER
119.
                 RURAL
                                  B
                                                                                        N/R
                                                                                 NO
                                                                                                SATELLITE
                                                                                                                   S, STRAIGHT
                        NIGHT
           7/25
                 URBAN
                                        STUDENTS
                                                          PHONE
                                                                  OD164
120.
                                                                                        30-40 SEC LIKE STAR
                                                                                                                   S, STRAIGHT
                        NIGHT
      336
           7/25
121.
                 RURAL
                                        RANCHERS
                                                          200-2
                                                                                 NO
                                                                                                LIKE STAR
                                                                                         30 MIN
                                                                                                                   ESE, STRAIGHT
      337
                        NIGHT
           7/25
                 RURAL
122.
                                        SYSTEMS ANAL
                                                          FORM
                                                                            G/V
                                                                                        2 MIN
                                                                                                BLUE WHITE STAR
                                                                                 NO
           7/25
      338
339
                                                                 OD164
LETTER
                 URBAN
                        NIGHT
                                                         PHONE
LETTER
                                                                                        15 SEC
N/R
                                                                                                LIKE STAR
123.
124.
                                  В
                                                                                  NO
                                                                                                                   SE, STRAIGHT
S, ZIG-ZAG
                        NIGHT
                 URBAN
                                                                            G/V
           7/27
      348
                 URBAN
                        NIGHT
                                         SALESMAN
                                                          200-2
                                                                                         3-5 MIN LIKE STAR
125.
                                                                                                                   SE, STRAIGHT
      357
363
                        NIGHT
126.
           7/28
                 URBAN
                                         STUDENTS
                                                         LETTER
                                                                 LETTER
                                                                                 TX
                                                                                        4-5 MIN SATELLITE
                                                                                                                   N, ZIG-ZAG
                        NIGHT
                 URBAN
           7/30
                                                          LETTER
                                                                 LETTER
127.
                                         PROFESSOR
                                                                            G/V
                                                                                        N/R
                                                                                                RED-YELLOW/ORANGE STAR S, STRAIGHT
      375
377
           8/01
                                                                                        2 MIN
                                                                                                SATELLITE
LIKE STAR
                        NIGHT
128.
                 URBAN
                                                                                                                   NE, STRAIGHT
N, STRAIGHT, W/ZIG-ZAG
                                         ELECTRICIAN
                                                          FORM
                                                                                 NO
                        NIGHT
           8/01
                 URBAN
                                                         200-2
                                                                 NO
                                                                                 NO
129.
                                                                            G/V
      382
           8/02
                                                                                                LIKE STAR
                 URBAN
                        NIGHT
                                                          200-2
130.
                                         POLICE
                                                                                 NO
                                                                                        1 MIN
                                                                                                                   S, STRAIGHT
      390
           8/02
                        NIGHT
                                                         200-2
                 URBAN
                                         DRIVER
                                                                                 NO
                                                                                        5 MIN
                                                                                                SATELLITE
                                                                                                                   SE, STRAIGHT
131.
                                                                                                SATELLITE
                                                                                        29 SEC
                                                          200-2
                                                                 NO
                                                                                                                   N, STRAIGHT
      392
           8/02
                 URBAN
                        NIGHT
                                         ENGINEER
                                                                            G/V
132.
                                                                                                                   N/R, STRAIGHT (FORM SENT, NOT RETURN)
                                                                                                LIKE STAR
                                                                                        15 SEC
                                                                 LETTER
                                                                                 NO
      425
           8/04
                 RURAL
                        NIGHT
                                                         LETTER
133.
                                                                                        30-40 SEC
                                                                                                   LIKE STAR
      457
           8/06
                        NIGHT
                                         ELECT ENGR
                                                          FORM
                 URBAN
134.
                                                                                                   YELLOW ORANGE
                                                                                                                 STAR NE, ERRATIC
                        NIGHT
                                                          200-2
                                                                 LETTER
                                                                                        45-90 SEC
      530
           8/14
                                         MILITARY
                 URBAN
135.
                                                                                        12-2 MIN
                                                          LETTER
                                                                 LETTER
                                                                                 NO
                                                                                                   LIKE STAR
                                                                                                                   SE, ZIG-ZAG
                        NIGHT
                                         STUDENT
      540
           8/16
                 URBAN
136.
                                                                 NO
                                                                                                WHITE
                                                                                                                   N, STRAIGHT
                                                         200-2
                                                                                        5 MIN
      594
                        NIGHT
                                         STUDENT
           8/25
                 URBAN
137.
                                                                                        12 MIN
                                                                                                MOON REFLECTING FROM OBJ N/R
                                                                 OD164
                                                         PHONE
                        NIGHT
                                         STUDENTS
      595
           8/25
                 URBAN
138.
                                                                                                  LIKE STAR
                                                                                                                   NE, STRAIGHT
                                                                                        5-10 MIN
                                         ELECTRONIC TECH 1 200-2 NO
      602
           8/26
                 URBAN
                        NIGHT
139.
                                                                                                YELLOW VOLLYBALL
                                                                                                                   N, STRAIGHT
                        NIGHT
                                         TELEPHONE OPR 1 FORM
                                                                                        15 MIN
           9/02
                 URBAN
      640
140.
                                                                                                BRIGHT CLEAR LIGHT N, ERRATIC
                                                                                        10 MIN
                                                                 OD164
                                                                                 NO
                        NIGHT
                                         MILITARY
                                                         PHONE
                                                                            G/V
      642
           9/02
                 URBAN
141.
                                                                                                                   NE, STRAIGHT
                                                                                        5 MIN
                                                                                                LIKE STAR
                                         N/R
                                                                                 NO
                        NIGHT
                                                          200-2
                                                                 NO
                                                                            G/V
      670
           9/05
                 URBAN
142.
                                                                                                                   NORTHERLY
                                                                                        4 MIN
                                                                                                LIKE SPUTNIK
                                                                                                                                      AMATURE ASTRONOMERS
                                                                 164
      685
                        NIGHT
           9/09
                 URBAN
143.
                                                                                                BRIGHT WHITE LIGHT NE, E, ERRATIC
                                                                                 NO
                                                         ELINT
                  (FOR) NIGHT
                                         MILITARY
144.
                                                                            G/V N/R 1 N/R
                                                                                                LIKE STAR
                                                                                                                   NORTH
145. 707
           9/20-21 URBAN NIGHT 1 A F
                                         HOUSEWIFE
                                                         PHONE
           9/21 URBAN NIGHT 1 A M
                                                                         3 G/V BX 1 25 MIN
                                                                                                LIKE STAR
                                                         200-2
                                         BUSINESSMAN
      709
                                                                                 NO 1 15 MIN ROUND, GREEN, RED, BLUE N, STRAIGHT
                                                                         1 G/V
                 USAFB NIGHT 2 A M
                                                         200-2 NO
                                         MILITARY
     718
           9/24
147.
                                                                                                                    ENE, E, WNW, STRAIGHT(SUDDEN DISAPP)
                                                                         G/V
                                                                                 NO 3 FEW MIN SMALL DOTS
                                                         LETTER LETTER
     730 9/27
                 AFRICA NIGHT
148.
                                                      2 LETTER/200-2 NO 2 G/V
                                                                                                                   NNE
                                                                                 NO 1 5 MIN
                                                                                                TWINKLING STAR
149. 738 10/01
                 URBAN NIGHT 2 Y M
                                         STUDENTS
                                                                                                                    SE, STRAIGHT
                                                                                                ROUND, TINTED BLUE
                URBAN NIGHT 1 A M
                                                         200-2 NONE
                                                                         3 G/V NO 1 1 MIN
     744 10/02
150.
                                                                         2 G/V NO 1 N/R
                       NIGHT 2 A B
                                                         LETTER LETTER
                                                                                                RED NARROW
     749 10/04
                 URBAN
151.
                                                                                                                   045° STRAIGHT
                                                                                                SPHERICAL PINK
                                                                         4 G/V NO 1 1 MIN
152. 862 12/01 URBAN NIGHT 3 A M
                                                         200-2
                                                                NO
                                         MILITARY
                                                                         4 G/V NO 1 4 MIN
                                                                                                                   SE, STRAIGHT
                                                                                                LIKE STAR
                                                         200-2 NO
                 RURAL NIGHT 1 A M
153. 875 12/11
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IN ADDITION TO THE ABOVE THERE WERE THIRTY-THREE OBJECTS EVALUATED AS SATELLITES ECHO I AND ECHO II IN THE MIDWEST FLAP FOLDER (ELLINGTON AFB)
THERE WERE THIRTEEN OBJECTS EVALUATED AS SATELLITES ON THE BASIS OF REPORTED CHARACTERISTICS INCLUDED IN THIS FOLDER.

Star Catalog 60 Garden Street Cambridge Massachusetts 02138

May 22, 1965

Dr. J. Allen Hynek Dearborn Observatory Evanston, Illinois

Dear Dr. Hynek:

The information which you requested regarding satellites with visual magnitudes of 3.0 or brighter is given below. All are orbiting as of this date. Many of the satellites launched in 1965, however, have magnitudes estimated from only a few observations, and thus for those objects, the magnitudes are to be considered less reliable.

Tutowettonol	Mama	Snedeta	Maximum
International designation	Name	Spadats Number	Magnitude
designation		number	ragni ouuc
60 Epsilon 3	Fragment Sputnik 4	36	+3
60 Zeta 1	Midas 2	43	+3
60 Iota 1	Echo 1	49	+0
60 Nu2	Rocket Courier 1B	59	+3
61 Alpha 1	Samos 2	70	+3
62 Omicron 1	Ariel	285	+2
62 Beta-Alpha 2	Rocket Alouette	426	+3
62 Beta-Kappa	None	444	+1
62 Beta-Tau 6	Debris Injun 3	520	+3
63003A	None	527	+2
63-27A	None	613	+2
63030A	Dual Tetrahedron	622	+3
63042B	None	682	+3
63047A	Centaur 2	694	+0
63049A	Rocket of unnamed	703	+3
64004A	Echo 2	740	-2
64004B	Debris of Echo 2	741	+0
64005A	Saturn 5	744	-1
64030A	Starflash	811	+2
64050B	Rocket Cosmos 42	866	+1
64053A	Cosmos 44	876	+1
64074A	S55C	924	+2
64076A	AD-1B	931	+3
64080В	Rocket Cosmos 51	948	+2
64084A	San Marco	957	+2
65004A	Tiros 9	978	-1.5
65006B	Rocket Cosmos 53	984	+2
65009A	Pegasus A	1085	+0
65009B	Command Mod.	1088	+1
65011D	Debris Cosmos 56	1092	+3
65014A	Cosmos 58	1097	+2
65016C	Grav.Grad.3	1292	+3
65027A	Snapshot	1314	+3
65027C	Fragment EGRS 4	1316	+3

		SAT	ELLITE	64)		196		3			EQUAT	OR .	SATE	LLITE		FER D	THEN LAT		A NURTH-	TOUT.	
S-N	DR:			SOUTH-		THER LAT	IXUEES:	NOATE-	SDL TH		S-N TIME	LONG.	LAT.	11 85	SOUTH-R	HT.		TIME	LOVE.	H1.	SCAR.
TIME	LONG.	LAT.	CORR.	COAR.		BEAR.	FIME CORR.	CORR.			turi	(6)		CERR.	CORR.	1111	(N-E)	CUAR.	0033.	1213	(Z=E)
				DECEMBE											DECEMBE	16,	1965				
1 21.2	265.20	81.5	27.5	-83.13	756	95.24		-62.10	256	50.00	0 52.5		81.5	27.4	-83.12		90.31		-61.12 -147.56	746	155.50
3 9.3	292.38	70.3 50.3	21.9	-18.69	761 758	11.0.		-147.53		155.60		319.61	50.0	21.8	-18.67		11.0	39.3	-158.9.	725	1:5.0
6 45.6	346.72	40.0	12-3	-4.17	754	6.7	42.5	-1+2.14		171.5.	6 16.9		30.0	9.2	-2.61	745	6.7		-162.17	701	171.6*
H 33.7	41.06	20.7	6.1	-2.63	749	5.6*	48.6	-164.65	655	174.30	9 53.2	41.12	20.0	6.1	-1.53	741	5.64		-164.72 -166.32	684	174.40
12 10.0	95.40	-20.1	-6.1	1.59	731	5.7.		164.94	675	175.1.	11 41.3	68.30 95.47	-20.0	-6.1	1.59	723	5.70	-47.7	164.91	£75	174.3*
15 46.3	122.58	-30.3	-9.1	2.65	713	6.7.		162.37		171.60	#1054 #500 VO.673 http://doi.org/10.100/	149.81	-30.C	-12.2	4.13	719	8.4.	-41.7	162.14	175	171.6*
19 22.6	176.92	-50.0	-15.2	6.41	723 693	11.0.	-38.£	147.71		169.6.	18 53.9 20 42.0		-50.0	-15.2	18.75	711	24.44	-38.7	147.66	£81	155.6*
21 14.7	231.26	-73.0	-21.5	13.77	685	90.00	-26.5	F2.22		50.00	22 30.1		-81.5 SHADCH	-27.3	13.21 LAT.				41.9	651	50.64
		SHADOW	ENTA	LAT.	14.0	18.11	LAI.	32.5					SHADER	- Sec. 10 10 10 10 10 10 10 10 10 10 10 10 10	DECEMBE			1121116			
				DECEMB	ER 13.	1965								-				77.4	-62.12	744	55.00
0 47.0	258.43	81.5	27.4	-33.11		90.0.	27.4	-61-11	154	52.30	0 18.3	258.49	81.5 70.0	27.4	-83.12	749	24.4	32.5	-147.5€	7.14	155.5*
2 35.1	285.60	70.0	21.9	-18.58	758	24.44	22.0	-147.54	74.1	155.6*	3 54.5 5 42.7	312.83	40.0	15.4	-6.37 -4.11	748	8.2		-159.90 -162.1F		171.6*
	312.77	40.0	12.3	-6.36 -4.13	756 753			-159.87	72¢	171.6	7 30.8	7.17	30.0	9.2	-2.63 -1.58	743	5.0		-163.66	702	174.30
7 59.5	34.29	30.0	9.2	-2.63 -1.58	748	5.6.		-163.63 -164.70	107 69E	174.3*	9 18.9	61.51	20.0	6.1	3.	731	4.9.	54.4	-166.34 164.9E	£84	175.1*
11 35.8	61.46	-20.5	-6.1	0.	732 720			-166.30		175.1.	12 55.2	88.68	-20.0 -30.0	-6.1	2.65	723 72J		-44.7	183.82	£75	173.3*
15 12.1	115.80	-30.0	-9.1	2.65	715	6.7*	-44.6	163.86	674	173.3.		143.02	-40.0 -50.0	-12.2	6.40	716		-41.7 -38.7	161.24	E#3	169.0
48.4	170.14	-49.0	-12.2	6.41	716	11.50	-41.6 -38.6	165.07	675	165.50	20 7.8	197.36	-70.0 -81.5	-21.6	18.75	765 599		-12.5			155.6*
20 36.5		-70.0	-21.5	83.23	696			147.7¢ 83.23	£ 81		21 55.9 23 44.0				LAT.			T LAT.	44.1		
		SHADEN	ENTRY	LAT.	35.9	EXII	LAT.	24.7					SHADEW	ENIN				7 5 5 5 6			
		SHADEW	ENTRY	DECEMBI			LAI.	34.7							DECEMBE	ER 18,	1965		-67.13	761	90.00
	251.66	81.5	27.4	-83.11	EH 14.	1965 90.0*	27.4	-83-11	751	50.2*		278.87 306.04	81.5 70.0	27.3	-93.13 -18.70	141 745	1965 90.1* 24.4*	27.3	-F3.13	737	155.6*
2 G.9 3 49.1	278.83	81.5 70.0 53.0	27.4 21.8 15.4	-83.11 -18.68 -6.36	751 756 754	90.0. 24.4. 11.0.	27.4 33.0 35.4	-83.11 -147.54 -159.88	741 723	169.6*	3 20.3 5 8.4	306.04	81.5 70.0 50.0	27.3 21.8 15.4	-83.13	FR 18,	1965 90.1* 24.4* 11.1*	27.3 32.9 19.2 42.3	-147.57 -155.91 -167.19	737 717 105	155.6* 165.6* 171.6*
2 0.9 3 49.1 5 37.2 7 25.3	278.83 306.00 333.17 0.34	81.5 70.0 53.0 40.0 30.0	27.4 21.8 15.4 12.3 9.2	-83.11 -18.68 -6.36 -4.13 -2.63	751 756 754 751 747	90.0. 24.4. 11.0. 8.3. 6.7.	27.4 33.0 35.4 42.4 45.5	-83.11 -147.54 -159.88 -162.15 -163.64	741 723 714 705	155.6* 165.5* 171.6* 173.3*	3 20.3 5 8.4 6 56.6 8 44.7	306.04 333.22 0.39 27.56	81.5 70.0 50.0 40.0	27.3 21.8 15.4 12.2 9.2	-83.13 -18.70 -6.37 -4.11 -2.64	741 746 746 744 741	1965 90.1* 24.4* 11.7* 8.3* 6.7*	27.3 12.9 19.2 42.1	-147.57 -155.91	737 717 105 701 494	155.6* 165.6* 171.6* 173.1* 174.1*
2 G.9 3 49.1 5 37.2	278.83 306.00 333.17	81.5 70.0 53.0 40.0	27.4 21.8 15.4 12.3	-83.11 -18.68 -6.36 -4.13	751 756 754 751	90.0. 24.4. 11.0. 8.3.	27.4 33.0 35.4 42.4 45.5 48.6	-83.11 -147.54 -159.88 -162.15	741 723 714 705 697	155.6* 169.5* 171.6*	3 20.3 5 8.4 6 56.6 8 44.7 10 32.8 12 21.0	306.04 333.22 0.39 27.56 54.73 81.90	81.5 70.0 50.0 40.0 10.0 20.0	27.3 21.8 15.4 12.2 9.2 6.1	0ECEMBS -83.13 -18.70 -6.37 -4.11 -2.64 -1.58	741 746 746 744 741 738 731	1965 90.2* 24.4* 11.7* 8.7* 6.7* 5.6* 4.9*	27.3 32.9 19.2 42.3 45. 48.4	-147.57 -155.91 -167.15 -167.15 -163.67 -164.74	737 717 105 701 694 684	155.6* 165.6* 171.6* 173.3*
2 G.9 3 49.1 5 37.2 7 25.3 9 13.5 11 1.6 12 49.8	278.83 306.00 333.17 0.34 27.51 54.68 81.85	81.5 70.0 53.0 40.0 30.0 20.0 3.0	27.4 21.8 15.4 12.3 9.2 6.1 5.	-83.11 -18.68 -6.36 -4.13 -2.63 -1.58 3.	751 756 754 751 747 742 732 721	90.C. 24.4. 11.C. 8.3. 6.7. 5.6. 4.9. 5.7.	27.4 33.0 35.4 42.4 45.5 48.5 54.5	-83.11 -147.54 -159.88 -162.15 -163.64 -164.70 -166.31 164.92	741 723 714 705 697 682 676	155.6* 169.2* 171.6* 173.3* 176.3* 175.1* 174.3*	3 20.3 5 8.4 6 56.6 8 44.7 10 32.8 12 21.0 14 5.1 15 57.2	306.04 333.22 0.39 27.56 54.73 81.90 109.07 136.24	81.5 70.0 50.0 40.0 30.0 20.0 6. -20.0	27.3 21.8 15.4 12.2 9.2 6.1 2. -6.1	9ECEMPS -43.13 -18.70 -6.37 -4.11 -2.64 -1.58 0. 1.59 2.65	741 746 746 746 741 738 731 724 721	1965 90.7* 24.4* 11.7* 8.7* 6.7* 5.6* 4.9* 6.7*	27.3 12.9 19.2 42.3 45. 46.4 -47.4	-147.57 -155.91 ! -167.19 ! -163.67 ! -164.74 ! -166.35 ! 164.85	737 717 105 701 694 684 681	155.6* 165.6* 171.6* 173.3* 174.4* 175.1* 174.3* 173.5*
2 G.9 3 49.1 5 37.2 7 25.3 9 13.5 11 1.6 12 49.8 14 37.9 16 26.0	278.83 306.00 333.17 0.34 27.51 54.68 81.85 109.03 136.20	81.5 70.0 50.0 40.0 30.0 20.0 0. -20.0 -30.0 -40.0	27.4 21.8 15.4 12.3 9.2 6.1 5. -6.1 -9.1	-83.11 -18.68 -6.36 -4.13 -2.63 -1.58 3. 1.59 2.65 4.13	751 756 754 751 747 742 732 732 716 712	90.C. 24.4. 11.C. 8.3. 6.7. 5.6. 4.9. 5.7. 6.7. 8.4.	27.4 33.0 39.4 42.4 45.5 48.5 54.5 -47.6 -44.6	-83.11 -147.54 -159.88 -162.15 -163.64 -164.70 -164.70 -164.92 163.85 162.35	741 723 714 765 697 663 676 675	155.6* 165.5* 171.6* 173.3* 174.3* 175.1* 174.3* 173.3*	3 20.3 5 8.4 6 56.6 8 44.7 10 32.8 12 21.0 14 5.1 15 57.2 17 45.4	306.04 333.22 0.39 27.56 54.73 81.90 109.07 136.24 163.41	81.5 70.0 50.0 40.0 10.0 20.0	27.3 21.9 15.4 12.2 9.2 6.1 2.	-83.13 -18.70 -6.37 -4.11 -2.64 -1.58 0.	741 746 746 744 741 738 731 724 721 717	1965 90.2* 24.4* 11.7* 8.3* 6.7* 5.6* 4.9* 5.7* 6.7* 11.2*	27.3 32.9 49.2 45. 45. 46.1 -41.1 -41.1	-147.57 -155.91 -162.19 -163.67 -164.74 -166.35 164.85 163.81 162.32	737 717 105 701 694 684 686 681 682	155.6* 165.6* 171.6* 173.3* 174.4* 175.1* 174.3* 171.6* 165.2*
2 G.9 3 49.1 5 37.2 7 25.3 9 13.5 11 1.6 12 49.8 14 37.9 16 26.0 18 14.2 20 2.3	278.83 306.00 333.17 0.34 27.51 54.68 81.85 109.03 136.20 163.37 190.54	81.5 70.0 53.0 40.0 30.0 20.0 -23.0 -30.0 -40.0 -50.0	27.4 21.8 15.4 12.3 9.2 6.1 -6.1 -9.1 -12.2 -15.2 -21.5	-83.11 -18.68 -6.36 -4.13 -2.63 -1.58 3. 1.59 2.65 4.13 6.43 18.76	751 756 754 751 747 747 742 732 721 716 712 707 698	1965 90.0 24.4 11.0 8.3 6.7 5.6 4.9 5.7 6.7 8.4 11.3 24.4	27.4 33.0 35.4 42.4 45.5 48.6 54.5 -47.6 -44.6 -38.6 -32.4	-83.11 -147.54 -159.88 -162.15 -163.64 -164.70 -166.31 164.92 163.85 160.06 147.69	741 723 714 765 697 663 676 675 677 683	155.6* 169.5* 171.6* 173.3* 174.3* 175.1* 174.3* 171.6* 169.5* 155.6*	3 20.3 5 8.4 6 56.6 8 44.7 10 32.8 12 21.0 14 5.1 15 57.2 17 45.4 19 33.5 21 21.6	306.04 333.22 0.39 27.56 54.73 81.90 109.07 136.24 163.41 190.58 217.75	81.5 70.0 50.0 40.0 30.0 20.0 6. -20.0 -30.1 -40.0 -50.0	27.3 21.8 15.4 12.2 9.2 6.1 2. -6.1 -7.1 -12.2 -19.2 -21.0	9ECEMPS -43.13 -18.70 -6.37 -4.11 -2.64 -1.58 3. 1.59 2.65 4.13 6.43 18.75	741 746 746 746 741 738 731 724 721 717 714	1965 90.1* 24.4* 11.7* 8.7* 6.7* 5.6* 4.9* 5.7* 6.7* 11.1* 24.4*	27.3 12.9 19.2 47.1 45. 46. -47. -44. -41. -38. -12.	-147.57 -155.91 -167.19 -163.67 -164.74 -166.35 164.85 163.81 162.32	737 717 105 701 494 684 681 682 681	155.6* 165.6* 171.6* 173.1* 174.1* 175.1* 174.3* 171.6* 165.2* 155.6*
2 G.9 3 49.1 5 37.2 7 25.3 9 13.5 11 1.6 12 49.8 14 37.9 16 26.0 18 14.2	278.83 306.00 333.17 0.34 27.51 54.68 81.85 109.03 136.20 163.37 190.54 217.71	81.5 70.0 53.0 40.0 30.0 20.0 -23.0 -30.0 -40.0 -50.0	27.4 21.8 15.4 12.3 9.2 6.1 -6.1 -9.1 -12.2 -15.2	-83.11 -18.68 -6.36 -4.13 -2.63 -1.58 3. 1.59 2.65 4.13 6.43	751 756 754 751 747 742 732 721 716 712 707	1965 90.0 24.4 11.0 8.3 6.7 5.6 4.9 5.7 6.7 8.4 11.3 24.4	27.4 33.0 39.4 42.4 45.5 48.5 54.5 -47.6 -41.6 -36.6	-83.11 -147.54 -159.88 -162.15 -163.64 -164.70 -166.31 164.92 163.85 160.06 147.69	741 723 714 765 697 663 676 675 675	155.6* 165.5* 171.6* 173.3* 174.3* 175.1* 174.3* 171.6* 165.5*	3 20.3 5 8.4 6 56.6 8 44.7 10 32.8 12 21.0 14 9.1 15 57.2 17 45.4 19 33.5	306.04 333.22 0.39 27.56 54.73 81.90 109.07 136.24 163.41 190.58 217.75	81.5 70.0 50.0 40.0 10.0 20.0 -20.0 -30.0 -40.0	27.3 21.8 15.4 12.2 9.2 6.1 -6.1 -7.1 -12.2 -13.2 -21.0	9ECEMPS -43.13 -18.70 -6.37 -4.11 -2.64 -1.58 3. 1.59 2.65 4.13 6.43 18.75 43.21	741 746 746 746 741 738 731 724 721 717 714	1965 90.1* 24.4* 11.7* 8.7* 6.7* 5.6* 4.9* 5.7* 6.7* 8.4* 11.1* 24.4* 90.0*	27.3 12.9 19.2 47.1 45. 46. -47. -44. -41. -38. -12.	-147.57 -155.91 -167.19 -163.67 -164.74 -166.35 164.85 163.81 167.32 165.44	737 717 105 701 494 684 681 682 681	155.6* 165.6* 171.6* 173.1* 174.1* 175.1* 174.3* 171.6* 165.2* 155.6*
2 G.9 3 49.1 5 37.2 7 25.3 9 13.5 11 1.6 12 49.8 14 37.9 16 26.0 18 14.2 20 2.3 21 50.4	278.83 306.00 333.17 0.34 27.51 54.68 81.85 109.03 136.20 163.37 190.54 217.71	81.5 70.0 53.0 40.0 30.0 20.0 -23.0 -30.0 -40.0 -50.0	27.4 21.8 15.4 12.3 9.2 6.1 -6.1 -9.1 -12.2 -15.2 -21.5 -27.0	-83.11 -18.68 -6.36 -4.13 -2.63 -1.58 3. 1.59 2.65 4.13 6.43 18.76	751 756 754 751 747 742 732 721 716 712 707 698 690	1965 90.C* 24.4* 11.C* 8.3* 6.7* 5.6* 4.9* 5.7* 6.7* 8.4* 11.3* 24.6* 90.C*	27.4 33.0 35.4 42.4 45.5 48.6 54.5 -47.6 -44.6 -38.6 -32.4	-83.11 -147.54 -159.88 -162.15 -163.64 -164.70 -166.31 164.92 163.85 162.35 160.06 147.69 83.22	741 723 714 765 697 663 676 675 677 683	155.6* 169.5* 171.6* 173.3* 174.3* 175.1* 174.3* 171.6* 169.5* 155.6*	3 20.3 5 8.4 6 56.6 8 44.7 10 32.8 12 21.0 14 5.1 15 57.2 17 45.4 19 33.5 21 21.6	306.04 333.22 0.39 27.56 54.73 81.90 109.07 136.24 163.41 190.58 217.75	81.5 70.0 50.0 40.0 10.0 20.0 -20.0 -30.3 -40.0 -50.0 -70.0 -81.5	27.3 21.8 15.4 12.2 9.2 6.1 -6.1 -7.1 -12.2 -13.2 -21.0	9ECEMPS -43.13 -18.70 -6.37 -4.11 -2.64 -1.58 3. 1.59 2.65 4.13 6.43 18.75 43.21	741 746 746 746 741 738 731 724 721 717 714 707	1965 90.1* 24.4* 11.7* 8.7* 6.7* 5.6* 4.9* 5.7* 6.7* 8.4* 11.1* 24.4* 90.0*	27.3 12.9 19.2 42.3 45. 46. -47. -41. -12. -27.	-147.57 -155.91 -167.19 -163.67 -164.75 -166.35 164.85 163.81 162.32 165.44 5 147.67	737 717 105 701 494 684 681 682 681	155.6* 165.6* 171.6* 173.1* 174.1* 175.1* 174.3* 171.6* 165.2* 155.6*
2 G.9 3 49.1 5 37.2 7 25.3 9 13.5 11 1.6 12 49.8 14 37.9 16 26.0 18 14.2 20 2.3 21 50.4	278.83 306.00 333.17 0.34 27.51 54.68 81.85 109.03 136.20 163.37 190.54 217.71	81.5 70.0 53.0 40.0 30.0 20.0 -23.0 -30.0 -40.0 -50.0 -70.0 -81.5	27.4 21.8 15.4 12.3 9.2 6.1 -6.1 -9.1 -12.2 -15.2 -21.5 -27.0	-83.11 -18.68 -6.36 -4.13 -2.63 -1.58 3. 1.59 2.65 4.13 6.43 18.76 83.22	751 756 754 751 747 747 742 732 721 716 712 707 698 690	1965 90.C. 24.4. 11.C. 8.3. 6.7. 5.6. 4.9. 5.7. 6.7. 8.4. 11.3. 24.6. 90.C.	27.4 33.0 39.4 42.4 45.5 48.5 54.5 -47.6 -41.6 -36.6 -27.0	-83.11 -147.54 -159.88 -162.15 -163.64 -164.70 -166.31 164.92 163.85 162.35 160.06 147.69 83.22	741 723 714 765 697 663 676 675 677 683	155.6* 169.5* 171.6* 173.3* 174.3* 175.1* 174.3* 171.6* 169.5* 155.6*	3 20.3 5 8.4 6 56.6 8 44.7 10 32.8 12 21.0 14 5.1 15 57.2 17 45.4 19 33.5 21 21.6	306.04 333.22 0.39 27.56 54.73 81.90 109.07 136.24 163.41 190.58 217.75	81.5 70.0 50.0 40.0 10.0 20.0 -20.0 -30.3 -40.0 -50.0 -70.0 -81.5	27.3 21.8 15.4 12.2 9.2 6.1 -6.1 -7.1 -12.2 -13.2 -21.0	9ECEMPS -43.13 -18.70 -6.37 -4.11 -2.64 -1.58 3. 1.59 2.65 4.13 6.43 18.75 43.21	741 746 746 746 741 738 731 724 721 717 714	1965 90.1* 24.4* 11.7* 8.7* 6.7* 5.6* 4.9* 5.7* 6.7* 8.4* 11.1* 24.4* 90.0*	27.3 12.9 19.2 42.3 45. 46. -47. -41. -12. -27.	-147.57 -155.91 -167.19 -163.67 -164.75 -166.35 164.85 163.81 162.32 165.44 5 147.67	737 717 105 701 494 684 681 682 681	155.6* 165.6* 171.6* 173.1* 174.1* 175.1* 174.3* 171.6* 165.2* 155.6*
2 G.9 3 49.1 5 37.2 7 25.3 9 13.5 11 1.6 12 49.8 14 37.9 16 26.0 18 14.2 20 2.3 21 50.4 23 38.6	278.83 306.00 333.17 0.34 27.51 54.68 81.85 109.03 136.20 163.37 190.54 217.71 244.88	81.5 70.0 53.0 40.0 30.0 20.0 -23.0 -30.0 -40.0 -50.0 -70.0 -81.5 SHADOW	27.4 21.8 15.4 12.3 9.2 6.1 -6.1 -9.1 -12.2 -15.2 -21.5 -27.0 ENTRY	-83.11 -18.68 -6.36 -4.13 -2.63 -1.58 3. 1.59 2.65 4.13 6.43 18.76 83.22 LAT. DECEPER	751 756 754 751 747 747 747 747 716 712 707 698 690 37.9	1965 90.C. 24.4. 11.C. 8.3. 6.7. 5.6. 4.9. 5.7. 6.7. 8.4. 11.3. 24.4. 90.C. EXIII	27.4 33.0 35.4 42.4 45.5 48.6 54.5 -47.6 -44.6 -38.6 -27.0 LAT.	-83.11 -147.54 -159.88 -162.15 -163.64 -164.70 -164.70 -164.92 163.85 160.06 147.69 83.22 36.7	741 723 714 765 697 683 675 675 675 675 675	155.6* 165.5* 171.6* 173.3* 174.3* 175.1* 174.3* 171.6* 165.6* 56.5*	3 20.3 5 8.4 6 56.6 8 44.7 10 32.8 12 21.0 14 9.1 15 57.2 17 45.4 19 33.5 21 21.6 23 9.8	306.04 333.22 0.39 27.56 54.73 81.90 109.07 136.24 163.41 190.58 217.75	81.5 70.0 50.0 40.0 10.0 20.0 -20.0 -30.1 -40.0 -50.0 -81.5 SHADOW	27.3 21.8 15.4 12.2 9.2 6.1 -6.1 -7.1 -12.2 -19.2 -21.0 -27.0 ENTR	9ECEMBS -83.13 -18.70 -6.37 -4.11 -2.64 -1.58 3. 1.59 2.65 4.13 6.43 18.75 93.21 Y LAT.	741 746 746 746 741 736 731 724 721 717 714 737 700	1965 90.1* 24.4* 11.7* 8.7* 6.7* 6.7* 6.7* 11.2* 24.4* 90.6* [X]	27.3 12.9 19.2 42.3 45. 46. -47. -41. -12. -27.	-147.57 -155.91 -167.19 -163.67 -164.75 -166.35 164.85 163.81 162.32 165.44 5 147.67	737 717 105 701 494 684 681 682 681	155.6* 165.6* 171.6* 173.1* 174.1* 175.1* 174.3* 171.6* 165.2* 155.6*
2 G.9 3 49.1 5 37.2 7 25.3 9 13.5 11 1.6 12 49.8 14 37.9 16 26.0 18 14.2 20 2.3 21 50.4 23 38.6	278.83 306.00 333.17 0.34 27.51 54.68 81.85 109.03 136.20 163.37 190.54 217.71 244.88	81.5 70.0 53.0 40.0 30.0 20.0 -20.0 -30.0 -40.0 -50.0 -70.0 -81.5 SHADOW	27.4 21.8 15.4 12.3 9.2 6.1 -6.1 -9.1 -12.2 -15.2 -21.5 -27.0 ENTRY	-83.11 -18.68 -6.36 -4.13 -2.63 -1.58 3. 1.59 2.65 4.13 6.43 18.76 83.22 LAT. DECEMBE -83.11 -18.69 -6.37	751 756 754 751 747 742 732 721 716 712 707 698 690 37.9 ER 15. 748 753 752	1965 90.C. 24.4. 11.C. 8.3. 6.7. 5.6. 4.9. 5.7. 6.7. 8.4. 11.3. 24.4. 90.C. EXII	27.4 33.5 35.4 42.4 45.5 48.5 54.5 -47.6 -41.6 -38.6 -27.5 LAT.	-83.11 -147.54 -159.88 -162.15 -163.64 -164.70 -166.31 164.92 163.85 160.06 147.65 83.22 36.7	741 723 714 705 697 683 675 675 675 675 675 748 736 721	155.6* 165.5* 171.6* 173.3* 176.3* 175.1* 174.3* 171.6* 165.6* 56.5* 56.5*	3 20.3 5 8.4 6 56.6 8 44.7 10 32.8 12 21.0 14 9.1 15 57.2 17 45.4 19 33.5 21 21.6 23 9.8	306.04 333.22 0.39 27.56 54.73 81.90 109.07 136.24 163.41 190.58 217.75 244.92	81.5 70.0 50.0 40.0 30.0 20.0 6. -20.0 -30.3 -40.6 -50.0 -70.0 -81.5 SHADOW	27.3 21.8 15.4 12.2 9.2 6.1 6.1 -7.1 -12.2 -21.0 -27.0 ENTR	9ECEMPS -43.13 -18.70 -6.37 -4.11 -2.64 -1.58 3. 1.59 2.65 4.13 6.43 18.75 43.21 Y LAT.	741 746 746 746 741 738 731 721 717 714 737 714	1965 90.1* 24.4* 11.1* 6.7* 5.6* 4.9* 5.7* 6.7* H.4* 11.1* 24.4* 90.0* [X1]	27.3 12.9 19.2 45. 45. 46. -47. -41. -12. -27. 1 LAT.	-147.57 -155.91 -167.19 -163.67 -164.75 -166.35 164.85 163.81 162.32 165.44 5 147.67	737 717 105 701 494 684 681 682 681	155.6* 165.6* 171.6* 173.1* 174.1* 175.1* 174.3* 171.6* 165.2* 155.6*
2 G.9 3 49.1 5 37.2 7 25.3 9 13.5 11 1.6 12 49.8 14 37.9 16 26.0 18 14.2 20 2.3 21 50.4 23 38.6	278.83 306.00 333.17 0.34 27.51 54.68 81.85 109.03 136.20 163.37 190.54 217.71 244.88 272.05 299.22 326.39 353.56 20.73	81.5 70.0 53.0 40.0 30.0 -20.0 -30.0 -40.0 -50.0 -70.0 -81.5 SHADOW	27.4 21.8 15.4 12.3 9.2 6.1 -6.1 -9.1 -12.2 -15.2 -21.5 -27.0 ENTRY	DECEMBI -83.11 -18.68 -6.36 -4.13 -2.63 -1.58 3. 1.59 2.65 4.13 6.43 18.76 83.22 LAT. DECEMBI -83.11 -18.69 -6.37 -4.10 -2.63	751 756 754 751 747 747 747 747 712 732 721 716 712 707 698 690 37.9 ER 15. 748 753 752 750 746	1965 90.C. 24.4. 11.C. 8.3. 6.7. 5.6. 4.9. 5.7. 6.7. 8.4. 11.3. 24.4. 90.C. EX [7] 1965 90.C. 24.4. 11.C. 8.3. 6.7.	27.4 33.0 35.4 42.4 45.5 48.6 54.6 -47.6 -41.6 -32.4 -27.0 LAT.	-83.11 -147.54 -169.88 -162.15 -163.64 -164.70 -164.70 -164.92 163.85 160.06 147.65 83.22 36.7 -83.11 -147.55 -159.85 -162.16 -162.65	741 723 714 765 697 663 675 675 675 675 675 748 736 721 713 704	155.6. 165.5. 171.6. 173.3. 174.3. 175.1. 174.3. 171.6. 165.6. 56.5. 56.5.	3 20.3 5 8.4 6 56.6 8 44.7 10 32.8 12 21.0 14 9.1 15 57.2 17 45.4 19 33.5 21 21.6 23 9.8 MODIFIE	306.04 333.22 0.39 27.56 54.73 81.90 109.07 136.24 163.41 190.58 217.75 244.92 D ORBITAL	81.5 70.0 50.0 40.0 30.0 20.0 6. -20.0 -30.1 -40.0 -50.0 -70.0 -81.5 SHADOW	27.3 21.8 15.4 12.2 9.2 6.1 -6.1 -7.1 -12.2 -13.2 -21.0 -27.0 ENTR	9ECEMPS -43.13 -18.70 -6.37 -4.11 -2.64 -1.58 3. 1.59 2.65 4.13 6.43 18.75 93.21 Y LAT.	741 746 746 746 741 736 731 724 721 717 714 737 740 49.0	1965 90.1* 24.4* 11.1* 6.7* 5.6* 4.9* 5.7* 6.7* H.4* 11.1* 24.4* 90.0* [X1]	27.3 12.9 19.2 45. 45. 46. -47. -41. -12. -27. 1 LAT.	-147.57 -155.91 -167.19 -163.67 -164.75 -166.35 164.85 163.81 162.32 165.44 5 147.67	737 717 105 701 494 684 681 682 681	155.6* 165.6* 171.6* 173.1* 174.1* 175.1* 174.3* 171.6* 165.2* 155.6*
2 G.9 3 49.1 5 37.2 7 25.3 9 13.5 11 1.6 12 49.8 14 37.9 16 26.0 18 14.2 20 2.3 21 50.4 23 38.6	278.83 306.00 333.17 0.34 27.51 54.68 81.85 109.03 136.20 163.37 190.54 217.71 244.88	81.5 70.0 53.0 40.0 30.0 -20.0 -30.0 -40.0 -50.0 -70.0 -81.5 SHADOM	27.4 21.8 15.4 12.3 9.2 6.1 -6.1 -9.1 -12.2 -15.2 -21.5 -27.0 ENTRY	-83.11 -18.68 -6.36 -4.13 -2.63 -1.58 3.159 2.65 4.13 6.43 18.76 83.22 LAT. DECEPER	751 756 754 751 747 747 742 732 721 716 712 707 698 690 37.9 ER 15. 748 753 752 750	1965 90.C. 24.4. 11.C. 8.3. 6.7. 5.6. 4.9. 5.7. 6.7. 8.4. 11.3. 24.4. 90.C. EX [7] 1965 90.C. 24.4. 11.C. 8.3. 6.7.	27.4 33.0 39.4 45.5 48.5 54.5 -47.6 -41.6 -32.4 -27.0 LAT.	-83.11 -147.54 -159.88 -162.15 -163.64 -164.70 -164.70 -164.70 -163.85 163.85	741 723 714 705 697 683 675 675 677 683 748 736 721 713 704 696	155.6. 165.5. 171.6. 173.3. 174.3. 175.1. 174.3. 175.6. 165.6. 56.5. 56.5. 155.6. 169.6. 171.6.	3 20.3 5 8.4 6 56.6 8 44.7 10 32.8 12 21.0 14 9.1 15 57.2 17 45.4 19 33.5 21 21.6 23 9.8 MODIFIES REFERENTINGLINA A SCENDIS PRIME S	306.04 333.22 0.39 27.56 54.73 81.90 109.07 136.24 163.41 190.58 217.75 244.92 D ORBITAL TION 81- NG NODE 1	81.5 70.0 50.0 40.0 10.0 20.0 6. -20.0 -30.3 -40.6 -50.0 -70.0 -81.5 SHADOW	27.3 21.8 15.4 12.2 4.2 6.1 -6.1 -7.1 -12.2 -21.6 -27.0 ENTR	9ECEMBS -83.13 -18.70 -6.37 -4.11 -2.64 -1.58 0. 1.59 2.65 4.13 6.43 18.75 93.21 Y LAT.	741 746 746 746 741 738 731 721 717 714 737 714 737 714	1965 90.1* 24.4* 11.1* 6.7* 5.6* 4.9* 5.7* 6.7* H.4* 11.1* 24.4* 90.0* [X1]	27.3 12.9 19.2 45. 45. 46. -47. -41. -12. -27. 1 LAT.	-147.57 -155.91 -167.19 -163.67 -164.75 -166.35 164.85 163.81 162.32 165.44 5 147.67	737 717 105 701 494 684 681 682 681	155.6* 165.6* 171.6* 173.1* 174.1* 175.1* 174.3* 171.6* 165.2* 155.6*
2 G.9 3 49.1 5 37.2 7 25.3 9 13.5 11 1.6 12 49.8 14 37.9 16 26.0 18 14.2 20 2.3 21 50.4 23 38.6	278.83 306.00 333.17 0.34 27.51 54.68 81.85 109.03 136.20 163.37 190.54 217.71 244.88 272.05 299.22 326.39 353.56 20.73 47.91 75.08 102.25	81.5 70.0 53.0 40.0 30.0 20.0 -20.0 -30.0 -40.0 -50.0 -70.0 -81.5 SHADOW	27.4 21.8 15.4 12.3 9.2 6.1 -6.1 -7.1 -12.2 -21.5 -27.0 ENTRY	-83.11 -18.68 -6.36 -4.13 -2.63 -1.58 3.159 2.65 4.13 6.43 18.76 83.22 LAT. DECEMBE -83.11 -18.69 -6.37 -4.10 -2.63 -1.58	751 756 754 751 747 747 747 747 747 747 747 698 690 37.9 ER 15. 748 753 752 750 746 742 732 732	1965 90.C. 24.4. 11.C. 8.3. 6.7. 5.6. 4.9. 5.7. 6.7. 8.4. 11.C. 8.4. 11.C. 24.6. 90.C. EXIII	27.4 33.0 35.4 45.5 48.5 54.5 -47.6 -41.6 -36.6 -27.0 LAT. 27.4 33.0 39.2 42.4 45.4 45.4 45.4 45.4	-83.11 -147.54 -159.88 -162.15 -163.64 -164.70 -164.70 -164.92 163.85 160.06 147.69 83.22 26.7 -83.11 -147.55 -159.85 -162.16 -163.65 -164.71 -166.32 164.91	741 723 714 765 697 683 675 675 675 677 683 748 736 737 764 683 677	155.6. 171.6. 171.6. 173.3. 174.3. 175.1. 175.6. 165.6. 56.5. 56.5. 56.5. 171.6. 173.3. 171.6. 175.6. 175.6. 175.6. 175.6. 175.6. 175.6. 175.6. 175.6. 175.6.	3 20.3 5 8.4 6 56.6 8 44.7 10 32.8 12 21.0 14 5.1 15 57.2 17 45.4 19 33.5 21 21.6 23 9.8 MODIFIE REFEREN INCLINA ASCENDI PRIME S ARGUMEN RA	306.04 333.22 0.39 27.56 54.73 81.90 109.07 136.24 163.41 190.58 217.75 244.92 D ORBITAL TION 81. NG NODE 1 MEEP INTE T OF PERI TE OF CHE	81.5 70.0 50.0 40.0 30.0 20.0 6. -20.0 -30.1 -40.0 -50.0 -70.0 -81.5 SHADOW	27.3 21.8 15.4 12.2 9.2 6.1 -6.1 -7.1 -12.2 -21.0 -27.0 ENTR 57.23 DE DAY 40 DEG. 8725 DE	9ECEMPS -43.13 -18.70 -6.37 -4.11 -2.64 -1.58 3. 1.59 2.65 4.13 6.43 18.75 43.21 Y LAT. ARTH SAT 1 H 47 EG. WEST -7.24 P1	741 746 746 746 744 741 738 731 724 721 717 714 737 714 737 714 737 714 737 714	1965 90.1* 24.4* 11.7* 8.7* 6.7* 6.7* 11.2* 24.4* 90.6* [X]	27.3 12.9 19.2 45. 45. 46. -47. -41. -12. -27. 1 LAT.	-147.57 -155.91 -167.19 -163.67 -164.75 -166.35 164.85 163.81 162.32 165.44 5 147.67	737 717 105 701 494 684 681 682 681	155.6* 165.6* 171.6* 173.1* 174.1* 175.1* 174.3* 171.6* 165.2* 155.6*
2 G.9 3 49.1 5 37.2 7 25.3 9 13.5 11 1.6 12 49.8 14 37.9 16 26.0 18 14.2 20 2.3 21 50.4 23 38.6 1 26.7 3 14.9 5 3.0 6 51.1 8 39.3 10 27.4 12 15.5 14 3.7 15 51.8 17 46.0	278.83 306.00 333.17 0.34 27.51 54.68 81.85 109.03 136.20 163.37 190.54 217.71 244.88 272.05 299.22 326.39 353.56 20.73 47.91 75.08 102.25 129.42 156.59	81.5 70.0 53.0 40.0 30.0 20.0 -30.0 -40.0 -50.0 -70.0 -81.5 SHADOW 81.5 70.0 50.0 40.0 30.0 20.0 -20.0 -30.0	27.4 21.8 15.4 12.3 9.2 6.1 -6.1 -9.1 -12.2 -21.5 -27.0 ENTRY	-83.11 -18.68 -6.36 -4.13 -2.63 -1.58 3.11 -1.59 2.65 4.13 6.43 18.76 83.22 LAT. DECEPER -83.11 -18.69 -6.37 -4.10 -2.63 -1.58 0. 1.59 2.65 4.13	751 756 754 751 747 747 742 732 721 716 712 707 698 690 37.9 ER 15. 748 753 752 750 746 742 732 732 752 750 746 742 732 732 732 732 733 753 753 752 753 753 753 753 753 753 753 753 753 753	1965 90.C. 24.4. 11.0. 8.3. 6.7. 5.6. 4.9. 5.7. 6.7. 8.4. 11.3. 24.4. 90.C. EX [7] 1965 90.C. 24.4. 11.C. 8.3. 6.7. 5.6. 4.9. 5.7. 6.7. 8.4. 11.3. 24.4. 90.C. 24.4. 11.0. 8.3. 6.7. 8.3. 6.7. 8.3. 6.7. 8.4. 11.0. 8.3. 6.7. 8.4. 11.0. 8.3. 6.7. 8.4. 11.0. 8.3. 6.7. 8.4. 11.0. 8.3. 6.7. 8.4. 11.0. 8.3. 6.7. 8.4. 11.0. 8.3. 6.7. 8.4. 11.0. 8.3. 6.7. 8.4. 11.0. 8.3. 6.7. 8.4. 11.0. 8.3. 6.7. 8.4. 11.0. 8.3. 6.7. 8.4. 11.0. 8.3. 6.7. 8.4. 8.7. 8.4. 8.7. 8.4. 8.7. 8.4. 8.7. 8.4. 8.7. 8.7. 8.7. 8.8. 8.7. 8.8. 8.7. 8.8. 8.7. 8.8. 8.7. 8.8. 8.7. 8.8. 8.7. 8.8. 8.7. 8.8. 8.7. 8.8. 8.7. 8.8. 8.7. 8.8. 8.7. 8.8. 8.7. 8.8	27.4 33.5 35.4 42.4 45.5 47.6 -47.6 -41.6 -38.6 -27.5 LAT. 27.4 43.5 42.4 45.4 45.4 45.4 46.5 54.4 -47.7 -41.7	-83.11 -147.54 -159.88 -162.15 -163.64 -164.70 -164.70 -164.30 163.85 160.06 147.69 83.22 36.7 -83.11 -147.55 -159.89 -162.16 -164.71 -166.32 164.91 163.84 162.34	741 723 714 705 697 683 675 675 675 675 676 683 677 686 683 677 676 676	155.6. 165.5. 171.6. 173.3. 176.3. 175.1. 174.3. 171.6. 165.6. 56.5. 56.5. 173.3. 171.6. 173.3. 174.3. 174.3. 174.3. 174.3. 174.3. 174.3. 174.3.	3 20.3 5 8.4 6 56.6 8 44.7 10 32.8 12 21.0 14 9.1 15 57.2 17 45.4 19 33.5 21 21.6 23 9.8 MODIFIE REFERENTINCLINA ASCENDIT PRIME S ARGUMEN RA	306.04 333.22 0.39 27.56 54.73 81.90 109.07 136.24 163.41 190.58 217.75 244.92 D ORBITAL TION 81. NG NODE 1 WEEP INTE T OF PERI TE OF CHAR STIC PERI TE OF CHAR TE OF CHAR TE OF CHAR TE OF CHAR	81.5 70.0 50.0 40.0 30.0 20.0 6. -20.0 -30.3 -40.6 -50.0 -70.0 -81.5 SHADOW 1965 Y 12 47 DEG. 147 DEG. 147 DEG. 147 DEG. 147 DEG. 148 DEG. 149 DEG. 149 DEG. 140 DEG.	27.3 21.8 15.4 12.2 9.2 6.1 6.1 -7.1 -12.2 -21.0 -27.0 ENTR 57.23 DE DAY 40 DEG. 8725 DE DAY 40 DEG. 8725 DE DAY	9ECEMPS -83.13 -18.70 -6.37 -4.11 -2.64 -1.58 0. 1.59 2.65 4.13 6.43 18.75 93.21 Y LAT.	741 746 746 746 741 738 731 721 717 714 737 714 737 714 737 714 737 714 737 714	1965 90.1* 24.4* 11.7* 8.7* 6.7* 6.7* 11.2* 24.4* 90.6* [X]	27.3 12.9 19.2 45. 45. 46. -47. -41. -12. -27. 1 LAT.	-147.57 -155.91 -167.19 -163.67 -164.75 -166.35 164.85 163.81 162.32 165.44 5 147.67	737 717 105 701 494 684 681 682 681	155.6* 165.6* 171.6* 173.1* 174.1* 175.1* 174.3* 171.6* 165.2* 155.6*
2 G.9 3 49.1 5 37.2 7 25.3 9 13.5 11 1.6 12 49.8 14 37.9 16 26.0 18 14.2 20 2.3 21 50.4 23 38.6 1 26.7 3 14.9 5 3.0 6 51.1 8 39.3 10 27.4 12 15.5 14 3.7 15 51.8 17 40.0 19 28.1 21 16.2	278.83 306.00 333.17 0.34 27.51 54.68 81.85 109.03 136.20 163.37 190.54 217.71 244.88 272.05 299.22 326.39 353.56 20.73 47.91 75.08 102.25 129.42 156.59 183.76 210.93	81.5 70.0 53.0 40.0 30.0 20.0 -20.0 -30.0 -40.0 -50.0 -81.5 SHADOW 81.5 70.0 50.0 40.0 30.0 20.0 -20.0 -30.0 -40.0	27.4 21.8 15.4 12.3 9.2 6.1 -6.1 -7.1 -12.2 -21.5 -27.0 ENTRY	-83.11 -18.68 -6.36 -4.13 -2.63 -1.58 3. 1.59 2.65 4.13 6.43 18.76 83.22 LAT. DECEMBE -83.11 -18.69 -6.37 -4.10 -2.63 -1.58 0. 1.59 2.65 4.13	751 756 754 751 747 747 747 747 747 747 747 698 690 37.9 ER 15. 748 753 752 750 746 742 732 732 732 732 732 732 732 732 733 753 753 753 753 753 753 753 753 753	1965 90.0. 24.4. 11.0. 8.3. 6.7. 5.6. 4.9. 5.7. 6.7. 8.4. 11.3. 24.6. 90.0. EXIII 1965 90.0. 24.4. 11.0. 8.3. 6.7. 5.6. 4.9. 5.7. 6.7. 8.4. 11.0. 24.6. 90.0. 24.4. 11.0. 8.3. 6.7. 5.6. 4.9. 11.0. 8.3. 6.7. 5.6. 4.9. 90.0. 24.4. 11.0. 8.3. 6.7. 8.4. 11.0. 8.3. 6.7. 8.4. 11.0. 8.3. 6.7. 8.4. 11.0. 8.3. 6.7. 8.4. 11.0. 8.3. 6.7. 8.4. 11.0. 8.3. 6.7. 8.4. 11.0. 8.3. 6.7. 8.4. 11.0. 8.3. 6.7. 8.4. 11.0. 8.3. 6.7. 8.4. 11.0. 8.3. 6.7. 8.4. 11.0. 8.3. 6.7. 8.4. 11.0. 8.3. 6.7. 8.4. 11.0. 8.3. 6.7. 8.4. 11.0. 8.4.	27.4 33.5 35.4 45.5 47.6 -47.6 -47.6 -41.6 -32.4 -27.5 LAT. 27.4 32.5 39.2 42.4 45.4 45.4 45.4 45.4 45.4 45.4 45	-83.11 -147.54 -159.88 -162.15 -163.64 -164.70 -164.70 -164.92 163.85 160.06 147.65 83.22 36.7 -83.11 -147.55 -152.16 -162.16 -162.65 -162.16 -163.84 164.91 164.91 163.84 162.34 164.91	741 723 714 765 697 683 675 675 675 677 683 748 738 721 713 704 696 683 677 675 675 677 675 675	155.6. 165.5. 171.6. 173.3. 174.3. 175.1. 174.3. 171.6. 165.6. 56.5. 56.5. 171.6. 173.3. 171.6. 173.3. 174.3. 174.3. 175.1. 175.1. 175.1. 175.1. 175.1. 175.1. 175.1. 175.1.	3 20.3 5 8.4 6 56.6 8 44.7 10 32.8 12 21.0 14 5.1 15 57.2 17 45.4 19 33.5 21 21.6 23 9.8 MODIFIE REFEREN INCLINA A SCENDI PRIME S ARGUMEN RA ANDMALI RA ECCENTR	306.04 333.22 0.39 27.56 54.73 81.90 109.07 136.24 163.41 190.58 217.75 244.92 0 ORBITAL TION 81. NG NODE 1 WEEP INTE T OF PERI TE OF CHA STIC PERI TE OF CHA ICITY G.	81.5 70.0 50.0 40.0 30.0 20.0 6. -20.0 -30.1 -40.0 -50.1 -70.0 -81.5 SHADOW 1965 Y 12 47 DEG. (LONG.) 2 RVAL ON IGEE 256. INGE -0.1 100 108.0 01242	27.3 21.8 15.4 12.2 9.2 6.1 -6.1 -7.1 -12.2 -21.6 -27.0 ENTR 57.23 DE DAY 40 DEG. 8725 DE BB PIN.	9ECEMBI -43.13 -18.70 -6.37 -4.11 -2.64 -1.58 3. 1.59 2.65 4.13 6.43 18.75 43.21 Y LAT. ARTH SAT 1 H 47 EG. WEST -7.24 F1 G. PER F	741 746 746 746 741 738 731 721 717 714 737 714 737 714 737 714 737 714 737 714	1965 90.1* 24.4* 11.7* 8.7* 6.7* 6.7* 11.2* 24.4* 90.6* [X]	27.3 12.9 19.2 45. 45. 46. -47. -41. -12. -27. 1 LAT.	-147.57 -155.91 -167.19 -163.67 -164.75 -166.35 164.85 163.81 162.32 165.44 5 147.67	737 717 105 701 494 684 681 682 681	155.6* 165.6* 171.6* 173.1* 174.1* 175.1* 174.3* 171.6* 165.2* 155.6*
2 G.9 3 49.1 5 37.2 7 25.3 9 13.5 11 1.6 12 49.8 14 37.9 16 26.0 18 14.2 20 2.3 21 50.4 23 38.6 1 26.7 3 14.9 5 3.0 6 51.1 8 39.3 10 27.4 12 15.5 14 3.7 15 51.8 17 40.0 19 28.1	278.83 306.00 333.17 0.34 27.51 54.68 81.85 109.03 136.20 163.37 190.54 217.71 244.88 272.05 299.22 326.39 353.56 20.73 47.91 75.08 102.25 129.42 156.59 183.76 210.93	81.5 70.0 53.0 40.0 30.0 -20.0 -30.0 -40.0 -50.0 -70.0 -81.5 SHADOW 81.5 70.0 50.0 40.0 30.0 20.0 -20.0 -40.0 -20.0	27.4 21.8 15.4 12.3 9.2 6.1 -6.1 -7.1 -12.2 -21.5 -27.0 ENTRY	-83.11 -18.68 -6.36 -4.13 -2.63 -1.58 3.11 -18.69 -6.37 -4.10 -2.63 -1.58 0. 1.59 2.65 4.13 6.43	751 756 754 751 747 747 747 747 716 712 707 698 690 37.9 ER 15. 748 753 752 750 746 742 732 752 750 746 742 732 718 713 709 701 693	1965 90.C. 24.4. 11.C. 8.3. 6.7. 5.6. 4.9. 5.7. 6.7. 8.4. 11.3. 24.4. 90.C. EX [7] 1965 90.C. 24.4. 11.G. 8.3. 6.7. 5.6. 4.9. 5.7. 6.7. 8.4. 11.3. 24.4. 90.C. 24.4. 11.G. 8.3. 6.7. 5.6. 4.9. 90.C. 24.4. 11.G. 8.3. 6.7. 5.6. 4.9. 90.C. 24.4. 11.G. 8.3. 6.7. 5.6. 4.9. 90.C. 24.4. 11.G. 8.3. 6.7. 5.6. 4.9. 90.C. 24.4. 11.G. 8.3. 6.7. 5.6. 4.9. 90.C. 24.4. 11.G. 8.3. 6.7. 5.6. 4.9. 5.7. 6.7. 8.4. 11.G. 8.3. 6.7. 5.6. 4.9. 90.C.	27.4 33.0 35.4 45.5 47.6 -47.6 -47.6 -37.0 LAT. 27.4 37.0 39.3 42.4 45.4 45.4 45.4 45.4 -47.7 -41.7 -31.7 -31.7 -31.7 -31.7	-83.11 -147.54 -159.88 -162.15 -163.64 -164.70 -164.70 -164.92 163.85 160.06 147.65 83.22 36.7 -83.11 -147.55 -152.16 -162.16 -162.65 -162.16 -163.84 164.91 164.91 163.84 162.34 164.91	741 723 714 765 697 683 675 675 675 677 683 748 738 721 713 704 696 683 677 675 675 677 675 675	155.6. 165.5. 171.6. 173.3. 174.3. 175.1. 174.3. 171.6. 165.6. 56.5. 56.5. 171.6. 173.3. 171.6. 173.3. 174.3. 174.3. 174.3. 174.3. 174.3. 174.3. 174.3.	3 20.3 5 8.4 6 56.6 8 44.7 10 32.8 12 21.0 14 9.1 15 57.2 17 45.4 19 33.5 21 21.6 23 9.8 MODIFIES REFERENT INCLINA ASCENDIO PRIME S ARGUMEN RA ANUMALI RA ECCENTR RADIUS RADIUS	306.04 333.22 0.39 27.56 54.73 81.90 109.07 136.24 163.41 190.58 217.75 244.92 0 ORBITAL TION 81. NG NODE 1 HEEP INTE TOF PERIOR TE OF CHARLES TE OF CHAR	81.5 70.0 50.0 40.0 30.0 20.0 6. -20.0 -30.3 -40.0 -50.0 -70.0 -81.5 SHADOW 1965 Y 12 47 DEG. 1CNG.) 2 RVAL ON IGEE 256. NGE -0.1 100 108.0 NGE -0.0	27.3 21.8 15.4 12.2 6.1 6.1 -7.1 -12.2 -21.0 -27.0 ENTR S FOR E # 4 D ENTR S FOR E # 4 D ENTR S FOR E # 4 D ENTR S FOR E # 4 D ENTR S FOR E 8725 DE 8725 DE 8725 DE 8725 DE 8725 DE 8725 DE 8725 DE 8725 DE 8725 DE	9ECEMBI -83.13 -18.70 -6.37 -4.11 -2.64 -1.58 0. 1.59 2.65 4.13 6.43 18.75 93.21 Y LAT. ARTH SAT 1 H 47 EG. WEST -7.24 F1 G. PER F	741 746 746 746 741 738 731 721 717 714 737 716 737 716 737 716 737 716 737 716 737 716 737 716 737 716 737 716 737 716 737	1965 90.1* 24.4* 11.7* 8.7* 6.7* 6.7* 11.2* 24.4* 90.6* [X]	27.3 12.9 19.2 45. 45. 46. -47. -41. -12. -27. 1 LAT.	-147.57 -155.91 -167.19 -163.67 -164.75 -166.35 164.85 163.81 162.32 165.44 5 147.67	737 717 105 701 494 684 681 682 681	155.6* 165.6* 171.6* 173.1* 174.1* 175.1* 174.3* 171.6* 165.2* 155.6*
2 G.9 3 49.1 5 37.2 7 25.3 9 13.5 11 1.6 12 49.8 14 37.9 16 26.0 18 14.2 20 2.3 21 50.4 23 38.6 1 26.7 3 14.9 5 3.0 6 51.1 8 39.3 10 27.4 12 15.5 14 3.7 15 51.8 17 40.0 19 28.1 21 16.2	278.83 306.00 333.17 0.34 27.51 54.68 81.85 109.03 136.20 163.37 190.54 217.71 244.88 272.05 299.22 326.39 353.56 20.73 47.91 75.08 102.25 129.42 156.59 183.76 210.93	81.5 70.0 53.0 40.0 30.0 -20.0 -30.0 -40.0 -50.0 -70.0 -81.5 SHADOW 81.5 70.0 50.0 40.0 30.0 20.0 -20.0 -30.0 -40.0 -50.0 -70.0	27.4 21.8 15.4 12.3 9.2 6.1 -6.1 -7.1 -12.2 -21.5 -27.0 ENTRY	DECEMBE -83.11 -18.68 -6.36 -4.13 -2.63 -1.58 3.159 2.65 4.13 6.43 18.76 83.22 LAT. DECEMBE -83.11 -18.69 -6.37 -4.10 -2.63 -1.58 0. 1.59 2.65 4.13 6.43 18.76 83.22	751 756 754 751 747 747 747 747 716 712 707 698 690 37.9 ER 15. 748 753 752 750 746 742 732 752 750 746 742 732 718 713 709 701 693	1965 90.C. 24.4. 11.C. 8.3. 6.7. 5.6. 4.9. 5.7. 6.7. 8.4. 11.3. 24.4. 90.C. EX [7] 1965 90.C. 24.4. 11.G. 8.3. 6.7. 5.6. 4.9. 5.7. 6.7. 8.4. 11.3. 24.4. 90.C. 24.4. 11.G. 8.3. 6.7. 5.6. 4.9. 90.C. 24.4. 11.G. 8.3. 6.7. 5.6. 4.9. 90.C. 24.4. 11.G. 8.3. 6.7. 5.6. 4.9. 90.C. 24.4. 11.G. 8.3. 6.7. 5.6. 4.9. 90.C. 24.4. 11.G. 8.3. 6.7. 5.6. 4.9. 90.C. 24.4. 11.G. 8.3. 6.7. 5.6. 4.9. 5.7. 6.7. 8.4. 11.G. 8.3. 6.7. 5.6. 4.9. 90.C.	27.4 33.0 35.4 45.5 47.6 -47.6 -47.6 -37.0 LAT. 27.4 37.0 39.3 42.4 45.4 45.4 45.4 45.4 -47.7 -41.7 -31.7 -31.7 -31.7 -31.7	-83.11 -147.54 -159.88 -162.15 -163.64 -164.70 -164.70 -163.85 162.35 162.35 162.35 162.35 162.35 162.35 162.35 162.35 162.35 162.35 163.65 -162.16 -162.65 -162.16 -163.65 -164.71 -166.32 164.91 163.84 162.34 162.34 162.34 162.34	741 723 714 765 697 683 675 675 675 677 683 748 738 721 713 704 696 683 677 675 675 677 675 675	155.6. 165.5. 171.6. 173.3. 174.3. 175.1. 174.3. 171.6. 165.6. 56.5. 56.5. 171.6. 173.3. 171.6. 173.3. 174.3. 174.3. 175.1. 175.1. 175.1. 175.1. 175.1. 175.1. 175.1. 175.1.	3 20.3 5 8.4 6 56.6 8 44.7 10 32.8 12 21.0 14 5.1 15 57.2 17 45.4 19 33.5 21 21.6 23 9.8 MODIFIE REFEREN INCLINA ASCENDI PRIME S ARGUMEN RA ANDMALI RA ECCENTR RADIUS RADIUS RADIUS RA	306.04 333.22 0.39 27.56 54.73 81.90 109.07 136.24 163.41 190.58 217.75 244.92 0 ORBITAL TION 81. NG NODE 1 WEEP INTE TE OF CHA STIC PERI TE OF CHA ICITY G. OF PERIGE OF APOGES TE OF CHA NG NODE	81.5 70.0 50.0 40.0 30.0 20.0 6. -20.0 -30.0 -50.0 -70.0 -81.5 SHADOW 1965 Y 12 RVAL ON IGEE 256. ILONG.) 2 RVAL ON IGEE 256. INGE -0.1 IGD 108.0 INGE -0.0 INGE -0.0 IR.A.) 20 IR.A.) 20	27.3 21.8 15.4 12.2 9.2 6.1 -6.1 -7.1 -12.2 -21.0 -27.0 ENTR 57.23 D E DAY 40 DEG. 8725 DE 8725 DE	9ECEMPS -43.13 -18.70 -6.37 -4.11 -2.64 -1.58 3. 1.59 2.65 4.13 6.43 18.75 43.21 Y LAT. ARTH SAT 1 H 47 EG. WEST -7.24 P1 G. PER F	741 746 746 746 741 731 731 731 737 714 737 714 737 714 737 714 737 714 737 714 737 714	1965 90.1* 24.4* 11.7* 8.7* 6.7* 6.7* 11.2* 24.4* 90.6* [X]	27.3 12.9 19.2 45. 45. 46. -47. -41. -12. -27. 1 LAT.	-147.57 -155.91 -167.19 -163.67 -164.75 -166.35 164.85 163.81 162.32 165.44 5 147.67	737 717 105 701 494 684 681 682 681	155.6* 165.6* 171.6* 173.1* 174.1* 175.1* 174.3* 171.6* 165.2* 155.6*
2 G.9 3 49.1 5 37.2 7 25.3 9 13.5 11 1.6 12 49.8 14 37.9 16 26.0 18 14.2 20 2.3 21 50.4 23 38.6 1 26.7 3 14.9 5 3.0 6 51.1 8 39.3 10 27.4 12 15.5 14 3.7 15 51.8 17 40.0 19 28.1 21 16.2	278.83 306.00 333.17 0.34 27.51 54.68 81.85 109.03 136.20 163.37 190.54 217.71 244.88 272.05 299.22 326.39 353.56 20.73 47.91 75.08 102.25 129.42 156.59 183.76 210.93	81.5 70.0 53.0 40.0 30.0 -20.0 -30.0 -40.0 -50.0 -70.0 -81.5 SHADOW 81.5 70.0 50.0 40.0 30.0 20.0 -20.0 -30.0 -40.0 -50.0 -70.0	27.4 21.8 15.4 12.3 9.2 6.1 -6.1 -7.1 -12.2 -21.5 -27.0 ENTRY	DECEMBE -83.11 -18.68 -6.36 -4.13 -2.63 -1.58 3.159 2.65 4.13 6.43 18.76 83.22 LAT. DECEMBE -83.11 -18.69 -6.37 -4.10 -2.63 -1.58 0. 1.59 2.65 4.13 6.43 18.76 83.22	751 756 754 751 747 747 747 747 716 712 707 698 690 37.9 ER 15. 748 753 752 750 746 742 732 752 750 746 742 732 718 713 709 701 693	1965 90.C. 24.4. 11.C. 8.3. 6.7. 5.6. 4.9. 5.7. 6.7. 8.4. 11.3. 24.4. 90.C. EX [7] 1965 90.C. 24.4. 11.G. 8.3. 6.7. 5.6. 4.9. 5.7. 6.7. 8.4. 11.3. 24.4. 90.C. 24.4. 11.G. 8.3. 6.7. 5.6. 4.9. 90.C. 24.4. 11.G. 8.3. 6.7. 5.6. 4.9. 90.C. 24.4. 11.G. 8.3. 6.7. 5.6. 4.9. 90.C. 24.4. 11.G. 8.3. 6.7. 5.6. 4.9. 90.C. 24.4. 11.G. 8.3. 6.7. 5.6. 4.9. 90.C. 24.4. 11.G. 8.3. 6.7. 5.6. 4.9. 5.7. 6.7. 8.4. 11.G. 8.3. 6.7. 5.6. 4.9. 90.C.	27.4 33.0 35.4 45.5 47.6 -47.6 -47.6 -37.0 LAT. 27.4 37.0 39.3 42.4 45.4 45.4 45.4 45.4 -47.7 -41.7 -31.7 -31.7 -31.7 -31.7	-83.11 -147.54 -159.88 -162.15 -163.64 -164.70 -164.70 -163.85 162.35 162.35 162.35 162.35 162.35 162.35 162.35 162.35 162.35 162.35 163.65 -162.16 -162.65 -162.16 -163.65 -164.71 -166.32 164.91 163.84 162.34 162.34 162.34 162.34	741 723 714 765 697 683 675 675 675 677 683 748 738 721 713 704 696 683 677 675 675 677 675 675	155.6. 165.5. 171.6. 173.3. 174.3. 175.1. 174.3. 171.6. 165.6. 56.5. 56.5. 171.6. 173.3. 171.6. 173.3. 174.3. 174.3. 175.1. 175.1. 175.1. 175.1. 175.1. 175.1. 175.1. 175.1.	3 20.3 5 8.4 6 56.6 8 44.7 10 32.8 12 21.0 14 9.1 15 57.2 17 45.4 19 33.5 21 21.6 23 9.8 MODIFIE REFERENT INCLINA ASCENDIO PRIME S ARGUMEN RA ANDMALI RA ECCENTR RADIUS	306.04 333.22 0.39 27.56 54.73 81.90 109.07 136.24 163.41 190.58 217.75 244.92 0 ORBITAL TION 81. NG NODE 1 WEEP INTE T OF PERIO TE OF CHAR STIC PERIO TE OF CHAR ICITY G.: OF PERIO OF	81.5 70.0 50.0 40.0 30.0 20.0 6. -20.0 -30.3 -40.6 -50.0 -70.0 -81.5 SHADOW 1965 Y 12 47 DEG. 147 DEG. 147 DEG. 147 DEG. 160 108.0 160 108.0	27.3 21.8 15.4 12.2 6.1 6.1 -7.1 -12.2 -21.6 -27.0 ENTR S FOR E M 4 D ENTR S FOR E M 57.23 D E DAY 40 DEG. 8725 DE 8725 DE 87	DECEMBE -83.13 -18.70 -6.37 -4.11 -2.64 -1.58 3. 1.59 2.65 4.13 6.43 18.75 93.21 Y LAT. ARTH SAT 1 H 47 EG. WEST -7.24 F1 G. PER F	741 746 746 746 741 731 731 731 737 714 737 714 737 714 737 714 737 714 737 714 737 714	1965 90.1* 24.4* 11.7* 8.7* 6.7* 6.7* 11.2* 24.4* 90.6* [X]	27.3 12.9 19.2 45. 45. 46. -47. -41. -12. -27. 1 LAT.	-147.57 -155.91 -167.19 -163.67 -164.75 -166.35 164.85 163.81 162.32 165.44 5 147.67	737 717 105 701 494 684 681 682 681	155.6* 165.6* 171.6* 173.1* 174.1* 175.1* 174.3* 171.6* 165.2* 155.6*

SMITHSONIAN ASTROPHYSICAL OBSERVATORY, CAMBRIDGE, MASSACHUSETTS

DECEMBER 1, 1965

SATELLITE 1964 4A, ECHO II

These predictions are based on orbital elements revised on November 29, 1965

T. = November 30.0, times are in days, U.T.

Argument of perigee = 266.56 - 2.49465 (t-T.)

Right ascension of ascending node = 205.469 - 0.83286 (t-T.)

Inclination = 81.467
Eccentricity = 0.01333 - 4.11 x 10⁻⁴ (t-T_o)
Semi-major axis = 7.517957 megameters
Mean anomaly (Rev.) = 0.71756 + 13.322110 (t-T_o) + 4.608 x 10⁻⁵ (t-T_o)²

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TIME (UI)	LONG.	LAT.	TIME CCRR.	CORR.	(MI)	BEAR. (N-E)	TIME CORR.	NORTH- LDNG. CORR.	HT.		TIME (UT)	LONG.	LAT.	TIME CORR.	SOUTH- LONG. COHR. DECEMBE	FT.		TIME CORR.	NORTH- LONG. CORR.		
area no	5500000	20 22	500 5	DECEMPE				- Allert Control		22.00	C 1.6	237.92	81.5	27.5	-83.09		90.0.	27.5	-83.09	767	50.00
4 6.2 5 54.4 7 42.5 9 30.6 11 18.8 13 6.9 14 55.1 16 43.2 18 31.4 20 19.5	264.95 292.12 319.30 346.47 13.64 40.81 67.99 95.16 122.33 149.51 176.68 203.85	81.5 70.0 50.0 40.0 30.0 20.0 -20.0 -30.0 -40.0 -50.0 -70.0 -81.5	27.5 21.9 15.4 12.3 9.2 6.1 0. -6.0 -9.0 -12.1 -15.1 -21.3 -26.7	-83.08 -18.67 -6.36 -4.10 -2.64 -1.58 0. 1.60 2.66 4.15 6.44 18.81 83.29	778 768 760 751 741 721 702 694 687 680 670	5.6* 4.9 5.7 6.7 8.4	33.2 39.6 42.7 45.8 46.9 54.9	-83.C8 -147.50 -159.81 -162.C8 -163.55 -164.62 -166.21 165.C2 163.95 162.45 160.16 147.77 83.29	765 750 739 727 716 694 677 671 666 663 663	9C.C. 155.6. 169.C 171.7 173.3 174.3 175.1 174.3. 173.3. 171.6. 169.C. 155.6. 9C.C.	1 49.7 3 37.8 5 26.0 7 14.1 9 2.3 10 50.4 12 38.6 14 26.7 16 14.8	265.10 292.27 319.44 346.61 13.79 40.96 68.13 95.30 122.47 149.65 176.82 203.99	70.0 50.0 40.0 30.0 20.0 -20.0 -30.0 -40.0 -50.0 -70.0 -81.5	21.9 15.4 12.3 9.2 6.1 3. -6.9 -9.1 -12.1 -15.2 -21.4 -26.8	-18.67 -6.36 -4.13 -2.63 -1.58 G. 1.59 2.66 4.14 6.42 18.79 83.26	770 764 759 752 744 728 712 705 696 692 682 675	24.4* 11.0* 8.2* 6.7* 5.6* 4.9* 5.7 6.7 8.4 11.2 24.4* 90.0*	33.1 39.5 42.6 45.7 48.7 54.7 -47.4 -44.4 -31.4 -32.2 -26.8	-147.51 -159.84 -162.11 -162.58 -164.65 -166.25 164.98 163.90 162.41 160.12 147.74 E3.26	757 738 728 717 706 687 675 675 666 669	155.6* 165.2 171.6 173.3 174.3 175.1 174.3* 173.3* 171.6* 165.2* 155.6* 90.0*
. **** *****		SHADOW	EATRY	LAT.	50.7	EXIT	LAT	16.3					SHADOW	EVESA			EXIT	Late	-0-1		
				DECEMBE	R 5x	1965									DECEMBE				. Services		-
3 32.1	6.89 34.06 61.23 88.41 115.58 142.75 169.92 197.10	81.5 70.0 56.0 40.0 30.0 20.0 -20.0 -30.0 -40.0 -50.0 -70.0 -81.5 SHABCW	27.5 21.9 15.4 12.3 9.2 6.1 0. -6.0 -9.1 -12.1 -15.1 -21.4 -26.7 ENTRY	-83.38 -18.67 -5.36 -4.10 -2.63 -1.58 3. 1.59 2.66 4.15 6.43 18.82 83.28 LAT.	776 767 762 752 742 723 725 697 696 684 673	6.7* 5.6* 4.9 5.7 6.7 8.4 11.5 24.4* 90.0*	33.1 39.8 42.7 45.8 46.8 54.8 -47.7 -44.3 -38.3 -32.1	-83.08 -147.50 -159.82 -162.09 -163.56 -164.62 -166.22 -165.01 -163.93 -162.44 -163.15 -147.76 -83.28 -13.1	766 747 736 724 713 692 676 676 667 664	90.6* 155.6* 169.0 171.7 173.3 174.3 175.1 174.3* 173.3* 171.6* 165.0* 155.6* 50.0*	3 3.7 4 51.8 6 40.0 8 28.1 10 16.3 12 4.4 13 52.5 15 40.7 17 28.8 19 17.0 21 5.1	7.02 34.19 61.37 88.54 115.71 142.88	81.5 70.0 59.0 40.3 30.0 20.0 0. -20.0 -30.0 -40.0 -70.0 -81.5 SHADOW	27.5 21.9 15.4 12.3 9.2 6.1 0. -6.0 -1.1 -12.1 -15.2 -21.4 -26.9 ENTR	-83.39 -18.67 -6.36 -4.16 -2.63 -1.58 3. 1.59 2.65 4.14 6.42 18.78 83.25 (LAI -	768 763 758 751 744 729 714 737 731 695 685 677	11.0* 8.3* 6.7* 5.6* 4.9* 5.7 6.7 H.4 11.0* 29.4* 90.0*	33.1 35.5 42.6 45.7 45.7 54.7 -47.4 -44.5 -38.5	162.40 161.11 147.73	735 725 714 764 686 674 671 665 665	90.5° 155.6° 169.6° 171.6 173.3 174.3 175.1° 174.3° 175.6° 169.0° 155.6° 90.0°
				CECEMBE	R 6+	1965									DECEMBI	H 10+	1965				
2 58.0 4 46.1	135.99 163.17 190.34	81.5 70.0 50.0 40.0 30.0 20.0 -20.0 -30.0 -40.0 -50.0 -70.0 -81.5 SHADOW	21.9 15.4 12.3 9.2 6.1 0. -6.0 -9.1 -12.1 -15.1 -21.4 -26.8	-83.08 -18.67 -6.36 -4.10 -2.63 -1.58 3. 1.59 2.66 4.15 6.43 18.85 83.27	774 766 760 752 743 725 707 733 691 687 676	6.7: 5.6: 4.9 5.7 6.7 8.4 11.0 24.4: 90.0:	33.1 35.6 42.7 45.7 45.8 54.8 -47.3 -44.3 -41.3 -38.3 -33.1	-83.08 -147.50 -159.82 -162.09 -163.57 -164.63 -166.23 165.00 163.92 162.43 162.14 147.75 83.27 -5.2	763 744 731 722 710 690 675 671 661 665	\$0.0. 155.0. 165.0 171.6 173.3 174.3 175.1 174.3. 173.3. 171.6. 165.0. 155.6.	2 29.5	0.26 27.43 54.60 91.77 108.94 136.12 163.29 190.46	81.5 70.0 50.0 40.0 30.3 20.0 -20.0 -30.0 -40.0 -76.0 -81.5 SHADON	27.5 21.9 15.4 12.3 9.2 5.1 0. -6.1 -7.1 -12.1 -15.2 -21.5 -20.9 ENTR	-83.09 -18.67 -6.36 -4.17 -2.63 -1.58 3. 1.59 2.65 4.14 6.41 18.78 83.25	765 761 757 751 744 733 716 739 703 698 688 683	8.9 6.7 5.6 4.5 5.7 6.7 6.4 11.0 24.4 93.0	22.1 29.5 42.6 45.6 54.6 54.6 -47.5 -44.5 -36.5 -32.3	-83.09 -147.52 -155.85 -162.12 -163.66 -164.67 -166.27 164.96 163.88 162.35 160.10 147.72 83.25 16.1	733 722 712 762 685 674 671 670 677 677	9C.C. 155.6. 165.6. 171.6. 171.6. 173.3 174.3 175.1. 174.3. 171.6. 169.C. 155.6. 5C.C.
				DECEMBE	н 7,	1965									DECEMB	8 11.	1965				
2 23.8 4 12.0 6 C.1 7 48.3 9 36.4 11 24.6 13 12.7 15 C.8 16 49.0 18 37.1	20.55 47.72 74.89 102.06 129.24 156.41 183.58	81.5 70.0 50.0 40.0 30.0 20.0 -20.0 -30.0 -40.0 -50.0 -70.6 -81.5 SHADCH	21.9 15.4 12.3 9.2 6.1 0. -6.0 -9.1 -12.1 -15.1 -21.4 -26.8	-83.08 -18.67 -6.36 -4.13 -2.63 -1.58 0. 1.59 2.66 4.14 6.43 18.79 81.27 LAT.	772 765 759 752 744 726 715 702 696 689 679 672	6.7° 5.6° 4.9 5.7 6.7 8.4 11.0 24.4° 93.0°	33.1 39.6 42.7 49.8 54.8 -47.4 -44.4 -41.4 -38.4 -32.2	-83.08 -147.51 -159.63 -162.13 -163.58 -164.64 -166.24 164.99 163.91 162.42 166.13 147.75 83.27	76C 741 73C 715 7CF 689 675 675 667 666 667	90.0* 155.6* 169.0 171.0 173.3 174.3 175.1 174.3* 173.3* 171.6* 165.0* 155.6* 50.5*	1 55.4 3 43.5 5 31.6 7 19.8 9 7.9 10 56.1 12 44.2 14 32.3	75.00 102.18 129.35 156.52 183.69 210.86	81.5 70.0 50.0 40.0 30.0 20.0 0. -20.0 -30.0 -40.0 -50.0 -70.0 -81.5	27.5 21.9 15.4 12.3 9.2 6.1 -6.1 -7.1 -12.1 -15.2 -21.5 -20.9	-83.17 -18.67 -6.36 -4.10 -2.63 -1.58 3. 1.59 2.65 4.13 6.41 18.77 83.24	763 756 756 756 744 735 717 711 706 705 682	8.3. 6.7. 5.6. 4.9. 5.7. 6.7. 8.4. 11.0. 24.4. 90.0.	31.3 39.5 42.5 45.6 45.6 54.6 -47.5 -44.5 -31.5 -32.3	-63.12 -147.52 -159.86 -162.13 -163.61 -164.68 -166.26 164.95 163.87 162.38 160.39 147.71 63.24	730 720 710 701 665 672 672 672 672	90.0* 155.6* 169.6* 171.6* 173.3* 174.3* 175.1* 174.3* 171.6* 169.6* 155.6* 50.5*