

PROJECT

**BLUE
BOOK**

1 FEBRUARY 1966

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.

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 Insufficient Data 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 Unidentified. 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.

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 saucer-shaped 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.

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.

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.

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 mis-identified 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 co-operation 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.

TOTAL UFO (OBJECT) SIGHTINGS

(Compiled 17 Jan 66)

<u>YEAR</u>	<u>TOTAL SIGHTINGS</u>	<u>UNIDENTIFIED</u>	<u>SOURCE</u>
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
	<u>10,147</u>	<u>646</u>	

STATISTICAL DATA FOR YEARS 1953-1964

TOTAL CASES BY CATEGORY

(Compiled 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	42	46	24	14	14	10	12	14	13	15	14	19	237
TOTAL	506	487	543	670	1006	627	360	557	591	474	399	562	6617

ASTRONOMICAL SIGHTINGS

Meteors	70	92	79	88	179	168	100	167	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	5	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	0	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	64	77	65	58	88	916

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	38
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	128
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	38	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		1c						1r	1w				3
Radar Analysis				1e		1g		3gmn		1m			6
Photo Analysis			2dl		1d	1j	2kj	5x	1j				12
Satellite Decay	0	1	1	1	0	1	0	2	0	1	0	1	8
Miscellaneous	2ab			2bf		1h		4sbbb		1h	3tuv		13
TOTAL	11	8	7	8	5	6	9	42	7	9	11	3	128

(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

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.

- (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



CSI

The Investigation of UFO's

APPROVED FOR RELEASE
CIA HISTORICAL REVIEW PROGRAM
22 SEPT 93

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History and methodology of "flying saucer" intelligence.

THE INVESTIGATION OF UFO'S

Hector Quintanilla, Jr.

Unidentified flying objects are not a new phenomenon. In 593 B.C. Ezekiel recorded a whirlwind to the north which appeared as a fiery sphere. In 1254 at Saint Albans Abbey, when the moon was eight days old, there appeared in the sky a ship elegantly shaped, well equipped and of marvelous color. In 1520 in France there were sighted a round-shaped object with rotating lights and two fiery suns. In 1874 in Texas a farmer reported seeing a dark flying object in the shape of a disc cruising in the sky at a wonderful speed. These are a mere sampling of the many such events recorded by historians. The modern era of UFOs, however, can be dated from 24 June 1947, when a flyer made some strange observations which national news coverage and authors with a poetic license so played up as to excite public entertainment of a notion that our planet had been visited by unknown vehicles from outer space.

[Top of page]

Supersonic Saucers

On that 24 June, Kenneth Arnold was out flying in his private plane. He was looking for a Marine transport that was supposed to have crash-landed somewhere on the southwest side of Mt. Ranier. First he flew directly toward the mountain from the west at an altitude of approximately 9,500 feet, searching all of the various ridges for the downed plane. Then he made a sweep back to the west, found nothing, and headed again toward Mt. Ranier. The air was so smooth that it was a real pleasure flying; he trimmed out the aircraft and relaxed, admiring the crystal-clear sky and the terrain. There was a DC-4 to his left and rear at approximately 14,000 feet.

He hadn't flown more than two or three minutes on this course when a bright flash reflected on his airplane. He couldn't find where the reflection came from, but to the left, north of Mt. Ranier; he did observe a chain of nine peculiar-looking objects flying from north to south at approximately 9,500 feet. They were approaching Mt. Ranier very rapidly, and he at first assumed them to be jet aircraft. Every few seconds two or three of them would dip or change course slightly, so as to catch the sun at an angle and reflect brightly. They were too far away for him to determine their shape or formation.

As they approached Mt. Ranier, however, he observed their outline quite clearly—except that, oddly, he could not find their tails. He watched them pass the southern edge of Mt. Ranier flying directly south-southeast down the hog's-back of a range. Their elevation seemed to vary by as much as one thousand feet, but they remained very near the horizon, therefore around his own elevation. They flew rather like geese, in a diagonal chain as though they were linked together. They seemed to maintain their orientation while swerving in and out of the high mountain peaks.

Arnold estimated the distance from him to the objects at approximately 25 miles. Using a Zeus fastener and a cowl tool, he estimated their size to be about two-thirds that of the DC-4. Watching them pass a high snow-covered ridge between Mt. Ranier and Mt. Adams, he saw that as the first object was leaving its south crest the last one was entering its northern crest. Later the length of this ridge, and therefore that of the chain of objects, was determined to be about five miles. Arnold timed their flight from Mt. Ranier to Mt. Adams, 47 miles, at 1 min. 42 sec., a speed of 1,659 miles per hour.

In a subsequent interview with newsmen, Arnold described the objects as appearing like saucers skipping on water. This description, shortened to "flying saucers" by newsmen, gave rise to the popular term for UFOs. The sighting, like most, was not

reproducible for purposes of investigation; it involved uncontrollable atmospheric conditions. The Air Force was left with one man's subjective interpretation of what he had experienced. Scientists who reviewed Arnold's sighting concluded that the objects were a mirage. The smooth, crystal-clear air that he noted indicated the very stable conditions which are associated with inversions and a high index of refraction of the atmosphere.

Although Arnold's experience could not be reproduced, another phenomenon in some respects similar and observed in the same area found a satisfactory explanation. Navy Commander W. J. Young reported in November 1948 that on several occasions he had seen over the Willamette valley and the plains of eastern Washington and Oregon what could easily have been mistaken for flying discs. One striking example occurred over the Willamette valley on a clear sunny day when the ever-present blue haze seemed somewhat thicker than usual. His aircraft was flying at altitudes between 1,000 and 5,000 feet when bright flying objects appeared, some on his beam and others on the bows or dead ahead. From time to time they would disappear and new ones appear.

Young finally determined that what looked to be aircraft at various altitudes were reflections of the sun from the aluminum roofs of farm buildings at great distance from his plane. The perspective of the land converging with the sky on the horizon, with limited ground visibility, made it appear as though the roof reflections were actually airborne at various altitudes in the haze. Thus one UFO sighting was solved by the observer himself. Although there is no uniform pattern among reported UFO phenomena, some characteristics of one may be found in others, as in Young's and Arnold's.

[Top of page]

Sign and Grudge

Newspaper publicity for Arnold's flying saucers started an avalanche of other sightings. The Air Force began receiving reports from people in all walks of life. Before December 1947 no specific organization was responsible for investigating and evaluating these. Without any basis in measurable data or controlled experiment, the reported phenomena were variously assessed, even within the military structure, as due to a new aerodynamic configuration, to natural occurrences, to misinterpretation of conventional objects, or to space ships under intelligent control. The military interest touched the fields of air defense, R&D, and intelligence, responsibilities vested in many different organizations.

To end this confusion, the Chief of Staff directed on 30 December 1947 that a project be established to collect, collate, evaluate, and distribute within the government all information concerning sightings which could be construed as of concern to the national security. Responsibility for the project, assigned the code name "Sign," was given to the Air Technical Intelligence Center. In February 1949 Project Sign, having completed its evaluation of the 243 UFO cases submitted to it, issued a report:

No definite and conclusive evidence is yet available that would prove or disprove the existence of these unidentified objects as real aircraft of unknown and unconventional configuration. It is unlikely that positive proof of their existence will be obtained without examination of the remains of crashed objects. Proof of non-existence is equally impossible to obtain unless a reasonable and convincing explanation is determined for each incident. . . . Explanations of some of the incidents revealed the existence of simple and easily understandable causes, so that there is the possibility that enough incidents can be solved to eliminate or greatly reduce the mystery associated with these occurrences. . . . Under wartime conditions, rapid and convincing solutions of such occurrences are necessary to maintain morale of military and civilian personnel.

With the backlog of cases disposed of, the project was continued on a reduced scale and under a new code name, "Grudge." Project Grudge completed its evaluation of 244 reports in August 1949, relying heavily on the work of university scientists and other outside consultants, as well as the USAF Air Weather Service and the U.S. Weather Bureau. The Grudge Report concluded that the UFO sightings signified nothing that would constitute a threat to the national security of the United States, that they were chargeable to misinterpretations of conventional objects, a mild form of mass hysteria or war nerves, and fabrications for the sake of hoax or publicity.

[Top of page]

Special Report No. 14

The soothing conclusions of Project Grudge caused very little comment, and the project was continued on a reduced scale. Nevertheless, the fringe of people that still believed in extraterrestrial visitation was growing with the popularity of science fiction articles and magazines. In December 1951 a contract was let to an industrial firm for a detailed study, unclassified, of the UFO cases on file. It took three years to complete this study.

Meanwhile, in March 1952, the project was given its present name, "Blue Book." During this period numerous books were written about the UFOs. Some representative titles are *The Coming of the Saucers*, *Space, Gravity, and the Flying Saucer*, *Is*

Another World Watching, The Flying Saucers Are Real, Flying Saucers from Outer Space, and Flying Saucers Come from a Distant World. UFO hobby clubs were formed throughout the country. Most professed to be studying the phenomena scientifically, but few, if any, had physical or behavioral scientists on their so-called evaluation committees. During the early fifties it became fashionable to accuse the Air Force of censorship or of withholding UFO information from the public.

In January 1953, while the three-year contract study, was still in process, a Scientific Advisory Panel was formed to make an authoritative quick evaluation. It was composed of civilian scientists outside the government with well-known and respected names—H. P. Robertson, Luis W. Alvarez, Lloyd V. Berkner, S. A. Goudsmit, Thornton Page. Following is an extract from their report:

The panel . . . has reviewed a selection of the best documented incidents. . . . We firmly believe that there is no residuum of cases which indicates phenomena which are attributable to foreign artifacts capable of hostile acts, and that there is no evidence that the phenomena indicate a need for the revision of current scientific concepts. The panel further concludes that the continued emphasis on the reporting of these phenomena does, in these perilous times, result in a threat to the orderly functioning of the protective organs of the body politic. We cite as examples the clogging of channels of communication by irrelevant reports, the danger of being led by continued false alarms to ignore real indications of hostile action, and the cultivation of a morbid national psychology in which skillful hostile propaganda could induce hysterical behavior and harmful distrust of duly constituted authority.

The panel recommended:

That the national security agencies take immediate steps to strip the unidentified flying objects of the special status they have been given and the aura of mystery they have unfortunately acquired.

One action taken on this recommendation was to establish, within the Office of Information at the Air Force Secretary's level, an office to answer public questions and release information regarding UFOs. Throughout the years, the responsibility for releasing UFO information to the public has remained with the Office of Information, Secretary of the Air Force.

When the unclassified contract study was ready at the end of 1954, it was immediately released to the news media. It was released under ATIC cover, because the competent company which produced it wished to remain anonymous in this field of research. It is commonly referred to as Special Report No. 14, the first 13 having been administrative progress reports.

Special Report No. 14 reduced and evaluated all the UFO data held in the Air Force files. It contains graphs showing the frequency distribution of sightings by time, date, location, shape, color, duration, azimuth, and elevation. It records an attempt to build a model of the typical UFO and an ultimate finding that UFOs come in all sizes, shapes, and colors. It concludes as follows:

It can never be absolutely proven that "Flying Saucers" do not exist. . . . Scientifically evaluated and arranged, the data as a whole did not show any marked patterns or trends. . . . A critical examination of the distributions of the important characteristics of sightings, plus an intensive study of the sightings evaluated as unknown, led to the conclusion that a combination of factors . . . resulted in the failure to identify as Knowns most of the objects classified as Unknowns. An intensive study aimed at finding a verified example of a "Flying Saucer" or at deriving a verified model or models of "Flying Saucers" led to the conclusion that neither goal could be attained using the present data.

It is emphasized that there was a complete lack of any valid evidence consisting of physical matter in any case of a reported unidentified aerial object. Thus, the probability that any of the unknowns considered in this study are "Flying Saucers" is concluded to be extremely small, since the most complete and reliable reports from the present data, when isolated and studied, conclusively failed to reveal even a rough model, and since the data as a whole failed to reveal any marked patterns or trends.

Therefore, on the basis of this evaluation of the information, it is considered to be highly improbable that any of the reports of unidentified aerial objects examined in this study represent observations of technological developments outside the range of present-day scientific knowledge.

[Top of page]

Investigation Procedures

The objectives of the UFO program, outlined in 1953 by Air Force Regulation 200-2, remain unchanged:

- (1) To determine if UFO phenomena present a threat to the security of the United States.
- (2) To determine if UFO phenomena exhibit any technological advances which could be channeled into U.S. R&D.
- (3) To explain or identify the stimuli which caused the observer to report a UFO.

Our Project Blue Book office at Wright-Patterson has a complement of only one officer, two sergeants, and one civilian stenographer. The initial investigation of all UFO sightings is therefore undertaken by the commander of the nearest Air Force base. In its subsequent analysis of UFO cases, also, the project office is assisted by many organizations and professional individuals. Project Consultant for the past eighteen years has been Dr. J. Allen Hynek, astrophysicist and Chairman of the Dearborn Observatory, Northwestern University. It is Dr. Hynek, obviously, who has maintained continuity on the project, in addition to evaluating all suspected astronomical cases. We have used the services of Dr. Charles P. Olivier, head of the American Meteor Society, in evaluating some suspected meteor cases.

For help on suspected aircraft sightings we have gone to Federal Aviation Agency offices, local airports, the Strategic Air Command, and the Air Defense Command. In suspected balloon sightings we have called upon local airports, local weather stations, the U.S. Weather Bureau, Holloman AFB Balloon Control Center, the National Center for Atmospheric Research, General Mills, Raven Industries, Sea Space Systems, and colleges and universities conducting balloon research. For suspected satellite sightings we use the printed Echo schedules, NASA satellite reports, the Smithsonian North and South Equatorial Crossings, and the professional services of the Space Detection and Tracking System. For suspected missile observations we go directly to Cape Kennedy, Vandenberg AFB, Point Magu, Wallops Island, Eglin AFB, Holloman AFB, and Green River.

For radar analysis we contact one of our internal organizations. For photo analysis we use an internal organization but also Kodak in Rochester, N.Y. On physical specimens we have used the services of the Air Force Materials Laboratory, Battelle Memorial, the Food and Drug Administration, Libby Owens, Corning Glass, Institute of Paper Chemistry, and the Northwestern Geology Department. Numerous other organizations and individuals have helped the project in the past. No individual, government agency, or industrial group has ever refused assistance.

As indicated above, UFO sightings are classified according to the suspected real event that gave rise to each report. The characteristics of these different categories are sketched below.

[Top of page]

Propeller Aircraft

Regular scheduled airliners fly in air corridors, are usually controlled by FAA. Lighting will probably be typical red and green wing lights with rotating beacon. They use landing lights on takeoff as well as in landing pattern. Sighting report may include hovering or stationary period if the aircraft is in a turn or approaching the observer. Total duration should be consistent with flight maneuvers, not likely to exceed five minutes unless some series of maneuvers is being performed. Landing light, blotting out the red and green flashing lights, is often reported as a single light at night. Experimental and unusual lighting effects can vary with the lighting configuration of each aircraft. Color most often reported as white, can be red. Objects reported in straight flight at certain altitude can be checked against local flight corridors; then FAA can be checked if there remains doubt that an object is an aircraft or if positive identification of a specific flight is required. There may or may not be sound associated with the visual effect reported. If near an airport, this type of object is not classed as a UFO; moving lights in and around airports which could be caused by aircraft are assumed to be aircraft.

Private or non-scheduled flights have the same characteristics in general. Speeds may be slower and duration longer. Altitude usually lower. No sound if the wind is blowing away from the observer. Duration should not exceed seven or eight minutes unless maneuvers can account for additional time. Normally flight is cleared from some local airport and not carried on radar plots through FAA; hardest type to make positive identification of. Evaluation made on reported flight characteristics consistent with aircraft.

[Top of page]

Jet Aircraft

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 three to five minutes, depending upon the length of arc visible. FAA has designated airways for these flights.

Special low-level military missions are flown at 2,000 feet in known air corridors. Sighting is usually brief, one minute or less. May be reported hovering if flight is directly toward the observer. May include a sudden burst of speed. No sound if wind is away from observer. Usually reported as a single light, but may be more than one. Sightings are at night; during the day these aircraft can be seen too well to be misinterpreted.

Special test or training missions, varying from a single plane to multiple flights or major air operations, may give rise to reports. These flights can be determined by contact with local, regional, or major air commands.

A jet with afterburner in operation, viewed from the side, may give the appearance of a short flame. It is usually reported as blue and tapering. When the afterburner is cut off, the object may be thought to have either just vanished or zoomed off into space. Duration is usually brief. The sighting is frequently during climb. As viewed from the rear, the jet may be reported red or orange with some yellow and of no distinct shape. Here again the disappearance may be sudden. If at high altitude, only a nondescript light may be reported.

[Top of page]

Refueling Missions

Here lights on the tanker and the multiple aircraft engaged add new visual characteristics. Sightings are at night only; daylight operations would be recognized for what they are. They may be at low or high altitude. Multiple lights will be moving around, in formation, going on and off. The basic light formation will fly straight for a set distance, then may make a 180-degree turn. Duration in an area may run as high as 15 minutes, but any single pass should not last more than four or five. Lights may be seen going one way and then appear on their return path later. The 922 Air Refueling Squadron at Wright-Patterson furnishes information on the visual characteristics of night refueling operations, and SAC recently photographed a refueling mission for the benefit of UFO analysts.

Refueling operations are controlled and conducted in specific areas. A "Flight Planning Guide" issued by the Aeronautic Chart and Information Center gives the location of these areas and the agency controlling each. A phone call to the controller will determine whether an area was in use at a particular time and what squadron flew the mission. Then communication with the squadron will give the number and type of aircraft flown and their entry and exit times.

[Top of page]

Photo Aircraft

Aircraft using flare drops for photo work are most often reported simply as flares. Similarly, aircraft using strobes to illuminate their target, which may work at either low or high altitudes, are reported as a series of evenly spaced flashes. Duration of these sightings is usually less than two minutes, more frequently 30 seconds.

Infra-red photo planes have turbine generators to drive their equipment. These make a whining noise which can be heard above the noise of the engines. Not many agencies do this work, which is often classified. The planes used are rather slow, less than 125 mph. Much of the work is done early in the morning, with landing lights on because of the low altitudes flown.

[Top of page]

Advertising Aircraft

Planes towing targets or banners during daylight hours are not usually misinterpreted unless they remain at such a distance that the observer cannot distinguish the tow vehicle and sign. Frequently in such cases the reports are accompanied by drawings picturing the towed banner as part of the UFO. Duration is longer than for other aircraft sightings, and the flight generally includes maneuvers. The frequently used loud speaker would presumably not be heard unless the flight were close enough for correct identification. Local investigators can check for these aircraft, since FAA regulations require a permit for such flights.

Aircraft with electrically lighted signs have the same essential characteristics except that they are normally sighted at night. On occasion the sign lights have been mistaken for windows of a much larger craft. Flights are relatively slow, characteristically maneuvering back and forth in one area. One usually operates over the same area for more than one day and can be viewed on successive nights, weather permitting.

[Top of page]

Helicopters

Motion slow, may or may not hover. It needs to be far enough away from the observer to escape daylight identification. It may be reported as a black speck moving back and forth, up and down. During the night weird effects can be caused by the red rotating beacon flashing through the canopy. Motion will be erratic if the flight includes hovering. Positive identification is

usually simple to obtain by checking the flight schedules of military and civilian helicopters in the area.

[Top of page]

Balloons

Flight characteristics here are affected by meteorological factors. Wind data is obtained from the Weather Bureau. An Air Weather Service liaison officer assists in evaluating the meteorological data. Low-level weather balloons are described in sightings as round or oval, occasionally oblong. The flight may be reported as hovering, rising, zig-zag, or erratic, but the object must be moving with the wind. It will be picked up by radar only if a radar reflector is attached. A frequent time for sightings is at dusk, before the balloon disappears into earth's shadow. It is rarely sighted at night: its small white lights are not visible to ground observers from above 10,000 feet without optical aids. The sighting from planes is usually very brief, and on occasion even experienced pilots have attributed unusual motion to balloons.

An upper-air balloon may be described as round or oval, usually silver during the day and orange at dusk. It will appear stationary or in slow motion. Actually, it moves with prevailing winds at the altitude six months to the east and six to the west. It will probably be picked up on radar and remain in the area long enough to be identified by aircraft scrambled or diverted for this purpose. Sudden disappearance is to be expected at dusk, and may be reported as a zooming off into space. The sun's reflection through folded panels can give unusual flashing effects. Every effort is made to pin to a specific launch any reports attributable to upper-air balloons; this practice has assisted the scientific community in recovering some of them.

Upper air research balloons are launched by military and civilian agencies for cosmic ray and other studies. These are about 100 feet in diameter, usually of polyethylene. They can be programmed to fly at various altitudes between 80,000 and 125,000 feet or higher. Their appearance may vary with the equipment suspended below and other attachments, but what is visible from the ground without optical aids is generally the same for all. The speed will vary with the wind, from hovering in the same area for some days up to 200 mph in jet streams. At night the balloon will descend as the gas cools and the next day go back up to the programmed altitude. It usually carries a radio beacon which is followed by tracking stations, as well as running lights and radar reflectors. Occasionally, multiple balloons are used to carry heavy equipment. Pilots scrambled to check on this kind of balloon cannot reach its altitude but can get close enough to identify it. At dawn the balloon may appear suddenly, as it moves into sunlight, and similarly disappear at dusk.

[Top of page]

Earth Satellites

In order for a report to be evaluated as deriving from an artificial satellite, the following criteria must be met: (1) Time of sighting must be at night and at such an hour that the vehicle can reflect the sun's rays. (2) Object should resemble a star in visual characteristics. (3) Direction of flight can have a westerly component only in the case of retrograde satellites. (4) Duration (considering the degrees of arc through which the object is observed) must be consistent with satellite orbital velocities.

Satellites are normally reported as star-like moving lights, most frequently white but occasionally yellow, green, blue, orange, and even red. Motion may be steady, hesitating, or zig-zag; portions of the flight may be seen as hovering or stationary. The path may be reported straight or arching, and a turn may be ascribed to it at the beginning or end of the flight. The object may appear or disappear suddenly. The speed should be about 15° of arc per minute, the average duration three to six minutes.

When a known satellite has a flight path over the observer's area at the time of the report (only Echo and Pegasus schedules are screened), and the above considerations are fulfilled, the sighting is evaluated as of that specific vehicle. There are more than 30 satellites in orbit visible to the naked eye. When a reported object does not correspond with Echo or Pegasus passages but displays the required characteristics, it is then evaluated as a probable or possible satellite.

[Top of page]

Astronomical Events

The most common UFO reports are of astronomical sightings: 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, especially Venus, Jupiter, and Mars, have been reported as UFOs. Stellar mirages are also a source of astronomical reports.

[Top of page]

Other Categories

There are three other classifications used for UFO reports. An *Insufficient Data* category takes care of those in which one or more elements of information essential for the evaluation are missing for example the duration of the sighting, the date, time, location, or position in the sky, weather conditions, and the manner of appearance or disappearance. If there is any indication that such a sighting may be important from the viewpoint of security, scientific or technical value, or public interest, every attempt is made to obtain the additional information necessary before placing the report in this category.

Another category is a catch-all labeled *Other*. It includes missiles, reflections, mirages, searchlights, birds, kites, spurious radar indications, hoaxes, fireworks, and flares.

And finally, a sighting is considered *unidentified* when a report apparently contains all the data necessary to suggest a valid hypothesis but its description cannot be correlated with any known object or phenomenon.

Through 1965, 10,147 UFO reports had been disposed of and classified in one or another of the seven categories. In 1964, a fairly average year, the figures were as follows:

Astronomical	123
Aircraft	71
Balloon	20
Insufficient Data	99
Other	88
Satellite	142
Unidentified	19
Total	562

[Top of page]

Policeman's Report

One intriguing, classic case of the 19 listed above as unidentified will also illustrate how widely government agencies, industrial firms, and individuals cooperate in the UFO project.

On 24 April 1964 at approximately 1745 hours, a Socorro, New Mexico, police officer, Lonnie Zamora, was headed south chasing a speeding automobile when he suddenly heard a roar and saw a flame in the sky to the southwest. He decided to let the speeder go in favor of investigating the flame, because there was a dynamite shack in that area and it might have blown up. He turned right onto a gravel road that ran by the shack.

As he was driving slowly along the road, Zamora saw above a steep hill just ahead a funnel-shaped flame, bluish and sort of orange. The base of the flame was hidden behind the hill; there was no smoke connected with it. He had trouble getting the car to the top of the hill because of loose gravel; he had to try three times before he made it. As he reached the top of the hill he saw a shiny object to the south, this side of the dynamite shack, about 150-200 yards away. It was off the road to the left in an arroyo, and at first glance it looked like a car turned over; but when he drove closer, it appeared to be aluminum color, not chrome, and oval-shaped like a football.

Zamora drove about 50 feet along the hill crest, radioing back to the sheriff's office, "10-44 [accident], I'll be 10-6 [busy out of the car] checking a wreck down in the arroyo." From this point, seated in the car, he could not see the object over the edge of the hill. As he stopped the car, he was still talking on the radio, and while he was getting out he dropped the mike. He picked it up and put it back and started down toward the object.

Just then he heard a very loud roar, not exactly like a blast but not steady like a jet engine. It was of low frequency at first and then became higher. At the same time he saw a light blue flame, sort of orange at the bottom. Zamora believes this flame came from the underside of the object; he could see no smoke but some dust in the vicinity. He panicked; he thought the object was going to blow up. In his own words (with slight rearrangements for the sake of clarity):

As soon as saw flame and heard roar, . . . ran away from object but did turn head towards object. Object was () in shape. It was smooth-no windows or doors. As roar started, it was still on or near ground. Noted red lettering of some type like (^). Insignia was about 21/4 inches high and about 2 inches wide, guess. Was in middle of object, like (.). Object still like aluminum white.

[Running], bumped leg on car—back fender area. Car facing southwest. . . . Fell by car and [sun] glasses fell off, kept running to north, with car between me and object. . . . I guess I had run about 25 feet when I glanced back and saw the object . . . rise to about level of car, about 20 to 25 feet, guess. Took, I guess, about six seconds when object started to rise and I glanced back. . . . It appeared about directly over the place where it rose from.

I was still running, . . . [then] about 50 feet from car I ducked down, just over edge of hill. . . . I stopped because I did not hear the roar. I was scared of the roar, and I had planned to continue running down the hill. I turned around toward the object and at the same time put my head toward ground, covering my face with my arms. . . . When the roar stopped, heard a sharp tone whine and the whine lasted maybe a second. Then there was complete silence about the object.

That's when I lifted up my head and saw the object going away from me . . . in a southwest direction . . . It did not come any closer to me. It appeared to go in straight line and at same height—possibly 10 to 15 feet from ground, and it cleared the dynamite shack by about three feet. Shack about eight feet high. Object was traveling very fast. It seemed to rise up, and take off immediately across country.

I ran back to my car and as I ran back, I kept an eye on the object. I picked up my . . . sun glasses, got into the car, and radioed to Nep Lopes, radio operator, to look out the window, to see if you could see an object. He asked, what is it? I answered, it looks like a balloon. I don't know if he saw it. If Nep looked out his window, which faces north, he couldn't have seen it. I did not tell him at the moment which window to look out of.

As I was calling Nep, I could still see object. The object seemed to lift up slowly, and to get small in the distance very fast. It seemed to just clear the Box Canyon or Mile Canyon Mountain. It disappeared as it went over the mountain. It had no flame whatsoever as it was traveling over the ground, and no smoke or noise.

Feeling in good health. Last drink—two or three beers—was over a month ago. Noted no odors. Noted no sounds other than described. Gave direction to Nep Lopes at radio and to Sergeant MS Chaves [of New Mexico state police at Socorro] to get there. Went down to where the object had been, and I noted the brush was burning in several places. . . . I got my pen and drew a picture of the insignia on the object. . . .

Then Sgt. Chaves came up, asked me what the trouble was because I was sweating and he told me that I was white, very pale. I asked the Sgt. to see what I saw and that was the burning brush. Then Sgt. Chaves and I went to the spot and Sgt. Chaves pointed out the tracks.

When I first saw the object (when I thought it might be a car) I saw what appeared to be two legs of some type from the object to the ground. At the time, I didn't pay much attention to . . . the two legs. The two legs were at the bottom of the object, slanted outwards to the ground. The object might have been about three and a half feet from the ground at that time. . . .

[Top of page]

Diagnosis: Unsolved

There is no doubt that Lonnie Zamora saw an object which left quite an impression on him. There is also no question about Zamora's reliability, He is a serious police officer, a pillar of his church, and a man well versed in recognizing airborne vehicles in his area. He is puzzled by what he saw, and frankly, so are we. This is the best-documented case on record, and still we have been unable, in spite of thorough investigation, to find the vehicle or other stimulus that scared Zamora to the point of panic.

During the course of the investigation and immediately thereafter, everything that was humanly possible to verify was checked. Radiation in the landing area was checked with Geiger counters from Kirtland AFB. The Holloman AFB Balloon Control Center was checked for balloon activity. All local stations and Air Force bases were checked for release of weather balloons. Helicopter activity was checked throughout the state of New Mexico. Government and private aircraft were checked. The reconnaissance division in the Pentagon was checked. The White House Command Post was checked. The Commander at Holloman AFB was interviewed at length about special activities from his base. Down-range controllers at the White Sands Missile Range were interviewed. Letters were written to industrial companies engaged in lunar vehicle research activity. The companies were extremely cooperative, but to no avail. The Air Force Materials Laboratory analyzed soil samples from the landing area.

The findings were altogether negative. No other witnesses could be located. There were no unidentified helicopters or aircraft in the area. Radar installations at Holloman AFB and at Albuquerque observed no unusual blips; but the down-range Holloman MTI radar, closest to Socorro, had been closed down for the day at 1600 hours. There was no unusual meteorological activity, no thunderstorms; the weather was windy but clear. There were no markings of any sort in the area except the shallow "tracks" Chaves and Zamora found. The soil analysis disclosed no foreign material. Radiation was normal for the "tracks" and surrounding area. Laboratory analysis of the burned brush showed no chemicals that could have been propellant residue.

The object was traveling at approximately 120 miles per hour when it disappeared over the mountain, according to Zamora's best guess of the time it took. Not an interplanetary speed, at any rate; and the findings are also negative for any indication that the Socorro UFO was of extraterrestrial origin or that it presented a threat to the security of the United States.

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