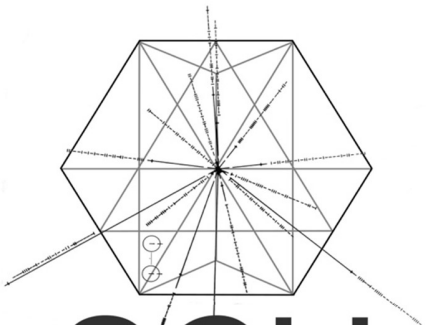
UAP Indications Analysis 1945-1975, United States Atomic Warfare Complex



UAP Indications Analysis, 1945-1975 United States Atomic Warfare Complex

L. J. Hancock[1], I. M. Porritt[1], S. Grosvenor[1]

[1] Scientific Coalition for UAP Studies (SCU), Fort Myers, FL 33913, USA

Corresponding authors: larryjoe@westok.net (L.J.H); Ianporritt21@gmail.com (I.M.P)

Date: August 14, 2023

Abstract

This paper provides an assessment of indicators associated with unidentified anomalous phenomena (UAP) reports near American military and aerospace facilities and ranks the relative likelihood of the following four intention scenarios: 1) general military survey, 2) atomic weapons survey, 3) atomic warfare prevention and 4) military aggression. This study follows on the work presented in UAP Pattern Recognition Study 1945-1975, US Military Atomic Warfare Complex (Hancock et al., 2023a), and is based on the conclusions that intelligent and focused activity was associated with UAP near atomic facilities to a greater degree than near conventional non-atomic military facilities.

The data for this indications analysis include both the original 590 UAP reports and the five study sites in Hancock et al., 2023a: 1) atomic materials production, 2) atomic weapons assembly, 3) atomic weapons stockpiles, 4) atomic weapons deployment, and 5) rocket/missile testing and development, plus a further 284 UAP reports that indicated either engaged aircraft, active radar jamming, radio interference in the form of noise on aircraft audio receivers, radar interference / jamming of aircraft receivers, directed radar frequency transmissions mimicking the frequencies used by pilots, coded radar frequency transmissions identification friend or foe; or were observed during missile, rocket, and high-altitude balloon tests, or over military installations. Intention analysis was applied to assess scenarios related to information collection/survey, deterrent/obstruction of military activities, and aggressive engagement. A list of indicators was created, and four major scenarios were considered for assessment. Results indicated that an atomic weapons survey was the most likely scenario. General military survey was the next likely scenario. Atomic warfare prevention and military aggression appeared as the least likely scenarios, in that order; we found little evidence to support prevention or aggression as primary intentions.

1. Introduction

The methodology used in this indications analysis was adapted from the tools and practices used within the national intelligence community for threat and warnings studies. It provides an approach to evaluating observed activities which are not reproducible nor predictably repeatable (Grabo, 2004).

Within the intelligence and military communities, this methodology is described as threat and warnings intelligence; in public and commercial applications, such as in marketing and strategic

business planning, it is commonly referred to as indications analysis. In their most basic form, indications studies involve long term collection of activities occurring within a specific area of interest. With a sufficient historical baseline of data, it is possible to determine when anomalies in that activity occur. Suspected anomalies are investigated and fact-checked; if deemed worthy of ongoing study, the next step in the process involves developing a set of hypothetical motives (intentions scenarios).

The process of indications analysis is a subjective one. Any numbers assigned to probabilities of scenarios are simply for convenience in discussions and do not involve true statistical analysis. Instead of using numbers, a more realistic approach is simply to use terms such as "It seems probable that" regarding positive indications support for scenarios, and terms such as "It appears unlikely" or "It seems improbable that" in reference to negative indications for a scenario (Grabo, 2004).

This methodology does not claim to produce either numeric or testable scientific results. It accepts the fact that indications analysis produces an estimate of motive and intentions, but that estimate will always be fundamentally subjective - as well as handicapped by incomplete data and information of varying reliability. The only recourse to this problem is to build a historical record covering a substantive period and to use observations vetted to the greatest extent possible. In both military operations and competitive marketing, decisions must be made even if the data are not scientifically sufficient for quantitative probabilities. The data from UAP reports is similarly insufficient, but this method allows some progress to be made in understanding the possibilities of intent associated with limited and incomplete data.

The final step in the analysis process is the assessment and description of relative likelihoods for the scenarios being evaluated for the indications data. Scenarios must be itemized with no attempt to rank one above the other. The relevance of indicators to all possible scenarios must be considered to avoid preconceptions as much as possible. The four military scenarios we will be investigating are outlined here.

1.1. General Military Survey

In its most basic form, military intelligence involves the collection of information on both the capabilities and vulnerabilities of a military force (Richelson, 2016). A general survey includes estimates of the size and readiness of an armed force in all its operational domains (ground, air, sea, and space). Information is collected on all types of weapons, as well as on the systems and logistics capabilities available for delivering each category of weapon. Regarding vulnerabilities, a determination must be made of the ability of each element of the armed force to detect threats and defend itself from attack. While a general survey is intended to be comprehensive and covers all classes of weapons, a special focus would normally be placed on "strategic weapons": those weapons capable of striking an enemy at the source of its military, economic, or political power. Strategic weapons are defined as those capable of destroying an adversary's population centers, industrial base, or utilities, transportation, and communications infrastructure.

If a general military survey is indicated, there would be no distinction in focus between atomic vs general military resources for UAP activities, although there might be a greater emphasis on the more advanced military capabilities.

1.2. Atomic Weapons Survey

A strategic weapons survey would be "targeted" - with a focus on collecting intelligence on the development, production capacity, stockpiling, and delivery platforms for weapons of massive physical destruction. For the purposes of this study, such strategic weapons are limited to nuclear and thermonuclear bombs and missile warheads. A survey of strategic nuclear capability is assumed to include the observation of radioactive materials processing / isotope separation as well as weapons production facilities (Peebles, 2000).

In practice, the observation and identification of weapons grade radioactive materials production plants is made possible given the exceptionally high levels of electrical power required for weapons grade materials concentration processes, the number and size of associated power transmission lines, and other engineering elements and safety considerations associated with atomic isotope separation. This makes it possible to profile atomic facilities and characterize how they could be identified in aerial surveys. Beyond the question of identification, even during the period of plant construction, other relatively simple techniques, including air and water isotope sampling, allow a characterization of the level of atomic technology in use as well as estimating the types of weapons in production – including a differentiation between nuclear and thermonuclear weapons (Richelson, 2007).

If a focused atomic survey is indicated, there would be an elevated level of UAP activities at atomic facilities and a lack of comparable levels at general military facilities.

1.3. Atomic Warfare Prevention

The ability to effectively preempt or intervene in strategic military action is based in being able to target strategic weapon deployments, as well as the systems used to deliver those weapons in military strikes. To be effective, either action also requires understanding the security and defenses put in place to protect the weapons and the ability to defeat that defense to compromise or eliminate the use of the weapons.

In addition, if this is the actual intention, beyond some sort of reconnaissance, two additional activities would be expected. The first would be evaluating the defenses associated with the weapons, including the capabilities of detection and warning systems. That activity normally involves some level of "engagement" with those with the defenses to fully verify their capabilities (Burrows, 2001). In military circles, such practices are referred to as "ferreting" and involve activities which will trigger defensive action. Ferreting activities include direct approaches to the targeted installations, appearing to simulate actual attacks. If prevention is involved as motive in ferreting activity, it would be necessary to conduct those tests on an ongoing, repetitive bases, to ensure the intervention capability remains viable in the face of new technologies or defenses.

For atomic warfare prevention to be indicated, UAP activities must represent a deliberate attempt to disrupt or prevent functional operations for atomic weapons delivery and there must be a further consequence to the disruption, that is, a permanent disengagement or disablement of an atomic weapons mission.

1.4. Military Aggression

This scenario raises the primary question whether UAP activities reflect a level of actual aggression sufficient to suggest the likelihood of overt, large-scale hostile action at some future

point in time. Indications analysis does not offer an estimate of the "imminence" or time frame of such a scenario. It is strictly limited to estimating the relative possibility of such a scenario as compared to the other intentions being evaluated (Grabo and Goldman, 2015).

A major challenge in evaluating this scenario is that certain activities which would be considered part of a general military survey, would also be part of the planning for future, hostile military action. As an example, activities which allow an evaluation and characterization of defensive capabilities may be strictly for informational purposes or carried out as part of the planning for a military campaign. Activities which trigger a defensive response are key to the detection, location, and recording of miliary capabilities regarding surveillance, security, communications, and armed response (ferreting). One factor which helps differentiate intentions regarding those activities includes the determination of whether they are being carried out covertly (indicative of possible plans for aggression) or overtly (suggestive of a survey). Another consideration is whether disguise or deception is involved in the collections/ferreting activities. The frequency and repetition of such activities is also a consideration. If military aggression is being contemplated, it is necessary to ensure that information from collections and assessments does not become outdated (Grabo and Goldman, 2015).

It is certainly possible that some instances of testing defensive capabilities may appear aggressive. Provocation of a response may be the first step in an aggressive action because it allows the aggressor to evaluate the full capabilities of surveillance, weaponry, and the quickness of a defense response. In that regard, the degree of overt aggressiveness – the actual compromise and/or destruction of military assets – is a major consideration as to whether actual aggression is intended. Examples of intentional destruction of military assets (such as interceptors) or the compromise of surveillance systems (suppression or other tactics related to compromising of military radar systems or command-and-control networks) would be indictors that the potential for further aggression is elevated. Overt destruction of or interference with defensive capabilities is the most obvious indicator which separates a survey scenario from the actual intent to conduct military aggression.

For military aggression to be indicated, UAP activities must represent a direct engagement with military personnel, resulting in a substantial risk or sustained damage to property and/or personal injury or death.

The conceptual model for our two, linked studies, pattern recognition and indications analysis, is illustrated in Figure 1.

The outline of our pattern and intentions analysis process is as follows:

- Collect and build a database of the most credible incidents possible.
- Chart the incidents to reveal patterns within the data.
- Analyze patterns to identify activity indicators.
- Map activity indicators to scenarios of "intent

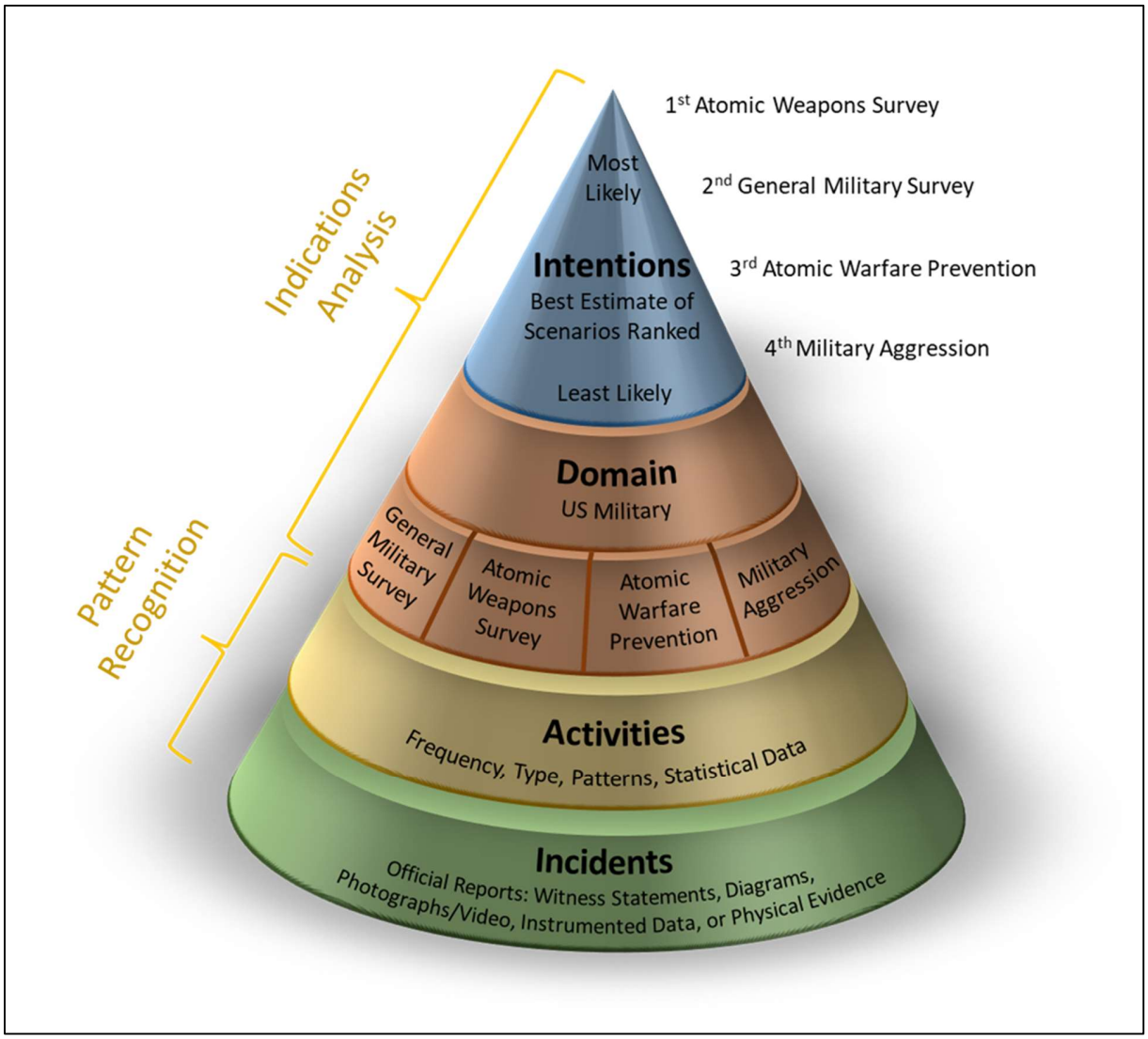


Figure 1 Intentions Study model

2. Methodology

2.1. Data Sources

Hancock et al., 2023a, examined UAP reports between 1945 and 1975. The patterns suggested an anomalously high level of UAP activity at military facilities, activity that reflected both intelligence and focus. The UAP reports were extracted from the Sparks Blue Book catalog (Sparks, 2020); National Investigations Committee on Aerial Phenomena yearly chronologies (NICAP 2023); and the books *Clear Intent* (Fawcett and Greenwood, 1984) and *Faded Giant* (Salas and Klotz, 2005). Sparks, 2020, served as our primary data source. This list contains reports which were officially reported to and investigated by the US Air Force's various UFO investigations programs (SIGN, GRUDGE, BLUEBOOK) (Swords and Powell, 2012). In addition, the NICAP yearly chronologies were used to access related case studies and reports from military personnel, law enforcement, pilots, and other observers. Details on individual incidents were taken from NICAP investigation summaries and linked Blue Book investigation

documents. Additional sources with incidents relevant to the study included material from the two books mentioned above.

2.2. Data Selection

After compiling the incident data into an Excel database, we did manual reviews to remove duplicates and reconciled a final set of entries for analysis. A total of 874 incidents were included in the study data set for this paper, 590 from Hancock et al., 2023a, and a further 284 were extracted from the data sources listed above that included the following activities involving potential interaction with UAP:

- Aircraft engagement
- Aircraft encounters
- Active radar jamming
- Over military installation
- Observed during missile, rocket, and high-altitude balloon tests
- Radar tracking data
- Radio interference in the form of noise on audio receivers
- Radar interference / jamming of receiver
- Directed radar transmissions mimicking our own surveillance radar frequencies
- Transmission of radar frequency identification codes indicating friend (or foe)

2.3. Intention Scenarios and Indicators

Hancock et al., 2023a, mapped UAP activity frequency, type and patterns. Here we examine these patterns and test a series of potential scenarios against these results. The four intentions scenarios examined in this study are:

1. Survey-Type
    a. General military survey
    b. Atomic weapons survey
2. Threat Assessment-Type
    a. Atomic warfare prevention
    b. Military aggression

These scenarios were then mapped to a list of potential intention indicators. Indicators are activities which, based on the frequency, type, and pattern of activity, would suggest one or more intentions scenarios. This determination is based on both Hancock et al., 2023a, and a detailed re-examination of the reports used in this study with a focus on each of the following indicators. As part of that work, we also identify and report on "gaps" in the data, such as activities where data was not available.

The UAP-activity indicator list developed for scenario analysis and evaluation in this study:

1. First-generation atomic weapons
    a. First-generation atomic weapons materials production facilities
    b. First-generation atomic weapons design and assembly facilities
    c. Extended activities at first-generation atomic weapons design and assembly facilities
2. Atomic weapons stockpiles
    a. National atomic weapons stockpiles
    b. Surveillance-like activities at national atomic weapons stockpiles
3. Thermonuclear weapons deployment sites

    a. Thermonuclear weapons deployment sites
    b. Extended activities at thermonuclear weapons deployment sites
4. ICBM sites
    a. ICBM sites
    b. Low altitude aerial incursions at ICBM bases
5. Rocket and missile tests
    a. ICBM test launches (Canaveral/Vandenberg)
    b. Rocket and missile tests (White Sands)
6. Manned space launches
7. Commercial nuclear power plants
8. Suggestive of radiation/isotope monitoring and particulate collections
9. Suggestive of testing of physical security at atomic military bases (Exclude ICBM)
10. Suggestive of testing air defenses at atomic development facilities
11. Suggestive of testing of air defense capabilities at conventional military bases
12. Suggestive of testing of physical security at conventional military facilities
13. Atomic weapons tests
14. Low-altitude aerial incursions at conventional military bases
15. Bomber alert and bomber exercises
    a. Atomic bomber alert missions
    b. Atomic bombing exercises
    c. Continental air defense exercises
16. Mobile atomic weapons platforms (submarines and aircraft carriers)
17. Testing capabilities, identification friend or foe (IFF) / radar response, jamming (electronic interference)
    a. Suggestive of testing of aircraft capabilities (speed, response times, maneuverability)
    b. Suggestive of false duplication of IFF radar responses to air defense radar facilities
    c. Suggestive of jamming or other types of electronic interference with military aircraft radar systems
18. Detection and tracking capabilities reconnaissance (visual and radar)
19. Covert UAP activity
20. Overt UAP activity
21. Direct engagement with military involving substantial risk or sustained damage, personal injury, or death

2.4. Indicator Analysis Matrix

Each indicator for each scenario has been scored (see Figure 2) based on the quality of the information available for that indicator, the frequency and strength of pattern of activity for that indicator, and whether or not the pattern of activity supports or not the specific scenario.

Column 1 is a specific indicator of activity evidenced by UAP reports.

Column 2 contains a data quality score from 0, no information is available to make an informed assessment about this indicator, through to a score of 3, high quality and quantity of information is available to make an informed assessment.

Column 3 contains a score for how well the data support the pattern described by this particular indicator, from +3 Highly supportive; 0 neither supports nor suggests the opposite; and -3 highly supportive that the opposite is true.

Columns 4-7: For each scenario, how well does the specific indicator pattern support this particular scenario. Score range from +3 to -3.

The table in Figure 2 is a high-level sketch of evidence for indicators support of the different intention scenarios. The scores from this table are then combined with a detailed analysis of the content and credibility of the individual reports associated with each indicator. Finally, a subjective decision is reached of the likelihood for each intention scenario to represent the reported data.

		Data Quality	Pattern Support	General Military Survey	Atomic Weapons Survey	Atomic Warfare Prevention	Military Aggression
1a	UAP activity at all first-generation atomic weapons materials production facilities	3	3	1	3	0	0
1b	UAP activity at all first-generation atomic weapons design and assembly facilities	3	3	1	3	0	0
1c	Extended surveillance at all first-generation atomic weapons design and assembly facilities	3	-3	0	0	-3	-3
2a	UAP activities at national atomic weapons stockpiles	3	3	2	3	1	1
2b	Extended surveillance at national atomic weapons stockpiles	3	0	0	0	-3	-3
3a	UAP activities at thermonuclear weapons deployment sites	3	3	2	3	1	-2
3b	Extended surveillance at thermonuclear weapons deployment sites	3	2	2	2	2	1
4a	UAP reports from ICBM sites	3	2	2	3	1	-2
4b	UAP low altitude aerial incursions at ICBM bases	3	3	2	3	1	-2
5a	UAP incidents associated with ICBM test launches (Canaveral/Vandenberg)	3	1	2	3	1	-2
5b	UAP incidents associated with rocket and missile tests (White Sands)	3	3	2	3	1	-2
6	UAP incidents associated with manned space launches	3	0	-1	-1	-1	-1
7	UAP activity at commercial nuclear power plants	3	-3	-1	-1	-1	-1
8	UAP activities suggestive of radiation/isotope monitoring and particulate collections	1	3	1	3	0	0

9	UAP activities suggestive of testing of physical security at atomic military bases (Exclude ICBM)	3	1	2	2	2	2
10	UAP activities suggestive of testing air defenses at atomic development facilities	3	3	2	2	2	2
11	UAP activities suggestive of testing of air defense capabilities at conventional military bases	3	2	2	0	0	-1
12	UAP activities suggestive of testing of physical security at conventional military facilities	3	-3	-3	0	0	-3
13	UAP activities at atomic weapons tests	0	0	0	0	0	0
14	UAP low altitude aerial incursions at conventional military bases	3	-3	-3	0	0	-3
15a	UAP incidents associated with atomic bomber alert missions	3	1	2	2	2	2
15b	UAP incidents associated with atomic bombing exercises	3	-3	-3	-3	-3	-3
15c	UAP activity associated with continental air defense exercises	3	-3	-3	-3	-3	-3
16	UAP activities associated with mobile atomic weapons platforms (submarines and aircraft carriers)	0	0	0	0	0	0
17a	UAP encounters suggesting testing of aircraft capabilities (speed, response times, maneuverability)	3	3	3	3	3	3
17b	UAP activity suggesting of false duplication of IFF (Identification Friend or Foe) radar responses to air defense radar facilities	3	2	2	2	2	2
17c	UAP incidents suggestive of jamming or other types of electronic interference with military aircraft radar systems	3	1	1	1	1	1
18	Detection and tracking capabilities reconnaissance (visual and radar)	3	3	3	3	1	1
19	Covert UAP activity	3	2	2	2	1	1
20	Overt UAP activity	3	2	3	3	2	-2
21	Direct engagement with military involving substantial risk or sustained damage, personal injury, or death	3	-2	1	1	1	-2

Figure 2 Indications Rating Scenario Matrix

3. Results

3.1. First-generation atomic weapons

3.1.a. Pattern Analysis (Hancock et al., 2023a)

Assessment: Very Strong Support

The pattern analysis indicated elevated UAP activity at atomic weapon development sites, including production of radioactive materials, weapons design, and production plants. That anomalous activity corresponded to a specific window of time. The highest degree of anomalous activity was at the earliest developmental sites (Hanford, Oak Ridge, Los Alamos, and Sandia Base / Kirtland AFB), while similar facilities which went into operation later in time (the Savannah River and Pantex plants) showed far less UAP activity. Killen base (one of the five national atomic weapons stockpile sites) also showed an elevated number of UAP incidents during the initial window of activity, while the other four sites do not.

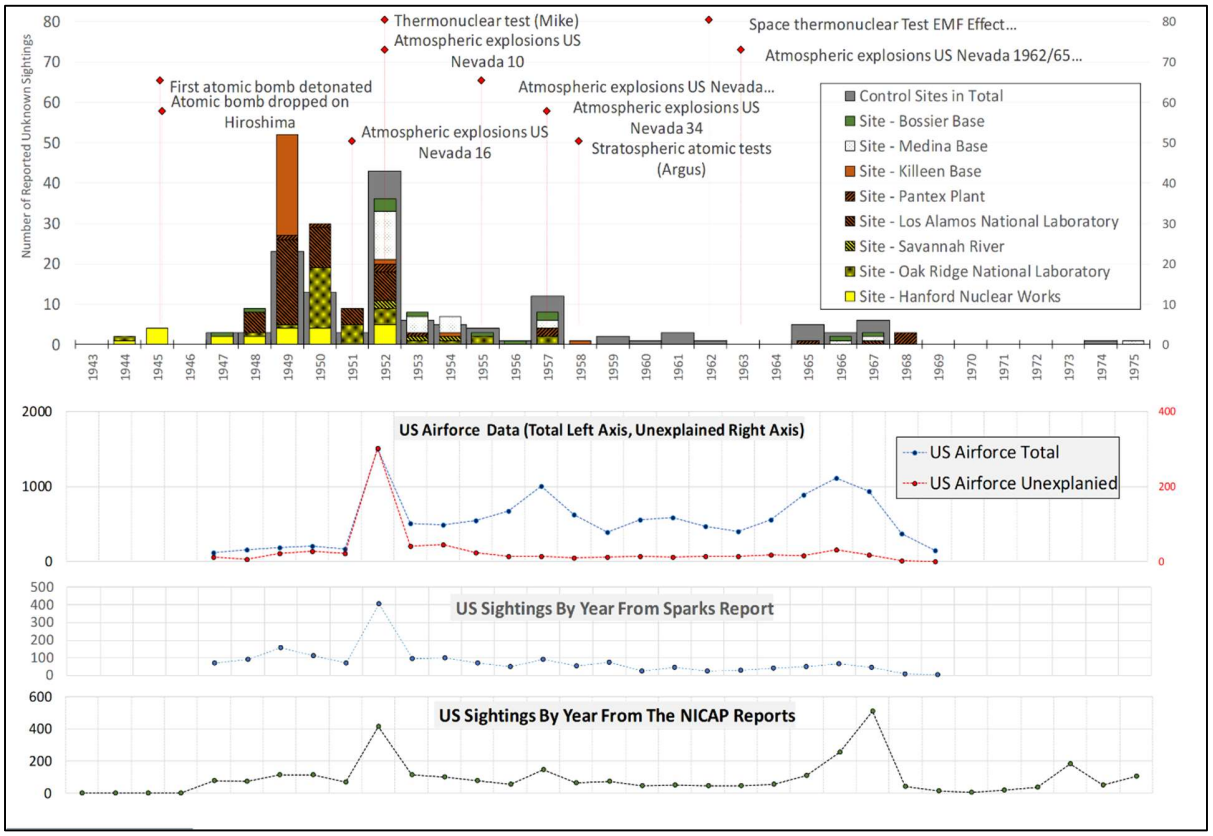


Figure 3 First-generation atomic weapons development facilities. US atomic weapons vs controls incident reports (Hancock et al., 2023a).

This shows the degree in which the atomic warfare sites (shown as a stacked bar) reported significantly more UAP encounters than the control sites (shown in total as a grey bar behind the atomic sites). This increase in activity at the atomic sites was most notable from 1948 to 1951 when the atomic warfare facilities became operational. During 1952, UAP activity was elevated at the atomic sites as well as the controls, and in the overall reporting for the US Air Force, Sparks, and NICAP reports (as shown in the line charts below the main bar chart).

The number of reports from different sources, including Sparks, NICAP, US Air Force Blue Book Reports (line chart) is shown below the main bar chart. Large peaks in the general level of reporting can result in the specific facility types also showing a peak in activity.

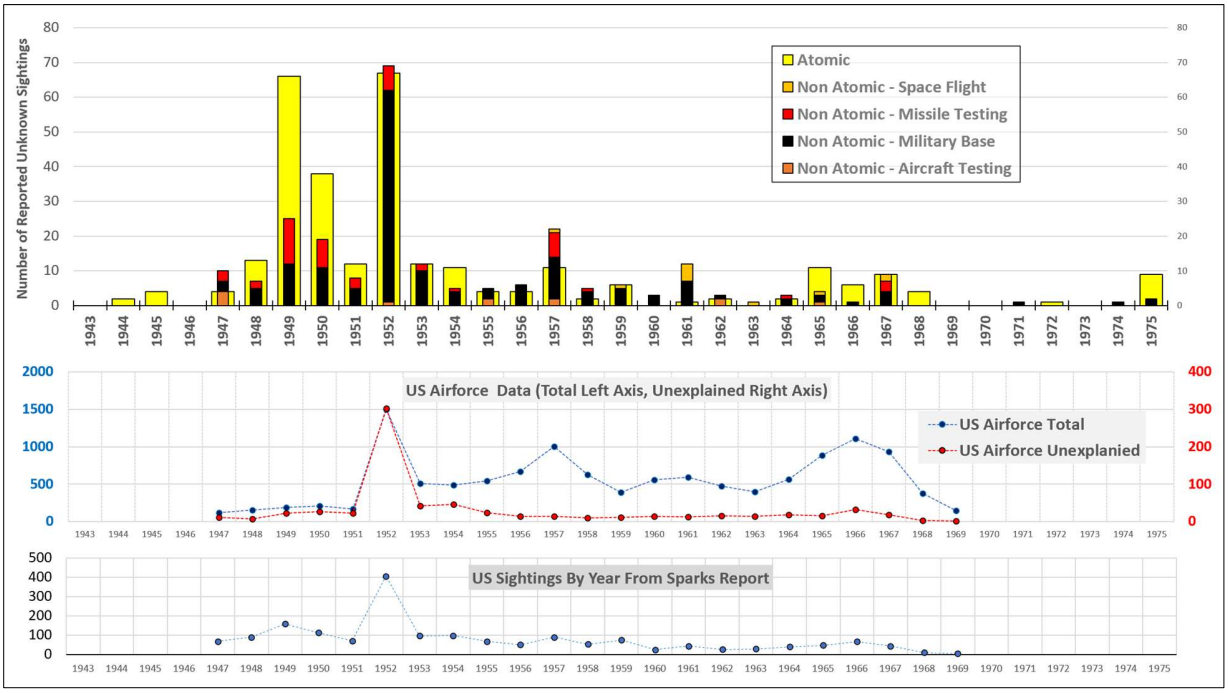


Figure 4 Comparison of atomic and non-atomic facility types. Hancock et al., 2023a also demonstrated an increased number of reported cases at the atomic facilities as compared to conventional, non-atomic weapons military bases.

Figure 4 shows the increase in activity at the atomic sites (yellow bars) during 1948 to 1951, most notable during 1949 and 1950, as compared with the general military sites (stacked orange, red and black bars). The White Sands rocket/missile testing site is included in the general military sites. While not an atomic site, White Sands is a specialty technology test site associated with specific indicators. When comparing the atomic sites to non-atomic sites, the specialty non-atomic facility types are highlighted separately to gain a greater understanding between the different groups of facilities. The difference between the atomic sites in yellow and the standard military sites in black is significant during the 1948 to 1951 period. There is also a period during 1965 to 1968 where the atomic sites show an increase in reports over the standard military sites, mainly at the ICBM sites. (Hancock et al., 2023a)

3.1.b. Incidents

Incidents with dates are sources from documents in the NICAP Chronologies unless otherwise referenced (NICAPa). Representative examples include the following:

- March 6, 1949, Killeen Base National Atomic Weapons Storage Site, Texas; an atomic stockpile sites, adjacent to Gray Air Force Base and co-located with Fort Hood. The Killeen Base security zone experienced a burst of UAP incidents over the period of some three months. The March 6 report came from a security patrol; the patrol observed a small, blue-

white, oblong object traveling above the site and within the designated special security area. Other Army patrols also observed unidentified lights/objects over the period of 8:30 pm to 2 am. The following day, at 1:30 pm, an Army private observed an orange teardrop-shaped object descend vertically, directly in front of him. At the end of March, an Army lieutenant on daylight patrol duty observed a reddish-white ball of fire pass horizontally over the base airstrip; he also noted interference on his field telephone while he was reporting the sighting.

- On April 27, 1949, southeast of Killeen Base, at 9:20 pm, a two-man Army patrol reported a small, blinking, violet object only a dozen feet or so away from them, passing through the branches of a tree before disappearing. Only five minutes later, four soldiers sighted a small light which appeared to have a metallic cone trailing behind it. The object was several hundred feet from them and about six to seven feet off the ground. Approximately ten minutes later, the same four men observed a small white light appear about one hundred feet from them and move away in zigzagging flight some six feet above the ground - before suddenly disappearing. Less than an hour later, they saw another light to the west- southwest of them.

- In early May 1949, at 11:30 in the morning in the Killeen security zone, two Army majors and a captain observed two oblong, highly reflective white discs, flying over the security area at an altitude of approximately 1,000 feet at an estimated speed of some 200-250 miles per hour. Both objects then made a coordinated, shallow turn. With Army concerns growing due to the frequency and quality of sightings, a network of artillery observers, with their ranging and plotting equipment, was organized, and put into place. Multiple network stations began making coordinated, measured/triangulated observations in early May. On May 6, a brilliant light, changing from pinkish to green, was observed and calculated to have been at 4,000 yards distance. It maintained its position and was in view for almost an hour.

- On May 7, 1949, two Fort Hood/Killeen Base (the Army triangulation network plotting center command post and another observer at a second network site) observed a brilliant, white diamond-shaped light at a relatively low altitude. Their triangulation calculations placed the unidentified light at 1,000 feet in height and at 15,000 feet (2.8 miles). The light was tracked for 57 seconds and traveled approximately 3 and a half miles during the observation. No sound was heard.

- On May 8, 1949 (the following day), three Fort Hood observation posts observed a similar brilliant diamond-shaped light at an altitude of 1,600 feet, slowly descending for 9 minutes. Senior officers from the agencies involved in Killeen base security reviewed the progress on the observations and concluded "agencies were unanimous in agreeing that the new observation system instituted by Fourth Army provided precise results and definitely indicated that the unknown phenomena in the Camp Hood area could not be attributed to natural causes."

- On May 19, 1949, an early morning daylight sighting in the Killeen security zone described a round, silver, thin object seen for some 5 minutes. The object was stationary and rocking, giving an edgewise view. It continued an irregular motion as it traveled upward and away at a slight angle.

The Killeen base/Fort Hood UAP incidents continued into June, with yet another triangulated/measured observation on the evening of June 6 recorded an aerial object moving within 4 miles of one observation post. Shortly after 9 pm that evening, observers in the plotting network tracked a hovering orange object some 30-70 feet in diameter and one mile in altitude. After 2 minutes and 40 seconds of observation, it began moving in level flight and then appeared to explode in a shower of particles. That night three balls of light were observed and plotted, with distances ranging from 15 to 24 feet in diameter and at a height of some 1,000 to 1,600 feet. The lights were generally stationary although one moved some 120 yards over 40 minutes. Durations of the various observations ranged from 57 seconds to 40 minutes.

- On May 21, 1949, Hanford radioactive materials plant, Washington state. An unidentified object was reported “station keeping” (hovering) within Hanford restricted air space. The object was visually described as silvery, and disc-shaped; radar confirmed a target at an altitude of 17,000 to 20,000 feet. The silvery, disc-shaped object was confirmed with visual observation by the Hanford radar station personnel. A call for an interceptor was relayed to Moses Lake airfield but before the F-82 fighter was even airborne the disc suddenly took off in a southerly direction at a speed “faster than a jet”.

  The spot intelligence report states that the pilot of the F-82 was instructed to search for the object and "intercept it in hopes that it might be a disk." However, the object had quickly moved out of the range of ground radar and the pilot of the F-82 was not able to locate it. A short time later, another aircraft was observed on radar in the restricted air space and appeared to behave “evasively”, suggesting the possibility that the intruder could detect radar scanning or the aircraft's approach. Following that incident, neither Hanford nor Oak Ridge reported unknown object observations until 1950.

- On March 21, 1950, military personnel in the Sandia Base ordinance (weapons) area near Albuquerque, New Mexico observed several silver colored objects engaged a series of aerial maneuvers over the base. Their actions appeared like aircraft engaged in “dog fighting”. The objects were extraordinarily maneuverable, performing right angle turns as well as being able to immediately reverse their direction of flight.

- On October 15, 1950, at 1:30 in the afternoon, John Isabell, a security guard on the Oak Ridge Patrol Force, stationed within the security area of the Oak Ridge Tennessee radioactive materials plant, observed a silver-white spherical object traveling from the southwest to the northeast and passing over the K-25 uranium enrichment area. It was white or silvery and round like a ball. The guard phoned the information on the sighting to his security headquarters; at the same time, radar picked up an indistinct target every third or fourth sweep over the K-25 area. An F-82 interceptor was scrambled. Observers on the ground reported that the fighter plane arrived about 15 minutes after the object had departed.

- On October 23, 1950, at 4:30 in the afternoon, an Oak Ridge Laboratory employee observed a low altitude flash from what appeared to be a metallic object traveling over the restricted area. After this report, it was discovered that a nuclear radiation detection station in the vicinity of the sighting had registered a burst of both alpha and beta emissions. The normal purpose of the radiation detection network was to detect any leaks of radiation from the Oak Ridge Laboratory, but an investigation determined there had been no leak at the time of the

incident; further studies provided no local explanation for the radiation spike. A note on a related FBI report of the incident states that no intentional or accidental radioactivity releases which would have explained the Geiger counter incident had occurred during the entire month of October.

- Oak Ridge sightings continued into November, and on November 5, 1950, at 11:55 in the morning an illustrator for Fairchild aircraft reported a very large object shaped like a pear, translucent but with a dark core, making darting movements around his working area for some 5-10 minutes. Investigation reports of the incident were found in both Air Force Office of Special Investigation and FBI files, and the illustrator provided a sketch of the object's appearance and movements.

- On November 29, 1950, just before 6 pm, Air Defense Command reported several radar tracks blanketing the restricted Oak Ridge security reservation. Interceptor aircraft were sent but made no visual contact. At 7 pm, a Geiger counter in the Oak Ridge area recorded both a spike in alpha particles and a slight rise in gamma radiation at the same time – later investigation showed no operational explanation for the emissions. That was the second instance of anomalous radiation detection at Oak Ridge during the tracking of unknown aerial objects, however an extended series of similar radiation incidents had occurred in the vicinity of the Los Alamos, New Mexico atomic facility during the period from 1947-1950.

- On November 4, 1957, air traffic controllers in the tower at Kirtland Air Force Base near Albuquerque, New Mexico (Kirtland being co-located with the Sandia Base national atomic weapons stockpile site) first observed a white light traveling over the base runway at low altitude and called for radar verification. Radar confirmed the target, and the object was observed to turn across a runway and rapidly descend. The controllers observed the object through binoculars and had an excellent view, at times looking down on it. They described it as automobile-sized, egg-shaped, and displaying a single white light. It circled and began to descend almost as if it were approaching for a landing. The object's descent was tracked on an approach control radar.

  Instead of landing, the UAP moved across the Air Force flight line runways and taxiways, heading toward the control tower at a very low speed of some twenty to thirty miles per hour. Descending even lower, still at very slow speed and demonstrating extreme maneuverability, the object disappeared behind a security fence at the perimeter of a floodlit high-security area – an area used for atomic weapons storage. After hovering there for some twenty to thirty seconds, it moved away slowly, and then accelerated in a steep climb at very high speed.

  The tower controllers were in communication with base approach radar control and radar tracked the object as it traveled east away from the base, only to circle a radio range signal station before heading north and disappearing off radar at approximately ten miles distance. Later in the evening another unknown target was picked up, hovering north of the base before disappearing. Some twenty minutes after that incident, an Air Force C-46 took off from Kirtland toward the west and radar painted an unknown object some four miles south of the runway. The object accelerated toward the runway and made a hard turn to move into formation with the C-46, maintaining proximity with the aircraft for fourteen miles before turning again and moving back toward the runway, where it remained stationary before fading off the radar.

- On November 7, 1957, several bright, flashing objects were observed hovering over the Pantex atomic assembly plant outside Amarillo, Texas. Private security personnel reported the objects to the highway patrol and a highway patrol officer was dispatched to the plant, also observing the lights. Security guards described three objects which had been "floating" over the plant for some time.

3.2. Atomic weapons stockpiles

3.2.a. Pattern Analysis (Hancock et al., 2023a)

Assessment: Very Strong Support

We note that while the data we have is extensive and strong for two of the earliest bomb depots (Sandia Base and Killeen National Stockpile site) we have no data for the other stockpile locations. Sandia Base was exceptional because it was co-located with a major operational Air Force base, which supported atomic weapons transport and testing. It was also supported by some of the first search radar systems and operational interceptors. Killeen was co-located with a major Army artillery center and Army personnel were very sensitive to and reported security violations.

Overall, the national stockpile sites were overseen by the Armed Forces Special Weapons Project (AFSWP) from 1946-1951. The civilian AFSWP, historically followed by the Defense Atomic Support Agency (DASA) and later the Defense Nuclear Agency (DNA), maintained the administration of selected Air Force, Army, and Navy nuclear facilities during the first years of the Cold War, paralleling jurisdiction of the 1946 AEC. We can find no information that the AFSWP personnel were directed to (or allowed to) submit UAP related security reports to the Air Force UFO project. None of the stockpile sites are mentioned in Project Blue Book reports nor included in Project Blue Book studies (Battelle Report #14, 1955) of UAP activity (probably due to security constraints in identifying stockpile locations).

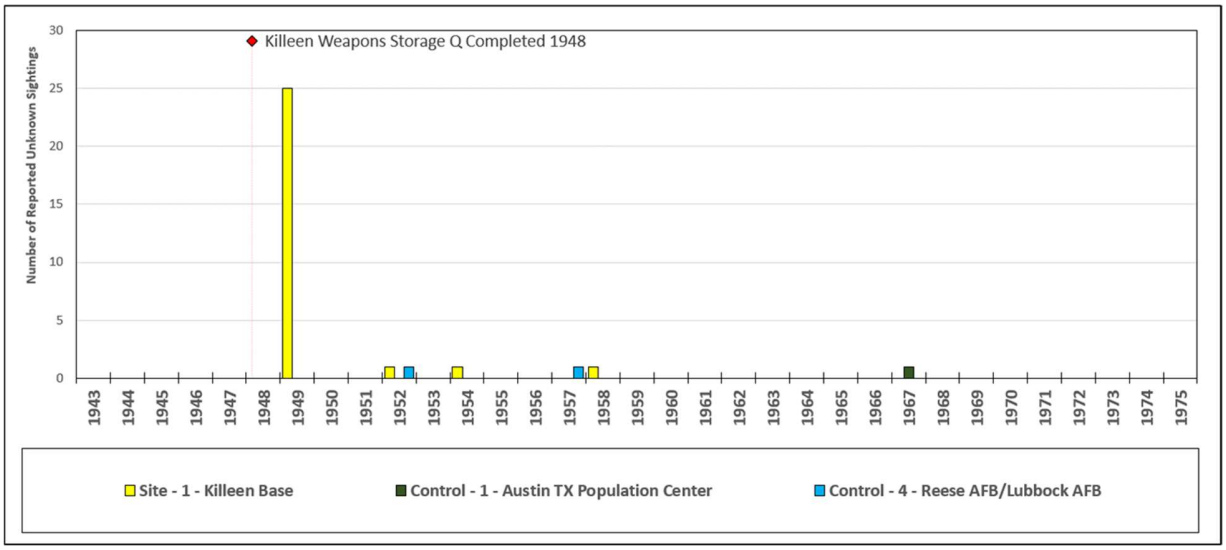


Figure 5 Killeen base site and controls, from **Hancock et al., 2023a**.

The number of reports at Killeen (shown as the yellow bar in Figure 5) is significantly greater than the reports from the controls and is also significant when compared with the other military sites as shown in Figure 3.

3.2.b. Incidents

AEC Q sites were constructed and became operational through the period of 1948-1951. These Q sites were established to distribute the original atomic bombs from Sandia Base outside Albuquerque, so that pre-emptive Soviet attacks would not threaten the entire American stores of atomic weapons. The sites contained weapons under the custody of the AEC, with oversight by the Armed Forces Special Weapons Project. The "Q" designation for the sites related to the level of AEC security required for access, which required a complete FBI background check. Q sites were used for stockpiling atomic weapons, testing high explosive detonators, and performing assembly and disassembly of training weapons for SAC. They were heavily guarded, located adjacent to major Army bases and SAC air bases. The Killeen base (co-located with the large Army base at Fort Bliss in Texas) was one of the first Q sites to become operational.

In 1949, the sheer number of UAP incidents at Killeen Base/Fort Hood, with many being at very low altitude or even ground level, resulted in the Army establishing instrumented UAP observation posts which produced very specific and concrete estimates of size, distance, and speed. We are still able to refer to an extensive set of Army documents on the Killeen Base experience, with exceptional observational detail. UFO historian Francis Ridge and the Nuclear Connections Project have compiled a detailed listing of the sightings at Killeen Base/Camp Hood (later designated Fort Hood) as well as other sightings near Texas air bases during the same period. Several of the following incidents and reports are excerpted from studies of those incidents in 1949-Fort Hood, Texas UFO Wave UFO (1949-Fort Hood, 2023; NICAPb, 2023)

- On March 6, 1949, a security patrol in the Special Weapons Project (atomic) reported a small, blue-white, oblong object traveling above the site. Other Army patrols also observed unidentified lights/objects over the period of 8:30 pm to 2 am. The following day, at 1:30 in the afternoon, an Army private observed an orange teardrop-shaped object descend vertically, directly in front of him. Later in an Army lieutenant on patrol duty observed a reddish-white ball of fire pass horizontally over the base airstrip; he also noted interference on his field telephone while he was reporting the sighting.
- Sightings continued in both the Q area and across Fort Hood. On April 27, 1949, southeast of Killeen Base, at 9:20 pm a two-man Army patrol reported a small, blinking, violet object only a dozen feet or so away from them, passing through the branches of a tree before disappearing. Only five minutes later, four soldiers sighted a small light which appeared to have a metallic cone trailing behind it. The object was several hundred feet from them and about six to seven feet off the ground. Approximately ten minutes later the same four men observed a small white light appear about one hundred feet from them and move away in zigzagging flight some six feet above the ground - before suddenly disappearing. Less than an hour later they saw another light to the west-southwest of them.
- In early May 1949 At 11:30 in the morning two Army majors and a captain observed two oblong, highly reflective white discs, flying at an altitude of approximately 1,000 feet at an estimated speed of some 200-250 miles per hour. Both objects then made a coordinated, shallow turn.

- On May 7, 1949, two sites (the Army triangulation network plotting centre command post and another observer at a second network site) observed a brilliant, white diamond-shaped light at low altitude. Their triangulation calculations placed the unidentified light at 1,000 feet in height and at 15,000 feet (2.8 miles). The light was tracked for 57 seconds and travelled approximately 3 and a half miles during the observation. No sound was heard.
- On May 8, 1949, three observation posts observed a similar brilliant diamond-shaped light at an altitude of 1,600 feet, slowly descending for some 9 minutes. Senior officers form the agencies involved in Killeen base security reviewed the progress on the observations and concluded "agencies were unanimous in agreeing that the new observation system instituted by Fourth Army provided precise results and definitely indicated that the unknown phenomena in the Camp Hood area could not be attributed to natural causes." Fourth Army convened the first of a series of weekly meetings with representatives from Army CIC (intelligence), Navy Intelligence, the FBI, and AFSWP personnel. The Army and Navy personnel agreed that the reports were “a source of grave concern”, the AFSWP attendees felt that someone would come up with a natural explanation - the FBI and AFOSI offered no comments at all.
- By July the Killeen/Fort Hood wave had begun to diminish; an Army report of July 2, 1949, provides a detailed summary of incidents which had begun on March 6. The Fourth Army summary report was distributed to a variety of agencies including the Air Material Command at Wright Patterson. Based on the July report, the Air Force and specifically the Air Force Project GRUDGE at the Air Material Command was advised that a series of instrumented and triangulated observations had been made and data were available – including those for three separate observations on the night of May 7, 1949. Most of the Killeen Base observations can be found in the Air Force UFO/BLUE BOOK files, virtually all designated as BBU, “Blue Book Unidentified.”

3.3. Thermonuclear weapons deployment sites

3.3.a. Pattern Analysis (Hancock et al., 2023a)

Assessment: Very Strong Support

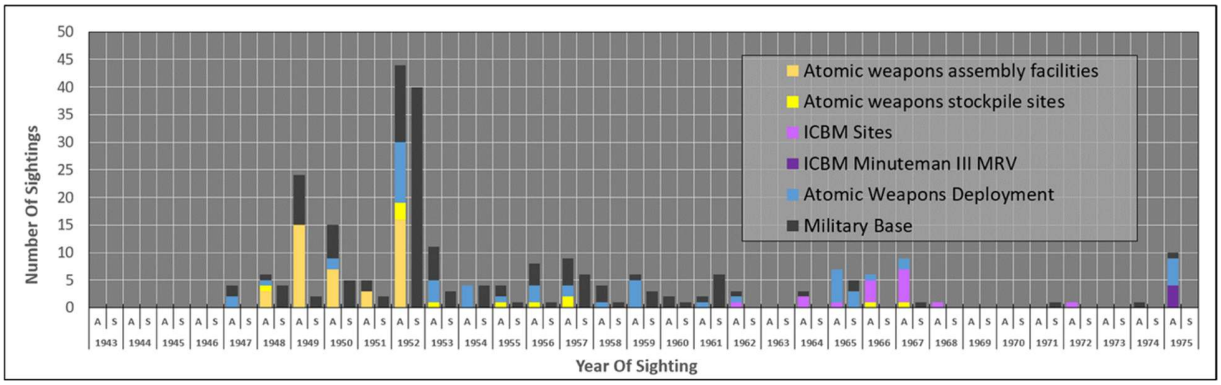


Figure 6 UAP activity over time at bases where thermonuclear bombs and missiles were deployed. Atomic deployment bases vs standard military bases (based on facility type at the time of sighting; Hancock et al., 2023a)

The type of facility is grouped into two types of sites on the x-axis, Figure 6, ‘A’ for atomic sites and ‘S’ for standard military base.

Atomic sites ('A')

- Sites that had atomic weapons during the date of the sighting are color-coded based on the facility type at the time of the sighting.
- Sites that previously had or will have atomic weapons during the study period but officially didn't have atomic weapons at the time of the sighting are included in the 'A' group but are color-coded black to separate them. As an example, in 1949 seven of the sightings reports in the atomic category 'A' (color black) were for Davis-Monthan AFB which at the time was a standard military base but became an atomic weapons deployment base in 1953 and an ICBM base in 1962.

Standard military base ('S')

- The military bases that never officially had atomic weapons during the study period are denoted as 'S' and shown as black bars.

There are several periods where atomic deployment sites received greater sightings than the standard military bases, 1949-1950 during the establishment of the atomic weapons development program, 1964 to 1967 after the deployment of the ICBM, and again in 1975 with the deployment of the Minuteman III ICBM's.

3.3.b. Incidents

- On May 2, 1959, at 8:23 in the morning, Pease AFB in New Hampshire was one of the primary Strategic Air Command bases supporting Head Start atomic bomber alert flights. Five radar tracks were detected coming inbound from the Atlantic and toward the base, minutes later, additional tracks appeared. Eventually, 18 radar tracks were being monitored by three different radars including one Texas Tower radar installation in the Atlantic. An attack seemed to be in progress and all available fighter aircraft were scrambled, from Pease and other air bases in the region. SAC bombers were brought to ready alert status, including planes at Stewart AFB, Westover AFB and Otis AFB.

  Reportedly air defense artillery sites also tracked several unidentified objects in the area of Pease AFB. Ultimately, several tracks were seen to reverse course and headed outwards from the base, back over the Atlantic. Other tracks simply went off the radar scopes (the Air Force report on the incident makes no mention of the possibility that some of the UAPs may have simply dropped below radar detection). The entire incident was initially treated as a well-organized and coherent attack on SAC; however, no intercepts were made, and, in the end, the whole matter was filed as an occurrence of unexplained radar phenomena. No mention was made in the reports of it resembling a classic "ferreting" that had effectively triggered an active defense response not only from Loring but the entire northern air defense zone (NICAPc, 2023).

- February - March –1967, Malmstrom AFB in Montana experienced an ongoing series of UAP incidents involving low-altitude unidentified lights. Reports include UAPs hovering adjacent to security gates and missile silos. On March 16, two flights (Echo and Oscar) reported an extended series of UAP activities, security alarms were triggered, and armed teams were dispatched to multiple missile locations. Maintenance and security personnel at multiple missile silos reported unknown aerial objects in their vicinity.

At least one flight of 10 ICBMs (Echo flight) was officially recorded as having unexplainably gone off alert status. There were also persistent reports from Air Force personnel on the base at the time that one other flight (Oscar) had also gone off alert status. The Echo flight missiles were later officially determined to have gone offline due to a control system fault triggering an "externally generated signal," source unknown (Salas and Klotz, 2005).

It should also be noted that while the missile wing's unit history notes UAP reports, they were all dismissed – with the unit historian being on record as having been told to edit that section of the history record. The only contemporary record of the incidents, from March 17, 1967, is a message sent to SAC expressing "grave concern" because the cause for the missiles going offline could not be identified.

- October 24, 1968, Minot AFB, North Dakota. Multiple radar tracks were observed approaching the base and an incoming B-52 aircraft. Security personnel reported an unidentified object landing and continued observing it for 45 minutes. Additional UAP reports were made from several 91st Strategic Missile Wing sites. In addition, a variety of anomalous electromagnetic effects were registered on radio and radar and security alarms were activated at outer and inner rings around silos. Official reports state that the outer [silo?] door of one location had been opened, and the combination lock of the inner door moved (NICAPc, 2023).

- On October 1975, Loring AFB in Maine reported an incursion with a UAP entering a high-security zone within 300 yards of the atomic weapons storage area. Similar reports from Loring throughout October became part of what was known as the "northern tier UFO wave" and are documented in several NORAD and NMCC internal communications.

- In October 1975 Wurtsmouth AFB in Michigan reported a base incursion with a UAP approaching and hovering over the weapons storage area. A series of UAP incidents were reported to NORAD, the National Military Command Centre at the Pentagon, the Air Force Chief of Staff and Strategic Air Command headquarters. In response, a Security Option 3 message was sent to all SAC installations across the northern border – Pease, Plattsburg, Wurtsmith, Kinchloe, Sawyer, Grand Forks, Minot, Malmstrom, Fairchild, and even Barksdale AFB in Louisiana (Fawcett and Greenwood, 1984).

- In November/December 1975, Malmstrom AFB, reported multiple waves of UAP incidents which included an apparent physical incursion involving ICBM silo security gates (site security alarm triggered) and possible attempted access to one missile silo. One Air Force communication refers to a "Faded Giant" incident which is the term for tampering with or loss of control over a nuclear weapon. A Faded Giant incident had previously occurred on one and possibly two instances at Malmstrom in 1966 (Fawcett and Greenwood, 1984).The UAP security incidents at "Northern Tier" Strategic Air Command bases are summarized in a commander in chief NORAD message of November 11, 1975, which refers to the series of UFO incidents at American and Canadian bases. The message expresses concern over possible press coverage and the need to come up with appropriate public responses (Fawcett and Greenwood, 1984).

3.4. ICBM Sites

3.4.a. Pattern Analysis (Hancock et al., 2023a)

ICBM sites

Assessment: Moderate Support

Low altitude aerial incursions at ICBM bases

Assessment: Very Strong Support

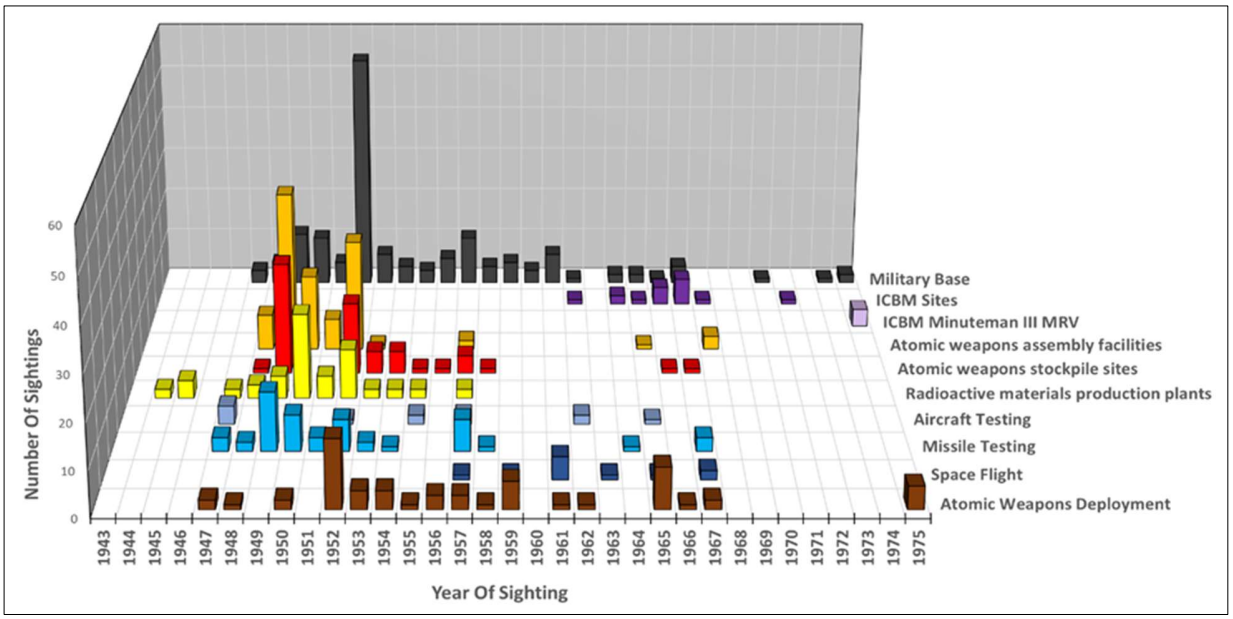


Figure 6 UAP comparative activity over time at ICBM facilities as compared to conventional and atomic military bases. Number of reports based on military facility type at the time of sighting (Hancock et al., 2023a).

The chart in Figure 7 shows the number of sightings at the various military facilities each year over the study period. The military facility type is the facility type at the time of the sighting. This shows the significance of any facility type/site as compared to the other types during a specific period. The ICBM sites (in purple) did not become operational until 1959. Any reports at the ICBM locations prior to becoming an ICBM site were captured under their facility type at that time.

While the number of sightings during the 1960/70 at the ICBM sites is lower than the late atomic facilities during the 1940 to early 1950 (Figure 8), the number of sightings at the ICBM sites is high relative to the number of sightings during this period when compared to other facility types.

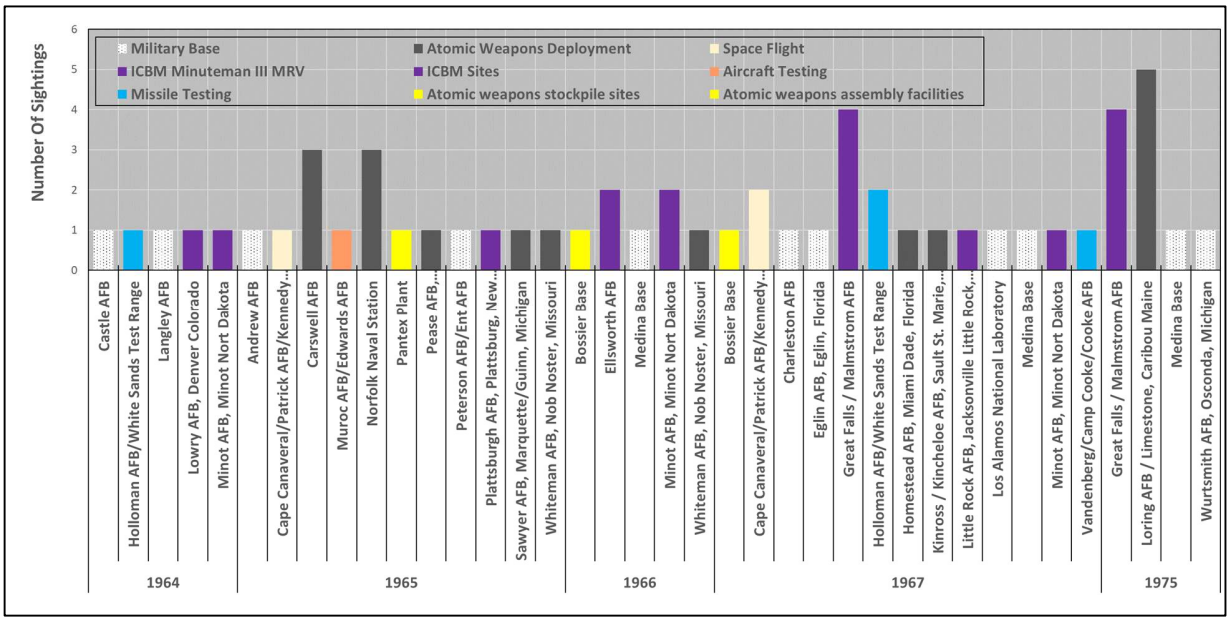


Figure 7 Individual sites and the number of sightings during 1964-67 and 1975. During these periods the predominate facility type was the ICBM sites and the atomic weapons deployment.

3.4.b. Incidents

- On August 7, 1962, one of the earliest reports of UAP activity related to ballistic missile installations involved Titan missile sites still being prepared for activation, with missiles not yet emplaced. On that date, personnel at a Titan ICBM complex in Arizona (associated with the Davis-Monthan SAC base) observed a brilliant light descending and becoming stationary over the site. The light was large enough to frighten the men, who went into the silo and notified base command. Reportedly SAC fighters were sent to investigate but as they approached, the object took off and rapidly moved out of sight before the actual arrival of the aircraft. The jets loitered over the site for a bit, then returned to their base and upon their departure the UFO immediately returned. It once again descended toward the silo - only to take off vertically and disappear overhead.

- May 24, 1964, Altus AFB, Altus, Oklahoma. Security personnel reported a UAP incident involving a large bright light which moved into to a stationary position directly over a newly constructed missile silo. Observed first by a security guard and later by maintenance personnel, the object had first appeared hovering over the security fence on the south side of the site; the object remained over the silo area for some eight to ten minutes. The incident was reported to command SAC command post, but no defensive actions were taken.

- August 1, 1965, FE Warren AFB, Wyoming, reported UAPs over its launch control facility following the initial report of a large unknown object over Cheyanne, Wyoming, then over FE Warren. For some four hours, numbers of UAPs up to more than a dozen were reported over various ICBM silos across the FE Warren installation. At one point 9 objects were observed moving in a structured formation (Hastings, 2008).

- August 11-12, 1965, at Whiteman AFB, Missouri, one of the first ICBM sites built for deployment of the advanced, solid fuel Minuteman missiles experienced an extended UAP

incident. Whiteman was being built to have 15 launch control centres and 150 missile silos. The evening of August 11, personnel at Base Operations and the Air Force control tower for the air base reported an ongoing series of unknown aerial objects. Fast-moving lights repeatedly passed over the missile sites during a four-to-five-hour period. One object appeared to point a spotlight at the ground. It was tracked on weather radar and height finder radar and determined to be at a height at 5,000 feet. No record of any attempt to intercept the objects was noted but the incident was reported to NORAD and ultimately found its way to Air Technical Intelligence Command.

- During the following two weeks unknown lights were reported in and over the Minot AFB Minuteman missile complex. In the first instance, on August 16, two individuals including a Missile Maintenance Analysis Specialist, observed a football-shaped light at low altitude for some twelve minutes. Just over a week later, on August 24, 1965, a major sighting involving Minot security personnel, radar confirmation and the dispatch of a security strike team occurred – with radio interference report by the strike team sent to investigate reports of an object hovering at ground level.

- August 16 and 24, 1965, at the Minot Minuteman ICBM base in North Dakota, UAPs were reported at very low altitude with radio interference noted by security teams. During the following two weeks unknown lights were reported in the area surrounding the base as well as directly over the Minot Minuteman missile complex. In the first instance, on August 16, two individuals, including a Missile Maintenance Analysis Specialist, observed a football-shaped light at low altitude for some twelve minutes.

- The incidents at Minot continued and during August 25-26, for over three hours, multiple UAPs were reported from three different ICBM sites, with each observation confirmed by multiple observers and radar (Hynek, 1966).

  A message from Minot Director of Operations to Wright Patterson reported extreme radio interference which interrupted radio communications across the base to security teams and silos from the Launch Control Centre. Interceptors were unable to engage, and objects lights went out whenever interceptors were in their area. A UFO also paced a B-52 inbound to Minot and radio communications with aircraft were lost until object departed (Salas and Klotz, 2005).

3.5. Rocket and Missile Testing

3.5.a. Pattern Analysis (Hancock et al., 2023a)

ICBM test launches (Canaveral/Vandenberg)

Assessment: Limited Support

Rocket and missile tests (White Sands)

Assessment: Very Strong support

Figure 6 UAP comparative activity over time at ICBM facilities as compared to conventional and atomic military bases. Number of reports based on military facility type at the time of sightingshows the relative number of reports at the testing facilities as compared to the other military facilities. Significant activity patterns include:

- High relative level of activity at the test facilities during 1949 to 1951 when compared to other non-atomic facilities. This missile testing activity was during the high level of activity at the early atomic warfare complexes and shows a similar drop off in activity post 1952 until 1957.
- The missile testing sightings were high in 1952 but this pattern of activity also corresponds to the general elevation of activity during the 1952 UAP peak.
- High number of sightings reports at missile testing sites during 1957, which was also during a smaller general peak of UAP activity. The level of activity at the missile testing site during 1957 was relatively higher than what the increase in activity of a general peak may suggest.
- Clusters of activity in 1961 and 1967 at the missile and space flight facilities.

There is also a high number of reports relative to the number of bases these facility types have. Two missile testing sites (White Sands and Vandenberg), one aircraft testing base (Edwards) and the Florida space center.

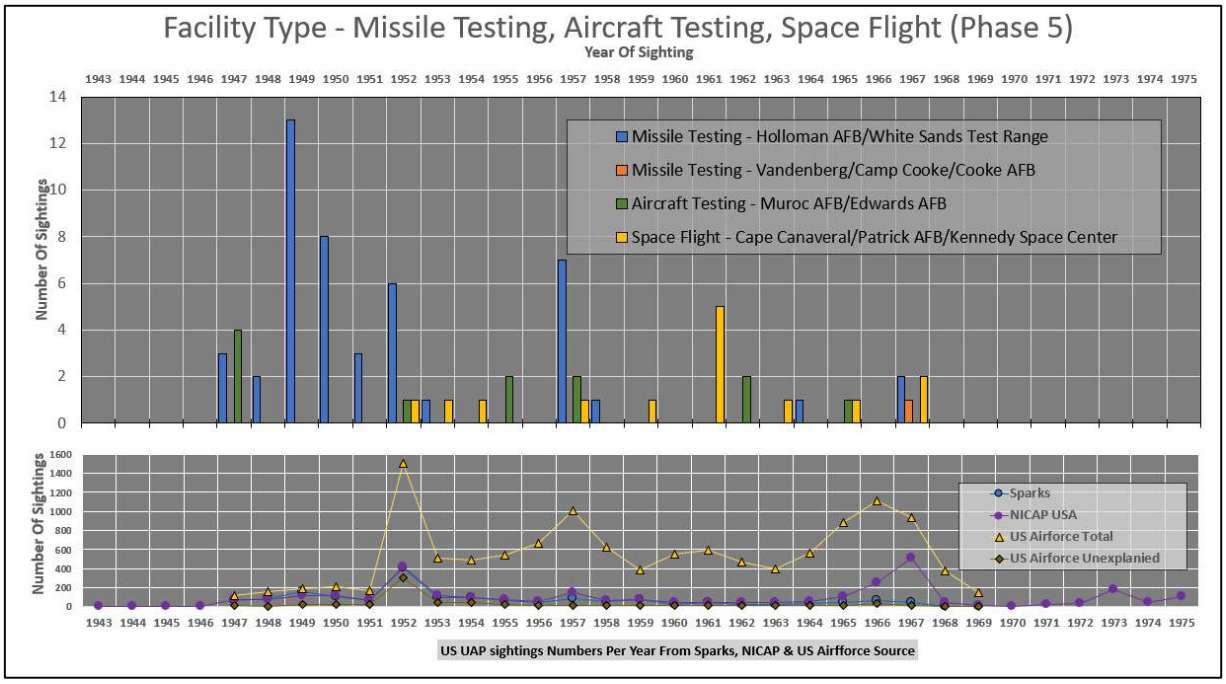


Figure 8 UAP activities at the missile testing, space flight and aircraft testing sites. The number of reports from Sparks, NICAP, US Air Force (line chart) is shown below the main bar chart. Large peaks in the general level of reporting can result in the specific facility types also showing a peak in activity - this facility peak could have been driven by an increase in overall sightings or conversely may have driven the overall activity. The peak activity at the facilities during 1947-1951 were not during general peak activity. The activity during 1952 and 1957 was during a general increase in general activity. (**Hancock et al., 2023a**)

3.5.b. Incidents

ICBM Launches at Cape Canaveral

- Jan. 10, 1961. Cape Canaveral, Florida. 12:15 p.m. (EST). During the tracking of a Polaris A-1 missile Test 5016, launched at 12:14 p.m. (EST), at 1st stage separation at about 12:15

p.m. (at about T+85 secs) Eastern Test Range's Radar Site 1.4, using an AF Missile Test Centre S-band pulse radar 2.1.2 and a continuous-wave (CW) radar, started tracking "strongest target return," an "unidentifiable object," instead of tracking the Polaris 1st stage to impact as intended. Object alternately moved slowly then moved fast, lost at T+880 secs Jan. 10,

- April 11, 1961. 9:57 a.m. (EST). Cape Canaveral, Florida. Polaris submarine missile scheduled for launch at 9:30 a.m. was delayed to 10:52:51 a.m. Patrick AFB FPS-20 radar tracked UFO from 150 to 600 knots (200 to 700mph) at ranges of 10 to 55 mi at azimuths 125° to 127° in a [6-7 mile?] orbit pattern at around 44 miles range.

- April 27, 1961. (EST). Cape Canaveral, Florida. Juno missile launch. Patrick AFB radar tracked UFO.

Rocket/Missile Testing at White Sands

- During 1950 an increasingly busy schedule of rocket, missile and stratospheric balloon tests at the White Sands test range was associated with a series of ongoing daylight sightings of unidentified objects in transit flight over the range. Beyond that there were several observations of UAPs "loitering" around high-level balloon test flights and in the area of missile and rocket test launches. On several days in April, different sets of observers reported unidentified objects crossing the test area, demonstrating exceptional speed, and in one instance flying at extreme altitude. The observations were made by multiple crews using sophisticated optical tracking equipment.

- April 27, 1950, White Sands test range, New Mexico. Members of a crew preparing to record the test of a Bell aircraft air to ground missile (MX 776A) observed and optically tracked four unidentified aerial objects flying very close together. The objects were recorded on film (a cinetheodolite instrument was being used for tracking the missile) at one of the tracking sites. The use of azimuth and elevation data from that site, as well as the azimuth reading from a separate site showed that the objects were approximately 30 feet in size and flying at very high altitude, on the order of 150,000 feet. The objects were not in view long enough to allow an exact speed estimate, other than that they were moving at a very high rate, well beyond that of conventional aircraft.

- May 4, 1950, during another weapons test, several Air Force crew members observed some eight unidentified objects and then tracked two objects in independent sightings, simultaneously observing and filming each separately with cinetheodolite instruments.

- August 1950, on two successive days similar unidentified objects were again observed in the vicinity of the White Sands range and over Holloman Air Force Base. On the first day, a B-50 aircraft, operated by the 2754th Experimental Wing, was airborne, monitoring another Shrike MX 776A missile test. Ground observers reported that two circular/elliptical shaped unidentified objects moved into the vicinity of the B-50 and remained with it for some thirty minutes. During that period, the aircraft made separate "runs" to prepare for the test launch.

  Nine observers were involved in the sighting and the objects were described as exhibiting very high speed during "sprints" (at some ten times the B-50 speed) over short distances, displaying exceptional maneuverability. While doing so they maintained a consistent position

with each other - at other times the objects appeared to remain stationary. The UAPs appeared to be emitting their own light, not simply reflecting the sun.

- August 31, 1950, Holloman base, White Sands. Instruments were in place and a series of photos were taken of unidentified objects which were sighted at different times over some four hours. The objects crossed over the Holloman base at very high rates of speed and the base requested interceptors. Four F-86 jets from Kirtland AFB responded but were unable to locate or engage the objects during the hour in which they were able to remain over the area. The report from the incidents noted that the objects had a definite shape although their edges were not totally distinct; they were clearly three dimensional and seemed to rock or oscillate as they moved – at very high rates of speed. The objects were filmed but their rate of travel was so great that their movements could not be correlated well enough to obtain a concrete speed estimate.

3.6. Manned space launches

Assessment: Limited support

Incidents

There are a few UAP reports from Cape Canaveral/Kennedy Space Center, but they are generally associated with the launch of many types of rockets and missiles, both in weapons testing and for scientific purposes. Weapons tests at Cape Canaveral far exceeded manned space launches until the 1960s.

Beyond 1960, NASA and civilian personnel carried out scientific and manned launches. We have no documentation of directives or protocols in place to report UAP sightings to the Air Force or to its UFO projects. In the case of the few reports that do exist for rocket and missile launches at Cape Canaveral/Kennedy Space Center, they come from military units including ships at sea or from press reports.

No incidents in our database.

3.7. UAP activity at commercial nuclear power plants

Assessment: Negative (Very Strong)

Incidents

We were unable to identify UAP activity at any “named” commercial nuclear power plants associated with our database. This may be because privately held companies have conducted commercial power operations with no protocols for reporting UAPs to law enforcement or the military. We find no evidence that protocols or directions were in place for reporting UAP incidents to the Air Force investigations. We do find some reports of power plant sightings in the general UFO/UAP literature, but they are all anecdotal, most often appearing in general media coverage of UFOs. Because of these issues we cannot assess any notable level of UAP activity at commercial plants, certainly nothing like the levels of incidents reported from within the atomic warfare complex.

No incidents in our database.

3.8. Suggestive of radiation/isotope monitoring and particulate collections

Assessment: Positive but Limited

Incidents

- April 27, 1949, southeast of the Killeen Base stockpile site in Texas, at 9:20 pm, a two-man Army patrol reported a small, blinking, violet object only a dozen feet or so away from them, maneuvering through the branches of a tree before disappearing. Only five minutes later, four soldiers sighted a small light which appeared to have a metallic cone trailing behind it. The object was several hundred feet from them and about six to seven feet off the ground. Approximately ten minutes later the same four men observed a small white light appear about one hundred feet from them and move away in zigzagging flight some six feet above the ground - before suddenly disappearing. Less than an hour later they saw another light to the west-southwest of them.

- The following day, April 28, 1949, twelve base security personnel as well as others on the facility reported 9 different sightings around Killeen Base, one an object with a metallic cone like the object which had been independently reported the previous evening. Groups of lights moving in formation were described in multiple instances, one a formation of four, another of up to ten lights. Over two nights, these and similar UAP incidents had essentially blanketed the entire facility.

- October 15, 1950, John Isabell, a security guard at the Oak Ridge atomic materials plant in Tennessee, was on duty and at 1:30 in the afternoon, observed a silver-white spherical object traveling from the southwest to the northeast and passing over the K-25 uranium enrichment area. The guard phoned the information on the sighting to his security headquarters; at the same time, radar picked up an indistinct target every third or fourth sweep over the K-25 area.

  At approximately the same time on that same day**,** Oak Ridge security personnel and other observers made an extended, low altitude, daytime observation of an unidentified object. When first observed, the object was estimated to be at approaching from an altitude of some 12,000 – 15,000 feet over the Solway security gate. AEC and FBI reports contain detailed observations and descriptions of the object and its movements. The object was initially taken to be an aircraft which was starting to make an outside loop, trailing smoke behind; however, the observers soon realized that the apparent smoke behind the object was structured, with a twenty-foot ribbon like tail. One observer, within fifty feet of the object, described the tail as solid in nature, with most of its length transparent and some sections intermittently glowing.

  The object came within some two hundred feet of the two initial observers, flying some six feet above the ground. One security officer attempted to approach the object, but it quickly became smaller as it moved off in a south-easterly direction. As it approached a nine-foot chain link fence it moved up, cleared the fence, and then maneuvered around a tree and a telephone pole. The pear-shaped object then accelerated and moved over a hill approximately a mile distant. As the object gained altitude it appeared to the observers to be larger than at its closest distance.

These very close-range Oak Ridge observations are similar in several points to those which occurred in certain Killeen Base/Fort Hood sightings – relatively small objects, with flexible tails, flying at extremely low altitudes and maneuvering in and around obstacles at will.

3.9. Suggestive of testing of physical security at atomic military bases

Assessment: Moderate Support

Incidents

- March – February, 1967 - Malmstrom AFB in Montana experienced an ongoing series of UAP incidents involving low-altitude unidentified lights. Reports include UAPs hovering adjacent to security gates and missile silos. On March 16, security alarms were triggered, and armed teams dispatched to multiple missile locations. Maintenance and security personnel at multiple missile silos reported unknown aerial objects in their vicinity.

  At least one flight of 10 ICBMs (Echo flight) was officially recorded as having unexplainably gone off alert status. There were also persistent reports from Air Force personnel on the base at the time that one other flight (Oscar) had also gone off alert status. The Echo flight missiles were later officially determined to have gone offline due to a control system fault triggered an "externally generated signal," source unknown (Salas and Klotz, 2005).

- It should also be noted that while the missile wing's unit history notes UAP reports, they were all dismissed – with the unit historian being on record as having been told to edit that section of the history record. The only contemporary record of the incidents, from March 17, 1967, is a message sent to SAC expressing "grave concern" because the cause for the missiles going offline could not be identified.

- October 24, 1968, Minot AFB, North Dakota. Multiple radar tracks were observed, approaching both the base and an incoming B-52 aircraft. Security personnel reported an unidentified object landing and continued observing it for 45 minutes. Additional UAP reports were made from several 91st Strategic Missile Wing sites. In addition, a variety of anomalous electromagnetic effects were registered on radio and radar and security alarms were activated at outer and inner rings around silos. Official reports state that the outer [silo?] door of one location had been opened, and the combination lock of the inner door moved (Sparks, 2020).

- October 1975, Loring AFB in main reported a security incident with a UAP entering a high security zone within 300 yards of the atomic weapons storage area. Similar reports from Loring throughout October became part of what was known as the "northern tier UFO wave" and is documented in several NORAD and NMCC internal communications. In October 1975, Wurtsmouth AFB in Michigan reported a base penetration with a UAP approaching and hovering over the weapons storage area. A series of UAP incidents were reported to NORAD, the National Military Command Center at the Pentagon, the Air Force Chief of Staff and Strategic Air Command headquarters. In response a Security Option 3 message was sent to all SAC installations across the northern border – Pease, Plattsburg, Wurtsmith, Kinchloe, Sawyer, Grand Forks, Minot, Malmstrom, Fairchild, and even Barksdale AFB in Louisiana (Fawcett and Greenwood, 1984).

- Malmstrom AFB, November/December 1975, reported multiple waves of UAP incidents, including apparent physical penetration of ICBM silo security gates (site security alarm triggered) and possible attempted access to one missile silo. One Air Force communication refers to a "Faded Giant" incident which is the term for tampering with or loss of control over a nuclear weapon. A Faded Giant incident had previously occurred on one and possibly two instances at Malmstrom in 1966 (Fawcett and Greenwood, 1984).

The UAP security incidents at "Northern Tier" Strategic Air Command bases are summarized in a commander in chief NORAD message of November 11, 1975, which refers to the series of UFO incidents at American and Canadian bases. The message expresses concern over possible press coverage and the need to come up with appropriate public responses (Fawcett and Greenwood, 1984).

3.10. Suggestive of testing of air defenses at atomic weapons development

Assessment: – Negative (Very Strong)

Data suggests UAP aircraft engagements were broadly associated with military interceptors rather than focused on the air defense of specific weapons development, assembly, or stockpile sites. The most involved incidents involving air defense were associated with SAC bomber and missile bases.

Within our study database, sighting reports have been classified as to engagement with aircraft and the location regarding the different military facility types.

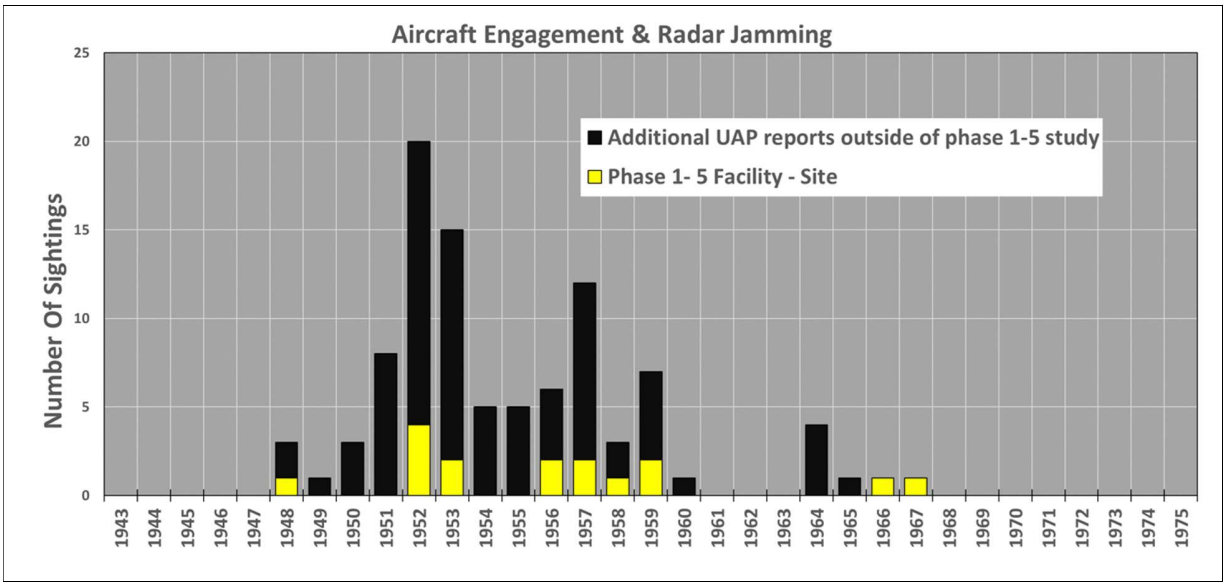


Figure 9 Aircraft engagement and radar jamming at the various facility types.

3.11. Suggestive of testing of air defense capabilities at conventional military bases

Assessment: No Data / No Assessment

3.12. Suggestive of testing of physical security at conventional military facilities

Assessment: Negative (Very Strong)

3.13. Atomic weapons tests

Assessment: No Data / No Assessment

Incidents

The study database contains no reports of UAP sightings in conjunction with atomic tests.

Independent work by researcher Robert Hastings has documented several such observations but all are anecdotal, collected decades after the fact and unsupported by documents. It should be noted that atomic weapons tests were conducted by a combination of Atomic Energy Commission personnel, scientists, and military units from both the Army and Navy. We find no record of security personnel reports or observation of UAPs, however there is also no record of directives or protocols in place to report such sightings to the Air Force or its UFO projects.

3.14. Conventional Military Bases

3.14.a. Pattern Analysis (Hancock et al., 2023a)

Conventional military bases

Assessment: Negative for overall study period (Strong)

Low-altitude incursion at conventional military bases:

Assessment: Negative for overall study period (Strong)

While the level of activity at conventional military bases pre-1952 was low relative to the high level of activity at the atomic warfare complex and missile testing facilities, the 1952 peak itself covered a wide selection of bases including the atomic, conventional, and testing facilities, as well as the wider public. Overall, there was a consistently low level of UAP activity at conventional military bases.

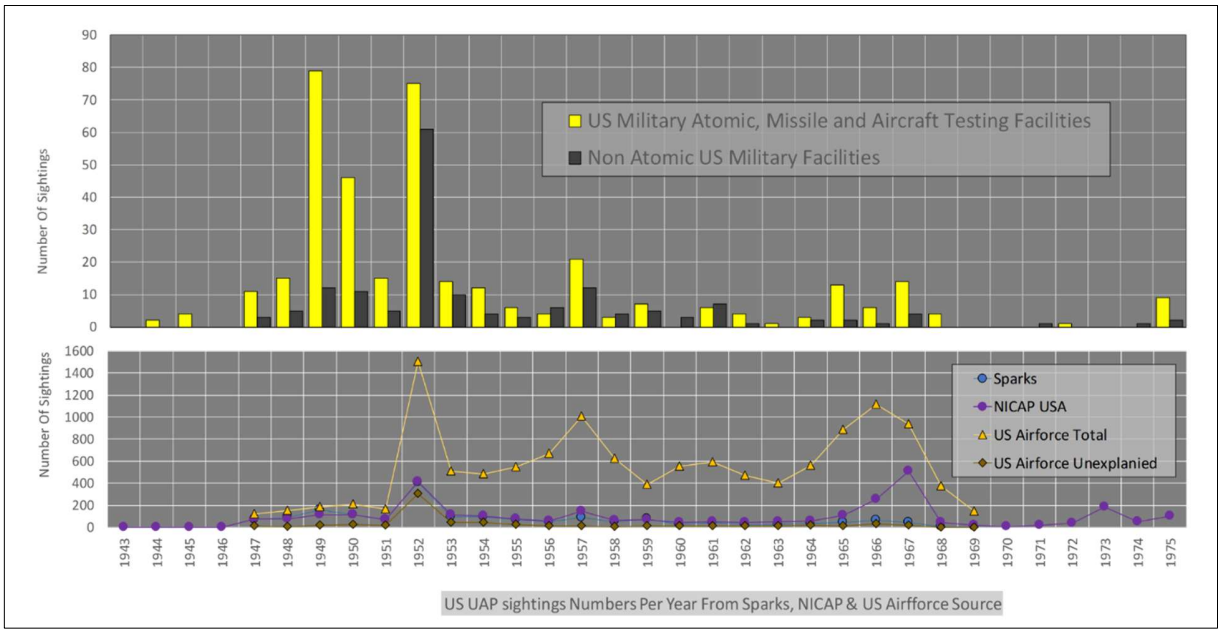


Figure 11 UAP activity at atomic vs. non-atomic military bases (Hancock et al., 2023a)

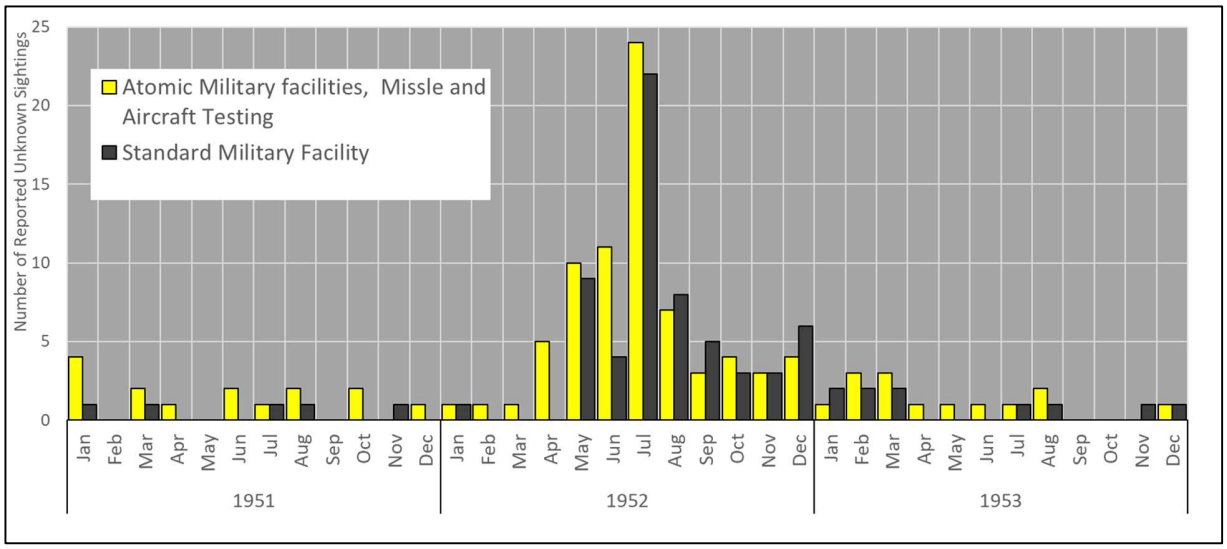


Figure 10 Atomic, missile and aircraft testing compared to standard military bases by month for 1951-1953

From Figures 11 and 12, pre-1952 UAP sightings were predominately around the atomic military complexes and the missile testing sites. In April 1952 to early 1953, UAP sightings are across a wide section of the military facilities, both atomic/testing and conventional military. During this period April 1952 - March 1953, both types of facilities follow a similar pattern, increasing in the number of sightings in April/May 1952, peaking in July 1952 and then tailing off in March 1953.

3.14.b. Incidents - Low-altitude incursion at conventional military bases

- July 29, 1947, Hamilton Air Force Base, California, 2:50 p.m. The Assistant Base Operations Officer and an experienced B-29 pilot both observed two round, shiny, white

objects. The first object was sighted as it headed right over a P-80 jet fighter coming in on a preliminary landing – in an approach at around 6,000 feet. A second object then appeared, flying a left to right "protective" maneuver over the first craft until they each passed southward toward Oakland and then out over the ocean. Both officers estimated the objects to be 15 to 25 feet in diameter, shiny white in color, and circular-shaped. The total duration of their sighting lasted about fifteen seconds, as the craft sped by in a clear sky. The objects appeared to be traveling 3-4 times the apparent speed of the P-80 fighter which they overflew. One of the objects flew straight and level while the other seemed to be weaving from side-to-side as if it were providing escort.

- June 26, 1947. Maxwell AFB, Montgomery, Alabama between 9:20-9:45 p.m. Four Army Air Force officers including 2 pilots and 2 intelligence officers, saw a bright light just above the SW horizon travel toward them in a zigzag with bursts of high speed. When directly over the base it made a sharp 90° turn and was lost to view in the south/southwest.

- July 8, 1947, at Muroc Army Airfield, in California five individuals saw two disc-shaped or spherical objects, silver and apparently metallic, fly a wide circular pattern at about 7,000-8,000 ft at an estimated speed of 300-400 mph. Before the first 2 objects disappeared, a 3rd similar disc or spherical silver object reflecting sunlight was seen by an additional 5 witnesses, to the north. It was flying in tight circles at about 7,000-8,000 ft at speeds beyond the capability of known aircraft.

- July 10, 1947. At Harmon Field, Newfoundland, Canada (a major air transportation center for Atlantic flights) three Trans World Airline personnel saw a translucent disc or silvery wheel-shaped object the size of a C-54 transport fly very fast at 10,000 ft from a point estimated at about 6 miles SSW of Harmon headed NNE, leaving a dark bluish-black trail 15 miles long, then ascend and cut a path through the clouds.

- July 29, 1947. Hamilton Army Air Force Field, California. Two officers reported seeing two round, shiny, white objects with an estimated 15–25-foot diameters fly across the field between six and ten thousand feet. One object flew straight and level, the other weaved from side-to-side like an escort fighter.

- August 1947 – Rapid City (Ellsworth) Air Force Base. An intelligence officer with the 28th Bombardment Wing reported that a major in the command had observed (from the base's flight line) a group of twelve discs, flying in a tight formation, "stacked down" from the lead object. They approached from the northwest, descended to approximately 5,000 feet and made a shallow, wide radius turn over the base, departing to southwest and accelerating as they departed. Their apparent speed was 300-400 mph and size approximately that of a B-29 aircraft. No sound was heard, but the objects appeared to have a luminous glow around them.

- August 14, 1947, Harmon Field, Newfoundland, 10:30 a.m. Three airmen with the 147th AACS (Airways and Air Communications Service) squadron observed two small crescent-shaped objects pass over them at approximately twice the speed of the jets with which they were familiar. The objects were flying a zigzag path heading west and were relatively low, at an altitude estimated just above 1,000 feet. Both objects disappeared into the clouds and a few seconds later one of them emerged and continued west.

- April 18, 1952. Yuma Test Station (now Yuma Proving Ground), Arizona Report by meteorological observers at 9575th Test Station Unit, Yuma Test Station, 6th Army of a dull-white, circular object flying an irregular trajectory heading east but with no contrail. Attempted to track with theodolite but object moved too fast and erratically.

- April 27, 1952. Yuma, Test Station at 8:30 p.m., an off-duty control tower operator and wife saw bright red or flame-colored discs, appearing as large as fighter planes. At one point both were flying in formation and the objects were flying below an 11,000-foot overcast of clouds.

- July 16, 1952. Hampton Roads, Virginia, 8 p.m. NACA aeronautical engineer Paul R. Hill saw 2 amber-colored objects approach from the S, turn W, reach overhead, begin a maneuver to revolve around a common center, change to a vertical plane after a few orbits, the initial two were joined by two more objects and all four flew off in a southerly direction (Hill, 1995).

- July 26, 1952. Hampton Roads area between Newport News and Langley AFB, Virginia. (One of the largest concentrations of military facilities on the East Coast) between 12:15-12:45 a.m., ground observers saw a brilliant luminous alternately bright silver, red and green object hovering over the James River Bridge at about 1,500 ft for 1/2 hour, then ascend toward the E were seen by Langley AFB tower. USAF crews of 2 F-94's and ground observers saw 4 round silver/bluish objects in V-formation shoot straight up and disappear at 5,000 ft, one tracked by USN ground radar at Norfolk and by airborne radars.

- Feb. 2, 1955. Miramar Naval Air Station California at 11:50 a.m. Navy commander observed USN a highly polished sphere with reddish-brown coloring about 3-5 miles to the S falling erratically about 300-500 ft/min. Object off-white in color with highly polished surface reflecting sunlight, at 10,000-20,000 feet. Object stopped for about 5 to 10 seconds at about 3,000-5,000 feet, suddenly changed from white to reddish-brown and instantly accelerated to an estimated 1,000- 1,500 mph on a heading of 170° leaving short brown vapor trail. Estimated size 25-35 feet diameter possibly as large as 100 feet.

- June 20, 1958. Fort Bragg, North Carolina. 11:05 p.m. Battalion Communication Chief SFC A. Parsley saw a silver, circular object, its lower portion seen through a green haze, hover, then oscillate slightly, then move away at great speed.

3.15. Bomber alert and bomber exercises

3.15.a. Pattern Analysis (Hancock et al., 2023)

Atomic bombing exercises
Assessment: Negative (Very Strong)

Atomic bomber alert missions
Assessment: Negative (Very Strong)

Continental air defense exercises
Assessment: Negative (Very Strong)

The nationwide Sky Shield air defense exercises Operation Sky Shield (Operation Sky Shield, 2023), involved Strategic Air Command bases, Air Defense Command bases and anti-aircraft

missile sites across the continent. Hundreds of aircraft and over 6,000 military sorties were involved. Commercial and general aviation air traffic was suspended for security purposes and military aircraft – both bombers and interceptors were the only aircraft aloft during the exercises. Exercises were conducted on:

- Sky Shield 1 September 10, 1960, from 1:00 a.m. to 7:00 a.m. CDT
- Sky Shield 2 October 14, 1961, from 11:00 a.m. to 11:00 p.m.
- Sky Shield 3, September 2, 1962

Pattern Analysis

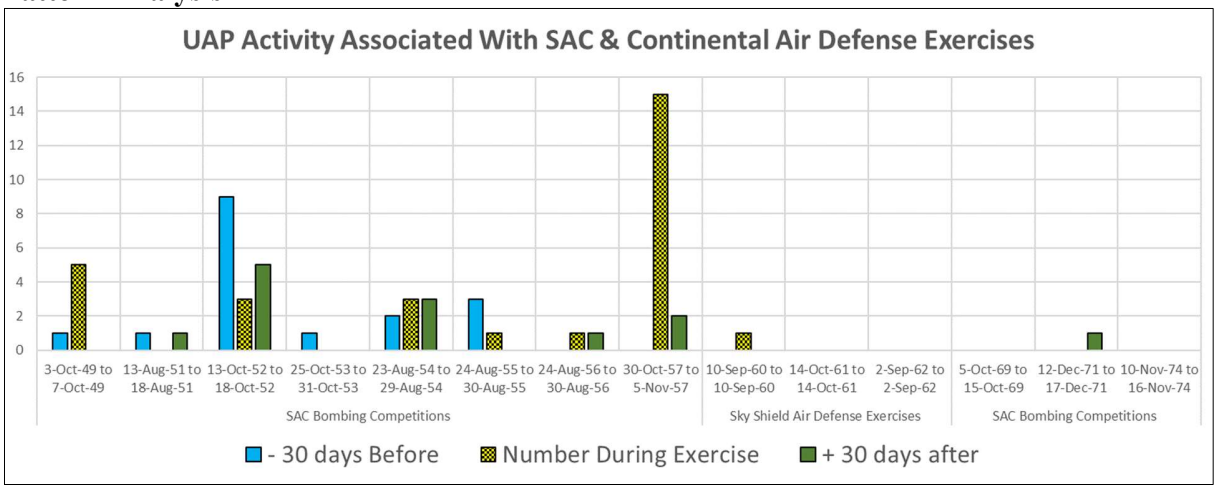


Figure 11 UAP activity associated with SAC & continental defense exercises Hancock et al., 2023a)

To determine whether there was an increase in UAP activity related to the major SAC exercises, as shown in Figure 13, two approaches were used:

- To determine whether there was a general increase in UAP activity at the time of the exercise, a comparison of UAP activity in the USA during the exercise period was compared to the same period 30 days prior and the same period 30 days after the defense exercise.
- To determine if the UAP reports were directly related to the exercise, each sighting report during the exercise was analyzed to determine if any reports could be directly linked to the defense exercise itself, either by location or by observation during the exercise by defense exercise participants/bases. Except for 1957, the number of reports during the exercise period does not suggest an increase in UAP activity during defense exercises. Additionally, the reports (including reports during 1957) cannot be directly linked to the exercises themselves.

3.15.b. Atomic bomber alert missions

It is important to note that there were thousands of bomber alert missions flown as part of the SAC Head Start, Round Robin and Chrome Dome programs which were conducted during our study period. A force of a dozen atomic bombers was aloft on alert 24 hours a day from 1958 into the early 1970s. There were an estimated 6,000 flights conducted in those missions (SAC Alert Program, 2023), (Airborne Alert Program, 2023).

Our database provides a very limited number of encounters between airborne SAC bombers and UAPs, half of them occurring before the alert bomber mission program was instituted. We find no indication of extended anomalous activity focused on SAC bomber alert missions.

Incidents

- May 1, 1952, at Davis-Monthan AFB in Arizona, daylight observations were made of two UAPs approaching and B-36 strategic bomber. The two objects appeared to be flying in formation, approaching from the rear, and overtaking the bomber. They then moved to a position directly beside the aircraft and paced it in flight. The observations of the objects involved not only the aircraft crew but an air intelligence officer on the ground and some six to eight additional ground observers. Aircraft crew observed the objects at very close range, looking down on them from a gun blister on the side of the bomber. The objects flew in formation with the aircraft for some twenty seconds, then sharply executed an 80 degree turn from its line of flight. They retreated some distance at which one stopped and hovered. The crew of the aircraft were shaken, called the base and requested permission to land and did so. The single object remained stationary and apparently kept its position for some five minutes before departing (Hynek, 1997).

- Sept 3, 1954, Carswell AFB Texas, a B-47 flight to Barksdale AFB in Louisiana was paced by UAP for over one-hour. The aircraft was flying in daylight, with clear skies and good visibility. Carswell surveillance radar requested the bomber crew look for something generating an unknown radar track in their vicinity they quickly located it – a streamlined missile-shaped object station keeping no more than a hundred feet above them. The object alternatively paced and circled the bombe; at other times it performed radical maneuvers which were observed by the full aircraft crew. Ultimately it made a high-speed ascent and disappeared. Reportedly personal photos of the craft were confiscated upon landing and the bomber crew was not requested to file a standard report (Clark, 2003).

- July 17, 1957, in which an RB-47 electronic warfare aircraft had multiple encounters with UFOs, one transmitting standard surveillance radar frequencies. Source: Brad Sparks study of RB-47 UAP encounter radar transmissions cited from UFO Encyclopedia 2nd Edition, Jerome Clark, 1998 (Sparks, 1988).

- March 25, 1959, a B-52 bomber operating on a Headstart II flight was flying toward the Canadian border when it made radar contact with an unknown object; the object appeared to be emitting its own radar frequencies, directed toward the bomber. The frequencies were identified and monitored by the aircraft's electronic warfare officer. The object was tracked on the B-52 radar for approximately an hour, closing to distances of eight thousand to fifteen thousand yards from the aircraft.

- The B-52 notified Air Defense Command and ground radar tracking was established on the target. At that point the UAP penetrated the northern air defense zone, and an F-89 interceptor was scrambled. The fighter crew intercepted and made visual and fire control radar contact with the target, describing it as delta shaped. After closing to an estimated four miles, radar tracked the object reversing its course, increase speed and moving away. The interceptor gave chase but the unknown easily outdistanced it and climbed away.

3.16. UAP activities associated with mobile atomic weapons platforms (submarines and aircraft carriers)

Assessment: No Data / No Assessment

While there was a documented process by which Air Force installations reported UAP incidents (the process included base level officers with the responsibility for taking and investigating local reports) we have no similar insight into either the Army or Navy process for dealing with UAP incidents. All services were directed by the Joint Chiefs to report suspect unidentified air and sea objects in accord with the CIRVIS reporting (JNAP-146) directive (Joint Army Air Force, 2023).

We find few documented details as to how either Army or Navy assigned personnel to carry out the JANAP directive. Given that the Navy deployed both nuclear and thermonuclear weapons on both ballistic missile submarines and aircraft supercarriers, it is possible we may be missing a body of relevant UAP incidents. The possibility is supported by an almost total lack of US Navy reports to the Air Force UAP projects including Project Blue Book.

3.17. Testing capabilities, identification friend or foe (IFF) / radar response, jamming (electronic interference)

3.17.a. Pattern Analysis (Hancock et al., 2023a; Figure 14)

Suggestive of testing of aircraft capabilities (speed/maneuverability)
Assessment: Very Strong Support

Suggestive of false duplication of IFF radar responses to air defense radar facilities
Assessment: Moderate Support

Suggestive of jamming or other types of electronic interference with military aircraft radar systems
Assessment: Moderate Support

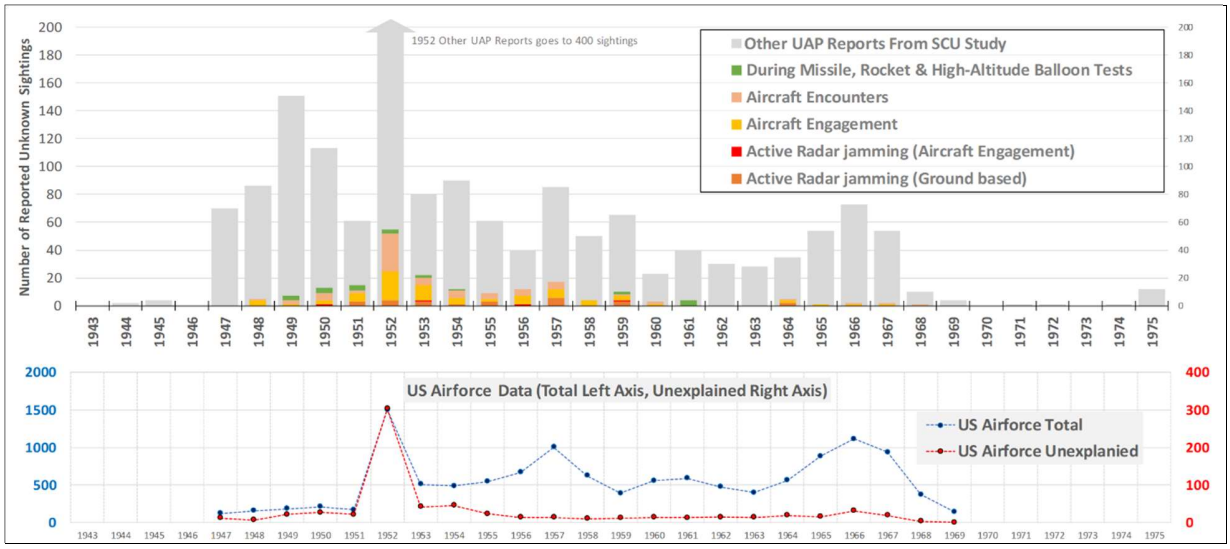


Figure 12 suggestive of jamming or other types of electronic interference with military aircraft radar systems. There was moderate support for UAP activities relating to the following indicators.

3.17.b. Suggestive of testing of aircraft capabilities (speed/maneuverability)

Assessment: Very Strong Support

Incidents

- December 4, 1949, the three-man crew of a C-47 military transport flying over Hammond, Louisiana observed a bright silver sphere the size of a fighter approach their plane head on, then execute a turn and take a station keeping position with the aircraft. It simply held its place, bobbing up and down. The sphere then made sudden starts and stops, maneuvering in all directions. Following that it flew directly across the nose of the aircraft, departing at very high speed.

- January 24, 1950, noted a large hemispherical-shaped object at five to ten miles away and a bit above their cruising altitude. The pilot began a climb toward the object and initially it moved off ahead - only to reappear after a moment, approach and hold stationary with the aircraft, oscillating or "wiggling" as it did so. After pacing the aircraft for a time, the object simply moved ahead of the transport again and departed at high speed.

- Sept 21, 1950, A flight of several F86s passed a UAP – with the object being monitored on radar. Radar operators observed the object turn and came back to pass underneath the flight, in what was estimated to be a 5G turn. On its return the object passed by the formation at a speed calculated to be some 1,200 mph (Hynek, 1997).

- July 9, 1951, near Augusta, Georgia. The pilot of an F-51 fighter observed an oval disc about twice the size of his plane come out of the sun toward him, apparently flying at high speed in a head-on approach. At the last moment the object lowered its altitude and flew underneath the aircraft – then turned to pursue the fighter, positioning itself to the front again - and made a second head-on dive. That same maneuver was repeated several times until the object finally broke off and climbed out of sight. The pilot had ample occasion to obtain a very good view of the object as it approached as close as three hundred to four hundred feet. It was a physical object, round but flat on top and bottom as well as apparently spinning (Clark, 2003).

- July 26, 1951, Washington DC A F-94 interceptor responded to pilot and radar reports of UAPs over the nation's capital. The fighter pilot saw blue lights in his area at one point, but radar tracking showed a cluster of objects directly around his aircraft (Clark, 2003). When other F-94s arrived in the area all UAP radar tracks disappeared; when the fighter departed the UAP radar tracks immediately reappeared (Randle, 2001).

- June 21, 1952, over the Oak Ridge atomic plant an F-47 on combat patrol was directed toward a UAP – upon approach the object turned on the fighter and made a series of ramming like approaches before leaving the area.

- On several nights during July 1952, interceptors across the northeast from Boston and Provincetown in Massachusetts, over multiple locations in Rhode Island and down to Washington DC and Virginia were scrambled to engage UAPs. When approached, the objects would reverse course and exit the area at high speeds (Clark, 2003).

- July 29, 1952, an Air Defense Command (ADC) radar site in Michigan registered a radar track coming south across Lake Huron at approximately 625 mph. A check of flight plans

showed no aircraft registered for a cross border flight on that path. Three F-94 interceptors were already on patrol, and one was directed toward an interceptor at 20,000 feet. As the fighter was vectored onto the UAP both the pilot and onboard radar operator visually acquired a large bluish white light "many times larger than a star." The light began to take on a reddish aspect and diminish in size as if it were moving away, at that moment the Ground Control Intercept (GCI) operator radioed that the unidentified object had made a one hundred eighty degree turn back north and was indeed moving away from the interceptor.

- The pilot went to afterburner and began pursuit, at the same time his onboard radar operator gained a solid lock on the target, with the display registering an image indicating that the object was the apparent size of a B-36 bomber. The jet closed, approaching within some four miles of the target and both it and the UAP being tracked by the ADC radar. At that point, the light brightened, and the object pulled ahead of the jet, breaking the onboard radar lock. Ground control advised the pilot that the target had doubled its distance from the jet in a single sweep of the radar beam.

- Ground radar continued to track both the jet and the target, which alternatively slowed down and sped up – whenever the interceptor was moving into onboard gun radar range. The target's bursts of speeds were incredible, several times it appeared to travel four miles in a single ten second sweep of the antenna, translating to something like 1,400 miles per hour. Every indication was that the target was responding to the interceptor, and that its changes in speed were related to the relative distance of the jet.

- Flying on afterburner, the jet began to reach the limit of its effective range and had to break off and return to its base. The UAP appeared to slow down at that point and proceeded beyond ground radar range. The incident had involved both ground-based and airborne radar, visual observation by two aircrews, as well as several indications of intelligent maneuvering on the part of the object – including its 180 degrees turn upon approach of the interceptor (NICAPd, 2023).

- August 5-6, 1953, South Dakota. A series of UAP engagements began with a Ground Observer Corps sighting in South Dakota. A GOC volunteer reported an unidentified light hovering to her east and called the sighting in to her report filter centre. The report was relayed to an ADC radar site where two operators quickly went outside, observed the light, and watched it begin to move at the same time the volunteer advised that the target was beginning to move over Rapid City. The radar operators then located the target on their radar, at the location described by the ground observer.

- A patrol interceptor, an F-84 Thunderjet, was in the air and was immediately given directions to the UAP. Once given the proper vectors, the pilot immediately identified the target and accelerated to intercept it. Ground-based radar tracks were obtained for both the jet and the UFO, which flew away from the jet, seemingly adding speed whenever the jet closed distance. The F-84 chased the UFO for some 120 miles, tracked by the ground radar. At that point it reached the limits of its fuel range and turned to head back to base. As the jet turned, the target reversed its course as well, following the jet.

- As the first interceptor landed, a second scrambled and vectored toward the UFO, at an altitude of 20,000 feet. The second jet visually acquired the target and at that point the UFO turned to the north and moved off with the jet in pursuit. Once again, the F-84 and the UFO

were concurrently tracked on ground radar, each showing plainly as solid objects. The pilot of the second jet then performed a series of tests to ensure that what he was chasing was indeed real, turning off his instrument lights and swinging the nose of the aircraft to ensure he was not simply seeing a reflection of something inside his cockpit – he wasn't. To prove it, at that point he began to close on the target, switched on his radar gun sight and the weapons radar lock display came on. There was no doubt in the pilot's mind that he was chasing a real target, and that the target was able to outfly him for the next 160 miles. At that point, the second jet was also forced to abandon pursuit due to low fuel. The UFO continued north, observed by more observers at another GOC filter centre, who had been alerted to the chase (NICAPe, 2023).

Incidents - Aircraft engagement involving UAP radar transmissions.

June 1955. Over five separate days in June 1955, radar operators on RB-47s flying over northern Canada detected unknown objects at ranges between two and five miles from the aircraft. Apparent radar sweeps of the SAC planes by an airborne radar beam and/or attempted radar jamming of the SAC aircraft occurred in each incident. During a June 4 encounter, the unknown was visually sighted and described as a metallic cylinder. On one occasion, the unknown paced the RB-47 for some nine hours.

July 17, 1957. A Strategic Air Command RB-47, a very specialized electronics intelligence platform flying with a crew of ELINT and electronic countermeasures specialists, was on a training flight from Kansas over the Gulf of Mexico, and was returning during the early morning hours. Its initial contact with an unknown aerial object was the detection of what appeared to be a ground-based search radar beam, but one whose source was apparently airborne and in motion, crossing the plane's flight path. From that point on, the encounter involved a series of apparent radar transmissions from a maneuvering aerial object – whose movements matched those of a brilliant light that tracked the plane - and with concurrent appearances of the object on the aircraft's own search radar (Clark 1998) (Sparks, 1998) and 6,200 MPH target hovers near Grand Canyon, (NICAPf, 2023).

At times the UAP simply moved along with the aircraft, at other times it apparently moved ahead of it and waited for RB-47 to pass. The entire encounter occurred over a span of approximately two hours and some 800 miles distance.

3.17.c. Suggestive of false duplication of IFF (Identification Friend or Foe) radar responses to air defense radar facilities

Assessment: Moderate Support

Incidents Coded Radar Transmissions / IFF

- July 16 - 18, 1957, an air defense radar station outside of Las Vegas, Nevada (Mount Lemmon) tracked an extremely high-speed unidentified target (estimated at 6,200 mph) for a very short time before it became stationary. The UFO remained airborne and stationary for over 32 minutes, apparently hovering at 42,000 feet altitude. The target then departed at a similar and possibly faster speed, until it disappeared beyond radar range. During the time in which it was acquired by the search radar, it appeared to respond to an encrypted military IFF transponder signal. The UAP was sent a command to identify itself from the air defense site.

In turn, the UAP sent back coded elements of an appropriate IFF response. A similar incident had been reported two days earlier by the same crew at the radar site. The incidents of those two days was unique with no similar report either before or afterward (NICAPf, 2023), (Hynek, 1972).

- Nov. 16, 1964. Caribbean. US Navy radar tracking of unidentified object emitting encrypted IFF Mode 1 transponder signals in response to shipboard IFF interrogation.

- Nov. 17, 1964. Caribbean. US Navy radar tracking of unidentified object emitting IFF Mode 1 transponder signals in response to shipboard IFF interrogation.

- Nov. 18, 1964. Caribbean N of Puerto Rico. 10:00 a.m. (EST). US Navy Atlantic Fleet Weapons Range (AFWR) radar tracked for 8 NM from 19°17' N, 65°33' W [about 70 mi NE of San Juan, Puerto Rico], a low altitude 180 knot (200 mph) unidentified object emitting encrypted IFF Mode 1 transponder signals in response to IFF interrogation, heading 170° flying directly over USS Bainbridge. Interception attempted but failed.

- Nov. 24, 1964. Caribbean NE of Puerto Rico. 8:55 a.m. (EST). US Navy AFWR radar tracking of unidentified object on NNE course 30° from 19°07' N, 65°05' W, to 19°52' N, 64°45' W, emitting encrypted IFF Mode 1 transponder signals. DF-8 fighter at Mach 0.99 (650 mph) at 45,000 ft vectored for intercept but object accelerated and flew upward beyond the fighter's ability to follow.

3.17.d. Suggestive of jamming or other types of electronic interference with military aircraft radar systems

Assessment: Moderate Support

Incidents

- Sept. 17, 1951. Hudson Strait (at 61°30' N, 68°50' W) to Baffin Island, Canada. 10:20-11:55 p.m. (EST). A USAF B-36 radar operator picked up radar interference which came from an unidentified aircraft at relative bearing 130° (to the E) at 28 nautical miles (32 miles) heading away. The anti-jamming device on the APQ-24 radar was turned on at 11:20 p.m. but did not affect the jamming on the radar scope. At 11:35 jamming covered 120° of the right side of the radar scope and then an unidentified aircraft was seen visually on the right side of the B-36, which was then at 18,000 ft (at 65°40' N, 71°40'W) (over SW Baffin Island). Object had "unconventional running lights" all white instead of red-green, with twin white flashing tail lights, traveling about 30 knots faster than the B-36, crossed the front from right to left heading 334° true toward the NNW, and was in view about 20 mins [to a distance of about 12 miles]. While object was still visible, at 11:50 p.m. the B-36 autopilot and APQ-24 radar set went out, the latter returning after a few mins about when the object disappeared. Two B-36 flights from Goose to Resolute while still over Labrador the next day detected carrier wave signals at several frequencies and some radar-like pulses at other frequencies, all below 1,000 MHz. The Strategic Air Command was concerned enough with the incidents to dispatch two electronics intelligence aircraft to Labrador to investigate possible Russian involvement (NICAPf, 2023).

- March 25, 1959. S Saskatchewan-N Montana. 7:36 p.m., radar-visual incident involving the F-89 intercept of a radar-emitting UAP tailing B-52 (engaged in a SAC Headstart II

Emergency War Order Exercise) back from Canada into the US. At 7:36 p.m. at about 52°N, 118°W (near Swift Current, Sask.) while B-52 headed 180° Mag (SSW True) at 32,000 ft traveling 375 knots (432 mph) tail gunner a UAP was sighted leaving a strange, non-persistent and intermittent contrail at 2 o'clock position (to the W). Radar confirmed the object to be trailing the B-52 at 8,000 yds (about 5 miles). Radar transmissions were then detected coming from the object, which continued to trail the bomber at a range of about 11,000 to 15,000 yds (about 6-8 miles). The object followed the bomber into Montana and the US Air Defense Identification Zone. It appeared to have red and green bright flashing lights about30-40 ft apart with a steady white light in between and somewhat to the rear, thus suggesting delta or swept-wing aircraft about the size of a B-57 bomber (~100 ft), described as "relatively high performance," speed in excess of Mach 0.8 (530 mph), altitude above 53,000 ft, with a "considerable acceleration capability."

- An F-89 interceptor was dispatched and approached the UAP, at which point the object accelerated away and flew beyond engagement by the aircraft. The incident was reported as a possible threat to national security.

3.18. Covert UAP Activity

Assessment: Moderate Support

It is true that during over the duration of the study period, UAP reports, those associated with atomic weapons development and deployment sites shifted from being primarily daylight observations to nighttime reports. In particular UAP reports at the initial Atlas, Titan and Minuteman intercontinental ballistic missile sites virtually all occurred at night, even during the earliest stages of construction. Yet even those incidents involved brightly lighted objects, often hovering in stationary positions over the sites for extended periods and at other times descending to very low altitudes or even ground level. While the low altitude activities did take them underneath radar surveillance, the objects continued to display bright lights and consistently drew the attention of personnel at the sites, ranging from construction workers to armed security personnel.

In several instances, at both Strategic Air Command airbases and in the vicinity of ICBM silos, the UAPs placed themselves directly over atomic weapons storage bunkers or over armed, megaton class ballistic missiles and allowed themselves to be observed and reported for periods ranging from five to ten minutes to an hour.

While such actions occurred at night, limiting physical descriptions and preventing photography, they could not be considered covert in the sense that the UAPs operated in a fashion to conceal the truly anomalous nature of flight capabilities or the focus of their attentions. The individuals observing and officially reporting them universally commented on their anomalous performance and rejected conventional explanations such as private helicopters or off course aircraft.

Military reconnaissance, as conducted before actual engagements occur, is conducted with a minimal observer profile, intended to gather as much information as possible without being observed or reported up a chain of command, certainly not to trigger major security alerts. The exception would be the types of activities previously discussed as ferreting – actions intended to force a military response to evaluate capabilities. While we cannot eliminate ferreting given the incidents in our database, it is an activity which is used in general military surveys where there is

no plan for actual aggression. Since no actual aggression resulting in damage to military facilities or death or injury to personnel has been conclusively demonstrated, and since the incidents which could be classified as ferreting were not conducted broadly nor consistently over time, we rank this activity as very negative in supporting an aggression scenario.

3.19. Overt UAP Activity

Assessment: Moderate Support

There are several incidents, especially during the first few years of our study, in which UAPs displayed themselves in a highly visible manner during daylight hours, appearing at low to medium altitudes where they could be differentiated from conventional aircraft and displayed flight characteristics and maneuvers which were clearly perceived as anomalous. Such incidents – involving multiple or even formations of UAPs - occurred over population centers but some of the most dramatic actually occurred over military facilities and over the rocket and missile test range at White Sands (a facility equipped to track and record high-speed objects).

As early as July 3, 1947, Navy petty officers observed a formation of three discs in a triangular formation circle the San Diego Navy Yard before heading back out over the ocean, on July 29th officers at Hamilton Air Base in California observed two rounded objects fly at low altitude over the base runway (with one appearing to fly “cover” for the other), and on August 28 an intelligence officer at Rapid City Air Base observed a group of 12 discs fly in formation over the base runway.

In later incidents, mentioned previously, security police at Kirtland/Sandia Base observed multiple objects fly at medium altitude over the base, during daylight, and performing what they described as a dogfighting exhibition with each other. At White Sands, test observers would report objects flying in formation with test aircraft during missile tests and at Davis-Monthan Air Force base, two objects approached and flew in formation with a B-36 aircraft, observed at close range by the crew and separately by personnel on the ground.

Such incidents were clearly overt, seemingly non-threatening, and completely contradictory to what would be expected in activities related to military aggression or potential hostilities. Beyond that, they were among the first early official reports from American military and scientific personnel, demonstrating advanced flight technologies but with no indication of any implied threat.

3.20. Direct engagement with military involving substantial risk or sustained damage, personal injury, or death.

Assessment: Negative (Moderate)

In all its assessments of UAP reports during the period of our study, even of those it regarded as anomalous or unexplained, the United States Air Force consistently noted that it had been unable to determine a hostile intention as related to any of the reports. It is true that some of the incidents previously noted were reported as national security threats – including those involving UAPs observed apparently monitoring SAC alert atomic bomber missions or the incidents in which multiple incoming radar tracks triggered region wide air defense responses. Yet in none of those incidents were any hostile actions, damages or casualties reported.

Beyond that, several incidents in our database record UAPs being perceived as engaging military interceptors, to the extent that the pilots involved perceived themselves as being under attack. Orders were even issued to fire on unidentified objects – but those orders applied to any unidentified aircraft in the air defense zone which refused to communicate or respond to instructions to descend and land and were part of a general Cold War practice which during the early 1950s resulted in ongoing and extensive efforts to identify and intercept unknown aerial objects. In June of 1952, there were aircraft accidents involving 100 aircraft with 36 aircraft destroyed, and 21 fatalities. In July of that year (the year of maximum UAP reports during our entire study) there were 135 accidents, 30 fatalities and 58 aircraft destroyed (those figures included losses in Korea where combat in the Korean conflict was still in progress) (Accident-Report, 2023).

Yet in regard to losses over the continental United States, those figures have to be considered with the understanding that all-weather, nighttime interceptors had just come into general service and a great many of the incidents occurred either at night or under extremely demanding weather conditions – or both. All were investigated and all were found to be true accidents, none caused by the objects being reported for intercepts. In evaluating this indicator, we also must be cautious regarding unknown electrical and electromagnetic effects reported associated with UAPs, effects seeming to affect aircraft guidance and electrical systems. Such effects, possibly peripheral to UAP propulsion, in themselves may have led to accidents, but damage and loss which cannot be proven to have been either directed or intentional.

4. Results

Following a review of likelihood assessments for listed indicators, the scenarios were ranked. These rankings were driven by the combination of indicators for each scenario, as well as the significance of indicators within the indicator set. The indicators were listed to capture possible intentions for the observed patterns of behavior found in UAP activities. Figure 3 First-generation atomic weapons development facilities. US atomic weapons vs controls incident reports (Hancock et al., 2023a).in section 3.1.a illustrates the frequency and pattern of intrusive UAP incursions, which was a significant factor in the assessment of scenario likelihood.

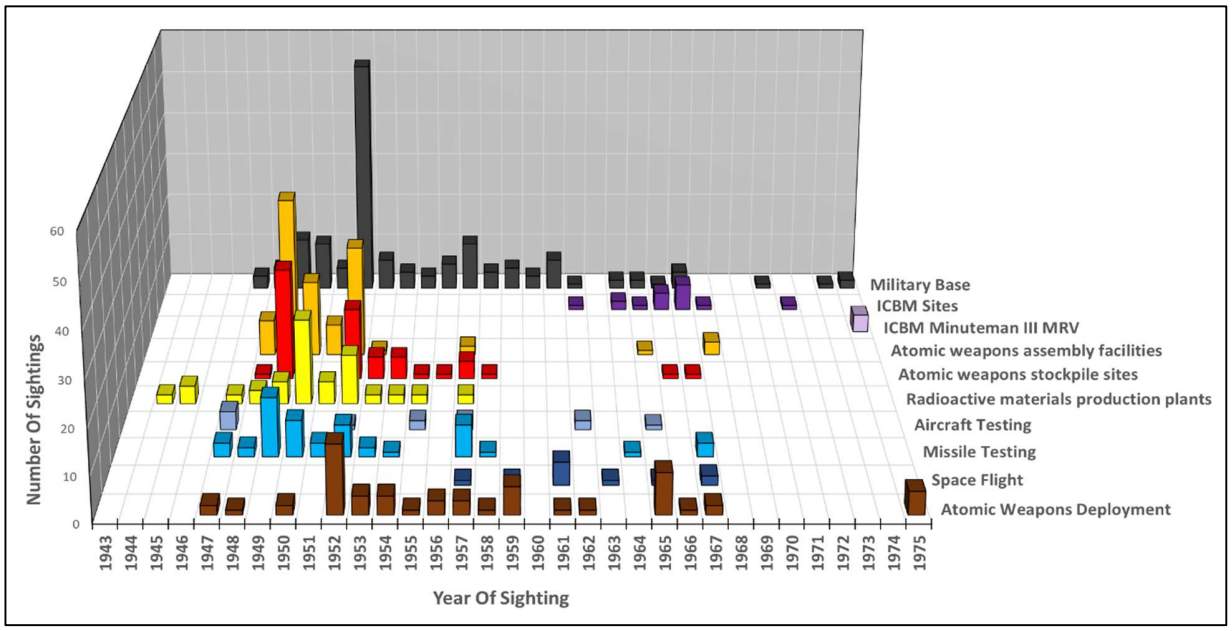


Figure 13 UAP incidents by facility type.

Timeline

The following sequential timeline supports the impression of an intentions driven and focused series of activities related to UAP incursions within the US atomic warfare complex (Figure 15):

- In 1944 and 1945, there were UAP incursions at radioactive materials production plants.
- In 1945, two atomic bombs were used to end World War II.
- In 1947, following a series of UAP activities at radioactive materials production plants, atomic weapons deployment facilities and missile testing were surveilled.
- In 1948, following the surveillance of radioactive materials production plants, atomic weapons deployment and missile testing, atomic weapons assembly and atomic weapons stockpiles were surveilled.
- In 1949, surveillance of atomic weapons assembly, atomic weapons stockpiles, radioactive materials production plants and missile testing were at exceptional levels as compared to conventional military facilities.
- In 1950, surveillance of atomic weapons assembly, radioactive materials production plants and missile testing were at exceptional levels as compared to conventional military facilities.
- The elevated UAP activity at atomic warfare development sites dramatically declined after 1952 while reports from general military bases and atomic weapons deployment sites continued through 1962, and intermittently at intercontinental ballistic missile sites from 1964-1967, 1971 and 1974-1975.
- Starting in 1962 and through 1975, UAP incursions were documented at ICBM installations following the deployment of nuclear warheads. In 1967, a UAP incursion was associated with the temporary disruption of a missile defense system at Malmstrom Air Force Base, where all sites in one flight of ICBMs were taken off strategic alert status. Several UAP activities also impacted Strategic Bomber Command alert missions.
- Elevated activity was noted during the periods of new ICBM installations and the initiation of operational status.

Each of the four scenarios evaluated in this study was evaluated based on the 24 indicators (a combination of activity patterns and related incidents) which were relevant to each scenario.

Based on the frequency, type, and pattern of UAP activity, our assessment ranked the likelihood of each scenario as follows:

- Focused survey of atomic weapons / warfighting capability
    - Strong support (Most likely)
- General military survey
    - Moderate support (Possible)
- Atomic warfare prevention
    - Some support (Less likely)
- Military aggression
    - (Least likely)

A discussion of each of these scenarios follows:

4.1. Scenario: Atomic Weapons Survey

Rank number 1 – Strong Support

Pattern comparison of UAP activity associated with a broad sampling of sites where atomic weapons were developed and deployed was compared to activity reported form conventional military facilities and bases. The comparison indicates a higher incidence of activity at atomic weapons bases. However, the levels and concentration of incidents at atomic development facilities as well as weapons deployment bases are clearly time delimited, with UAP activity decreasing substantially following the earliest years of the study period. The fact that anomalous levels of UAP activity are not ongoing at either the weapons development or deployment sites suggests a survey as compared to the other scenarios.

The most significant levels of anomalous UAP activity appears to be strictly related to the core facilities of the atomic warfare complex – weapons grade reductives production, atomic weapons assembly and to some extent, with the production and storage of atomic weapons during the years from 1945 to1952. Notably, the first facilities in each phase clearly reported a level of UAP activity quite different from the last facilities to be established in that class of atomic facility. That is seen in reports from the Hanford and Oak Ridge sites as compared to the Savannah River site, which went into operation several years later. It is also seen in the incidence of reports at the Los Alamos and Sandia weapons assembly facilities when compared to the Pantex installation which followed them some years later.

The most significant window of UAP activity occurred during the years 1948 to 1951 as numbers of first fission (nuclear) and then fusion (thermonuclear) weapons were developed and produced in quantities sufficient for stockpiling. Again, the notably higher levels of activities at the earliest facilities (as compared to facilities becoming operational in later years) suggests a time-delimited survey.

While we can offer no specific explanation for the very early activity at the Hanford site (which began as the facility was under construction), it should be noted that one well-established technique for identifying atomic weapons development facilities involves profiling specific physical and security characteristics which allow their identification. Those characteristics

include large-scale power requirements at isolated locations, large water supplies and extensive construction of special facilities for radioactive materials transportation and disposal (including large numbers of waste tank structures).

Such profiles were routinely used in American high altitude and satellite surveys to locate atomic materials facilities in the Soviet Union, China, India, and Iran. The Hanford site would be especially visible in such surveys due to its location on the Columbia River in a flat, strictly agricultural area of Washington state. Hanford's very early UAP reports may be useful in profiling the degree of atomic energy and weapons knowledge reflected in the overall pattern of UAP activity. Regarding the technical aspects of capability assessment, there was insufficient data to identify any significant UAP activity related to air borne isotope/particulate collection.

All weapons development facilities showed the same overall diminishment and virtual cessation of activity following a national surge of UAP reports in 1952. The anomalous patterns during the years prior to 1952 was never repeated, despite the surge in air defense radar and interceptor deployment of the 1950s and 1960s. Activity at the atomic study sites almost completely ceased over time, while overall UAP reporting across the United States continued though the end of the study period circa 1975.

Pattern analysis indicated elevated UAP activity at atomic warfare complex sites which occurred across all three atomic facility types, but this anomalous activity corresponded to a specific window of time. The highest degree of anomalous activity was at the earliest developmental sites (Hanford, Oak Ridge, Los Alamos, and Sandia Base / Kirtland AFB), while facilities developed later in time such as Savannah River and Pantex show no comparable bursts of activity. Killen base (one of the five national atomic weapons stockpile sites) showed an elevated number of UAP incidents during this pre-1952 window, while the other four sites do not. It should be noted that data may be lacking in respect to the early atomic weapons stockpile locations due to the absence of UAP reporting protocols for the Atomic Energy Commission personnel in charge of those locations. The reports from the Killeen base primarily come from the Army installation (Fort Hood) which was co-located with the weapons stockpile facility.

As a corollary to what appears as a "window" of early UAP activity at the first atomic weapons facilities, the study found a significant and comparable level of UAP activity associated with the earliest missile/rocket testing site, at the White Sands test range (1949 and 1950). This peak directly corresponds to the elevated level of UAP activity at the core atomic warfare complex. Pattern study of the ongoing missile development as well as manned space launches revealed no comparable UAP activity patterns. The early focus on missile and rocket development suggests not only a survey scenario, but one focused on both the development of strategic (atomic) weapons of mass destruction and the capability of using them in global warfare.

In regard to a UAP focus on the deployment of atomic weapons several of the most significant were directly associated with Strategic Air Command aircraft carrying thermonuclear weapons on alert missions, and with intrusions at both SAC bomber and missile bases.

Based on the frequency, type, and pattern of UAP activity for this study, a Focused Atomic Weapons/Warfighting Capability Survey was determined to be the most likely scenario.

4.2. Scenario: General Military Survey

Ranked Number 2 - Moderate Support

An evaluation of patterns, as well as specific types of indicators for atomic weapons sites as compared to conventional (non-atomic) military installations, was conducted to determine whether there was any distinction between the two categories of facilities. While there is support for the general military survey, it was time delimited and demonstrated a particular focus on atomic warfare capabilities. In addition, there are few incidents suggesting UAP activity focused on conventional military installations and bases, but to a lesser degree as compared to atomic facilities. Indications of broad, continental wide UAP activity did occur – particularly in 1952/53 but were not repeated over time. In contrast, the anomalous UAP activity focused on atomic weapons deployment was recurring, notably regarding the deployment of new and more capable generations of thermonuclear intercontinental ballistic missiles.

An examination of those and similar incidents of what appears as "engagement" with military interceptors shows them occurring in the vicinity of atomic weapons installations as well as generally over the continental United States - with some relative focus over the strategic northeastern Corridor as well as over the upper Midwest. Specific incidents occurred over atomic development facilities, at least one atomic stockpile site, and several strategic weapons deployment installations. Yet the study found no comparable patterns or series of incidents of that nature directly related to conventional military bases.

While speculative, UAP incidents from the highly anomalous UAP activity of 1952 did stimulate an exceptional amount of air defense activity, with much of it concentrated over the strategic northeastern Corridor which contains major metropolitan centers, some of the largest clusters of major Army and Navy logistics bases, and the nation's capital in Washington DC. While this would support the scenario of a general military survey, it was essentially a one-time event and in comparison, no similar levels of UAP activity were reported even during a series of massive continental-wide air defense exercises (involving thousands of aircraft simulating attack and defense of targets across the United States) which were conducted in the early 1960s.

Another point of contrast between focused atomic weapons survey – as compared to a general military survey – is the repetitive pattern of anomalous UAP activity associated with the deployment of new generations of intercontinental ballistic missiles. Those incidents include both low altitude and ground level intrusions into secured bases and even more highly secured atomic weapons storage bunkers and even missile silos. The types of incidents reported from conventional military was notably different, largely consisting of higher altitude overflights by rapidly traveling UAPs. Those reports are not at all comparable to the low altitude and ground level incidents reported from atomic stockpile and atomic weapons deployment bases. There are no similar security reports of such intrusions at conventional military bases, nothing like the multiple incidents at Strategic Air Command bases. Incidents which were serious enough to result in alert messages to the North American Defense Command and the National Military Command Center at the Pentagon.

Based on the frequency, pattern, and sequencing of UAP activity, it appears that surveillance has been conducted at general military bases to a lesser degree than facilities associated with the atomic warfare complex.

4.3. **Atomic Warfare Prevention**
Ranked number 3 - Some Support

Our study database does reveal a limited number of incidents of UAP activity associated with violations of physical security related to strategic atomic weapons deployment, as well as directed engagements with missile launch systems and military aircraft. There were also incidents of electrical and/or electromagnetic interference with both atomic bombers and intercontinental ballistic missiles. While the reported incidents are themselves well documented and credible, the few that are on record are spread out over the full period of the study and exhibit no continual pattern of activity. They are observed to occur in "bursts" over relatively short periods of time, with one possible interpretation being the testing of UAP capabilities for interfering with new weapons delivery systems. Although some of these incidents may represent attempts to disrupt or prevent functional operations for atomic weapons delivery, there is insufficient data to indicate prevention as the primary intention associated with the UAP activity, specific to the period of this study.

One particular series of incidents suggesting possible testing of prevention capabilities involved a series of UAP radar transmissions directed at both SAC aircraft and air defense facilities, occurring during a single week in 1957. Another short burst of incidents took place over five separate days in June 1955, where an SAC aircraft flying over northern Canada detected unknown objects at ranges between two and five miles from the plane. Radar transmissions from those objects repeatedly jammed SAC aircraft. During a June 4 encounter, a UAP was visually sighted and described as a metallic cylinder. On one occasion the unknown paced the aircraft for some nine minutes, before breaking contact and departing at high speed. The incidents were so well documented that the commands reported them as a national security concern, recommending they be investigated for signs of possible Russian electronic warfare. Short bursts of UAP intrusions at ICBM bases occurred during August 1965, with four major bases in multiple states reporting incidents at several individual missile silos. Security personnel reported radio interference which was so intense across such a broad spectrum of frequencies that intentional jamming of command-and-control capabilities was suspected by all involved. While these type of actions could be assessed as a demonstration of the ability to interfere with atomic bombers (at a minimum eliminating their capability for radar-assisted bombing, a key SAC practice) or with ballistic missiles, there are alternative interpretations, including possible messaging.

The issue with interpreting these types of incidents as indicative of preparation for actual intervention to preempt strategic atomic warfare, or to neutralize missile-launched atomic weapons is that it is simply not possible to determine whether the effects reported suggest intentional compromise of the weapons systems (a positive indicator for the scenario) or are the result of very close proximity of the UAPs to complex and concentrated electronic communications and control systems at the missile installations.

The possibility that such incidents were a form of "messaging" or some type of attempted communications has to be considered, along with the fact that other UAP incidents present evidence that the objects are able to intelligently respond to encrypted interrogation requests (transmitted via radar) from aircraft, ship and air defense installations with recognizable (and encrypted) IFF transponder codes.

While the incidents of interference with strategic bombers and missiles is suggestive, they are

limited in number and appear to have been more in the nature of "sampling" of such weapons and their defenses. That sort of sampling activity, especially when repeated over time and with different types of weapons systems is more suggestive of the General Military Survey than of Prevention of Atomic Warfare, leading us to rank Prevention of Atomic Warfare as less likely than a General Military Survey. When considering the scenario for Prevention of Atomic Warfare, verifiable reports including the testing of strategic atomic weapons are important, and to date represents a gap in our available data.

4.4. Military Aggression

Ranked Number 4 - Low Support

Despite incidents of temporary disruption of Strategic Command Alert aircraft missions and of ICBM missile operations, atomic weapons deployments continued over the duration of this study, without any incidents related to actual aggression against the weapons themselves. There were also no instances of widespread interference with military surveillance radar or with the suppression of interceptors to engage reported UAPs – instead there were numerous and ongoing reports of radars tracking UAPs and the dispatch of armed fighter aircraft to intercept the radar targets.

The ongoing generation of radar tracking reports, combined with visual observations of UAPs both during daylight hours, and as well lighted objects in nighttime observations, argues against covert operations in UAP activity and would support relatively overt survey scenarios rather than the covert intelligence collections that would be associated with potential military aggression.

There are several reports in which UAP actions resulted in both civilian and military aircraft taking evasive maneuvers to avoid what were perceived to be approaches that would result in mid-air collisions. In certain instances, military pilots felt that UAPs were actively involved in what might be considered as military engagement – however, there were no instances in which weapons appear to have been used against the aircraft and while aircraft have experienced problems with electrical systems or communications, it is possible that those may have been effects of UAP propulsion or related technologies. Instances in which military aircraft have been lost while attempting to engage UAPs are inconclusive and appear to have involved unrelated effects ranging from weather to lack of oxygen at high altitudes.

The other factor arguing against the scenario of military aggression is the lack of repetition of interference with weapons systems or in what could be aggressive engagements with military aircraft. The great majority of such incidents occurred over specific periods of time and – as with the early atomic weapons production facilities – either were not repeated at all or repeated very selectively as new facilities and weapons systems were put into operation. The reports in our study database do not show ongoing, broad-based military intelligence collections throughout the length of our study, another point that supports the scenario of some type of survey rather than an intention of planning for military action.

While alternative intentions may be indicated in a wider timespan for UAP activity, the progressive and logical surveillance of the atomic weapons complex during the period of this study (1945-1975) indicates a focused survey of US atomic warfare operations.

5. Key Points from Hancock et al., 2023a

- The results of our previous pattern recognition paper study on UAP reports between 1945 and 1975 indicated an elevated level of UAP activity at military facilities – activity reflecting both intelligence and focus.
- Focused UAP activity was most noticeable at the earliest facilities of each type: materials production, weapons assembly, weapons stockpiling, and weapons deployment.
- Elevated UAP activity occurred during a "window" of time in which the first weapons production occurred (from 1948-1951), continued during the national spike in UAP reporting in 1952 and then dramatically decreased, never to repeat the "window" levels during the remainder of the study period.
- Similar "windows" of focused UAP activity were noted at the primary rocket and missile test center (White Sands) during this initial period, as well as with the deployment of each new generation of intercontinental ballistic missile.
- No comparable level of "window" activity is seen at the radioactive materials production and weapons assembly plants which came into service in later years – specifically at Savanna River and Pantex.
- Elevated activities were noted at ballistic missile sites – with the introduction of each new class of missile including the introduction of multiple reentry vehicle warheads on Minutemen III missiles (those warheads significantly elevated the number of warheads delivered by a single missile launch).

6. Conclusions

Atomic weapons surveying was concluded to be the most likely scenario for the patterns reported in Hancock et al., 2023a. Based on the frequency, type, and pattern of UAP activity in our study period of 1945 to 1975, our assessment ranked the likelihood of each of our four selected intention scenarios as follows:

- Focused survey of atomic weapons / warfighting capability
    - Strong support (Most likely)
- General military survey
    - Moderate support (Possible)
- Atomic warfare prevention
    - Some support (Less likely)
- Military aggression
    - Low support (Least likely)

Despite ongoing incursions at American atomic warfare facilities, nuclear weapons development continued for the duration of the study, and rose to the capability of global planetary destruction.

The intentions study model presented in this paper provides a structured methodology for the assessment of UAP intentions based on high quality UAP reports associated with the US military between 1945-1975. This paper applied the intention analysis model specifically to the domains of the US military; however, other areas of study such as biological, psychological, sociological

and technological, may be examined utilizing the pattern recognition and indications analysis process, subject to available data. For each domain, a variety of scenarios may be evaluated for likelihood of intention, and thus improve our understanding of an advanced intelligence yet to be identified.

Credit Author Statement

L. J. Hancock: Conceptualization, Methodology, Investigation, Data Curation, Writing - Original Draft, Writing - Review & Editing, Supervision. **I. M. Porritt**: Conceptualization, Methodology, Formal Analysis, Writing - Original Draft, Writing - Review & Editing, Visualization. **S. Grosvenor**: Conceptualization, Methodology, Investigation, Data Curation, Writing - Original Draft, Writing - Review & Editing.

Data Repository

The 874 incidents used in the study necessary to reproduce these reported findings is available at https://doi.org/10.5281/zenodo.7758498

References

Accident-Report.com, http://www.accident-report.com/Yearly/1952/5205.html Accessed 8 Aug 2023

Battelle Report #14, 1955, https://archive.org/details/ProjectBlueBookSpecialReport14/mode/2upBattelle1955m

Burrows, W. E., 2001. By Any Means Necessary America's Secret Air War in the Cold War, Farrar, 8-10, ISBN: 978-0374117474

Clark, J., 1998. The UFO Encyclopedia 2nd Edition, The Phenomena from the Beginning, Article: Brad Sparks study of July 1957 RB-47 UFO Encounter, ISBN: 978-0780800977

Clark, J., and J. Clark, 2003. Strange Skies Pilot Encounters with UFOs, Pgs. 85-86, Pg. 118, Pg. 99, ISBN: 978-0806522999

Fawcett, L., B. Greenwood, 1984. *Clear Intent, The Government Coverup of the UFO Experience*, Prentice-Hall Inc., Pgs. 16-56, Pgs. 50-51, Pg. 53 ISBN: 978-0131366497

Grabo, C.M., 2004. Anticipating Surprise / Analysis for Strategic Warning, Pgs. 325-42, Pgs. 145-150, ISBN: 978-0761829522

Grabo, C. M, J., Goldman, 2015. The Handbook of Warnings Intelligence, Pgs. 9-10, Pgs. 280-291, ISBN: 978-1442248120

Hancock, L. J., I. M. Porritt, S. Grosvenor, L. Cates, I Okafor. 2023a. *UAP Pattern Recognition Study 1945-1975 US Military / Atomic Warfare Complex database.* Scientific Coalition for UAP Studies. https://doi.org/10.5281/zenodo.7295958

Hastings, R., 2008. UFOs and Nukes Extraordinary Encounters at Nuclear Weapons Sites, 214-215, ISBN: 978-1434398314

Hill, P., 1995. Unconventional Flying Objects A Scientific Study, 1995, 174-176, https://www.amazon.com/Unconventional-Flying-Objects-Scientific-Analysis/dp/1571740279

Hynek, Dr. A, 1966. in Saturday Evening Post (Are Flying Saucers real? Dec 17, 1966, 17-21, https://www.saturdayeveningpost.com/reprints/are-flying-saucers-real/

Hynek, Dr. A., 1972. Unidentified Object Experience A Scientific Inquiry, Chapter 7, ISBN: 978-0200719353

Hynek, Dr. A., 1997. The Hynek UFO Report, Pg.100, Pg. 130, ISBN: 978-0760704295

Joint Army Air Force, Navy Publication, General Description and Purpose of Communications Instructions for Reporting Vital Intelligence Sightings, JANAP 146, https://www.nsa.gov/portals/75/documents/news-features/declassified-documents/ufo/janap_146.pdf Accessed 11 Aug 2023

NICAPa, UFO Chronology, http://www.nicap.org/chronos Accessed 11 Aug 2023

NICAPb, UFO Chronology, http://www.nicap.org/chronos/1949fullrep.htm Accessed 11 Aug 2023

NICAPc, UFO Chronology, http://www.nicap.org/590502pease_dir.htm Accessed 11 Aug 2023

NICAPd, UFO Chronology, Key Radar Case Port Huron Michigan, NICAP, http://www.nicap.org/520729porthuron_dir.htm Accessed 11 Aug 2023

NICAPe, UFO chronology, The Rapid City/Ellsworth AFB Incident, NICAP chronology http://www.nicap.org/530805ellsworth_dir.htm Accessed 11 Aug 2023

NICAPf, UFO Chronology, 6200 MPH Target Hovers Near Grand Canyon, NICAP, http://www.nicap.org/570716lasvegas_dir.htm Accessed 11 Aug 2023

NICAPg, UFO Chronology, B-36 Radar Picks Up Object Seen Visually, NICAP, http://www.nicap.org/reports/510917atlantic_rep.htm Accessed 11 Aug 2023

Operation Sky Shield, https://en.wikipedia.org/wiki/Operation_Sky_Shield Accessed 11 Aug 2023

Peebles, C., 2000. Shadow Flights America's Secret War Against the Soviet Union, Pgs. 5-7, ISBN: 978-0891417002

Randle, K., 2001. Invasion Washington / UFOs over the Capital, Pgs. 138-139, ISBN: 978-0380814701

Richelson, J. T., 2007. Spying on the Bomb American Nuclear Intelligence from NAZI Germany to Iran and North Korea, Pgs. 41,50,90, 95, and 121, ISBN: 978-0393329827

Richelson, J. T., 2016. The U.S. Intelligence Community, Pgs. 5-7, ISBN: 978-0813349183

Salas, R., J. Klotz, 2005. *Faded Giant*, Burksurge LLC. Pgs. 12-27, Pgs. 4-11, ISBN: 978-1419603419

Sparks, B., 2020. Comprehensive Catalog of 2,200 Project Blue Book UFO Unknowns: Database Catalog, V1.30. NICAP. http://www.nicap.org/bb/BB_Unknowns.pdf

Sparks B., 1998 RB-47 Radar Visual Case, National Investigations Committee on Aerial Phenomena, http://www.nicap.org/reports/RB47_Sparks_Ency.pdf

Swords, M., R Powell R. 2012. UFOs and Government / A Historical Inquiry, Chapter 4 "A Formalized UFO Project", Chapter 5 "Grudge", Chapter 7 "Transition", and Chapter 8 "Tacking Against the Wind", https://www.amazon.com/UFOs-Government-Historical-Michael-Swords-ebook/dp/B01JJ9JF7Q

1949-Fort Hood, Texas UFO Wave, https://www.ufocasebook.com/fthood1949.html Accessed 11 Aug 2023

The Airborne Alert Program Over Greenland, The Nuclear Information Project, http://www.nukestrat.com/dk/alert.htm Accessed 11 Aug 2023

The SAC Alert Program, Historical Study Program, https://nsarchive2.gwu.edu/nukevault/ebb304/sac_alert_program_ch3.pdf Accessed 11 Aug 2023