A Forensic Analysis of Navy Carrier Strike Group Eleven's Encounter with an Anomalous Aerial Vehicle

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ANALYSIS OF EVIDENCE AND RESULTING CONCLUSIONS

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Robert Powell[1,*], Peter Reali[1], Tim Thompson[1], Morgan Beall[1], Doug Kimzey[1], Larry Cates[1], and Richard Hoffman[1]

[1]*Scientific Coalition for Ufology, Town Lake Dr., Ste A, #173, Fort Myers, Florida*

*Corresponding author: Robert Powell, exploreSCU@gmail.com

ABSTRACT

On November 14th of 2004, the U.S. Navy's Carrier Strike Group Eleven (CSG 11), including the USS *Nimitz* nuclear aircraft carrier and the USS *Princeton* missile cruiser, were conducting a training exercise off the coast of southern California when the Navy's radar systems detected as many as 20 anomalous aerial vehicles (AAV). These AAVs were deemed a safety hazard to an upcoming air exercise and the Captain of the USS *Princeton* ordered an interception with two F/A-18F Navy jets. This paper examines the publicly available subset of these data: Eyewitness information from the pilots and radar operators; Freedom of Information Act releases of four navy documents; and a Defense Intelligence Agency released video taken by an F/A-18F jet using an AN/ASQ-228 Advanced Targeting Forward Looking Infrared (ATFLIR). Analytical calculations based on radar notes, testimony from the pilots, and the ATFLIR video are used to derive the velocity, acceleration and estimated power demonstrated by the AAV maneuvers. Calculated AAV accelerations ranged from 40 g-forces to hundreds of g-forces and estimated power based on a weight of one ton ranged from one to nine gigawatts. None of the navy witnesses reported having ever previously seen military or civilian vehicles with these maneuvering abilities. Manned aircraft such as the F-22 and F-35 are limited to nine g-forces[27] and the F-35 has maintained structural integrity up to 13.5 g-forces.[28] Our results suggest that given the available information the AAV's capabilities are beyond any known technology. The public release of all navy records associated with this incident to enable a full, scientific and open investigation is strongly recommended.

1 Introduction

Military reports of aerial objects that appear to be intelligently controlled and with aerodynamic capabilities surpassing any known aircraft are littered throughout our military history beginning with the Second World War. Investigations of these incidents have been initiated by the U.S. Air Force several times, with Project Blue Book (1953-1969) being the most well-known. The conclusions drawn by the Air Force have been that these objects pose no threat to our national security and that any continued study by the Air Force would not promote any increase in scientific knowledge.[1] Nonetheless, military reports of sightings of these objects continues to this day as does the investigation of such incidences by the military.[2]

The event involving CSG 11 is one of several well-documented AAV incidents that include military radar data. One of the earliest well documented incidents involved an Air Force airborne early warning aircraft, an RB-47, in July 1957. The jet was equipped with electronic countermeasures (ECM) gear and manned by six officers. The aircraft was followed for over 700 miles by an intensely luminous light that was seen by the cockpit crew and detected on ECM monitoring gear and by ground-radar.[3] Seven years later in November of 1964 a Navy exercise involving the destroyer USS *Gyatt* off the coast of Puerto Rico detected unknowns on radar for a period of three days. An F-8 jet attempted to intercept the unknown and made both visual and radar contact with a delta shaped craft. The craft accelerated away from the F-8 and was detected by the *Gyatt* radar at speeds up to 1,500 knots. Photographic copies of the Navy radar screen were captured and provided to the Air Force.[4] One of the best documented cases occurred at an ICBM site four years later: Minot AFB, North Dakota, on October 24, 1968. This incident involved 16 Air Force witnesses on the ground and the seven-man crew of a B-52 bomber that witnessed the object from the air. The object was detected on both ground radar and the B-52's radar. Photographs of the radar screens were kept and an extensive interview of all the Air Force officers in the B-52 and enlisted men on the ground was conducted.[4,5] The Air Force Project Blue Book file concluded that perhaps the cause was a combination of the stars Sirius, Vega, and some sort of plasma. Forty years later, on January 8, 2008, the first case with extensive civilian radar coverage from the FAA (Federal Aviation Administration) occurred. Over 20 witnesses saw unidentified lights over a four hour period that covered two counties in north central Texas. The raw digital data from five different radar sites was obtained from the FAA. The information provided showed that the radar detected F-16s on a training mission that night as well as an object in the same location and time as described by the local constable. The constable described an object to the south of his home that was stationary to slow moving and then suddenly moved to the northeast at a very high rate of speed. The radar showed a slow moving object to the south of the constable's home that suddenly accelerated to the northeast at over 1,900 mph.[6] Five years later, on April 25, 2013, in the same area as the 1964 *Gyatt* incident, a Homeland Security patrol aircraft took Infrared (IR) video of an unknown object that approached Puerto Rico from the northwest at night. The object was about four to five feet in length and was traveling just above treetop height during the night at around 80 mph. The strangest portion of the video was when the object entered the ocean with little to no impact, no change in speed, traveled underwater for a few seconds, and upon exiting the water it split into two equally sized objects as the original (Powell et al., 2015).[7]

The event involving Carrier Strike Group Eleven is similar to these other cases because of the existence of electronic data and it involved the military. This case was chosen for analysis because of the quality and number of witnesses involved, the extended period of time the object was sighted over different locations and time periods, the availability of radar data, and the existence of an IR video. This forms the motivation for our report.

2 Supporting Data and Limitations

2.1 Witnesses

The strength of this report lies predominantly in the quality and quantity of military witnesses. There are five primary witnesses, four of whom have been interviewed by our team, twenty secondary witnesses that have made public statements in various forums, and four anonymous witnesses whose statements support those of the other witnesses. All of the witnesses are service men and women either in the U.S. Navy or the U.S. Marines. Their ranks vary from Junior Seamen to Commanders and Lieutenant Colonels. Audios of the interviews that were conducted by the authors of this report have been made available on the SCU website at: http://www.explorescu.org/. The recordings have been screened for any personal information. Any information taken from interviews made by news people or others are so noted in this paper. Details on all primary witnesses (defined as direct witnesses to the event that have been willing to be interviewed), secondary witnesses (defined as witnesses who have provided information but have not been willing to be interviewed), and anonymous witnesses (defined as witnesses wishing to protect their identity and whose testimony has been cross referenced for accuracy by the authors of this report) can be found in Appendix L.

The testimonies that have been provided are of an event that occurred 14 years ago. It is expected that memories change over time and that witness testimonies will differ. Furthermore, once testimonies become public then they can contaminate other witness's memories of an event. The authors of this report have taken this into consideration by examining when statements were made and have sought to determine the facts that lie in congruence across the memories of multiple witnesses.

The authors weighted the testimony based on experience of the witnesses. The Commander of the F/A-18 squadron and his Lieutenant Commander, both graduates of the U.S. Naval Academy, were considered the most reliable witnesses based on their rank, experience, and their matter-of-fact statements during our interviews and in past testimony. The next most valuable witness was the Senior Chief who was responsible for the radar operators aboard the USS *Princeton*. Appendix L provides the background and qualifications of all the primary witnesses used in this paper.

The authors believe the testimonies and electronic evidence are sufficient to establish that the event occurred and that the object encountered displayed properties unexplainable within our current understanding of physics. It should be noted that although this case has recently been made famous in the public media, much of the research in this paper was conducted prior to the *New York Times* media release of December 17, 2017.

2.2 Freedom of Information Act Requests and Other Documents

A total of 26 Freedom of Information Act (FOIA) requests and appeals were made to the U.S. Navy, U.S. Marines, NORAD, and the Defense Intelligence Agency to obtain information on the event that involved Carrier Strike Group Eleven (CSG 11). Requests were made for radar data, written logs, communication logs, videos, and intelligence reports. The amount of written information received was limited. Not a single government document was received that indicated this event ever occurred although a string of emails was provided that indicated several Marine officers aboard the USS *Nimitz* were aware of the event and an indication that information on the event should be available in Navy archives. The full documents are in Appendix B. Marine Lieutenant Colonel Robert A. Tomlinson stated in an email released by FOIA and redacted by the Navy on March 7, 2017:

> "I am definitely aware of the flying tic tac! We were aboard the USS *Nimitz* attached to CVW-11. The CO of VFA-41, CDR Fravor had the video footage on his ATFLIR and several pilots in VMFA-232 saw the video. I personally did not see the video, but I heard all about it. I believe our CO at the time, Lt Col Kurth

(retired) observed the tic tac, and I believe Lt Col [redacted], Lt Col [redacted] (retired), Lt Col [redacted] (retired), and several others also observed the video footage. Another good reference might be current Rear Admiral Dell Bull as he was the VFA-41 Executive Officer at the time.*"*

A deck log for the USS *Nimitz* was received that helped corroborate the location of the exercise as stated by the various witnesses. Detailed information on the specific FOIA requests and the replies received are available in Appendix B.

The other documents referenced in this paper are of two types. One type includes compilations of witness testimonies based on interviews made by the authors from January 2018 to April 2018 and compilations of witness testimonies from interviews made by various media sources from February 2018 to June 2018. The second type are documents that have been used to assist with building a timeline of events. These documents have been cross referenced against each other and against witness testimonies for accuracy of information. In Appendix C each document is supplied and is discussed in relation to its origin and accuracy.

2.3 ATFLIR AN/ASQ-228 Thermal Imaging Camera

A pod mounted, AN/ASQ-228 Advanced Targeting Forward-Looking Infrared (ATFLIR), camera took a 76-second video of an AAV two hours after an AAV was engaged by a separate F/A-18F piloted by Commander (CDR) Fravor. A copy of this video can be viewed at https://www.explorescu.org/papers/nimitz_strike_group_2004. CDR Fravor and LCDR Slaight, commanders of the two jets involved in the engagement, agreed that the object that was filmed two hours after their engagement was the same type of object they had engaged.[8,9] While most technical specifications for the ATFLIR camera are still highly classified, some broad outlines of its capability are available. Publicly available information reveals that the AN/ASQ-228 Advanced Targeting Forward-Looking Infrared (ATFLIR) is a multi-sensor, electro-optical targeting pod incorporating an infrared camera, a low-light television camera, a target laser rangefinder/laser designator, and a laser spot tracker developed and manufactured by Raytheon. It is used to provide navigation and targeting for military aircraft in adverse weather conditions using precision-guided munitions such as laser-guided bombs. More detailed information on this system is available in Appendix D as well as help in reading the outputs on the video display.

2.4 Data Limitations

The limitations in witness testimony and available documents have been discussed in 2.1 and 2.2. The other limitation to analysis is in the available military data. According to the *New York Times* this IR video was released to them by the government.[2] Most of the witnesses have stated that the video released is of lower quality, shorter duration, and some of the information such as latitude and longitude have been removed.[8-12] Detailed information on the provenance of the video is available in Appendix E. Other important data that would have been collected (radar data, electromagnetic (EM) data, and intelligence reports) by the Navy's Carrier Strike Group (CSG) could provide information such as speed, acceleration, manuevers, and size of the AAV. It is believed this information may exist based on military witnesses who have indicated that representatives of a U.S. government agency took control of the data that was on the USS

Princeton. (This is discussed in section 2.5.) FOIA requests to the Navy for this information were met with replies that the information did not exist. Background information on the CSG and its data collection capabilities is detailed in Appendix F.

An exceptional amount of detailed analysis could be done with access to the radar and EM data taken by CSG 11. Unlike conventional radar, the USS *Princeton's* SPY-1 radar system does not rotate to send out radar pulses but instead sends out continuous pulses in all directions and pulses as short as 6.5 microseconds. It consists of a large array of small solid state radiating transmitter/receiver elements that can send EMF waves at different phase delays to focus and direct the radar beam without the traditional mechanical rotation of an antenna. The same elements can then be used as receivers of the reflected signals. This is known as a synthetic aperture phased array radar. With the information this system provides, the exact size, speed and acceleration of the object in question could be determined as well as its maneuverability. With multiple radar frequencies used by the various ship and planes, it might also be possible to identify the materials making up the AAV based on their absorption characteristics in the 3-6 GHz range. There may have also been valuable information that was garnered from any EM emissions detected by CSG 11.

One method to help obtain this information is if there is a sufficient groundswell of public opinion to cause Congress to request release of information from the military and intelligence agencies.

Despite the limitations placed on available information, we have been able to develop a strong case that the F/A-18 engagement that occurred on November 14, 2004 was with an aerial device intelligently controlled, either directly or remotely, and performing maneuvers well beyond the capabilities of any technology in the public domain or in the military witness' experiences.

2.5 Chronological Occurance of Events

We have broken the event into a seven different periods of time and some of those times have multiple witness locations. This section will follow the timeline, with descriptions of the relevant witness(s) and their perspective of the events.

Nov.10-13, 2004: Pre-event Information

The incident analyzed in this paper began on November 10, 2004, and involved Carrier Strike Group Eleven led by the USS *Nimitz*. The strike group was conducting training exercises prior to deployment to the Middle East. The exercises varied in distance from 50-120 miles south-southwest to southwest of San Diego. The assets in the strike group that were known to be involved in the event were the USS *Nimitz*, USS *Princeton*, VMFA-232 (Marine F/A-18C "Hornets"), VFA-41 (Navy F/A-18F "Super Hornets"), and VAW-117 (E-2 Hawkeye early warning aircraft).[10,13]

Senior Chief Kevin Day, USS Princeton Cruise Book, 2003

The key asset in the group was the USS *Princeton* whose role was air defense protection for the strike group. It had the best radar and best situational awareness of all aerial objects and it was the unit that would direct aircraft to a target. Its Captain was James L.T. "Red" Smith.[10,14]

The major event occurred on November 14, but for several days prior to that date AAVs (Anomalous Aerial Vehicles—the Navy's term for a UFO at the time; these terms are often used interchangeably by Navy personnel) would appear on radar in waves of 8-20 AAVs. There were multiple witnesses to this including the Operations Specialist Senior Chief Kevin Day who was over radar, the Fire Controlman Senior Chief, and the Fire Controlman Petty Officer Gary Voorhis.[10,11,15] The AAVs were first noticed over the Catalina Islands and traveled south at 80,000+ feet at about 100 knots.

The Senior Chief as well as the Fire Controlman Petty Officer, Gary Voorhis, responsible for the CEC (Cooperative Engagement Capability) checked the radar systems for the possibility of false returns. They re-calibrated systems, checked with other vessels and found no indication of errors. The USS *Nimitz* also detected the unknowns as did a E-2 Hawkeye airborne early warning aircraft equipped with the AN/APS-145 radar system.[10,13,15,16] The knowledge of these radar detections of AAVs was prevalent among many of the crew of the USS *Nimitz* and the USS *Princeton*. Despite this, no actions were initially taken as the AAVs did not appear to be a threat.

Petty Officer Gary Voorhis, USS *Princeton Cruise Book, 2003*

<u>November 14, 2004, 11 a.m. to 1 p.m. local time: Decision to Intercept</u>

The late morning of November 14, 2004 consisted of clear skies, no wind, and very calm water in the area of Carrier Strike Group 11.[8,15,18,19] The *Nimitz* Deck Log indicates the ship was located at 31º12.3'N 117º52.2'W at 1130 hours local time. This matches well with the CVW-11 Event Summary document (see Appendix C) that shows the USS *Nimitz* located at 31º29.3'N 117º52.8'W at 1410 hours.[20] The USS *Princeton* was nearby while the USS *Higgins* was docked in San Diego and the USS *Chafee* was 1/3 of the way back on its journey from Pearl Harbor to the Southern California Operating Area.[21,22] The location of the nuclear attack submarine, USS *Louisville*, is not known for the time period of November 10-14.

Sometime in the late morning Senior Chief Day estimated he saw 14 AAVs show up on *Princeton's* SPY-1 radar again. They were the highest track quality rating on the system and were spread out uniformly across about 100 miles.[10] The AAVs were also picked up by the *Nimitz*.[10,16] An airborne early warning aircraft from VAW-117 was able to detect the nearest AAV with their radar once they tightened their radar beam on the coordinates provided by the USS *Princeton*.[10,13,15] All of the radar data from these varied sources were combined by the CEC system and integrated into one picture. The varied radar sources from different locations, different angular lines of transmission, and different operating frequencies made it highly unlikely that the targets being tracked by CSG 11 were atmospheric inversions or other false reflections that might fool a single radar system.

Senior Chief Day was concerned and the following paraphrasing of his testimony explains why. The AAVs, originally at 80,000+ feet, were observed to descend in as little as 0.78 second to various altitudes from 28,000 feet to as low as just 50 feet or less above the ocean surface.[10,11,15] (See Appendix G for estimated speed, acceleration, and g-force calculations.) In only a few hours an air defense exercise was scheduled to commence which would involve the launch of as many as 30 aircraft from the USS *Nimitz* as well as from Marine Corps Air Station Miramar in San Diego. The AAVs, at the very least, would be a hazard to air navigation at these lower altitudes. When Captain Smith came down to the Combat Information Center (CIC), Senior Chief Day briefed him on the radar contacts and recommended that the closest target be intercepted. The Captain agreed and authorized the interception.[10] The USS *Princeton* took control of the intercepting aircraft from the E-2 Hawkeye since its CEC system provided the best radar track of the AAVs.[10,13,15]

Approximately 2 p.m.: Lt Colonel Douglas Kurth First Jet to Investigate

The time was now roughly 1400 hrs. (This is supported by the *Nimitz* Deck Log which showed planes that departed at 1332 hrs, the CVW-11 Event Summary, and CDR Fravor's own recollection.)[17,20,23] Lt. Colonel Douglas Kurth's F/A-18C "Hornet" had departed the USS *Nimitz* at about 1110 hrs to complete a post-maintenance check flight.[13,17] Although his fuel level was low, he was not far away so his was the first aircraft directed by Operations Specialist Don Oktabinski of the USS *Princeton* to intercept the AAV. Kurth, who was the Commanding Officer of Marine Hornet squadron VMFA-232, was asked a strange question by the *Princeton*. He was asked if he had ordinance on board. He replied, *"*None.*"* He was the first to reach the target displayed on *Princeton's* radar. The exact location of that target is not known for certain but it was within 60 miles of the *Nimitz* and was southwest of the ship. As the Commander neared the radar-vectored location of the AAV, *Princeton* advised him to abort his instructions, as "Super Hornets" from VFA-41 were approaching the target. Kurth's radar picked up the two approaching F/A-18Fs but no other contacts. Before departing Kurth saw a disturbance on the calm and glassy ocean surface. He described it as a circular area that was 50-100 meters in size and had the appearance of "white water" similar to what a sinking ship might create.[13,15]

2:10 p.m. to 2:40 p.m.: CDR David Fravor and LCDR Jim Slaight Encounter the AAV

VFA-41 Squadron Commanding Officer Dave Fravor and Lieutenant Commander Jim Slaight were the "First Cycle" launched at 1332 hours[17] for the air defense exercise conducted in an area spread 80-150 miles SSW of San Diego, California. They were flying F/A-18F "Super Hornets" and their call signs were "FastEagle01" and "FastEagle02." Both planes had a pilot and a Weapons Systems Officer (WSO) aboard. LCDR Slaight, call sign "Clean", was the WSO and his plane was acting as the wingman for CDR Fravor. The wingman was the "mutual support" protector of the lead plane. LCDR Slaight was also one of the department heads within the VFA-41 Squadron at the time of the event. The pilot of Slaight's plane was a junior officer. Both CDR Fravor and LCDR Slaight have kept confidential the names of the other pilots. [8,9,24]

CDR Fravor and his wingman were headed to their Hold Point, also known as their Combat Air Patrol (CAP) coordinates where they would conduct training exercises. The CAP coordinates consist of four predetermined latitude, longitude, altitude points where fighter aircraft station themselves to protect an asset, in this case the Carrier Strike Group. The CAP coordinates were only known to the pilots and those on board ship with a need to know. This understanding of CAP coordinates will become important later in the discussion.[8,9,15,23]

About 30 minutes after takeoff, "FastEagle01" and "FastEagle02" were contacted by the USS *Princeton* and told they were being redirected to a "real world situation;" a radar target that was not part of the exercise. They were ordered to a heading of 270 degrees (due west) at a range of about 60 miles and were given intercept coordinates at 20,000 feet. They proceeded with their APG-73 radar set to an envelope extending 20 miles in all directions.[8] They also received the same question as Commander Kurth. Did they have ordinance on board? They gave a negative response. They only had practice missiles that could not be launched.[8,23,24] (It is not known if this incident caused the air defense exercise to be canceled for the day. David Fravor and Kevin Day indicated that it was, while the leaked Navy Event Document tends to indicate that it was only delayed.)

Approximately 60-80 miles southwest of the Nimitz, the intercept coordinate was achieved and *Princeton* showed they had merged with the target on radar in what is known as a "merge-plot." This is the point in space where two targets are so close together at a given range that the radar system cannot distinguish them from each other.[8,10,24] When asked the distance between two targets that would result in a "merge-plot" Senior Chief Day, responsible for radar, properly declined to give a detailed answer as that could be considered confidential military information. He indicated that it was some value less than a mile.[10] (Based on experience analyzing FAA radar, one of the authors of this report knows that FAA radar cannot distinguish targets at 50-70 miles distance that are separated by less than ½ mile. The SPY-1 radar is far superior to FAA radar. We suspect that the "FastEagles" were within ½ mile of their target when the "merge-plot" occurred on radar.)

Although the *Princeton* indicated that the "FastEagles" were at the same location as the aerial target, nothing was seen on radar by the "FastEagles" so the pilots began to visually scan the area.[8,9] LCDR Slaight indicated that his jet was equipped with APG-73 radar and although he could not detect the target, he stated that he had no indication from his radar that his system was being "electronically jammed."[15,24] The *Princeton* did not detect any jamming either. Senior Chief Day stated that the ship had an electronic warfare sweep operator and that no jamming or any other electronic signals were coming from the AAV. The Chief stated that if the F/A-18Fs were being jammed then the only way the *Princeton* would not have detected the jamming would have been if a narrow beam was directed only against the planes.[10]

Looking down, Fravor and Slaight saw a disturbance in the water. They did not know the cause. Fravor thought possibly a downed aircraft as he estimated that the disturbance might be caused by an object about the size of a 737 (about 120 feet in length) roughly 10-15 feet under the surface of the ocean and causing a disturbance of the calm water above it as the water broke over the object.[8,24] LCDR Slaight thought the disturbance in the water with the frothing and bubbling on the surface might be a submarine but this was later dismissed after determining that there were no submarines in their immediate area at that time. This was verified during LCDR Slaight's debriefing by the ship's Intelligence Officer following his return to the USS *Nimitz*.[24] Details on the ocean surface would have been apparent to the pilots in the two "FastEagles." A 120 ft object at 20,000 ft distance would be 0.34 degrees in size or slightly smaller than a full moon. (See Appendix H for calculations related to angular size, distance, and actual size.) Witness testimonies referring to sonar contacts of any underwater objects were negative with one exception. Petty Officer Gary Voorhis in the CEC indicated that an underwater object was tracked at 500 knots. No additional confirmation confirming sonar contacts has been obtained.[11]

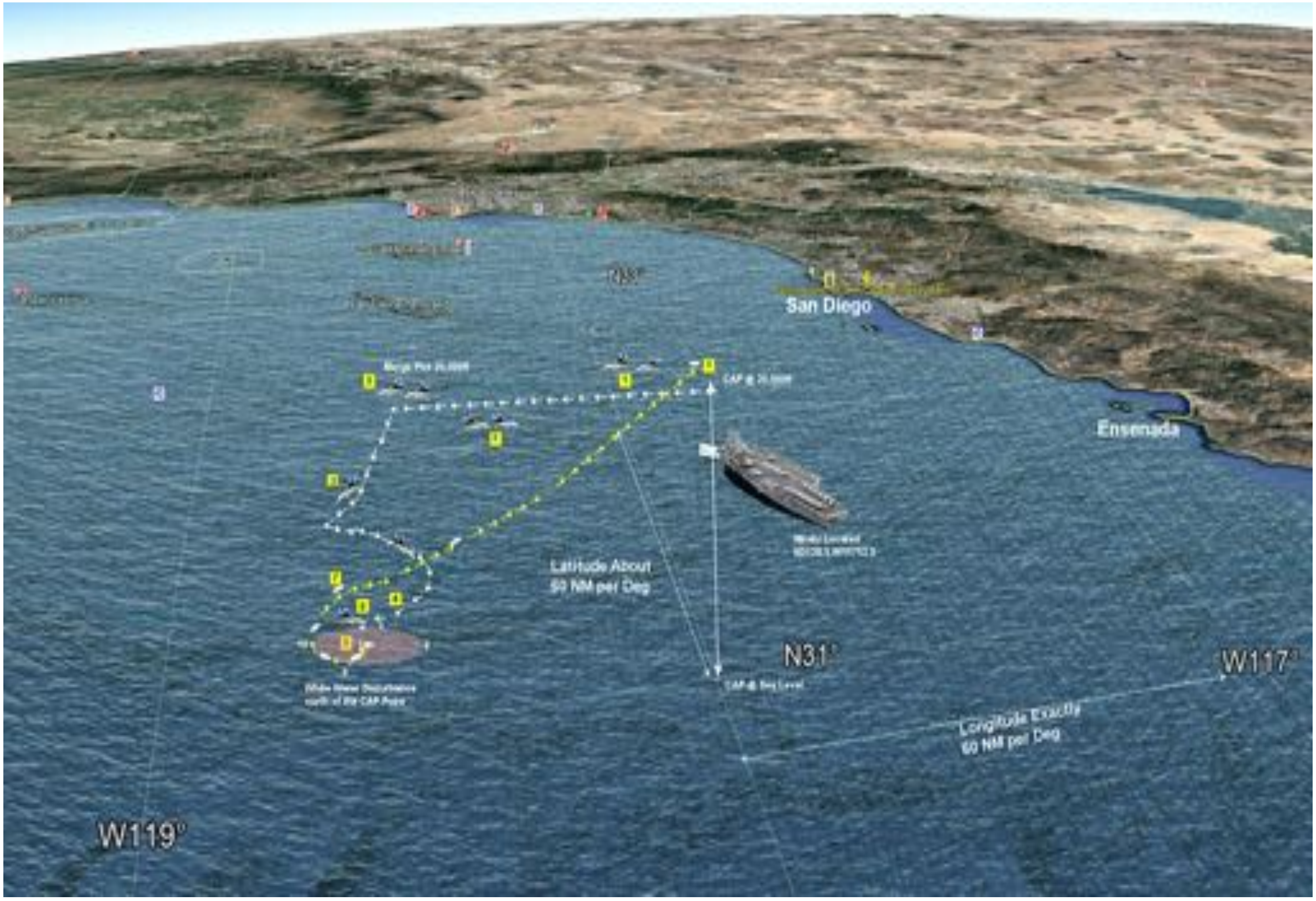
As the "FastEagles" continued to observe the water disturbance from an altitude of 20,000 feet, all four pilots saw an additional anomaly. CDR Fravor described a white "Tic-Tac" shaped object, with perhaps two small appendages hanging below its belly, moving just above the water disturbance. The object had no wings or exhaust and its movement had no observable effect on the calm ocean surface such as that of a rotor wash from a helicopter. CDR Fravor estimated the object to be 50 feet above the water and he described its movement as follows: "It's almost like a ping pong ball. So when it goes right it can stop <u>instantly</u>, and it goes back left, it goes straight forward, it is randomly moving around, very erratic." (See Figure 1.) Fravor's estimate of the object's distance from the water was based on experience and his estimate of the object's size. Using Fravor's estimate of the "Tic-Tac" being the size of his plane, an object 50-60 feet in size at 20,000 ft would take up 0.14 - 0.17 angular degree of sky or about a third the size of the full moon—sufficiently large to visually pick up details. If the object had been much smaller then it would have been difficult for the pilots to have observed much detail at that altitude. (See Appendix H for calculations related to angular size, distance, and actual size.) It did not need to slow down to make a change in direction; its directional change was instantaneous. Furthermore, the object was moving in a random and erratic motion below him in left, right, forward, and backward directions.[8,15,23,24]

Figure 1: "Tic-Tac" Shape

CDR Fravor decided to descend towards the object to investigate and he informed his WSO in his back seat they were headed down. Fravor dropped to about 12,000 to 16,000 feet.[8,15] His wingman, which included LCDR Slaight as the WSO, remained at 20,000 feet and were able to observe both Fravor's aircraft and the "Tic-Tac" during their engagement.[8,9,15,16,23]

CDR Fravor describes his engagement with the "Tic-Tac" (See Figure 2 on the following page as a visual aid):

> "So we passed through about the twelve o'clock position and we're descending. It [The "Tic-Tac"] kind of recognizes that we're there and it starts to mirror us. [The same thought went through the wingman pilot's mind who stated, 'The UFO turned on them as if it knew or somehow anticipated what they were going to do."[23]] So now, think of it at the six o'clock position, we're at the twelve o'clock position. We're coming down and it starts coming up. So it's going towards nine o'clock and we're going towards three o'clock. And we do this all the way around until I get all the way back towards about the nine o'clock position. So I'm still coming down nice and easy and I'm watching this thing. Because it's just kind of watching us and following. And I'm like, 'That's kind of weird.' So now there's probably about, let me think, 2,500, it's probably about maybe 3,000 feet below us and about a mile across the circle. It's about the size of an F-18. So you know 47 feet long. But it has no wings. I don't see any exhaust plume, you know, like an older airplane would have smoke. There's none of that.



<u>Figure 2: CMD FRAVOR'S ENGAGEMENT WITH THE "TIC-TAC"</u>

1. CDR Fravor and his wingman are somewhere north of the CAP point and are vectored by The USS *Princeton* to go ~60 NM west.
2. At the "merge-plot" Fravor decides to investigate and descends towards the unknown object, while the wingman stays at altitude.
3. As Fravor descends from the twelve to the nine o'clock position moving clockwise, the "Tic-Tac" apparently notices him and starts to move from the center of the white water disturbance and moves clockwise, mirroring his movements.
4. As Fravor descends to the right at the three o'clock position the "Tic-Tac" begins to ascend toward the nine o'clock position.
5. The clockwise movement continues until Fravor again reaches the nine o'clock position and the "Tic-Tac" is heading toward the three o'clock position.
6. Fravor decides to cut across and dive to the three o'clock position for an intercept.
7. The "Tic-Tac" shoots up across Fravor's nose and instantaneously heads south at an inclined angle.
8. Fravor and his wingman no longer see any white water activity and decide to return to the CAP point to complete their exercises.
9. USS *Princeton* notifies Fravor, as they decide to return to the CAP point, that the "Tic-Tac" is there. The "Tic-Tac" has traveled 60 NM in a couple of minutes or less.

> "So as I come across, I'm a little above him. He's at the three o'clock position and I go, 'Well, the only way I might get this is to do an aggressive out-of-play maneuver." So I dump the nose and I go from the nine o'clock through the vertical down, to go across to the three o'clock. So he's over here and I go like this [motions cutting across the circle]. So as I get down to about, I'm probably about 60 degrees nose low a little, pulling through the bottom. It starts to accelerate. It has an incredible rate of acceleration. And it takes off and it goes south. And it takes off like nothing I've ever seen. It literally is one minute it's there and the next minute it's like, poof, and it's gone." [19]

Fravor, to put it in perspective,described how even a jet at Mach 3 can be seen for at least 10-15 seconds before it fades from sight. In CDR Fravor's own words, *"*This thing disappeared in a second; it was just gone.*"*[25] (This sudden acceleration is discussed further in this report and in Appendix I.)

Since the "Tic-Tac" had now departed, CDR Fravor decided to reverse direction and returned to the object that he had seen under the water. Five minutes had gone by during the engagement and the water disturbance was no longer there.

The jets were on their way back to the *Nimitz* when CDR Fravor received a call back from the *Princeton* to tell him that, "You will not believe this but the "Tic-Tac" is back at your CAP.*"*[10,15,16,24] The surprise reaction from the *Princeton* was because the CAP point was a secret coordinate location that was a precise latitude, longitude, and altitude. The strangeness of this observation was later noted by Senior Chief Day when he stated in his interview:

> *"*They [the "Tic-Tac"] shouldn't have known where it was. And that was the bizzareness of it. How the hell did it know where the CAP station was? I mean it was <u>right on it</u>. Directly <u>on</u> it. Not close by, but <u>on</u> it. On that point in space.*"*[10]

The two "FastEagles" returned to the *Nimitz*. Despite Fravor's interest in the "Tic-Tac," he no longer had sufficient fuel to pursue it further.[15,23]

<u>2:10 p.m. to 2:40 p.m.: LCDR Slaight's View of CDR Fravor's Engagement from Above</u>

LCDR Jim Slaight described the object that CDR Fravor engaged. He also recounted that the object resembled a giant "Tic-Tac," 40 to 50 feet long, 10 to 15 feet wide, off-white in color, no audible noise or sound, no markings, fins, vents or exhaust type of ports. Slaight said the object had *"*defined edges*"* but along those defined edges there appeared to be a *"*fuzzy or wavy looking border around the entire surfaces of the object." Around the surface of the object he said, "it looked like what the heat waves would look like coming off a hot paved road or what the carrier deck looked like if you looked across it when in the Gulf in the Mid-East.*"* This was noted on the edges of the entire object. None of LCDR Slaight's jet instrumentation was affected by the encounter.[24]

As CDR Fravor headed down towards the "Tic-Tac," LCDR Slaight observed that the object had now started on a direct path towards CDR Fravor's jet but then changed course and started to circle around the Commander's plane. Before completely circling CDR Fravor's plane, the object then stopped and hovered for a second or two and then darted off horizontally at a slight upwardly inclined angle. LCDR Slaight's description of the object's ability to suddenly greatly accelerate was similar to CDR Fravor's. In Slaight's own words:

> *"*It was there….then it rifled off, out of sight in a split second. It was as if the object was shot out of a rifle. There was no gradual acceleration or spooling up period, it just shot out of sight immediately. I have never seen anything like it before or since. No human could have withstood that kind of acceleration.*"* [24]
> [See Appendix I for acceleration details.]

LCDR Slaight believes the object was either autonomous in control or was externally controlled. He feels it was under some type of *"*intelligent control.*"* He is not aware of any technology that could maneuver or accelerate in the fashion that this object did on November 14, 2004.[24]

<u>2:10 p.m. to 2:40 p.m.: The *Princeton's* View of CDR Fravor's Engagement</u>

In the modern Navy's Command Information Center the radar information, electronic data, and the voices of the combatants are provided real time over the CIC's speaker system. (The photograph to the right is the *Princeton's* CIC.) While CDR Fravor was engaging the "Tic-Tac," the event was monitored in the USS *Princeton's* CIC as Fravor's Weapons System Officer was broadcasting the real-time events of the intercept to the ship.[10,15] Five radar operators were present on the *Princeton* as the composite radar imagery from all the fleet's ships was displayed. The excitement in the CIC was very high and Senior Chief Day remembers it well. At the time of intercept, *"*Pilots are screaming and everyone on the radio is screaming.*"* He remembered CDR Fravor's comment being, *"*I'm engaged! I'm engaged! Oh, shit!*"* The Senior Chief goes on to indicate that at the time of the interception the other 14 radar targets on the *Princeton's* radar screen began to drop from altitude towards the ocean. This activity caused a lot of consternation in the CIC.

USS *Princeton Command Information Center, 2009. Courtesy of L. Klees.*

Another witness in the CIC was Petty Officer Voorhis. He stated:

> *"*At a certain point there ended up being multiple objects that we were tracking. That was towards the end of the encounter and they all generally zoomed around at ridiculous speeds, and angles, and trajectories and then eventually they all bugged out faster than our radars. We were getting what we call 'spot radar sightings' where it would just catch a glimpse of it as it was moving so it was moving faster than our radar could register. And then they were gone.*"* [11]

The engagement ended as abruptly as it began. The time elapsed was 5-7 minutes from the beginning of the "FastEagle" engagement based on the time of "merge-plot," when the plane and the AAV appeared as one target on radar. Once the engagement ended the two aircraft returned to the *Nimitz* and the radar targets that were near the ocean surface ascended and returned to their original altitudes of 80,000+ feet in less than a second and began to track together to the south at 100 knots.[10]

In addition to the witnesses in the CIC, the authors have identified 18 of the crew that saw the IR video that was widely circulated via email on the ship during the next 24 hours using the SIPRNet (Secret Internet Protocol Router Network), which provides controlled and classified access to internet communications between ships and aircraft. Four of those crew members have been identified and they have indicated they have seen the IR video. All four crew members have been verified as servicemen aboard the USS *Princeton*. One crew member, Jason Turner, has been interviewed. The other three crew members who watched the video were Joe Wolschon, Chris Guilford, and Karson Kammerzell. Copies of their comments are available in Appendix L.

<u>2:50 p.m. to 3:10 p.m.: Return to the USS *Nimitz*</u>

CDR Fravor's and LCDR Slaight's planes returned to the USS *Nimitz*. The *Nimitz* log showed a landing/departure cycle at 1504 hours that would have included the two FastEagles based on the timeline constructed from testimonies.[15,17] A second pair of aircraft also departed at that time. Neither the identity of the second pair of departing pilots or their mission is known. A third pair of aircraft and their crew were on deck when CDR Fravor landed.[24] The Commander requested that the crew of the third cycle try and take a video of the object using their ATFLIR.[8] This is the pair of aircraft that took the IR video, which is discussed later in this report. The identity of the pilot and the WSO that took the video are known by SCU, but their privacy will be honored and their names not published.

CDR Fravor indicated that once he returned to the *Nimitz* there was a lot of playful "UFO" banter from his colleagues that was done in jest. Fravor took most of this in stride except for a joke played by an intelligence officer who told them that there was going to be a big investigation of the incident. CDR Fravor stated, *"*When I determined that was not true, *we had a little talk."* Fravor's interviews give the impression that he believed the incident had not been taken seriously and that it was not properly investigated. He stated that to his knowledge no official investigation of the incident occurred. He clarified this by pointing out that since he was a commanding officer and among the 20 highest placed individuals of the 5,500 crew members on the *Nimitz* that had there been an investigation then he would have known about it.[8,25]

LCDR Slaight, second in command to Fravor of the entire squadron, stated that he was debriefed within an hour of landing as is standard protocol for a returning mission. He was debriefed in the normal manner by a junior intelligence officer. Slaight asked the intelligence officer whether there was a submarine in the area where there appeared to be a submersed object. The intelligence officer said that he would check and did so immediately after the debriefing. He told LCDR Slaight that there was no submarine in the area where the water disturbance was observed.[24]

Additional information from onboard the USS *Nimitz* comes from Marine officers mentioned in FOIA documents and one radar operator who wishes to remain anonymous. The authors of this report have determined the identity of the radar operator, his rank on the *Nimitz* in 2003, and that he was part of the Combat Detection Center on the *Nimitz*. The importance of the *Nimitz* radar operator is that he confirmed that he also detected the unknowns on the *Nimitz* radar system.

Other individuals who may have seen the ATFLIR video while onboard the USS *Nimitz* were identified through FOIAs dated August 13, 2017 and October 10, 2017. These included Lt. Col. Doug Kurth (retired 2006), Lt. Col. Ryan McCaskill (serving with US Northern Command), Lt. Col. Justin Knox (retired 2016), Lt. Col. John Schares (retired 2013), VFA-41 XO Dell Bull (currently Rear Admiral), and Major Richard Behrmann (current XO of VMA-232). These are available in Appendix B.

4:20 p.m.: Launch of a Pair of Jets with an ATFLIR Pod

The information on this third pair of jets comes primarily from the March 14, 2015 *FighterSweep* article,[15] the May 18, 2018 document titled the Executive Summary,[13] two media interviews made by CDR Fravor in June of 2018,[8,25] and the authors' interview of LCDR Slaight on February 22, 2018.[9] The *Nimitz* log indicates a landing/departure cycle at 1620 hours. CDR Fravor had requested that the crew with the ATFLIR pod obtain a video of the object should they encounter it.[17]

The two F/A-18Fs launched under the control of the E-2 Hawkeye airborne radar plane, which would be responsible for radar monitoring and communications with the F/A-18Fs. The planes separated after their initial rendezvous, with one heading to the southern CAP point where the "Tic-Tac" was last seen.[13,15]

The plane that headed south picked up a radar contact in the RWS (Range While Search) scan mode at about 33 miles to its south. The WSO attempted several STT (Single Target Track) locks on the target without success.[13,15] CDR Fravor stated that, after watching the video many times, jamming was the cause of the failure of the radar to obtain a range reading on the object.[8] The *FighterSweep* article also indicates that jamming occurred.[15] However, the Executive Summary (a document released in 2018 and available in Appendix C) indicates that there were no jamming cues.[13]

November 14 to November 15, 2004: Missing Data

As previously noted, much of the witness testimony for the next 24 hours after the event involved crew members aboard the *Princeton* and *Nimitz* that looked at the IR video through the SIPRNet. During this time, as reported by three witnesses interviewed by our team, the communication logs, the radar data, and other associated electronic information was removed from the USS *Princeton* and a copy of the video from the USS *Nimitz*. There are three incidents reported by three different witnesses which when taken together support a contention that there was a government agency that collected and removed the available data and information regarding the AAVs.

The first incident of missing data that we will mention is considered to be the most minor of the three and occurred aboard the USS *Nimitz*. After viewing the IR video CDR Fravor obtained two new Hi8 tapes (an 8mm magnetic video recording medium used during the turn of the 21st century), made a copy of it, wrapped it up, and put it in a shared safe with a note on them. He returned to his locker at some later time and found that the tapes were gone. Fravor thought that perhaps someone needed a tape since they were in limited supply on the ship.[8] If this had been the only incident then the accidental reuse of a tape that had been put in a shared safe is a reasonable hypothesis.

The second incident occurred aboard the USS *Princeton*. The morning after the event, Senior Chief Kevin Day went to get a copy of the communication logs so that he could do an After Action report on the events of Nov 14, 2004. He found that all the communications data had been erased; only the date and time stamps remained. This was highly unusual and the Senior Chief had thought this could not be done and he explained why this was not an equipment malfunction. All of the communications between the *Princeton* and other ships and aircraft were copied onto multiple optical disks to ensure that the communication logs are not lost. This was performed automatically by computer, which placed a date and time stamp by every communication. The reason for this duplication was in case an event occurred, such as a ship collision, man overboard, lost aircraft, etc., an investigation could be conducted to determine what happened.[10] Senior Chief Day's statement of the disappearance of the communication logs for November 14 is also supported by then Cryptologic Technician Petty Officer Third Class Karson Kammerzell of the USS *Princeton* who sarcastically stated that the "watch logs rewrote themselves like the event never happened".[26]

Petty Officer Jason Turner, USS Princeton Cruise Book, 2003

The third event also occurred aboard the USS *Princeton*. Petty Officer Voorhis was in charge of the Aegis computer suite's Cooperative Engagement Capability system. He recalls that within twelve hours of the AAV event a helicopter landed on board. He was approached by non-uniformed personnel who asked him to relinquish all of the CEC information including radar data, electronics information, data recordings, communications—everything that was not required for the ship's operation and navigation. He requested their ID but this was refused. He told the men that the Captain's permission would be required and subsequently the Petty Officer received orders from the Captain to relinquish the information to the gentlemen and he did so. He turned over all the information which was stored on magnetic tapes. He also erased all other magnetic tapes that were backups. Petty Officer Voorhis stated, *"*As far as my Captain was concerned, you do everything they say period; *or you go to jail."* Two days later the ship arrived at Puerto Vallarta. Again, non-uniformed individuals came on board the Princeton and all the non-critical information in their drives was also deleted.[11] This is also supported by Petty Officer Jason Turner who was in Supply and had a security clearance. He recalls that as soon as the ship docked in Puerto Vallarta individuals came on board because he had watch duty the following day and he looked at the logbook. He does not recall if there was a name of the government agency with which they were associated. When asked if it was NORAD, he replied *"*No.*"*[12] The evidential value of the information retrieved from the *Princeton* was made clear by Petty Officer Voorhis who stated:

> *"*...you could literally plot the entire course of the object, you could extract the densities, the speeds, the way that it moved, the way it displaced the air, its radar cross-section, how much of the radar itself was reflected off its surface. I mean you could pretty much recreate the entire event with the CEC data.*"*

Witnesses indicate that a U.S. government authority has acquired the information. Access to the large and diverse amount of data that went missing shortly after these AAV encounters would enhance our team's ability to further examine and characterize this incident and report on it in the public domain.

3 Analysis

3.1 Performance Characteristics Based on Statements from Radar Witnesses

Speed, acceleration, and power characteristics can be calculated based on statements from two navy personnel who observed the radar tracks of the "Tic-Tacs" in real time. The Senior Chief in charge of radar took notes while observing the radar in the CIC area, and noted that his equipment indicated that the object moved from 80,000+ feet to 20,000 feet in 0.78 second. A second man, the Petty Officer stationed in the same room at the same time as the Senior Chief, characterized the erratic movements of the objects from stationary at 80,000 feet to stationary at 20,000 feet on radar as "as fast as a thought." Calculations based on these observations, 60,000 vertical feet in 0.78 second and an initial and final velocity of zero, and assuming a constant acceleration (linear velocity) changing to a deceleration midway, yield a maximum velocity of 104,895 mph at the midway point, and an acceleration of 12,250 g-forces (see Appendix G). If one of the navy's jets of a similar size (F/A-18F at 18 tons) accelerated at this rate, it would need 90 gigawatts of power.

These numbers are nonsensical to any known aircraft; one would expect to see a fireball due to air friction at those speeds and one would not anticipate any known aircraft to remain structurally intact with such large g-forces. We examine these characteristics from a second and third set of data to compare with the above results. This is done in Sections 3.2 and 3.3

3.2 Performance Characteristics Based on Statements from Pilots

Two experienced Navy pilots in separate jets were vectored by the USS *Princeton* to the location of one of the objects mentioned in the previous paragraph. Upon arriving at the coordinates provided by the *Princeton* they simultaneously viewed the object from separate altitudes and angles. During the engagement with the "Tic-Tac," it accelerated from stationary to "out of sight" within one second according to one pilot, and "like a bullet shot from a rifle" according to the other pilot. Both pilots estimated the length of the "Tic-Tac" to be 40-60 feet along its major axis, and about 15 feet along its minor axis. The limit of a human's visual acuity is one arc minute, and can be used to calculate a distance at which an object is no longer resolvable. In a transparent medium, a 60 foot diameter object will reach the limit of human perception at 39.1 miles. Using a time to disappearance of one second results in a peak velocity of 281,520 mph and a maximum constant acceleration equivalent to 12,823 g-forces. Taking the lower bounds by using a 15 foot diameter object, the limit of human perception is 9.8 miles. Using a longer time to disappearance of two seconds results in a peak velocity of 35,280 mph and a minimum constant acceleration equivalent to 803 g-forces. Appendix I contains tables that show the calculated g-force based on various sizes of the object, time frames, and levels of visual acuity.

The resulting speed and acceleration derived from the pilots' testimony is consistent with that derived from the ship-board radar operators' reports.

3.3 Performance Characteristics Based on an IR Video

A third method to measure the performance characteristics of the "Tic-Tac" is to use information in the IR video itself. There is sufficient information to determine the g-forces generated depending on the size and distance of the object. The specific portion of the video analyzed is when the object appears to move rapidly to the left at the end of the video. Once the F/A-18's video system has locked onto a target, that target normally remains in the center of the video frame.[29] A Canadian Air Force serviceman, with thousands of hours using the ASQ-228, stated to one of the authors of this report that only once did he experience the system losing lock and that was when they had the system in a vehicle and hit a jarring bump in the road. He stated that the breaking of the servo lock on an object in the video is most unusual. He further indicated that he used the ASQ-228 to video missile launches and never once did it lose lock during the high acceleration of a missile launch.

The only other aircraft in the area of operation were other F/A-18s and an E2 Hawkeye early warning radar aircraft. This is based on statements from the pilots who indicated that a Carrier Strike Group exercise has complete control of its airspace and no other aircraft are allowed into the area. It is very unlikely that the object in the video is an aircraft from outside CSG 11 for this reason; however, there is always the possibility that the plane taking the video took a video of another F/A-18 and this possibility is examined in detail in Appendix J. That appendix also shows calculations that determine the distance that an F/A-18 would be from the camera in order to create an image of the same size as seen in the video. The distance calculated is 17 to 22 miles away. Based on statements from CDR Fravor and a Canadian Air Force user, both with extensive use of the ASQ-228, the wings and outline of an F/A-18 should have been visible on a clear day at that distance. Furthermore, the resulting g-forces calculated are 40 times earth's gravity which is well beyond the capability of an F/A-18 or the ability of a pilot to survive such an acceleration.

The work done in Appendix J shows that the identity of the "Tic-Tac" based on its size, estimated distance and lack of aerodynamic details in the ATFLIR image, and by calculating its average velocity and acceleration, along with the power requirements to perform these maneuvers—it is well beyond the capabilities of any technology in the public domain.

Additional work from another author-analyst is shown in Appendix K. The acceleration values are calculated by a different method than in Appendix J but the results are similar. Appendix K also looks at the acceleration rates of an earlier portion of the video that shows movement across only three video frames.

4 Discussion

Three independent sets of information were used to evaluate the object's speed and acceleration. In all three instances the acceleration values calculated were a minimum of 40 g-forces. First was the observed radar data movements of the objects provided by two highly trained first hand witnesses who were primarily responsible for the evaluation of the radar data aboard the USS *Princeton* and the rest of CSG-11. Second was a time estimate of the object's ability to accelerate and disappear from sight based on the testimony of two senior Navy pilots, each with thousands of hours of flight experience. Third was a calculation of an object's movement displayed on an ATFLIR video and the resulting acceleration necessary to accomplish this. All three methods resulted in acceleration values that are not survivable by a pilot or any known structured aircraft. Had there only been one piece of information indicating high acceleration rates then perhaps it could be overlooked as some unknown anomaly in the radar data affecting multiple systems, unusual movements for the ATFLIR pod, or errant memories with two very experienced pilots. But this is not the case as three independent pieces of information indicate an object traveled at unheard of accelerations for an aircraft. We have no reasonable explanation for the accelerations demonstrated by the object.

It is worth discussing that if the object(s) had been traveling at the speeds calculated then there should have been other characteristics observed that were not reported. There was never an indication of noise from the sound barrier being broken. Even more unusual is that the resulting friction from the speeds obtained in the atmosphere should have created an intense fireball and destructive shock-wave as the object moved through the sky. None of the four pilots that witnessed the object's sudden acceleration reported any heating that would be expected at the speeds noted in sections 3.1 and 3.2 of this paper. The only comment associated with heat came from one of the pilots who stated that the air around the object had a wavy appearance similar to what is seen on a road during a hot summer day.

These unusual characteristics bring into question whether the object seen existed as a physical mass. Arguments that the object possessed mass include:

(1) The "Tic-Tac" or AAV was opaque, had clearly defined edges and appeared to the pilots as a physical object.
(2) CDR Fravor engaged with the visual object and it reacted with complex manuevers that included moving upwards towards his jet, responding to his jet's movements, and finally accelerating away from the encounter when CDR Fravor attempted to intercept the object.
(3) The object was detected on at least three radar units on different Navy assets operating at different radar frequencies. It was seen in the visible spectrum as well as the 3-5 micron range of the ATFLIR camera.

Arguments that the object lacked mass include:

(1) The extreme accelerations that were exhibited.
(2) The instantaneous directional changes seen by CDR Fravor when first encountering the object.
(3) The lack of any obvious interaction with the atmosphere during movement.

The radar information that was acquired by the USS *Princeton*, the USS *Nimitz,* and the E-2 Hawkeye early warning aircraft could shed a lot of light on this incident. The radar data would provide exact time and distance measurements so that precise speeds and accelerations could be determined. The actual size of the object might be available in the radar data. The sudden movement of all the AAVs—was it synchronous? How did the other AAVs on radar react when the F/A-18s intercepted the one AAV? Did all the AAVs seen on radar travel at the same speed and altitude? Did the time required for the AAVs to travel different distances change as would be expected? And data from three different systems operating at three different frequencies would also provide information on the AAV's surface absorption and reflection characteristics.

The complete and original ATFLIR video could also provide valuable information. A better image of the object might be able to be ascertained with higher quality video information in both the visible and IR spectra. Information on the details of the ASQ-228's operation could allow for a more detailed determination of the AAV's acceleration on the video as well as whether there may have been any EM interference detected in the video.

There might also be information in the communication logs that provides useful information. Even the radio transmissions and other EM signals monitored by equipment on the *Princeton* might be use in helping to resolve exactly what happened that day.

5 Conclusions

In three separate instances we have calculated acceleration rates based on testimonies of military witnesses with years of experience and knowledge related to military aircraft characteristics and capabilities. These witnesses include two United States Naval Academy graduates, one with the rank of commander and the other a lieutenant commander. The accelerations demonstrated by the AAVs are beyond the capabilities of any known aircraft in the public domain. We do not know the origin of the AAVs nor do we have any information on their means of propulsion. We do believe that sufficient information has been provided in this paper to justify the release of all information related to this incident so that a complete scientific investigation can be conducted.

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REFERENCE END NOTES:

1. Swords, Michael, et al, *UFOs and Government: A Historical Inquiry*. Anomalist Books: San Antonio, TX. 2012, page 336 (Bolender memo).
2. Cooper, Blumenthal, Keane, "Glowing Auras and 'Black Money': The Pentagon's Mysterious U.F.O. Program," *New York Times*, December 16, 2017, front page.
3. McDonald, James E., "Twenty-Two Years of Inadequate UFO Investigations," American Association for the Advancement of Science, 134th Meeting, General Symposium, the University of Arizona, Tucson, Arizona, December 27, 1969. Also see: Brad Sparks, "RB-47 Electronic Intelligence Case," in Jerome Clark, The UFO Encyclopedia, 3rd ed. (Omnigraphics, Detroit, Mich., Nov. 2018) vol. 2, pp. 953-1001.
4. United States Air Force, *Project Blue Book and Project SIGN*, National Archives and Records Administration, National Archives Microfilm Reading Room, Washington, D.C.
5. Tulien, Thomas. "A Narrative of UFO Events at Minot Air Force Base", http://www.minotb52ufo.com Accessed on August 21, 2018.
6. Powell, Robert, and Glen Schulze, "Stephenville Lights: A Comprehensive Radar and Witness Report Study," July 2008. Copy available at https://www.explorescu.org/papers/stephenville-lights-a-comprehensive-radar-and-witness-report-study
7. Scientific Coalition for Ufology, "2013 Aguadilla Puerto Rico: The Detailed Analysis of an Unidentified Anomalous Phenomenon," August 2015. Copy available at https://www.explorescu.org/papers/2013_aguadilla_puerto_rico
8. David Fravor, interview by Linda Moulton Howe. KGRA radio, June 28, 2018.
9. Jim Slaight, interview by Robert Powell, telephone interview, February 22, 2018. Interview available at https://www.explorescu.org/papers/nimitz_strike_group_2004
10. Kevin Day, interview by Robert Powell, telephone interview, January 15, 2018 by Robert Powell. Interview available at https://www.explorescu.org/papers/nimitz_strike_group_2004
11. Gary Voorhis, interview by Robert Powell, telephone interview, April 6, 2018. Interview available at https://www.explorescu.org/papers/nimitz_strike_group_2004
12. Jason Turner, interview by Robert Powell, telephone interview, January 11, 2018. Interview available at https://www.explorescu.org/papers/nimitz_strike_group_2004
13. Author Unknown, "Executive Summary." Released by George Knapp, *LasVegasNow*, May 18, 2018. Origination date of article estimated as 2008 or 2009.
14. *U.S. Navy Cruise Book*, "USS Princeton (CG 59), Honor and Glory, Operation Iraqi Freedom", 2003 Westpac Deployment.
15. Paco Chierici, *Fighter Sweep*, "There I Was: The X-Files Edition" https://fightersweep.com/1460/x-files-edition/. March 14, 2015. Accessed 08/08/2018.
16. Terry V., interview by Jeremy Corbell, *Jeremy Corbell Radio Show*, internet radio, June 13, 2018.
17. "Deck Logs of the USS *Nimitz*," November 9-17, 2004. Obtained from the U.S. Navy through a Freedom of Information Act request, filed July 4, 2017, assigned identification as DON-NAVY-2017-008134.
18. *Weather Underground*, Ensenada Mexico, General Abelardo Rodriguez Intl Airport, November 14, 2004. https://www.wunderground.com/history/daily/MMTJ/date/2004-11-14?req_city=Ensenada&req_statename=Mexico Accessed August 09, 2018.
19. David Fravor, "CDR Strike Fighter Squadron 41 Interview," from *"To The Stars Academy".* https://coi.tothestarsacademy.com/2004-uss-nimitz-pilot-interview. Accessed July 05, 2018.
20. *ATS: Above Top Secret*, "Fighter Jet UFO Footage: The Real Deal," http://www.abovetopsecret.com/forum/thread265835/pg9. Accessed August 05, 2018.
21. "Deck Logs of the USS Chafee," November 10-17, 2004. Obtained from the U.S. Navy through a Freedom of Information Act request, filed June 11, 2018, assigned identification as DON-NAVY-2018-008449.
22. "Deck Logs of the USS Higgins," November 10-17, 2004. Obtained from the U.S. Navy through a Freedom of Information Act request, filed June 11, 2018, assigned identification as DON-NAVY-2018-008450.
23. "2004 USS *Nimitz* Pilot Report" from *"To The Stars Academy".* https://coi.tothestarsacademy.com/nimitz-report Accessed July 05, 2018.
24. Jim Slaight, interview by retired Navy Captain Tim Thompson, telephone interview, February 19, 2018. (Some information unavailable on the recording due to a technical problem in the first 10 minutes of the interview.) Interview available at www.explorescu.org.
25. David Fravor, interview by Jeremy Corbell, *Jeremy Corbell Radio Show*, internet radio, June 23, 2018.

26. Karson Kammerzell, "Anyone remember the UFO's during com2ex before the 05 deployment?", *Facebook*, Public Group, USS PRINCETON (CG 59), July 9, 2012. Accessed July 18, 2018.
27. *Global Security* 300 N. Washington St., Alexandria, Virginia. F-35 Joint Strike Fighter (JSF) Lightning II. Accessed September 28, 2018. https://www.globalsecurity.org/military/systems/aircraft/f-35.htm
28. "F-35 Lightning II News", June 9, 2010. www.f-16.net/f-35-news-article4113.html Accessed September 28, 2018.
29. Uyeno, Gerald, "Raytheon Advanced Forward Looking Infrared (ATFLIR) Pod", 2006, page 3. DoD Directive 5230.24—Approved for public release; distribution is unlimited. 265SPR-024.06

APPENDIX A

GLOSSARY/ACRONYMS

AEGIS Combat System (ACS) – (also referred to as AEGIS Weapons System (AWS) this is an integrated United States (US) Navy phased radar-based combat system produced by Lockheed Martin. It uses a powerful computer and radar technology to track and guide weapons to destroy enemy targets. The AN/SPY 1 Radar, MK 99 Fire Control System, Weapons Control System (WCS), the Command Decision Suite, and the SM-2 Standard Missile family of weapons are all part of the AEGIS Combat System.

Anomalous Aerial Vehicle (AAV) – a term used for an aerial phenomena for which there is no conventional or prosaic explanation for it. (See UFO)

Advanced Targeting Forward Looking Infrared Radar (ATFLIR) – a military grade thermal imaging camera that is mounted to the wing or fuselage to aircraft. Besides capturing thermal imagery, it can readily identify, lock on and direct missiles towards an intended target.

AN/SPY 1 – Military Designation (S=Ship, P=Portable Radar, Y=Targeting, Fire Control) for a 3D radar which is part of the Aegis Combat System. Each ship in the Carrier Group has a version of this radar which is interconnected to provide a 360 degree picture of any and all objects at a classified distance. It is part of the AEGIS Combat System. (See AEGIS Combat System).

AN/APS-145 – a radar used aboard an E-2 Hawkeye airborne Early Warning System aircraft. It is capable of tracking more than two thousand targets at the same time and controlling forty hostile targets. It has a range of greater than three hundred and forty miles.

AN/ASQ-228 – Military Designation for the Advanced Targeting Forward Looking Radar (ATFLIR) – See definition above.

Carrier Strike Group (CSG) – a naval group of ships led by an aircraft carrier that are sent to various parts of the world for defense purposes. These ships and a submarines are fully equipped with all weapons systems necessary to protect and defend US interests.

Combat Air Patrol Point (CAP Point) – the classified location where fighters will fly a tactical pattern around or screening a defended target while looking for incoming attackers. Flights may include and designate a specified altitude (low or high) to shorten the response times.

Commander (CDR) – the highest ranking officer in military command, organization, or military group. In the US Navy it is the rank between Lieutenant Commander and Captain, but it can also be a "positional rank" such as in "Commander, Carrier Strike Group Eleven". You will often see them referred to as the "CO" or Commanding Officer.

Command Information Center (CIC) – a designated area on a navy ship considered to be the hub for all decisions by Commanders and are the central location for all of the data and information from all information and communications systems.

Composite Training Unit Exercise (COMPUTEX) – a naval combat exercise in which either new ships or crew have the opportunity to conduct military missions to aid in learning.

Cooperative Engagement Capability (CEC) – a sensor/radar network that is integrated with fire control. It combines data from various sensors and radar systems located on aircraft and ships, into a single, real-time composite picture for military decision making. It works in conjunction with the AEGIS radars of guided missile cruisers and destroyers. Because multiple ships and aircraft are all integrated, the CEC helps to eliminate false targets and helps to improve accuracy of a target or multiple targets which the enemy is using.

Carrier Air Wing (CVW) – a US Navy aircraft carrier air wing based a Naval Air Station Lemoore, California and attached to the USS *Nimitz* aircraft carrier. (e.g., CVW – 11).

E-2 Hawkeye Airborne Early Warning System (EWS) – a specialized aircraft developed by Northrop Grumman that is equipped with advanced radar systems and other gear that is data linked to the cooperative engagement capability (CEC) and part of the overall AEGIS system (see AEGIS and CEC definitions). They play a critical role in surveillance missions.

Electronic Counter Measures (ECM) – the use of electronic means to thwart or counter an enemies use of electronics to attack you (e.g., use of a jamming system which in essence blocks a signal from use.)

Executive Officer (XO) – is the "Second in Command", under the Captain. Executive Officers may hold various officer ranks from Ensign all the way up to Captain in the navy. Much of the operational aspects of a squadron or unit usually falls under their responsibilities and they do assist in supporting the Commanding Officer of that particular unit or squadron.

Fast Eagle (1&2 Blue) – Code Designations for each of the F/A-18 E/F Super Hornets in use on the USS *Nimitz* in the First Cycle of the military exercise on the day of the report incident.

Federal Aviation Administration (FAA) – a federal organization which is responsible for regulating solely commercial airspace within the US. It has no responsibilities for military aircraft. Besides regulations, it provides training, pilot certifications and now has responsibilities extended to drones.

First Cycle – In a military exercise such as that of this report, there are repeatable sets of two Fighters being sent from the USS *Nimitz*, each of these sets of two aircraft with one being referred to as a Wingman which lags behind the lead Fighter is considered a cycle. The successive sets are referred to as the Second Cycle and Third Cycle and so on.

Forward Looking Infrared Radar (FLIR) – this is a term for a company which has products and services that it develops using the infrared part of the spectrum. The products are cameras that can discriminate the heat signatures of objects and have both government and commercial uses.

Freedom of Information Act (FOIA) – this is a federal law that seeks to provide public access to documents, records and other media in use by the US Government. Through specified procedures, anyone can make a written request for these documents. The government can deny this request based upon exemptions that have been specified in the Act.

Hornet – a McDonnell Douglas F/A-18 Hornet is a twin-engine, supersonic, all-weather, carrier-capable, multi-role combat jet, designed as both a fighter and an attack aircraft (hence the F/A designation).

Infrared (IR) – a portion of the electromagnetic spectrum with wavelengths beyond the visible range of humans and less than microwaves. The wavelength ranges from 700 nanometers to 1 millimeter.

Inter-Continental Ballistic Missile (ICBM) – a guided ballistic missile with a minimum range of five thousand five hundred kilometers or three thousand four hundred miles. It is designed for nuclear weapons delivery.

Lieutenant Commander (LCDR) – the second highest ranking officer in the US Navy and can also be referenced as a “Commander”. (See Commander above)

Merge-Plot (MP) – this is the point at which an object and an aircraft cannot be discriminated any longer as two separate objects.

North American Aerospace Defense Command (NORAD) – a United States and Canada bi-national organization charged with the missions of aerospace warning, aerospace control and maritime warning for North America.

Operations Specialist (OS) – is a US Navy and US Coast Guard occupational rating. These individuals work in the combat information center (CIC) tactical nerve center of the ship. They are responsible for the collection, processing display and competent evaluation and dissemination of pertinent tactical information to command and control stations, for which crucial decisions are made.

Petty Officer (PO) – is a non-commissioned naval officer equivalent to a corporal or a sergeant in comparison to other branches of service.

Range While Search (RWS) – a radar scans for targets and gives you the range to them.

Senior Chief Petty Officer – (see Petty Officer above) – a naval officer. There are three senior grades (chief petty officer, senior chief petty officer and master chief petty officer).

Scientific Coalition for Ufology (SCU) – a coalition or group of cooperative people who seek to apply scientific principles and methods to the use of studying the anomalous phenomena being reported around our world referred to as Unidentified Flying Objects (UFOs), Unidentified Submerged Objects (USOs), Unidentified Aerial Phenomena (UAP) and Unidentified Anomalous Vehicles (UAVs).

Secret Internet Protocol Router Network (SIPRNet) – a secret classified network that is used solely in the US military to share data and information that is of national security interests and is restricted to those with clearances at that classification level or higher.

Single Target Track (STT) – also referred to as a "lock". The radar locks onto a single target and all other targets disappear from the radar scope.

Super Hornet - a McDonnell Douglas F/A-18E/F Super Hornet is a twin-engine, supersonic, all-weather, carrier-capable, multi-role combat jet, designed as both a fighter and an attack aircraft (hence the F/A designation). The distinction between a Hornet and a Super Hornet is the more advancements made with performance and overall equipment and designs. The maneuverability with these designs were improved.

Tic-Tac – there is no technical reference for this term. It was coined by a pilot who stated that the shape of the unknown object being seen looked like a piece of candy which is available in stores and is called a "Tic-Tac."

Track While Scan (TWS) – the radar can capture multiple targets and track them all simultaneously. This setting on radar also displays altitude as well as direction of the target.

Unidentified Flying Object (UFO) – an unidentified aerial object that is observed by a witness(s), reported and after an investigation is completed and still remains unknown or unexplained is the accepted definition of a UFO. Most witnesses who merely cannot identify the object consider it a UFO, but these could be identifiable objects like birds, aircraft, and astronomical phenomena. It requires an investigation to rule these out and only after all natural or conventional hypotheses are eliminated, the UFO or "Unknown" is classified as such.

Weapons Systems Officer (WSO) – on military aircraft with two persons aboard, one person, usually seated behind the pilot is responsible for the radar, any infrared thermal imaging cameras, and the targeting and delivery of any bombs, missiles and other weapons onboard allowing the pilot to strictly navigate the aircraft as needed.

VAW - Marine Fighter Squadron (Designation, not an acronym) – the Marine Corp refers to their Fighter aircraft squadrons with the designation shown along with a number (e.g., VAW-117 also called the "Wallbangers" which is an E-2 Hawkeye Early Warning Aircraft – see definition above)

VFA - US Navy Fighter Squadron (Designation, not an acronym) - the Marine Corp refers to their Fighter aircraft squadrons with the designation shown along with a number (e.g. VFA-41 also known as the Black Aces, a group of F/A-18 Super Hornet aircraft).

VFMA - Marine Fighter Attack Squadron (Designation, not an acronym) – the Marine Corps refers to their Fighter Attack aircraft squadrons with the designation shown along with a number (e.g., VFMA – 232 is composed of F/A-18 Hornet aircraft)

APPENDIX B

FREEDOM OF INFORMATION ACT (FOIA) REQUESTS AND REPLIES

by Robert Powell

Freedom of Information Act Request

The first FOIA requests were made on December 30, 2016. These requests were made based on information obtained in a Navy blog written on March 14, 2015 by ex-Navy fighter pilot Paco Chierici. This blog was encountered by happenstance. The article contained detailed information about a U.S. Navy encounter with an unidentified flying object. It appeared to be a legitimate story that used naval terminology and the article indicated there were multiple high-quality witnesses to the encounter that occurred on November 14, 2004.

The FOIAs were submitted by one of the authors of this report and executive member of the Scientific Coalition for Ufology (SCU), Robert Powell, who has 10 years experience in submission of over 100 FOIA requests to various government organizations. There were a total of 26 FOIA requests and appeals submitted regarding this specific incident. The following documents the extensive efforts made by the SCU to examine and analyze this incident in detail.

FOIA requests were sent to the Department of the U.S. Navy, Chief of Naval Operations, Commander of Naval Surface Forces U.S. Pacific Fleet, Office of Naval Research, the U.S. Pacific Fleet, Office of Naval Intelligence, U.S. Marines Pacific, Naval Air Warfare Center Aircraft Division, Naval Facilities Engineering Command, Naval Sea Systems Command, Navy Chief of Operations, Office of Naval Inspector General, Naval History and Heritage Command, North American Air Defense Command (NORAD), Department of Defense, and the Defense Intelligence Agency. A few of these requests are still outstanding. The majority have been answered and in almost every case the first response was that the specific naval organization had no information on any of the multiple naval assets at sea on that day. A few FOIA requests and appeals did provide some useful information. A copy of the FOIAs and FOIA appeal responses is available at the end of this appendix.

Sometimes a government or military agency actually has the information requested and simply states that they do not have it. This is the case in two of the FOIAs that were submitted. One of the most valuable documents that was received only occurred after an appeal was submitted after a denial of an original request. On April 5, 2017, the US Marines denied any available information related to the November 2004 event. Both FOIA denials were appealed in early July of 2017 to the Navy's JAG (Judge Advocate General) attorneys. Copied on the appeal were the requestor's U.S. Senator, Congressman, and the late John McCain (Chairman of the Senate Armed Services Committee). Perhaps copying congress had an effect as this time a more positive response was received on August 31. But before you see the responses (note that the responses were emails from servicemen in early March of 2017)---realize that these responses existed and were in the hands of the Navy even though they denied having any information in their letters of April 2017 with their original claim of "no records available"!

The response to this appeal provided the information that the event that occurred on November 14, 2004, was well known within the Navy and that even more documents existed. The full documents are in the appendix but here is the key information provided, first from Lieutenant Colonel Robert A. Tomlinson in an email statement on March 7, 2017:

> "I am definitely aware of the "flying tic tac! We were aboard the USS *Nimitz* attached to CVW-11. The CO of VFA-41, CDR Fravor had the video footage on his ATFLIR and several pilots in VMFA-232 saw the video. I personally did not see the video, but I heard all about it. I believe our CO at the time, Lt Col Kurth (retired) observed the tic

> tac, and I believe Lt Col [redacted], Lt Col [redacted] (retired), Lt Col [redacted] (retired), and several others also observed the video footage. Another good reference might be current Rear Admiral Dell Bull as he was the VFA-41 Executive Officer at the time.*"*

More information likely exists but it will likely require a forceful inquiry such as from a congressional subcommittee investigation in order to pry loose radar data, communication logs, Navy Intelligence reports, and other information on this case.

In addition to the above mentioned success, the deck logs for the USS *Nimitz* were obtained seven months after the original submission. They are referenced in this report. However, the Navy stated that the deck logs for the USS *Princeton* "could not be found". The FOIA officer involved in the search stated that the FOIA logs for October and December were available but not November. The same FOIA officer said that such a situation was very unusual and that either the deck logs were lost or they had been classified. We suspect the latter.

It is worth noting a positive response was received from the Navy indicating that documents had been identified related to Naval Air Station Lemoore, which is the home land base for CO Fravor's F18 squadron, the VFA-41. Within three weeks a response came back from the Navy indicating that they had incorrectly stated that they had found documents at Lemoore. These examples are presented to indicate the difficulty the SCU has had obtaining information for this report, due to the culture of excessive over classification of all information as being secret. The reluctance to release it to civilians is a result of all information as being perceived as a threat to national security and seems to be pervasive within many of our military and government structures.

FREEDOM OF INFORMATION DOCUMENTS
SENT TO: DEPT OF NAVY, CHIEF OF NAVAL OPERATIONS
DOCUMENT I.D. DON-NAVY-2017-002231 AND APPEAL

This message is to confirm your request submission to the FOIA online application: Request information is as follows:

- Tracking Number: DON-NAVY-2017-002231
- Requester Name: Robert Powell
- Date Submitted: 12/30/2016
- Request Status: Submitted
- Description: I am requesting all communications, log books, radar data, FLIR video, and all other recorded information regarding the events surrounding any Anomalous Aerial Vehicles, Unidentified Airborne Contacts, or other terminology used to describe unknown aircraft, on the date of Nov. 14, 2004. The information to be queried would be related to the U.S.S. *Nimitz*, the U.S.S. *Princeton*, Marine Hornet squadron VMFA-32, E-2C Hawkeye VAW-117, and the F-18 squadron VFA-41. To help in your search, I provide you the following information: Approximately 80 miles southwest of San Diego on 11-14-2004, an unknown object was detected on radar by the USS *Princeton*. Aircraft from the VMFA-32 and the VFA-41 were vectored to the area of contact. Radar contact was made by the *Princeton* and the VFA-41. The object observed was a white oval shape with no obvious means of propulsion. A FLIR video was taken of the object. I am confident the information exists and am asking for official copies to be provided me through the FOIA system. Any information that provides sensitive information on the operation of radar systems may be redacted but I am requesting copies of the radar data either in photographic or digital form as well as all other information related to this event as previously described. If there is any other information that you need please let me know. I appreciate your help.

  Robert Powell

NAVY REPLY REGARDING LOGS, RADAR DATA, VIDEO, AND COMMUNICATIONS FOR USS *PRINCETON*

DEPARTMENT OF THE NAVY
COMMANDER
NAVAL SURFACE FORCE
U.S. PACIFIC FLEET
2841 RENDOVA ROAD
SAN DIEGO, CALIFORNIA 92155-5490

5720
N00J/
February 16, 2017

Mr. Robert Powell
[redacted]

Dear Mr. Powell,

This letter is in reference to your Freedom of Information Act (FOIA) 5 U.S.C. § 552 request submitted to Commander, U.S. Pacific Fleet and referred to this office on February 2, 2017, and assigned tracking number 2017-14. You are seeking copies of "all communications, log books, radar data, FLIR video, and all other recorded information regarding the events surrounding any anomalous aerial vehicles, unidentified airborne contacts, or other terminology used to describe unknown aircraft, on the date of Nov. 14, 2004."

A search has been conducted of the USS PRINCETON responsive departments, as well as outside agencies: Naval Heritage and History Command (NHHC) and Office of Naval Intelligence (ONI). It has been determined that such records do not exist. With any adverse determination, you have the right to seek dispute resolution from the Department of the Navy FOIA Public Liaison by contacting Mr. Christopher Julka at christopher.a.julka@navy.mil or (703) 697-0031.

This office considers this FOIA request completed and closed. If you have any questions, you may contact Mr. Juan Lopez, Command FOIA Coordinator, at (619) 437-2206 or juan.r.lopez@navy.mil. Please be sure to refer to the case number shown above in all correspondence about this case.

Sincerely,

D. T. JONES
Captain, U.S. Navy
Force Judge Advocate
By Direction of the Commander

NAVY ACKNOWLEDGEMENT OF APPEAL FOR LACK OF INFORMATION RELEASED ON USS *PRINCETON*

DEPARTMENT OF THE NAVY

OFFICE OF THE JUDGE ADVOCATE GENERAL
1322 PATTERSON AVENUE SE SUITE 3000
WASHINGTON NAVY YARD DC 20374

IN REPLY REFER TO:
5720
Ser 14/294
May 23, 2017

Mr. Robert Powell
[redacted]
e-mail:robertmaxpowell@gmail.com

SUBJECT: FREEDOM OF INFORMATION ACT (FOIA) REQUEST DON-NAVY-2017-002231; FOIA APPEAL DON-NAVY-2017-006392

This letter acknowledges receipt of your correspondence regarding your Freedom of Information Act (FOIA) appeal that was received in our office on May 22, 2017. Your case has been assigned file number DON-NAVY-2017-006392. Please refer to that file number for any future questions or correspondence concerning your appeal.

In fairness to all requesters, we process all appeals in the order in which they are received. Processing times may be affected by the number and complexity of pending appeals. For that reason, we are unable to provide an estimated completion date at this time. Your rights to judicial review will not be prejudiced by waiting for a substantive determination regarding your appeal. We will work as expeditiously as possible, however, to respond to your request within 20 working days as outlined in the FOIA regulations.

You may contact me at 202-685-5446 or wendy.winston@navy.mil if you have any questions concerning the processing of your appeal. Please provide your last name and the above assigned file number in any correspondence.

Sincerely,

Wendy A. Winston
Legal Administrative Specialist
General Litigation Division

APPEAL FOR INFORMATION ON USS PRINCETON IS DENIED

DEPARTMENT OF THE NAVY
OFFICE OF THE JUDGE ADVOCATE GENERAL
1322 PATTERSON AVENUE SE SUITE 3000
WASHINGTON NAVY YARD DC 20374

IN REPLY REFER TO:
5720
Ser 14/340
June 19, 2017

Mr. Robert Powell
[redacted]
e-mail:robertmaxpowell@gmail.com

SUBJECT: FREEDOM OF INFORMATION ACT (FOIA) REQUEST DON-NAVY-2017-002231; FOIA APPEAL DON-NAVY-2017-006392

This letter responds to your FOIA appeal received in this office on May 22, 2017. You initially requested "all communications, log books, radar data, FLIR video, and all other recorded information regarding the events surrounding any Anomalous Aerial Vehicles, Unidentified Airborne Contacts, or other terminology used to describe unknown aircraft, on the date of Nov. 14, 2004."

As you note in your appeal, your original FOIA request was referred to two separate commands. You are appealing the February 16, 2017, response from Commander, Naval Surface Force, U.S. Pacific Fleet, which was assigned tracking number 2017-14. In its response, that command noted that searches were conducted on USS PRINCETON, Naval History and Heritage Command, and the Office of Naval Intelligence; however, no responsive records were found. In your appeal, you challenge the adequacy of the search conducted and request "a more thorough examination to find these records and if these records cannot be found then provide all of the records from the USS [PRINCETON] on Nov. 14, 2004 to establish that the records were thoroughly researched." To support your challenge, you also attached two documents to your appeal that you state "lend credence to the belief that there are documents in the possession of Commander, U.S. Pacific Fleet related to the incident involving an unknown aircraft on Nov. 14, 2004."

Your appeal is a request for a final determination under the FOIA. For the reasons set forth below, your appeal is denied.

The adequacy of an agency's search for information requested under the FOIA is determined by a "reasonableness" test. *Meeropol v. Meese*, 790 F.2d 942, 956 (D.C. Cir. 1986); *Weisberg v. United States Dep't of Justice*, 705 F.2d 1344, 1350-51 (D.C. Cir. 1983). As a general rule, an agency must undertake a search that is reasonably calculated to locate the requested information. *Kowalczyk v. Department of Justice*, 73 F.3d 386, 388 (D.C. Cir. 1996). Courts have found agencies satisfy the "reasonableness" test when they properly determine where responsive records are likely to be found and search those locations. *Lechliter v. Rumsfeld*, 182 F. App'x 113, 115 (3d Cir. 2006) (concluding that agency fulfilled duty to conduct a reasonable search when it searched two offices that it "determined to be the only ones likely to possess responsive documents" (citing *Oglesby v. U.S. Dep't of the Army*, 920 F.2d 57, 68 (D.C. Cir. 1990)); *McKinley v. Bd. of Governors of the Fed. Reserve Sys.*, 849 F. Supp. 2d 47, 55-56 (D.D.C. 2012) (concluding that agency's search was reasonable because agency determined that all responsive records were located in a particular location created for express purpose of collecting records related to subject of request and searched that location). Moreover, courts have found that an agency's inability to locate a responsive record does not undermine an otherwise reasonable search. *Moore v. FBI*, 366 F. App'x 659, 661 (7th Cir. 2010) (noting that although agency had years earlier destroyed some potentially responsive records, that fact does not invalidate the search).

Following receipt of your appeal, my staff contacted Commander, Naval Surface Force, U.S. Pacific Fleet, which provided additional information on the searches conducted. Specifically, Naval Surface Force staff searched external back-up hard drives for any records related to the incident using the search terms "PRINCETON," "UFO," and "Unidentified," and searched the command's filing cabinets for responsive information; however, no responsive information was found. USS PRINCETON searched all safes in Combat Systems Maintenance Central, Combat Information Center watch logs, bridge deck logs, recorded Aegis combat system SPY radar data, and recorded video data; however, no responsive information was found. Naval History and Heritage Command searched for PRINCETON deck logs for November and December 2004; however Naval History and Heritage Command does not have PRINCETON's deck logs for those two months. The Office of Naval Intelligence also conducted a search, but did not have the deck logs from PRINCETON and did not find any responsive information pertaining to the incident or to unidentified flying objects.

Based on these facts, I find the searches conducted by Naval Surface Force, U.S. Pacific Fleet; USS PRINCETON; Naval History and Heritage Command; and the Office of Naval Intelligence were adequately and reasonably tailored to retrieve responsive information. Moreover, as the 7th Circuit said in *Moore*, an agency's inability to locate a responsive record does not undermine an otherwise reasonable search – even where the agency had years earlier destroyed some potentially responsive records. You do not indicate where you obtained the two documents you submitted in support of your appeal; however, neither document undermines the adequacy of the searches conducted. Accordingly, your appeal is denied.

5720
Ser 14/340
June 19, 2017

As the Department of the Navy's designated adjudication official for this FOIA appeal, I am responsible for the denial of this appeal. You may seek judicial review of this decision by filing a complaint in an appropriate U.S. District Court. My office represents the U.S. government and is therefore unable to assist you in this process.

If you would like to seek dispute resolution services, you have the right to contact the Department of the Navy's FOIA public liaison, Mr. Chris Julka, at christopher.a.julka@navy.mil or (703) 697-0031.

If you have further questions or concerns for my office, my point of contact is LCDR Adam Yost, JAGC, USN, who may be reached at adam.yost@navy.mil or (202) 685-5398.

Sincerely,

G. E. Lattin

G. E. LATTIN
Director
General Litigation Division

Copy to:
COMNAVSURFOR
DNS-36
DON CIO

DOCUMENT I.D. DON-NAVY-2017-002364 AND APPEALS
SENT TO: NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION

This message is to confirm your request submission to the FOIA online application: Request information is as follows:

- Tracking Number: DON-NAVY-2017-002364
- Requester Name: Robert Powell
- Date Submitted: 01/03/2017
- Request Status: Submitted
- Description: This is a request under the Freedom of Information Request for which I am willing to pay up to $50, otherwise contact me if the cost is greater. I am requesting all communications, log books, radar data, FLIR video, and all other recorded information regarding the events surrounding any Anomalous Aerial Vehicles, Unidentified Airborne Contacts, or other terminology used to describe unknown aircraft, on the date of Nov. 14, 2004. The information to be queried would be related to the E-2C Hawkeye VAW-117, and the F-18 squadron VFA-41. To help in your search, I can provide you the following information: Approximately 80 miles southwest of San Diego on 11-14-2004, an unknown aircraft was detected on radar by the USS *Princeton*. Aircraft from the USS *Nimitz* (the VFA-41) were vectored to the area of contact. Radar contact was made by the *Princeton* and the VFA-41. The object observed by the F-18s from the VFA-41 was a white oval shape with no obvious means of propulsion. A FLIR video was taken of the object. I am confident the information exists and am asking for official copies to be provided me through the FOIA system. Any information that provides sensitive information on the operation of radar systems may be redacted but I am requesting copies of the radar data either in photographic or digital form as well as videos and all other information related to this event as previously described. If there is any other information that you need please let me know. I may be contacted by email or at my home address: Robert Powell [redacted] I appreciate your help. Thanks,
- Robert Powell

NAVY REPLY THAT INFORMATION IS AVAILABLE FROM NAVAL AIR STATION LEMOORE, SAN DIEGO

DEPARTMENT OF THE NAVY
NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION
OFFICE OF COUNSEL
47076 LILJENCRANTZ ROAD
PATUXENT RIVER, MD 20670-1127

5720.9b
11.7AD/2017-002364
30 March 2017

VIA SAME DAY E-MAIL
Mr. Robert Powell
[redacted]

SUBJECT: FOIA CASE DON-NAVY-2017-002364

Dear Mr. Powell,

This letter responds to your Freedom of Information Act (FOIA) request entered into FOIA online on 3 January 2017.

During our search for records responsive to your request, we identified documents that originated with Naval Air Station Lemoore (CNIC). We have referred this request to them for a release determination/direct response to you.

If you have any questions regarding your request, please contact me on 301-995-3193 or by email at Brittany.l.smith2@navy.mil

Sincerely,

Brittany L. Smith
Brittany L. Smith
Paralegal Specialist

cc: **Commander, Navy Installations Command (CNIC)**

NAVY REPLY CHANGED TO "NO INFORMATION IS AVAILABLE"

DEPARTMENT OF THE NAVY
COMMANDER NAVAL AIR FORCE PACIFIC
BOX [illegible]
SAN DIEGO, CALIFORNIA [illegible]

5720
Ser N013/016
27 Apr 17

Mr. Robert Powell
[redacted]

Dear Mr. Powell:

Your January 3, 2017 request under the Freedom of Information Act (FOIA) for, "communications, log books, radar data, FLIR video and all other recorded information" relating to, "any Anomalous Aerial Vehicles, Unidentified Airborne Contacts, or other terminology used to describe unknown aircraft" encountered by aircraft from VAW-117 and VFA-41 on November 14, 2014 was received in this office on January 5, 2017. Your request was assigned FOIA #2017-002364.

Our search for responsive records included those maintained by Commander, Strike Fighter Wing, Pacific; Strike Fighter Squadron FOUR ONE (VFA-41); and, Commander, Airborne Command and Control Logistics Wing, Pacific, but none were found.

Because no responsive documents were found, you are advised of your right to appeal the adequacy of this search in writing to the Office of the Judge Advocate General, Code 14, 1322 Patterson Avenue SE, Suite 3000, Washington Navy Yard D.C. 20374-5066. Any appeal must be received within 60 calendar days from the date of this letter in order to be considered, and a copy of this letter should be attached along with a statement regarding why your appeal should be granted. It is recommended that the letter of appeal and the envelope both bear the notation, "Freedom of Information Act Appeal."

My point of contact in this matter is LCDR Matt Tucker, Judge Advocate General's Corps, U.S. Navy. Please do not hesitate to contact him if you have any further questions regarding this matter. He may be reached at (619) 545-2796.

Sincerely,

J. M. [illegible]
Captain
Judge Advocate General's Corps
U.S. Navy
By direction of
the Commander

APPEAL TO NAVY DENIAL OF INFORMATION AT NAVAL AIRSTATION LEMOORE, SAN DIEGO

Robert Powell
[redacted]
July 26, 2017

Department of the Navy
Office of the Judge Advocate General
Code 14
1322 Patterson Avenue SE
Suite 3000
Washington Navy Yard, DC 20374-5066

Re: FOIA APPEAL Request of 2017-002364 and 2017-002564

Dear Sir or Madam:

This letter is in reference to the Freedom of Information Act, 5 U.S.C.∮552 (a)(6)(A)(i)(III)(aa), which allows a minimum of 90 days to appeal a FOIA determination. The FOIA request being appealed was originally initiated with the Naval Air Warfare Center Aircraft Division (NAWCAD) on December 31, 2016, and filed as 2017-002364. On January 18, 2017, the Navy opened a sister case with the Commander, Naval Air Force, Pacific, and identified as 2017-002564. Both FOIA requests were denied on April 27, 2017 using the same letter. A copy of the original FOIA requests and denial are attached.

This appeal is a request for a more thorough searching of naval records based on two reasons.

The first reason is because communications with the Navy indicated records existed. Based on a letter dated March 30, 2017, the Navy indicated records exist at Naval Air Station Lemoore. This letter made sense since the VFA-41 squadron is supported at NAS Lemoore. The letter stated, "During our search for records responsive to your request, we identified documents that originated with Naval Air Station Lemoore." A copy of that letter is attached. The letter clearly indicates that records were found at NAS Lemoore yet four weeks later a letter dated April 27, 2017, stated that no responsive records were found for either the VFA-41 Lemoore squadron or the airborne early warning aircraft from VAW-117. I would like a copy of the records related to VFA-41 for the date of November 14, 2004, from NAS Lemoore.

The second reason for a more thorough search is because the denials for information on the day of November 14, 2004 has now affected five different Navy components (the USS *Princeton*, USS *Nimitz*, VMFA-232, VFA-41, and VAW-117). The denial of a similar request for information (FOIA request 2017-002231) related to the USS *Princeton* (letter dated Feb.16, 2017 from Commander Naval Surface Force Fleet) and a denial of information (FOIA request 2017-003339) related to the Marine Hornet group VMFA-232 provides an argument that it is no longer reasonable to believe that a thorough search was made for the records of each of these independent naval components and in 5 of 5 cases, no records were found. This lack of information drives home the question, “So exactly what happened on November 14, 2004?”

I have also attached two supporting files that lend credence to the belief that an incident involving an unknown aircraft on Nov. 14, 2004 did occur. The document labeled " There I Was: The X-Files Edition" was written by a former Navy ROTC pilot and provides a detailed account of the event that transpired on November 14, 2004. This story is written on a respectable naval blog site known as FighterSweep and the article can be found here: https://fightersweep.com/1460/x-files-edition/ The document with the heading “CVW-11 Event Summary” appears to be a "Navy After Action" report that was released on the internet in February of 2007. There is no reason to doubt the authenticity of the statements made by these individuals.

I request that a more thorough search be made for the VFA-41 and VAW-117 records for November 14, 2004 (especially at NAS Lemoore).

Thank you for your time and consideration.

Sincerely,

Robert Powell
[redacted]

cc: Honorable Senator John McCain
Honorable Senator Ted Cruz
Honorable Congressman Roger Williams

NAVY ACKNOWLEDGEMENT OF APPEAL SUBMITTED REGARDING INFORMATION AT NAVAL AIR STATION LEMOORE, SAN DIEGO

DEPARTMENT OF THE NAVY

OFFICE OF THE JUDGE ADVOCATE GENERAL
1322 PATTERSON AVENUE SE SUITE 3000
WASHINGTON NAVY YARD DC 20374

IN REPLY REFER TO:
5720
Ser 14/415
Aug 4, 2017

Mr. Robert Powell
[redacted]
e-mail:robertmaxpowell@gmail.com

SUBJECT: FREEDOM OF INFORMATION ACT (FOIA) REQUEST DON-NAVY-2017-002364 (sister case number DON-NAVY-2017-002564); FOIA APPEAL DON-NAVY-2017-009164

This letter acknowledges receipt of your correspondence regarding your Freedom of Information Act (FOIA) appeal that was received in our office on Aug 3, 2017. Your case has been assigned file number DON-NAVY-2017-009164. Please refer to that file number for any future questions or correspondence concerning your appeal.

In fairness to all requesters, we process all appeals in the order in which they are received. Processing times may be affected by the number and complexity of pending appeals. For that reason, we are unable to provide an estimated completion date at this time. Your rights to judicial review will not be prejudiced by waiting for a substantive determination regarding your appeal. We will work as expeditiously as possible, however, to respond to your request within 20 working days as outlined in the FOIA regulations.

You may contact me at 202-685-5446 or wendy.winston@navy.mil if you have any questions concerning the processing of your appeal. Please provide your last name and the above assigned file number in any correspondence.

Sincerely,

Wendy A. Winston
Legal Administrative Specialist
General Litigation Division

NAVY DENIAL OF APPEAL FOR INFORMATION AT NAVAL AIR STATION LEMOORE, SAN DIEGO

DEPARTMENT OF THE NAVY
COMMANDER NAVAL AIR FORCE PACIFIC
BOX 357051
SAN DIEGO, CALIFORNIA 92135-7051

5720
Ser N01J/ 029
20 Sep 17

Mr. Robert Powell
[redacted]
E-mail: robertmaxpowell@gmail.com

SUBJECT: FREEDOM OF INFORMATION ACT (FOIA) REQUEST DON-NAVY-2017-002364 (SISTER CASE DON-NAVY-2017-002366), FOIA APPEAL DON-NAVY-2017-009144

On August 31, 2017, the Office of the Judge Advocate General remanded your subject FOIA request to Commander, Naval Air Force, Pacific (COMNAVAIRPAC) to coordinate contacting two Navy personnel to search for any responsive agency records these individuals may have in their possession, and to coordinate with the Naval Air Warfare Center Aircraft Division to address that command's search for responsive information and the referral of your request to Naval Air Station, Lemoore.

Mr. David Fravor, the now-retired Commanding Officer of VFA-41 in November, 2004, and Rear Admiral Dell Bull, USN, the executive officer of VFA-41 in November, 2004, were contacted to search for responsive information. Neither of these individuals have information responsive to your request, because neither retained records or information from VFA-41 pertaining to anomalous aerial vehicles, unidentified airborne contacts, or other unknown aircraft encountered by Navy and Marine Corps aircraft on November 14, 2004.

Additionally, enclosure 1 addresses the Naval Air Warfare Center Aircraft Division (NAVAIR) referral of your request to Naval Air Station, Lemoore and explains that the command's original response to you contained a clerical error; NAVAIR does not have any information or documents responsive to your FOIA request.

Because no responsive documents were found, you are advised of your right to appeal the adequacy of this search in writing to the Office of the Judge Advocate General, Code 14, 1322 Patterson Avenue SE, Suite 3000, Washington Navy Yard D.C. 20374-5066. Any appeal must be received within 90 calendar days from the date of this letter in order to be considered, and a copy of this letter should be attached along with a statement regarding why your appeal should be granted. It is recommended that the letter of appeal and the envelope both bear the notation, "Freedom of Information Act Appeal."

My point of contact in this matter is LCDR Matt Tucker, Judge Advocate General's Corps, U.S. Navy. Please do not hesitate to contact him if you have any further questions regarding this matter. He may be reached at (619) 545-2796.

Sincerely,

[illegible]
Captain
Judge Advocate General's Corps
U.S. Navy
FOIA Coordinator
By direction of
the Commander

Enclosures: 1. Naval Air Warfare Center Aircraft Division ltr 5720.9b Ser 11.7AD/2017-002364 of 18 Sep 17

NAVY EXPLANATION OF ERROR IN SAYING INFORMATION WAS AVAILABLE AT NAVAL AIR STATION LEMOORE, SAN DIEGO

DEPARTMENT OF THE NAVY
NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION
OFFICE OF COUNSEL
47076 LILJENCRANTZ ROAD
PATUXENT RIVER, MD 20670-1127

5720.9b
11.7AD/2017-002364
18 September 2017

Mr. Robert Powell
[redacted]

SUBJECT: FOIA CASE DON-NAVY-2017-002364

Dear Mr. Powell,

My office previously sent you a response, dated 30 March 2017, to your subject FOIA request. In that response letter, my office incorrectly stated that NAVAIR had identified documents that originated with Naval Air Station Lemoore. The letter was created using a previous FOIA referral letter, and the language pertaining to documents was incorrectly retained and included in your response letter.

No responsive materials were ever located by NAVAIR, because NAVAIR's mission and record maintenance requirements pertain primarily to the acquisition lifecycle of Naval aircraft. The types of information you requested are not items that would be in NAVAIR's possession, because NAVAIR does not receive or retain information pertaining to events that specific units or squadrons encounter. Instead, we referred your request to Naval Air Station Lemoore (under the cognizance of CNIC), because we determined that CNIC would be the appropriate command to determine whether any responsive materials existed. I regret the clerical error in the letter of 30 March 2017. NAVAIR does not have any information or documents responsive to your FOIA request.

We apologize for any confusion and inconvenience this may have caused.

If you have any questions regarding your request, please contact me on 301-995-3193 or by email at Brittany.l.smith2@navy.mil.

Sincerely,

Brittany L. Smith
Brittany L. Smith
Paralegal Specialist

cc: **Commander, Navy Installations Command (CNIC)**

EMAIL TO NAVY JAG AS TO WHY APPEALS HAVE BEEN DENIED AND NOW THE NEW YORK TIMES RELEASES A VIDEO

From: Robert Powell [mailto:robertmaxpowell@gmail.com]
Sent: Sunday, December 17, 2017 11:49 PM
To: Winston, Wendy A CIV OJAG, CODE 14
Cc: Yost, Adam B LCDR OJAG, Code 14
Subject: [Non-DoD Source] Re: Acknowledgment letter ICO FOIA appeal DON-NAVY-2018-001475

Dear Madam and Sir,

As you know I currently have an appeal (2018-001475) regarding my FOIA requests for information on the *Nimitz/Princeton/*F-18 incident of Nov. 14, 2004.

Saturday morning I was somewhat happy and dismayed to see that the New York Times had an article that included Navy F-18 video footage released to them by the DoD of the same event that I have been requesting from the Navy in my FOIAs. Here is a link to the article: https://www.nytimes.com/2017/12/16/us/politics/pentagon-program-ufo-harry-reid.html

In light of this release of information in the New York Times, I hope that the documents requested in my appeal can be found in the Navy's archives. I'm sure that the Navy has better access to these documents than the DoD.

Sincerely,

Robert Powell

NAVY REPLY AS TO NEW YORK TIMES RELEASE AND THEIR FORWARDING OF INQUIRY TO THE DEFENSE INTELLIGENCE AGENCY

DEPARTMENT OF THE NAVY
OFFICE OF THE JUDGE ADVOCATE GENERAL
1322 PATTERSON AVENUE SE SUITE 3000
WASHINGTON NAVY YARD DC 20374

IN REPLY REFER TO:
5720
Ser 14/110
January 3, 2018

Mr. Robert Powell
[redacted]
e-mail: robertmaxpowell@gmail.com

SUBJECT: FREEDOM OF INFORMATION ACT (FOIA) REQUESTS DON-NAVY-2017-002364, DON-NAVY-2017-002564, ASSOCIATED FOIA APPEAL DON-NAVY-2017-009164; AND DON-USMC-2017-003339, ASSOCIATED FOIA APPEAL DON-NAVY-2017-008885; FINAL FOIA APPEAL DON-NAVY 2018-001475

This letter responds to your FOIA appeal received in this office on November 16, 2017. Your current appeal, 001475, relates to underlying requests 002364, 002564, 003339 and associated formerly adjudicated appeals 008885 and 009164. As previously addressed extensively, your underlying requests and associated appeals to Navy and Marine Corps commands relate to military action off the coast of California on November 14, 2004, including "all communications, log books, radar data, FLIR video, and all other record information." Your appeal asks for a more thorough search for records, including archived records, related to November 14, 2004. In a follow-up email to my staff on December 17, 2017, you referenced recent New York Times articles which you assert are related to your underlying FOIA requests.

Your appeal is a request for a final determination under the FOIA. For the reasons set forth below, your appeal challenging the adequacy of the Navy and Marine Corps search for records is denied. However, based on the information you provided via email, and the New York Times articles, in the interests of transparency under the FOIA, I am referring your underlying request for information relating to any potential incident on November 14, 2004, to the Defense Intelligence Agency's Freedom of Information Act Requester Service Center (DIA) so they may determine whether any records exist, and if so, whether they are releasable to you. The DIA FOIA Office may be reached at (301) 394-5587, via email at foia@dodiis.mil, or regular mail at:

Defense Intelligence Agency
ATTN: FAC2A1 (FOIA)
7400 Pentagon
Washington, DC 20301-7400

Please understand this referral neither confirms nor denies whether records responsive to your request exist.

The adequacy of an agency's search for information requested under the FOIA is determined by a "reasonableness" test. *Meeropol v. Meese*, 790 F.2d 942, 956 (D.C. Cir. 1986); *Weisberg v. United States Dep't of Justice*, 705 F.2d 1344, 1350-51 (D.C. Cir. 1983). As a general rule, an agency must undertake a search that is reasonably calculated to locate the requested information. *Kowalczyk v. Department of Justice*, 73 F.3d 386, 388 (D.C. Cir. 1996). Courts have found agencies satisfy the "reasonableness" test when they properly determine where responsive records are likely to be found and search those locations. *Lechliter v. Rumsfeld*, 182 F. App'x 113, 115 (3rd Cir. 2006) (concluding that agency fulfilled duty to conduct a reasonable search when it searched two offices that it determined to be the only ones likely to possess responsive documents (citing *Oglesby v. U.S. Dep't of the Army*, 920 F.2d 57, 68 (D.C. Cir. 1990)); *McKinley v. Bd. of Governors of the Fed. Reserve Sys.*, 849 F. Supp. 2d 47, 55-56 (D.D.C. 2012) (concluding that agency's search was reasonable because agency determined that all responsive records were located in a particular location created for express purpose of collecting records related to subject of request and searched that location).

Moreover, courts have found that an agency's inability to locate a responsive record does not undermine an otherwise reasonable search. *Moore v. FBI*, 366 F. App'x 659, 661 (7th Cir. 2010) (noting that although agency had years earlier destroyed some potentially responsive records, that fact does not invalidate the search). Additionally, the mere speculation that requested documents exist does not undermine the finding that the agency conducted a reasonable search. *Wilbur v. C.I.A.*, 355 F.3d 675, 678 (D.C. Cir. 2004) ("Likewise, the agency's failure to turn up a particular document, or mere speculation that as yet uncovered documents might exist, does not undermine the determination that the agency conducted an adequate search for the requested records.").

Your appeal is the latest in a series of multiple FOIA requests you submitted over the last several months to various commands within the Navy and Marine Corps for information and documents relating to an incident off the California coast on November 14, 2004. The appeal follows a remand my office previously made to the 3d Marine Aircraft Wing (3d MAW) and Commander, Naval Air Forces Pacific (CNAP) in a letter dated August 31, 2017. After consultation with 3d MAW and CNAP, no additional records were found responsive to your request at either command, information which was relayed to you. Additionally, by letter dated 18 Sep 2017, the Office of Counsel, Naval Air Warfare Center Aircraft Division informed you that prior correspondence indicating documents responsive to your request may be located at Naval Air Station Lemoore was an administrative error caused by using an unedited form letter from another unrelated

5720
Ser 14/110
January 3, 2018

FOIA request.

As the court said in *Moore*, an agency's inability to locate a responsive record does not undermine an otherwise reasonable search – even where the agency had years earlier potentially destroyed responsive records. Thus, 3d MAW and CNAP's failure to find responsive records does not undermine the otherwise wholly adequate search conducted by them and their respective subordinate commands. The overall thoroughness and adequacy of the search in your cases is further buttressed by the extensive FOIA appellate history (including remands for additional action) which occurred in the processing of your requests. Accordingly, your appeal is hereby denied. However, as previously indicated, in the interest of transparency under the FOIA, I am referring your request for information relating to November 14, 2004, to the DIA's FOIA office.

As the Department of the Navy's designated adjudication official for this FOIA appeal, I am responsible for the denial of this appeal. You may seek judicial review of this decision by filing a complaint in an appropriate U.S. District Court. My office represents the U.S. government and is therefore unable to assist you in this process.

If you would like to seek dispute resolution services, you have the right to contact the Marine Corps' FOIA public liaison, Ms. Sally Hughes, at hqmc@usmc.mil or (703) 614-4008, or the Department of the Navy's FOIA public liaison, Mr. Chris Julka, at christopher.a.julka@navy.mil or (703) 697-0031.

If you have further questions or concerns for my office, my point of contact is LCDR Adam Yost, JAGC, USN, who may be reached at adam.yost@navy.mil or (202) 685-5398.

Sincerely,

G. E. Lattin

G. E. LATTIN
Director
General Litigation Division

Copy to:
DIA
CNAP
3d MAW
HQMC (ARSF)
DNS-36
DON CIO

DOCUMENT I.D. DON-NAVY-2017-002389

SENT TO: NAVAL SEA SYSTEMS COMMAND

(no response or transfer of FOIA ever received)

This message is to confirm your request submission to the FOIA online application: Request information is as follows:

- Tracking Number: DON-NAVY-2017-002389
- Requester Name: Robert Powell
- Date Submitted: 01/03/2017
- Request Status: Submitted
- Description: I am requesting all communications, log books, radar data, and all other recorded information regarding the events surrounding any Anomalous Aerial Vehicles, Unidentified Airborne Contacts, or other terminology used to describe unknown aircraft, on the date of Nov 14, 20004. The information to be queried would be related to the USS *Nimitz* and the USS *Princeton*

Good Morning,

I will be transferring your request to NAVAIR and SURFACE FORCES. I apologize for the delay.

v/r

Rita La Prince
FOIA Specialist
Naval Sea Systems Command
Phone: 202-781-2612
E-mail: Rita.LaPrince@navy.mil

-----Original Message-----
From: Robert Powell [mailto:robertmaxpowell@gmail.com]
Sent: Tuesday, June 06, 2017 7:59 PM
To: Laprince, Rita C CIV SEA 00A
Subject: Re: [Non-DoD Source] Re: FOIA Request DON-NAVY-2017-002389 Submitted

Dear Rita,

Could you provide me a status update of FOIA 2017-002389 please. Either I have not received a letter from you that is referenced below or I have misplaced it.

Thanks,

Robert

On 4/25/17 9:26 AM, Laprince, Rita C CIV SEA 00A wrote:

Good Morning,

We conducted a thorough search and found out that your request needs to be transferred to NAVAIR Force Pacific and Surface Forces. I am in the process of preparing the letter to you and transferring the case to those commands

v/r

Rita

Rita La Prince
FOIA Specialist
Naval Sea Systems Command
Phone: 202-781-2612
E-mail: Rita.LaPrince@navy.mil

-----Original Message-----
From: Robert Powell [mailto:robertmaxpowell@gmail.com]
Sent: Tuesday, April 25, 2017 9:41 AM
To: Laprince, Rita C CIV SEA 00A
Cc: Hamlin, Donna M CIV NAVSEA, SEA 00A
Subject: Re: [Non-DoD Source] Re: FOIA Request DON-NAVY-2017-002389 Submitted

Could you provide me an update as to where my FOIA 2017-002389 is within your queue?

Thanks,

Robert Powell

DOCUMENT I.D. DON-NAVY-2017-002564

SENT TO: COMMANDER NAVAL AIR FORCE, U.S. PACIFIC FLEET

This message is to confirm your request submission to the FOIA online application: Request information is as follows:

- Tracking Number: DON-NAVY-2017-002564
- Requester Name: Robert Powell
- Date Submitted: 01/12/2017
- Request Status: Submitted
- Description: I am requesting all communications, log books, radar data, FLIR video, and all other recorded information regarding the events surrounding any Anomalous Aerial Vehicles, Unidentified Airborne Contacts, or other terminology used to describe unknown aircraft, on the date of Nov. 14, 2004. The information to be queried would be related to the U.S.S. *Nimitz*, the U.S.S. *Princeton*, Marine Hornet squadron VMFA-32, E-2C Hawkeye VAW-117, and the F-18 squadron VFA-41. To help in your search, I provide you the following information: Approximately 80 miles southwest of San Diego on 11-14-2004, an unknown object was detected on radar by the USS *Princeton*. Aircraft from the VMFA-32 and the VFA-41 were vectored to the area of contact. Radar contact was made by the *Princeton* and the VFA-41. The object observed was a white oval shape with no obvious means of propulsion. A FLIR video was taken of the object. I am confident the information exists and am asking for official copies to be provided me through the FOIA system. Any information that provides sensitive information on the operation of radar systems may be redacted but I am requesting copies of the radar data either in photographic or digital form as well as all other information related to this event as previously described. If there is any other information that you need please let me know. I appreciate your help.

  Robert Powell

REPLY FROM COMMANDER NAVAL AIR FORCES THAT THEY HAVE NO INFORMATION

DEPARTMENT OF THE NAVY
COMMANDER NAVAL AIR FORCE PACIFIC
BOX 357051
SAN DIEGO, CALIFORNIA 92135-7051

5720
Ser N013/016
27 Apr 17

[redacted]

Dear Mr. Powell:

Your January 3, 2017 request under the Freedom of Information Act (FOIA) for, "communications, log books, radar data, FLIR video and all other recorded information" relating to, "any Anomalous Aerial Vehicles, Unidentified Airborne Contacts, or other terminology used to describe unknown aircraft" encountered by aircraft from VAW-117 and VFA-41 on November 14, 2014 was received in this office on January 5, 2017. Your request was assigned FOIA #2017-002364.

Our search for responsive records included those maintained by Commander, Strike Fighter Wing, Pacific; Strike Fighter Squadron FOUR ONE (VFA-41); and, Commander, Airborne Command and Control Logistics Wing, Pacific, but none were found.

Because no responsive documents were found, you are advised of your right to appeal the adequacy of this search in writing to the Office of the Judge Advocate General, Code 14, 1322 Patterson Avenue SE, Suite 3000, Washington Navy Yard D.C. 20374-5066. Any appeal must be received within 60 calendar days from the date of this letter in order to be considered, and a copy of this letter should be attached along with a statement regarding why your appeal should be granted. It is recommended that the letter of appeal and the envelope both bear the notation, "Freedom of Information Act Appeal."

My point of contact in this matter is LCDR Matt Tucker, Judge Advocate General's Corps, U.S. Navy. Please do not hesitate to contact him if you have any further questions regarding this matter. He may be reached at (619) 545-2796.

Sincerely,

J. M. NILSEN
Captain
Judge Advocate General's Corps
U.S. Navy
By direction of
the Commander

DOCUMENT I.D. DON-NAVY-2017-002300
SENT TO: OFFICE OF NAVAL INTELLIGENCE

Dear Sir or Madam:

This is a request under the Freedom of Information Request for which I am willing to pay up to $50, otherwise contact me if the cost is greater.

I am requesting all communications, log books, radar data, FLIR video, and all other recorded information regarding the events surrounding any Anomalous Aerial Vehicles, Unidentified Airborne Contacts, or other terminology used to describe unknown aircraft, on the date of Nov. 14, 2004. The information to be queried would be related to the U.S.S. *Nimitz*, the U.S.S. *Princeton*, Marine Hornet squadron VMFA-32, E-2C Hawkeye VAW-117, and the F-18 squadron VFA-41.

To help in your search, I provide you the following information: Approximately 80 miles southwest of San Diego on 11-14-2004, an unknown object was detected on radar by the USS *Princeton*. Aircraft from the VMFA-32 and the VFA-41 were vectored to the area of contact. Radar contact was made by the *Princeton* and the VFA-41. The object observed was a white oval shape with no obvious means of propulsion. A FLIR video was taken of the object. I am confident the information exists and am asking for official copies to be provided me through the FOIA system. Any information that provides sensitive information on the operation of radar systems may be redacted but I am requesting copies of the radar data either in photographic or digital form as well as all other information related to this event as previously described. If there is any other information that you need please let me know.

I appreciate your help.

Thanks,

Robert Powell

REPLY FROM OFFICE OF NAVAL INTELLIGENCE THAT THEY HAVE NO INFORMATION

01/06/2017 01:10 PM
FOIA Request: DON-NAVY-2017-002300

This provides a final response to your above reference FOIA request for “all communications, log books, radar data, FLIR video, and all other recorded information regarding the events surrounding any Anomalous Aerial Vehicles, Unidentified Airborne Contacts, or other terminology used to describe unknown aircraft, on the date of Nov. 14, 2004. The information to be queried would be related to the U.S.S. Nimitz, the U.S.S. Princeton, Marine Hornet squadron VMFA-32, E-2C Hawkeye VAW-117, and the F-18 squadron VFA-41.” You submitted your request to the Office of Naval Intelligence (ONI) via email on December 30, 2016. Your request was assigned the above referenced FOIA number.

ONI has no records responsive to your request as it is not within ONI’s mission and functions. The information you have requested would more likely be under the purview of the Department of Air Force. To assist you in determining the types of records ONI may have the following information is provided.

ONI is an Echelon III, Department of Navy Command that reports directly to the Director of Naval Intelligence. ONI’s mission is to produce meaningful maritime intelligence for key strategic, operational and tactical decision makers. ONI supports combat operations and provides vital Maritime Domain Awareness information for planning America’s defense against maritime threats ONI’s Echelon IV subordinate Commands are as follows:

a. The Farragut Technical Analysis Center (Farragut). Farragut’s mission is to identify technical characteristics, capabilities and vulnerabilities of current and future foreign naval forces threatening U.S. interests. Farragut produces a variety of digital deliverables ingestible by research, development, testing and evaluation activities, acquisition program offices and advanced decision aides embedded in U.S. Navy systems. Farragut produces validated threat data and assessments to support the Department of Defense and navy long-range planning and acquisition programs. Farragut develops and sustains Acoustic Intelligence infrastructure and processes. Farragut’s five departments are as follows: Acquisition Intelligence Integration Department; the Command, Control, Communication and Computer Intelligence Surveillance and Reconnaissance Department; the Naval Platforms Department; the Acoustic Intelligence Department; and the Naval Weapons Department.

b. The Kennedy Irregular Warfare Center (Kennedy). Kennedy’s mission is to provide products and services to meet Department of Defense, National, Navy, Naval Special Warfare and the Navy Expeditionary Combat Command maritime irregular warfare intelligence requirements, and to perform such other functions and tasks as may be assigned by higher authority.[1] Kennedy’s six departments are the Administrative Department; the Analysis Department; the Operations and Plans Department; the Logistic Support Department; the Communications Department; and the Training Department.

c. The Hopper Information Services Center (Hopper Hopper’s mission is to deliver responsive and adaptable intelligence mission systems, applications and to provide services support for sustained global maritime and joint intelligence operations. Hopper is the intelligence information services provider for ONI and its naval, joint, interagency and international customers supporting MDA intelligence requirements. Hopper's six departments are the Operations Department; the Protection Department; the Transformation Department; the Intergradation and Develop Department; the Control Department; and the Joint Deployable Intelligence Support Systems Department.

d. The Nimitz Operational Intelligence Center (Nimitz). Nimitz's mission is to provide Maritime Domaine Awareness intelligence for ONI's operational customers in the Department of Defense and Coast Guard. Nimitz's four departments are the Naval Warfare Department; the Fleet Support Department; the Transnational Threat Department; and the Fleet Imagery Support Department.

If you are unsatisfied with this response, you may contact the Navy FOIA Public Liaison at DONFOIAPublicLiaison@navy.mil or by telephone at 703-697-0031 <tel:(703)%20697-0031> . Please ensure you have your assigned FOIA number available. Alternatively, you are advised of your right to appeal this determination. To exercise this right refer to the above referenced FOIA number and send your appeal justification to the Judge Advocate General (Code 14), Department of the Navy, Building 33, Washington Navy Yard, 1322 Patterson Avenue, SE, Suite 3000, Washington, DC 20374-5066. Your appeal must be received by that office within 60 calendar days from the date of this email. A copy of this email should accompany your appeal statement and we recommend you label your letter and envelope with the notation "Freedom of Information Act Appeal."

I am the ONI FOIA Manager and the point of contact for your request. I can be reached at (301) 669-2048 <tel:(301)%20669-2048> or by email at jwatson@nmic.navy.mil.

Jeana Watson, ONI FOIA Manager

DOCUMENT I.D. DON-NAVY-2017-11

SENT TO: U.S. PACIFIC FLEET

Dear Ms Aguon:

This is a request under the Freedom of Information Request for which I am willing to pay up to $50, otherwise contact me if the cost is greater.

I am requesting all communications, log books, radar data, FLIR video, and and all other recorded information regarding the events surrounding any Anomalous Aerial Vehicles, Unidentified Airborne Contacts, or other terminology used to describe unknown aircraft, on the date of Nov. 14, 2004. The information to be queried would be related to the U.S.S. *Nimitz*, the U.S.S. *Princeton*, Marine Hornet squadron VMFA-32, E-2C Hawkeye VAW-117, and the F-18 squadron VFA-41.

To help in your search, I can provide you the following information: Approximately 80 miles southwest of San Diego on 11-14-2004, an unknown aircraft was detected on radar by the USS *Princeton*. Aircraft from the VMFA-32 and the VFA-41 were vectored to the area of contact. Radar contact was made by the *Princeton* and the VFA-41. The object observed by the F-18s from the VFA-41 was a white oval shape with no obvious means of propulsion. A FLIR video was taken of the object. I am confident the information exists and am asking for official copies to be provided me through the FOIA system. Any information that provides sensitive information on the operation of radar systems may be redacted but I am requesting copies of the radar data either in photographic or digital form as well as all other information related to this event as previously described. If there is any other information that you need please let me know.

I may be contacted by email or at my home address:

Robert Powell
[redacted]

I appreciate your help.

Thanks,

Robert Powell

REPLY FROM UNITED STATES PACIFIC FLEET THAT REQUEST FOR INFORMATION HAS BEEN SENT TO OTHER GROUPS

DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR, HAWAII 96860-3131

IN REPLY REFER TO:
5720
Ser N01J/1671
January 20, 2017

Mr. Robert Powell
[redacted]

Dear Mr. Powell:

SUBJECT: FREEDOM OF INFORMATION ACT 2017-11

This letter is in response to your Freedom of Information Act (FOIA) request for "all communications, log books, radar data, FLIR video, and all recorded information regarding the events surrounding any Anonymous Aerial Vehicles, Unidentified Airborne Contacts, or other terminology used to describe unknown aircraft, on the date of November 14, 2004." Your request was received on January 3, 2017 and assigned FOIA case file number 2017-11.

Your request has been referred to the following agencies for action as a matter under their cognizance:

Commander, Naval Surface Force, U.S. Pacific Fleet
2841 Rendova Road
San Diego, CA 92155-5490

Commander, Naval Air Force, U.S. Pacific Fleet
P.O.B. 357051
San Diego, CA 92135-7051

Headquarters U.S. Marine Corps
Attn: FOIA/PA Section (ARSF) Rm 2B289
3000 Marine Corps Pentagon
Washington, DC 20350-3000

My point of contact is Ms. Lisa Aguon who may be contacted at (808) 474-6792 or via email at lisa.aguon@navy.mil.

Sincerely,

G. F. SMITH
By direction

DOCUMENT I.D. DON-NAVY-2017-00016

SENT TO: OFFICE OF NAVAL RESEARCH AND THEIR REPLY

Mr. Powell:

The Office of Naval Research (ONR) received your Freedom of Information Act (FOIA) request and gave it the number 17-016 in our system. However, ONR is not the appropriate command to release the information you requested. Your inquiries related to the USS Nimitz and the USS Princeton may be directed to the Department of the Navy, Naval Sea Systems Command (NAVSEA). Their FOIA office can be reached at NAVSEAFOIA@navy.mil. Your inquiries related to air squadrons may be directed to the Department of the Navy, Naval Air Systems Command (NAVAIR). Their FOIA office can be reached at NAWCADFOIA@navy.mil. In addition, records responsive to the subjects in your request may also be found at the Department of the Navy, Naval Facilities Engineering Command (NAVFAC). Their FOIA office can be contacted at:

Naval Facilities Engineering Command Washington (James Dixon)
1314 Harwood Street, SE
Washington Navy Yard, DC 20374-5018

We will close out your request on our end.

V/r,

Jason
Jason C. Towns
FOIA Analyst
Contractor Support to ONR Code BD042
Data Federal Corporation
Office of Naval Research
875 N. Randolph St
Arlington, VA 22203
703-696-5361
ONRFOIA@navy.mil

DOCUMENT I.D. DON-NAVY-2017-002611

SENT TO: NAVAL FACILITIES ENGINEERING COMMAND

(No reply received.)

Dear Sir or Madam:

This is a request under the Freedom of Information Request for which I am willing to pay up to $50, otherwise contact me if the cost is greater.

I am requesting all communications, log books, radar data, FLIR video, and all other recorded information regarding the events surrounding any Anomalous Aerial Vehicles, Unidentified Airborne Contacts, or other terminology used to describe unknown aircraft, on the date of Nov. 14, 2004. The information to be queried would be related to the U.S.S. *Nimitz*, the U.S.S. *Princeton*, Marine Hornet squadron VMFA-32, E-2C Hawkeye VAW-117, and the F-18 squadron VFA-41.

To help in your search, I provide you the following information: Approximately 80 miles southwest of San Diego on 11-14-2004, an unknown object was detected on radar by the USS *Princeton*. Aircraft from the VMFA-32 and the VFA-41 were vectored to the area of contact. Radar contact was made by the *Princeton* and the VFA-41. The object observed was a white oval shape with no obvious means of propulsion. A FLIR video was taken of the object. I am confident the information exists and am asking for official copies to be provided me through the FOIA system. Any information that provides sensitive information on the operation of radar systems may be redacted but I am requesting copies of the radar data either in photographic or digital form as well as all other information related to this event as previously described. If there is any other information that you need please let me know.

I appreciate your help.

Thanks,

Robert Powell

DOCUMENT I.D. DON-NAVY-2017-003339 AND APPEALS

SENT TO: U.S. MARINES, PACIFIC

You have been assigned to the FOIA request DON-USMC-2017-003339. Additional details for this request are as follows:

* Assigned By: Capt Lamberto E. Mathurin
* Referral Tracking Number: DON-USMC-2017-003339
* Due Date: 02/01/2017
* Requester: Robert Powell
* Request Track: Simple
* Short Description: N/A
* Long Description: All communications, log books, radar data, FLIR video, and and all other recorded information regarding the events surrounding any Anomalous Aerial Vehicles, Unidentified Airborne Contacts, or other terminology used to describe unknown aircraft, on the date of Nov. 14, 2004. The information to be queried would be related to the U.S.S. Nimitz, the U.S.S. Princeton, Marine Hornet squadron VMFA-232 (Red Devils), E-2C Hawkeye VAW-117, and the F-18 squadron VFA-41.

REPLY FROM U.S. MARINES THAT THEY HAVE NO INFORMATION

UNITED STATES MARINE CORPS
3D MARINE AIRCRAFT WING
MARINE CORPS AIR STATION MIRAMAR
P.O. BOX 452038
SAN DIEGO CA 92145-2038

IN REPLY REFER TO:
5720
SJA
5 Apr 17

From: Freedom of Information Act Coordinator, 3d Marine Aircraft Wing
To: Mr. Robert Powell

Subj: FREEDOM OF INFORMATION ACT REQUEST DON-USMC-2017-003339

1. This responds to the portion of your Freedom of Information Act (FOIA) request DON-USMC-2017-003339 for all communications, log books, radar data, FLIR video, and all other recorded information in the possession of Third Marine Aircraft Wing regarding the events surrounding any Anomalous Aerial Vehicles, Unidentified Airborne Contacts, or other terminology used to describe unknown aircraft, on the date of Nov. 14, 2004,

2. In processing your request, we searched the files of VMFA-232, and the operations section of Marine Aircraft Group 11. Records from the time frame requested are not maintained locally. We also contacted the Aviation Corridor (Deputy Commandant-Aviation) in Virginia for any potential records pertaining to your request. No responsive records have been located and as such there are no responsive records to your request in Third Marine Aircraft Wing.

3. In view of the above, you may consider this to be an adverse determination that may be appealed to the Department of the Navy, Office of the General Counsel (ATTN: FOIA APPEALS), 1000 Navy Pentagon, Room 5A532, Washington, DC 20350-1000. Your appeal, if any, must be postmarked within 90 calendar days from the date of this letter and should include a copy of your initial request, a copy of this letter, and a statement indicating why you believe it should be granted. We recommend that your appeal and its envelope both bear the notation "Freedom of Information Act Appeal."

4. You also have the right to seek assistance and/or dispute resolution services from the Marine Corps FOIA Public Liaison, Ms. Sally Hughes, at hqmcfoia@usmc.mil or (703) 614-4008, and/or the Department of the Navy FOIA Public Liaison, Mr. Christopher Julka, at Christopher.a.julka@navy.mil or (703) 697-0031. You may also contact the Office of Government Information Services for assistance and/or dispute resolution at ogis@nara.gov or 1-877-684-6448. For more information online about services provided by OGIS, please visit their website at https://ogis.archives.gov.

Subj: FREEDOM OF INFORMATION ACT REQUEST DON-USMC-2017-003339

5. Please contact me at (858) 577-7345 or via email at lamberto.mathurin@usmc.mil if you have any questions or concerns.

L. MATHURIN

APPEAL TO NAVY REGARDING MARINES HAVING NO INFORMATION

Robert Powell
[redacted]

May 30, 2017

Department of the Navy
Office of the General Counsel
ATTN: FOIA APPEALS
1000 Navy Pentagon
Room 5A532
Washington, DC 20350-1000

Re: FOIA APPEAL Request of DON-USMC-2017-003339

Dear Sir or Madam:

This letter is in reference to the Freedom of Information Act, 5 U.S.C.∮ 552 (a)(6)(A)(i)(III)(aa), which allows a minimum of 90 days to appeal a FOIA determination. The FOIA request being appealed was originally initiated on December 30, 2016, filed as 2017-003339 and was denied on April 5, 2017 with the determination that "no records exist". A copy of the original appeal and denial are attached.

I have also attached two supporting files that lend credence to the belief that there are documents in the possession of the U.S. Marine Corps related to an incident involving an unknown aircraft on Nov. 14, 2004. The document labeled "Overview of Event of 14 November 2004" provides a detailed account of the event that transpired. I have highlighted in yellow the portions of the event that involved a Marine Harrier jet. I have removed the personal names of the commanders involved and have referred to them as Commanders Y and X. The document with the heading “CVW-11 Event Summary” appears to be a "Navy After Action" report that was released in 2007. There is no reason to doubt the authenticity of the statements made by these individuals.

I request that a more thorough search be made for the VMFA-232 records for November 14, 2004 based on the Department of the Navy Records Management Program 5210.1 revised May 2012. If these records cannot be found then please provide all of the records from the VMFA-232 on Nov. 14, 2004 to establish that the records were thoroughly researched. This information will establish what did happen on said date if there was truly no unknown aircraft involved.

Thank you for your time and consideration.

Sincerely,

Robert Powell

FAILURE OF NAVY TO ACT ON APPEAL REGARDING MARINES RESPONSE, WITH A COPY TO CONGRESSIONAL REPRESENTATIVES

Robert Powell
[redacted]
July 5, 2017

Department of the Navy
Office of the General Counsel
ATTN: FOIA APPEALS
1000 Navy Pentagon
Room 5A532
Washington, DC 20350-1000

Re: FOIA APPEAL Request of DON-USMC-2017-003339

Dear Sir or Madam:

On May 30, 2017, I sent an appeal regarding the denial of a FOIA request. I have received no confirmation of my appeal and it has been over 30 days. I am copying my U.S. Senator Ted Cruz as well as the Chairman of the Senate Armed Services Committee, Senator John McCain. I am asking for their support in the appeal of my FOIA request as well as their support in an answer to the original FOIA. A copy of that original letter is enclosed.

I have also attached two supporting documents that lend credence to the belief that there are documents in the possession of the U.S. Marine Corps and the U.S. Navy related to an incident involving an unknown aircraft on Nov. 14, 2004, in U.S. waters near San Diego, California.

Thank you for your time and consideration.

Sincerely,

Robert Powell

cc: Honorable Senator John McCain
Honorable Senator Ted Cruz

NAVY RESPONSE TO SECOND APPEAL

DEPARTMENT OF THE NAVY
OFFICE OF THE JUDGE ADVOCATE GENERAL
1322 PATTERSON AVENUE SE SUITE 3000
WASHINGTON NAVY YARD DC 20374

IN REPLY REFER TO:
5720
Ser 14/400
July 27, 2017

Mr. Rober Powell
[redacted]
e-mail:robertmaxpowell@gmail.com

SUBJECT: FREEDOM OF INFORMATION ACT (FOIA) REQUEST DON-USMC-2017-003339; FOIA APPEAL DON-NAVY-2017-008885

This letter acknowledges receipt of your correspondence regarding your Freedom of Information Act (FOIA) appeal that was received in our office on July 24, 2017. Your case has been assigned file number DON-NAVY-2017-008885. Please refer to that file number for any future questions or correspondence concerning your appeal.

In fairness to all requesters, we process all appeals in the order in which they are received. Processing times may be affected by the number and complexity of pending appeals. For that reason, we are unable to provide an estimated completion date at this time. Your rights to judicial review will not be prejudiced by waiting for a substantive determination regarding your appeal. We will work as expeditiously as possible, however, to respond to your request within 20 working days as outlined in the FOIA regulations.

You may contact me at 202-685-5446 or wendy.winston@navy.mil if you have any questions concerning the processing of your appeal. Please provide your last name and the above assigned file number in any correspondence.

Sincerely,

Wendy A. Winston
Legal Administrative Specialist
General Litigation Division

MARINES/NAVY PROVIDE A PARTIAL RESPONSE TO APPEAL AND PROVIDE MARINE STATEMENTS ON THE TIC-TAC INCIDENT

DEPARTMENT OF THE NAVY
OFFICE OF THE JUDGE ADVOCATE GENERAL
1322 PATTERSON AVENUE SE SUITE 3000
WASHINGTON NAVY YARD DC 20374

IN REPLY REFER TO:
5720
Ser 14/441
August 31, 2017

Mr. Robert Powell
[redacted]
e-mail: robertmaxpowell@gmail.com

SUBJECT: FREEDOM OF INFORMATION ACT (FOIA) REQUEST DON-USMC-2017-003339; FOIA APPEAL DON-NAVY-2017-008885 AND FREEDOM OF INFORMATION ACT (FOIA) REQUEST DON-NAVY-2017-002364 (SISTER CASE DON-NAVY-2017-002564); FOIA APPEAL DON-NAVY-2017-009164

This letter responds to your two subject FOIA appeals, received in this office on July 24, 2017, and August 3, 2017, respectively. Your appeals are requests for final determinations under the FOIA. For the reasons set forth below, your appeals are granted in part and denied in part.

I. FOIA Request DON-USMC-2017-003339; FOIA Appeal DON-NAVY-2017-008885

First, you appeal the April 5, 2017, response from 3d Marine Aircraft Wing (MAW) to your request for "all communications, log books, radar data, FLIR video, and all other recorded information in the possession of Third Marine Aircraft Wing regarding the events surrounding any Anomalous Aerial Vehicles, Unidentified Airborne Contacts, or other terminology used to describe unknown aircraft, on the date of Nov. 14, 2004." In its response, 3d MAW noted that searches were conducted at Marine Fighter Attack Squadron 232 (VMFA-232) and the operations section of Marine Aircraft Group (MAG) 11; however, the search returned no responsive information because records from the 2004 timeframe of your request are no longer maintained at those commands.

In your appeal, you challenge the adequacy of the search conducted by the U.S. Marine Corps and request "a more thorough search be made for the VMFA-232 records for November 14, 2004 based on the Department of the Navy Records Management Program 5210.1 revised May 2012. If these records cannot be found then please provide all of the records from the VMFA-232 on Nov. 14, 2004 to establish that the records were thoroughly researched." To support your challenge, you also attached two documents to your appeal that you state "lend credence to the belief that there are documents in the possession of the U.S. Marine Corps related to an incident involving an unknown aircraft on Nov. 14, 2004."

The adequacy of an agency's search for information requested under the FOIA is determined by a "reasonableness" test. *Meeropol v. Meese*, 790 F.2d 942, 956 (D.C. Cir. 1986); *Weisberg v. United States Dep't of Justice*, 705 F.2d 1344, 1350-51 (D.C. Cir. 1983). As a general rule, an agency must undertake a search that is reasonably calculated to locate the requested information. *Kowalczyk v. Department of Justice*, 73 F.3d 386, 388 (D.C. Cir. 1996). Courts have found agencies satisfy the "reasonableness" test when they properly determine where responsive records are likely to be found and search those locations. *Lechliter v. Rumsfeld*, 182 F. App'x 113, 115 (3d Cir. 2006) (concluding that agency fulfilled duty to conduct a reasonable search when it searched two offices that it "determined to be the only ones likely to possess responsive documents" (citing *Oglesby v. U.S. Dep't of the Army*, 920 F.2d 57, 68 (D.C. Cir. 1990)); *McKinley v. Bd. of Governors of the Fed. Reserve Sys.*, 849 F. Supp. 2d 47, 55-56 (D.D.C. 2012) (concluding that agency's search was reasonable because agency determined that all responsive records were located in a particular location created for express purpose of collecting records related to subject of request and searched that location). Moreover, courts have found that an agency's inability to locate a responsive record does not undermine an otherwise reasonable search. *Moore v. FBI*, 366 F. App'x 659, 661 (7th Cir. 2010) (noting that although agency had years earlier destroyed some potentially responsive records, that fact does not invalidate the search).

Following receipt of your appeal, my staff contacted 3d MAW, which provided additional information on the searches conducted. 3d MAW Headquarters staff do not maintain any files, systems, or archives where information responsive to your request could be found. VMFA-232 staff searched flight logs, flight schedules, the command's share drive, and classified storage hard drives for anything from 2004. VMFA-232 had no records or information from 2004, and no responsive information was found. MAG 11 also searched for responsive information; however, no responsive information was found because MAG 11 does not retain any of the kinds of records that could be responsive to your FOIA request.

Based on these facts, I find the searches conducted by 3d MAW, VMFA-232, and MAG 11 were adequately and reasonably tailored to retrieve responsive information. Moreover, as the 7th Circuit said in *Moore*, an agency's inability to locate a responsive record does not undermine an otherwise reasonable search – even where the agency had years earlier destroyed some potentially responsive records. You indicate that you obtained the two documents from the internet; however, neither document undermines the adequacy of the searches conducted. Accordingly, your appeal as it pertains to the searches conducted by 3d MAW, VMFA-232, and MAG 11, is denied.

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However, in the course of the Marine Corps' search for information responsive to your request, a Marine Lieutenant Colonel provided an email noting that he is aware of the 2004 event and, although he did not witness the event or documentation of the event, he provided names of Navy and Marine Corps personnel who may have responsive information. This email appears to be responsive to your FOIA request; accordingly, a copy is attached at enclosure 1. The names of certain personnel, telephone numbers, and email address have been redacted pursuant to FOIA exemption (b)(6). FOIA exemption (b)(6) allows the Government to withhold information about individuals when the disclosure of such information would constitute a clearly unwarranted invasion of personal privacy. As it relates to FOIA exemption (b)(6), the disclosure of names can constitute an unwarranted invasion of personal privacy for certain personnel; however, other personnel names can be released due to the nature of their positions and duties. For DoD, in the interest of open government, ranks of all personnel and the names of office-director level DoD employees or those in the rank of O-6 (Navy captain or Marine Corps colonel) and above generally are not exempted under (b)(6). In this case, I have determined that there is a public interest in releasing the names of the personnel who have or are serving as commanding officers, as well as personnel above the rank of O-6, that outweighs the privacy interests of these individuals. However, I have also determined all of the service members in enclosure 1 have substantial privacy interests in their e-mail addresses and telephone numbers which outweighs public interest in release. Release of such information is not likely to shed any light on the agency's performance of its statutory duties. Rather, release of such information would raise privacy and security concerns. *See, e.g., George v. Internal Revenue Service, et al.*, 2007 U.S. Dist. LEXIS 36525 (N.D. Ca 2007); *Wilson v. United States Air Force*, 2009 U.S. Dist. LEXIS 114702 (E.D. Ky 2009); *Schoenman v. Federal Bureau of Investigation, et al.*, 575 F. Supp. 2d 136 (D.D.C. 2008).

By copy of this letter, I am remanding your request to 3d MAW for three reasons. First, I am directing that command to contact the Marine Corps personnel listed in enclosure 1 to search for any responsive agency records the listed individuals may have in their possession. Second, I am directing that 3d MAW coordinate with the office of the Deputy Commandant of the Marine Corps for Aviation to search for information that may be responsive to your request. Third, I am directing that 3d MAW coordinate with the Marine Corps' History Division to search for information in that Division that may be responsive to your request. 3d MAW will provide you with a response within 20 working days from the date of this letter. You retain the right to appeal the response to this office within 90 days of the date of the response. I caution you that remand to 3d MAW does not mean that additional records responsive to your FOIA request exist. Moreover, if such records exist, portions may still be withheld under applicable FOIA exemptions.

5720
Ser 14/441
August 31, 2017

II. FOIA Request DON-NAVY-2017-002364; FOIA Appeal DON-NAVY-2017-009164

Second, you appeal the April 27, 2017, response from Commander, Naval Air Force Pacific (CNAP) to your request for "communications, log books, radar data, FLIR video, and all other recorded information" relating to "any Anomalous Aerial Vehicles, Unidentified Airborne Contacts, or other terminology used to describe unknown aircraft" encountered by aircraft from Carrier Airborne Early Warning Squadron ONE ONE SEVEN (VAW-117) and Strike Fighter Squadron FOUR ONE (VFA-41) on November 14, 2004. In its response, Commander, Naval Air Force Pacific noted that searches were conducted by Commander, Strike Fighter Wing, Pacific; VFA-41; and Commander, Airborne Command and Control Logistics Wing, Pacific; however, no responsive records were found.

In your appeal, you challenge the adequacy of the searches conducted and request "a more thorough searching of naval records." To support your appeal, you note that you received a letter from the Naval Air Warfare Center Aircraft Division that indicated the Division's search for records responsive to your request identified documents that originated with Naval Air Station Lemoore, and that the FOIA request was referred to Naval Air Station Lemoore for a release determination and direct response to you. You therefore challenge CNAP's conclusion that no responsive records were found, and you request a copy of the records. You also attached two documents to your appeal that you state "lend credence to the belief that an incident involving an unknown aircraft on Nov. 14, 2004 did occur."

The adequacy of an agency's search for information requested under the FOIA is determined by a "reasonableness" test. *Meeropol v. Meese*, 790 F.2d 942, 956 (D.C. Cir. 1986); *Weisberg v. United States Dep't of Justice*, 705 F.2d 1344, 1350-51 (D.C. Cir. 1983). As a general rule, an agency must undertake a search that is reasonably calculated to locate the requested information. *Kowalczyk v. Department of Justice*, 73 F.3d 386, 388 (D.C. Cir. 1996). Courts have found agencies satisfy the "reasonableness" test when they properly determine where responsive records are likely to be found and search those locations. *Lechliter v. Rumsfeld*, 182 F. App'x 113, 115 (3d Cir. 2006) (concluding that agency fulfilled duty to conduct a reasonable search when it searched two offices that it "determined to be the only ones likely to possess responsive documents" (citing *Oglesby v. U.S. Dep't of the Army*, 920 F.2d 57, 68 (D.C. Cir. 1990)); *McKinley v. Bd. of Governors of the Fed. Reserve Sys.*, 849 F. Supp. 2d 47, 55-56 (D.D.C. 2012) (concluding that agency's search was reasonable because agency determined that all responsive records were located in a particular location created for express purpose of collecting records related to subject of request and searched that location). Moreover, courts have found that an agency's inability to locate a responsive record does not undermine an otherwise reasonable search. *Moore v. FBI*, 366 F. App'x 659, 661 (7th

Cir. 2010) (noting that although agency had years earlier destroyed some potentially responsive records, that fact does not invalidate the search).

Following receipt of your appeal, my staff contacted CNAP staff, which provided additional information on the searches conducted. VFA-41 conducted a search for responsive information; however, the squadron had no records of flight schedules or FLIR footage going back to 2004; therefore, no responsive information was found. Similarly, Commander, Strike Fighter Wing, Pacific, the Immediate Superior in Command of VFA-41, did not have records dating to 2004; therefore, no responsive information was found. Commander, Airborne Command and Control Logistics Wing, Pacific, the Immediate Superior in Command of VAW-117, stated that the squadron no longer has any records pertaining to the date in question, and the E-2C that would have been operating at the time did not have a flight data recorder that could have recorded information responsive to your request.

Based on these facts, I find the searches conducted by VFA-41; Commander, Strike Fighter Wing, Pacific; Commander, Airborne Command and Control Logistics Wing, Pacific; and VAW-117 were adequately and reasonably tailored to retrieve responsive information. Moreover, as the 7th Circuit said in *Moore*, an agency's inability to locate a responsive record does not undermine an otherwise reasonable search – even where the agency had years earlier destroyed some potentially responsive records. You indicate that you obtained the two documents from the internet; however, neither document undermines the adequacy of the searches conducted. Accordingly, your appeal as it pertains to the searches conducted by VFA-41; Commander, Strike Fighter Wing, Pacific; Commander, Airborne Command and Control Logistics Wing, Pacific; and VAW-117 is denied.

However, in its response to you, CNAP did not address the Naval Air Warfare Center Aircraft Division's search for responsive information or how the referral of your request to Naval Air Station Lemoore was resolved. Additionally, as noted above, in the course of the Marine Corps' search for information responsive to your request, a Marine Lieutenant Colonel provided an email noting that he is aware of the 2004 event and, although he did not witness the event or documentation of the event, he provided names of Navy and Marine Corps personnel who may have responsive information.

By copy of this letter, I am remanding your request to CNAP for two reasons. First, I am directing that CNAP coordinate contacting the Navy personnel listed in enclosure 1 to search for any responsive agency records those individuals may have in their possession. Second, I am directing that CNAP coordinate with the Naval Air Warfare Center Aircraft Division to address that command's search for responsive information and the referral of your request to Naval Air Station Lemoore. CNAP will provide you with a response

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August 31, 2017

within 20 working days from the date of this letter. You retain the right to appeal the CNAP response to this office within 90 days of the date of the response. I caution you that remand to CNAP does not mean that additional records responsive to your FOIA request exist. Moreover, if such records exist, portions may still be withheld under applicable FOIA exemptions.

As the Department of the Navy's designated adjudication official for this FOIA appeal, I am responsible for the partial denials of your appeals. You may seek judicial review of this decision by filing a complaint in an appropriate U.S. District Court. My office represents the U.S. government and is therefore unable to assist you in this process.

If you would like to seek dispute resolution services, you have the right to contact the Marine Corps' FOIA public liaison, Ms. Sally Hughes, at hqmcfoia@usmc.mil or (703) 614-4008, or the Department of the Navy's FOIA public liaison, Mr. Chris Julka, at christopher.a.julka@navy.mil or (703) 697-0031.

If you have further questions or concerns for my office, my point of contact is LCDR Adam Inch, JAGC, USN, who may be reached at adam.inch@navy.mil or (202) 685-5452.

Sincerely,

G. E. Lattin

G. E. LATTIN
Director
General Litigation Division

Enclosures:
1. Copy of responsive email

Copy to:
3d MAW
HQMC (ARSF)
CNAP
DNS-36
DON CIO

From:	Tomlinson LtCol Robert A
To:	[redacted] Maj [redacted]; Bynum LtCol Dustin J
Cc:	[redacted] Capt [redacted] [redacted] LtCol [redacted]
Subject:	RE: FOIA Request
Date:	Tuesday, March 07, 2017 22:33:52

[redacted],

I am definitely aware of the "flying tic tac"! We were aboard the USS NIMITZ attached to CVW-11. The CO of VFA-41, CDR "Sex" Fravor (spelling?) had the video footage on his ATFLIR and several pilots in VMFA-232 saw the video. I personally did not see the video, but I heard all about it. I believe our CO at the time, LtCol "Cheeks" Kurth (retired) observed the tic tac, and I believe LtCol [redacted], LtCol [redacted] (retired), LtCol [redacted] (retired), and several others also observed the video footage. Another good reference might be RADM Dell Bull (CNATRA) as he was the VFA-41 XO at the time.

S/F,

LtCol Rob "DAHIGI" Tomlinson
Commanding Officer
VMFA-323 "Death Rattlers"
[redacted]

-----Original Message-----
From: [redacted] Maj [redacted]
Sent: Tuesday, March 07, 2017 6:27 PM
To: Bynum LtCol Dustin J; Tomlinson LtCol Robert A
Cc: [redacted] Capt [redacted] [redacted] LtCol [redacted]
Subject: FW: FOIA Request

Good afternoon Gentlemen,

3d MAW received a FOIA request recently for any responsive records in regards to an unknown, white, oval-shaped aircraft without obvious means of propulsion that was detected approximately 80 miles from San Diego by the USS Princeton and FA-18s from VFA-41 and VMFA-232. (request is provided in the attached email). During the course of our search for records, you gentlemen were identified as Marines who may have knowledge pertaining to this request.

Please let me know if you can spread any light on the circumstances surrounding this FOIA request and
1. if you have any records responsive to this request
or
2. know of any people or commands which may be able to provide responsive records.

Please let me know if you have any questions and thank you for any help that you can give.

V/r,

[redacted]
Major, USMC
Deputy Staff Judge Advocate
3rd Marine Aircraft Wing

Office: [redacted]

-----Original Message-----
From: [redacted] Maj [redacted]
Sent: Monday, March 06, 2017 10:20 AM
To: [redacted] Capt [redacted]
Subject: FOIA Request

Capt [redacted],

All flight schedules from the timeframe outlined in the FOIA request have been archived, and we at the squadron no longer have access to them. MAG-11 Ops should have a POC at the archive to facilitate recovery of these files. The squadron also has no archived FLIR footage or radar data from that date, nor do we even use the same recording systems that were used at that time. Two individuals, LtCol "Warren" Byram (CO VMFA-314), and LtCol "DADDGI" Tomlinson (CO VMFA-323) were in VMFA-232 on the date in question, and may be able to provide further clarification should Mr. Powell desire to talk to them. Let me know what other questions you have.

S/F,

Maj [redacted]
Executive Officer
VMFA-232 "Red Devils"

Office: [redacted]
DSN: [redacted]
Mobile: [redacted]
BB: [redacted]
Time Zone: Z - 8 / Japan - 16 / Hawaii + 3

ADDITIONAL INFORMATION PROVIDED BY U.S. MARINE CORP

UNITED STATES MARINE CORPS
3D MARINE AIRCRAFT WING
MARINE CORPS AIR STATION MIRAMAR
P.O. BOX 452038
SAN DIEGO CA 92145-2038

IN REPLY REFER TO:
5720
SJA
10 Oct 17

From: Freedom of Information Act Coordinator, 3d Marine Aircraft Wing
To: Mr. Robert Powell

Subj: REMAND RESPONSE FOR FREEDOM OF INFORMATION ACT REQUEST DON-USMC-2017-003339

1. This letter is in response to the appeal you made regarding your Freedom of Information Act (FOIA) request DON-USMC-2017-003339 for all communications, log books, radar data, FLIR video, and all other recorded information in the possession of 3d Marine Aircraft Wing (MAW) regarding the events surrounding any Anomalous Aerial Vehicles, Unidentified Airborne Contacts, or other terminology used to describe unknown aircraft, on the date of 14 November 2004.

2. In processing your request, we further researched the files of VMFA-232 and the operations section of Marine Aircraft Group (MAG) 11, both physical and electronic, for any documentation from 2004 and none was found. Additionally, due diligence was taken to ensure all shared drives and physical files were searched within 3d MAW. No responsive records have been located. Moreover, an email from the MAG-11 operations officer, Lieutenant Colonel (LtCol) Stephen N. McClune is being sent to you via separate correspondence detailing the use of Forward Looking Infrared Radiometer (FLIR) footage.

3. In reference to personnel identified by LtCol Robert A. Tomlinson that may have witnessed then anomalous event, the following information is provided.

a. LtCol Doug Kurth: Retired in 2006.

b. LtCol Ryan McCaskill: Serving with United States Northern Command.

c. LtCol Justin Knox: Retired in 2016.

d. LtCol John Schares: Retired in 2013.

4. Because none of these Marines are under the purview of 3d MAW, they were not contacted to obtain information.

5. In view of the above, you may consider this to be an adverse determination that may be appealed to the Department of the Navy, Office of the General Counsel (ATTN: FOIA APPEALS), 1000 Navy Pentagon, Room 5A532, Washington, DC 20350-1000. Your appeal, if any, must be postmarked within 90 calendar days from the date of this letter and should include a copy of your initial request, a copy of this letter, and a statement indicating why you believe it should be granted. We recommend that your appeal and its envelope both bear the notation "Freedom of Information Act Appeal."

6. You also have the right to seek assistance and/or dispute resolution services from the Marine Corps FOIA Public Liaison, Ms. Sally Hughes, at hqmcfoia@usmc.mil or (703) 614-4008, and/or the Department of the Navy FOIA Public Liaison, Mr. Christopher Julka, at Christopher.a.julka@navy.mil or (703) 697-0031. You may also contact the Office of Government Information Services for assistance and/or dispute resolution at ogis@nara.gov or 1-877-

Subj: FREEDOM OF INFORMATION ACT REQUEST DON-USMC-2017-003339

684-6448. For more information online about services provided by OGIS, please visit their website at https://ogis.archives.gov.

7. Please contact me at (858) 577-7345 or via email at lamberto.mathurin@usmc.mil if you have any questions or concerns.

L. E. MATHURIN

DOCUMENT I.D. DON-NAVY-2017-004661

SENT TO: NAVY CHIEF OF OPERATIONS

(copy of Navy retention records specification received)

This message is to confirm your request submission to the FOIA online application: Request information is as follows:

- Tracking Number: DON-NAVY-2017-004661
- Requester Name: Robert Powell
- Date Submitted: 03/20/2017
- Request Status: Submitted
- Description: This is a Freedom of Information Act request that should most likely be handled by either the Dept of the Navy Chief of Information or the Dept of the Navy Chief Information Officer. I am requesting the Records Management document(s) that describes the life cycle management process of records kept by Naval ships and aircraft whether in paper or electronic format. Such a document would discuss how video recordings, photos, logbooks, emails, etc. would be maintained and archived over time. I am also requesting the document(s) that define the storage locations for all records during the life cycle management process. Thank you. Robert Powell

DOCUMENT I.D. DON-NAVY-2017-007397

SENT TO: NAVY HISTORY AND HERITAGE COMMAND

SECOND REQUEST FOR USS *PRINCETON* LOGS

This message is to confirm your request submission to the FOIA online application: Request information is as follows:

- Tracking Number: DON-NAVY-2017-007397
- Requester Name: Robert Powell
- Date Submitted: 06/11/2017
- Request Status: Submitted
- Description: This is a FOIA request for information regarding the USS *Princeton* on the dates of November 9, 2014 through and including November 16, 2014. Please provide a copy of the Deck Log, CIC Watch Log, Radar Contact Logs, and messages sent to either CINCLANT or CINCPAC during this time period.

Good Morning Sir, I hope all is well.

My name is Ms. Thomas and I am the FOIA Coordinator for Naval History and Heritage Command. I am in receipt if your FOIA request for records pertaining to the USS PRINCETON for November 2004.

I spoke to Mr. Thompson when he inquired about similar records. As I stated to him, the only records we receive here at NHHC are the deck logs and the command operations reports (CORs); unfortunately, the USS PRINCETON did not submit deck logs for the months of November and December of 2004 or a COR for 2004. We searched all of the unclassified and classified holdings and no records were ever submitted by the ship. Additionally, the remaining records you are seeking are temporary files that remain onboard the ship and are destroyed after they reach their disposition date which could be two to six years in accordance with the Navy Records Management Program.

Unfortunately, due to this, you can either withdraw your request and resubmit if you come across other records or you can receive an official response from us on letterhead stating "no records". Please let me know how you wish to proceed or if you have any questions.

Have a great day!

Very Respectfully,

Ms. Flor Thomas
FOIA Coordinator
Naval History and Heritage Command
History and Archives Division (HAD)
805 Kidder Breese Street, SE
Washington Navy Yard, DC 20374
(202) 433-6908

DOCUMENT I.D. DON-NAVY-2017-008134

SENT TO: NAVY HISTORY AND HERITAGE COMMAND

(Copy of *Nimitz* Deck Logs received. Relevant portions available in Appendix C)

This message is to confirm your request submission to the FOIAonline application: Request information is as follows:

- Tracking Number: DON-NAVY-2017-008134
- Requester Name: Robert Powell
- Date Submitted: 07/04/2017
- Request Status: Submitted
- Description: This is a FOIA request for information regarding the USS *Nimitz* on the dates of November 9, 2014 through and including November 16, 2014. Please provide a copy of the Deck Log, CIC Watch Log, Radar Contact Logs, and messages sent to either CINCLANT or CINCPAC during this time period.

Dear Mr. Powell ,

I am reaching out to you with respect to your FOIA request referenced above. Our agency has been advised to no longer review on site, process or release documents for FOIA requests involving deck logs and command history reports of nuclear vessels due to possible disclosure of Naval Nuclear Propulsion Information (NNPI). NNPI is information that can be found in the deck logs as well as the command history that is considered restricted and oftentimes classified.

At the moment, we have been instructed to run all such records through Naval Reactors in order for them to review and make the determination on whether we can continue processing. Since this process is completely out of NHHC control, the time line for processing your request is uncertain. However, we will keep you updated if there are any developments regarding your request.

I am the designated point of contact for transferring records pertaining to your request to Naval Reactors for review and processing. Should you have any questions, do not hesitate to contact me at your earliest convenience.

Sincerely,
David Ajua
Government Information Specialist
Naval History and Heritage Command
805 Kidder Breese Street, Southeast
Washington Navy Yard, DC 20374
david.ajua@navy.mil
david.ajua@navy.smil.mil
(202) 685-0156

Dear David,

Since our last communication I did some research that indicated the release of deck logs on nuclear carriers has been a common practice. The USS Enterprise, since decommissioned, has years worth of deck logs available at the National Archives. The *Nimitz* deck logs were released with FOIA 2012F071337 with only 8 days between request and release. This again occurred with FOIA 2012F071343 with 18 days between request and release. The deck logs of the USS Eisenhower were released with FOIA 2011F061614 with only 2 days between request and release. The deck logs of the USS Carl Vinson were released with FOIA 2012F081493 with 17 days between request and release. There are more examples available. Please pass this information on to the appropriate party and request a release date. If they are not willing to supply a reasonable release date, please deny the FOIA request so that I can appeal it to JAG and my congressional representative.

I appreciate your help in this and realize that the delay is not under your control.

Best wishes,

Robert

On 12/12/2017 8:42 AM, Thomas, Flor J CIV NHHC HAD wrote:

Good Morning Mr. Powell, I hope all is well.

SUBJECT: FREEDOM OF INFORMATION ACT REQUEST CASE NUMBER DON-NAVY-2017-008134

This is in response to your Freedom of Information Act (FOIA) request dated July 4, 2017 in which you requested the deck logs from the USS NIMITZ (CVN 68) from November 9-16, 2014; Watch Logs; Radar Contact Logs; and messages sent to either CINCLANT or CINCPAC during this time period. Your request was modified on July 14, 2017 to the deck logs of the USS NIMITZ (CVN 68) from November 9-16, 2004. Your request was received by this office via FOIA online on July 4, 2017 with the case number DON-NAVY-2017-008134.

Your request has been processed in accordance with the Freedom of Information Act (5 U.S.C. § 552), Part 701 of Title 32 of the Code of Federal Regulations, and the Department of the Navy Freedom of Information Act Program (SECNAVINST 5720.42F).

The final release of the requested deck logs falls under the cognizance of Commander, Naval Air Force U.S. Pacific Fleet. We have referred these records to that command for review and a direct response to you.

For the purpose of assessing FOIA processing fees, you have been categorized as an "all other" requester. As such, you are entitled to two hours of search and 100 pages of duplication free of charge, but are responsible for the payment of any search and duplication fees exceeding your free entitlement. In this instance, since the fees do not exceed your free entitlement, there is no fee charge for the processing of your request by this office.

You may contact the analyst who processed your request, Mr. David Ajua at (202) 685-0156 or email: david.ajua@navy.mil, as well as our FOIA Public Liaison Ms. Robin Patterson at DONFOIA-PA@navy.mil for any further assistance and to discuss any aspect of your request.

If you are not satisfied with the response to this request, you may administratively appeal by writing to:

Department of the Navy
Office of the Judge Advocate General (Code 14)
1322 Patterson Avenue SE, Suite 3000
Washington Navy Yard, DC 20374-5066

Your appeal must be postmarked within 90 calendar days from the date of this letter to be considered. A statement as to why your appeal should be granted should be included and a copy of this letter should be attached. Both the appeal letter and the envelope should bear the notation, "Freedom of Information Act Appeal."

Additionally, you may contact the Office of Government Information Services (OGIS) at the National Archives and Records Administration to inquire about the FOIA mediation services they offer. The contact information for OGIS is as follows: Office of Government Information Services, National Archives and Records Administration, 8601 Adelphi Road-OGIS, College Park, Maryland 20740-6001, e-mail at ogis@nara.gov; telephone at 202-741-5770; toll free at 1-877-684-6448; or facsimile at 202-741-5769.

Very Respectfully,

Ms. Flor Thomas
FOIA Coordinator
Naval History and Heritage Command
History and Archives Division (HAD)
805 Kidder Breese Street, SE
Washington Navy Yard, DC 20374
Bldg. 200
(202) 433-6908

DOCUMENT I.D. DON-NAVY-2018-000472

SENT TO: NAVY INSPECTOR GENERAL

REQUEST MADE FOR A REPORT ON THE *NIMITZ/PRINCETON* INCIDENT

This message is to confirm your request submission to the FOIAonline application: Request information is as follows:

- Tracking Number: DON-NAVY-2018-000472
- Requester Name: Robert Powell
- Date Submitted: 10/18/2017
- Request Status: Submitted
- Description: This is a FOIA request for a copy of the Naval Inspector General report that was made regarding a Navy incident that occurred on November 14, 2004. The incident involved a minimum of the USS *Nimitz*, the USS *Princeton*, an Airborne Early Warning Aircraft from VAW-117, a Marine F-18 from VMFA-232, and four F-18 SuperHornets from VFA-41 that included CO David Fravor (retired) and XO Dell Bull (now Rear Admiral, USN).

NAVY INSPECTOR GENERAL REPLY THAT NO REPORT EXISTS

DEPARTMENT OF THE NAVY
NAVAL INSPECTOR GENERAL
1254 9TH STREET SE
WASHINGTON NAVY YARD DC 20374-5006

IN REPLY REFER TO:
5720
Ser 00K2/17-1042
19 Dec 2017

Mr. Robert Powell
[redacted]
robertmaxpowell@gmail.com

Dear Mr. Powell:

This responds to your Freedom of Information Act (FOIA) request (DON-NAVY-2018-000472) of October 18, 2017, in which you requested "a copy of the Naval Inspector General report that was made regarding a Navy incident that occurred on November 14, 2004. The incident involved a minimum of the USS Nimitz, the USS Princeton, an Airborne Early Warning Aircraft from VAW-117, a Marine F-18 from VMFA-232, and four F-18 SuperHornets from VFA-41 that included CO David Fravor (retired) and XO Dell Bull (now Rear Admiral, USN)."

On December 17, 2017, you appealed our failure to make a timely response. The Office of the Judge Advocate General forwarded the matter to our office for a response on December 18, 2017. I apologize that our office did not timely respond to you. The delay is due to a temporary lack of FOIA program resources at the Office of the Naval Inspector General (NAVINSGEN).

A search of the Naval Inspector General investigation database for complaints received between 2004 and 2005 using the following search terms, "USS Nimitz," "USS Princeton," "Airborne Early Warning," "VAW-117," "VMFA-232," "VFA-41," "Fravor" and "Bull" failed to locate the requested records. Consequently, we have no records to provide you.

In view of the above, you may consider this to be an adverse determination that may be appealed. Any appeal should be submitted to:

OFFICE OF THE JUDGE ADVOCATE GENERAL
ATTN: FOIA APPEALS – CODE 14
1322 PATTERSON AVENUE SE SUITE 3000
WASHINGTON NAVY YARD DC 20374-5066

Your appeal, if any, must be postmarked within 90 calendar days from the date of this letter and should include a copy of your initial request and a copy of this letter. You are encouraged, but not required, to include a statement indicating why you believe your appeal should be granted. I recommend that your appeal and its envelope both bear the notation, "Freedom of Information Act Appeal." You may also submit an appeal using the "Create Appeal" link in FOIA ON-LINE.

You also have the right to seek assistance and/or dispute resolution services from Mr. Christopher Julka, Department of the Navy, FOIA Public Liaison officer. Mr. Julka may be

5720
Ser 00K2/17-1042
19 Dec 2017

contacted at: Christopher.a.julka@navy.mil or (703) 697-0031. You may also contact the Office of Government Information Services (OGIS) for assistance and/or dispute resolution at ogis@nara.gov or 1-877-684-6448. For more information online about services provided by OGIS, please visit their website at https://ogis.archives.gov.

I am responsible for this denial decision; if you have any questions concerning this matter, please contact me at (202) 433-4703.

Sincerely,

Lori S. Howard

Lori S. Howard
Associate Counsel

DOCUMENT I.D. DON-NAVY-2018-008449

SENT TO: NAVY HISTORY AND HERITAGE COMMAND

(USS *Chafee* Deck Logs received. Relevant portions available in Appendix C)

This message is to confirm your request submission to the FOIAonline application: Request information is as follows:

- Tracking Number: DON-NAVY-2018-008449
- Requester Name: Robert Powell
- Date Submitted: 06/12/2018
- Request Status: Submitted
- Description: This is a FOIA request for information regarding the USS *Chafee* on the dates of November 10, 2004 through and including November 16, 2004. Please provide a copy of the Deck Log, CIC Watch Log, Radar Contact Logs, and messages sent to either CINCLANT or CINCPAC during this time period.

Dear Mr. Powell:

SUBJECT: FREEDOM OF INFORMATION ACT REQUEST CASE NUMBER DON-NAVY-2018-008449 and DON-NAVY-2018-008450

This is in response to your Freedom of Information Act (FOIA) request of June 12, 2018 in which you requested a copy of the USS CHAFEE (DDG 90) and the USS HIGGINS (DDG 76) watch logs, CIC Watch Log, Radar Contact Logs, and messages sent to either CINCLANT or CINCPAC during November 10, 2004 through November 16, 2004. Your request was received by this office on June 12, 2018 via FOIA Online under case numbers DON-NAVY-2018-008449 and DON-NAVY-2018-008450.

Your request has been processed in accordance with the Freedom of Information Act (5 U.S.C. § 552), Part 701 of Title 32 of the Code of Federal Regulations, and the Department of the Navy Freedom of Information Act Program (SECNAVINST 5720.42F).

The release of the USS CHAFEE and USS HIGGINS deck logs falls under the cognizance of Commander, Naval Surface Force, U.S. Pacific. We have referred these records to that command for review and direct response to you. Please be advised that Naval History and Heritage Command does not maintain CIC Watch Log, Radar Contact Logs, or messages sent to either CINCLANT or CINCPAC during the requested time periods.

There are no fees associated with the processing of your request by this office.

You may contact me directly at (202) 433-0203 and at flor.thomas@navy.mil as well as our FOIA Public Liaison Ms. Robin Patterson at DONFOIA-PA@navy.mil for any further assistance and to discuss any aspect of your request.

If you are not satisfied with the response to this request, or believe that an adequate search was not conducted, you may administratively appeal by writing to:

Department of the Navy
Office of the Judge Advocate General (Code 14)
1322 Patterson Avenue SE, Suite 3000
Washington Navy Yard, DC 20374-5066

Your appeal must be postmarked within 90 calendar days from the date of this letter to be considered. A statement as to why your appeal should be granted should be included and a copy of this letter should be attached. Both the appeal letter and the envelope should bear the notation, "Freedom of Information Act Appeal."

Additionally, you may contact the Office of Government Information Services (OGIS) at the National Archives and Records Administration to inquire about the FOIA mediation services they offer. The contact information for OGIS is as follows: Office of Government Information Services, National Archives and Records Administration, 8601 Adelphi Road-OGIS, College Park, Maryland 20740-6001, e-mail at ogis@nara.gov; telephone at 202-741-5770; toll free at 1-877-684-6448; or facsimile at 202-741-5769.

Very Respectfully,

Ms. Flor Thomas
Senior Government Information Specialist

FOIA Coordinator
Naval History and Heritage Command
History and Archives Division (HAD)
805 Kidder Breese Street, SE
Washington Navy Yard, DC 20374
Bldg. 200
(202) 433-0203
flor.thomas@navy.mil
NHHC_FOIA@navy.mil

DOCUMENT I.D. DON-NAVY-2018-008450

SENT TO: NAVY HISTORY AND HERITAGE COMMAND

(USS Higgins Deck Logs received. Relevant portions available in Appendix C)

This message is to confirm your request submission to the FOIAonline application: Request information is as follows:

- Tracking Number: DON-NAVY-2018-008450
- Requester Name: Robert Powell
- Date Submitted: 06/12/2018
- Request Status: Submitted
- Description: This is a FOIA request for information regarding the USS *Higgins* on the dates of November 10, 2004 through and including November 16, 2004. Please provide a copy of the Deck Log, CIC Watch Log, Radar Contact Logs, and messages sent to either CINCLANT or CINCPAC during this time period.

DOCUMENT I.D. DON-NAVY-2018-008450

SENT TO: NAVY HISTORY AND HERITAGE COMMAND

(Request still outstanding.)

This message is to confirm your request submission to the FOIAonline application: Request information is as follows:

- Tracking Number: DON-NAVY-2018-008451
- Requester Name: Robert Powell
- Date Submitted: 06/12/2018
- Request Status: Submitted
- Description: This is a FOIA request for information regarding the USS *Louisville* on the dates of November 10, 2004 through and including November 16, 2004. Please provide a copy of the Deck Log, CIC Watch Log, Radar Contact Logs, and messages sent to either CINCLANT or CINCPAC during this time period.

DOCUMENT I.D. 18-R-072

SENT TO: NORAD

Dear Ms. Mayeux,

I have clarified my request below. Please let me know if the clarification is sufficient.

The records that I am seeking would consist of radar data from the San Clemente Island, California radar site also known in the Joint Surveillance System as J-36A and the Mount Laguna, California radar site known as in the Joint surveillance System as J-30. The time period being requested is 18:00 hrs Zulu to 21:00 hrs Zulu on November 14, 2004. Please send radar data on a CD in a text format with data including date, time, transponder code or lack of, range, azimuth, altitude, longitude, and latitude. If there are any fees for searching, reviewing, or copying the records, I will pay up to $50. If the cost is higher please let me know before processing the request.

If you have any questions about this request, you may contact me by phone at 512-921-1155 or my email at robertmaxpowell@gmail.com

Thank you for your time and consideration.

Sincerely,

Robert Powell

NORAD REPLY THAT THEY HAVE NO RADAR DATA

UNITED STATES NORTHERN COMMAND

JUL 3 1 2018

HQ USNORTHCOM/CS
250 Vandenberg Street, Suite B016
Peterson Air Force Base CO 80914-3801

Mr. Robert Powell
[redacted]

Dear Mr. Powell

We received your Freedom of Information Act (FOIA) request dated 05 July 2018. Your request was assigned USNORTHCOM FOIA case number 18-R-073. In your request letter you asked for the following: radar data from the San Clemente Island, California radar site also known in the Joint Surveillance System as J-36A and the Mount Laguna, California radar site known as in the Joint surveillance System as J-30. The time period being requested is 18:00 hrs Zulu to 21:00 hrs Zulu on November 14, 2004. Please send radar data on a CD in a text format with data including date, time, transponder code or lack of, range, azimuth, altitude, longitude, and latitude.

After performing a search of our system of records we found no responsive documents in USNORTHCOM system of records. NORAD as a bi-national organization is not subject to the FOIA.

As a requester in the "All Others" fee category, you received the first two hours and 100 pages of records at no cost; therefore, there are no assessable fees for processing your request. If you have any further questions concerning your request, please do not hesitate to contact our FOIA Request Service Center at the above address.

If you are not satisfied with this action, you have the right to appeal to the appellate authority, Ms. Joo Chung, Director of Oversight and Compliance (ODCMO), Office of the Secretary of Defense (OSD). The appellate address is: ODCMO Directorate for Oversight and Compliance, 4800 Mark Center Drive, ATTN: DPCLTD, FOIA Appeals, Mailbox #24, Alexandria, VA 22350-1700. As an alternative, you may use the OSD FOIA request portal to submit your appeal electronically at the following link: http://pal.whs.mil/palMain.aspx or email your appeal to OSD.FOIA-APPEAL@mail.mil. If you use email, please have the words "FOIA Appeal" in the subject of the email. Your appeal should cite our case number 18-R-073, be postmarked within 90 days of the date of this response, and be clearly marked "Freedom of Information Act Appeal" on the request. You also have the right to seek dispute resolution services from USNORTHCOM's FOIA Public Liaison, Mr. Jim Hogan at (571) 372-0462 or OSD.FOIALiaison@mail.mil. Additionally, you have the right to contact the Office of

Deter Prevent Defeat

Government Information Services (OGIS) to inquire about the FOIA mediation services they offer. The contact information for OGIS is: Office of Government Information Services, National Archives and Records Administration, 8601 Adelphi Road-OGIS, College Park, Maryland 20740-6001; email at ogis@nara.gov; telephone at (202) 741-5770; toll free at 1-877-684-6448; or facsimile at (202) 741-5769.

RICHARD J. GALLANT
Major General, USA
Chief of Staff

DOCUMENT I.D. 18F-0373

SENT TO: DEPARTMENT OF DEFENSE

(Request is still outstanding.)

General Information

*Request Type	FOIA
Requester Category	Educational or Non-Commercial Scientific

Shipping Address

*Street1	[redacted]
Street2	[redacted]
*City	[redacted]
*State	Texas
*Country	United States
*Zip Code	[redacted]

Request Information

Attachment

*Description

I am requesting a copy of the two videos that the DoD supplied to the New York Times and was displayed at the NYT website and in the NY Time on Saturday, December 16, 2017. One of the videos was made by a F-18 SuperHornet on November 14, 2004. Since the DoD has already released these videos it should be straightforward to provide me a copy.

I am also requesting a copy of the 400+ page document mentioned in the New York Times article.

I am also requesting a copy of all other electronic and paper documents related to both these events. In the case of the event of Nov. 14, 2004, some of those specific documents include but are not limited to the deck logs of the USS Princeton and the USS Nimitz for the dates of Nov. 10-16, 2004; all information related to the E-2 Hawkeye of VAW-117 that was involved in tracking the unknown all radar information and radar contact logs from the USS Princeton related to the unknown object; all information related to the VFA-41 squadron; any note/information obtained related CO David Fravor of VFA-41; all information from VMFA-432 and inclusive of any notes/information obtained from Lt. Col Kurth; all CIC Watch Logs; ship to aircraft audio communication records; and messages sent to either CINCLANT or CINCPAC during this time period.

Date Range for Record Search: From 11/10/2004 To 11/16/2004

Fee Information

Willing Amount: 25

DEPARTMENT OF DEFENSE
OFFICE OF FREEDOM OF INFORMATION
1155 DEFENSE PENTAGON
WASHINGTON, DC 20301-1155

JAN 1 7 2018

Ref: 18-F-0373

Mr. Robert Max Powell
[redacted]

Dear Mr. Powell:

This is the final response to your enclosed January 2, 2018, Freedom of Information Act (FOIA) request, a copy of which is attached for your convenience. We received your request in this office on January 3, 2018 and assigned it FOIA case number 18-F-0373. We ask that you use this number when referring to your request.

However, please note that your request was misdirected to this office for processing. This FOIA office only processes requests for the Office of the Secretary of Defense (OSD) and the Joint Staff (JS). There is no central FOIA processing point for records for the entire Department of Defense (DoD). FOIA processing is decentralized and delegated to those officials of the Military Departments and various DoD Components who generate and/or maintain the records being sought or reviewed. In consideration of this fact, we have forwarded your request to the Defense Intelligence Agency (DIA) FOIA office for their direct response to you.

The DIA, which operates its own FOIA program, would have cognizance over the information you have requested. For your convenience, contact information for the DIA FOIA office is provided below:

> Defense Intelligence Agency
> 7400 Pentagon
> Attn: DLOC FAC2A1
> Washington, DC 20301-7400

This action closes your request with this office, and there are no assessable fees associated with this response.

Sincerely,

for Adrienne L. Santos

Stephanie L. Carr
Chief

Enclosure:
As stated

DEFENSE INTELLIGENCE AGENCY

WASHINGTON, D.C. 20340-5100

U-18-4500/FAC-2A1 (FOIA) JAN 31 2018

Mr. Robert Max Powell
[redacted]

Dear Mr. Powell:

This is an interim response to your Freedom of Information Act (FOIA) request dated January 10, 2018, requesting the following:

- ***A copy of the two videos that the DoD supplied to the New York Times and was displayed at the NYT website and in the NY Time on Saturday, December 16, 2017***
- ***Requesting a copy of the 400-page document mentioned in the New York Times article***
- ***Requesting a copy of all other electronic and paper documents related to both these events***
- ***All information related to the E-2 Hawkeye of VAW-117 that was involved in tracking the unknown and all radar information and radar contact logs from the USS Princeton related to the unknown object***
- ***All information related to the VFA-41 squadron; any notes/information obtained related CO David Fravor of VFA-41***
- ***All information from VMFA-432 and inclusive of any notes/information obtained from Lt. Col Kurth***
- ***All CIC Watch Logs; ship to aircraft audio communication records; and messages sent to either CINCLANT or CINCPAC during time period from 11/10/2004 to 11/16/2004***

We received your request on January 16, 2018 and assigned it case number FOIA-0119-2018. Please use this number in all future correspondence with us about this matter.

We will be unable to respond to your request within the FOIA's 20 day statutory time period due to unusual circumstances. These unusual circumstances could be: (a) the need to search for and collect records from a facility geographically separated from this office; (b) the potential volume of records responsive to your request; and (c) the need for consultation with one or more other agencies which have substantial interest in either the determination or the subject matter of the records. For these reasons, your request has been placed in our queue and will be worked in the order the request was received. Our current administrative workload is in excess of 1,139 requests.

We regret that there is currently a substantial delay in processing requests and solicit your patience and understanding. We assure you that we will process your request as soon as possible.

APPENDIX C

DOCUMENTS REFERENCED

by Robert Powell

The documents are listed chronologically based on date of origin, except for the FOIA Deck Logs documents, which are listed at the end of this appendix due to their larger size. Following the date is the name of the document as it will be referenced in this paper.

2007 February 13, CVW-11 Event Summary

An Event Summary of the 2004 event was posted on the site AboveTopSecret by an anonymous source under the pseudonym "Cometa2". The individual that posted the documented indicated that they were not the owner but it had been made available on their German site known as Vision Unlimited and that they were posting it based on permission from another anonymous source under the pseudonym "Final Theory".[1]

This CVW-11 Event Summary appears to be an actual Navy event summary. A copy of it was provided various Navy organizations as part of the FOIA requests. There was never a reply that this was not a Navy document. It has a lot of information that matches what has been stated by witnesses and that is contained in other documents. The location that the CVW-11 shows for the Nimitz at 2:10pm local time (31º29.3'N 117º52.8'W) matches well with the Deck Log of the USS Nimitz at 11:30am (31º12.3'N 117º52.2'W). The document also matches up with statements from CDR Fravor and LCDR Slaight in terms of the nicknames for the F-18 flights, the unknown object in the water, the engagement with the "Tic-Tac", and the lack of a radar lock from the F-18s.

There are some known discrepancies in the CVW-11 based on witness testimonies: the "Fast Eagles" were not vectored upon takeoff but after they had taken off on a training mission; none of the witnesses indicated that there was steam or smoke around the object in the water; and the event summary indication that the unknown object was 25-30 feet in size is smaller than the 40-60 feet in most other estimates. But these are not major discrepancies and can be addressed by examining all documents for supporting information. This document is usable in telling the story of this encounter when combined with other documents and witness statements.

CVW-11 EVENT SUMMARY
14 NOVEMBER 04
EVENT SUMMARY

EVENT 3

Event
Side
Narrative
ADEX
3A1,3C1,
3D2

1 *ATS: Above Top Secret*, "Fighter Jet UFO Footage: The Real Deal," http://www.abovetopsecret.com/forum/thread265835/pg1. Accessed August 05, 2018.

110/100, 303/305, 401
FAST EAGLES 110/100 UPON TAKE OFF WERE VECTORED BY PRINCETON AND BANGER (1410L) TO INTERCEPT UNID CONTACT AT 160@40NM (N3050.8 W11746.9) (NIMITZ N3129.3 W11752.8). PRINCETON INFORMED FAST EAGLES THAT THE CONTACT WAS MOVING AT 100 KTS @ 25KFT ASL.

FAST EAGLES (110/100) COULD NOT FIND UNID AIRBORNE CONTACT AT LOCATION GIVEN BY PRINCETON. WHILE SEARCHING FOR UNID AIR CONTACT, FAST EAGLES SPOTTED LARGE UNID OBJECT IN WATER AT 1430L. PILOTS SAW STEAM/ SMOKE/CHURNING AROUND OBJECT. PILOT DESCRIBES OBJECT INITIALLY AS RESEMBLING A DOWNED AIRLINER, ALSO STATED THAT IT WAS MUCH LARGER THAN A SUBMARINE.

WHILE DESCENDING FROM 24K FT TO GAIN A BETTER VIEW OF THE UNID CONTACT IN THE WATER, FAST EAGLE 110 SIGHTED AN AIRBORNE CONTACT WHICH APPEARED TO BE CAPSULE SHAPED (WINGLESS, MOBILE, WHITE, OBLONG PILL SHAPED, 25-30 FEET IN LENGTH, NO VISIBLE MARKINGS AND NO GLASS) 5NM WEST FROM POSITION OF UNID OBJECT IN WATER.

CAPSULE (ALT 4K FT AT COURSE 300) PASSED UNDER FAST EAGLE 110 (ALT 16KFT). FAST EAGLE 110 BEGAN TURN TO ACQUIRE CAPSULE. WHILE 110 WAS DESCENDING AND TURNING, CAPSULE BEGAN CLIMBING AND TURNED INSIDE OF FAST EAGLE'S TURN RADIUS. PILOT ESTIMATED THAT CAPSULE ACHIEVED 600-700 KTS. FAST EAGLE 110 COULD NOT KEEP UP WITH THE RATE OF TURN AND THE GAIN OF ALTITUDE BY THE CAPSULE. 110 LOST VISUAL ID OF CAPSULE IN HAZE. LAST VISUAL CONTACT HAD CAPSULE AT 14KFT HEADING DUE EAST.

NEITHER FAST EAGLES 110 OR 100 COULD ACHIEVE RADAR LOCK OR ANY OTHER MEANS OF POSITIVE ID. FAST EAGLE 100 WAS FLYING HIGH COVER AND SAW THE ENGAGEMENT BY FAST EAGLE 110. FAST EAGLE 100 CONFIRMS 110 VISUAL ID; 100 LOST CONTACT IN HAZE AS WELL.

CPA OF ACFT 110 FROM CONTACT 4000-5000 FT.

FAST EAGLES, DEVILS AND HOBOS PERFORMED ADEX IN MULLET AFTER VECTOR FROM PRINCETON TOWARD UNID CONTACT. EACH PERFORMED 1X RUN. FAST EAGLE VID 2X GROUPS:
1X SIM F8, WINGS CLEAN
1X SIM F8, WINGS CLEAN. RTB
BMB
3A2,3B1
105/106, 204/200
FAST EAGLES AND CAMELOTS PERFORMED BMB AT 2507. EACH DROPPED 4X MK-82. FAST EAGLES PERFORMED 3X RUNS; CAMELOTS 2X RUNS
SSC
2E2
503
RAVEN PERFORMED SSC AT NM/OK. 2X CONTACTS; NO PHOTO'S:
1- CHARTER FISHING BOAT N3126 E11714 COURSE 030 @ 10-15 KTS AT 1415L.
2- COMMERCIAL FISHING BOAT, N3111 E11803 COURSE 300 @ 5 KTS AT 1430L.
LOG/PG
2H1
616
INDIAN PERFORMED LOG (3X PACKAGE RUNS TO PRINCETON), DLQ'S ON PRINCETON AND PLANE GUARD IN VA.

TOTAL ORDNANCE EXPENDED: NONE

EVENT 4

Event
Side
Narrative
ADEX
4A1,4B1
4D1
111,212,
201,413
FAST EAGLES (BLUE), CAMELOTS (RED), AND HOBOS (BLUE) PERFORMED ADEX IN OPAREA MISR-1E, 2V2. ALL EXECUTED 3X RUNS.
BMB
4C1
310,311
DEVILS CONDUCTED BMB IN OPAREA 2507. EACH EXECUTED 2X RUNS AND BOTH EXPENDED 2X BLU-111 (TOTAL 4 X BLU-111).
TOTAL ORDNANCE EXPENDED: 4 X BLU-111

EVENT 5

Event
Side
Narrative
CSAR
5B1,5E1
5F1,5A1,
5H2
206,501,
106,613
CAMELOTS, BANGER, FAST EAGLES, INDIANS, AND RAVENS PERFORMED CSAR AT 090@17NM FROM NIMITZ. RAVENS JAMMED WHILE CAMELOTS EXECUTED RESCORT AT 12,000FT. BANGER CONTROLED EVENT 5 (CSAR). FAST EAGLE PERFORMED ROLE OF RMC. INDIANS REMAINED WITH CAMELOTS IN RESCORT.
AIC
5C1,5D1
5A2
303,305,
410,401,
102,100
FAST EAGLES, DEVILS, AND HOBOS PERFORMED AIC IN OPAREA MISR-1E. 305 DROPED OUT OF AIC, 2V3. HOBO AND DEVIL PERFORMED RED AIR, FAST EAGLES AND HOBO PERFORMED BLUE AIR.
TOTAL ORDNANCE EXPENDED: NONE

EVENT 6

Event

Side
Narrative
RTNK
6A1,6B1
105,211
CAMELOTS AND FAST EAGLES PERFORMED ROLE AS RTNK FOR EVENT 6 (AIC).
AIC
6B2,6C2
307,310,
201
CAMELOTS (RED) AND DEVILS (BLUE) PERFORMED AIC IN OPAREA MISR-1E. EACH EXCUTED 3X RUNS.
GANGPLANK
6C1
311
DEVIL PERFORMED GANGPLANK IN OPAREA PAPA-2. DEVIL SIMULATED 2 X MK-82.
NVG
6D1
402,403
HOBOS PERFORMED NVG OVHD. NSTR.
TOTAL ORDNANCE EXPENDED: NONE

2015 March 14, FighterSweep Article: "There I Was: The X-Files Edition"

This is the article that was found online in July of 2016 by Robert Powell. The value of the article is that it was written by a retired Navy pilot (Paco Chierici) and naval terminology is used throughout the article. Everything about the article hinted of a legitimate encounter between a Navy Carrier Group and UFOs.[2] Chierici indicated that the article was based on conversations with his friend, retired CDR David Fravor, and a report provided to him by a government agency that investigated the event. Chierici stated that the government agency had just visited David Fravor prior to Chierici's request for information from his friend.[3] This claim has also been supported by statements from David Fravor.[4] So some few weeks or months prior to March 2015 would be the time frame when Chierici was given a report and began writing his article. Based on information garnered in the SCU investigation of this incident, it is believed that the agency was most likely a group within the Defense Intelligence Agency known as AATIP (Advanced Aerial Threat Identification Program). The article matches very well the eye witness statements from CDR Fravor and LCDR Slaight as well as Lt. Colonel Kurth who stated that the article is 95% accurate.[5] The main sources for the FighterSweep article appear to be CDR Fravor, Lt. Colonel Kurth, and a report compiled by a government agency.

2 Paco Chierici, *Fighter Sweep*, "There I Was: The X-Files Edition" https://fightersweep.com/1460/x-files-edition/. March 14, 2015. Accessed August 08, 2018.
3 Paco Chierici, interview by Ken Arcigma, *Ken Arcigma's Manceptional Podcast*, "007: UFO's, Jets, Films & Books Oh My---Life of a US Navy Pilot with Paco Chierici," April 25, 2018.
4 David Fravor, interview by Linda Moulton Howe. KGRA radio, June 28, 2018.
5 Douglas Kurth, interview by Robert Klinn, telephone interview, November 09, 2017.

There I Was: The X-Files Edition

MARCH 14, 2015 PACO CHIERICI 0 COMMENTS NAVY

A good buddy of mine and former squadron mate, Dave "Sex" Fravor, has one of the most bizarre aviation stories of all time. It is a story that stretches credibility, so I'll start off by building up Dave's bona fides.

For what it's worth, I know him personally — very well. We flew A-6s together for a cruise back in the Dark Ages before he matriculated into the Hornet world. He's a funny guy. Smart and sharp witted, with a typical fighter pilot's overestimation of his skills. (He'd read the SHB article and assured me his was way better than anything Nasty could do. I called B.S.–pretty standard.) In the air, though, Dave was all business, as professional as it gets.
It's easy to get a sense of who and what he is because his squadron was featured on the 10-part miniseries Carrier that aired on PBS. You get an excellent and accurate impression of him from his screen time as Commanding Officer of VFA-41.

VFA-41 'Black Aces' CAG jet on its takeoff roll at MCAS Miramar, heading out to perform of the many Centennial of Naval Aviation fly-by's.

On the morning of 14 November 2004, Dave and his WSO launched into the clear blue Southern California sky about a hundred miles southwest of San Diego. Their Call Sign was FASTEAGLE 01. His wingman and WSO launched just after them in FASTEAGLE 02. They climbed overhead the ship and rendezvoused in normal fashion before setting off to their assigned work area in the open ocean south of USS Nimitz. Normal day, normal ops for the pre-deployment work up cycle they were in the middle of.

The *Nimitz* Carrier Strike Group had been on station for a few weeks already, working to integrate the operations of the carrier with her various support ships, including the Ticonderoga Class Guided Missile Cruiser, USS Princeton. As far as Dave was concerned, it was a standard day in a normal work up cycle. Another step in the long journey in preparing the ships of the Strike Group and the planes of the Air Wing to work harmoniously for their upcoming combat deployment.

What Dave didn't know was for the past several days, *Princeton* had been picking up some bizarre returns on their *Death Star*-worthy SPY-1 radar. On several occasions beginning 10 November, the Fire Control Officer and the extremely experienced Fire Control Senior Chief had detected multiple returns descending from far above the radar's scan volume–somewhere higher than 80,000 ft. The targets, dubbed Anomalous Aerial Vehicles (AAVs), would drop from above 80K to hover roughly 50 feet off the water in a matter of seconds.

Always over the same spot, a Lat/Long about 30NM off the coast of Baja, roughly 70nm southwest of Tijuana. At the time, the SPY-1 was the most sophisticated and powerful tactical radar on the planet. With it, they were able to track these AAVs while they descended, hovered and then zipped away at speeds, turn rates and accelerations faster than any known friendly or threat aircraft. *Impossibly fast*.

VFA-41 'Black Aces' CAG resting on the ramp after a sortie during Air Wing Fallon.

Once the Air Wing's planes arrived aboard *Nimitz*, the Fire Control team on *Princeton* saw an opportunity to use those assets and eyeballs to help solve the AAV mystery.

At the same time FASTEAGLE flight was wrapping up its scheduled training, the CO of Marine Hornet squadron VMFA-232, Lieutenant Colonel "Cheeks" Kurth, was completing a post-maintenance check flight not too far away. He was the first fast-mover contacted by *Princeton*. The communication was strange and intriguing. He was asked to investigate an unidentified airborne contact. This wasn't a terribly unusual request while a Strike Group was in transit or deployed far from home waters, but it was more than a little strange practically in sight of the San Diego Home port. To add to the unusual communications, he was queried as to what ordinance he had on board.

"None."

While *Princeton* was communicating with Cheeks, they were also attempting to hand off their AAV contact to the Air Wing's E-2C Hawkeye, also airborne at the time. The crew from VAW-117 had been providing intercept control for FASTEAGLE flight during their training. *Princeton* now wanted the E-2 to guide the Super Hornets to an intercept with the AAV contact, currently hovering over their favorite spot, but now about 20,000 feet over the ocean.

The AAV returns had not been strong enough to show up on the E-2's broad sweep, but once they focused their radar on the coordinates *Princeton* directed them towards, they managed a faint contact. The radar returns from the contact weren't enough to generate a target track however, so *Princeton* cut the E-2 from control and contacted FASTEAGLE directly. Though he was unable to lock up the AAVs, the E-2 controller remained on frequency and listened to the entire ensuing evolution.

As Cheeks approached the spot he was being vectored to, *Princeton* advised him to stay above 10K as the section of Super Hornets were approaching the target. His radar picked up the FASTEAGLE two-ship, but no other contacts. A moment later *Princeton* directed him to "skip it" and return to the ship. Since he was so close, he decided to fly over the action and sneak a peek.

The sea was calm, almost glassy smooth and it was late morning on a beautiful SoCal day. Perfect conditions. As Cheeks flew over the spot he saw a disturbance on the surface of the ocean. A round section of turbulent water about 50-100 meters in diameter. It was the only area and type of what he called, "whitewater" describing that it looked as if there was something below the surface like a shoal or what he'd heard a ship sinking rapidly would look like.

He overflew the disturbance and circled back in the direction of *Nimitz* without ever seeing what caused the water to froth. As he turned away, which happened to be the moment the Super Hornets converged on the location, the whitewater cleared and the ocean surface returned to its smooth state. The spot of the previous disturbance was completely indiscernible.

A few thousand feet below him, Dave had gone though the similar surreal experience of being asked by *Princeton* if the FASTEAGLE jets were carrying any ordnance. Dave's baffled WSO reported that all they had were two captive-carry training missiles. They were given bearing and range vectors to a set of coordinates and told to investigate an unknown aerial contact over that spot.

With no further information on the contact, they descended to the low 20s and scanned with radar, picking nothing up. Neither plane in this flight was carrying a FLIR pod, which limited the type of sensors they could search with; but, both planes were brand new–in Dave's words, "They still had that new car smell." The APG-73 radars were both new and had performed perfectly during the previous hour's training. Yet the screens from both planes were clean all the way to the point *Princeton* called "Merge plot!"

All four aircrew were eyes out from this point forward. The first unusual indication Dave picked up was the area of whitewater on the surface that Cheeks was looking at over his shoulder as he flew away. He remembers thinking it was about the size of a 737 and maybe the contact they had been vectored on had been an airliner that had just crashed. He maneuvered his F-18 lower to get a better look. As he was descending through about 20K he was startled by the sight of a white object that was moving about just over the frothing water. It was all white, featureless, oblong and making minor lateral movements while staying at a consistent low altitude over the disk of turbulent water.

Dave put FASTEAGLE 02 into high cover passing through about 15K and she and her WSO witnessed the events from a perfect vantage point. Dave continued his dive lower towards the object, now also attempting to slave the radar through his HMCS to achieve a short range lock. No luck. His intention was to pass the object close aboard at about 350 kts, but as he got closer he noticed that the AAV had oriented one of its skinny ends towards him, as if, in his words, "It had just noticed us" and it was now pointing at them.

The AAV then began to rise from its hover. The object, which he would later describe as a while tic-tac, rose in right 2-circle flow about a mile cross-circle from Dave's Hornet. BFM instincts took over and Dave dug nose-low to cut across the bottom of the circle. As he was looking at the AAV and pulling his nose up to bear, the tried again to slave his radar via the HMCS. Again, the APG-73 was unable to lock on the white, fighter-sized flying object now just a couple of thousand feet away and closing.

All through these maneuvers, Dave's WSO was broadcasting the real-time events of the intercept to *Princeton*. The radar operators in the E-2 listened on the secure net to what sounded like one of the hundreds of intercepts they had heard over the years. With the notable exception that the aircrew's voices were more stressed and the verbiage to ID the target was unlike anything they had heard before.

A Super Hornet from VFA-41 'Black Aces' sitting on the ramp at NAS Fallon.

In his debrief comments, Dave, his WSO and the two other crews stated the object had initially been hovering like a Harrier. They described it as uniformly white, about 46 feet long (roughly fighter-sized), having a discernible midline horizontal axis (like a fuselage) but having no visible windows, nacelles, wings or propulsion systems.

As Dave was pulling for nose-on and trying to get a dogfight lock with his radar, the AAV tightened its turn, "lift vector on, then aft" as Dave described, passed behind his tail and accelerated away at multi-Mach speed. Dave immediately queried *Princeton* for a snap-vector but the SPY-1 radar had also lost the contact. The first calls from *Princeton* were "picture clean." A few moments later *Princeton* came back with, "You're not going to believe this, it's at your CAP." Princeton had picked up the AAV hovering at 24K at the assigned Lat/Long Dave had used earlier during training as his orbiting point.

Though low on gas, the FASTEAGLE flight swung through the CAP position to try and pick up the AAV again. They saw nothing more on their way back to *Nimitz*. Even the 100 meter circle of turbulent ocean water had disappeared. That spot was now indistinguishable from the rest of the sea's surface. Asked later, Dave reported that he had not seen anything on or below the surface of the ocean that may have caused the turbulent circle of water. It had existed when they had first visually acquired the tic-tac, then was gone when they circled back a few minutes later.

Back on *Nimitz* after recovery, the four crew headed down to the paraloft to remove their gear. The next four crews from VFA-41 were getting dressed for their training mission to the same area, using the same assigned Lat/Longs as CAP points. Dave and his crewmembers passed on what they had seen to the new guys and reminded them to get tape if they could.

By the time the new crew launched, rendezvoused and checked in with the E-2 for control, it was early afternoon; 1500. The planes separated, with one heading to that same southern CAP location. They were cruising along at 20K and 300kts, max endurance. Again, the jet, radar and also, this time, the FLIR were spanking new and operating perfectly.

The WSO first picked up a contact on the radar around 30nm away while it was operating in the RWS scan mode. He checked the coordinates and it was indeed hovering at their precise CAP point. He attempted several STT locks, to no avail. Later, in the debrief, he explained that he had multiple telltale cues of EA.

The target aspect on the track file was turning through 360 degrees along with some other distinct jamming indications. In the less precise scan mode, the return indicated that the object was, in the WSO's words, "A few thousand feet below us. Around 15-20K– but hovering stationary." The only movement was generated by the closure of the fighter to the CAP location.

The WSO resorted to the FLIR pod on board, slaving it to the weak track the RWS mode had been able to generate. He recorded the following sequence to the on-board recorder. Using the IR mode, he was able to lock onto the AAV. It showed up on his screen and on tape as a white object in a black background hovering with no known means.

The IR camera did not detect roiling hot gasses blasting from below the AAV, as they would with a Harrier or a helicopter. It was simply hanging in midair. He switched to the TV mode and was able to again lock the FLIR onto the object while still trying, with no luck, to get a STT track on the radar. As he watched it, the AAV moved out of his screen to the left so suddenly it almost seemed to disappear. On the tape, when it is slowed down, the object accelerates out of the field of view with shocking speed. The WSO was not able to reacquire the AAV either in RWS or with the FLIR.

Somehow the tape made its way to YouTube. A few years after the incident, when first telling me the story, Dave pointed me to the link. It was unremarkable without the background information. But folded into context it was amazing, especially the slow-mo of the dot accelerating out of screen. For years I told the story to friends and showed them the video as punctuation.

However last month when I called Dave to refresh my memory before sitting down to write this bizarre encounter, he informed me that the video had been removed from YouTube. He told me that a government agency with a three letter identifier had recently conducted an investigation into the AAVs and had exhaustively interviewed all parties involved.

All of the seven flight crew, including 6 aircrew from VFA-41 and Cheeks from VMFA-232. The Fire Control Officer and Senior Chief from *Princeton*, and the radar operator on the E-2. They even queried the crew of the USS Louisville, a *Los Angeles*-class Fast-Attack submarine that was in the area as part of the *Nimitz* Carrier Strike Group who reported there were no unidentified sonar contacts or strange underwater noises on that day.

I'm not sure what to make of these events. I've loved the story since first listening because it is so crazy. I had never given aliens or UFOs much thought. It was a waste of my CPU power to mull a question like that. If they wanted to make contact, they would. If they wanted to observe from a distance, then they would be impossible to discern given the assumed high technology required to visit.

But now I was faced with credible witnesses. Not crackpots wearing foil hats but people I knew and people who were from my world. There were multiple, corroborating platforms that detected the AAVs using varied sensors. And, of course, the eight eyeballs that actually got a visual on the white tic-tac as Dave maneuvered to merge with it. He doesn't have to be a stranger to you either. Watch him on the PBS series, Carrier, and generate your own opinion of his professionalism and sanity.

Then send me your best design for an aluminum foil hat…

About the Author

Paco Chierici flew A-6E Intruders and F-14A Tomcats during his 10 year active duty career. He flew the F-5 Tiger II for a further 10 years as a Bandit concurrent with his employment as a commercial pilot. Paco is currently a 737 captain. Paco is also the creator and producer of the award winning naval aviation documentary Speed and Angels. Paco has written articles for various international and domestic magazines as well as regular contributions to FighterSweep. He is currently revising the first draft of his debut novel, a naval aviation thriller. Paco has the standard panoply of medals and ribbons but his proudest accomplishment is the Top Nugget award for landing grades from his first deployment.

https://fightersweep.com/1460/x-files-edition/

2017 September 7, "2004 USS *Nimitz* Pilot Report"

This document was first released on the *To The Stars Academy* (TTSA) web site.[6] The document is based on an interview with the pilot who was a Lieutenant and was CDR Fravor's Wingman. The witness, a junior pilot compared to Fravor and Slaight, describes the two FastEagles' encounter with the "Tic-Tac". In this document "Source" is Fravor's Wingman-Pilot, OK-1 is LCDR Slaight, OK-2 is CDR Fravor, OK-3 is Fravor's WSO, OK-4 is the pilot of the later flight that takes the FLIR video, and OK-5 is the WSO of OK-4. The main value of the document is additional confirmation of the activities of the FastEagles that day and as a primary witness to Fravor's engagement of the "Tic-Tac". This pilot also viewed the FLIR video.

The identity of the "Source" of this document as well as the identities of OK-3, OK-4, OK-5, and OK-6 are known. The document referenced is redacted but an unreadacted copy was leaked to the internet on August 6, 2018. The source of the inadvertent leak was a member of the TTSA group. SCU has a copy of this document. These ex-Navy pilots wish to remain anonymous and SCU will honor their right to privacy.

The document as relayed by the Source has several discrepancies as would be expected from memory of a 14-year old event: the radio operator that contacted the pilots was not female but a male by the name of Don Oktabinski; the aircraft did not proceed east to their contact but to the west; and the statement that CDR Fravor made a copy of the gun tape is not correct. Nonetheless, the bulk of this witness's statements match well with what has been relayed by the senior pilots involved, CDR Fravor and LCDR Slaight.[7,8]

6 "2004 USS Nimitz Pilot Report" from *"Two The Stars Academy"*. https://coi.tothestarsacademy.com/nimitz-report Accessed July 05, 2018.

7 Jim Slaight, interview by retired Navy Captain Tim Thompson, telephone interview, February 19, 2018. (Some information unavailable on the recording due to a technical problem in the first 10 minutes of the interview.) Interview available at www.explorescu.org.

8 David Fravor, interview by Linda Moulton Howe. KGRA radio, June 28, 2018.

2004 USS NIMITZ PILOT REPORT (/nimitz-report/2017/12/13/xyefay39a1nmjp6kegxwvxz75topzg

This report was taken to obtain additional information regarding the 2004 USS Nimitz incident and the possible encounter of an unidentified aerial system while US fighter pilots were on an official training mission off the coast of San Diego. All personally identifiable information has been removed to protect sources and methods.

The "Source" of this report is a highly decorated and recognized expert in aviation and Navy combat flight operations with Top Secret clearance. There are also six "others knowledgable (OK)" that are referenced as being aware of the incident. OK-4 and OK-5, who were assigned to the follow-on cycle from the USS Nimitz on the same day, after the Source's encounter, reportedly saw the same object and were able to obtain brief FLIR footage. TTS Academy has obtained this footage, entitled "FLIR1," which you can watch here (/2004-nimitz-flir1-video) after reading this report.

Report Number: [redacted]

DATE/TIME OF INCIDENT: 14 November 2004, from approximately 1200 to 1300, EST (Field Comment – Source originally indicated a time period from approximately 1300 hours to 1400 hours, but later clarified that the precise time to be approximately 1200 as the mission was the first sortie from the aircraft carrier that day)

LOCATION OF INCIDENT: [redacted]

DATE/TIME OF REPORT: 7 September 2017, from approximately 1815 to 2130 hours.

LOCATION INFORMATION PROVIDED: [redacted]

SOURCE INFORMATION

[redacted]

OTHERS KNOWLEDGEABLE 1 (OK-1)

[redacted]

OTHERS KNOWLEDGEABLE 2 (OK-2)

[redacted]

OTHERS KNOWLEDGEABLE 3 (OK-3)

[redacted]

OTHERS KNOWLEDGEABLE 4 (OK-4)

[redacted]

OTHERS KNOWLEDGEABLE 5 (OK-5)

[redacted]

OTHERS KNOWLEDGEABLE 6 (OK-6)

[redacted]

NARRATIVE

On 7 September, 2017, at approximately 1815 hours, EST, Source was met in the [redacted]

(Field Comment - The meeting was pre- coordinated two days prior.) The purpose of the meeting was to obtain additional information regarding an incident Source encountered in 2004, involving a possible Unidentified Aerial System (UAS), while on an official training mission. (Field Comment - Source is an O-4, Active Duty Officer with the U.S. Navy and has maintained a Top Secret security clearance for the duration of their career. Source is also highly decorated and a recognized expert in aviation and Navy combat flight operations.)

In early July 2004, Source received their first military assignment as a pilot for the U.S. Navy's F-18 Super Hornet. Source conducted joint exercises as part of [redacted] at Eielson, Air Force Base, Denali, Alaska until August, 2004. After completing their initial training period, Source was assigned in October 2004 to support the U.S.S. Nimitz Carrier Battle Group, in San Diego, CA.

On 14 November 2004, the U.S.S. Nimitz Battle Group was conducting a training mission in U.S. Navy Operating Area [redacted] approximately 80 nautical miles (NM) west from the coast of San Diego. The purpose of the training was to practice carrier operations, launch and recovery, flight safety drills, and battle scenarios. The weather conditions for that day were exceptional with no cloud cover and a calm sea state. Visibility was unrestricted and skies were blue. Source, OK-1, OK-2, and OK-3 were identified as the first cycle of F-18s that day and as such, were designated first to be launched. OK-6 was located approximately 120 NM from the training location and was assigned as the radar operator for the E-2 Hawkeye radar aircraft serving as air traffic control.

At approximately 1200 hours EST, Source and OK-1 were launched from the U.S.S. Nimitz. Source was piloting the aircraft while OK-1 was

assigned to the back seat as the designated Weapons Systems Officer (WSO). Upon launching, Source and OK-1 immediately rendezvoused with OK-2 and OK-3 and proceeded together to their designated training area. Source and OK-1 served as "wing" for OK-2 and OK-3. Upon reaching their designated training area, Source, OK-1, OK-2, and OK-3 engaged in "Red Air vs Blue Air" combat routines with OK-6 serving as air traffic controller. At approximately 1230 hours, during a mission "reset", an unidentified female voice from U.S.S. Princeton Missile Cruiser, CVL-23 interrupted their combat routines to announce an immediate :-vectoring. (Source Cc - ment – The female voic ɔ was that or a young woman and there was a sense of urgency in her tone.) Upon hearing the female controller's command, OK-2 realized the re-vectoring was in the opposite direction of the U.S.S. Nimitz. Although Source, OK-1, OK-2, and OK-3 were not particularly alarmed over the request, due to concerns of limited fuel, OK-2 requested another group of F-18s respond to the call. At this time, the female controller's voice became more directive in tone and ordered the two F-18s to the new operating area. (Source Comment – I became nervous when I heard the female controller for the second time. I could sense concern and urgency in her voice and I realized this was not a drill and that this was for real.)

Both F-18s assumed combat formation en route to the new location. Source and OK-1's aircraft was approximately .3 NM behind OK-2 and OK-3's aircraft and both F-18s proceeded east at an altitude of approximately 10,000 to 20,000 feet towards San Clemente Island. Source inquired to OK-1, "What do you think it is?" to which OK-1 responded, "It might be drug runners." Source then remarked to OK-1, "Bad ass!" (Source Comment – As a new pilot, the idea that we were being asked to intercept drug runners was exciting to me. I fully expected to see a low flying Cessna or helicopter coming from Mexico.)

As both F-18s approached the new operating area, the female controller announced, "Approaching merge plot". At this time, the female controller asked, "What is your load-out?" (Field Comment – The request for load-out refers to the quantity and type of ordinance the aircraft is armed with.) OK-2 responded to the female controller, "None, practice rounds only." (Source Comment – At this point I was frightened due to the fact that we were being asked if we had any weapons available. I became

concerned because we were in a situation that we may have to use our aircraft itself as weapon. I was thinking to myself that this could be another September 11th–style attack that we were being asked to intercept.) As both F-18s approached the target location, the female controller began to count down the anticipated intercept time, "Two minutes to merge plot," etc. Finally, the female controller indicated "merge plot" and announced, "You should have visual."

As Source looked down at the ocean from the cockpit, they noticed a small patch of water, approximately 60 feet wide by 80 feet in length that appeared choppy and turbulent amongst a calm sea. The disturbance was unusual in that there was no apparent cause. The area was generally the shape of an oval and appeared to be "roiling". Towards the center of the disturbance, the water appeared lighter color and smooth again as if an unknown object had recently submerged beneath the surface. Source opined they thought they were witnessing a crash, perhaps that of an unidentified aircraft, as they made the mental transition from intercept mission to search and rescue.

Approximately two seconds after noticing the unusual water disturbance, Source described witnessing a small, unidentified aerial system (UAS) cross over the turbulent area of water. The unidentified object was elongated, approximately 30 to 40 feet in length, white in color, and described resembling a "tic-tac" candy mint. The object had no distinguishable control surfaces, was uniformly smooth, with no windows, doors, or lights visible. The object was opaque with a solid, definable edge. The object did not appear to emit any noticeable light or radiation from its surface nor did it have any noticeable exhaust trail. The object traveled from left to right over the disturbed water at an altitude of approximately 1000 to 3000 feet. The object appeared to travel at a speed of approximately 300 to 500 knots in a straight line. Source was unaware of the origin of the object or its destination but believed the disturbed water below could have been related in some way to the object. Source immediately became alarmed and initially thought that perhaps this was an unannounced, classified missile test by a U.S. Navy submarine. As such, they were concerned that the object could pose a threat, especially given the fact both F-18s were unarmed.

Upon noticing the object, OK-2 indicated over the radio, "I'm in!" in which

Source replied, "I have high cover". (Source Comment – I was scared because I never encountered a situation like this before and I felt that the object had yet to be identified and we were about to pursue it.) OK-2 conducted an aggressive banking maneuver and dropped their aircraft while turning at the same time in order to catch up with the object. As OK-2 conducted the maneuver, Source noticed the object immediately respond to OK-2's change of direction. (Source Comment – The UFO turned on [redacted] as if it knew or somehow anticipated what they were going to do and even pointed towards them! I was worried for them because whatever this was, [redacted] didn't stand a chance against it! There is no way any aircraft or missile that I know of could conduct maneuvers like what we saw that day.) Source indicated that the object began to make deliberate changes in its altitude, attitude, and angle in response to OK-2's aircraft in a manner that seemed to defy the laws of flight physics. The object instantaneously - but in a controlled, intelligent manner - "tumbled" into nonsensical angles that made any engagement by the F-18 impossible. OK-2 and OK-3 were approximately 1000 to 3000 feet from the object when the object turned and "pointed at them." OK-2 conducted one or two evasive turns in their F-18 but the object appeared to maintain positive and dominant control of the airspace.

At no time during the incident did either F-18 have radar contact with the object; however, OK-6 and the female air controller confirmed radar contact. After approximately 8 to 10 seconds, both Source and OK-2 lost visual contact with the object. When Source looked back at the area where the ocean was disturbed, the water was again smooth and calm with no signs of anything submerging. (Field Comment – Source used a pen to describe how the object behaved when OK-2 and OK-3 approached it. Source also drew a picture of the incident, see attachment.)

Upon losing visual contact with the object, both F-18s were low on fuel and returned successfully to the U.S.S. Nimitz without further incident. Upon recovery of both aircraft, Source, OK-1, OK-2, and OK-3 arrived for their routine intelligence debriefing only to find that no debriefing official was available. Furthermore, closed circuit television on-board the ship had movies involving aliens and paranormal activities playing. (Field

Comment – Source was furious that colleagues on the ship were not taking the incident seriously and were playing the movies "Signs", "Men in Black", and "X-Files". Source believed it was a flight safety issue at a minimum, especially if they were deliberately vectored to a testing location of a blue-force weapon system.)

After not receiving an intelligence debriefing, Source, OK-1, OK-2, and OK-3 entered the Ready Room, where OK-2 slammed closed and secured both hatchways and began making an electronic copy of the gun tape from his F-18. During this time, Source made detailed written notes of the incident on available printer paper and mailed them to their Aunt with the notice "keep this because this is important stuff about some real X-files shit." (Field Comment – Source is unaware if copies of the gun tapes still exist but maintains an original copy of their notes and log book entry.)

According to Source, OK-4 and OK-5 also encountered the same object later the same day. OK-4 and OK-5 were assigned to the follow-on cycle from the U.S.S. Nimitz and obtained brief FLIR footage of the incident. When OK-4 and OK-5 later compared the video, Source identified the object affirmatively as being the same one they saw earlier. (Field Comment - The FLIR footage displays what appears to be a white "tic-tac" shaped object suddenly darting off the screen at high velocity when it is approached.)

No negative physiological or mental issues were experienced during the incident or afterwards. Source indicated they experienced some time dilation during the incident but believes it was due to their heightened state of excitement and adrenaline and not a result of their interaction with the object.

PARTICIPANTS (4): [redacted]

EXPENDITURES: [redacted]

ACTIONS TAKEN: [redacted]

REPORT PREPARED BY: [redacted]

2018 May 18, "Executive Summary"

This redacted document was first published by George Knapp on KLAS-TV in Las Vegas. The document was not dated as to when it was written but it is suspected to have been developed under the auspices of a new government organization initiated by U.S Senator Harry Reid in 2007 to investigate aerospace threats under the Department of Defense and known as AATIP (Advanced Aerospace Threat and Identification Program).[9] The year 2007 is mentioned on the top of page 4 of the report, so it is likely this report was generated in 2008 or later. David Fravor states that it was originally written in 2009 and that it is an unofficial report.[10] It does not seem to be the document that Paco Chierici was provided to write his March 2015 blog article due to lack of similarities in any of the wording and minor discrepancies between the two reports. Based on the wording and phrasing used in the report, as a minimum it appears that the report is based on original interviews or earlier documents of those interviews. The individuals that appear to be the source of information for the report based solely on how the report is worded are: the Firecontrol Senior Chief of the *Princeton*, the Air Control Officer of the E-2 Hawkeye (VAW-117), the pilots (Fravor and wingman-pilot) and WSOs (Slaight and Fravor's WSO) of the initial VFA-41 flight, Lt. Col. Kurth, the pilot of the E2-Hawkeye airborne early warning aircraft, and the pilot and WSO of the plane that took the FLIR video.[11]

The Executive Summary report has been reviewed and the bulk of the summary match what has been told by other witnesses. David Fravor stated that this report had a few errors but was the most accurate summary of the events that he has seen.[12]

Under conditions of confidentiality to not reveal identifying information of personnel not otherwise in the public record, the SCU has obtained an un-redacted copy of the Executive Summary and have verified to our satisfaction that the report is a legitimate document that is based on the actual interview of the pilots and sailors involved. We made this determination by cross-checking the unredacted names against service member ranks and names of those who served during that time period along with comparisons of statements in the report against information that SCU obtained from witnesses not a part of this original Executive Summary.

A few comments should be made regarding errors or discrepancies within this report because of so much valuable information that contained in this report. These are the most noteworthy discrepancies:

1. The AAV altitude is listed as "60,000 feet and descending to 50 feet in seconds" on pages 1 and 3, while other reports have indicated either 80,000 or 80,000+ feet.
2. A comment is made on pages 1 and 6 that the AAV demonstrated the ability to "cloak". SCU has not found any clear evidence of this in any other reports or witness testimony. There is also nothing in the Executive Summary that support this conclusion. This seems to be an unsupported conclusion drawn by the author of the report.

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9 Cooper, Blumenthal, Keane, "Glowing Auras and 'Black Money': The Pentagon's Mysterious U.F.O. Program," *New York Times*, December 16, 2017, front page.

10 David Fravor, interview by Linda Moulton Howe. KGRA radio, June 28, 2018.

11 Author Unknown, "Executive Summary." Released by George Knapp, *LasVegasNow*, May 18, 2018.Origination date of report estimated as 2008 or 2009.

12 David Fravor, interview by Jeremy Corbell, *Jeremy Corbell Radio Show*, internet radio, June 23, 2018.

3. A comment is also made on page 1 that “The AAV possibly demonstrated a highly advanced capability to operate undersea completely undetectable by our most advanced sensors.” The SCU found no evidence of this within the Executive Report or from any other witness or document.
4. This report states on page 3 that “...the AAV exhibited Ballistic Missile Characteristics in reference to its appearance, velocity, and indications on radar.” The SCU believes the appearance and movements described by the pilots and the slow/extreme speeds on radar are not indicative of a ballistic missile. None of the other documentation supports that the object had a ballistic missile characteristic.
5. The latitude and longitude coordinates of the AAV that are noted on page 5 of the report would place the AAV slightly to the north and to the east of the *Nimitz*. This does not match other information we have obtained which places the AAV either to the south or southwest of the *Nimitz*.

The report also references Wikipedia as a source for some of the characteristics of the aircraft and radar. Quoting Wikipedia doesn’t mean the information is incorrect, and in this case it is correct, but that is somewhat of a surprise and is not good practice. Nonetheless, this paper has a lot of useful information that can be used in connection with witness statements and other reports.

Executive Summary

During the period of approximately 10-16 November 2004, the Nimitz Carrier Strike Group (CSG) was operating off the western coast of the United States in preparation for their deployment to the Arabian Sea. The USS Princeton on several occasions detected multiple Anomalous Aerial Vehicles (AAVs) operating in and around the vicinity of the CSG. The AAVs would descend "very rapidly" from approximately 60,000 feet down to approximately 50 feet in a matter of seconds. They would then hover or stay stationary on the radar for a short time and depart at high velocities and turn rates. On 14 November after again detecting the AAV, the USS Princeton took the opportunity of having a flight of two F/A-18Fs returning from a training mission to further investigate the AAV. The USS Princeton took over control of the F/A-18s from the E-2C Airborne Early Warning aircraft and vectored in the F/A-18s for intercept leading to visual contact approximately one mile away from the AAV, which was reported to be "an elongated egg or a 'Tic Tac' shape with a discernable midline horizontal axis". It was "solid white, smooth, with no edges. It was "uniformly colored with no nacelles, pylons, or wings." It was approximately 46 feet in length. The F/A-18Fs radar could not obtain a 'lock' on the AAV; however it could be tracked while stationary and at slower speeds with the Forward Looking Infrared (FLIR). The AAV did take evasive actions upon intercept by the F/A-18 demonstrating an advanced acceleration (G), aerodynamic, and propulsion capability. The AAV did not take any offensive action against the CSG; however, given its ability to operate unchallenged in close vicinity to the CSG it demonstrated the potential to conduct undetected reconnaissance leaving the CSG with a limited ability to detect, track, and/or engage the AAV.

Key Assessments

- The Anomalous Aerial Vehicle (AAV) was no known aircraft or air vehicle currently in the inventory of the United States or any foreign nation.
- The AAV exhibited advanced low observable characteristics at multiple radar bands rendering US radar based engagement capabilities ineffective.
- The AAV exhibited advanced aerodynamic performance with no visible control surfaces and no visible means to generate lift.
- The AAV exhibited advanced propulsion capability by demonstrating the ability to remain stationary with little to no variation in altitude transitioning to horizontal and/or vertical velocities far greater than any known aerial vehicle with little to no visible signature.
- The AAV possibly demonstrated the ability to 'cloak' or become invisible to the human eye or human observation.
- The AAV possibly demonstrated a highly advanced capability to operate undersea completely undetectable by our most advanced sensors.

Nimitz Carrier Strike Group (CSG-11)

The following events took place during deployment preparation of the Nimitz Carrier Strike Group (CSG) during the months of November and December 2004 in the SOCAL Operating Area off the coast of California and Mexico. The CSG was comprised of the following ships and submarine: USS Nimitz (CVN-68), USS Princeton (CG-59), USS Chafee (DDG-90), USS Higgins (DDG-76), and the USS Louisville (SSN-724). The Nimitz was home to Carrier Air Wing 11 (CVW-11) comprised of VMFA-232 (USMC F/A-18C), VFA-14 (F/A-18E), VFA-41 (F/A-18F), VFA-94 (F/A-18C), VAQ-135 (EA-6B), VAW-117 (E-2C), HS-6 (H-60), and VRC-30 Det 3 (C-2A). The only participants in the events surrounding the detection and intercept of the AAV are the USS Princeton, VAW-117, VMFA-232, and VFA-41.

USS Princeton (CG-59)

USS Princeton (CG-59) is a Ticonderoga-class cruiser guided-missile cruiser serving in the United States Navy. Armed with naval guns and anti-air, anti-surface, and anti-submarine missiles, plus other weapons, she is equipped for surface-to-air, surface-to-surface, and anti-submarine warfare. She also is the home of two Seahawk LAMPS III helicopters. The Princeton was the first Ticonderoga-class cruiser to carry the upgraded AN/SPY-1B radar system. [1]

AN/SPY-1

The AN/SPY-1 is an advanced, automatic detect and track, multifunctional phased-array radar. This high-powered (4 MW) radar is able to perform search, track and missile guidance functions simultaneously with a capability of over 100 targets. It is a multi-function phased-array radar capable of search, automatic detection, transition to track, tracking of air and surface targets, and missile engagement support. The computer-controlled phased array can concentrate energy where it is needed. The operator can boost the range and resolution in a particular direction without blinding the ship to threats from another side. The four fixed arrays of "SPY" send out beams of electromagnetic energy in all directions simultaneously, continuously providing a search and tracking capability for hundreds of target at the same time. The unique SPY-1 multi-function phased array radar system replaces numerous conventional independent sensors and is designed for the most challenging environments and missions, including long-range volume search, fire control-quality tracking and ballistic missile defense. SPY-1's S-band frequency range permits optimum performance in all-weather operations and the ability to perform all major radar functions while simultaneously providing proven S-band

[1] http://en.wikipedia.org/wiki/USS_Princeton_(CG-59)

mid-course guidance for semi-active missiles, such as the Evolved Sea Sparrow Missile, SM-2 and SM-3.[7]

Anomalous Aerial Vehicle (AAV) Detection

The USS Princeton was part of the Nimitz Carrier Battle Group, during the period of approximately 10-16 November 2004 while completing Tailored Ships Training Availability (TSTA) in preparation for their deployment to the Arabian Sea. During COMPTUEX, which is intermediate level training for elements of the Nimitz Carrier Strike Group (CSG) prior to the deployment, the Princeton on several occasions detected multiple AAVs operating in and around the vicinity of the location shown in Figure 1. The Fire Control Officer, [redacted], and his technician, FCCS [redacted], initially thought the contacts were part of the COMPTUEX exercise. According to Senior Chief [redacted], the AAVs would descend from a very high altitude into the scan volume of the AN/SPY-1 at a high velocity. The top of the scan volume would put the AAVs at higher than 60,000 feet. The AAVs would descend "very rapidly" from approximately 60,000 feet down to approximately 50 feet in a matter of seconds. They would then hover for a short time and depart at high velocities and at high rates demonstrating an advanced acceleration (g) capability. Senior Chief [redacted] added that based on his experience, which is 17 years as a Fire Control on Aegis cruisers, the AAV exhibited Ballistic Missile Characteristics in reference to its appearance, velocity, and indications on the radar. Since the radar was in the mode to handle Air Intercept of conventional aircraft it never obtained an accurate track of the AAVs and was quickly "dropped" by the radar meaning it was eliminated by the computer to reduce the amount of clutter on the radar, as any other false target is handled. If the radar were set up in a mode for Ballistic Missile tracking they likely would have had the capability to track the AAV. They were detected three separate times during the week operating off the western coast of the United States and Mexico. The Tactical Air Officer onboard the Princeton could not identify the radar contact and given the high speed and altitude was perplexed. The Meteorological Officer (METOC) onboard the Princeton provided a briefing that discussed a high altitude weather phenomena where ice crystals can form and be detected by the AN/SPY-1. On 14 November 2004, after again detecting an AAV took the opportunity of two F/A-18s airborne in the vicinity to task them for airborne reconnaissance of the AAV.

E-2C Hawkeye

The Grumman E-2 Hawkeye is an American all-weather, aircraft carrier-based tactical Airborne Early Warning (AEW) aircraft. The twin turboprop aircraft was designed and developed in the 1950s by Grumman for the United States Navy as a replacement for the E-1 Tracer. The United States Navy aircraft has been

[7] http://www.globalsecurity.org/military/systems/ship/systems/an-spy-1.htm

progressively updated with the latest variant, the E-2D, first flying in 2007. The Hawkeye provides all-weather airborne early warning and command and control functions for the carrier battle group. Additional missions include surface surveillance coordination, strike and interceptor control, search and rescue guidance and communications relay. An integral component of the carrier air wing, the E-2C uses computerized sensors to provide early warning, threat analysis and control of counteraction against air and surface targets. It is a high-wing aircraft with stacked antennae elements contained in a 24-foot (7.3 m) rotating dome above the fuselage.[3]

APS-145 Radar

The AN/APS-145 Airborne Surveillance Radar is the most reliable, cost-effective, high-power advanced early warning radar available. This sophisticated system is the latest in a long line of airborne early warning systems from Lockheed Martin. Over 500 E-2C's have been completing nearly 100 percent of their missions, day in and day out, for more than two decades. The AN/APS-145 carries on the tradition, adding several significant features found in no other airborne surveillance radar.[4]

- High-power UHF Doppler radar that utilizes a rotating antenna within a circular radome mounted atop the aircraft.
- Range is greater than any airborne surveillance radar in the world
- Will monitor and track more than 20,000 targets simultaneously
- Sophisticated jam avoidance and ECCM techniques assure unparalleled performance in dense EMI and jamming environments
- Adaptive signal processing provides superior target detection and tracking in complex target environments
- Adapts to dynamic operating conditions automatically over varied terrain with no operator intervention

Anomalous Aerial Vehicle (AAV) Detection

On 14 November 2004, LT [redacted], E-2C NFO, was in VAW-117 and airborne during the contact. Additionally, he was the squadron's avionics division officer and would be responsible for any and all RADAR recordings, etc... Unfortunately in the E-2C, it is not routine to have any kind of recording engaged unless it is pre coordinated which is typically only used during airborne testing of new capabilities, etc... There was no recording of this event.

LT [redacted] was flying as the Air Control Officer (ACO) on the mission where the AAV was observed by the flight of F/A-18s. He was controlling the F/A-18s that were

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[3] http://en.wikipedia.org/wiki/E-2C

[4] http://www.lockheedmartin.com/products/APS145/index.html

flying as part of their work ups prior to deployment. He did not see the object on his radar (raw video) until the USS Princeton directed the contact and gave the E-2 the general direction to steer its radar. LT [redacted] initially thought the return was a wave because in a high sea state (4 or greater) the E-2C RADAR can actually detect the waves. Additionally, the target was so low and the return was so faint that without the inputs from the USS Princeton the return would have been missed/ignored. This was even more interesting because the USS Princeton initially reported the target to be at 15,000 – 20,000 feet MSL. Due to the intermittent radar return from the target, velocity was unavailable.

Although initially requested by the USS Princeton to attempt a track of the object, the USS Princeton took control of the F/A-18s and the E-2C remained Airborne but was no longer involved in the contact or control. The fighters were being controlled by the USS Princeton for the duration of the contact and intercept. The E-2 aircrew on board monitored the Air Defense Control (ADC) Net during the contact puzzled while listening to all of the merge calls coming over the net (typical of what you would hear during the Airborne Intercept of an enemy fighter). It was obvious there was something out there and the fighters were taking it seriously.

F/A-18 Airborne Reconnaissance of the AAV

This section provides the debrief of the F/A-18 pilots and weapon system operators (WSOs) from VFA-41 that were able to get both a visual and sensor contact with the AAV on 14 November 2004 at approximately N31 20' W117 10' about 70nm south of the U.S./Mexico Border 30 nm off the Baja Mexico Coast (Figure 1). Additionally the statement provided by the Commanding Officer (CO) of VMFA-232.

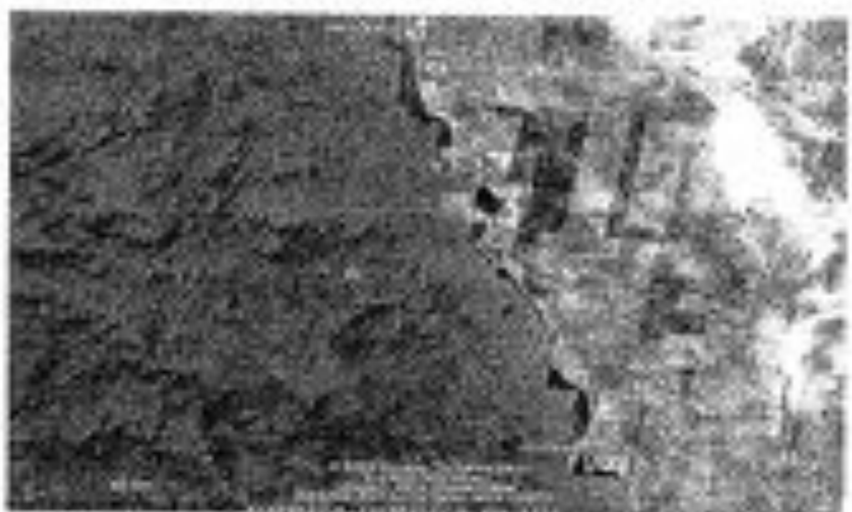


Figure 1. Location of the AAV during the F/A-18 intercept

F/A-18C Tracking of the Water Disturbance

Pilot: Lt Col [redacted] USMC

Lt. Col [redacted], Commanding Officer VMFA-232, was flying a single-seat F/A-18C that launched from the USS Nimitz at approximately 1030L to conduct a Functional Check Flight of an aircraft that had recently completed significant maintenance. He noted the weather that day was blue skies, no clouds, and unlimited visibility. After 30 minutes into his flight he received a radio call from his air controller asking him to investigate an unidentified airborne contact. This was not a standard request. Additionally the controller asked if he had ordnance onboard, which was odd since no controller had ever asked that question during a situation of identifying an unknown contact over U.S. or International territory. He responded that he had no ordnance onboard. The controller provided vectors to the vicinity of figure 1. The object was reported to be at "slow speed and low altitude". While enroute at approximately 250 knots indicated/400 knots groundspeed at medium altitude (15-25,000 feet), he gained radar contact of what he believed to be two F/A-18Fs that were approaching the AAV from the west at low altitude (500-5,000 feet). There was no other traffic on the radar. The controller informed him to remain above 10,000 feet, as there was other fighter traffic at low altitude investigating the AAV. As he approached approximately 15nm from the AAV descending through approximately 15,000 feet, he could see a water disturbance in the ocean surface. He recalled that the sea state was low (calm). At approximately 5-10 nm away from the AAV, the controller told him to "skip it" and return to his operating area. Since he was close he elected to fly over the water disturbance to try and see what was causing it.

The disturbance appeared to be 50 to 100 meters in diameter and close to round. It was the only area and type of whitewater activity that could be seen and reminded him of images of something rapidly submerging from the surface like a submarine or ship sinking. It also looked like a possible area of shoal water where the swell was breaking over a barely submerged reef or island. He overflew the disturbance and turned back to the northwest. As he was flying away he could see the disturbance clearing and could no longer identify the place where it occurred. He did not see any object or vessel associated with the disturbance either above the surface, on the surface, or below the surface. He also never made visual contact with the other fighter aircraft that were vectored to the location or the AAV. It is possible that the disturbance was being caused by an AAV but that the AAV was 'cloaked' or invisible to the human eye.

Lt Col [redacted] recovered aboard the Nimitz at approximately 1200L. He reported to the Carrier Intelligence Center (CVIC) and was asked by his Intelligence Officer, 1stLt [redacted], if he saw the "supersonic Tic Tac"? We questioned now Capt. [redacted] to determine if he had any further information but based on his position in CVIC at the time he was not involved in any further discussions concerning the AAV.

F/A-18F Intercept and Visual Contact

FASTEAGLE 01
Pilot: CDR David "Sex" Fravor, USN/WSO: LT [redacted], USN
FASTEAGLE 02
Pilot: LT [redacted], USN/WSO: LCDR [redacted] USN

CDR Fravor, Commanding Officer VFA-41, was the pilot of FastEagle 01. He and LT [redacted] were in the lead aircraft of the first F/A-18F section airborne that day from VFA-41, call sign FastEagle 01. The flight walked, started and launched with no issue. They completed their departure from the USS Nimitz and flew to the working area to conduct the training portion of the flight. After they completed their training the E-2C controller handed them off to the USS Princeton callsign 'Poison' where they received vectors via Bearing Range Altitude Aspect (BRAA) to an unknown contact flying into the working area from the south. Poison asked what ordnance they had on board. LT [redacted] told Poison control that they had two captive training AIM-9Ms (CATM-9) and no other ordnance.

The flight descended to between 20-24,000 feet and proceeded to the contact. CDR Fravor did not recall any indications via on-board sensor of the object. Their aircraft was not carrying a Forward Looking Infrared (FLIR) pod onboard. As CDR Fravor remembers it, the Radar Attack Display was clean (no targets). Their F/A-18F had an APG-73 radar and was set to the following parameters:

- -Range While Search (RWS)
- -Range Gated High
- -80NM scale

CDR Fravor and LT [redacted] were attempting acquire the object visually as they heard "merge plot" from Poison. Situational awareness to the object was initially received via sporadic Link-16 tracks (Link-16 is a time division multiple access data-link) via an off-board sensor. Lt [redacted] assumed that the sensor providing the information was the USS Princeton's SPY-1 radar. According to CDR Fravor the first indication he had of the unknown contact was a visual of a disturbance on the water below the AAV. As he scanned the area he gained a visual on the object. It is important to note that when asked to describe the disturbance on the water he stated that it was localized underneath the object, did not appear as a trail or wake, and looked like frothy waves and foam almost as if the water was boiling.

At this point CDR Fravor detached FASTEAGLE02, which held at approximately 20,000 feet, and FASTEAGLE01 descended to between 12-16,000 feet. CDR Fravor attempted a "helmet lock" that was unsuccessful. It is important to note that CDR Fravor was using the Joint Helmet Mounted Cuing System which will cue the aircraft sensors such as the radar to "lock on" to what the pilot is looking at and it also has a recording capability. It may have been useful in this situation but typically because of the large amount of head movement it is not practical. CDR Fravor stated that the helmet's recording capability was rarely used therefore he did not think to use it that day.

LT [redacted] communicated what they were seeing with Poison control and said that he had a running dialogue on the interflight radio with FastEagle 02. CDR Fravor stated that the object was "holding like a Harrier." (Referring to the AV-8B jet aircraft, which is capable of hovering and Vertical/Short Takeoff and Landing (V/STOL) via thrust vectoring.) According to CDR Fravor, the object's shape was like an elongated egg or a 'Tic Tac' and had a discernable midline horizontal axis. However, the object was uniformly white across the entire body. It was approximately 46 feet in length. LT [redacted] described it as "solid white, smooth, with no edges. It was uniformly colored with no nacelles, pylons, or wings." When asked to describe the appearance, if it glowed or reflected sunlight he said, "neither, it looked like it had a white candy-coated shell, almost like a white board." His report differs from CDR Fravor in that he reported the object traveling level at approximately 500-1000 feet at approximately 500 knots.

The object was pointed in a north/south orientation and was moving both north & south and east & west, while maintaining a consistent altitude. These displacements, according to CDR Fravor, were minor. CDR Fravor stated he then began a descent with the intention to take a close aboard pass with the object in an attempt to visually identify it. They began the decent as they rolled in from about 10,000ft and approximately 350 knots to take the object close aboard. CDR Fravor pulled nose on and then pulled trail [aft] of the object. As they were maneuvering, the object appeared, according to CDR Fravor: "to recognize us." He assessed this from the fact the object "pointed" (realigned it's axis) in the direction of their aircraft. At this time, according to CDR Fravor, the disturbance on the water ceased.

As they completed this maneuver, the object ascended quickly and pulled lift vector on and aft of them at a supersonic speed. CDR Fravor commanded the radar through the Short Range radar set and asked for a picture from Poison. Poison initially reported that the "picture was clean" [no contact] but then stated "you're not going to believe this, its at your CAP" meaning that the AAV had flown to their training CAP, which was located in the southern end of the training area and had climbed to approximately 24,000 feet. CDR Fravor stated that the flight attempted to locate both the object and the disturbance with no success. CDR Fravor stated that nothing was seen on the surface or subsurface and that there were no indications of the previous disturbance.

Following the engagement, the flight rejoined and returned to the USS Nimitz. When asked how the jets functioned and if there was any indications of a system malfunction, he stated that- "the jets were brand new, less than 100 hrs on them. They were working perfectly." LT [redacted] when asked, said that all aircraft systems were functional. That there were no mission computer issues or avionics issues and that there was no radio or communication interference and that they had entry into the Link-16 network. When asked LT [redacted] couldn't confirm any physiological or psychological feelings that were out of the ordinary.

The flight met up with LT [redacted] and LT [redacted]'s flight in the paraloft and passed what they had seen. The flight proceeded to CVIC. LT [redacted] noted that the sailors in CIVC had donned tin-foil caps and wanted to know about the "UFO flight." They reviewed the tapes and described to CIVC what they had seen and what the flight had done. He was not asked to sign any non-disclosure agreement and he is uncertain how far up the chain the reporting went past his commanding officer.

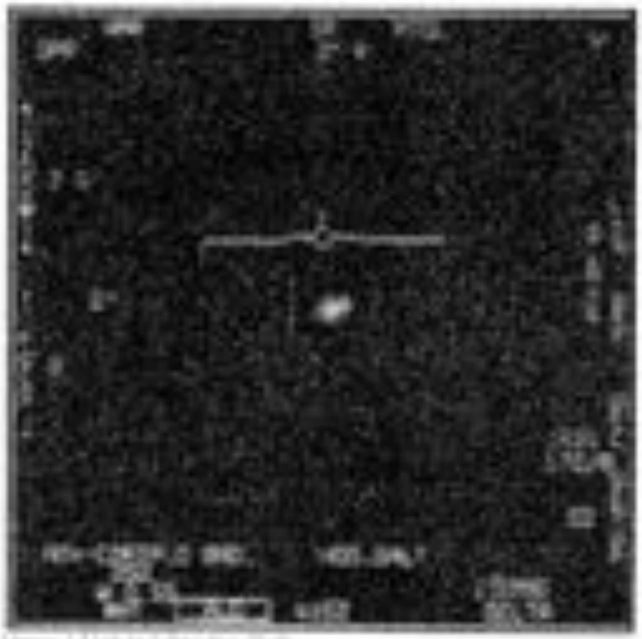
F/A-18F FLIR Tracking

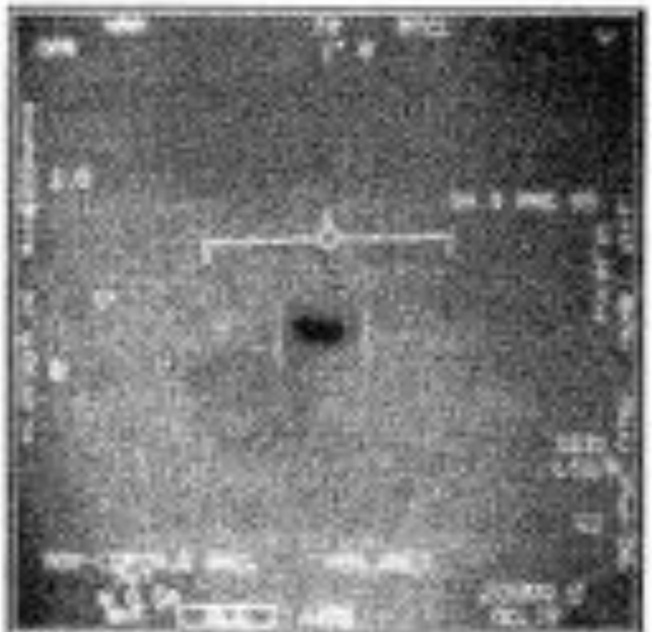
Pilot: LT [redacted], USN/WSO: LT [redacted], USN

Lt [redacted] was a member of VFA-41 and was the Weapons and Sensors Officer (WSO) flying with LT [redacted]. They were a part of the second F/A-18F section airborne that day from VFA-41. Their flight launched following the FASTEAGLE flight. The crews spoke with each other in the paraloft, discussed the object and that the flights were scheduled for the same working area. FASTEAGLE flight told LT [redacted]'s flight what they saw and to try to see and record what they could.

The flight walked, started and launched. They completed their departure from the USS Nimitz, climbed to altitude and separated to begin the training portion of the flight. According to LT [redacted] it was a clear day. There were no clouds and there was a discernable horizon. The time was approximately 1500L. The flight checked with the E-2C and separated. Their jet proceeded south to the southern cap. They flew at 20,000 feet and were flying a max endurance profile at approximately 300 knots ground speed.

All on board systems were functioning normally. The radar was in a standard search mode (RWS/ 80NM/ 4bar/ intr) and the FLIR was in L+S slave (the FLIR would point in direction of an L+S track). There was no radio or communication interference and they had entry into the Link-16 network. Initial awareness of an object came via the radar. According to the radar display, the initial tracks were at approximately 30-40 nm to the south of the aircraft. LT [redacted] was controlling the radar and FLIR and attempted multiple times to transition the radar to Single Target Track (STT) mode on the object. The radar could not take a lock, the b-sweep would raster around the hit, build an initial aspect vector (which never stabilized) and then would drop and continue normal RWS b-sweep. When asked, LT [redacted] stated that there were no jamming cues (strobe, champagne bubbles, "any normal EA indications"). It "just appeared as if the radar couldn't hack it." The radar couldn't receive enough information to create a single target track file. The FLIR, in L+S slave, pointed in direction of the initial track files as the radar attempted lock. The FLIR showed an object at 0 ATA and approximately -5deg elevation (Figure 2). According to LT [redacted], "the target was best guess co-altitude or a few thousand feet below," estimating the object to be between 15-20 thousand feet. The object, according to the FLIR, appeared stationary (Figure 3). There was no discernible movement from the object with the only closure being a result of the aircraft's movement. As LT [redacted] watched the object it began to move out of FLIR field of view to the left. LT [redacted] made no attempt to slew the FLIR and subsequently lost situational awareness to the object. The Flight continued with training mission with no further contact with object.





[illegible]

LT [redacted] was clear in that he couldn't confirm that it was the same object as described by FASTEAGLE flight. He never had visual, only seeing the object via the FLIR. He reaffirmed that all systems were functional.

Following completion of the training portion, the section returned to the ship for a normal approach, landing and shutdown. The crew met in CVIC and debriefed. LT [redacted] said that the CVIC section attempted to collect his tapes but he refused. They proceeded to their ready room where they debriefed with CDR Fravor and his flight. Copies of the tapes were made with a set being turned into the intelligence section. LT [redacted] was not asked to sign any non-disclosure agreement and he is uncertain how far up the chain the reporting went past his commanding officer. When asked LT [redacted] couldn't confirm any physiological or psychological feelings that were out of the ordinary. He only expressed a feeling of confusion during the event.

USS Louisville (SSN-724)

The USS Louisville USS Louisville (SSN-724) is a Los Angeles-class nuclear fast attack submarine[5]. She was operating in the vicinity of the USS Nimitz as part of the

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[5] http://en.wikipedia.org/wiki/USS_Louisville_(SSN-724)

CSG during the detection and intercept of the AAV. According to former LT [redacted] now a civilian working for the US Navy, who was a qualified Submarine Officer onboard the Louisville in November 2004 during the AAV activity there were no unidentified sonar contacts in the vicinity of the aerial sightings or at anytime during the operations off the coast of California. The former commander of the USS Louisville, CAPT [redacted] confirmed that there was no anomalous undersea activity during this period. There was a live fire exercise conducted by the USS Louisville during the period of and in the vicinity of the AAV sightings; however, the weapon in use did not match the flight profile or visible characteristics of the AAV. Additionally any live fire would have been coordinated throughout the CSG and all air traffic would have been well aware of the launch and operation of the weapon system. Aircraft would not have been vectored for the intercept of a US Weapon in-flight.

Based on the lack of detection of any unidentified sonar contacts it is highly unlikely that an AAV operated below the surface of the ocean; it is possible that the AAV demonstrated the ability to be cloaked or invisible to the human eye based on pilot reporting of the water disturbance with no visible craft. Based on the assessment of Mr. [redacted] if the AAV did operate underwater undetected it would represent a highly advanced capability given the advanced capability of our sensors.

Leadership and Reporting

Typically most if not all reporting on any CSG mission related air activity is completed in CVIC by the intelligence personnel. At least one pilot or aircrew member of each flight or aircraft will stop by CVIC to be debriefed by intelligence. Intelligence personnel will then take the information provided by the pilot or aircrew member and complete a mission report (MISREP). During contingency or wartime operations a MISREP is filed even if the aircrew had nothing significant to report (NSTR).

On 14 November following the intercept of the AAV, CDR Fravor reported to CVIC to debrief with Intelligence. He discussed the entire mission and AAV contact with LCDR [redacted], the Carrier Air Wing Intelligence Officer. According to LCDR [redacted], he "wasn't sure what to do". He also stated that they "didn't take it seriously" at first; however, they had absolutely no reason to question the report from a very experienced and well respected F/A-18 squadron commanding officer. LCDR [redacted] added that they likely would have not given as much attention if it came from a lesser-experienced aviator. He reported it to the Commander of the Air Wing, CAPT [redacted], also a highly experienced aviator but he did not take it very serious. LCDR [redacted] completed an email based MISREP. It was submitted via email because the F/A-18s were on a training mission. The email-based report including the FLIR video was sent via a secure system to CAPT [redacted] at 3rd Fleet Intelligence, their higher echelon command. Finally, LCDR [redacted] admitted and detailed the high level of ridicule that the aircrew experienced over the next few weeks. The following details were also confirmed with CAPT [redacted] the CSG-11 Senior Intelligence Officer (N2). Capt [redacted] confirmed that the CSG leadership asked him if any additional reporting was required and he advised that since they were in a training environment an email based MISREP to 3rd Fleet N2 was the only report required. When asked what he thought the AAV was he replied that he believed it was part of a counterdrug operation based on the area of operations.

3rd Fleet Intelligence (N2)

The 3rd Fleet N2 at the time of the event was CAPT [redacted]. CAPT [redacted] has since retired from the US Navy and could not be located; however, his deputy N2 was CAPT [redacted]. CAPT [redacted] confirmed that the MISREP was received via email on or about 14 November 2004. Since this MISREP was completed during training and preparation for deployment it was read and acknowledged by 3rd Fleet N2 but was not forwarded to anyone up the chain of command. Additionally CAPT [redacted] stated that it was not likely archived but deleted at some point later as there is no requirement to keep these reports and it was likely in file folder with all of the other training MISREPS sent in by the CSG during deployment preparation.

Commander Carrier Strike Group 11

The commander of the Nimitz Carrier Strike Group during the intercept was Rear Admiral D.C. Curtis now a Vice Admiral (VADM) and is commander of Naval Surface Forces and the Pacific Fleet's Naval Surface Force. All of the AAV activity was reported to VADM Curtis by the Commanding Officer, USS Princeton and Commanding Officer, VFA-41. Based on all of the conversation with those involved and among the leadership of the various combatants within the CSG, VADM Curtis was a well respected, competent, and thorough Naval Officer. There is no question in anyone's mind that he followed any and all regulations and guidance applicable to his command.

Capt [redacted] was the Director of Operations (N3) for CSG-11 at the time of the intercept. Capt [redacted] confirmed that other than the MISREP there was no other official report or statement from the CSG. He also stated that at no time did they consider the AAV a threat to the battle group. Additionally they had no advanced knowledge of live fire events, US Weapons Testing or any other experimental aircraft operating in the area. Finally, they had never seen anything like this before and never again.

Admiral Peter Daly assumed command of the CSG in January 2005 after the intercept and had no knowledge or involvement in this incident.

2004 November 14, Deck Logs from the *USS Nimitz*

The only original documents obtained and known to be created on the date of the event are the Deck Logs of the ships received through the Freedom of Information Act (FOIA). The Deck Logs to the USS *Nimitz,* USS *Chafee,* and the USS *Higgins* are referenced in the FOIA section of this report. They are original documents and are accurate. The Navy stated that they could not find the Deck Logs of the USS *Princeton*. The Navy indicated tha the Deck Logs of the USS *Louisville* existed but had been classified as exempt from disclosure. The FOIAs generated to obtain these documents are listed in Appendix B. The following pages consist in order the Deck Logs of the *Nimitz*, *Chafee,* and *Higgins.* These are pages for the information referenced. The entirety of the Deck Logs received for the time period of November 10-16, 2004 can be found on the SCU website.

The main purpose of the *Nimitz* Deck Logs was to establish the location of the *Nimitz* during the event and to establish when flights left and returned on deck. The main purpose of the *Chafee* and *Higgins* Deck Logs was to establish that those ships were not in the area at the time of the event.

There is one other event of note that was found in the Nimitz Deck Log, but is not necessarily related to the events described in the main report. At the latitude/longitude location of N31º31.1', W117º55.2' a "chem-light" was noted on the log at 0346 local time on November 14th. (A "chem-light" is carried by crew members so that should they fall overboard at night, they can be located.) The log indicates the captain was called. It was verified that there was no "manoverboard" but without calling for a muster roll. It is very unusual to not take more preventative action and check the muster roll unless it was clear that the light seen on the ocean was not a "chem-light". As an example, man-overboard drills were run on November 12th at 0205 and 0419 local time and in both cases it was noted that it was a drill. No conclusion can be drawn that this was related to the event that would occur later that morning. This is noted only to capture the information should it be useful in the future. (Although there is no reason to believe this occurred, the possibility of a prank by crew members cannot be ruled out.)

SHIP'S DECK LOG - TITLE PAGE
OPNAV 3100/99 (Rev. 1-84) S/N 0107-LF-000-7600

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FOR OFFICIAL USE ONLY

SHIP'S DECK LOG

OF THE

U.S.S. NIMITZ

CVN 68
(hull number)

ATTACHED TO
- DIVISION
- SQUADRON
- CARRIER STRIKE GROUPE ELEVEN GROUP
- COMMANDER THIRD FLEET

COMMENCING 2341 (+8U) 01 NOVEMBER 2004
(zone time and date)

AT 32 08.8' N 117 23.3' W SAN DEIGO OPAREA
(location)

ENDING 2338 (+8U) 30 NOVEMBER 2004
(zone time and date)

AT 30 26.7' N 118 14.0' W SAN DEIGO OPAREA
(location)

EXAMINED AND CERTIFIED TO BE CORRECT [redacted] CDR USN
(name, grade and signature)
NAVIGATOR

APPROVED BY R. GILMAN, CAPT USN
(name, grade and signature)
COMMANDING

TO BE COMPLETED FOLLOWING CHANGE OF COMMAND

DATE OF CHANGE OF COMMAND: 23 NOV 04

APPROVED BY T.N. BRANCH, CAPT USN
(name, grade and signature of Relieving Commanding Officer)
COMMANDING

FORWARD DIRECT TO THE CHIEF OF NAVAL OPERATIONS AT THE END OF EACH MONTH

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U.S. Government Printing Office

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OPNAV 3100/99 [illegible]

SHIP'S DECK LOG SHEET

NOFORN

USE BLACK INK TO FILL IN THIS LOG

SHIP TYPE	HULL NUMBER	YEAR	MONTH	ZONE	DAY		
D A C V N	0 6 8	4	1 1	U	1 4	E	U

UIC NIMITZ

IN TRANSIT FROM SO CAL

TO OP AREA

POSITION	ZONE	TIME	POSITION	ZONE	TIME	POSITION	ZONE	TIME	LEGEND
0800 L ___ BY ___ λ ___ BY ___			1200 L ___ BY ___ λ ___ BY ___			2000 L ___ BY ___ λ ___ BY ___			1 - CELESTIAL 2 - ELECTRONIC 3 - VISUAL 4 - D.R.

TIME	ORDER	CSE	SPEED	DEPTH	RECORD OF ALL EVENTS OF THE DAY
					0000 - 0400
2326					ASSUMED THE WATCH UNDERWAY AS BEFORE, STEAMING
					INDEPENDENTLY IN SOCAL OP AREA, ON A COURSE OF
					330°T AND A SPEED OF 5 KTS. SOPA IS RDML CURTIS.
					YOKE IS SET THROUGHOUT THE SHIP; DARKEN SHIP IS SET
					THROUGHOUT THE SHIP WITH THE EXCEPTION OF NORMAL
					UNDERWAY NAVIGATION LIGHTS. ENGINEERING STATUS IS AS
					[redacted]
					EDG'S 1,2,3,4 ↑. STEERING UNITS 4 AND 1 ONLINE, 2 AND
					3 ON STANDBY. CO IS OFF THE BRIDGE.
2330					SET AND DRIFT IS [illegible] NEGLIGIBLE
2356	AA2			050	RPM
0001	ASTOP			333	
				SET	046°T @ 0.1 KTS
0006	AA1			015	RPM
0008		330		310	OFGHL
0030				SET	046°T @ 0.1 KTS
0005					STARTED STEERING UNITS 2 AND 3, 1 AND 4 SECURED.
0100					SET 046°T @ 0.1 KTS
0130	L 30°				
					SET IS NEGLIGIBLE
	RAPUN				
0145	L 30°				
0145	CL [illegible]				
0153		4BL			[illegible]
0200					SET 111°T AT .1 KTS
0237	[illegible]				

NOFORN

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S/N 0107-LF-031-0000

SHIP'S DECK LOG SHEET

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D	A	SHIP TYPE	HULL NUMBER	YEAR	MONTH	ZONE	DAY		
D	A	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	E	
1	2	3 - 4	5 - 7	12	13 - 14	15	16 - 17	22	

USS [illegible]
AT / PASSAGE FROM So. CAL
TO OP AREA

CLASS: U | MARKS:

POSITION 0800	ZONE	TIME
L		BY
λ		BY

POSITION 1200	ZONE	TIME
L		BY
λ		BY

POSITION 2000	ZONE	TIME
L		BY
λ		BY

LEGEND
1 - CELESTIAL
2 - ELECTRONIC
3 - VISUAL
4 - D. R.

TIME 18 - 21	ORDER 22 - 28	CSE 29 - 31	SPEED 32 - 36	DEPTH 37 - 40	RECORD OF ALL EVENTS OF THE DAY 41 - 71
					[illegible] (cont)
[illegible]	[illegible]			[illegible] RPM	
	[illegible]			[illegible] RPM	
	[illegible]			[illegible] RPM	
[illegible]	[illegible]			[illegible] RPM	
[illegible]	[illegible]			[illegible] RPM	
[illegible]	[illegible]			[illegible] RPM	
[illegible]	[illegible]			[illegible] RPM	
[illegible]				[illegible] AT [illegible]	
[illegible]	[illegible]				
[illegible]	[illegible]				
[illegible]	[illegible]				
[illegible]	[illegible]				
[illegible]	[illegible]				
	[illegible]			[illegible]	
[illegible]	[illegible]			[illegible]	
[illegible]	[illegible]			[illegible]	
				[illegible] AT [illegible]	
[illegible]	[illegible]				
[illegible]	[illegible]				
[illegible]	[illegible]			[illegible]	
	[illegible]				
[illegible]	[illegible]				
[illegible]	[illegible]				
[illegible]				[illegible] [redacted] HAS THE CONN	
				[illegible]	
				[illegible]	
				[illegible]	
[illegible]	[illegible]				
		180		[illegible]	
[illegible]				[illegible] [redacted] HAS THE AIR	

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SHIP'S DECK LOG SHEET

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		SHIP TYPE		HULL NUMBER	YEAR	MONTH	ZONE	DAY			CLASS	MARKS
D	A	[illegible]		0 6 8	[illegible]	[illegible]	[illegible]	[illegible]	E		[illegible]	/
1	2	3 - 4		5 - 7	11 - 12	13 - 14	15	16 - 17	21		78	79

USS NIMITZ

AT / PASSAGE FROM S. CAL

TO OP AREA

POSITION 0800	ZONE	TIME	POSITION 1200	ZONE	TIME	POSITION 2000	ZONE	TIME	LEGEND
L ____	BY ____		L ____	BY ____		L ____	BY ____		1 - CELESTIAL 2 - ELECTRONIC 3 - VISUAL 4 - D. R.
λ ____	BY ____		λ ____	BY ____		λ ____	BY ____		

TIME	ORDER	CSE	SPEED	DEPTH	RECORD OF ALL EVENTS OF THE DAY
18 - 21	22 - 29	30 - 32	33 - 36	37 - 40	41
					[illegible] (LOCT)
					L [redacted] KT
					λ
					[illegible]
					RELIEVED THE WATCH UNDERWAY AS BEFORE
[illegible]					SET 11°T AT .8KTS
[illegible]	[illegible]				[illegible] RPM
[illegible]	[illegible]				
[illegible]	[illegible]				
[illegible]		[illegible]			150 [illegible]
[illegible]	[illegible]				
[illegible]		170			116 [illegible]
	[illegible]				383 RPM
0417	[illegible]				408 RPM
[illegible]	[illegible]				
	[illegible]				
[illegible]					SET 073°T AT .1KTS
[illegible]	[illegible]				444 RPM
[illegible]	[illegible]				310 RPM
	[illegible]				
[illegible]		175			130 [illegible]
0436	[illegible]				333 RPM
	RAPID				
0440	[illegible]				131 RPM
0442	[illegible]	165°			
0443	[illegible]			050	RPM
		165°		165	[illegible]
0447	[illegible]	180			
0451		180		344	[illegible]
0457				507	15 KT .265

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USE BLACK INK TO FILL IN THIS LOG

	SHIP TYPE	HULL NUMBER	YEAR	MONTH	ZONE	DAY	
D A	C V	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	E

USS NIMITZ

AT / PASSAGE FROM SO CAL

TO OP AREA

CLASS / MARKS

POSITION 0800	ZONE / TIME	POSITION 1200	ZONE / TIME	POSITION 2000	ZONE / TIME
L	BY	L	BY	L	BY
λ	BY	λ	BY	λ	BY

LEGEND
1 - CELESTIAL
2 - ELECTRONIC
3 - VISUAL
4 - D. R.

TIME 18-21	ORDER 22-29	CSE 30-32	SPEED 33-36	DEPTH 37-40	RECORD OF ALL EVENTS OF THE DAY
					0400-0800 (cont.)
0530					SET 085°T AT 7 KTS
0531	L15R				
0532	L 165	165			
0600					SET 080°T AT 6 KTS
# 0555		115			117 DPGMC
0610	AA5				075 RPM
0617					OBSERVED SUNRISE SECURED NAVIGATION LIGHTS
0630	AA1				055 RPM
0629	A15R				
0630					SET 081°T AT 7 KTS
0641					RECEIVED CHRONOMETER REPORT
0642		170		167	DPGMC
0647	R20G				
0655		200		201	DPGMC
0705	L15R				
0707	L15R				
0710	AA2			060	RPM
0711	L130				
0713	AA5			075	RPM
0714	AFFUL			233	RPM
		130		127	DPGMC
0715	AA2			050	RPM
0717	ABFUL			947	RPM
0719	ASTOP			939	RPM
0724	AFULL			150	RPM
	ASTOP			233	RPM
0725	AAFUL			171	RPM
0728		130		110	DPGMC
				0736	[redacted] HAS THE DECK [redacted] HAS THE DECK
					[redacted]

REPORT SYMBOL OPNAV 3100-10

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LATE ENTRY

SHIP'S DECK LOG SHEET

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USE BLACK INK TO FILL IN THIS LOG

	SHIP TYPE	HULL NUMBER	YEAR	MONTH	ZONE	DAY		CLASS	NUMBER
D A	CVN	068	4	11	U	14	E	U	/

USS NIMITZ

AT / PASSAGE FROM SO CAL

TO OP AREA

POSITION 0800	ZONE	TIME
L		BY
λ		BY

POSITION 1200	ZONE	TIME
L		BY
λ		BY

POSITION 2000	ZONE	TIME
L		BY
λ		BY

LEGEND
1-CELESTIAL
2-ELECTRONIC
3-VISUAL
4-D.R.

TIME 18-21	ORDER 22-28	CSE 29-32	SPEED 33-36	DEPTH 37-40	RECORD OF ALL EVENTS OF THE DAY 41
					[redacted] 0716
					0800-1200
0728					RELIEVED THE WATCH AS OFFICER OF THE DECK
					LT [redacted] HAS THE DECK
0734					RECEIVED FUEL REPORT
0738					SET 211° AT 3 KTS
0743	R10R				
0745	R30R				
0746	R230				
0747	AA2				040 RPM
					RECEIVED MAG TEMP REPORT
0748		330			220 DFGMC
0819	R20R				
					JET TEST BLAST
0824	L30R				
0825	RAMID				
	SMG	330			
0832	AA2				060 RPM
0850		360			295 DFGMC
0855	AA2				040 RPM
0863	AA5				065 RPM
0930					SET 251°T AT 3KTS
0933	R15R				
0936	R03R				
0939		030			028 DFGMC
0941					RECEIVED MUSTER REPORT
	L10R				
0945	RAMID				
0946	L015				
		015			600 DFGMC

REPORT SYMBOL OPNAV 3100-10

IF CLASSIFIED STAMP REVIEW / DECLASSIFICATION DATE HERE

U.S. GPO

IF CLASSIFIED STAMP SECURITY MARKING HERE

SHIP'S DECK LOG SHEET

IF CLASSIFIED STAMP SECURITY MARKING HERE

USE BLACK INK TO FILL IN THIS LOG

D A CVN 068 | 4 1 1 4 1 4 | E

USS NIMITZ

AT (PASSAGE FROM) SO. CAL

TO OP AREA

TIME	ORDER	CSE	SPEED	RECORD OF ALL EVENTS OF THE DAY
				0800 - 1200 (CONT)
0950	AA2			040 RPM
0957				RECEIVED BOAT REPORT
1000				SET 183° AT .3 KTS
1032	R10R			
1033	AA2			060 RPM
1037	L10R			
	AMID			
	SA7C	140		127 DEGMC
1039	AA2			040 RPM
	AA1			025 RPM
1043	R150			
1045		150		179 DEGMC
1052				AMBER DECK
1054				RED DECK
	L30R			
	AA2			060 RPM
1059	RAMID			
				SET 257°T AT .2 KTS
1100	L010			
		010		352 DEGMC
1101				CO IS ON THE BRIDGE
	AA1			025 RPM
1104				CO IS OFF THE BRIDGE
1105				NAVIGATOR IS CDO UNDERWAY
1108				SET 051° AT .1 KTS
				AMBER DECK
1110				RED DECK
1123	AA1			035 RPM
1126				RECEIVED DRAFT REPORT DRAFT FWD [illegible]
				DRAFT AFT 37FT [illegible] MEAN DRAFT [illegible] DISPLACEMENT [illegible]

REPORT SYMBOL OPNAV 3100-13

IF CLASSIFIED STAMP REVIEW / DECLASSIFICATION DATE HERE

IF CLASSIFIED STAMP SECURITY MARKING HERE

OPNAV 3100/99 (REV. 7-84)
S/N 0107-LF-031-0486

SHIP'S DECK LOG SHEET

IF CLASSIFIED STAMP SECURITY MARKING HERE

USE BLACK INK TO FILL IN THIS LOG

	SHIP TYPE	HULL NUMBER	YEAR	MONTH	ZONE	DAY	
D A	CVN	068	4	11	U	14	E

USS NIMITZ

AT / PASSAGE FROM SOCAL

TO OP AREA

POSITION	ZONE	TIME	POSITION	ZONE	TIME	POSITION	ZONE	TIME
0800 L. ___ BY ___ λ ___ BY ___			1200 L. 31°12.3'N BY 2 λ 117°52.2'W BY 2			2000 L. ___ BY ___ λ ___ BY ___		

LEGEND
1 - CELESTIAL
2 - ELECTRONIC
3 - VISUAL
4 - O.R.

TIME	ORDER	CSE	SPEED	DEPTH	RECORD OF ALL EVENTS OF THE DAY
					0800 - 1200 (CONT'D)
1130					LT [redacted] HAS THE CONN
					SET 100°T @ 0.3 KTS
1135					LTJG [redacted] HAS THE DECK
					w/ ET[redacted]
					& [redacted]
					1200 - 1600
1135					ASSUMED THE WATCH UNDERWAY AS BEFORE
1145	L158				
1151	L340				
1152	AA1				035 RPM
1153					CO IS ON THE BRIDGE
1156		340			315 DEGMAG
1158					CO IS OFF THE BRIDGE
1159					NAVIGATOR IN CDO UNDERWAY
1200					SET 090°T at 0.4 KTS
1204	L330				
1206					AMBER DECK
	RAMID				
	L335				
1212		335			316 DEGMAG
1224	AA1				035 RPM
1225	AA5				075 RPM
1229	AA1				025 RPM
1230					RED DECK
					SET 106°T @ 0.2 KTS
1233	L50				
	L330				
	L325				
1234		326			304

REPORT SYMBOL OPNAV 3100-10

IF CLASSIFIED STAMP REVIEW / DECLASSIFICATION DATE HERE

U.S. GPO

IF CLASSIFIED STAMP SECURITY MARKING HERE

OPNAV 3100/99 (REV. 7-91)
S/N 0107-LF-031-0400

SHIP'S DECK LOG SHEET

IF CLASSIFIED STAMP SECURITY MARKING HERE

USE BLACK INK TO FILL IN THE LOG

D	A	SHIP TYPE	HULL NUMBER	YEAR	MONTH	ZONE	DAY		CLASS	MARKS
D	A	C V N	0 6 8	0 4	1 1	U	1 4	E	U	

USS NIMITZ
AT / PASSAGE FROM SO CAL
TO OP AREA

POSITION 0800	ZONE	TIME
L ___ BY ___		
λ ___ BY ___		

POSITION 1200	ZONE	TIME
L ___ BY ___		
λ ___ BY ___		

POSITION 2000	ZONE	TIME
L ___ BY ___		
λ ___ BY ___		

LEGEND
1-CELESTIAL
2-ELECTRONIC
3-VISUAL
4-D.R.

TIME	ORDER	CSE	SPEED	DEPTH	RECORD OF ALL EVENTS OF THE DAY
					1300 - 1500 (CONT'D)
1240				LTJG [redacted] HAS THE CONN	
1242				LT [redacted] HAS THE CONN	
1244	AA1			015 RPM	
1253				AMBER DECK	
				NAVIGATOR IS EOD UNDERWAY	
1300				SET 178°T @ 0.2 KTS	
1304				RED DECK	
1312	AA1			035 RPM	
1314	R15R			ONE SHORT BLAST	
1317	R30R				
1318	RAMID				
1319	SAYG	018			
* 1321		018		009 DEGMC	
1323	AA2			056 RPM	
1326				CO IS ON THE BRIDGE	
1328	AA2			061 RPM	
1330	AA6			071 RPM	
				SET 182° AT 0.2 KTS	
1332	L015				
				CHECKMATE	
	AA5			067 RPM	
* 1520				LEAK IN NUMBER TWO SHAFT [illegible] NUMBER 2	
1334		015		003 DEGMC	
1339		017		357 DEGMC	
1351	3A5			075 RPM 3RD ANSWERED STOP	
1355				060 RPM	
1357	AA2			060 RPM	
1402		010		358 DEGMC	
	AA5			075 RPM	
	AAF			050 RPM	

REPORT SYMBOL
OPNAV 3100-10

IF CLASSIFIED STAMP REVIEW / DECLASSIFICATION DATE HERE
U.S. GPO:199-704-002/00003

IF CLASSIFIED STAMP SECURITY MARKING HERE

OPNAV 3100/99 (Rev. 7-84)

SHIP'S DECK LOG SHEET

IF CLASSIFIED STAMP SECURITY MARKING HERE

USE BLACK INK TO FILL IN THIS LOG

		SHIP TYPE	HULL NUMBER	YEAR	MONTH	ZONE	DAY			CLASS	DOWNG.
D	A	CV	068	4	11	U	14	E		U	

USS NIMITZ

AT / PASSAGE FROM SO CAL

TO OPAREA

POSITION 0800	ZONE	TIME
L		BY
λ		BY

POSITION 1200	ZONE	TIME
L		BY
λ		BY

POSITION 2000	ZONE	TIME
L		BY
λ		BY

LEGEND
1 - CELESTIAL
2 - ELECTRONIC
3 - VISUAL
4 - D. R.

TIME	ORDER	CSE	SPEED	DEPTH	RECORD OF ALL EVENTS OF THE DAY
					1200-1600 (CONT'D)
1404	L00R				
	L006				
	AAF				100 RPM STBD ANSWERED STOP
					SET 097°T AT 0.4KTS
1405	L007				
	AAS				075 RPM
	AA1				025 RPM
1406					AMBER DECK
1407		002			353 DEGMC
1408					RED DECK
1410					CO IS OFF THE BRIDGE
1411					NAVIGATOR IS CDO UNDERWAY
1416	L30R				
	AA3				060 RPM
1435	RAMID				
1436	L15R				
	RAMID				
1437	LMR				
	SHIFTR				
	SA36	064			
					CO IS ON THE BRIDGE
1438					AMBER DECK
1439	AA1				025 RPM
		064			053 DEGMC
	R30R				
1450					RED DECK
	AA3				060
1453	S180				
					SET 300°T AT 0.4KTS
1454	AAF				050 RPM

REPORT SYMBOL OPNAV 3100-13

IF CLASSIFIED STAMP REVIEW / DECLASSIFICATION DATE HERE

IF CLASSIFIED STAMP SECURITY MARKING HERE

OPNAV 3100/99 (REV. 7-89)
S/N 0107-LF-031-0400

SHIP'S DECK LOG SHEET

IF CLASSIFIED STAMP SECURITY MARKING HERE

USE BLACK INK TO FILL IN THIS LOG

	SHIP TYPE	HULL NUMBER	YEAR	MONTH	ZONE	DAY		CLASS	PAGES
D A	C V N	0 6 8	4	1 1	U	1 4	E	U	

USS NIMITZ
AT / PASSAGE FROM SOCAL
TO OP AREA

POSITION 0800	ZONE — TIME	POSITION 1200	ZONE — TIME	POSITION 2000	ZONE — TIME	LEGEND
L ______ BY ___		L ______ BY ___		L ______ BY ___		1-CELESTIAL 2-ELECTRONIC 3-VISUAL 4-D.R.
λ ______ BY ___		λ ______ BY ___		λ ______ BY ___		

TIME	ORDER	CSE	SPEED	DEPTH	RECORD OF ALL EVENTS OF THE DAY
					1200-1600 (CONT'D)
1435					CO IS OFF THE BRIDGE
					WAHIPATOR IS COD UNDERWAY
1436	LSR				
1438	L170				
1441		170		161	DEGMG
1444	AAF			110	RPM STBD ANSWERED STOP
1451	AA1			015	RPM STBD ANSWERED STOP
1455	LSR				TWO SHORT BLASTS
					CO IS ON THE BRIDGE
	RUDDER				
1457	R10R				ONE SHORT BLASTS
1500	R30R				
	AAT			050	RPM STBD ANSWERED 4th STOP
					SET 077°T AT 0 ZATI
1504					CHECK DECK
	RAMD				
1505	R350				
1506	AA+2			010	RPM STBD ANSWERED STOP
1508	SAYA	353			
1509		353		338	DEGMC
1523					LT [redacted] HAS THE CONN
1527					LT [redacted] HAS THE DECK
					LTJG [redacted]
					1600 - 2000
1527					ASSUMED THE 4th WATCH UNDERWAY AS BEFORE
1533	R105				
					SET 068°T AT 0 ZATI
1536	AA1			010	RPM

REPORT SYMBOL OPNAV 3100-18

IF CLASSIFIED STAMP REVIEW / DECLASSIFICATION DATE HERE

U.S. GPO

IF CLASSIFIED STAMP SECURITY MARKING HERE

OPNAV 3100/99 (Rev. 7-84)
S/N 0107-LF-031-0466

SHIP'S DECK LOG SHEET

IF CLASSIFIED STAMP SECURITY MARKING HERE

USE BLACK INK TO FILL IN THIS LOG

		SHIP TYPE	HULL NUMBER	YEAR	MONTH	ZONE	DAY		CLASS	MARKS
D	A	C V N	0 6 8	4	1 1	U	1 4	E	U	

USS MIMITE

AT/PASSAGE FROM SO CAL

IN OP AREA

POSITION 0800 ZONE TIME	POSITION 1200 ZONE TIME	POSITION 2000 ZONE TIME	LEGEND
L ____ BY ____	L ____ BY ____	L ____ BY ____	1 - CELESTIAL 2 - ELECTRONIC
λ ____ BY ____	λ ____ BY ____	λ ____ BY ____	3 - VISUAL 4 - D.R.

TIME	ORDER	CSE	SPEED	DEPTH	RECORD OF ALL EVENTS OF THE DAY
					1500 - 2000 (CONT)
1539	AA3				050 RPM STBD
					RED DECK
	E30R				ONE SHORT BLASTS
1543	AA3				060 RPM
1544	R170				
1545	AAF				110 RPM
1548		170			165 DEGMG
1549					AMBER DECK
1551					RED DECK
1553	AAS				075 RPM
	L160				
1557	L155				
1558					LO IS OFF THE BRIDGE
1559		195			190 DEGMG
1600					SET INT'T AT 0 TAPS
1606					AMBER DECK
1608					CO IS ON THE BRIDGE
1610	AAS				065 RPM
1612	AA3				040 RPM
1613					RED DECK
	L15R				TWO SHORT BLASTS
	L10R				
1615	L30R				
1616	AA2				030 RPM
1618	L355				
1620	AA2				040 RPM
					GREEN DECK
1621	AA2				050 RPM
1622		355			337 DEGMG
1623					ENERGIZED NAV LIGHTS

REPORT SYMBOL OPNAV 3100-10

IF CLASSIFIED STAMP REVIEW / DECLASSIFICATION DATE HERE

U.S. GPO 1986-764-XXX/XXXXX

IF CLASSIFIED STAMP SECURITY MARKING HERE

OPNAV 3100/99 (REV. 7-84)
S/N 0107-LF-031-0400

SHIP'S DECK LOG SHEET

IF CLASSIFIED STAMP SECURITY MARKING HERE

USE BLACK INK TO FILL IN THIS LOG

D A | SHIP TYPE: CVN | HULL NUMBER: 068 | YEAR 04 MONTH 11 ZONE U DAY 14 | E

USS NIMITZ

AT / PASSAGE FROM SO CAL

TO OP AREA

CLASS U

POSITION 0800 ZONE TIME	POSITION 1200 ZONE TIME	POSITION 2000 ZONE TIME	LEGEND
L ____ BY ___	L ____ BY ___	L ____ BY ___	1-CELESTIAL 2-ELECTRONIC
L ____ BY ___	L ____ BY ___	L ____ BY ___	3-VISUAL 4-D.R.

TIME	ORDER	CSE	SPEED	DEPTH	RECORD OF ALL EVENTS OF THE DAY
					1600 - 2000 (CONT)
1626	AA2			Ø4Ø RPM	
1627				ENERGIZED TASKING LIGHTS	
1641	R358				
	AA2			Ø5Ø RPM	
		358			
1642	RSR	359			
1643	AA2			Ø4Ø RPM	
		359			
1644	RØØØ				
1646	L354				
1649	RØØØ				
1650		ØØØ			
1653	L15R			RED DECK	
1654	AA1			Ø3Ø RPM	
				CO	IS OFF THE BRIDGE
1656	L305				
	L3Ø4				
17Ø1		3Ø4		26Ø	DEGMAG
* 1656				ASSUMED TACON OF USS PRINCETON,	
				STATIONED AS PLANE GUARD.	
1721				ENS [redacted] HAS THE CONN	
1725	R15R				
LOG 1727	R30R			LT. [redacted] HAS THE DECK	
					[redacted]
					16ØØ - 2ØØØ (CONT)
1727				ASSUMED THE WATCH UNDERWAY AS BEFORE	
1729	AA1			Ø35 RPM	
173Ø	R345			SET 072°T AT 8.1 KTS	

REPORT SYMBOL OPNAV 3100-15

IF CLASSIFIED STAMP REVIEW / DECLASSIFICATION DATE HERE

IF CLASSIFIED STAMP SECURITY MARKING HERE

OPNAV 3100/99 (Rev. 7-84)
S/N 0107-LF-031-4400

SHIP'S DECK LOG SHEET

IF CLASSIFIED STAMP SECURITY MARKING HERE

USE BLACK INK TO FILL IN THIS LOG

		SHIP TYPE	HULL NUMBER	YEAR	MONTH	ZONE	DAY		CLASS	MANUAL
D	A	CVN	068	4	11	U	14	E	U	

USS NIMITZ

AT/PASSAGE FROM SO CAL

TO OP AREA

POSITION 0800 ZONE TIME	POSITION 1200 ZONE TIME	POSITION 2000 ZONE TIME	LEGEND
L ____ BY ___	L ____ BY ___	L ____ BY ___	1 - CELESTIAL
λ ____ BY ___	λ ____ BY ___	λ ____ BY ___	2 - ELECTRONIC
			3 - VISUAL
			4 - D.R.

TIME	ORDER	CSE	SPEED	DEPTH	RECORD OF ALL EVENTS OF THE DAY
					1600-2000 (cont)
1735				CO IS	ON THE BRIDGE
1734				GREEN	DECK
1735		345		316	PDGMC
1735	AAZ			030	RPM
1744	L10R	342			
1746		342		321	DFGMC
1748	R344				
1749		344		321	DFGMC
Rev 1752	AAZ	~~344~~		040	RPM
1753	R346				
1754		346			
1755	R348				
1757		348		329	DFGMC
	R350				
1759	AAZ			045	RPM
		350		331	DFGMC
1801	L349			SET	116°T AT 01 KTS
1802	L348				
1803		348		329	DFGMC
1805	AAZ			050	RPM
1808	AAZ			055	RPM
1810	AAZ			060	RPM
1812				FOX	CORPEN IS 346° AT 10KTS
1824	AAZ			050	RPM
1837				RED	DECK
				AMBER	DECK
1841				RED	DECK
1845				CO	IS OFF THE BRIDGE
X 1850				SET	100°T AT 01KTS
1854				CO	IS ON THE BRIDGE

REPORT SYMBOL OPNAV 3100-10

IF CLASSIFIED STAMP REVIEW/DECLASSIFICATION DATE HERE

IF CLASSIFIED STAMP SECURITY MARKING HERE

OPNAV 3100/99 (REV. 7-81)
S/N 0107-LF-031-0400

SHIP'S DECK LOG SHEET

IF CLASSIFIED STAMP SECURITY MARKING HERE

USE BLACK INK TO FILL IN THIS LOG

		SHIP TYPE	HULL NUMBER	YEAR	MONTH	ZONE	DAY		CLASS	MANUAL
D	A	CVN	068	4	11	U	14	E	U	/

USS NIMITZ

AT/PASSAGE FROM SO CAL

TO OPAREA

POSITION ZONE TIME	POSITION ZONE TIME	POSITION ZONE TIME	LEGEND
0800 L ___ BY ___ λ ___ BY ___	1200 L ___ BY ___ λ ___ BY ___	2000 L 31° 45.7 N BY 2,4 λ 117 56.5 W BY 2,4	1 - CELESTIAL 2 - ELECTRONIC 3 - VISUAL 4 - D.R.

TIME	ORDER	CSE	SPEED	DEPTH	RECORD OF ALL EVENTS OF THE DAY
					1600 - 2000 (CONT.)
1855				GREEN DECK	
1901	AAZ			065	RPM
1902	RSR				
	LSR				
1905		345		326	TRUE
1907				SET	[illegible] AT 2KTS
1912	AAZ			055	RPM
1919	AAS			065	RPM
1923	AAZ			050	RPM
1926				LTJG	[redacted] HAS THE CONN
	AAZ			045	RPM
1926	R-345				
1927				LTJG	[redacted] HAS THE DECK [redacted] LT
					2000 - 2400
1929				RELIEVED	THE WATCH UNDERWAY AS BEFORE
1928		348		330	TRUE
1931	R-349				
1933		349		331	DFGMC
	R354				
1934		351		333	DFGMC
1935				SET	050°T @ 03KTS
1938	LSR				
1940		349			
	AAS			070	RPM
1949				200	[illegible]
1955		360		343	TRUE
1957	AAZ			035	RPM

REPORT SYMBOL OPNAV 3100-10

IF CLASSIFIED STAMP REVIEW / DECLASSIFICATION DATE HERE

IF CLASSIFIED STAMP SECURITY MARKING HERE

SHIP'S DECK LOG - TITLE PAGE

IF CLASSIFIED STAMP SECURITY MARKING HERE

FOR OFFICIAL USE ONLY

SHIP'S DECK LOG

OF THE

U.S.S. CHAFEE

DDG-090
(hull number)

ATTACHED TO
- DIVISION
- DESRON 31 SQUADRON
- GROUP
- FLEET

COMMENCING 31 OCT, 2300 +10W (zone time and date) 19 2004

AT NAVSTA PEARL HARBOR, HI (location)

ENDING 30 NOV, 2318 +8U (zone time and date) 19 2004

AT IVIC SO-CAL OP AREA (location)

EXAMINED AND CERTIFIED TO BE CORRECT [redacted] LT (name, grade and signature) [redacted]

APPROVED BY JOHN W. AILES CDR (name, grade and signature) [redacted] COMMANDING

TO BE COMPLETED FOLLOWING CHANGE OF COMMAND

DATE OF CHANGE OF COMMAND

APPROVED BY (name, grade and signature of Relieving Commanding Officer) COMMANDING

FORWARD DIRECT TO THE CHIEF OF NAVAL OPERATIONS AT THE END OF EACH MONTH

REPORT SYMBOL

IF CLASSIFIED STAMP REVIEW/DECLASSIFICATION DATE HERE

IF CLASSIFIED STAMP SECURITY MARKING HERE

OPNAV 3100/99 (Rev. 7-84)
S/N 0107-LF-031-0400

SHIP'S DECK LOG SHEET

IF CLASSIFIED STAMP SECURITY MARKING HERE

USE BLACK INK TO FILL IN THIS LOG

SHIP TYPE	HULL NUMBER	YEAR	MONTH	CENT	DAY		CLASS	MARKING
D A D D G	0 9 2	4	1 1	N	2 4	E	U	/

UNIT [illegible]

AT/PASSAGE FROM PEARL HARBOR

TO SOCAL OP AREA

POSITION 0800 ZONE TIME	POSITION 1200 ZONE TIME	POSITION 2000 ZONE TIME	LEGEND
L. ___ BY ___	L. ___ BY ___	L. ___ BY ___	1 - CELESTIAL 2 - ELECTRONIC
λ ___ BY ___	λ ___ BY ___	λ ___ BY ___	3 - VISUAL 4 - D.R.

TIME	ORDER	CSE	SPEED	DEPTH	RECORD OF ALL EVENTS OF THE DAY
					0700-1200 [illegible]
0823	PMS		17		
	PAF		24		
0834					GREEN DECK
0843					[illegible] OFF THE [illegible]
0918					[illegible]
0942					[illegible]
					[illegible]
1021	[illegible]		18		
1023	PAF		20		
1038					[illegible] DECK
[illegible]					[illegible]
1041	[illegible]	[illegible]	5		
1053	CLOSE				
1054		266			257 [illegible]
1055	PAF		30		
1057					[illegible] DECK
1100					[illegible]
1123					[illegible]
1128					[illegible] [redacted] HAS THE CONN
1133	[illegible]		10		
1135	CLOSE				
1137		[illegible]			[illegible]
1140	DAS		17		
1145					LT [redacted] HAS THE DECK
					[redacted]
					1200-1600 [illegible]
1145					ASSUMED THE WATCH [illegible]
1157	CLOSE				

REPORT SYMBOL OPNAV 3100-10

IF CLASSIFIED STAMP REVIEW/DECLASSIFICATION DATE HERE

IF CLASSIFIED STAMP SECURITY MARKING HERE

SHIP'S DECK LOG SHEET

OPNAV 3100/99 (Rev. 7-84)
S/N 0107-LF-031-0400

IF CLASSIFIED STAMP SECURITY MARKING HERE

USE BLACK INK TO FILL IN THIS LOG

SHIP TYPE: D A [illegible] | HULL NUMBER: [illegible]

YEAR / MONTH / ZONE / DAY: [illegible]

E

USS CHAFEE

AT/PASSAGE FROM [illegible]

TO [illegible]

CLASS / U

POSITION ZONE TIME 0800 L. BY λ BY

POSITION ZONE TIME 1200 L. BY λ BY

POSITION ZONE TIME 2000 L. BY λ BY

LEGEND
1 - CELESTIAL
2 - ELECTRONIC
3 - VISUAL
4 - D.R.

TIME	ORDER	CSE	SPEED	DEPTH	RECORD OF ALL EVENTS OF THE DAY
					1200-1700 [illegible]
[illegible]	[illegible]				
	[illegible]				
[illegible]	[illegible]		5		
[illegible]		[illegible]		[illegible]	
				[illegible]	
[illegible]	[illegible]		20		
	[illegible]				
	[illegible]				
[illegible]	[illegible]				
[illegible]				[illegible]	
	[illegible]				
	[illegible]				
[illegible]	[illegible]		5		
[illegible]		[illegible]		[illegible]	
[illegible]	[illegible]				
	[illegible]				
[illegible]	[illegible]				
	[illegible]				
[illegible]	[illegible]				
	[illegible]				
[illegible]		[illegible]		[illegible]	
[illegible]				[illegible]	
[illegible]	[illegible]		[illegible]		
[illegible]				[illegible]	
[illegible]	[illegible]				
	[illegible]				
		[illegible]		[illegible]	
[illegible]				[illegible]	
[illegible]				[illegible]	

REPORT SYMBOL OPNAV 3100-11

IF CLASSIFIED STAMP REVIEW/DECLASSIFICATION DATE HERE

IF CLASSIFIED STAMP SECURITY MARKING HERE

OPNAV 3100/99 (Rev. 7-84) S/N 0107-LF-031-0[illegible]

SHIP'S DECK LOG SHEET

IF CLASSIFIED STAMP SECURITY MARKING HERE

USE BLACK INK TO FILL IN THIS LOG

SHIP TYPE	HULL NUMBER	YEAR	MONTH	ZONE	DAY
D A DDG	090	4	11	12	14

USS CHAFEE

AT/PASSAGE FROM HAWAIIAN

TO OP AREA

LEGEND: 1 - CELESTIAL, 2 - ELECTRONIC, 3 - VISUAL, 4 - D.R.

TIME	ORDER	CSE	SPEED	DEPTH / RECORD OF ALL EVENTS OF THE DAY
				1200-1700 (cont)
1300				SET [illegible] °T DRIFT [illegible] KTS
1305				COMMANDING OFFICER IS ON THE BRIDGE
1319	RSA 5020			
1325		059		059 PSTGC
				SET LOW VISIBILITY DETAIL
1340				SECURED LOW VISIBILITY
1342				SECURED NAVIGATION LIGHTS
				SET [illegible] °T DRIFT 6 KTS
1400				SET 319.3T DRIFT 13
1417				ENERGIZED NAVIGATION LIGHTS
1417				STATIONED LOW VISIBILITY DETAIL
1434				SET 023 DRIFT 13 KTS
1453	CL 060			
1454		065		057 PSTGC
1502	CL 067			
1503		067		067 PSTGC
1507	CL 055			
		055		045 PSTGC
1523				ENS [redacted] HAS THE CONN
1525				TANK GROUNDED LA SERVICES
1530				ENS [redacted] HAS THE CONN
		035		054 PSTGC
				SET 166°T DRIFT 3.4 KTS
1538	RR 5071			
1539		091		061 PSTGC
				MINOR STEERING FAULT
1557	CG 580.4			

REPORT SYMBOL OPNAV 3100-15

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OPNAV 3100/99 (Rev. 7-84)

SHIP'S DECK LOG SHEET

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USE BLACK INK TO FILL IN THIS LOG

USS CHAFEE

AT/PASSAGE FROM HAWAIIAN

TO SOCAL

D A DDG 90 4 11 W 14

LEGEND: 1 - CELESTIAL 2 - ELECTRONIC 3 - VISUAL 4 - D.R.

TIME	ORDER	CSE	SPEED	DEPTH	RECORD OF ALL EVENTS OF THE DAY
					1200-1700 (CONT)
1551		069		059	PSTGC
1600				SET	061°T DRIFT 1.5
1618	LISR				
	SAFG				
1611		060		060	PSTGC
					ENERGIZED NAVIGATION LIGHTS
1623					COMMANDING OFFICER IS ON THE BRIDGE
					COMMANDING OFFICER IS OFF THE BRIDGE
1640	CL 060				
					SET 301°T DRIFT 1.2 KTS
1643	PAS		17		
1648				LTJG	[redacted] HAS THE DECK
					X [redacted]
					X
					1700-2300
1648					ASSUMED THE DECK UNDERWAY AS BEFORE
1649					ENS [redacted] HAS THE CONN
1653	R 065				
1654		065		063	PSTGC
1656	R 070				
1658		070		068	PSTGC
1700					SET = 208°T DRIFT = 2.3 KT
					OBSERVED SUNSET
1708					SECURED FOG SIGNALS VISIBILITY 5 NM
1709	L 067				
1710		067		057	PSTGC
1730					SET = 227°T DRIFT = 2 KT
1733	L 065				
1735		065		063	PSTGC

REPORT SYMBOL OPNAV

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SHIP'S DECK LOG - TITLE PAGE
OPNAV 3100/99 (Rev. 7-86) S/N 0107-LF-480-7020

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FOR OFFICIAL USE ONLY

SHIP'S DECK LOG

OF THE

U.S.S. HIGGINS

DDG - 076
(hull number)

ATTACHED TO
- ______________ DIVISION
- TWO - THREE SQUADRON
- ______________ GROUP
- THIRD FLEET

COMMENCING +8U 2145 31 OCTOBER, 19 2004
(zone time and date)

AT PIER 2 NAVSTA SAN DIEGO
(location)

ENDING +8U 2209 30 NOVEMBER, 19 2004
(zone time and date)

AT 32° 41.2' N 118° 36.9' W SOCAL OPAREA
(location)

EXAMINED AND CERTIFIED TO BE CORRECT [redacted] LT, USN [redacted]
(name, grade and signature)

APPROVED BY R. T. KITCHENER, CDR, US [redacted]
(name, grade and signature)
COMMANDING

TO BE COMPLETED FOLLOWING CHANGE OF COMMAND

DATE OF CHANGE OF COMMAND: 17 NOV 04

APPROVED BY J. A. WILSON, CDR, [redacted]
(name, grade and signature of Relieving Commanding Officer)
COMMANDING

FORWARD DIRECT TO THE CHIEF OF NAVAL OPERATIONS AT THE END OF EACH MONTH

REPORT SYMBOL OPNAV 3100-99

IF CLASSIFIED STAMP REVIEW/DECLASSIFICATION DATE HERE

IF CLASSIFIED STAMP SECURITY MARKING HERE

SHIP'S DECK LOG SHEET

USS HIGGINS DDG 76

AT/PASSAGE FROM [illegible] TO [illegible]

Ship Type	Hull Number	Year	Month	Day
DDG	076	[illegible]	[illegible]	[illegible]

TIME	ORDER	CSE	SPEED	DEPTH	RECORD OF ALL EVENTS OF THE DAY
					[illegible]
[illegible]					[illegible]
					[illegible] [redacted]
[illegible]					[illegible]
[illegible]					[illegible] [redacted]
					[redacted]
					0000 – 0700
0045					ASSUMED THE WATCH MANNED AS BEFORE.
0320					SOUNDING AND SECURITY REPORTS ALL SECURE
0325					INTERNAL ROVER REPORTS ALL SECURE
0440					SOUNDING AND SECURITY REPORTS ALL SECURE
0444					INTERNAL ROVER REPORTS ALL SECURE
0533					SOUNDING AND SECURITY REPORTS ALL SECURE
0539					INTERNAL ROVER REPORTS ALL SECURE
0645					WATCH PROPERLY RELIEVED BY [redacted]
					[redacted]

REPORT SYMBOL OPNAV 3100-10

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IF CLASSIFIED STAMP SECURITY MARKING HERE

OPNAV 3100/99 (Rev. 7-81)
S/N 0107-LF-031-0000

SHIP'S DECK LOG SHEET

IF CLASSIFIED STAMP SECURITY MARKING HERE

USE BLACK INK TO FILL IN THIS LOG

D A [illegible] | SHIP TYPE | HULL NUMBER | YEAR 4 | MONTH 11 | ZONE U | DAY 14 | E

USS HIGGINS (DDG-76)

AT / PASSAGE FROM HAVSTA S.D.

TO PIER 1

CLASS U | MARKS /

POSITION 0800	ZONE	TIME	POSITION 1200	ZONE	TIME	POSITION 2000	ZONE	TIME	LEGEND
L. ______ BY ___			L. ______ BY ___			L. ______ BY ___			1 - CELESTIAL 2 - ELECTRONIC 3 - VISUAL 4 - D.R.
λ ______ BY ___			λ ______ BY ___			λ ______ BY ___			

TIME	ORDER	CSE	SPEED	DEPTH	RECORD OF ALL EVENTS OF THE DAY
					0100 - 1200
0745					ASSUMED THE WATCH MOORED AS BEFORE
0800					OBSERVED MORNING COLORS
0810					RECEIVED DAILY BOAT REPORT, DRAFT REPORT, FUEL/WATER
					REPORT AND COMBAT SYSTEMS REPORT.
0910					RECEIVED DAILY MASTER REPORT AND CHRONOMETER REPORT
1145					PROPERLY RELIEVED BY ENS [redacted]
					X [illegible] [redacted]
					X [redacted]
					1200 - 1700
1145					ASSUMED THE WATCH MOORED AS BEFORE.
1200					STRUCK 8 BELLS ON TIME.
1345					INTERNAL ROVER REPORTS ALL CONDITIONS NORMAL.
1645					PROPERLY RELIEVED BY LT [redacted]
					X [illegible] [redacted]
					X [illegible] [redacted]
					1700 - 2200
1645					ASSUMED THE WATCH MOORED AS BEFORE.
16[illegible]					OBSERVED EVENING COLORS.
170[illegible]					INTERNAL ROVER REPORTS ALL CONDITIONS NORMAL.
1832					INTERNAL ROVER REPORTS ALL CONDITIONS NORMAL.
1935					INTERNAL ROVER REPORTS ALL CONDITIONS NORMAL.
1959					XO ON BOARD.
2017					INTERNAL ROVER REPORTS ALL CONDITIONS NORMAL
2145					WATCH PROPERLY RELIEVED BY CC [redacted]
					[redacted]
					NEEEP

REPORT SYMBOL OPNAV 3100-10

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APPENDIX D

Advanced Targeting Forward Looking Infrared Radar (ATFLIR)

AN/ASQ-228

by Peter Reali

AN/ASQ-228 ATFLIR

The ATFLIR AN/ASQ-228 operates in the medium infrared portion of the spectrum, at 3.7-5.0 nanometer wavelengths and is self cooled by the F/A-18 "Super Hornet's" indigenous mechanics. It is not only passive, but contains a laser designator. It can also provide low-light television viewing in the visual range and for different applications, it can switch among 0.7°, 2.8° and 6.0° fields of view. Common optics and a mid-wave staring focal plane array support an infrared channel with 30x magnification and an electro-optical channel offering up to 60x magnification.[1]

AN/ASQ-228 ATFLIR

with other weapon systems and platforms for close cooperation on the battlefield.

Working closely with its U.S. Navy and Marine Corps teammates, Raytheon is committed to a number of future enhancements, including laser (IR) marker, electronics consolidation, sensor fusion, and automatic target recognition as well as improvements to the pod's EO camera, laser tracker and detection range.

In both air-to-ground and air-to-air missions, ATFLIR's sharp imagery makes it easier for aircrews to identify friendly versus enemy forces.

Tactical Capabilities

- Precision targeting
- Long range (>40 nautical miles)
- High-altitude (>50,000 feet) laser designation
- First-pass kill and J-series weapon delivery
- Tactical laser ranging
- Air and ground target tracking
- Real-time bomb hit assessment/indication

Current Features

- Common optical path
- Continuous auto-boresight alignment
- Visible (EO) camera
- Built-in navigation FLIR (optional)
- 360° roll drive unit

Planned Enhancements

- Laser marker
- Electronics consolidation
- Sensor fusion
- Automatic target recognition
- Improved EO camera and laser spot tracker
- Increased detection range

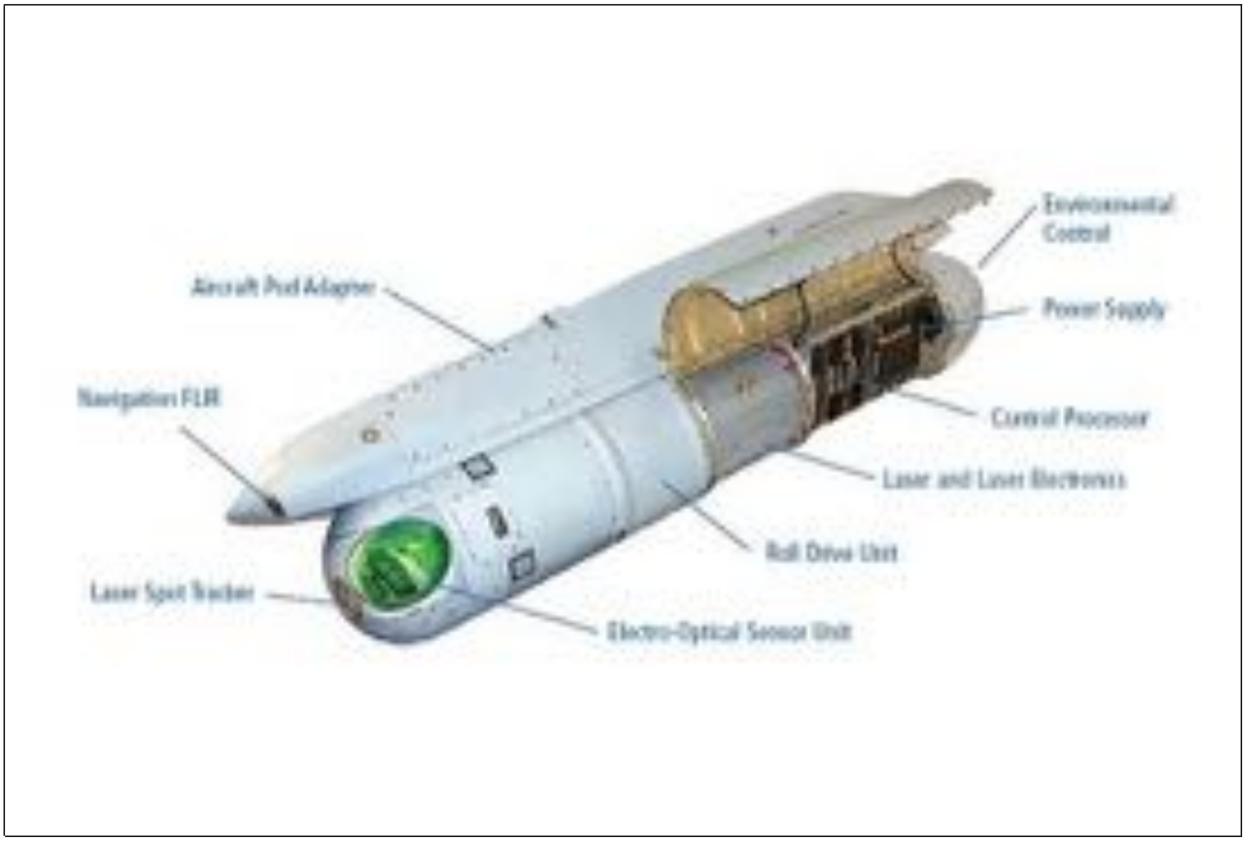
Specifications	
Focal plane	640 x 480 InSb
Spectral band	3.7-5.0 mm
Field of view	0.7°, 2.8°, 6.0°
Reliability	>600-hr MTBF
Supportability	Optional 2-level
Testability	Detection: 95% Isolation: 98%
Weight	420 lb (191 kg)
Length	72 in. (183 cm)
Diameter	13 in. (33 cm)

Raytheon Company
Space and Airborne Systems
2000 E. El Segundo Blvd.
P.O. Box 902
El Segundo, California
90245-0902 USA

www.raytheon.com

1 David Donald, "Proven in combat, Raytheon ASQ-228 gets upgraded," *AIN Online*, December 12, 2006. https://www.ainonline.com/aviation-news/defense/2006-12-12/proven-combat-raytheon-asq-228-gets-upgraded. Accessed August 8, 2018.

The AN/ASQ-228 is 72 in (183 cm) long, weighs 420 lb (191 kg), and has a slant range of 40 mi (64.3 km), and is said to be useful at altitude of up to 50,000 ft (15,240 m). It has fewer parts than many previous systems, which it intended to improve. Crews indicate that it offers much greater target resolution and image accuracy than previous systems.

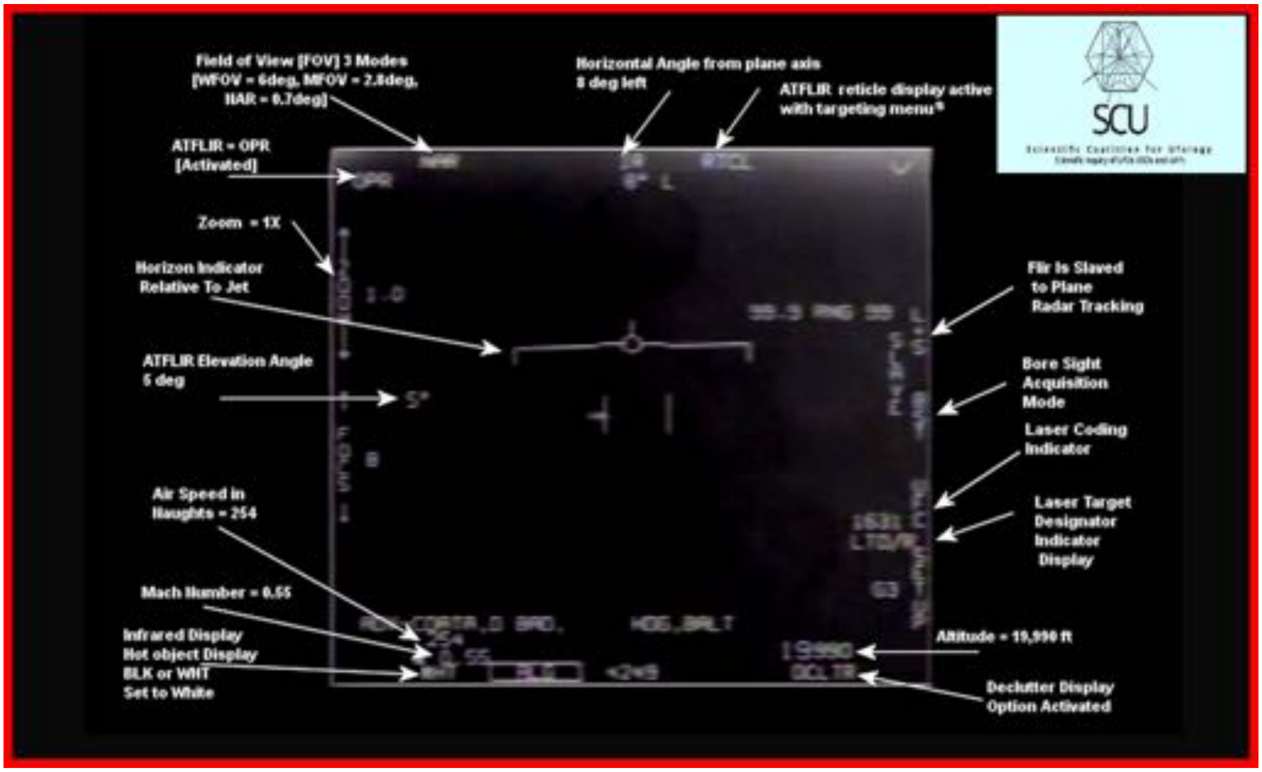


Courtesy of Thai Military and Asian Archives 2015[2]

ATFLIR presently is used only by the US Navy on the Boeing F/A-18E/F Super Hornet and the earlier F/A-18C/D and with Marine Corps F/A-18Cs when deployed onboard aircraft carriers. It is normally carried on one of the fuselage hard-points otherwise used for AIM-120 AMRAAM missiles.

The AN/ASQ-228 ATFLIR was the most advanced infrared optical system in 2004 and remains so today but it's greatest asset is the situational awareness it provides the pilot and target designator. To provide this capability an advanced visual cockpit display, as shown below, presents all the important information to a viewing screen to be accessed for necessary operational and targeting activities.

2 Thai Military and Asian Region, https://thaimilitaryandasianregion.wordpress.com/2015/10/30/f18-super- hornet/. October 30, 2015. Accessed August 8, 2018.



AN/ASQ-228 ATFLIR Cockpit Digital Display derived from the FLIR-1 Video described later - Copyright SCU [Scientific Coalition For Ufology]

As can be seen from the display above starting from the bottom left moving clockwise: The display can show, when viewed in the infrared camera, objects that are hotter than the spatial background as either White or Black and here it is set for White. The air speed in Nautical Miles/hr and Mach Number or % of the speed of sound at the local barometric pressure. Shown here as 254 N and 0.55M respectively. The elevation angle of the ATFLIR camera, as it tracks an object in degrees. Here shown as 5 deg above the Horizon. The horizon bar/ladder indicator showing the true angle of the horizon relative to the air-frame axis. The Zoom indication of 1X or 2X currently shown as 1X. The OPR indicating the ATFLIR is activated but it can be turned off in other conditions. The Field of view shown as NAR which is the narrowest field of view of 0.7deg but can be widened to either 2.8 or 6 degrees as needed. The horizontal angle of the ATFLIR optical gimbal as it rotates from the axis of the plane, shown here as 8 deg left of the long axis. RCTL displays that the reticle is active with the targeting information being displayed. Below it is the IR indicator showing it is in the Infrared Mode and not TV mode. The ATFLIR is slaved to the radar tracking system and that there are other options are available. It is in the bore site acquisition mode and other options may be used. A laser coding indicator that is classified information. The planes altitude shown as 19,990 ft and that a de-clutter display option is activated by the pilot; presumably to make the reading of critical information more efficient.

There have been more recent incidents showing these displays that differ somewhat from the above display but this is the display available in 2004 and current equipment is much more capable and has been enhanced greatly requiring the addition of additional displays not shown here. Some of the information is still classified or unknown by the authors and is not described here, although it appears on the screen.

APPENDIX E

VIDEO PROVENANCE

by Robert Powell

ATFLIR VIDEO TAKEN ON NOV. 14, 2004

The ATFLIR video is valuable to the extent that it supports the testimony that has been provided by the pilots and the individuals who had access to the radar systems onboard the USS *Princeton*. The source of the video will be discussed in this appendix.

The video first surfaced in the public on 2007 where it was hosted on a German website, *Vision Unlimited*, a company specializing in film and 3D Animations and Virtual Reality. It was released by two anonymous witnesses using the name "The Final Theory" and "Cometa" after they initiated discussions on February 4, 2007 on the forum site *Above Top Secret*. The discussions centered around accusations of a faked video.[1] The video was later removed from the internet sometime after May 18, 2008 but can still be found using the *Wayback Machine's* internet archival system.[2] For future reference we will refer to this video as 'F4.mpg'.

The next time that the video became public was when the *New York Times* broke their front page story of the F/A-18 encounter with a UFO on December 16, 2017.[3] This video was also released by the group To The Stars Academy (TTSA) on their website. For future reference we will refer to this video as 'FLIR1.mp4'.

The SCU has evaluated the two videos and does not find any difference in the videos other than changes to the format. The 2007 release, F4.mpg, is 352x240 while the TTSA version, FLIR1.mp4, is 1280x720. It appears that TTSA changed the format to 1280x720 when adding extensive commentary. Both videos were broken into individual frames. There is only one frame difference between the two with the FLIR1.mp4 version having 2287 frames as compared to 2288 frames on the earlier F4.mpg version. The F4.mpg version was judged to be the better quality video and is the one that will be used in the analysis. It is problematic that a leaked government video and an "officially" released government video are the same but that is not an issue related to the authenticity of the video which is the chief concern here.

There is no reason to doubt the authenticity of the video as there are witnesses who saw the video on the Navy's classified internet system known as SIPRNet. These witnesses viewed the video on either the USS *Princeton* and the USS *Nimitz* within hours of the actual event. They have confirmed that this is the same video that they saw in 2004 except that the quality is degraded and the video is shorter than the original.

Petty Officer Gary Voorhis, when asked about the original video that he saw vs the one released by the *New York Times*, stated, "It was edited. There is a lot of information on those videos that wasn't there. Latitude and longitude..." He was asked if the video that he saw was about the same length as the video in the *New York Times* release and he replied, "No. It was longer."[4]

Petty Officer Jason Turner had a similar but more detailed discussion when comparing the original video to the one recently released. Just after the 5 minute mark of his interview, he explains:

---

1 *ATS: Above Top Secret*, "Fighter Jet UFO Footage: The Real Deal," http://www.abovetopsecret.com/forum/thread265835/pg9. Accessed 08/05/2018.

2 *Wayback Machine*, Accessed 08/08/2018. https://web.archive.org/web/20070217091957/http://www.vision-unlimited.de:80/extern f4.mpg

3 Cooper, Blumenthal, Keane, "Glowing Auras and 'Black Money': The Pentagon's Mysterious U.F.O. Program," *New York Times*, December 16, 2017, front page.

4 Gary Voorhis, interview by Robert Powell, telephone interview, April 6, 2018. Interview available at www.explorescu.org.

"A few days later [after the event] I had a friend who worked up in ceph? [word unclear], where the crytologic type missions work. I had a secret clearance so I was able to—he showed me the video after it happened so the video that you see is actually cut short. There is more video to it. Where that is, I don't know. It was quite a long video. The video doesn't show where this thing turned sideways and you can see it's elongated and how it turned and went in a different direction that they couldn't keep up with.

As soon as it surfaced again, I knew there was missing video. Where that missing video is or if someone cut it off when they uploaded it, who knows. But there is a lot more video on that particular one. The one that we see is really really grainy. The one that we saw, was not. The one that we're watching here, it looks like whatever that object is, it's a lot smoother than what we see on this video. It doesn't have a rough surface like this video has. It was very clear as to what the shape and dimensions of this thing was."[5]

The Senior Chief Kevin Day also confirms the videos are the same and recalls the original video to be longer. He states at about the 35th minute of his interview:

"That video that came out in the *New York Times*, our ship was in possession of that same video that day [of the event] or the next morning. It was emailed to my email account and I shared it with the team. The reason why I didn't take it with me myself, and believe me I wanted to, is because it resided on a secret computer system and unlike some people in government I hold secret stuff sacrosanrct and I don't take it home with me...
The one in the New York Times that was released was probably the exact same video that I had possession of immediately following the event. I think it was exactly the same video. The video on the New York Times was probably about, I would say maybe, a half to a third as long as the original one that I received."[6]

When LCDR Slaight was asked if the video that was released was the same one that he saw 14 years ago, he replied:

"You're talking about FLIR-1? Oh, yeah, yeah. That was our squadron's jet on the third cycle. I mean, I know the aircrew."

Slaight indicated that he did not know for certain if the length of the video was the same but he suspected that the original was longer. He explained his reasoning as follows:

---

5 Jason Turner, interview by Robert Powell, telephone interview, January 11, 2018. Interview available at www.explorescu.org.

6 Kevin Day, interview by Robert Powell, telephone interview, January 15, 2018 by Robert Powell. Interview available at www.explorescu.org.

> "My guess is it's a lot longer than that. Usually if you are on an engagement or something, you will throw your tapes on before you ever get there. That way you don't miss anything. In fact it's 'flights on—tapes on', so you don't forget."[7]

When asked about chain of custody and why hasn't the Department of Defense (DoD) officially indicated that they had released the video known as FLIR-1, retired CDR Fravor stated at the time of 46:49 on the recording:

> "I can't speak for DoD. When the airplane that took the video came back from their flight, the back-seater went into debrief and of course when he walks in one of the Petty Officers is sitting in there, one of the intel specialists, and goes, 'Oh, VFA-41 did you see any aliens?' He kind of laughed and he said, 'As a matter of fact they're on these tapes.' Then he threw the tapes down. So what happens with those tapes is—the targeting pod video that you've seen—they copy it off of the tape that we have—it's a Hi-8 tape that comes directly off the video feed to our displays so it's really not corrupted at all.
>
> In about 2007-2008 my WSO had sent me an email and said, 'Hey Skipper, does this look familiar?' It was actually the video that you have all seen now. Someone who had taken it off of the drive and did that [released it to the internet]."[8]

The video analyzed in this report, 'F4.mpg', is the same video as released by the New York Times except for formatting changes. Based on testimonies from multiple witnesses who saw the video on board ship in November of 2004, this is the same video. The only question is whether it is the same or a similar object as encountered by CDR Fravor and LCDR Slaight. Both pilots indicate that it is the same object.

---

7 Jim Slaight, interview by Robert Powell, telephone interview, February 22, 2018. Interview available at www.explorescu.org.

8 David Fravor, interview by Linda Moulton Howe. KGRA radio, June 28, 2018.

APPENDIX F

BACKGROUND INFORMATION ON CARRIER STRIKE GROUP ELEVEN (CSG 11)

by Robert Powell

Carrier Strike Group

A U.S. Navy Carrier Strike Group (CSG) is one of the most imposing military projections of power on Earth. Consisting of over 6,000 sailors, a nuclear aircraft carrier, at least one missile cruiser, multiple destroyers, air wings, and at least one nuclear submarine, a CSG has global reach. As Rear Admiral Faller noted: "It is capable of conducting large force strikes against multiple targets for days without replenishment. It can launch precision weapons from carrier-based aircraft and Tomahawk Land Attack Missiles. Hitting a car-sized target from a thousand miles away is not fiction."[1]

One of the reasons for a CSG's lethal abilities is the AEGIS weapon system and its AN/SPY-1 radar. A conventional radar detects a target when the radar beam strikes that target once during each 360 degree rotation of the antenna. A separate tracking radar is then required to engage each target. By contrast, the computer-controlled AN/SPY-1 Phased Array Radar of the AEGIS system does this in one system. The four fixed hexagonal arrays send out beams of electromagnetic energy in all directions simultaneously, continuously providing a search and tracking capability for hundreds of target simultaneously. The system's capability was proved in the early 1990s during Operation Desert Storm, when the AEGIS-equipped cruiser Bunker Hill took over tactical control of 26 warships and more than 300 aircraft, directing attacks against Iraqi forces & coordinating the interception of enemy missiles.[1,2]

The Carrier Strike Group involved in the November 14, 2004, incident off the southwest coast of California was Carrier Strike Group Eleven and commanded by Rear Admiral D.C. Curtis. It was centered around the nuclear powered aircraft carrier USS *Nimitz*, missile cruiser USS *Princeton*, destroyers USS *Chafee* and USS *Higgins*, nuclear submarine USS *Louisville*, and Carrier Air Wing-11 (CVW-11) which consisted of VMFA-232, VFA-41,VAW-117, VFA-14, VFA-94, VAQ-135, VRC-30, and HS-6.[3]

An illustration by Austin Rooney for the United States Navy.

1 Rear Admiral Craig Faller, Commander, Carrier Strike Group Three. *Navy Blog: The Official Blog of the U.S. Navy*, "Value of a Carrier Strike Group," October 17, 2011. http://navylive.dodlive.mil/2011/10/17/value-of-a-carrier-strike-group/2147483647/. Accessed June 11, 2018.

2 *Lockheed Martin*, "Aegis, Shield of the Fleet." https://www.lockheedmartin.com/en-us/news/features/history/aegis.html Accessed June 5, 2018.

3 Source material from the U.S. Navy. http://www.pbs.org/weta/carrier/air_wing_11.htm Accessed June 5, 2018.

USS *Princeton*


USS Princeton, May 2003, U.S. Navy file photo

The USS *Princeton* is a *Ticonderoga* class cruiser and is identified as CG 59. She was commissioned in 1989 and has a crew of about 350 including 24 officers. In addition to the SPY-1B radar the ship was equipped at the time with the Raytheon SPS-49 air search radar, four Raytheon SPS-62 radar, the Lockheed SPQ-9A/B system, and surface search radar. The ship also had the SQS-53B sonar and the SQR-19 passive towed sonar. The *Princeton* also has a helicopter landing pad.[4]

It was the AEGIS-equipped cruiser *Princeton* that owned the tactical role in the USS *Nimitz* Carrier Strike Group Eleven during a naval exercise off the southwest coast of California in November of 2004. She was equipped with an upgraded version of the SPY-1 radar, the AN/SPY-1B. Its phased array radar operated in S-band varying from 3.1 to 3.5 GHz with an instantaneous bandwidth of 40 MHz, a peak power of 4-6 megawatts, and pulses with lengths as short as 6.4 microseconds.[5] It was the *Princeton* that had the most powerful radar system in the strike group and her computer systems coordinated radar returns from all the ships in the strike group including the E-2 Hawkeye an airborne early warning aircraft.

The *Princeton* coordinates and compiles radar information from all ships and aircraft in the strike group using the Cooperative Engagement Capability (CEC) system. CEC is a system of hardware and software that allows the sharing of multiple radar on air targets amongst CEC equipped units. Sensor data from individual units are transmitted to other units in the network real time. Each CEC equipped ship or plane uses identical sensor data processing algorithms resulting in each unit having the same display of radar tracks.[5] This approach requires sharing measurements from every sensor (unfiltered range, bearing, and elevation) among all units[ships & aircraft] while retaining the critical data characteristics of accuracy and timeliness. Thus the strike group can operate as a single, distributed, theater defensive system.[6] An educational video that explains the CEC system can be found here: https://www.youtube.com/watch?v=WumIk1MwVPM

The CEC system minimizes the possibility of false radar tracks as noted in the John Hopkins APL Technical Digest: “Design improvements have been made for some radar systems as part of the CEC integration process to ensure low false track rate on the net and yet high sensitivity for cueing. Generation of false tracks, e.g., due to clutter, at a rate tolerated on a single unit is often too high for a network of units, so further processing is provided in the CEP (Cooperative Engagement Processor).”[6]

4 *Jane’s All the World’s Ships, 2004-2005.*

5 U.S. Navy Fact Sheet, “CEC - Cooperative Engagement Capability”, http://www.navy.mil/navydata/fact_display.asp?cid=2100&tid=325&ct=2 Office of Corporate Communications, Naval Sea Systems Command (OOD), Washington, D.C. 20376. Last updated January 25, 2017. Accessed May 31, 2018.

6 “The Cooperative Engagement Capability,” *John Hopkins APL Technical Digest,* Volume 16, No 4, 1995.

USS *Nimitz*

USS Nimitz, March 1996, US Navy file photo

USS *Nimitz* (CVN 68) is a nuclear-powered super carrier of the U.S. Navy, and the lead ship of her class. One of the largest warships in the world, she was commissioned on May 3, 1975. The ship is 1092 feet long, 252 feet wide, 24 stories high, has two nuclear power plants, holds about 5,000 sailors, and can carry about 75 aircraft. In 2004 the *Nimitz* had multiple radar systems including the ITT SPS-48E an air search radar operating at E/F bands, the Raytheon SPS49 air search radar at C/D bands, the Hughes Mark 23 target acquisition radar, and the Northrop Grumman SPS-64 navigational radar at G band.[4] The strength of a *Nimitz* class carrier is also in the aircraft that are carried, especially the F/A-18E/F Super-Hornets.

VFA-41

VFA-41 F/A-18F Super Hornet, Courtesy U.S. Navy

The F/A-18F crew consists of a pilot and a weapons system officer. It has two engines, is capable of speeds greater than Mach 1.8, a length of 60'3", a 44'9" wingspan, and a tactical range of 1275 nautical miles. In 2004 it was equipped with the APG-73 radar system, an all-digital, multi-mode radar for use in both air-to-air and air-to-ground combat missions. It is an all weather, coherent, multi-mode, multi-waveform search-and-track sensor. A Terrain Avoidance mode is used for low-level penetration missions, and an Air-to-Surface Ranging mode is available for the accurate delivery of both guided and unguided munitions. A specialized Sea Search mode will enable the system to acquire and track ship targets in any sea state. It operates at a frequency of 8-12 GHz and has a range of 60 nautical miles.[7]

The primary F/A-18F squadron that was involved in this incident was VFA-41, known as the Black Aces. With a history that extends back to 1945, the Black Aces became the first operational F/A-18F Super-Hornet squadron in 2001 and were first deployed in 2003. Their home port is NAS Lemoore in California. This squadron along with the USS *Nimitz* was most recently portrayed in their 2005 deployment to the Gulf during the Iraq war in the Public Broadcasting System (PBS) miniseries documentary "Carrier" in 2008.[8] The lead pilot in the interception of the "Tic-Tac" and the commanding officer of VFA-41, David Fravor, is also part of PBS's documentary "Carrier". CDR Fravor's command consisted of about 300 servicemen and 12 F/A-18F Super Hornets.

7 *Airborne Electronics Forecast*, October 2007.
8 Official U.S. Navy website. "The Black Aces," http://www.vfa41.navy.mil/, Last updated August 15, 2013. Accessed June 11, 2018.

VAW-117 E-2 Hawkeye Airborne Early Warning Aircraft

E-2 Hawkeye, Courtesy of the U.S. Navy

The E-2 Hawkeye is the Navy's all-weather, carrier-based tactical battle management airborne early warning, command and control aircraft. The E-2 is a twin engine, five crew member, high-wing turboprop aircraft with a 24-foot diameter radar rotodome attached to the upper fuselage. The Hawkeye provides all-weather airborne early warning, airborne battle management and command and control functions for the CSG and Joint Force Commander. Additional missions may include surface surveillance coordination, air interdiction, offensive and defensive counter air control, close air support coordination, time critical strike coordination, search and rescue airborne coordination and communications relay. An integral component of the Carrier Strike Group air wing, the E-2 uses computerized radar, Identification Friend or Foe and electronic surveillance sensors to provide early warning, threat analysis against potentially hostile air and surface targets. It provided airborne command and control for successful operations during the first Arabian Gulf War.[9]

The VAW-117 squadron is known as "The Wallbangers". It is comprised of 150 officers and enlisted personnel. The Commander of VAW-117 in November of 2004 was current rear-Admiral Karl O. Thomas. They were the first fleet squadron to receive the updated E-2 Hawkeye HE-2K aircraft. The Hawkeye HE-2K also features the Cooperative Engagement Capability system (CEC). CEC is the Navy's most comprehensive sensor fusion system and drastically improves the Carrier Strike Group's situational awareness and self-defense capabilities.[10] The E-2 Hawkeye is equipped with the AN/APS-145 radar, which is capable of tracking more than 2000 targets and controlling the interception of 40 hostile targets. The radar is capable of detecting aircraft at ranges greater than 340 miles and each five second sweep covers six million cubic miles of air space.[11]

VMFA-232

Formed in 1925, VMFA-232 known as the "Red Devils" is the oldest and most decorated Marine Corps fighter squadron. Marine Fighter Attack Squadron 232 brought 204 crewmembers and nine F/A-18C aircraft on board the USS *Nimitz* for their November COMPTUEX. The commanding officer of the squadron was Lieutenant Colonel Douglas Kurth.[12]

The F/A-18C (single pilot) and D models (two-seater) is a block upgrade in 1987 incorporating provisions for employing updated missiles and jamming devices against enemy ordnance. Known as the "Hornet" it is a significantly different aircraft than the "Super Hornet". Its wingspan and length are

9 Official U.S. Navy website. U.S. Navy Fact File. "E-2 Hawkeye Early Warning and Control Aircraft" http://www.navy.mil/navydata/fact_display.asp?cid=1100&tid=700&ct=1 Last updated January 5, 2018. Accessed June 12, 2018.

10 Official U.S. Navy website. "VAW-117 Wallbangers Squadron History," http://www.cacclw.navy.mil/vaw117/history.html Last updated February 9, 2107. Accessed June 12, 2018.

11 "E-2C / D Hawkeye Airborne Early Warning Aircraft," *Naval Technology.* https://www.naval-technology.com/projects/e2-hawkeye/ Accessed June 12, 2018.

12 Allen, Kris, "VMFA-232 Joins *Nimitz* CVW-11 Team," *Nimitz* vol 29, No.18, November 13, 2004, p.1.

shorter at 37.5 feet and 56 feet respectively. Its listed speed is comparable to the "Super Hornet" at Mach 1.7 but its range is shorter at 1089 nautical miles.[13]

The F/A-18C flown my Commanding Officer Lieutenant Colonel Kurth was the first aircraft that reached the intercept point of the "Tic-Tac" as provided by the USS *Princeton*.

USS *Chafee* and USS *Higgins*

Both the USS *Chafee* (DDG 90) and the USS *Higgins* (DDG 76) are *Arleigh Burke* Guided Missile Destroyers and are manned by 32 officers and 348 enlisted men. They were part of the Nimitz Strike Group and were equipped with SPS-73 navigational radar, SPS-67 surface search radar, the SPY-1D Phased-Array radar, and hull mounted Sonar. They were not in close proximity with the rest of the strike group at the time of the encounter with the "Tic-Tacs".[14]

USS *Louisville*

The USS *Louisville* is a Los Angeles class submarine and is designated as SSN 724. It is one of the most advanced attack submarines in the world. Launched in 1986, it is 360 feet long and operates with one nuclear reactor. It is equipped with several Sonars: IBM BQQ 5D/E for passive/active search, Ametek BQS 15 high frequency close range, and TB 23/29 passive towed array. There is very little detailed information available on this submarine's capabilities.[15]

USS Louisville, Naval History and Heritage Command

13 "F/A 18C/D Hornet", https://www.military.com/equipment/f-18c-d-hornet Accessed July 05, 2018.

14 Official U.S. Navy website. "America's Navy, USS *Chafee,*" http://www.public.navy.mil/surfor/ddg90/Pages/specs.aspx#.Wz5X7NUzqM8. Accessed August 07, 2018.

15 *Jane's All the World's Ships, 2004-2005.*

APPENDIX G

ACCELERATION, SPEED, AND POWER CALCULATIONS BASED ON RADAR OBSERVATIONS

Author: Peter Reali

This paper examines the reported 2004 *Nimitz* sightings of Anomalous Aerial Vehicles (AAVs) by Navy pilots and radar operators during a naval exercise off the San Diego coast in November 2004. These were dubbed by pilots as being “Tic-Tac” shaped. Calculations based on recalled measurements of their velocity result in very large accelerations.

This paper will focus on the reported ability of the "Tic-Tac"'s to hover at an altitude of 80,000 feet then descend in a matter of seconds to hover over the ocean at 20,000 feet and then reascend to 80,000 feet again in a matter of seconds. This has been verified by interviews conducted by the SCU of the personnel involved in the incident, both radar operators and pilots. This paper will focus on the kinematics of the reported objects and the required accelerations and power dissipation that would have to have been expended to perform these maneuvers. It is hoped that this paper will encourage the serious investigation of what these phenomena are by the current scientific community in the prospect that with proper instrumentation and study new theories and insights will be gained.

The author explores two approaches that would be used by conventional technology to try and estimate how this would be achieved. All calculations to be very conservative, assume a "Tic-Tac" modest weight of 2000lb. The Earth’s gravity is ignored as it too low to affect the outcome of the calculations. For ease of calculation it is assumed the trajectory is symmetrical about X_m (distance) and t_m (time). This in no way assumes that the "Tic-Tac"'s behave in this manner but is an attempt to estimate what it would take to perform a maneuver like this, which is similar to ones reported in the incident, by using current technology.

The first approach assumes a linear velocity increase from 0 to the maximum velocity at the halfway point of 50,000 ft. This requires a constant positive acceleration A(t) for $t_m/2$ seconds until V_m is achieved at $X_m/2$; it is instantly followed by an abrupt reversal of acceleration [negative acceleration] until the velocity is 0 at altitude X_m = 80,000ft. V_m, A(t) and the Maximum Power P(t)max required to perform these maneuvers, will be calculated. This approach is called the linear velocity approach. Figure A1 shows the relation in time between the velocity, acceleration and distance traveled for this type of trajectory. This approach has the disadvantage of having the maximum acceleration be constant abruptly starting at ground level followed by an enormous shock of an instantaneous reversal to negative constant acceleration until the final altitude is reached.

The second approach assumes a parabolic velocity, where the acceleration starts at a maximum value and linearly decreases as velocity increases until $X_m/2$ is reached where the acceleration is 0 and it reverses and linearly increases until X_m is reached then is turned off. This avoids the huge shock of the acceleration reversal that occurs in case 1 above. The relationship of velocity, acceleration and distance traveled is shown in figure A2 for this trajectory. As in case [1] V_m, A(t) and the Maximum Power P(t) max required to perform these maneuvers, will be calculated. This calculation is a little more complicated for case 2 compared to case 1.

The results are presented for t_m = 6 sec and 0.78 sec in Table 1 and the detailed calculations are available in Sub-appendix A. The time of 0.78 seconds is based on the Senior Chief’s notes of the time measured for the AAV to move from 80,000 ft to 20,000 ft. The time of 6 seconds is an arbitrary time chosen to reflect the resulting extreme accelerations even if the Chief’s notes had been significantly in error.

Trajectory Mode	$V(t) = V_m$ Maximum Velocity	A(t) max acceleration	P(T) maximum power Dissipation
Linear Velocity t_m = 6 sec	**20,000 ft/sec or 13,636.36 mph**	**6666.67 ft/sec^2 or 207.04 g's**	**8.28 x 10^9 ft-lb/sec or 11.3 Gigawatts**
Parabolic Velocity t_m = 6 sec	**15,000 ft/sec or 10,227.27 mph**	**10,000 ft/sec^2 or 310.56 g's**	**7.17 x 10^9 ft-lb/sec or 9.75 Gigawatts**
Linear Velocity t_m = 0.78 sec	**153,846 ft/sec or 104,895 mph**	**394,477 ft/sec^2 or 12,250 g's**	**3.7695 x 10^{12} ft-lb/sec or 5.1265 x 10^3 Gigawatts**
Parabolic Velocity t_m = 0.78sec	**115,000 ft/sec or 78,409 mph**	**592,000ft/sec^2 or 18,385 g's**	**3.26 x 10^{12} ft-lb/sec or 4.44 x 10^3 Gigawatts**

Table 1:Velocity, acceleration, power

Conclusions:

[1] It is apparent from these results that no human could survive the accelerations required to perform these maneuvers. A 170 lb human would be subject to minimum forces of 17.6 tons with a 6 sec trajectory and for a 0.78 sec trajectory a maximum of 1,041.3 tons.

[2] From Table 1 above, for a 6 sec parabolic climb the power released is ~ 7.2 x 10^9 ft-lb/sec = 1.36 x 7.2 x 10^9 joules/sec or = 9.8 x 10^9 joules/sec or watts. A one megaton nuclear weapon releases releases the energy equivalent to 4.18 x 10^{15} joules[1]. For this argument I will assume it is released in one second. This is equivalent to 10^6 tons of TNT. We can then calculate how much TNT would need to be exploded each second to generate this much energy. For this we can use the ratio of [(9.8 x10^9 joules) / (4.18 x 10^{15} joules)] x 10^6 tons of TNT = (2.3 x 10^{-6}) x 10^6 tons of TNT or the equivalent energy of 2.3 Tons of TNT released each second. This is equivalent to 2.3 tons of TNT being detonated each second. For a 0.78 sec climb it would be a thousand times greater or (3.26/7.17) x 2.3 x 10^3 = 1.05 kilotons of TNT/sec. This is a small tactical nuclear weapon's type of output.

[3] The speed at maximum velocity would cause melting of most metals and would be equivalent to a meteorite entering the atmosphere from outer space. None of these effects were noticed by the personnel reporting this incident so one must conclude a technology outside of the current understanding of our sciences would have to be involved and this merits serious study by the scientific community.

1 http://www.atomicarchive.com/Effects/effects1.shtml

Sub-appendix A: Derivation of the Acceleration and Power Equations

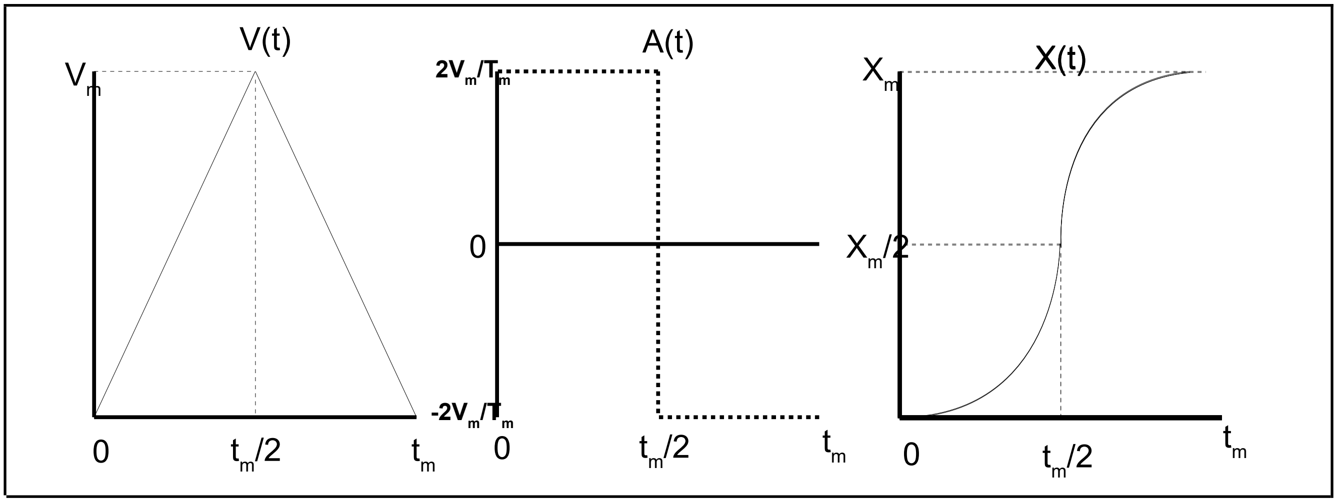


Figure A1: Linear Velocity Constant Acceleration [where X_m is defined as the distance traveled in time t_m,, thus for any starting altitude, X_m always starts at $X_m = 0$. This is true for all subsequent calculations in this paper as well.]

The first analysis assumes a linear increase in speed from 20,000 ft location hover to halfway point of 50,000 ft, then the acceleration reverses for the next 30,000 feet and hovers at 80,000 ft. In figure A1 we can see that V(t) increases linearly until V_m the maximum speed at 50,000 feet then the speed linearly decreases until it hovers at 80,000 feet. Earth's gravity is ignored as it is negligible compared to the "Tic-Tac"'s acceleration. X_m = 60,000 ft the distance traveled in t_m seconds by the "Tic-Tac"'s. What needs to be determined is V_m and A(t) the acceleration of the vehicle at ground level only as the accelerations are constant with time and reverse at the 50,000 foot altitude. The details of the derivation are shown below for the interested reader.

The velocity is large but it is the acceleration that is phenomenal and from equation 8.0 below $A(t) = 4X_m / (t_m)^2$ so we can calculate $A(t) = 4 \times 60{,}000$ ft / (6 sec)^2 as we are assuming a maximum t_m of 6 sec so we get A(t) = 6,666.67 ft/sec^2. Earth's gravity of 1g = 32.2 ft/sec^2 so this equates to 6,666.67 ft/sec^2 / 32.2 ft/sec^2 = 207.04 g's. If t_m = 0.78 sec (assuming a minimum t_m) we get A(t) = 4 x 60,000 ft / (.78 sec)^2 = 394,477 ft/sec^2 which equates to 12,250 g's.

One more interesting calculation that is easy to do because the acceleration is constant, and the top velocity can be calculated, is the maximum amount of power being used. I will assume this vehicle weighs one ton only to be conservative although it was described as being as large as an F/A-18 fighter jet. Since power is Force x Velocity, we get for t_m = 6 sec, P = Mass x Acceleration x Velocity. I will convert 2000lbs to mass in slugs = weight/gravity = 2000 / 32.2 = 62.11 slugs. Now the acceleration is

6,666.67 ft/sec^2 so from 7 below, $V_m = 2X_m / t_m = 2 \times 60{,}000$ ft / 6 sec = 20,000 ft/sec, therefore we get P = 62.11 slugs x 6,666.67 ft/sec^2 x 20,000 ft/sec = 8.28 x 10^9 ft-lb/sec. The units are correct as power is energy/unit time so converting to Metric power = 1.36 watts/ft-lb/sec = 1.36 watts/ft-lb/sec x 8.28 x 10^9 ft-lb/sec = 1.13 x 10^{10} in watts, and in kilowatts = 1.13 x 10^7 kilowatts = 11,300 MW of power. Repeating for t_m = 0.78 sec, P_{max} = 3.7695 x 10^{12} ft-lb/sec = 5,126.5 gigawatts. For some idea of scale, very large power stations are on the order of 2000 MW so it's surprising that these did not show up with a lot of heat on the ATFLIR. The heat radiation from this would be comparable to a small nuclear weapon.

$$v(t) = 2V_m t / t_m \quad \text{for } t \le t_m/2 \quad \text{and } v(t) = 2V_m(1 - t/t_m) \quad \text{for } t > t_m/2 \qquad 1.0$$

$$A(t) = dV(t)/dt = 2V_m / t_m \quad \text{for } t \le t_m/2 \quad \text{and } A(t) = -2V_m / t_m \quad \text{for } t \ge t_m/2 \qquad 2.0$$

$$X(t) = \int V(t)dt + K1 = 2V_m \int (t / t_m)dt = V_m(t^2)/t_m + K1 \quad \text{for} \quad t \le t_m/2 \qquad 3.0$$

$$X(t) = 2V_m \int (1 - t / t_m)dt = 2V_m [(t - t^2 / 2t_m)] + K2 \quad \text{for} \quad t \ge t_m/2 \qquad 4.0$$

Now from 3.0 solving for K1, since $X(t_m/2) = X_m/2$ we can write

$$X_m/2 = (V_m / t_m)*(t_m / 2)^2 + K1 \text{ therefore } \quad K1 = (2X_m - V_m t_m)/4 \qquad 5.0$$

Therefore $\quad X(t) = V_m t^2 / t_m + (2X_m - V_m t_m)/4 \quad \text{for } t \le t_m/2 \qquad 6.0$

Now at t =0 $\quad X(t) = 0$ Therefore $\quad (2X_m - V_m t_m)/4 = 0$ so, $V_m = 2X_m / t_m \qquad 7.0$

from 2.0 and 7.0 $\quad A(t) = 2V_m / t_m = 2(2X_m / t_m)/ t_m = 4X_m / (t_m)^2$

$$A(t) = 4X_m / (t_m)^2 \qquad 8.0$$

now from 4.0 $\quad X(t) = [\, 2V_m[\, (t-(t^2 / 2t_m)\,] + K2$ for $t > t_m/2$ and $X(t_m) = X_m$ So

$X_m = 2V_m[\, t_m - (t_m)^2/2t_m] + K2 = V_m t_m + K2$ therefore $K2 = X_m - V_m t_m$

$$K2 = X_m - V_m t_m \qquad 9.0$$

$X(t) = [\, 2V_m[\, (t-(t^2 / 2t_m)\,] + X_m - V_m t_m \quad$ for $t > t_m/2$

from 7 above $\quad V_m = 2X_m / t_m$

$$X(t) = [4X_m / t_m]\, [\, (t-(t^2 / 2t_m)\,] - X_m \quad \text{for } t > t_m/2 \qquad 10.0$$

Figure A2: Derivation of the Linear Velocity Equations

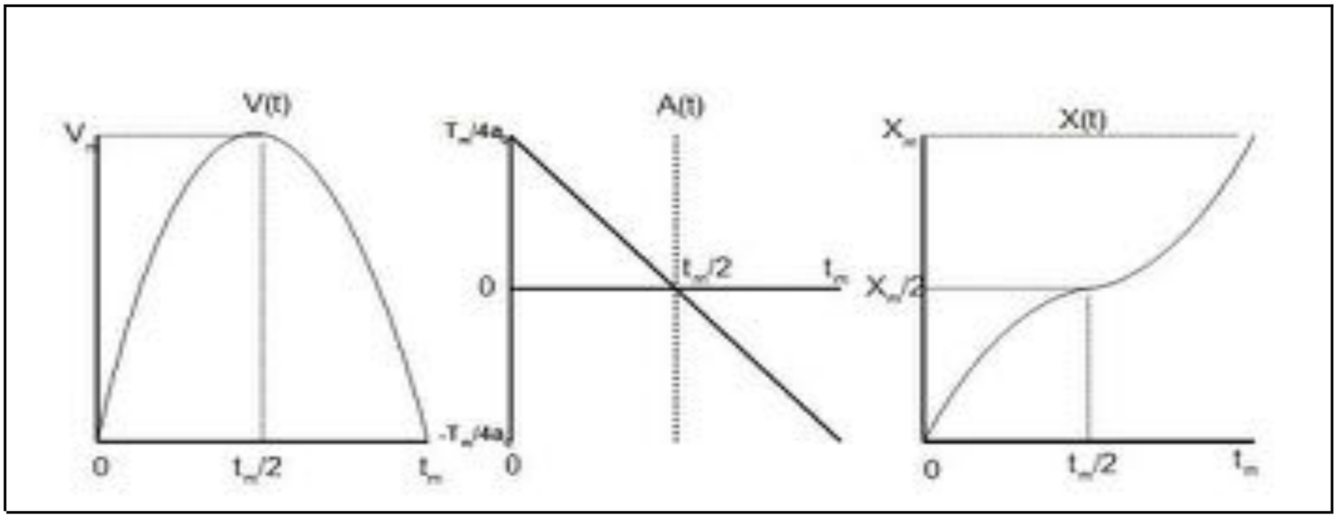


Figure A3: Parabolic Velocity-Linear Decreasing Acceleration

The second analysis tries to avoid the constant acceleration and trades off a larger initial acceleration that decreases to 0 at the halfway 50,000 ft point then reverses in direction and linearly increases until 80,000 ft and turns off and hovers with a velocity of 0. A parabolic velocity was chosen at it has these characteristics. A parabola needs three variables to determine its equation. The derivation is shown below. I had to dig into some old books on analytic geometry to figure this out and it took me a lot longer than it used to as the wheels are pretty rusty. From equation 1 the general equation for a parabola that opens downward we need three parameters, the intercepts with the X-axis and the constant a_0 note this is not acceleration but a constant of the parabola that determines the distance from the Vertex, V_m to its focal point and I won't get involved in discussing this. From the derivation below, equations 2 and 6 we get $A(t) = (1/2\ a_0)[\ t_m / 2 - t\ ]$ and $a_0 = (t_m)^3 / 24\ X_m$, so A(t) which is maximum at t = 0 and decreases linearly to zero at $t_m / 2$. Continuing $A(0) = 24\ X_m / (t_m)^3\ (\ t_m / 4) = 6\ X_m / (t_m)^2 = 6(60{,}000) / 36 = 10{,}000$ ft/sec^2 or 310.56 g's. $V_m = 3X_m / 2t_m$ for $t_m = 6$ sec and $X_m = 80{,}000$ ft.

$V_m = (180{,}000\ ) / 12 = 15{,}000$ ft/sec, $A(0)_{max} = 10{,}000$ ft/sec^2 or 310.56 g's

Power can be calculated as before with some simplifying assumptions: Since the work done along a time varying curved path is a vector quantity we assume for simplification a purely vertical rise so the force is always in line with the velocity and the vector dot product * can be assumed to be a scalar multiplication. This is justified since any deviation from a vertical climb would use even more energy, so this calculation is a minimum requirement.

$$W = \int F * dx = \int_{t1}^{t2} F(t) * v(t)\,dt = \int_{t1}^{t2} F(t)(dx/dt)\,dt = \int_{t1}^{t2} F(t)\,v(t)\,dt$$ [2]

Power is defined as: $$dW/dt = d/dt\left(\int_{t1}^{t2} F(t)\,v(t)\,dt\right) = F(t)\,v(t) = mA(t)\,v(t)$$

2 https://en.wikipedia.org/wiki/Work_(physics)

$P(t) = m \times A(t) \times V(t)$ so from equations (2) and (1) below

$$P(t) = m[-1/(4a_0)][t - t_m / 2]^2 + V_m][(1/2a_0)(t_m / 2 - t)] = (-1/8(a_0)^2)[(t - t_m / 2)^3 + 4a_0 V_m] \text{ so}$$

$P(t) = ABS[(-m/8(a_0)^2)[(t - t_m / 2)^3 + 4a_0 V_m (t - t_m / 2)]]$	A1

ABS is the absolute value as power is always positive even though the acceleration is negative for $t > t_m/2$, so finding the maximum power dissipation in the range between $[0 \leq t \leq t_m]$ we will take the derivative of P(t) and where $dP(t)/dt = 0$ and $d^2P(t) /d^2 t < 0$ is a local maximum.

$$dP(t)/dt = (3m / 8(a_0)^2)[(t - t_m / 2)^2 + (4a_0 V_{m)} /3)] = 0$$

$$\text{so} \quad (t - t_m / 2)^2 = 4a_0 V_{m)} /3, \text{ solving for t:}$$

$$t = t_m / 2 \pm (4a_0 V_{m)} /3)^{0.5} = t_m (1/ 2 \pm \quad 1/2*\sqrt{(3)} \quad)$$

now finding $d^2P(t) /d^2 t = (3/4(a_0)^2)[(t - t_m / 2)]$ when $t = t_m (1/ 2 \pm \quad 1/2*\sqrt{(3)} \quad)$ is < 0 for $t \leq t_m / 2$ from Figure A4 below we see that for $t = 1.2679$, so $t = 0.5t_m \pm 0.2886\, t_m = 3 \pm 1.7321 = 1.2679$ or 4.7321

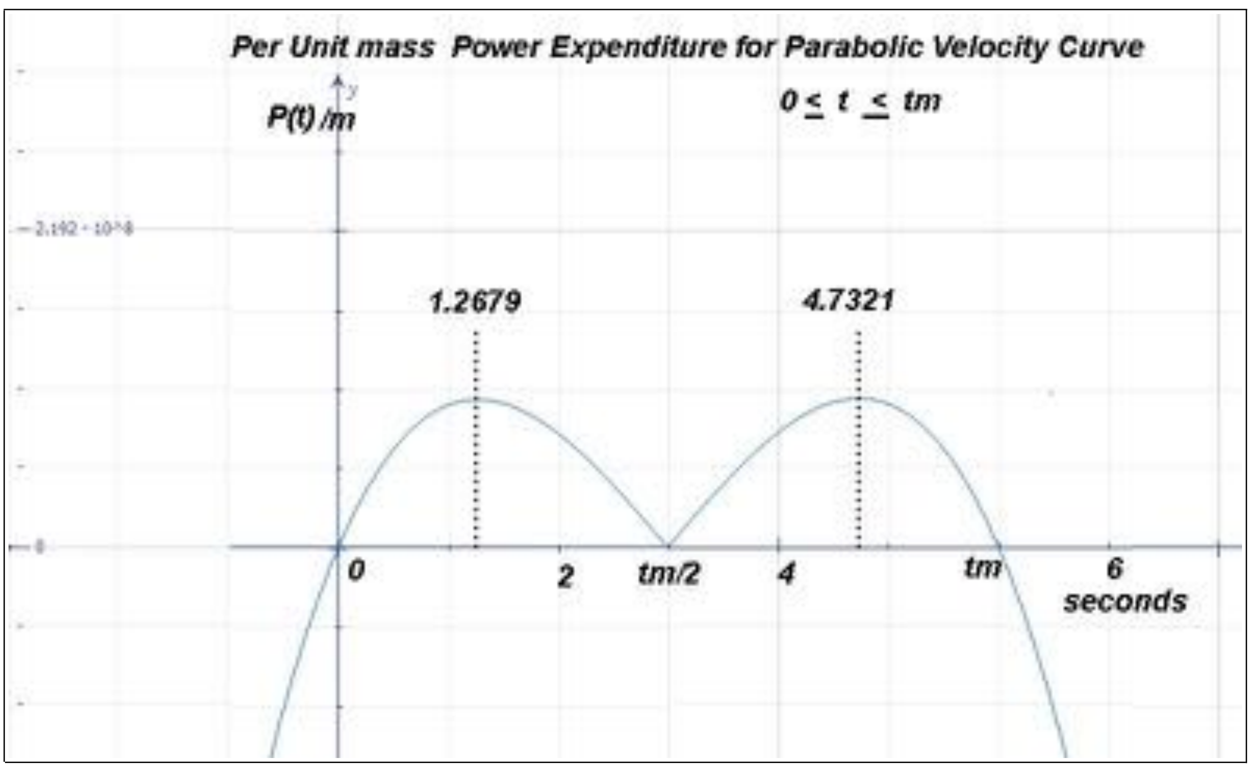


Figure A4: Power expenditure per unit mass as a function of time for $t_m = 6$ sec

calculating the maximum power from A1 above:

$$P(t) = ABS[(-m/8(a_0)^2)[(t - t_m / 2)^3 + 4a_0 V_m (t - t_m / 2)]]$$

$$P(t = 1.2679\ ) = ABS[(-m/8(a_0)^2\ )[\ (\ 1.2679 - 3)^3 + 4a_0\,V_m(\ 1.2679 - 3)\ ]]$$
$$= ABS[(-m/8(a_0)^2\ )[\ -5.1966 + 4a_0\,V_m(\ -1.7321)\ ]]$$

$a_0 = \ (t_m)^3 / 24\ X_m = 6*36 / 24*80000 = 9/60000 = 1.5 \times 10^{-4}\ sec^3/ft$ and $V_m = 15,000$ ft/sec

m = 2000lb X_m = 60,000 ft and t_m = varied from 0.1 to 10 sec using an Excel spreadsheet we get Table 1 below and a plot Figure A5

Pmax = $(2000/8x32.2x(\ 1.5 \times 10^{-4})^2\ ) \times (5.1966\ + (\ 1.7321) \times (4x\ (\ 1.5 \times 10^{-4}) \times (15,000)) = 7.169 \times 10^9$ ft-lb/sec = 1.36 watt/ft-lb/sec x 7.169×10^9 ft-lb/sec = 9.75×10^9 watts = 9.75 Gigawatts

Table 2 repeats the calculations for t_m from 0.1 sec to 10 sec using an excel spreadsheet. The yellow row agrees with the above calculation as an error check.

T_m sec total time to Xmax	Mg lb	Xmax Altitude ft	Ao	V_m ft/sec max velocity	A(t)max Accel ft/sec^2	T1 sec Time to Max Power	Pmax ft-lb/sec @T1	Pmax Gigawatts @T1	Log Pmax Gigawatts @T1
0.1	2000	60000	6.94E-10	9.00E+05	3.60E+07	0.021132	1.55E+15	2.11E+06	6.32
0.5	2000	60000	8.68E-08	1.80E+05	1.44E+06	0.105662	1.24E+13	1.69E+04	4.23
0.78	2000	60000	3.30E-07	1.15E+05	5.93E+05	0.164833	3.26E+12	4.44E+03	3.65
1	2000	60000	6.94E-07	9.00E+04	3.60E+05	0.211325	1.55E+12	2.11E+03	3.32
1.5	2000	60000	2.34E-06	6.00E+04	1.60E+05	0.316987	4.59E+11	6.24E+02	2.80
2.0	2000	60000	5.56E-06	4.50E+04	9.00E+04	0.42265	1.94E+11	2.63E+02	2.42
2.5	2000	60000	1.09E-05	3.60E+04	5.76E+04	0.528312	9.91E+10	1.35E+02	2.13
3.0	2000	60000	1.88E-05	3.00E+04	4.00E+04	0.633975	5.74E+10	7.80E+01	1.89
3.5	2000	60000	2.98E-05	2.57E+04	2.94E+04	0.739637	3.61E+10	4.91E+01	1.69
4.0	2000	60000	4.44E-05	2.25E+04	2.25E+04	0.845299	2.42E+10	3.29E+01	1.52
4.5	2000	60000	6.33E-05	2.00E+04	1.78E+04	0.950962	1.70E+10	2.31E+01	1.36
5.0	2000	60000	8.68E-05	1.80E+04	1.44E+04	1.056624	1.24E+10	1.69E+01	1.23
5.5	2000	60000	1.16E-04	1.64E+04	1.19E+04	1.162287	9.31E+09	1.27E+01	1.10
6.0	2000	60000	1.50E-04	1.50E+04	1.00E+04	1.267949	7.17E+09	9.75E+00	0.99
6.5	2000	60000	1.91E-04	1.38E+04	8.52E+03	1.373612	5.64E+09	7.67E+00	0.88
7.0	2000	60000	2.38E-04	1.29E+04	7.35E+03	1.479274	4.52E+09	6.14E+00	0.79
7.5	2000	60000	2.93E-04	1.20E+04	6.40E+03	1.584936	3.67E+09	4.99E+00	0.70
8.0	2000	60000	3.56E-04	1.13E+04	5.63E+03	1.690599	3.03E+09	4.11E+00	0.61
8.5	2000	60000	4.26E-04	1.06E+04	4.98E+03	1.796261	2.52E+09	3.43E+00	0.54
9.0	2000	60000	5.06E-04	1.00E+04	4.44E+03	1.901924	2.13E+09	2.89E+00	0.46
9.5	2000	60000	5.95E-04	9.47E+03	3.99E+03	2.007586	1.81E+09	2.46E+00	0.39
10	2000	60000	6.94E-04	9.00E+03	3.60E+03	2.113249	1.55E+09	2.11E+00	0.32

Table 2: Parabolic Velocity Showing Maximum Power Dissipation

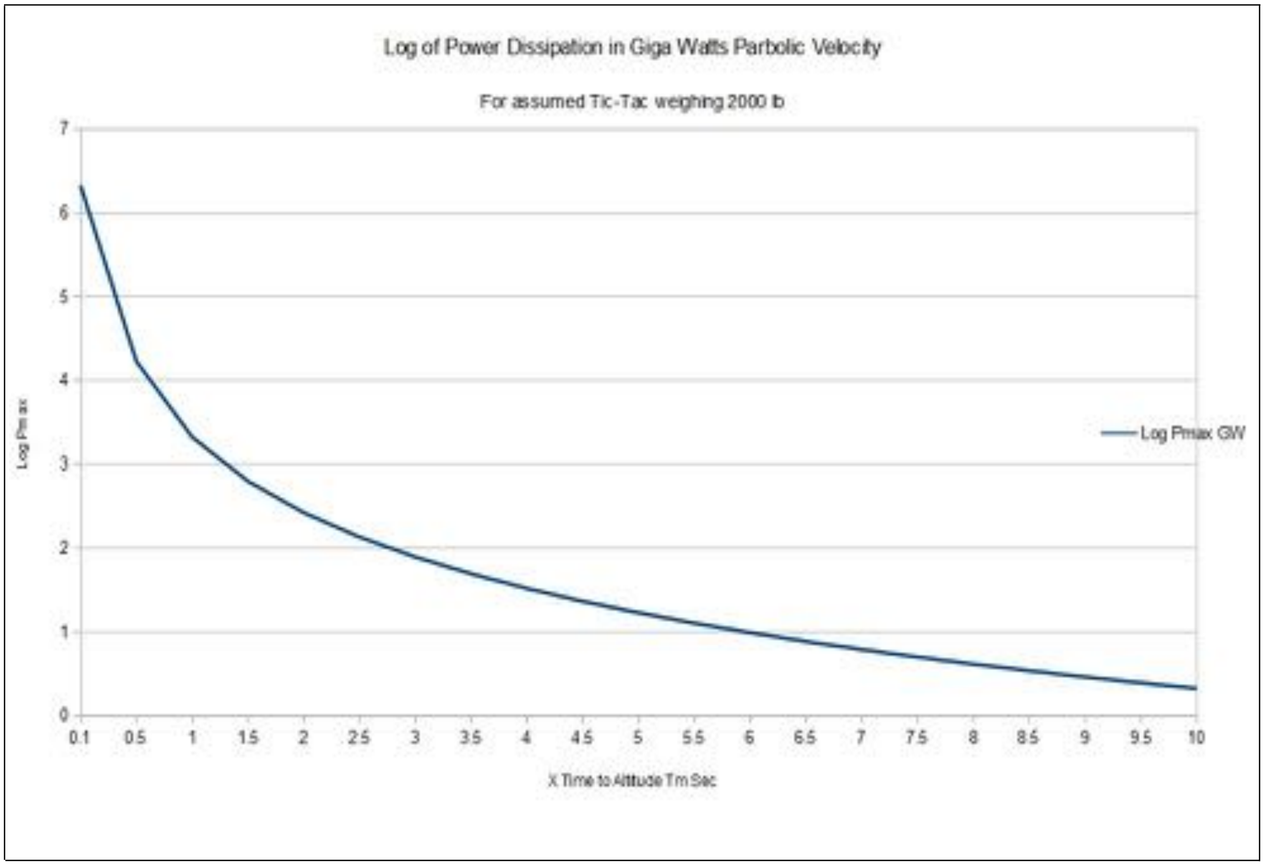


Figure A5: Power Dissipation for different ascent times

Derivation of the Parabolic Velocity equations:

$$V(t) = -(1/4\ a_0)(t - t_m / 2)^2 + V_m \qquad 1.0$$

Now $A(t) = dV(t)/dt$ from 1.0 $dV(t)/dt = (1/2\ a_0)(t_m / 2 - t)$ so

$$A(t) = (1/2\ a_0)(t_m / 2 - t) \qquad 2.0$$

Also $V(t) = dX(t)/dt$ so $X(t) = -(1/4\ a_0) \int (t - t_m / 2)^2\, dt + \int V_m\, dt + K$ integrating we get

$X(t) = -(1/4\ a_0)[(1/3)(t - t_m / 2)^3] + V_m t + K$ solving for the integration constant K

at t=0 $X(0) = 0 = -(1/4\ a_0)[(1/3)(0 - t_m / 2)^3] + V_m \times (0) + K = 0$

so $K + t_m^3 / 96\ a_0 = 0$ so $K = - t_m^3 / 96\ a_0$ therefore

$$X(t) = -(1/4\ a_0)[(1/3)(t - t_m / 2)^3] + V_m t - t_m^3 / 96\ a_0 \qquad 3.0$$

Now solving for V_m we know that at $t = t_m/2$ $X(t_m/2) = X_m /2$ and from 3

$X_m /2 = V_m\ t_m /2 - t_m^3 / 96\ a_0$ so $V_m\ t_m = X_m + t_m^3 / 48\ a_0$ so $V_m = (X_m / t_m + t_m^2 / 48\ a_0)$

$$V_m = (t_m^2 / 48\ a_0 + X_m / t_m) \qquad 4.0$$

Since X_m and t_m are known quantities we wish to derive a_0 and V_m in terms of them

From 1 above we know that at $t = t_m$ that $V(t) = 0$ so we can write

$V(t_m) = -(1/4\ a_0)(t_m - t_m / 2)^2 + V_m = -(1/4\ a_0)(t_m / 2)^2 + V_m = 0$ so $V_m = t_m^2 / 16\ a_0$

$$V_m = t_m^2 / 16\ a_0 \qquad 5.0$$

from 4 and 5 $t_m^2 / 16\ a_0 = t_m^2 / 48\ a_0 + X_m / t_m$ multiplying both side by $16\ a_0 t_m$

we get $t_m^3 = t_m^3 /3 + (16\ a_0\ X_m)$ so we can write $16\ X_m$ and solving for a_0

we can write $a_0 = (2t_m^3 /3)(1/16\ X_m) = t_m^3 / 24\ X_m$

$$a_0 = t_m^3 / 24\ X_m \qquad 6.0$$

finally from 5 and 6 $V_m = (t_m^2 / 16)(24\ X_m / t_m^3) = 3X_m /2t_m$

$$V_m = 3X_m /2t_m \qquad 7.0$$

Finally the maximum acceleration can be derived from 2.0 and 6.0

we get $A(t) = (1/2\ a_0)[t_m / 2 – t]$ and $a_0 = (t_m)^3 / 24\ X_m$ so

A(t) which is maximum at t = 0 and decreases linearly to zero at $t_m/2$. Continuing

$$A(0) = [24\ X_m / (t_m)^3 (t_m / 4) = 6\ X_m / (t_m)^2$$

$$A_{max} = 6\ X_m / (t_m)^2 \qquad 8.0$$

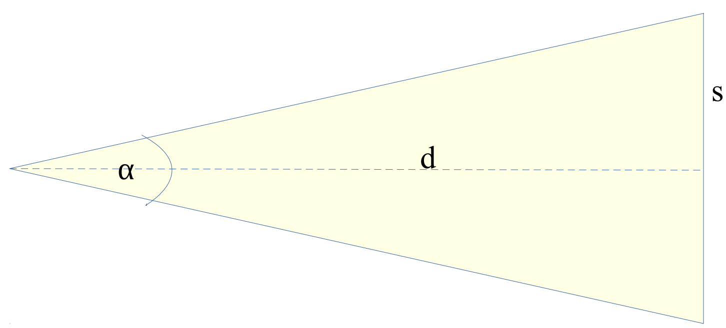
APPENDIX H

Calculations of size, distance, and angular size

by Robert Powell

Trigonometry is used to calculate either the size, distance, or angular size of an object whenever two of the three parameters are known. This is done using the trigonometric function for the relationship of the angle adjacent to the hypotenuse in a right triangle to its adjacent and opposite sides. In the diagram below, the tangent of angle α is equal to the opposite side divided by the adjacent side: $\tan \alpha = s / d$, where α represents the angular size of an object in the sky; d = distance to the object; and s = actual size of the object.

Formulas: $s = 2d*\tan(\alpha/2)$; $d = s/(2*\tan(\alpha/2))$; $\alpha = 2*\arctan(s/(2d))$



Calculate Apparent Size of Object in Water from the F/A-18s

The size of the object was compared to that of a 737 or about 120 feet. s = 120 feet
The distance to the object is the altitude of the aircraft since the object was near the ocean surface. d = 20,000 feet

$\alpha = 2*\arctan(s/(2d))$

$\alpha = 2*\arctan(120 \text{ ft} / (2 * 20{,}000 \text{ ft}))$

$\alpha = 2*\arctan(120 / 40{,}000))$

$\alpha = 2*\arctan(0.003)$

$\alpha = 0.344$

Calculate Apparent Size of "Tic-Tac" from the F/A-18s

The size of the object was compared to that of an F/A-18 which is 50-60 feet.
The distance to the object is the altitude of the aircraft since the object was near the ocean surface. d = 20,000 feet

$\alpha = 2*\arctan(s/(2d))$

$\alpha = 2*\arctan(50 \text{ ft} / (2 * 20{,}000 \text{ ft}))$

$\alpha = 2*\arctan(50 / 40{,}000))$

$\alpha = 2*\arctan(0.00125)$

$\alpha = 0.143$

$\alpha = 2*\arctan(s/(2d))$

$\alpha = 2*\arctan(60 \text{ ft} / (2 * 20{,}000 \text{ ft}))$

$\alpha = 2*\arctan(60 / 40{,}000))$

$\alpha = 2*\arctan(0.0015)$

$\alpha = 0.172$

APPENDIX I

ACCELERATION, SPEED, AND POWER CALCULATIONS BASED ON BLIND POINT DISTANCE (BPD)

Author: Peter Reali

This paper discusses the calculated accelerations and power requirements for the “Tic-Tac” shaped object to accelerate out of sight (which will be referred to as the Blind Point Distance or BPD) as reported by the F/A-18 pilots, CDR Fravor and LCDR Slaight, during the 2004 Nimitz Strike Group encounter with an unidentified machine-like aerial object. It also considers the reported radar observation by Senior Chief Kevin Day that after the encounter by the pilots the “Tic-Tac” appeared at the CAP point, 40 miles away in what was a very short amount of time. Since all the objects appeared to be identical it is not known if the object was the same but the observers believed it to be so. It will thus be considered in the calculations as well.

We will determine the distance an object of a certain size must move away from an observer before it is no longer discernible by the human eye. It is well documented that the human eye cannot discern objects that have an angular resolution of less than 1/60 of a degree or 1 arc minute.[1] This determination is for conditions that are optimal to the human eye, but in our case, the pilots were staring into a bright clear sky. The ability to discern objects under these conditions is a very complex subject and beyond the scope of this study. To avoid having to analyze the neurophysiology of this type of capability the author will take a very conservative approach of widening the minimal angular resolution over the range of 1/60, 1/30 and 1/15 of a degree. This has the effect of moving the distance to where the object becomes invisible to a much closer distance. To further complicate the calculation the object was described as being shaped like a “Tic-Tac” candy with a 3:1 or 4:1 aspect ratio and as the object accelerated off into the distance we do not know if the wide or narrow dimension of the object was facing the observing pilots. The object was described as being about the size of an F/A-18 or about 60 ft at its widest dimension. So an additional variable will be added to the calculations using maximum observable diameters of 15, 30 and 60 ft for all the angles discussed above.

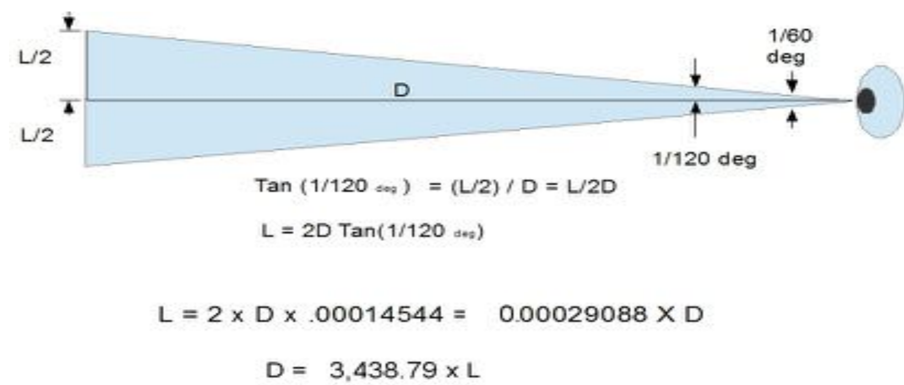


Figure 1: Relationship of object size to observable distance of an object

From Figure 1, as an example, we are assuming the visible angle is 1/60 of a degree to explain how we calculate the distance to the BPD under ideal conditions. We can see that for an object the size of a “Tic-Tac”, described as being the size of an F/A-18 or about 60 ft. The distance to where it cannot be observed is D = 3,438.79 X 60 ft = 206,327.4 ft = 39.1 miles. The accounts by the pilots of how long it took to disappear vary from a second to the similarity of being shot from a gun. If we are very

1 Yanoff, Myron; Duker, Jay S. (2009). Ophthalmology 3rd Edition. MOSBY Elsevier. p. 54.

conservative we can say it took between 0.5[2] to 5 sec to disappear from sight or go 39 miles. We can then calculate the acceleration assuming a linear velocity increase with constant acceleration.

A second consideration is the possibility that the object went out of sight due to passing over the Earth's horizon. We can calculate this distance and compare it to the BPD distance for the human eye of 39.1 miles and if it is greater we can ignore it, and from the formula for the distance to the horizon as a function of altitude, it can be shown that the following equation applies[3]:

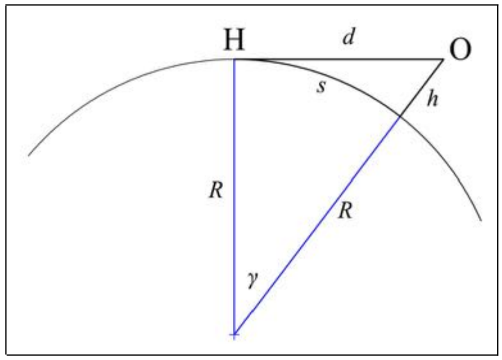


Figure 2: The relationship to d , h and R

A simple derivation using the Pythagorean Theorem gives the relationship where the altitude, h, is much less than the radius of the Earth, true in our case:

$$d = \sqrt{2 h R}$$

From the encounter description in the main report, the F/A-18s were between 1,000 to 20,000 ft and using these two extreme values and the radius of the Earth as 3,959 miles, Table 1 has the distance to the horizon calculated for these values:

h height in feet	D distance to Horizon in miles
20000.00	173.18
18000.00	164.30
16000.00	154.90
14000.00	144.90
12000.00	134.15
10000.00	122.46
8000.00	109.53
6000.00	94.86
4000.00	77.45
2000.00	54.77
1000.00	38.72

Table 1 Distance to the horizon vs. Altitude

It can be seen that for all altitudes, except 1,000 ft the BPD is less than the point where vision of the object would be lost and 1,000 ft is below where the two F/A-18s were located, but regardless is very close to 39.1 miles so the BPD distance will be used in the calculations.

2 https://plato.stanford.edu/entries/consciousness-temporal/empirical-findings.html
3 https://web.archive.org/web/20031018020513/http://mintaka.sdsu.edu/GF/explain/atmos_refr/horizon.html

Case 1: The "Tic-Tac" accelerates off in an unknown direction until out of sight

For the case when the "Tic-Tac" may not be the same one as reported by Senior Chief Kevin Day and just leaves the area, it does not start slowing down at the halfway point, so the equations we can derive for velocity and acceleration are as follows:

$V(t) = V_m t / t_m$ as a linear increase in velocity until $t = t_m$ where $X(t_m) = X_m = 40$ miles.

$$V(t) = V_m t / t_m \text{ for } t \leq t_m \qquad 1.0$$

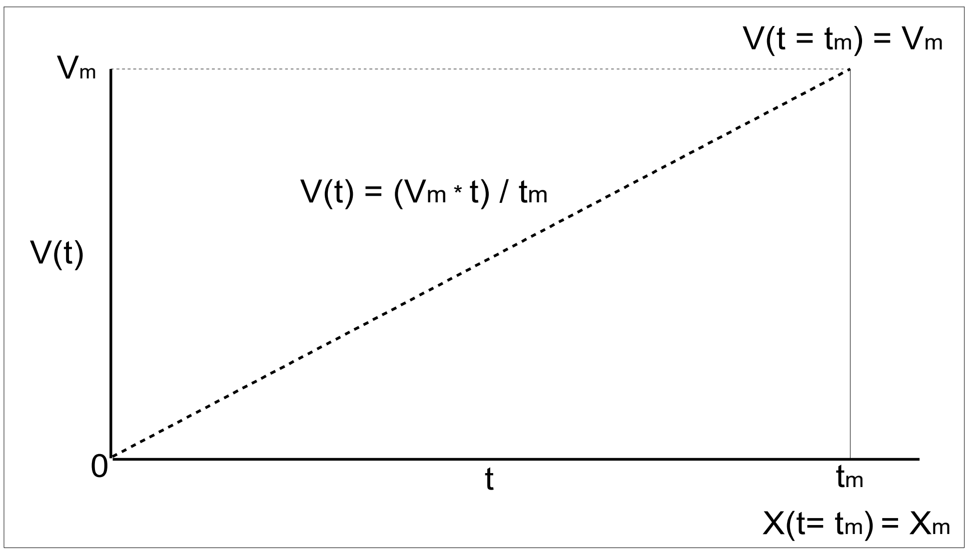


Figure 3: Linear Velocity Curve to BPD

We can then derive $A(t) = dv(t)/dt = V_m / T_m$ a constant acceleration. So we can write

$$A(t) = V_m / t_m \qquad 2.0$$

Further using 3.0 above $X(t) = \int V(t)\, dt + K$, $V(t) = V_m t / t_m$, so taking the anti-derivative,

$X(t) = \int (V_m t / t_m)\, dt + K = V_m t^2 / 2 t_m + K$, solving for the integration constant

$X(t) = V_m t^2 / 2 t_m + K$ at $X(t = t_m) = X_m$ or $X_m = V_m t_m / 2 + K$, solving for K we get

$K = (2X_m - V_m t_m) / 2$ so finally $X(t) = V_m t^2 / 2 t_m + (2X_m - V_m t_m) / 2$

$$X(t) = V_m t^2 / 2 t_m + (2X_m - V_m t_m) / 2 \qquad 3.0$$

solving for V_m at $t = 0$, $X(t = 0) = 0$ substituting into X(t) we get $(2X_m - V_m t_m) / 2 = 0$ so

$$V_m = 2X_m / t_m \qquad 4.0$$

so solving for the acceleration from 6.0 and 4.0 $A(t) = V_m/t_m = 2X_m/t_m^2$

$$A(t) = 2X_m/t_m^2 \qquad 5.0$$

From comparing 1.0 and 2.0 with 14.0 and 15.0 derived below, we can see that V_m is the same but the acceleration is half the value of the case where the "Tic-Tac" is the same.

T_{BPD} Secs	Size at 3 viewing angles in ft	BPD (Φ) Visual Acuity Angle deg	g*M Wt in lbs	BPD (Φ) In dec °	BPD ft	BPD Mi	Linear Vm ft/sec	Linear Vm Mph	Linear Vm Mi/sec	Linear A(t) ft/sec2	Linear A(t) g's	Pmax ft-lb/sec T1	Pmax Gigawatt sT1	tons of Tnt
0.2	60	1/60 deg	2000	0.02	206,264.80	39.07	2,062,648.05	1,406,350.94	390.65	10,313,240.24	320,286.96	1.32E+15	1.80E+06	429,889.68
0.2	30	1/60 deg	2000	0.02	103,132.40	19.53	1,031,324.02	703,175.47	195.33	5,156,620.12	160,143.48	3.30E+14	4.49E+05	107,472.42
0.2	15	1/60 deg	2000	0.02	51,566.20	9.77	515,662.01	351,587.74	97.66	2,578,310.06	80,071.74	8.26E+13	1.12E+05	26,868.10
0.5	60	1/60 deg	2000	0.02	206,264.80	39.07	825,059.22	562,540.38	156.26	1,650,118.44	51,245.91	8.46E+13	1.15E+05	27,512.94
0.5	30	1/60 deg	2000	0.02	103,132.40	19.53	412,529.61	281,270.19	78.13	825,059.22	25,622.96	2.11E+13	2.88E+04	6,878.23
0.5	15	1/60 deg	2000	0.02	51,566.20	9.77	206,264.80	140,635.09	39.07	412,529.61	12,811.48	5.29E+12	7.19E+03	1,719.56
2.5	60	1/60 deg	2000	0.02	206,264.80	39.07	165,011.84	112,508.08	31.25	66,004.74	2,049.84	6.76E+11	9.20E+02	220.10
2.5	30	1/60 deg	2000	0.02	103,132.40	19.53	82,505.92	56,254.04	15.63	33,002.37	1,024.92	1.69E+11	2.30E+02	55.03
2.5	15	1/60 deg	2000	0.02	51,566.20	9.77	41,252.96	28,127.02	7.81	16,501.18	512.46	4.23E+10	5.75E+01	13.76
5	60	1/60 deg	2000	0.02	206,264.80	39.07	82,505.92	56,254.04	15.63	16,501.18	512.46	8.46E+10	1.15E+02	27.51
5	30	1/60 deg	2000	0.02	103,132.40	19.53	41,252.96	28,127.02	7.81	8,250.59	256.23	2.11E+10	2.88E+01	6.88
5	15	1/60 deg	2000	0.02	51,566.20	9.77	20,626.48	14,063.51	3.91	4,125.30	128.11	5.29E+09	7.19E+00	1.72
0.2	60	1/30 deg	2000	0.03	103,132.40	19.53	1,031,324.00	703,175.46	195.33	5,156,620.01	160,143.48	3.30E+14	4.49E+05	107,472.41
0.2	30	1/30 deg	2000	0.03	51,566.20	9.77	515,662.00	351,587.73	97.66	2,578,310.01	80,071.74	8.26E+13	1.12E+05	26,868.10
0.2	15	1/30 deg	2000	0.03	25,783.10	4.88	257,831.00	175,793.86	48.83	1,289,155.00	40,035.87	2.06E+13	2.81E+04	6,717.03
0.5	60	1/30 deg	2000	0.03	103,132.40	19.53	412,529.60	281,270.18	78.13	825,059.20	25,622.96	2.11E+13	2.88E+04	6,878.23
0.5	30	1/30 deg	2000	0.03	51,566.20	9.77	206,264.80	140,635.09	39.07	412,529.60	12,811.48	5.29E+12	7.19E+03	1,719.56
0.5	15	1/30 deg	2000	0.03	25,783.10	4.88	103,132.40	70,317.55	19.53	206,264.80	6,405.74	1.32E+12	1.80E+03	429.89
2.5	60	1/30 deg	2000	0.03	103,132.40	19.53	82,505.92	56,254.04	15.63	33,002.37	1,024.92	1.69E+11	2.30E+02	55.03
2.5	30	1/30 deg	2000	0.03	51,566.20	9.77	41,252.96	28,127.02	7.81	16,501.18	512.46	4.23E+10	5.75E+01	13.76
2.5	15	1/30 deg	2000	0.03	25,783.10	4.88	20,626.48	14,063.51	3.91	8,250.59	256.23	1.06E+10	1.44E+01	3.44
5	60	1/30 deg	2000	0.03	103,132.40	19.53	41,252.96	28,127.02	7.81	8,250.59	256.23	2.11E+10	2.88E+01	6.88
5	30	1/30 deg	2000	0.03	51,566.20	9.77	20,626.48	14,063.51	3.91	4,125.30	128.11	5.29E+09	7.19E+00	1.72
5	15	1/30 deg	2000	0.03	25,783.10	4.88	10,313.24	7,031.75	1.95	2,062.65	64.06	1.32E+09	1.80E+00	0.43
0.2	60	1/15 deg	2000	0.07	51,566.20	9.77	515,661.96	351,587.70	97.66	2,578,309.79	80,071.73	8.26E+13	1.12E+05	26,868.10
0.2	30	1/15 deg	2000	0.07	25,783.10	4.88	257,830.98	175,793.85	48.83	1,289,154.89	40,035.87	2.06E+13	2.81E+04	6,717.02
0.2	15	1/15 deg	2000	0.07	12,891.55	2.44	128,915.49	87,896.92	24.42	644,577.45	20,017.93	5.16E+12	7.02E+03	1,679.26
0.5	60	1/15 deg	2000	0.07	51,566.20	9.77	206,264.78	140,635.08	39.07	412,529.57	12,811.48	5.29E+12	7.19E+03	1,719.56
0.5	30	1/15 deg	2000	0.07	25,783.10	4.88	103,132.39	70,317.54	19.53	206,264.78	6,405.74	1.32E+12	1.80E+03	429.89
0.5	15	1/15 deg	2000	0.07	12,891.55	2.44	51,566.20	35,158.77	9.77	103,132.39	3,202.87	3.30E+11	4.49E+02	107.47
2.5	60	1/15 deg	2000	0.07	51,566.20	9.77	41,252.96	28,127.02	7.81	16,501.18	512.46	4.23E+10	5.75E+01	13.76
2.5	30	1/15 deg	2000	0.07	25,783.10	4.88	20,626.48	14,063.51	3.91	8,250.59	256.23	1.06E+10	1.44E+01	3.44
2.5	15	1/15 deg	2000	0.07	12,891.55	2.44	10,313.24	7,031.75	1.95	4,125.30	128.11	2.64E+09	3.59E+00	0.86
5	60	1/15 deg	2000	0.07	51,566.20	9.77	20,626.48	14,063.51	3.91	4,125.30	128.11	5.29E+09	7.19E+00	1.72
5	30	1/15 deg	2000	0.07	25,783.10	4.88	10,313.24	7,031.75	1.95	2,062.65	64.06	1.32E+09	1.80E+00	0.43
5	15	1/15 deg	2000	0.07	12,891.55	2.44	5,156.62	3,515.88	0.98	1,031.32	32.03	3.30E+08	4.49E-01	0.11

Table 2 Calculations for the Case with constant acceleration and visual acuity of 1/60°,1/30°, and 1/15°

Example of using the linear velocity equations for the BPD calculations above:

We will replicate the calculations for Row 1 of Table 2 for a sanity check:

T_{BPD} = 0.2 sec , Acuity angle = 1/60 deg, wt = 2000 lb, apparent size 60 ft:

From Figure 1, X_m = BPD = 60/2Tan(1/120deg) = **206,264.80 ft**

X_m = BPD in miles = 206,264.80 ft /5280 ft/mile = **39.06 miles**

$V_m = 2X_m/t_m$ equation 4 = (2 x BPD)/T_{BPD} = 2 x (206,264.80ft) / 0.20sec =**2,062,648.05 ft/sec**

$V_{m\text{-}mph}$ = (2,062,648.05 ft/sec) x 3600 sec/hr /5280ft/mi = **1,406,350.94 mi/hr**

$V_{m\text{-}mi/sec}$ = 1,406,350.94 mi/hr / 3600 sec/hr =**390.65 mi/sec**

A(t) from equation 2, A_{BPD} = A(t) = V_m/t_m = (2,062,648.05 ft/sec) /(.2sec) =**10,313,240.24ft/sec^2**

A_{BPD} = A(t) in g's = 10,313,240.24 ft/sec^2 / (1g/32.2ft/sec^2) = **320,286.96 g's**

P(t) =m A(t)V(t) [4] P_{max} =(2000lb/32.2 ft/sec^2) (10,313,240.24ft/sec^2)(2,062,648.05 ft/sec) =

P_{max} = **1.32 x 10^{15} ft-lb/sec**

$P_{max\text{-}GW}$ = (1.32 x 10^{15} ft-lb/sec) (1.36W/ft-lb/sec[5])(1GW/10^9 watts) = **1.80 x 10^6 GW**

$P_{max\ [Tons\ of\ TNT/sec]}$ = (1.80x10^6 GW)x(10^6 tons)x(10^6 Tons-TNT/4.18 /GW)=**429.89 tons-TNT/sec**

Case 2: The Tic-Tac is the same one reported by the pilots and the radar operator

The second consideration is that it was reported that the "Tic-Tac" after leaving the encounter, assuming it was the same object, traveled to the CAP point that was 40 miles away. At the CAP point it was hovering and continued moving south at around 100 mph. This means that it had to accelerate and decelerate to near zero velocity at the CAP point after traveling nearly 40 miles. Now if we observe Figure 4 we can see that when the BPD distance is less than halfway to the CAP point then the time to the CAP point $T_{CAP}/2 > T_{BPD\text{-}L}$ and further if the BPD distance is greater than halfway to the CAP point then $T_{CAP}/2 < T_{BPD\text{-}R}$. This is true because we can consider in Figure 3 that the curve represents a linear acceleration that occurs in Figure 4 as being before it reaches the halfway point to the CAP point; and for the BPD distance greater than the halfway point, we can take advantage of the symmetry around the halfway point of Figure 4 to simplify our calculations. We change notation to avoid confusion between between the two subscript m's meaning different things in Figure 3 and Figure 5. If we interpret Fig 3 as being the first part of Figure 4 [Small Blue Triangle top] before it gets to the point $t_{cap}/2$. We define this time as $T_{BPD\text{-}L}$. Now when the BPD is greater than 20 miles we define the time as $T_{BPD\text{-}R}$ [Large Blue Polygon bottom]. Further we know that the two accelerations are the same. So $A_{cap} = A_{BPD}$.

This leads to two cases that must be considered:

Case 2: 1.0 For the case where the BPD is reached prior to $t_c/2$, see Figure 4 on the next page:

To avoid confusion between the definitions of t_m between the equations for Case 1 and Case 2 we define $t_m = t_c$ and $X_m = X_c$ and $V_m = V_{mc}$.

For this case 2 we can use the fact that for a linear velocity trajectory, the case 1 equations can be used at time t_L since the object is still accelerating and has not reached the point of deceleration. We can see that the ratio of $V(t_L) = 2X_L/t_L = V_{mc}[t_L/(t_c/2)]$ from equations 4.0 and 1.0. Further from equation 14.0 of

4 https://en.wikipedia.org/wiki/Work_(physics)

5 https://www.traditionaloven.com/tutorials/power/convert-ft-lbf-per-seconds-to-watts-w.html

Case 2 $V_{mc} = 2X_c/t_c$. If follows we can write,

$$2X_L/t_L = V_{mc}[t_L/(t_c/2)] = [2X_c/t_c][t_L/(t_c/2)] = (4X_c t_L)/t_c^2 \text{ rearranging leads to}$$

$$t_c^2 = 2\, t_L^2 (X_c/X_L) \text{ therefore } tc = t_L\sqrt{2(X_m/X_L)}$$

$$tc = t_L\sqrt{2(X_m/X_L)} \qquad \textbf{\textit{E1}}$$

from 14.0 $\quad V_{mc} = 2X_c / tc = 2X_c / t_L\sqrt{2(X_c/X_L)} = (1/t_L)\sqrt{2X_cX_L}$

$$V_{mc} = (1/t_L)\sqrt{2X_cX_L} \qquad \textbf{\textit{E2}}$$

from 15.0 $\quad A(t) = 2V_{mc}/t_c$

$$A(t) = (2/t_L t_c)\sqrt{2X_cX_L} \qquad \textbf{\textit{E3}}$$

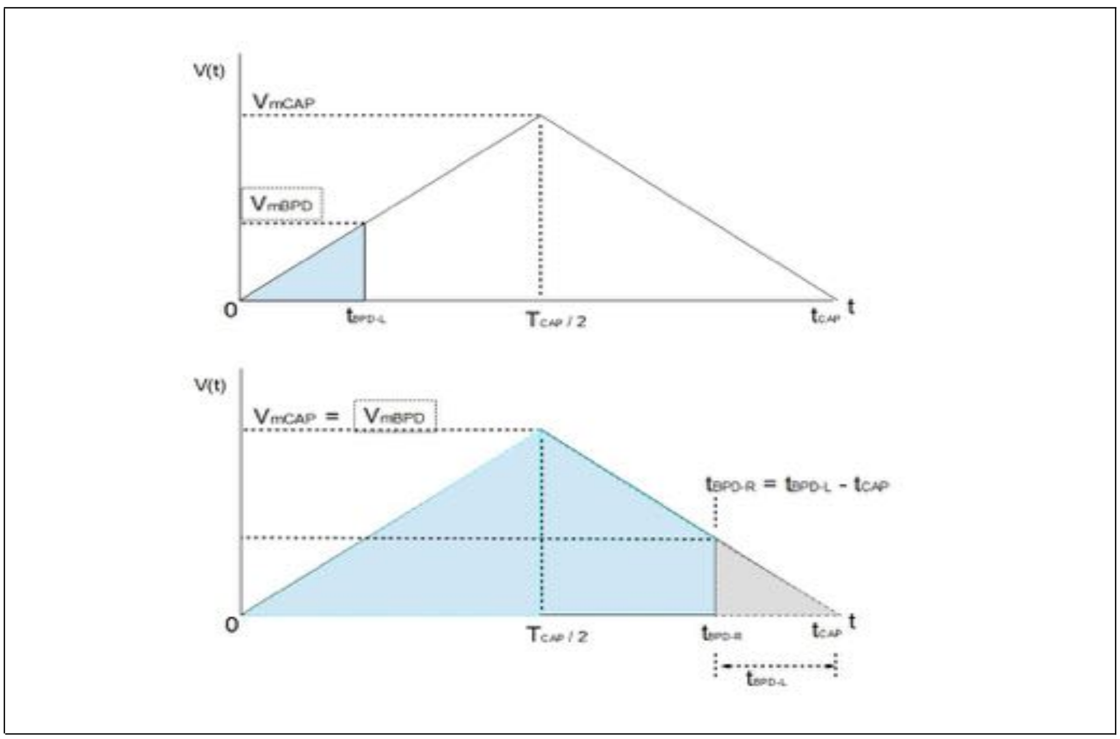


Figure 4: The relationship between the BPD trajectory and the CAP trajectory

It is interesting to note that in equations ***E2*** and ***E3*** that the form is similar to equations 4.0 and 5.0 above with the distances replaced by the geometric mean of the two distances of X_L and X_c which makes sense as the geometric mean weights the distances better than the arithmetic mean when the terms differ by orders of magnitude as is the case for the distances in these trajectories.

Table 3b on page 190 shows the BPD calculated for all the Case 1 entries and is highlighted in gray. As a sanity check for the equations an example will be calculated for row 2 which treats the case where the BPD is $X_L = 19.532652$ miles and the $t_L = 0.2$ secs. *X_c= 40miles*

From equation ***E1***: $t_c = 0.2\sqrt{(2*40/19.532652)} = 0.404757$ *sec [row 2 column 2]*

from ***E2***: $V_{mc} = (1/t_L)\sqrt{2*X_c X_L} = (1/0.2)\sqrt{2*40*19.532652} = 197.65$ *Mi/sec [row 2 column 11]*

from ***E3***: $A(t) = (2/t_L t_c)\sqrt{2*X_c X_L} = 2*(197.65/0.404757) = 976.63 Mi/sec^2 =$ *(976.63*5280)/32.2g's = 160,143.38 g's. [Row 2, column 13] The power and energy follow from these values and will be discussed later using equations **E11** and **E12**.*

Figure 5 is a graph from Microsoft Mathematics plot of equation 17 from Subappendix A. It shows that the calculated $T_c = 0.404757$ sec substituted into Equation 17 when plotted reproduces the proper $T_L = 0.2$ Mac and X_L =19.53 Miles. This result confirms that equations ***E1***, ***E2*** and ***E3*** are correct as ***E2*** and ***E3*** are based on ***E1***. Figure 5 displays a piece-wise function[6] composed of two parabolas separated by the regions $t \le t_c/2$ for the blue parabola defining the ascent to the halfway point at $t_c/2$ and the green parabola for $t \ge t_c/2$ where the ascent acceleration is reversed and the object comes to rest at X_c, $t > t_c/2$. The white square is the region where the functions are defined. This reverse calculation uses the originally unknown time to get to the CAP point, T_c as an input constant and solves for the time when the BPD occurred T_L and it agrees with the original assumed value of 0.2 sec confirming the validity of the derived equations above.

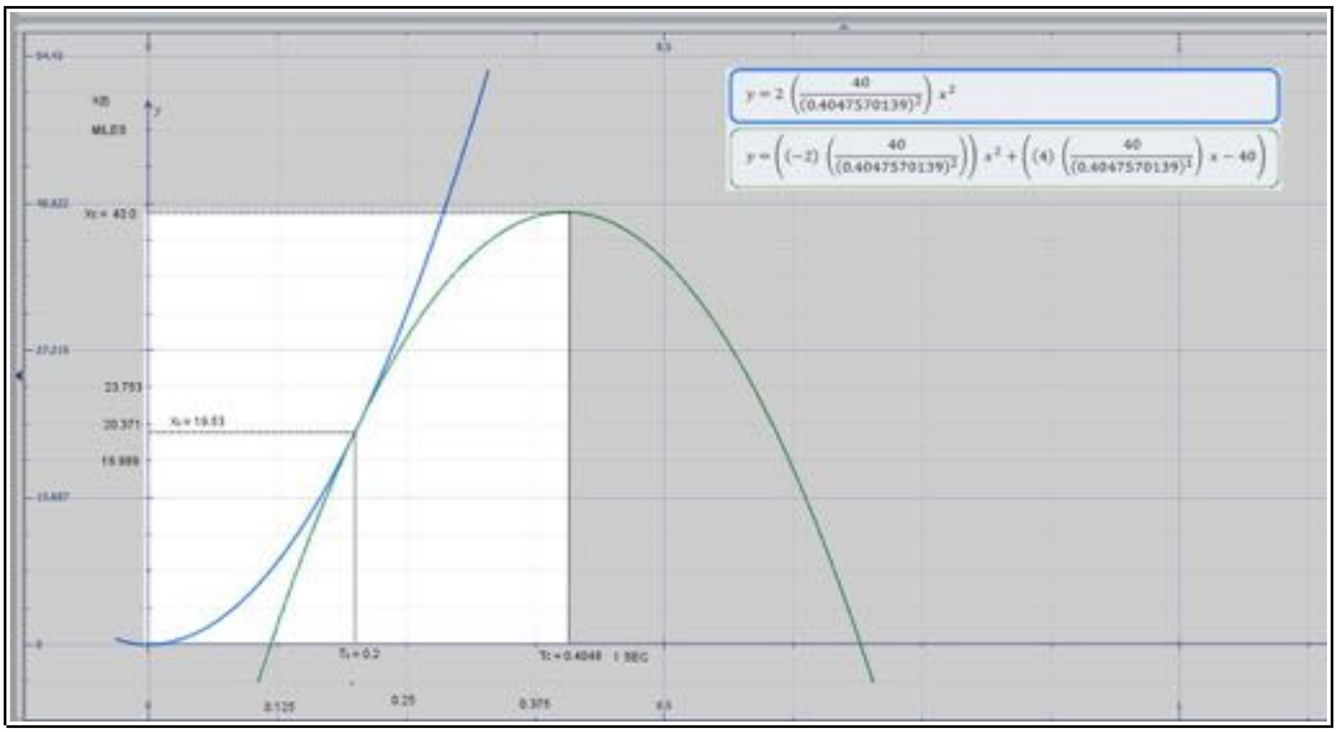


Figure 5: Case 1 BPD less than Tc/2 showing calculated T_c from T_L matches table values

6 https://en.wikipedia.org/wiki/Piecewise_linear_function

Case 2: 2.0 For the case where the BPD is reached after $t_c/2$:

We know that the CAP point was said to be 40 miles away so 20 miles is the halfway point or $T_{CAP}/2 = 20$ miles and $T_{BPD-L} < 20$ miles. If we examine Table 2 column 7 it contains the distance to the BPD in miles and only 4 entries are greater than 20 miles. For the case where $T_{CAP}/2 < T_{BPD-R}$ we don't know the acceleration or velocity values as the equations for the trajectory are not the same as 1 and 2 derived previously in Figure 3. For the trajectory to the right of $T_{CAP}/2$, we do know from the triangular derivation of the distance from Figure 1, the distance to the object and the assumed time to get there T_{BPD-R}. We can derive these however from equation 17 derived in Subappendix A on pages 193-194.

$X(t) = [4X_m / t_m] [(t-(t^2 / 2t_m)] - X_m$: for $t > t_m/2$; now to avoid confusion between two different definitions of X_m and T_m we will re-label them as $X_m = X_c$, the distance to the CAP point that is known, and $t_m = t_c = t$, the time to get to the CAP which is unknown, and $T_{BDR\_R} = t_R$, the time to travel the distance to the blind point which is assumed, and $X(t = t_R) = X_R$, the distance to the blind point that is calculated and known. We will solve the equation for t so rewriting

$X_R = [4 X_c / t] [t_R - (t_R^2 /2t)] - X_c$ this can be rearranged into a quadratic equation as a function of t, the blind point distance:

$$(X_R + X_c) = (8 X_c t_R t - 4t_R^2 X_c)/ 2t^2 \Rightarrow$$

$$2t^2(X_R + X_c) = 8 X_c t_R t - t_R^2 \mathbf{X_c} \Rightarrow$$

$$t^2 - t [(4 X_c t_R / (X_R + X_c)] + \mathbf{X_c} t_R^2 /2(X_R + X_c) = 0$$

Solving for t using the well known quadratic formula [7] we can write:

$$t = t_c = [2 X_c t_R / (X_R + X_c)] \pm \sqrt{[(4 X_c^2 t_R^2)-2 \mathbf{X_c} t_R^2(X_R + X_c)]/(X_R + X_c)^2} \qquad \textbf{\textit{E4}}$$

now for ease of spreadsheet calculations, we define the new constant

$$p = 2 X_c t_R / (X_R + X_c) \qquad \textbf{\textit{E5}}$$

and we can write:

$$t_c = p \pm \sqrt{p(p - t_R)} \qquad \textbf{\textit{E6}}$$

now we note this leads to two solutions, but only one is possible so we must determine which sign applies. For there to be a real solution $p(p - t_R) \geq 0$ since $p = 2 X_c t_R / (X_R + X_c)$ is always a positive quantity this leaves $(p - t_R) \geq 0$ or $p \geq t_R$ so examining the range values of X_c from figure 4 we can see that $X_c/2 \leq X_R \leq X_c$ and therefore substituting into ***E5*** the minimum and maximum values of X_R we get pmax = $4t_R/3$ and pmin = t_R now again from figure 3 we note that

$$t_c \geq t_R \qquad \textbf{\textit{E7}}$$

7 https://en.wikipedia.org/wiki/Quadratic_formula

continuing by substituting pmax and pmin into ***E6*** we get,

pmax $\quad tc = 4t_R/3 \pm \sqrt{4t_R/3(4t_R/3 - t_R)} = 4t_R/3 \pm 2t_R/3 = 2t_R/3$ for the negative sign which violates E4 thus the negative solution is not valid, while the positive sign gives $2t_R$ which is valid. Now for

pmin $\quad tc = t_R \pm \sqrt{t_R(t_R - t_R)} = t_R$ for positive sign and 0 for the negative sign and the negative sign again violates relation ***E7***. So we have ruled out the negative sign for the solution and the final relationship is:

$$t_c = p + \sqrt{p(p - t_R)} \qquad \textbf{\textit{E8}}$$

now applying equations 14 and 15 from Subappendix A

$$A(t = t_c/2) = 4X_c / (t_c)^2 \text{ and this is a constant value so}$$
$$A_c = 4X_c / (t_c)^2 \qquad \textbf{\textit{E9}}$$

Now to calculate the power required for the blind point distance trajectories to continue to the CAP point, we need to know the value of t_c and equation ***E8*** provides us with this value, as the accelerations can now be calculated from ***E9***.

Using the formulas 14 and 15 derived in Subappendix A, we can write the following relationships for maximum velocity and acceleration assuming a mass based on a weight of 2000 lb and the maximum power expended will be the force [mass times acceleration] multiplied by the maximum velocity:

$$V_{mc} = 2X_c/ t_c \qquad \textbf{\textit{E10}}$$

Now we can write from ***E9*** and ***E10*** with some algebraic rearrangements

$$V_{mc} = (2X_c) / \sqrt{(4X_c / A_c)} = \sqrt{X_c A_c}$$

$$V_{mCAP} = \sqrt{X_c A_c} \qquad \textbf{\textit{E11}}$$

$$P_{mc} = M A_c V_{mc} \text{ [8]} \qquad \textbf{\textit{E12}}$$

Table 3a is for the four entries in column 7 as described above, these alone were derived from equations ***E4*** through ***E12*** above.

8 https://en.wikipedia.org/wiki/Work_(physics)

p	T_c +	T_c -	*V(t)ft/sec*	*Tcap/2 +t sec*
0.2	0.22423817	0.18049056	1,883,711.45	0.11
			1,712,464.96	0.12
			1,541,218.46	0.13
0.51	0.56059541	0.45122641	1,369,971.96	0.14
			1,198,725.47	0.15
			1,027,478.97	0.16
2.53	2.80297707	2.25613205	856,232.48	0.17
			684,985.98	0.18
			513,739.49	0.19
5.06	5.60595413	4.51226410	342,492.99	0.2
			171,246.50	0.21
			0.00	0.22

Table 3a: Sanity check on equation derivations

Table 3a uses equation 8 from Subappendix A, $V(t) = 2V_{mc} (1 - t / t_c)$ for $t > t_c /2$ to check equation ***E8*** used to calculate p, t_{c+} and t_{c-} and it compares V(t) as it steps through 0.1 sec increments from 0.11 sec equal to $t_c /2$ shown in column 5. As we see from Figure 4, previously displayed, V(t) should equal 0 at $t = t_c$ as expected also in the third column t_{c-} has values less than t_R as derived in ***E7*** above. Table 3b has the four entries shown in orange for BPD greater than 20 miles [case2] all other entries in gray are [case1] entries where the BPD distance is less than 20 miles. This gives different values for these entries than Table 2 where the BPD distance does not follow the same trajectory as the CAP point trajectory. Note that the velocity at the BPD distance, which is the same as the maximum velocity because the object continues accelerating out of sight in Table 2 is 2,062,648.05 ft/sec while the velocity at the BPD distance in the second case Table 3a is 171,246.50 ft/sec because in the second case the object has gone into deceleration at the halfway point and has decreased its velocity from 1,883,711.45 ft/sec to 171,246.50 ft/sec in a maner of 0.1 sec and comes to rest at 0 velocity at the CAP point.

As a final sanity check for Table 3b we will calculate the $V_m(t)$ and A(t) for case 2 using the equations from Subappendix A which allow us to calculate these values approaching the CAP point.

Replicating the values in Row 1 of Table 3b for V_m and A(t) only $X_c = 40$ mi and $t_c = 0.22$ sec from the calculations in Table 3a all other calculations are derived as in example for Table 2.
$V_m = V_{mc} = 2X_c/ t_c$ from E7 = (2 x 40 mi x 5280 ft/mi) / 0.22423817 sec = 1,883,711.45 ft/sec
$A_c = 4X_c / (t_c)^2 = 4(40\text{mi} \times 5280\text{ft/mi}) / (0.22423817\text{sec})^2 = 16{,}800{,}988.09 \text{ ft/sec}^2$ = 521,769.84 g's

Figure 6 is a plot from Microsoft Mathematics plot of equation 17 from Subappendix A showing that the calculated $T_{C\ substituted}$ into Equation 17 when plotted reproduces the proper T_R and X_R confirming that the equations ***E4*** - ***E10*** are correct. Again Figure 6 displays a piece-wise function[9] composed of two parabolas separated by the regions $t \leq t_m/2$ for the blue parabola defining the ascent to the halfway point at $t_m/2$ and the green parabola for $t \geq t_m/2$ where the ascent acceleration is reversed and the object comes to rest at X_m, $t > t_m/2$ the white square is the only region where the functions are defined. This reverse calculation uses the originally unknown time of $t_m = 0.22423817$ sec to get to the CAP point as an input and solves for the time when the BPD occurred and it agrees with the original assumed value of 0.2 sec for T_R confirming the validity of the derived equations above.

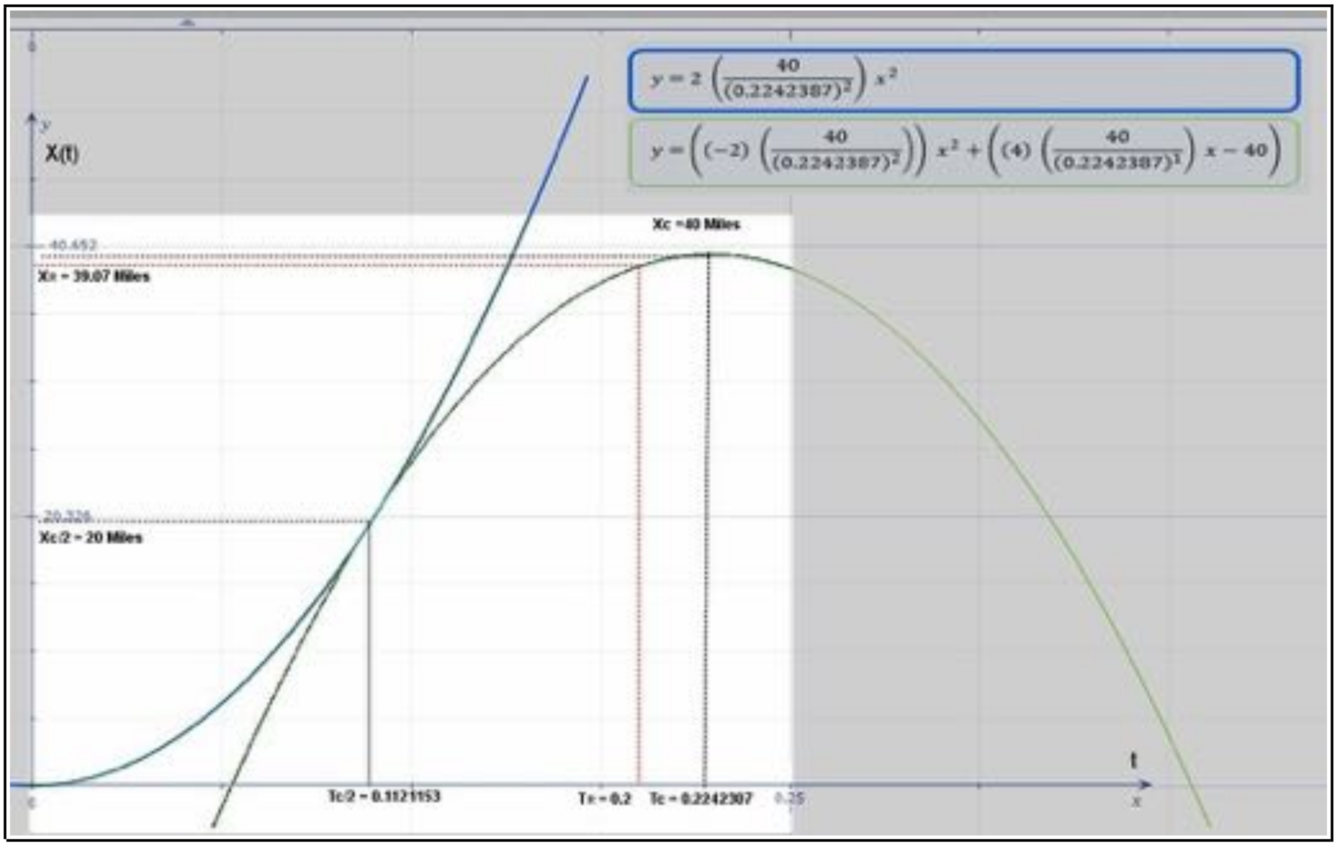


Figure 6: Case 2 BPD greater than Tc/2 showing calculated T_c from T_L matches table values

9 https://en.wikipedia.org/wiki/Piecewise_linear_function

TL-R Secs	Tc Secs	Diameter at 3 viewing angles in ft	BPD (Φ) Visual Acuity Angle deg	m	BPD (Φ) In decimal deg	XL-R ft	XL-R Mi	Linear Vmc ft/sec	Linear Vmc Mph	Linear Vmc Mi/sec	Linear A(t) ft/sec2	Linear A(t) g's	Pmax ft-lb/sec T1	Pmax GigawattsT1	tons of Tnt
0.2	0.224238	60	1/60 deg	2000	0.02	206264.8	39.07	1883711.45	1284348.72	356.76	16800988.79	521769.84	1.97E+015	2.67E+006	639566.89
0.2	0.404757	30	1/60 deg	2000	0.02	103132.4	19.53	1043589.08	711538.01	197.65	5156620.12	160143.48	3.34E+014	4.55E+005	108750.54
0.2	0.572413	15	1/60 deg	2000	0.02	51566.2	9.77	737928.92	503133.35	139.76	2578310.06	80071.74	1.18E+014	1.61E+005	38449.12
0.5	0.560595	60	1/60 deg	2000	0.02	206264.8	39.07	753484.58	513739.49	142.71	2688158.21	83483.17	1.26E+014	1.71E+005	40932.28
0.5	1.011893	30	1/60 deg	2000	0.02	103132.4	19.53	417435.63	284615.2	79.06	825059.22	25622.96	2.14E+013	2.91E+004	6960.03
0.5	1.431032	15	1/60 deg	2000	0.02	51566.2	9.77	295171.57	201253.34	55.9	412529.61	12811.48	7.56E+012	1.03E+004	2460.74
2.5	2.802977	60	1/60 deg	2000	0.02	206264.8	39.07	150696.92	102747.9	28.54	107526.33	3339.33	1.01E+012	1.37E+003	327.46
2.5	5.059463	30	1/60 deg	2000	0.02	103132.4	19.53	83487.13	56923.04	15.81	33002.37	1024.92	1.71E+011	2.33E+002	55.68
2.5	7.155161	15	1/60 deg	2000	0.02	51566.2	9.77	59034.31	40250.67	11.18	16501.18	512.46	6.05E+010	8.23E+001	19.69
5	5.605954	60	1/60 deg	2000	0.02	206264.8	39.07	75348.46	51373.95	14.27	26881.58	834.83	1.26E+011	1.71E+002	40.93
5	10.118925	30	1/60 deg	2000	0.02	103132.4	19.53	41743.56	28461.52	7.91	8250.59	256.23	2.14E+010	2.91E+001	6.96
5	14.310321	15	1/60 deg	2000	0.02	51566.2	9.77	29517.16	20125.33	5.59	4125.3	128.11	7.56E+009	1.03E+001	2.46
0.2	0.404757	60	1/30 deg	2000	0.03	103132.4	19.53	1043589.07	711538	197.65	5156620.01	160143.48	3.34E+014	4.55E+005	108750.53
0.2	0.572413	30	1/30 deg	2000	0.03	51566.2	9.77	737928.91	503133.35	139.76	2578310.01	80071.74	1.18E+014	1.61E+005	38449.12
0.2	0.809514	15	1/30 deg	2000	0.03	25783.1	4.88	521794.53	355769	98.82	1289155	40035.87	4.18E+013	5.68E+004	13593.82
0.5	1.011893	60	1/30 deg	2000	0.03	103132.4	19.53	417435.63	284615.2	79.06	825059.2	25622.96	2.14E+013	2.91E+004	6960.03
0.5	1.431032	30	1/30 deg	2000	0.03	51566.2	9.77	295171.56	201253.34	55.9	412529.6	12811.48	7.56E+012	1.03E+004	2460.74
0.5	2.023785	15	1/30 deg	2000	0.03	25783.1	4.88	208717.81	142307.6	39.53	206264.8	6405.74	2.67E+012	3.64E+003	870
2.5	5.059463	60	1/30 deg	2000	0.03	103132.4	19.53	83487.13	56923.04	15.81	33002.37	1024.92	1.71E+011	2.33E+002	55.68
2.5	7.155161	30	1/30 deg	2000	0.03	51566.2	9.77	59034.31	40250.67	11.18	16501.18	512.46	6.05E+010	8.23E+001	19.69
2.5	10.118925	15	1/30 deg	2000	0.03	25783.1	4.88	41743.56	28461.52	7.91	8250.59	256.23	2.14E+010	2.91E+001	6.96
5	10.118925	60	1/30 deg	2000	0.03	103132.4	19.53	41743.56	28461.52	7.91	8250.59	256.23	2.14E+010	2.91E+001	6.96
5	14.310322	30	1/30 deg	2000	0.03	51566.2	9.77	29517.16	20125.33	5.59	4125.3	128.11	7.56E+009	1.03E+001	2.46
5	20.237851	15	1/30 deg	2000	0.03	25783.1	4.88	20871.78	14230.76	3.95	2062.65	64.06	2.67E+009	3.64E+000	0.87
0.2	0.572413	60	1/15 deg	2000	0.07	51566.2	9.77	737928.88	503133.33	139.76	2578309.79	80071.73	1.18E+014	1.61E+005	38449.12
0.2	0.809514	30	1/15 deg	2000	0.07	25783.1	4.88	521794.51	355768.99	98.82	1289154.89	40035.87	4.18E+013	5.68E+004	13593.82
0.2	1.144826	15	1/15 deg	2000	0.07	12891.55	2.44	368964.44	251566.66	69.88	644577.45	20017.93	1.48E+013	2.01E+004	4806.14
0.5	1.431032	60	1/15 deg	2000	0.07	51566.2	9.77	295171.55	201253.33	55.9	412529.57	12811.48	7.56E+012	1.03E+004	2460.74
0.5	2.023785	30	1/15 deg	2000	0.07	25783.1	4.88	208717.81	142307.59	39.53	206264.78	6405.74	2.67E+012	3.64E+003	870
0.5	2.862064	15	1/15 deg	2000	0.07	12891.55	2.44	147585.78	100626.67	27.95	103132.39	3202.87	9.45E+011	1.29E+003	307.59
2.5	7.155161	60	1/15 deg	2000	0.07	51566.2	9.77	59034.31	40250.67	11.18	16501.18	512.46	6.05E+010	8.23E+001	19.69
2.5	10.118926	30	1/15 deg	2000	0.07	25783.1	4.88	41743.56	28461.52	7.91	8250.59	256.23	2.14E+010	2.91E+001	6.96
2.5	14.310322	15	1/15 deg	2000	0.07	12891.55	2.44	29517.16	20125.33	5.59	4125.3	128.11	7.56E+009	1.03E+001	2.46
5	14.310322	60	1/15 deg	2000	0.07	51566.2	9.77	29517.16	20125.33	5.59	4125.3	128.11	7.56E+009	1.03E+001	2.46
5	20.237852	30	1/15 deg	2000	0.07	25783.1	4.88	20871.78	14230.76	3.95	2062.65	64.06	2.67E+009	3.64E+000	0.87
5	28.620644	15	1/15 deg	2000	0.07	12891.55	2.44	14758.58	10062.67	2.8	1031.32	32.03	9.45E+008	1.29E+000	0.31

Table 3b Calculations for the Case with non constant acceleration

Index: Orange BPD = T_R, Grey Angle 1/60 deg, Yellow Angle 1/30 deg, Green Angle 1/15 deg
All entries except Orange Occur with BPD = T_L

Conclusions:

[1] The Blind Point Distance was determined to be due to visual acuity effects and not because the object traveled over the horizon and became invisible due to the curvature of the Earth.

[2] Looking at the accelerations for all cases in Table 2 and 3b, we can see that for all cases between 0.2 to 5 sec, apparent size between 60 and 15 ft, and visual acuity between 1/60 to 1/15 deg, the minimum acceleration is 32 g's and the maximum acceleration is 521,770 g's which would be impossible for any human and any mechanically complex mechanism to survive. The lowest g-force value also occurs at 5 sec of time to the BPD which really cannot be considered as fast or instantaneous as was described by the pilots. This was included for completeness of exposition but should probably be replaced by the 2.5 sec acceleration of 128 g's.

[3] For the same time range the power dissipated at the maximum velocity is a minimum of 441 megawatts and a maximum of 2,670,000 gigawatts. To put this in perspective a one megaton nuclear weapon, releases 4.18×10^{15} joules energy[10], if we say it is released in one sec then a joule/sec is the definition of a watt, 10^9 watts is a gigawatt so it would release 4.18×10^6 gigawatts. A one kiloton nuclear weapon would release 4.18×10^3 gigawatts of energy. This would then place the energy release per second at a minimum of 121/4,180 = 0.11 tons or 860 lb of TNT each second and a maximum of 639.57 kilotons of TNT per second to propel it on its trajectory.

[4] Further, all known propulsive methods are reaction type of engines that release this energy by explosions of different types to propel the vehicle through the atmosphere. Exploding the minimum of 220 lb of TNT per second would be quite noticeable in the atmosphere and cause massive sonic and shock wave disturbances, a 639.57 kilotons of TNT released per second is equivalent to a larger than Hiroshima type of nuclear weapon being exploded and would cause massive destruction throughout the entire area. No explosive effects or sounds were observed or any damage done to the planes or the surrounding area, which raises questions about the physics and technology of the observed objects, called "Tic-Tacs", that are beyond current physical explanations.

[4] In this paper only the horizontal acceleration and power calculations were made. The CAP point was at 20,000 ft and so there was a vertical component to the energy expenditure that was just as extraordinary, but a similar treatment like this has already been covered in Appendix G which calculates these figures for accelerations from 20,000 ft to 80,000 ft. We could just estimate that this is a little less than four miles and so using the figures for 4.8 miles in Table 3b a rough estimate of the energy released would be between 860 lb and 6.72 kilotons of TNT released per second. The interested reader is referred to Appendix G for further details and will not be treated here.

[5] Every effort has been made to be conservative and take into account the visual acuity problems of the observers due to atmosphere, light intensity and visual aspect ratio of the object described by the witnesses. In all these cases the acceleration is beyond the capability of any known science or

10 http://www.atomicarchive.com/Effects/effects1.shtml

technology that is presently available. The power released would, at a minimum, have been easily detected and at worst would be extremely destructive, but this was not the case. The witnesses have impeccable reputations and much of their testimony is in agreement with each other. Although some details are uncertain there is enough agreement to lead to the conclusion that this was an observation of a machine-like unidentified flying object with technology beyond our current capabilities. It should be investigated further by having a full release of the details that are currently classified by military and government entities to allow academic and scientific organizations do detailed studies.

Subappendix A

Derivation of the Linear Velocity Trajectory with reversing acceleration to hover at CAP point

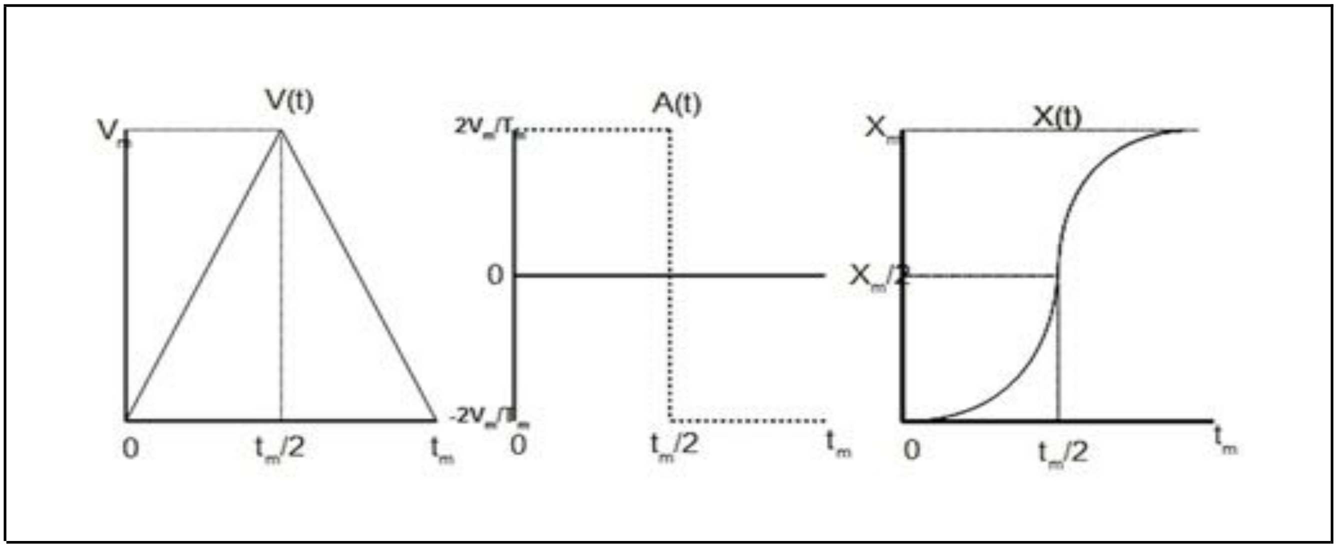


Fig 5 Linear Velocity With Reversing Constant Acceleration

$v(t) = 2V_m t / t_m$ for $t \leq t_m/2$ and $v(t) = 2V_m(1 - t/t_m)$ for $t > t_m/2$ 8.0

$A(t) = dV(t)/dt = 2V_m / t_m$ for $t \leq t_m/2$ and $A(t) = -2V_m / t_m$ for $t \geq t_m/2$ 9.0

$$X(t)=\int V(t)\,dt+K1 = \int [2\mathrm{Vmt}/tm]\,dt = Vm(t^2)/t\,m+K1 \;for\; t \leq tm/2 \qquad 10.0$$

$$X(t)=\int [2\mathrm{Vm}/tm(1-t/tm)]\,dt=[2\mathrm{Vm}[t-(t^2)/2\mathrm{tm}]]+K2 \;for\; t>tm/2 \qquad 11.0$$

Now from 3.0 solving for K1, since $X(t_m/2) = X_m/2$ we can write

$X_m/2 = (V_m / t_m)*(t_m/2)^2 + K1$ therefore $K1 = (2X_m - V_m t_m)/4$ 12.0

Therefore $X(t) = V_m t^2 / t_m + (2X_m - V_m t_m)/4$ for $t \leq t_m/2$ 13.0

Now at $t=0$ $X(t) = 0$ Therefore $(2X_m - V_m t_m)/4 = 0$ so

$$V_m = 2X_m / t_m \qquad 14.0$$

from 8.0 $A(t) = dV(t)/dt = |2V_m / t_m|$ $0 \leq t \leq t_m$ 15.0

and 14.0 $A(t) = 2V_m / t_m = 2(2X_m/t_m)/t_m = 4X_m/(t_m)^2$

$$A(t) = 4X_m / (t_m)^2 \qquad 16.0$$

now from 4.0 $X(t) = [\ 2Vm[\ (t-(t^2 / 2t_m)\ ]+ K2$ for $t > t_m/2$ and $X(t_m) = X_m$, so

$X_m = 2Vm[\ t_m - (t_m)^2/2t_m] + K2 = Vm\ t_m + K2$ therefore $K2 = X_m - Vm\ t_m$

$$K2 = X_m - Vm\ t_m \qquad 17.0$$

$$X(t) = [\ 2Vm[\ (t-(t^2 / 2t_m)\ ] + X_m - Vm\ t_m \qquad \text{for } t > t_m/2$$

from 7 above $V_m = 2X_m / t_m$ so $t_m = 2X_m / V_m$

$$X(t) = [4X_m / t_m\ ]\ [\ (t-(t^2 / 2t_m)\ ]\ - X_m \qquad \text{for } t > t_m/2 \qquad 18.0$$

APPENDIX J

ACCELERATION, SPEED, AND POWER CALCULATIONS BASED ON AN ATFLIR VIDEO

Author: Peter Reali

The 2004 *Nimitz* "Tic-Tac" Incident

This is an analysis of the F4.mpg Video that determines not what the "Tic-Tacs” are but that they exhibit characteristics beyond any known present technology.

Executive Summary:

This paper takes a simple approach to investigating the size, perpendicular angular velocity component and acceleration of the so called “Tic-Tac” object in the F4.mpg video. From these calculations are derived a range of estimated distances of the "Tic-Tac" from the F/A-18 jet and the size of the "Tic-Tac" based on the size of the angular dispersion of the “Tic-Tac” diameter in the ATFLIR video. This allows us to eliminate any object that is larger or smaller than the known sizes of all aircraft in the area of the *Nimitz* exercise location. While not precise, it shows that the “Tic-Tac” due to it's size, estimated distance and lack of aerodynamic details in the ATFLIR image and by calculating it's average velocity and acceleration, along with the power requirements to perform these maneuvers, it cannot be any known type of aircraft using current technology.

These calculations are based on two regions of the ATFLIR screen as it changes from a 1X zoom with a 0.7 deg field of view to a 2X zoom with a 0.35 deg field of view of the ATFLIR camera and the angular size of the “Tic-Tac” compared to the total field of view. It uses two diameters; one for the dense center and the other that is wider that includes the corona. It concludes that the distances calculated are not far enough to prevent the details of a conventional aircraft, like wing's, to not be visible on the ATFLIR display. The acceleration calculated would have killed a human pilot, although a drone device is not eliminated as a possibility. The final conclusion is that the “Tic-Tac” cannot be another F/A-18 due to the lack of identifiable wing's and air-frame characteristics, further since during the 2004 *Nimitz* aerial exercise the only planes in the area were F/A-18s and an E2 radar plane and neither of these could produce the results seen. This is an unidentified object with characteristics that are beyond our current understanding due to the acceleration and lack of identifiable aerodynamic features in the ATFLIR display.

Abstract:

In preparing this paper the F4.mpg video was analyzed using the VirtualDub[1] open source video editing and filtering tool to examine the video on a frame by frame basis to determine the timing between the examined portions of the frames and calculate the accelerations, power requirements and maximum velocities for the observed trajectories of the “Tic-Tac”. VirtualDub is a well supported and active open source application with people who write and post third party filters that are available for free download and analysis. Attempts were made to filter the video in different ways but for this paper only the raw video was used.

Using the analysis tools of VirtualDub the video has the following encoding characteristics:

1 https://sourceforge.net/projects/virtualdub/

F4.mpg Video: Frame size, fps (µs per frame): 352 x 240, 29.970 fps (33367 µs) Length: 2289 frames (1:16.37) Decompressor: Internal DIB decoder (   ) Number of key frames: 2289 Min/avg/max/total key frame size: 253440/253440/253440 (566528K) Min/avg/max/total delta size: (no delta frames) Data rate: 60765 kbps (0.01% overhead)

Assumptions:

All scientific investigations are based on underlying assumptions that need to be proved or disproved by logical examinations to see if they violate current accepted knowledge and physical laws. The author of this paper will list his assumptions to the best of his ability always aware that there may be others he is unaware of.

1. This paper uses the F4.mpg video as the source of its analysis and further restricts its analysis to the last few seconds of the video [frames 2221 to 2252] as the "Tic-Tac" object accelerates to the left out of the field of view of the ATFLIR display. This video and the FLIR1 video released by the government and displayed on the *Two The Stars Academy* website appear identical. The author has viewed the two videos in detail, at the pixel level, and is satisfied that the FLIR1 video was likely derived from the original F4.mpg video; which appeared on a German website in 2007, and is just over two years after the 2004 *Nimitz* Naval incident. It is possible that this is an elaborate fake and this cannot be ruled out, but the SCU has interviewed pilots who were there at the time of the debriefing and have said that it is substantially the same video, but it is lower quality and has been shortened in length. The author feels that the difficulty in tracing the origin of the document is a result of the legal ramifications for the person who copied the video illegally and released it without authorization. This would subject them to the risk of government prosecution due to the classified nature of the equipment being used. Further, any fakery would take substantial resources and technical skill, with little chance of financial reward for the effort. All these reasons lead the author to conclude that the video is most likely valid. A more detailed discussion of the origin of the two videos is covered in a different appendix.

2. The operation of the Ratheon An/ASQ-228 ATFLIR camera acts like a typical full frame camera and maps the full field of display to the sensor without cropping the image. This means that at the display the full 0.7 deg field of view has a one-to-one mapping to the horizontal display and that a percentage of the horizontal display represents the same percentage of the angular view of the ATFLIR camera. If this is not the case and the sensor is cropped, as is termed in the photographic community, it means that the sensor is seeing only a portion of the field of view and this acts as another magnifying factor and

that all images on the FLIR display are bigger and farther away than the author assumes in the paper below. This would not invalidate his conclusions,however, and the “Tic-Tac” would only have even more extraordinary acceleration and power capabilities. The case of the FLIR mapping to less than the sensors full imaging capability would be wasting the capability of the sensor and throwing away important image resolution capabilities and that would be a design disaster and huge waste of money.

3. Any object that has a long axial dimension, as it would turn left, would appear to change in size on the ATFLIR display as the long aspect of the body would show up in the ATFLIR display, the author believes this is a powerful argument against this being a conventional air-frame of any known type and rules out aircraft or missiles as sources of the “Tic-Tac's” image in the ATFLIR display.

4. The apparent movement of the “Tic-Tac” object moving to the left during frames 2221 to 2251 or 1.14.11sec to 1.15.11 sec (the exact times are obtained using the VirtualDub software) into the video is due to the “Tic-Tac” moving to the left and not due to the airplane moving to the right. This is based on the ATFLIR display showing that the “Tic-Tac” remains in a relatively stable position, as the ATFLIR display registers a constant angular pointing position at the top of the ATFLIR display of 8 deg to left and 5 deg down from the airplane axis in the frames that were analyzed. The tracking servo does not seem to change its position, but it is possible that a small angular degree shift of a few tenths of a degree would not be registered in the display as the display does not appear to update changes of less than 1 deg. <u>This could result in what would appear to be a large acceleration and not due to any change in the objects motion. This would also nullify assumption 3 above as the object would not be turning to the left and no change in shape would be observed. The argument against this possibility is that the ATFLIR display would be very difficult for the pilot to use, if small angular deviations due to atmospheric vibrations would constantly make objects on the display shoot off the screen and this has not been reported by the pilots during any interviews or other discussions. If it did occur this would surely have been mentioned as a possibility.</u> The tracking servo does not seem to change its position but it is possible that it could be turned off or be malfunctioning during this time, but according to interviews of the people involved all equipment was functioning perfectly.

<u>Forward:</u>

As shown in Fig 1 and 2 the ATFLIR maps a 0.70/0.35 deg field of view to the ATFLIR image sensor, this is equivalent to a super-telephoto lens of a focal length greater than 1200mm and a magnification factor of 35x or greater compared to a 35mm lens and sensor. This means that for objects at significant distance the details of their structure should be visible in the ATFLIR display up to several miles in distance. The exact analysis of this factor will be left for future investigations of the ATFLIR operating characteristics. Figure 2b shows a table of focal length to angular field of view for typical camera lenses and shows that a 1.5 deg field of view exceeds the magnification factor of a 1200mm telephoto lens.

Figure 1: shows the small angular area aperture of 1.5 deg of the ATFLIR

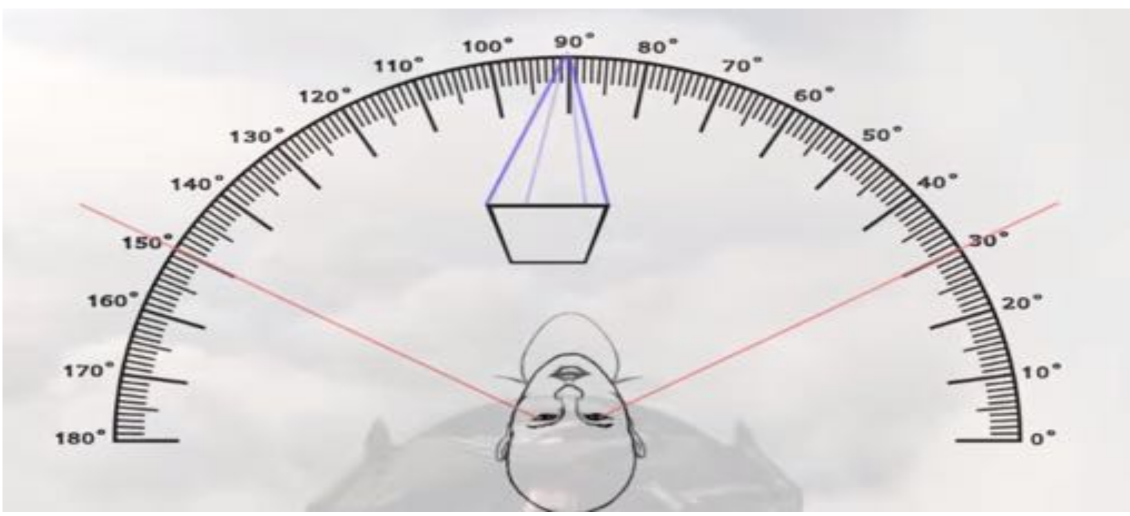


Figure 2a: shows the small angular aperture of 0.7/0.35 deg mapping on the ATFLIR display

Focal Length (mm)	Diagonal (°)	Vertical (°)	Horizontal (°)
35	63.4	37.8	54.4
50	46.8	27.0	39.6
70	34.4	19.5	28.8
85	28.6	16.1	23.9
105	23.3	13.0	19.5
200	12.3	6.87	10.3
300	8.25	4.58	6.87
400	6.19	3.44	5.15
500	4.96	2.75	4.12
600	4.13	2.29	3.44
700	3.54	1.96	2.95
800	3.10	1.72	2.58
1200	2.07	1.15	1.72

Figure 2b:[2] shows the small angular aperture of 0.7/0.35 deg is a super Telephoto lens

Figure 3 below is a screen capture from the FLIR1 video showing the "Tic-Tac" just before it accelerates to the left out of the screen's field of view.

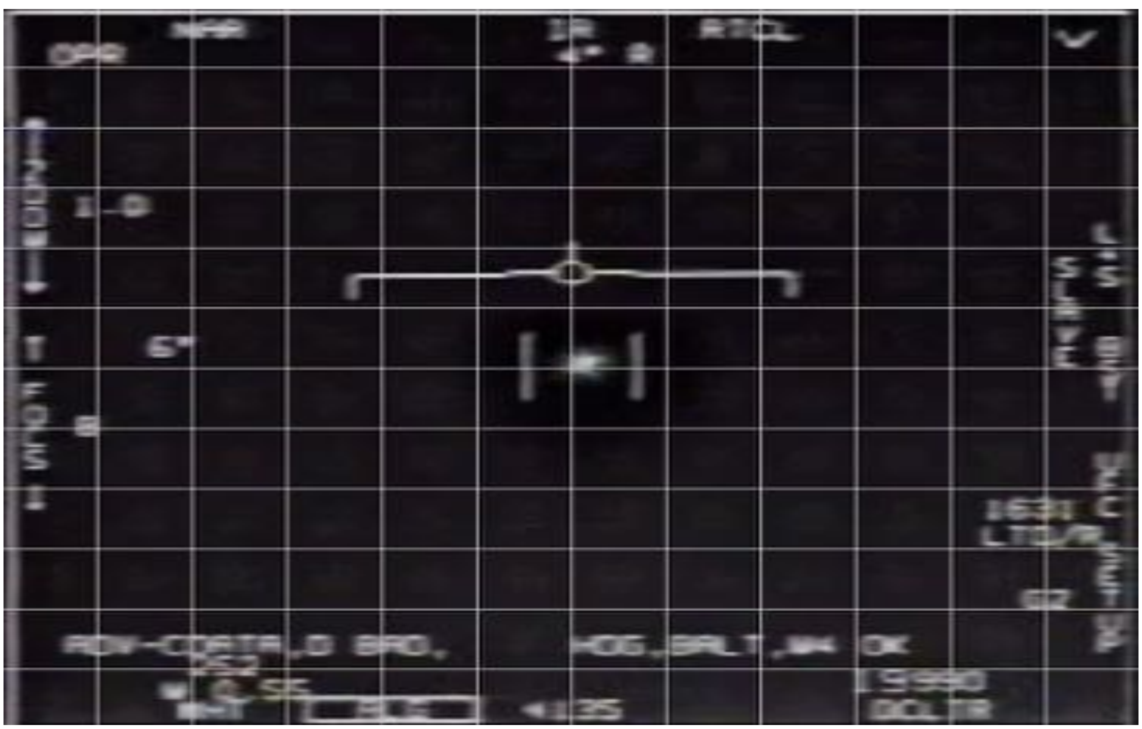


Figure 3: ATFLIR display showing the "Tic-Tac" diameter across the 0.7deg field of view

2 https://www.edmundoptics.com/resources/application-notes/imaging/understanding-focal-length-and-field-of-view/

1.0 The details of the Calculations:

As can be seen in Figure 3 the ATFLIR display has superimposed on it a grid that divides it equally into 12 parts horizontally. By viewing the entire video it was noticed that the “Tic-Tac” object has a diameter between 1/3 and 1/2 of a single reticle of the display. This is due to the diameter of the dense center relative to the vague corona extending outside this center which occupies a diameter about 1/2 of a reticle. If we were to place these two diameters across the screen they would fill the screen completely with 36 small diameter objects or 24 large diameter objects. How much each small object covers the screen is proportional to the portion of the 0.7 deg angle that it occupies. Thus we can divide the display into two regions of 24 or 36 subdivisions of the total 0.7 deg field of view of the ATFLIR display. The 0.7 deg of ATFLIR display comes from information obtained by reading the specifications for the Ratheon AN/ASQ-228 ATFLIR specifications. The ATFLIR has three setting's WFOV = 6 deg, MFOV = 2.8 deg, NFOV or NAR = 0.7 deg.

We have no way of knowing the true trajectory of the object observed except for an average velocity, the distance traveled in a fixed amount of time. Now in the following analysis the velocity is assumed to increase linearly and the resulting acceleration will be constant and provides a convenient way to overcome the difficulties of abrupt changes in velocity and accelerations that may not be linear as shown in Figure 4a below. But if the velocity varies in a non-linear way it still requires that the average velocity $V_m/2$ be the same since it travels the same distance in the same amount of time t_m ; so if the velocity is varying above the linear amount it must decrease below the linear amount so that the final average velocity is $V_m/2$, to guarantee it goes off the screen in time t_m. This results in a very conservative approach, as other trajectories that have lower accelerations for part of the time will require higher accelerations for at least some part of the remaining time. This means that the acceleration may be greater or less than the constant acceleration but if we can show that the constant acceleration is beyond the capability of an F/A-18, then we have shown that the “Tic-Tac's” ATFLIR signature is not any known aircraft. This is shown in Fig 4a below with the “Tic-Tac” exhibiting nonlinear velocity, the dashed line, with the average velocity the same as the linear increasing velocity, not dashed. At $t_{m,}$ V_{nl} is > V_m but both have traveled the same distance in t_m seconds, so the average velocity is the same.

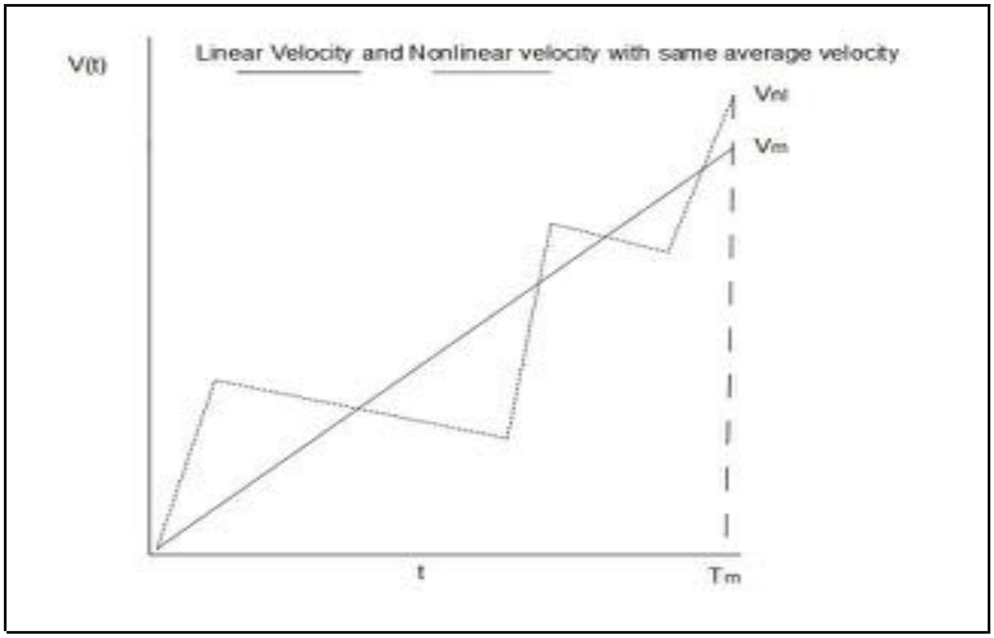


Figure 4a "Tic-Tac" with nonlinear velocity equal to average velocity of a linear trajectory

Figure 4b below shows with simple trigonometry the relationship between the distance from the F/A-18's ATFLIR detector using the tangent relationship of d1 the distance to the "Tic-Tac", α the angle created between d2 /2 the half diameter of the "Tic-Tac": Since the tangent of α is (d2/2)/d1 = Tan(α) we can derive d2 = 2*d1*Tan(α) now neither d1 or d2 are known but the angle α is derived by dividing the amount or % of the reticle occupied by either diameter by the 0.7deg or 0.35deg of angle of the total 12 divisions shown in Figure 3 above. From this we get two relationships for the diameter with simple trigonometry. The relationship between the distance from the F/A-18's ATFLIR detector using the tangent relationship of d1, the distance to the "Tic-Tac", and the angle created between d2 /2, the half diameter of the "Tic-Tac".

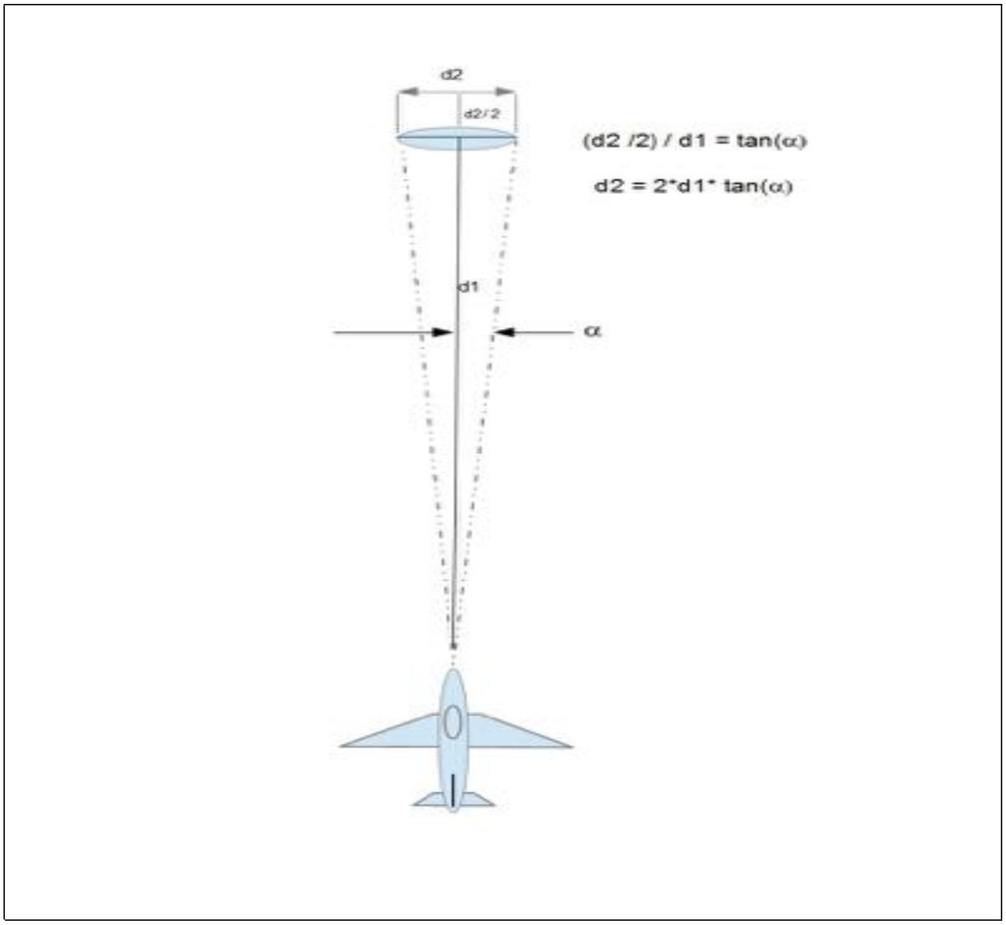


Figure 4b: "Tic-Tac" Size Calculations

In Figures 5a and 5b, although the image shows a 1x zoom indicator on the left of the display, in 5b it has already zoomed the image and an instant later it updates the Zoom to 2X. Thus the diameter of the relationships of the "Tic-Tac" image to the reticle size stay the same 1/3 to 1/2 a reticle in size. As the zoom changes to 2X the full field of view in the LCD display is now 0.7 deg / 2 or 0.35 deg. This means that in the 2X mode each reticle represents half the distance as the 1X mode. Since we want to keep a constant scale we will keep the reticles weighted to the 1X Zoom mode, so for the "Tic-Tac" in figure 5a, the 2X portion of the screen, actually moves 5.0 / 2 = 2.5 reticles in 0.60 sec in the 2X mode and 1.0 reticles in 0.367 sec in the 1X mode in Fig 5a.

Further complicating the situation, one must also consider that when the ATFLIR zooms the display is blanked for a period of time giving inaccurate reading's and producing artifacts until the mechanism stabilizes. So the calculations will be done compensating for the uncertainty of when the zoom display can be used to calculate the "Tic-Tac" trajectory distances. These are shown in Table 1 for the early zoom and in Table 2 for the late zoom changes with the associated calculations. The two cases are displayed with the resulting calculations of maximum velocity and acceleration as a function of the "Tic-Tac" distance and apparent diameter [k = to 24 or 36 and 1X or 2X zoom] followed by a detailed derivation of the equations used to derive these results.

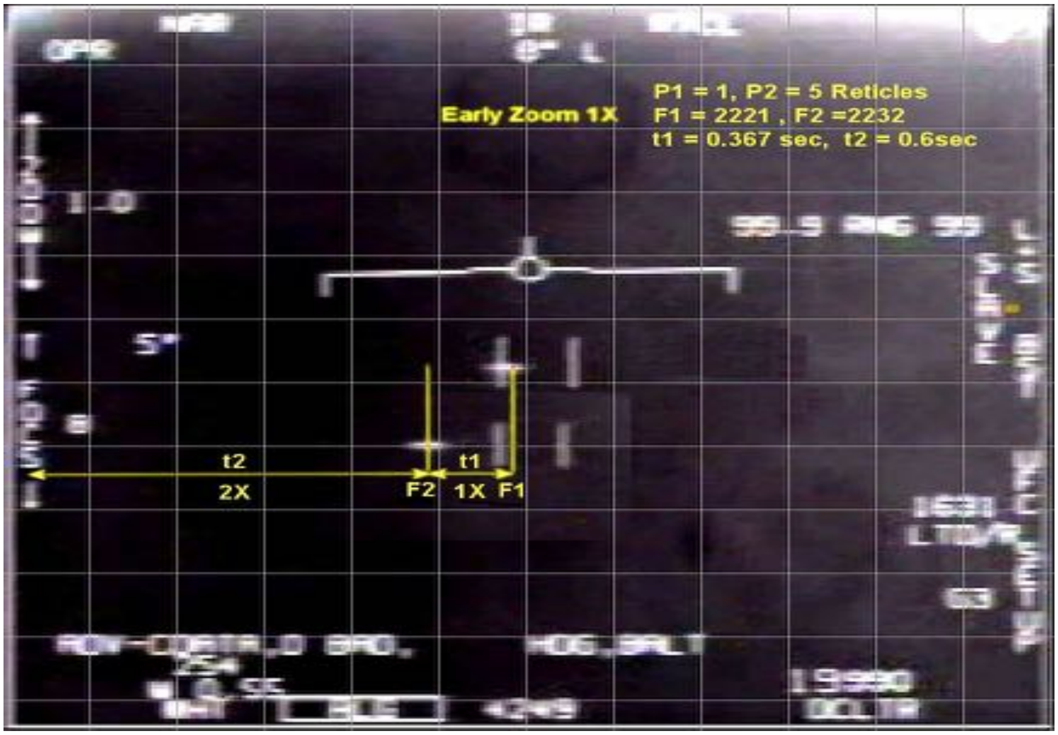


Figure 5a: shows the point where the Early Zoom changes from 1X to 2x

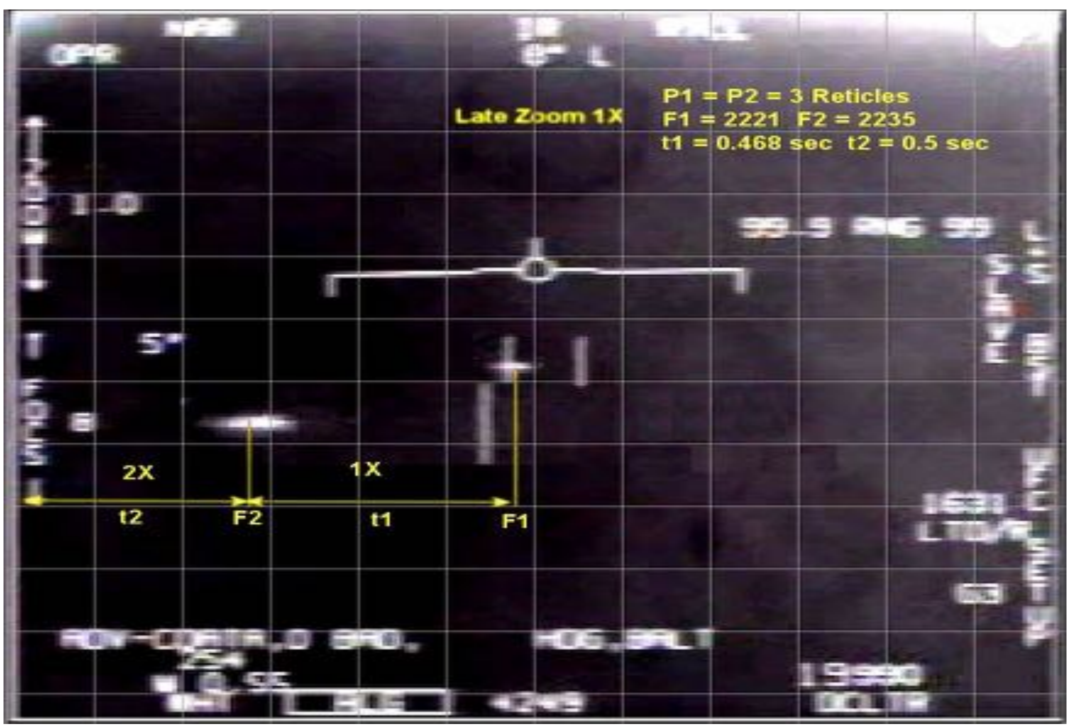


Figure 5b: shows the point where the Late Zoom changes from 1X to 2x

Subappendix D gives the detailed relationships between the frame numbers of the video and the time spent in each of the early and late zoom phases of 1X and 2X.

Zoom Factor z=1X or 2X	k	b deg	a = b/2k radians	Tan(b/2k)	d1 in feet	d1 in miles	d2 in feet	(Vm) Ang Vel. ft/sec	T_m sec	(Am) Angular Accel g's	Power Req ft-lb/sec	PwrRatio must be >1
1X	36	0.7	1.696848E-04	1.696848E-04	141000	26.70	47.85	782.31	0.367	66.2	1.66E+09	0.05
1X	36	0.7	1.696848E-04	1.696848E-04	149000	28.22	50.57	826.69	0.367	69.96	1.85E+09	0.04
1X	36	0.7	1.696848E-04	1.696848E-04	157000	29.73	53.28	871.08	0.367	73.71	2.05E+09	0.04
1X	36	0.7	1.696848E-04	1.696848E-04	165000	31.25	56.00	915.47	0.367	77.47	2.27E+09	0.03
1X	36	0.7	1.696848E-04	1.696848E-04	173000	32.77	58.71	959.85	0.367	81.22	2.49E+09	0.03
2X	36	0.7	1.696848E-04	1.696848E-04	141000	26.70	47.85	1978.58	0.600	61.92	3.92E+09	0.02
2X	36	0.7	1.696848E-04	1.696848E-04	149000	28.22	50.57	2090.84	0.600	65.43	4.38E+09	0.02
2X	36	0.7	1.696848E-04	1.696848E-04	157000	29.73	53.28	2203.11	0.600	68.95	4.86E+09	0.02
2X	36	0.7	1.696848E-04	1.696848E-04	165000	31.25	56.00	2315.37	0.600	72.46	5.37E+09	0.01
2X	36	0.7	1.696848E-04	1.696848E-04	173000	32.77	58.71	2427.63	0.600	75.97	5.90E+09	0.01
Zoom Factor z =1X or 2X	k	b deg	a = b/2k radians	Tan(b/2k)	d1 in feet	d1 in miles	d2 in feet	(Vm) Angular Vel ft/sec	T_m sec	(Am) Angular Accel g's	Power Req ft-lb/sec	PwrRatio must be >1
1X	24	0.7	2.545272E-04	2.5453E-04	93000	17.61	47.34	515.99	0.367	43.66	7.21E+08	0.11
1X	24	0.7	2.545272E-04	2.5453E-04	101000	19.13	51.41	560.38	0.367	47.42	8.50E+08	0.09
1X	24	0.7	2.545272E-04	2.5453E-04	109000	20.64	55.49	604.76	0.367	51.18	9.90E+08	0.08
1X	24	0.7	2.545272E-04	2.5453E-04	117000	22.16	59.56	649.15	0.367	54.93	1.14E+09	0.07
2X	24	0.7	2.545272E-04	2.5453E-04	93000	17.61	47.34	1305.02	0.600	40.84	1.71E+09	0.05
2X	24	0.7	2.545272E-04	2.5453E-04	101000	19.13	51.41	1417.28	0.600	44.35	2.01E+09	0.04
2X	24	0.7	2.545272E-04	2.5453E-04	109000	20.64	55.49	1529.54	0.600	47.87	2.34E+09	0.03
2X	24	0.7	2.545272E-04	2.5453E-04	117000	22.16	59.56	1641.8	0.600	51.38	2.70E+09	0.03

Table 1 "Tic-Tac" Size k, Early Zoom Z, Angular Velocity and Acceleration

The actual size of the “Tic-Tacs” does not change with zoom as we will calculate them as if they were in the 1X zoom range and we get: α = a = b /2

d2 = 2*d1*Tan(α /24) = 2*d1*Tan(0.35 deg / 24) for the corona of the “Tic-Tac” 1.0

d2 = 2*d1*Tan(α/36) =2*d1*Tan(0.35 deg / 36) for the center of the “Tic-Tac” 2.0

Tables 1 and 2 are spread sheets that encapsulate d2 for assumed values of d1, the divisions of 24 and 36 are defined by the variable k = to 24 or 36. b = ATFLIR angular field of view [AFOV] α = b /2 = half the angle used in figure 4b to calculate d2 the “Tic-Tac” maximum diameter.

Zoom Factor z=1X or 2X	k	b deg	a = b/2k radians	Tan(b/2k)	d1 in feet	d1 in miles	d2 in feet	(Vm) Ang Vel. ft/sec	T_m sec	(Am) Ang Acc g's	Power Req ft-lb/sec	PwrRatio must be >1
1X	36	0.7	1.6968E-04	1.6968E-04	141000	26.7	47.85	1840.43	0.47	122.13	7.19E+009	0.01
1X	36	0.7	1.6968E-04	1.6968E-04	149000	28.22	50.57	1944.85	0.47	129.06	8.03E+009	0.01
1X	36	0.7	1.6968E-04	1.6968E-04	157000	29.73	53.28	2049.27	0.47	135.99	8.92E+009	0.01
1X	36	0.7	1.6968E-04	1.6968E-04	165000	31.25	56	2153.69	0.47	142.92	9.85E+009	0.01
1X	36	0.7	1.6968E-04	1.6968E-04	173000	32.77	58.71	2258.11	0.47	149.85	1.08E+010	0.01
2X	36	0.7	1.6968E-04	1.6968E-04	141000	26.7	47.85	2701.75	0.5	53.5	4.63E+09	0.02
2X	36	0.7	1.6968E-04	1.6968E-04	149000	28.22	50.57	2855.04	0.5	56.53	5.16E+09	0.01
2X	36	0.7	1.6968E-04	1.6968E-04	157000	29.73	53.28	3008.33	0.5	59.57	5.73E+09	0.01
2X	36	0.7	1.6968E-04	1.6968E-04	165000	31.25	56	3161.62	0.5	62.6	6.33E+09	0.01
2X	36	0.7	1.6968E-04	1.6968E-04	173000	32.77	58.71	3314.91	0.5	65.64	6.96E+09	0.01
Zoom Factor z =1X or 2X	k	b deg	a = b/2k radians	Tan(b/2k)	d1 in feet	d1 in miles	d2 in feet	(Vm) Ang Vel ft/sec	T_m sec	(Am) Ang Acc g's	Power Req ft-lb/sec	PwrRatio must be >1
1X	24	0.7	2.545272E-04	2.545272E-04	93000	17.61	47.34	1213.9	0.47	80.55	3.13E+09	0.02
1X	24	0.7	2.545272E-04	2.545272E-04	101000	19.13	51.41	1318.32	0.47	87.48	3.69E+09	0.02
1X	24	0.7	2.545272E-04	2.545272E-04	109000	20.64	55.49	1422.74	0.47	94.41	4.30E+09	0.02
1X	24	0.7	2.545272E-04	2.545272E-04	117000	22.16	59.56	1527.16	0.47	101.34	4.95E+09	0.02
2X	24	0.7	2.545272E-04	2.545272E-04	93000	17.61	47.34	1782	0.5	35.29	2.01E+09	0.04
2X	24	0.7	2.545272E-04	2.545272E-04	101000	19.13	51.41	1935.29	0.5	38.32	2.37E+09	0.03
2X	24	0.7	2.545272E-04	2.545272E-04	109000	20.64	55.49	2088.58	0.5	41.36	2.76E+09	0.03
2X	24	0.7	2.545272E-04	2.545272E-04	117000	22.16	59.56	2241.88	0.5	44.39	3.18E+09	0.02

Table 2 "Tic-Tac" Size k, Late Zoom Z, Angular Velocity and Acceleration

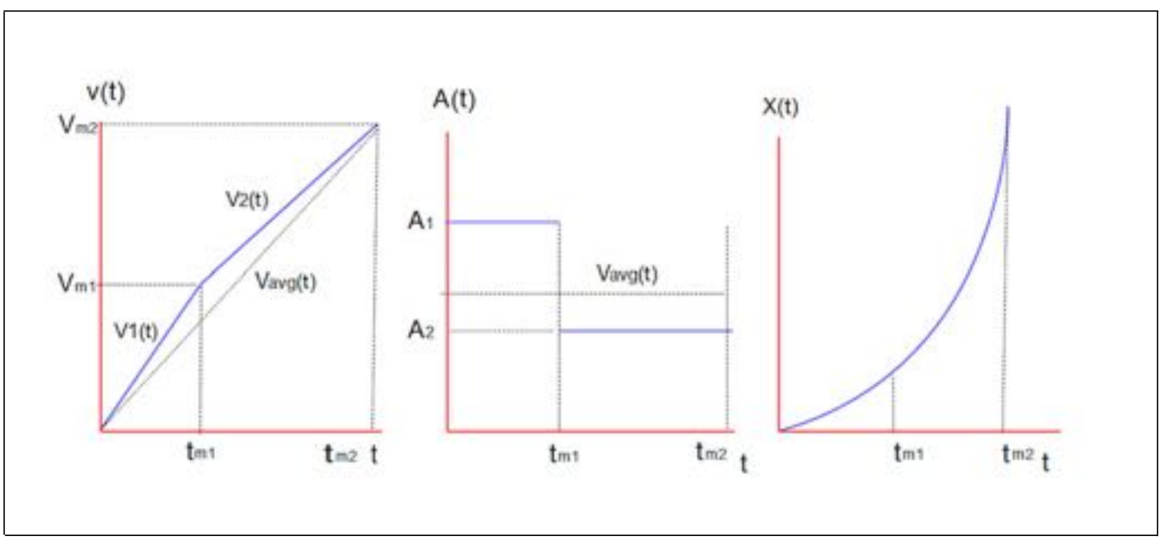


Figure 6: Linear velocity and constant acceleration curves

Now proceeding we can further calculate the velocity and acceleration for a given distance assuming the "Tic-Tac" accelerates to the left a portion of the full 0.7 deg in approximately 1 second. We do this by assuming a constant acceleration to the left and calculate the maximum velocity. Figure 6 above shows the "Tic-Tac" having three velocity curves based where $V(t)_1$ occurs when $0 \leq t \leq t_{m1}$ and $V(t)_2$ occurs when $t_{m1} \leq t \leq t_{m2}$. These are both assumed to be linear velocity curves as the velocity and acceleration changes are unknown precisely but we know where the zoom changes, there may have been an acceleration change at t_{m1}. We will treat the two trajectories independently and calculate the average velocity and accelerations forming the third curve based on the distances $X(t_{m1}) = X1$ and $X(t_{m2}) = X2$ shown in Figure 6.

$V(t)_1 = V_m / t_{m1}$ for $0 \leq t \leq t_{m1}$ for our case:

$$V(t)_1 = (V_{m1} * t) / t_{m1} \qquad 3.0$$

Since the acceleration of for each V(t) is equal to $dV(t)/dt = V_{m1}/t_{m1}$ the slope we can write as $A_1(t) = V_{m1}/t_{m1}$ 4.0

further we observe the average velocity is $(V_{m1} + 0)/2 = V_{m1}/2 = X1/t_{m1}$

we can write

$$\boxed{V_{m1} = 2*X1/t_{m1} \qquad 5.0}$$

or for linear velocity trajectory the maximum velocity is twice the average velocity over X1 and further the acceleration is from 4 and 5

$$\boxed{A_1(t) = 2*X1/(t_{m1})^2 \qquad 6.0}$$

and for $t_{m1} \leq t \leq t_{m2}$

$$V(t)_2 = [(V_{m1} - V_{m2})/(t_{m1} - t_{m2})]*(t) + [(t_{m1}V_{m2} - t_{m2}V_{m1})/(t_{m1} - t_{m2})] \qquad 7.0$$

again since the acceleration of for each V(t) is equal to

$$dV(t)/dt = A_2(t) = (V_{m1} - V_{m2})/(t_{m1} - t_{m2}) \qquad 8.0$$

now by a similar argument as above we can calculate the average velocity traveling over the distance X2 as

$$X2/(t_{m2} - t_{m1}) = (V_{m2} - V_{m1})/2 \qquad 9.0$$

From 9 solving for $V_{m2} = 2*X2/(t_{m2} - t_{m1}) + 2\,X1/t_{m1}$ and from 9.0 and 5.0 above

$V_{m2} = 2*X2 / (t_{m2} - t_{m1}) + V_{m1}$	10.0

looking at this result we see that this is twice the sum of the average velocity over X1 plus the average increase in velocity over X2 which intuitively makes sense.

Now from 5 and 8 we can find the acceleration $A_2(t) = (V_{m1} - V_{m2})/(t_{m1} - t_{m2})$

$A_2(t) = [2X1/t_{m1} - (2*X2 / (t_{m2} - t_{m1}) + 2\ X1/ t_{m1})\ ] / (t_{m1} - t_{m2}) = 2*X2 / (t_{m1} - t_{m2})^2$

$A_2(t) = 2*X2 / (t_{m1} - t_{m2})^2 = (V_{m2} - V_{m1})/(t_{m2} - t_{m1})$	11.0

For the sake of brevity, it's left as an exercise for the reader to substitute values in to check the correctness of the algebra.

Now we introduce four more variables, z, p1, p2 and s:

[1] To account for the change in Zoom of 1X, z =1 and for 2X, z =2

[2] And in addition, the decimal portion of reticles (for k = 24 or 36) traveled traversing distance X1 in units of d2, the "Tic-Tac" diameter, is p1 and the decimal portion of reticles traveling in X2 in units of d2, the "Tic-Tac" diameter, is p2

[3] s = k/12 : [when multiplied by P1 or P2 and divided by Z] is the apparent distance the "Tic-Tac" has moved across the screen diameter in decimal reticle units based on the large or smaller diameter k], so the total distance moved in either zoom is (s*p1)/z or s*(p2/z) or explicitly: is 3*p1/z for k = 36, s =3 or 2*p1/z for k = 24, s=2 and the ATFLIR has three setting's: WFOV = 6 deg, MFOV = 2.8 deg, NFOV or NAR = 0.7 deg. We define b = 0.7deg for the NAR setting in our analysis.

further as an example: if the "Tic-Tac" has moved 1.25 reticles when Z = 1 or 2 when p1 or p2 = 1.25., then X1 = (3*p1/z)*d2 or (3*1.25/1)*d2 = 3.75*d2 and X2 = (2*p2/z) = 2.5*d2, if Z =2 then X1 = 1.875*d2 and X2 = 1.25*d2. Now the diameter of the "Tic-Tac" in ft, is d2 = 2*d1*Tan(a = b /2) from equations 1 and 2. It follows, if d1 is 69,000 ft b= 0.7deg and a = 0.35 deg then d2 = 1.70 x 10^{-4} x 2 x 69,000ft =23.46 ft we can then calculate X1 = 1.875 x 23.46 = 43.99ft and X2 = 2.5 x 23.46 = 58.65ft

<u>Now expressing the equations above using these variables:</u>

now from 1.0 , 5.0 and 6.0 above zoom = 1: angle in radians = pi /180 x angle in deg

$V_{m1} = 2*X1/ t_{m1}$, d2 = 2*d1* Tan([.35deg]*[pi /180] /k), X1 = (3*p1/z)*d2 we can then combine them:

$V_{m1} = (4/t_{m1})*(s*p1/z)*d1*Tan([.35deg]*[pi /180] /k)$	12.0
$A_1(t) = V_{m1} / t_{m1}$	13.0

and the portion traveled traversing distance X2 in units of "Tic-Tac" Diameter is p2 / z, now from 1.0,10.0 and 11.0 above for zoom = 2: X2 = (s*p2/z)*d2
V_{m2} = 2*X2 / (t_{m2} -t_{m1}) + 2 X1/ t_{m1} , d2 = 2*d1* Tan([0.35deg]*[pi /180] /k)
with X2 = (s*p2/z)*d2 = we can write:

X2 = (s*p2/z)*2*d1* Tan([0.35deg]*[pi /180] /k)

V_{m2} = [4/(t_{m2} -t_{m1})]*(s*p2/z)]*d1*Tan([0.35deg]*[pi /180] /k) + V_{m1}	14.0
A_2(t) = (V_{m2} – V_{m1})/(t_{m2} -t_{m1})	15.0

<u>The following calculations use Table 1 columns 6 and 8 to derive the relations of d1 and the apparent size of the "Tic-Tac", d2 in the calculations below:</u>

<u>The Early Zoom = 1X case using Fig 5a above, s=3, p1 =1,z = 1, t_{m1} = 0.367sec:</u>
From 12.0 V_{m1} = (4/t_{m1})*(3*p1/z)*d1*Tan([0.35deg]*[p /180] /k) = If d1 = 141,000ft, with apparent size of 47 ft, k = 36, Tan([0.35deg]*[p /180] /36) = 1.696848 x 10^{-4}, V_{m1} = (4/0.367 sec)*(3)*(141,000 ft)*(1.696848 x10^{-4}) = 782.31 ft/sec. Now from 6.0 we can calculate the acceleration for Zoom= 1X, A_1(t) = 2*X1/ $(t_{m1})^2$ we can see from 5.0 that this is just V_{m1} / t_{m1} = 782.31/ (0.367) ft/sec^2 = 2131.82 ft/sec^2 expressed in g's = 2131.82/32.2 = 66.20 g's.

The Early Zoom = 1X , Apparent Size 47 ft, with small center size: V_{m1} = 782.31 ft/sec and A_1(t) = 66.20 g's As can be seen in Table1, row 2, the 9th and 11th column.

<u>The Early Zoom 1X case for the larger corona size with apparent size of 47 ft</u> ,
if d1 is 93,000 ft, k = 24,Tan([0.35deg]*[p /180] /24) = 2.5453 x 10^{-4} we are looking at a same apparent object diameter [47 ft] traveling a smaller distance, in the same amount of time and it must be closer and the velocity must be smaller.

V_{m1} = (93000/141000) x 782.31= 515.99 ft/sec,
A_1(t) = 515.99/(0.367*32.2) = 43.66 g's

The Early Zoom = 1X, Apparent Size 47 ft, with large corona size: V_{m1} = 515.99 ft/sec and A_1(t) = 43.66 g's As can be seen in Table1, As can be seen in Table1 row 13, the 9th and 11th column.

<u>The Early Zoom case for Zoom = 2X case, with apparent size of 47 ft, for small center size,</u> k = 36, using Fig 5a previously displayed, s = 3, p2 = 5, z = 2, t_{m1} = 0.600sec:
From 14.0, we can write V_{m2} -V_{m1} = ([4*3*2.5]/0.600)*141,000*(1.69684 x 10^{-4}) = 46.875*(1.41x10^5)*(1.696848 x 10^{-4}) = 1196.29 ft/sec and V_{m1} = 782.31ft/sec so,

V_{m2} = 1978.60ft/sec as can be see in Table 1 above the 6th row and 9th column is the same value. From 15.0 we get $A_2(t) = (V_{m2} - V_{m1})/(t_{m2} - t_{m1}) = 1196.29/0.600$ ft/sec^2 = 1993.82 ft/sec^2 in units of g's = 1993.82/32.2 = 61.92 g's

The Early Zoom = 2X, Apparent Size 47 ft, with small center size: V_{m2} = 1978.60 ft/sec and $A_2(t)$ = 61.92 g's As can be seen in Table1, row 7, the 9th and 11th column.

<u>The Early For Zoom = 2X, and apparent size of 47 ft, for large corona size</u>
k = 24, using Fig 5a previously displayed, s = 2, p2 = 5 ,z = 2, t_{m1} = 0.64 sec:
From 14.0, $V_{m2} - V_{m1} = ([4*2*2.5]/0.600)*93{,}000*(2.5453 \times 10^{-4}) = 31.25*(9.3 \times 10^4)*(2.5453 \times 10^{-4})$ = 789.05 ft/sec and V_{m1} = 515.99 ft/sec so V_{m2} = 1305.04 ft/sec From 15.0 we get $A_2(t) = (V_{m2} - V_{m1})/(t_{m2} - t_{m1})$ = 789.05/0.600 ft/sec^2 = 1315.10 ft/sec^2 in units of g's = 1315.10/32.2 = 40.84 g's

The Early Zoom = 2X, Apparent Size 47 ft, with large corona size: V_{m2} =1305.04 ft/sec, $A_2(t)$ = 40.84 g's As can be seen in Table1, row 17, the 9th and 11th column.

Now the same equations are used to calculate the cases of the late zoom changes and these are shown in Table 2, previously displayed.

The formality of the equations was done to enter them into a spreadsheet to complete the calculations shown in Tables 1 and 2 and will not be reproduced further. Now the same equations are used to calculate the cases of the late zoom changes and these are shown in Fig 6 on page 206 and are detailed in Subappendix A, and will not be reproduced further.

The complete calculations for Early and Late Zoom changes for all ranges not included in Tables 1 and Tables 2 above are detailed in Subappendix C for the interested reader.

Calculating the Average Maximum and Minimum Velocities and Accelerations:

The average maximum velocity and acceleration described in Figure 6 can be derived from Figures 5a and 5b by ignoring the timing of the zoom changes and determining the distance X1 traveled in t_{m1} and X2 traveled in t_{m2} and dividing by $t_{m1} + t_{m2}$. From equation 5.0 we can determine X1 and X2 for the each linear trajectory and add them together

From the work done above we write:

$$V_{mavg} = 2*(X1 + X2) / (t_{m1} + t_{m2}) \qquad 16.0$$

$$A_{mavg} = 2*(X1 + X2) / (t_{m1} + t_{m2})^2 = V_{mavg} /(t_{m1} + t_{m2}) \qquad 17.0$$

Table 3 uses the above equations along with the values in Table 1 and 2 to derive the average maximum velocities and accelerations for the late and early zoom changes to derive the results for the average trajectory shown previously in Figure 6. These will now be compared to see if they differ and determine the boundaries for the power and acceleration exhibited by the "Tic-Tac".

Zoom Factor 1X or 2X	k	d1 in ft.	L Distance Traveled X1 +X2 ft	L (Vm) Avg Angular Velocity ft/sec	L A) Avg Angular Accel g's	Power Req ft-lb/sec	Power Ratio must be >1	E Distance Traveled X1 +X2 ft	E(Vm) Avg Ang Velocity ft/sec	E (A) Avg Ang Accel g's	Power Req ft-lb/sec	Power Ratio must be >1
1X	36	141000	645.99	1334.69	42.82	1.83E+09	0.04	502.44	1004.87	31.21	1.00E+09	0.08
1X	36	149000	682.64	1410.42	45.25	2.04E+09	0.04	530.94	1061.89	32.98	1.12E+09	0.07
1X	36	157000	719.29	1486.14	47.68	2.27E+09	0.03	559.45	1118.9	34.75	1.24E+09	0.06
1X	36	165000	755.95	1561.87	50.11	2.50E+09	0.03	587.96	1175.92	36.52	1.37E+09	0.06
1X	36	173000	792.6	1637.6	52.54	2.75E+09	0.03	616.46	1232.93	38.29	1.51E+09	0.05
2X	36	141000	645.99	1334.69	42.82	1.83E+09	0.04	502.44	1004.87	31.21	1.00E+09	0.08
2X	36	149000	682.64	1410.42	45.25	2.04E+09	0.04	530.94	1061.89	32.98	1.12E+09	0.07
2X	36	157000	719.29	1486.14	47.68	2.27E+09	0.03	559.45	1118.9	34.75	1.24E+09	0.06
2X	36	165000	755.95	1561.87	50.11	2.50E+09	0.03	587.96	1175.92	36.52	1.37E+09	0.06
2X	36	173000	792.6	1637.6	52.54	2.75E+09	0.03	616.46	1232.93	38.29	1.51E+09	0.05
1X	24	93000	426.08	880.33	28.24	7.96E+08	0.1	331.39	662.79	20.58	4.37E+08	0.18
1X	24	101000	462.73	956.05	30.67	9.38E+08	0.08	359.9	719.8	22.35	5.15E+08	0.15
1X	24	109000	499.38	1031.78	33.1	1.09E+09	0.07	388.41	776.82	24.12	6.00E+08	0.13
1X	24	117000	536.03	1107.51	35.53	1.26E+09	0.06	416.92	833.83	25.9	6.91E+08	0.11
2X	24	93000	426.08	880.33	28.24	7.96E+08	0.1	331.39	662.79	20.58	4.37E+08	0.18
2X	24	101000	462.73	956.05	30.67	9.38E+08	0.08	359.9	719.8	22.35	5.15E+08	0.15
2x	24	109000	499.38	1031.78	33.1	1.09E+09	0.07	388.41	776.82	24.12	6.00E+08	0.13
2x	24	117000	536.03	1107.51	35.53	1.26E+09	0.06	416.92	833.83	25.9	6.91E+08	0.11

Table 3 The Average Max Velocity and Acceleration for early and late zoom changes Max Values and Min Values the early and late zoom average acceleration changes are calculated over a Tic-Tac diameter size ranging from 47 to 60 feet as shown in Sub-appendix C

Zoom Factor	k	E-Avg Accel	L-Avg Accel	E-Avg-Overall	L-Avg-Accel Overall X1+X2
1X	36.00	73.71	135.99	37.16	47.68
2X	36.00	86.18	59.57	37.16	24.85
1X	24.00	49.3	49.37	24.85	47.68
2X	24.00	46.11	46.11	26.75	24.85

Table 4 Final Averaging of Accelerations for Final Conclusions are over the 5 entries for k=36 and the 4 entries for k=24

Now the remainder of my arguments are based on the results of Table 1, 2, 3 and 4 above. A rather critical parameter in Table 1 and 2, is the diameter d2 in column 8. This is the apparent diameter of the object, although the ATFLIR measures the heat signature, *so the object's size is a result of the aircraft's temperature differences compared to the sky due to the frictional heating of the aerodynamic surfaces to create lift and directional control and not just the high exhaust temperatures due to its engines.* Now we know from the investigations that the only type of aircraft that were present during this *Nimitz* exercise were F/A-18s[3] (dimensions 60ft x16ft x45ft) and E2 Hawkeye Radar planes[4] (dimensions 57ft x 18ft x 80ft) so if the “Tic-Tac" is an aircraft then the ATFLIR signature should be similar in size to the dimensions of the two possible aircraft shown in Figure 7.

Figure 7: E2 Hawkey radar plane (left) and F/A-18 Super Hornet (right).

We must consider the possibility that the ATFLIR images are of the exhaust only and that the aircraft was at such a distance that no features could be visible. The images in Figures 8a and 8b show that due to thermal temperature differences caused by frictional heating of the aircraft's air-frame compared to the sky temperature the body of the aircraft would be visible and if it was at such a distance that the telescopic site of the ATFLIR equipment could not make it out it would still extend to the maximum dimensions of the aircraft. Additionally, if only the exhaust was being viewed, when the object moves to the left then it would need to change its profile so that its wing's come into view.

We see in Tables 1 and 2 column 8 that as d2 varies from 47 to 58 feet, the acceleration varies from 30 to 150 g’s. This wide variance is a result of uncertainty in the timing of when the zoom occurs and when the average overall accelerations are calculated; in Table 4 it appears to agree with the early zoom case much better. Further the most likely case is that in the early zoom case, when the image size doubles it is actually in the 2X zoom mode. This gives a range of accelerations of 41 to 81 g’s, which clearly is beyond the capability of the given aircraft and would severely injure any pilot operating the plane and probably exceeds the stress capability of all aircraft in existence. The lowest acceleration of 41g’s was not within the known capability of air-to-air missiles[5], possessed by the Navy in

3 http://www.navy.mil/navydata/fact_display.asp?cid=1100&tid=1200&ct=1
4 http://www.flugzeuginfo.net/acdata_php/acdata_e2_en.php
5 http://www.x-plane.org/home/urf/aviation/text/missiles/aam.html

2004[6] and the relative distance and dimensions rule this out as will be discussed next.

Figure 8a: FLIR images of F-35 showing the characteristic body shape[7]

These are sets of images [Fig 8a and 8b] of an F-35 flying at speed and a Stealth B-2 bomber taking off and it can readily be seen that the air-frame is quite visible.

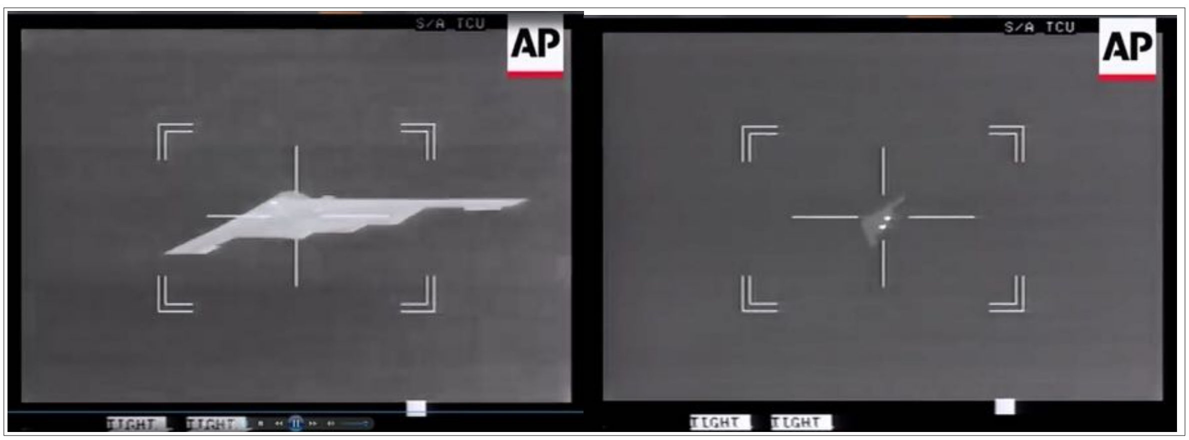


Figure 8b: B2 Stealth Bomber seen through infrared FLIR type system[8]

Now if the "Tic-Tac" dimensions are closer in distance and smaller than the dimensions of the airplanes in questions, such as a Sidewinder air-to-air missile[9] which is about 10 ft long and 0.5 ft in diameter it would have to be between 4 and 7 miles distant (d1) but its acceleration would be between 8 and 25 g's. The calculations for brevity are shown in Subappendix B, highlighted in yellow, and use the same equations as were used to derive Tables 1, 2, and 3. While this is a possibility, the SCU has conducted interviews of

6 http://www.deagel.com/Defensive-Weapons/AIM-9X-Sidewinder_a001166003.aspx

7 https://www.youtube.com/watch?v=AzyH0M4C8TY

8 https://www.youtube.com/watch?v=3c6pa_vPE_k

9 Sea Power (January 2006). Wittman, Amy; Atkinson, Peter; Burgess, Rick, eds. "Air-to-Air Missiles". **49** (1). Arlington, Virginia: Navy League of the United States: 95–96. ISSN 0199-1337

military personnel who witnessed these objects and they testified the objects were the size of an F/A-18. Further, if the object was a missile it would lengthen its display signature as it changed its angle and moved off the screen to the left and this was not observed.

We have proved our case and our unknown has no apparent air-frame that is visible, if the dimensions are larger and the "Tic-Tacs" *are* much farther away, then their size and acceleration characteristics are even greater and display unknown capability and technology that would be fatal to any human pilot and destroy any air-frame of current technology.

One further observation, the calculations that use the corona as the diameter and produce smaller accelerations [k = 24] are more likely not the real diameter of the "Tic-Tac" and are most likely some type of thermal or optical radiation signatures of the air close to the object.

<u>Power Requirements:</u>

Now we will consider the power requirements to perform this maneuver if it were being made by an F/A-18 "Super Hornet" at the minimum Early Zoom acceleration shown in Table 3 of 20.58 g's. Since we are considering averages of acceleration and velocity we can take two approaches. First we will consider the power exhibited by the "Tic-Tac" assuming it is an F/A-18 aircraft that has been misidentified and then compare it to the actual maximum power that an F/A-18 can deliver to its air-frame. It should be obvious that the E2 Hawkeye could not possibly sustain a 20.58 g-force acceleration without tearing off its large radar dome much less having the power or speed capability. It will not be considered in the following power analysis.

1.0 The power required for an F/A-18 to accelerate to the side at 20.58 g's can be calculated from the following relationships:

Power = Force x Velocity[10] for constant force and velocity and in this case we will consider the F/A-18's mass and its acceleration exhibited from Table 3, columns 10 and 11, row 11 shown in yellow. The mass M of the F/A-18 is equal to weight[11] = 32,000 lb / g or M = 32,000lb / g ft/sec^2. The Force = Mass x Acceleration so from Table 3 the acceleration is 20.58 g's. Now force is 32,000 lb/g ft/sec^2 x 20.58 g's = 3.2 x 2.058 x 10^5 = 6.59 x 10^5 lb. Continuing, the maximum angular velocity from Table 3 column 10 row 11, the angular velocity of 20.58 g's of acceleration is 662.79 ft/sec. We are rounding up to whole numbers for simplicity. The power is 6.59 x 10^5 lb x 662.79ft/sec = 4.37 x 10^8 ft-lb/sec as calculated in Table 3. It should be noted that velocity is a vector quantity and we are only considering the component of angular velocity that is perpendicular to the axis of the "Tic-Tac" and so the "Tic-Tac" could also have a component of velocity that is parallel to the axis of the "Tic-Tac" and that would make the total velocity even greater and require more power, but from the information we have there is no way to determine this. So this is a minimum power that we are calculating.

10 https://en.wikipedia.org/wiki/Thrust#Thrust_to_propulsive_power
11 https://en.wikipedia.org/wiki/Boeing_F/A-18E/F_Super_Hornet

2.0 The maximum power that an F/A-18 has available comes from its two General Electric F414-400 turbo fan jet engines each developing 22,000lb of thrust.[12] The maximum speed of an unloaded F/A-18- "Super Hornet" is specified as Mach 1.6 or about 1200 miles/hour[13]. Since this is the maximum power available to the F/A-18 we can calculate it as P_{max} = $Force_{max}$ x $Velocity_{max}$ = 44,000lb x 1200 mi/hr x 5280ft/mi x (1hr/3600sec) =[(4.4 x 1.2 x 5.28)/3.6] X 10^7 ft-lb/sec = 7.744 x 10^7 ft-lb/sec. We further note that this ignores the atmospheric resistance to the plane as the speed increases which is a nonlinear power law and is beyond the scope of this calculation, so it sets an unrealizable upper limit as if the plane were traveling in a vacuum. It serves as a computable upper boundary that we know the F/A-18 would not be capable of this acceleration. So comparing the results we see:

3.0 The maximum power available from the F/A-18's engines is less than the maximum power required to accelerate the plane to the left at 19.11 g's by a factor of 7.744 x 10^7 ft-lb/sec/ 4.37 x 10^8 ft-lb/sec = 0.18 or only about 18% of the required power and this is for the minimum acceleration shown as well as only part of the probable acceleration that is actually occurring as mentioned above.

Table 1, 2, and 3 above have been enhanced with the right most two columns containing the power requirements for the "Tic-Tac" maneuvers and the power ratio as is calculated in Section 3 above, for the power requirements. As seen, the power ratio is not >1 in any of the rows in the column, showing that an F/A-18 does not have the power to execute the required trajectories.

Conclusions:

[1] The "Tic-Tacs" are not aircraft of any know type.

[2] The "Tic-Tacs" exhibit at least one of the following characteristics, no aerodynamic air-frame, no obvious means of reactive propulsion, acceleration characteristics beyond human endurance and air-frame structural capability.

[3] If the "Tic-Tacs" were a missile, it would be smaller and closer to the plane and it would not have the acceleration calculated from the ATFLIR display as shown above.

[4] If the "Tic-Tac" were a missile or an airplane, as it moved to the left it would have to show part of its long air-frame changing the diameter of the image on the ATFLIR display as it moved to the left and this does not happen.

12 ibid
13 ibid

[5] If the “Tic-Tacs” were F/A-18 sized aircraft, it would be between 18 and 33 miles from the ATFLIR camera and with its telescopic capability it would likely be identifiable by its shape and certainly by the external dimensions of the image on the screen; it's size would be able to be calculated, as we have shown above.

[6] The “Tic-Tacs” demonstrate accelerations of greater than 40g’s and most likely much higher, with no noticeable effect on their structure or performance. Here we are using the early zoom figures from Table 1 as the most conservative.

[7] The ATFLIR is capable of registering the maximum dimensions of aircraft air-frames and showing the aerodynamic structures that support lift and maneuver functions.

[8] The F/A-18 does not have adequate power to exhibit even the minimum required acceleration for the maneuvers that are observed in the video.

[9] The “Tic-Tacs” exhibit technological capability far beyond anything that existed in 2004 or that exist today.

Sub-appendix A

Calculations for the Late Zoom Case using Fig 5b shown prior:

<u>The Late Zoom = 1X , small center size, s=3, p1 =3.0, z = 1, t_{m1} = 0.468sec, :</u>

From 12.0 V_{m1} = (4/t_{m1})*(3*p1/z)*d1*Tan([0.35 deg]*[pi / 180] / k) =
If d1 is 141,000 ft, apparent size of 47 ft, k = 36, Tan([0.35 deg]*[pi /180] / 36)
= 1.696848 x 10^{-4}
V_{m1} = (4 / 0.468sec)*(3*3)*(141,000 ft)*(1.696848 x 10^{-4}) = 1840.43 ft/sec
Now from 6.0 we can calculate the acceleration for Zoom= 1X
$A_1(t) = 2*X1/ (t_{m1})^2$, we can see from 5.0 that this is just V_{m1} / t_{m1}
= 1840.43 / (0.468) ft/sec^2 = 3932.5427 ft/sec^2
expressed in g's = 3932.5427 / 32.2 = 122.13 g's

The Late Zoom = 1X, apparent size 47 ft, with small center size: V_{m1} = 1840.43 ft/sec and $A_1(t)$ = 122.13 g's As can be seen in Table2, row 2, the 9th and 11th column.

<u>The Late Zoom 1X case for the larger corona size with apparent size of 47 ft ,</u>
if d1 is 93,000 ft, k = 24,Tan([0.35 deg]*[pi / 180] / 24) = 2.5453 x 10^{-4} we are looking at a same apparent object diameter [47.34 ft] traveling a smaller distance, in the same amount of time and it must be closer and the velocity must be smaller.
V_{m1} = (4 / 0.468sec)*(2*3)*(93,000 ft)*(2.5453 x 10^{-4}) = 1213.91 ft/sec,
$A_1(t)$ = 1213.91 / (0.468*32.2) = 80.55 g's

The Late Zoom = 1X, Apparent Size 47 ft, with large corona size: V_{m1} = 1213.91 ft/sec and $A_1(t)$ = 80.55 g's as can be seen in Table 2, row 13, the 9th and 11th column.

<u>The Late Zoom case for Zoom = 2X case, with apparent size of 47 ft, for small center size,</u> k = 36, using Fig 5b above, s = 3, p2 = 3, z = 2, t_{m1} = 0.50 sec:
From 14.0, we can write V_{m2} -V_{m1} = ([4*3*1.5] / 0.50)*141,000*(1.696848 x 10^{-4}) =
V_{m2} -V_{m1} = 36 *14.1* 1.696848 so V_{m2} -V_{m1} = 861.32 ft/sec
V_{m2} = 861.32 + 1840.43 = 2701.75 ft/sec
From 15.0 we get $A_2(t) = (V_{m2} – V_{m1}) / (t_{m2} - t_{m1})$ = 861.32 / 0.50 ft/sec^2 = 1722.64 ft/sec^2 in units of g's = 1722.64 / 32.2 = 53.50 g's

The Late Zoom = 2X, apparent size 47 ft, with small center size: V_{m2} = 2701.75 ft/sec, $A_2(t)$ = 1722.64 ft/sec = 53.50 g's As can be seen in Table 2, row 7, the 9th and 11th column.

The Late For Zoom = 2X, and apparent size of 47 ft, for large corona size

k = 24, using Fig 5b above, s = 2, p2 = 3.0, z = 2, t_{m1} = 0.50sec:

From 14.0, V_{m2} - V_{m1} = ([4*2*1.5] / 0.50)*93,000*(2.5453 x 10^{-4}) = 24*(9.3x10^{4})*(2.5453 x 10^{-4}) = 568.11 ft/sec and V_{m1} = 1213.91 so V_{m2} = 1782.02 ft/sec

From 15.0 we get $A_2(t)$ = (V_{m2} – V_{m1}) / (t_{m2} - t_{m1}) = 568.11 / 0.50 ft/sec^2 = 1136.22 ft/sec^2 in units of g's = 1136.22/32.2 = 35.29 g's

The Late Zoom = 2X, Apparent Size 47 ft, with large corona size: V_{m2} = 1782.02 ft/sec, $A_2(t)$ = 35.29 g's As can be seen in Table 2, row 17, the 9th and 11th column.

Sub-appendix B

“Tic-Tac” Size d2 of Missile relative to Early Zoom and Distance

Zoom Factor z=1X or 2X	k	b deg	a = b/2k radians	Tan(b/2k)	d1 in feet	d1 in miles	d2 in feet	(Vm) Angular Vel. ft/sec	T_m sec	(Am) Angular Accel g's
1X	36	0.7	0.0001696848	0.0001696848	21000	3.98	7.13	116.51	0.37	9.86
1X	36	0.7	0.0001696848	0.0001696848	29000	5.49	9.84	160.9	0.37	13.62
1X	36	0.7	0.0001696848	0.0001696848	37000	7.01	12.56	205.29	0.37	17.37
2X	36	0.7	0.0001696848	0.0001696848	21000	3.98	7.13	294.68	0.6	9.22
2X	36	0.7	0.0001696848	0.0001696848	29000	5.49	9.84	406.94	0.6	12.74
2X	36	0.7	0.0001696848	0.0001696848	37000	7.01	12.56	519.2	0.6	16.25
1X	24	0.7	0.0002545272	0.0002545272	13000	2.46	6.62	72.13	0.37	6.1
1X	24	0.7	0.0002545272	0.0002545272	21000	3.98	10.69	116.51	0.37	9.86
1X	24	0.7	0.0002545272	0.0002545272	29000	5.49	14.76	160.9	0.37	13.62
2X	24	0.7	0.0002545272	0.0002545272	13000	2.46	6.62	182.42	0.6	5.71
2X	24	0.7	0.0002545272	0.0002545272	21000	3.98	10.69	294.68	0.6	9.22
2X	24	0.7	0.0002545272	0.0002545272	29000	5.49	14.76	406.94	0.6	12.74

“Tic-Tac” Size d2 of Missile relative to Late Zoom and Distance

Zoom Factor z=1X or 2X	k	b deg	a = b/2k radians	Tan(b/2k)	d1 in feet	d1 in miles	d2 in feet	(Vm) Angular Vel. ft/sec	T_m sec	(Am) Angular Accel g's
1X	36	0.7	0.0001696848	0.0001696848	21000	3.98	7.13	274.11	0.47	18.19
1X	36	0.7	0.0001696848	0.0001696848	29000	5.49	9.84	378.53	0.47	25.12
1X	36	0.7	0.0001696848	0.0001696848	37000	7.01	12.56	482.95	0.47	32.05
2X	36	0.7	0.0001696848	0.0001696848	21000	3.98	7.13	402.39	0.5	7.97
2X	36	0.7	0.0001696848	0.0001696848	29000	5.49	9.84	555.68	0.5	11
2X	36	0.7	0.0001696848	0.0001696848	37000	7.01	12.56	708.97	0.5	14.04
1X	24	0.7	0.0002545272	0.0002545272	13000	2.46	6.62	169.68	0.47	11.26
1X	24	0.7	0.0002545272	0.0002545272	21000	3.98	10.69	274.11	0.47	18.19
1X	24	0.7	0.0002545272	0.0002545272	29000	5.49	14.76	378.53	0.47	25.12
2X	24	0.7	0.0002545272	0.0002545272	13000	2.46	6.62	249.1	0.5	4.93
2X	24	0.7	0.0002545272	0.0002545272	21000	3.98	10.69	402.39	0.5	7.97
2X	24	0.7	0.0002545272	0.0002545272	29000	5.49	14.76	555.68	0.5	11

Sub-appendix C

Complete Calculations for the Early and Late Zoom Cases

Early Zoom Factor 1X or 2X	k	b deg	a = b/2k radians	Tan(b/2k)	d1 in feet	d2 in feet	(Vm) Angular Velocity ft/sec	Angular Velocity mi/hr	tm sec	(Am) Angular Acceleration g's	Power Req ft-lb/sec	Power Ratio must be >1
1X	36	0.7	0.00016968	0.00016968	1,000	0.34	5.55	3.78	0.367	0.47	8.34E+04	929.01
1X	36	0.7	0.00016968	0.00016968	2,000	0.68	11.1	7.57	0.367	0.94	3.33E+05	232.25
1X	36	0.7	0.00016968	0.00016968	3,000	1.02	16.64	11.35	0.367	1.41	7.50E+05	103.22
1X	36	0.7	0.00016968	0.00016968	4,000	1.36	22.19	15.13	0.367	1.88	1.33E+06	58.06
1X	36	0.7	0.00016968	0.00016968	5,000	1.70	27.74	18.91	0.367	2.35	2.08E+06	37.16
1X	36	0.7	0.00016968	0.00016968	13,000	4.41	72.13	49.18	0.367	6.1	1.41E+07	5.5
1X	36	0.7	0.00016968	0.00016968	21,000	7.13	116.51	79.44	0.367	9.86	3.68E+07	2.11
1X	36	0.7	0.00016968	0.00016968	29,000	9.84	160.9	109.7	0.367	13.62	7.01E+07	1.1
1X	36	0.7	0.00016968	0.00016968	37,000	12.56	205.29	139.97	0.367	17.37	1.14E+08	0.68
1X	36	0.7	0.00016968	0.00016968	45,000	15.27	249.67	170.23	0.367	21.13	1.69E+08	0.46
1X	36	0.7	0.00016968	0.00016968	53,000	17.99	294.06	200.49	0.367	24.88	2.34E+08	0.33
1X	36	0.7	0.00016968	0.00016968	61,000	20.70	338.44	230.76	0.367	28.64	3.10E+08	0.25
1X	36	0.7	0.00016968	0.00016968	69,000	23.42	382.83	261.02	0.367	32.4	3.97E+08	0.2
1X	36	0.7	0.00016968	0.00016968	77,000	26.13	427.22	291.28	0.367	36.15	4.94E+08	0.16
1X	36	0.7	0.00016968	0.00016968	85,000	28.85	471.6	321.55	0.367	39.91	6.02E+08	0.13
1X	36	0.7	0.00016968	0.00016968	93,000	31.56	515.99	351.81	0.367	43.66	7.21E+08	0.11
1X	36	0.7	0.00016968	0.00016968	101,000	34.28	560.38	382.07	0.367	47.42	8.50E+08	0.09
1X	36	0.7	0.00016968	0.00016968	109,000	36.99	604.76	412.34	0.367	51.18	9.90E+08	0.08
1X	36	0.7	0.00016968	0.00016968	117,000	39.71	649.15	442.6	0.367	54.93	1.14E+09	0.07
1X	36	0.7	0.00016968	0.00016968	125,000	42.42	693.53	472.86	0.367	58.69	1.30E+09	0.06
1X	36	0.7	0.00016968	0.00016968	133,000	45.14	737.92	503.13	0.367	62.44	1.47E+09	0.05
1X	36	0.7	0.00016968	0.00016968	141,000	47.85	782.31	533.39	0.367	66.2	1.66E+09	0.05
1X	36	0.7	0.00016968	0.00016968	149,000	50.57	826.69	563.65	0.367	69.96	1.85E+09	0.04
1X	36	0.7	0.00016968	0.00016968	157,000	53.28	871.08	593.92	0.367	73.71	2.05E+09	0.04
1X	36	0.7	0.00016968	0.00016968	165,000	56.00	915.47	624.18	0.367	77.47	2.27E+09	0.03
1X	36	0.7	0.00016968	0.00016968	173,000	58.71	959.85	654.44	0.367	81.22	2.49E+09	0.03
1X	36	0.7	0.00016968	0.00016968	181,000	61.43	1004.24	684.71	0.367	84.98	2.73E+09	0.03
1X	36	0.7	0.00016968	0.00016968	189,000	64.14	1048.62	714.97	0.367	88.74	2.98E+09	0.03
1X	36	0.7	0.00016968	0.00016968	197,000	66.86	1093.01	745.23	0.367	92.49	3.24E+09	0.02
Early Zoom Factor 1X or 2X	k	b deg	a = b/2k radians	Tan(b/2k)	d1 in feet	d2 in feet	(Vm) Angular Velocity ft/sec	Angular Velocity mi/hr	tm sec	(Am) Angular Acceleration g's	Power Req ft-lb/sec	Power Ratio must be >1
2X	36	0.7	0.00016968	0.00016968	1,000	0.34	14.03	9.57	0.600	0.44	1.97E+05	392.71
2X	36	0.7	0.00016968	0.00016968	2,000	0.68	28.07	19.14	0.600	0.88	7.89E+05	98.18
2X	36	0.7	0.00016968	0.00016968	3,000	1.02	42.1	28.7	0.600	1.32	1.77E+06	43.63
2X	36	0.7	0.00016968	0.00016968	4,000	1.36	56.13	38.27	0.600	1.76	3.16E+06	24.54
2X	36	0.7	0.00016968	0.00016968	5,000	1.7	70.16	47.84	0.600	2.2	4.93E+06	15.71
2X	36	0.7	0.00016968	0.00016968	13,000	4.41	182.42	124.38	0.600	5.71	3.33E+07	2.32
2X	36	0.7	0.00016968	0.00016968	21,000	7.13	294.68	200.92	0.600	9.22	8.70E+07	0.89

2X	36	0.7	0.00016968	0.00016968	29,000	9.84	406.94	277.46	0.600	12.74	1.66E+08	0.47
2X	36	0.7	0.00016968	0.00016968	37,000	12.56	519.2	354	0.600	16.25	2.70E+08	0.29
2X	36	0.7	0.00016968	0.00016968	45,000	15.27	631.46	430.54	0.600	19.76	3.99E+08	0.19
2X	36	0.7	0.00016968	0.00016968	53,000	17.99	743.72	507.08	0.600	23.27	5.54E+08	0.14
2X	36	0.7	0.00016968	0.00016968	61,000	20.7	855.98	583.63	0.600	26.79	7.34E+08	0.11
2X	36	0.7	0.00016968	0.00016968	69,000	23.42	968.24	660.17	0.600	30.3	9.39E+08	0.08
2X	36	0.7	0.00016968	0.00016968	77,000	26.13	1080.5	736.71	0.600	33.81	1.17E+09	0.07
2X	36	0.7	0.00016968	0.00016968	85,000	28.85	1192.76	813.25	0.600	37.33	1.42E+09	0.05
2X	36	0.7	0.00016968	0.00016968	93,000	31.56	1305.02	889.79	0.600	40.84	1.71E+09	0.05
2X	36	0.7	0.00016968	0.00016968	101,000	34.28	1417.28	966.33	0.600	44.35	2.01E+09	0.04
2X	36	0.7	0.00016968	0.00016968	109,000	36.99	1529.54	1042.87	0.600	47.87	2.34E+09	0.03
2X	36	0.7	0.00016968	0.00016968	117,000	39.71	1641.8	1119.41	0.600	51.38	2.70E+09	0.03
2X	36	0.7	0.00016968	0.00016968	125,000	42.42	1754.06	1195.95	0.600	54.89	3.08E+09	0.03
2X	36	0.7	0.00016968	0.00016968	133,000	45.14	1866.32	1272.49	0.600	58.41	3.49E+09	0.02
2X	36	0.7	0.00016968	0.00016968	141,000	47.85	1978.58	1349.04	0.600	61.92	3.92E+09	0.02
2X	36	0.7	0.00016968	0.00016968	149,000	50.57	2090.84	1425.58	0.600	65.43	4.38E+09	0.02
2X	36	0.7	0.00016968	0.00016968	157,000	53.28	2203.11	1502.12	0.600	68.95	4.86E+09	0.02
2X	36	0.7	0.00016968	0.00016968	165,000	56	2315.37	1578.66	0.600	72.46	5.37E+09	0.01
2X	36	0.7	0.00016968	0.00016968	173,000	58.71	2427.63	1655.2	0.600	75.97	5.90E+09	0.01
2X	36	0.7	0.00016968	0.00016968	181,000	61.43	2539.89	1731.74	0.600	79.48	6.46E+09	0.01
2X	36	0.7	0.00016968	0.00016968	189,000	64.14	2652.15	1808.28	0.600	83	7.04E+09	0.01
2X	36	0.7	0.00016968	0.00016968	197,000	66.86	2764.41	1884.82	0.600	86.51	7.65E+09	0.01
Early Zoom Factor 1X or 2X	k	b deg	a = b/2k radians	Tan(b/2k)	d1 in feet0	d2 in feet	(Vm) Angular Velocity ft/sec	Angular Velocity mi/hr	tm sec	(Am) Angular Acceleratio n g's	Power Req ft-lb/sec	Power Ratio must be >1
1X	24	0.7	0.00025453	0.00025453	1,000	0.51	5.55	3.78	0.367	0.47	8.34E+04	929.01
1X	24	0.7	0.00025453	0.00025453	2,000	1.02	11.1	7.57	0.367	0.94	3.33E+05	232.25
1X	24	0.7	0.00025453	0.00025453	3,000	1.53	16.64	11.35	0.367	1.41	7.50E+05	103.22
1X	24	0.7	0.00025453	0.00025453	4,000	2.04	22.19	15.13	0.367	1.88	1.33E+06	58.06
1X	24	0.7	0.00025453	0.00025453	5,000	2.55	27.74	18.91	0.367	2.35	2.08E+06	37.16
1X	24	0.7	0.00025453	0.00025453	13,000	6.62	72.13	49.18	0.367	6.1	1.41E+07	5.5
1X	24	0.7	0.00025453	0.00025453	21,000	10.69	116.51	79.44	0.367	9.86	3.68E+07	2.11
1X	24	0.7	0.00025453	0.00025453	29,000	14.76	160.9	109.7	0.367	13.62	7.01E+07	1.1
1X	24	0.7	0.00025453	0.00025453	37,000	18.84	205.29	139.97	0.367	17.37	1.14E+08	0.68
1X	24	0.7	0.00025453	0.00025453	45,000	22.91	249.67	170.23	0.367	21.13	1.69E+08	0.46
1X	24	0.7	0.00025453	0.00025453	53,000	26.98	294.06	200.49	0.367	24.88	2.34E+08	0.33
1X	24	0.7	0.00025453	0.00025453	61,000	31.05	338.44	230.76	0.367	28.64	3.10E+08	0.25
1X	24	0.7	0.00025453	0.00025453	69,000	35.12	382.83	261.02	0.367	32.4	3.97E+08	0.2
1X	24	0.7	0.00025453	0.00025453	77,000	39.20	427.22	291.28	0.367	36.15	4.94E+08	0.16
1X	24	0.7	0.00025453	0.00025453	85,000	43.27	471.6	321.55	0.367	39.91	6.02E+08	0.13
1X	24	0.7	0.00025453	0.00025453	93,000	47.34	515.99	351.81	0.367	43.66	7.21E+08	0.11
1X	24	0.7	0.00025453	0.00025453	101,000	51.41	560.38	382.07	0.367	47.42	8.50E+08	0.09
1X	24	0.7	0.00025453	0.00025453	109,000	55.49	604.76	412.34	0.367	51.18	9.90E+08	0.08
1X	24	0.7	0.00025453	0.00025453	117,000	59.56	649.15	442.6	0.367	54.93	1.14E+09	0.07
1X	24	0.7	0.00025453	0.00025453	125,000	63.63	693.53	472.86	0.367	58.69	1.30E+09	0.06
1X	24	0.7	0.00025453	0.00025453	133,000	67.70	737.92	503.13	0.367	62.44	1.47E+09	0.05
1X	24	0.7	0.00025453	0.00025453	141,000	71.78	782.31	533.39	0.367	66.2	1.66E+09	0.05
1X	24	0.7	0.00025453	0.00025453	149,000	75.85	826.69	563.65	0.367	69.96	1.85E+09	0.04

1X	24	0.7	0.00025453	0.00025453	157,000	79.92	871.08	593.92	0.367	73.71	2.05E+09	0.04
1X	24	0.7	0.00025453	0.00025453	165,000	83.99	915.47	624.18	0.367	77.47	2.27E+09	0.03
1X	24	0.7	0.00025453	0.00025453	173,000	88.07	959.85	654.44	0.367	81.22	2.49E+09	0.03
1X	24	0.7	0.00025453	0.00025453	181,000	92.14	1004.24	684.71	0.367	84.98	2.73E+09	0.03
1X	24	0.7	0.00025453	0.00025453	189,000	96.21	1048.62	714.97	0.367	88.74	2.98E+09	0.03
1X	24	0.7	0.00025453	0.00025453	197,000	100.28	1093.01	745.23	0.367	92.49	3.24E+09	0.02
1X	24	0.7	0.00025453	0.00025453	205,000	104.36	1137.4	775.5	0.367	96.25	3.50E+09	0.02
Early Zoom Factor 1X or 2X	k	b deg	a = b/2k radians	Tan(b/2k)	d1 in feet	d2 in feet	(Vm) Angular Velocity ft/sec	Angular Velocity mi/hr	tm sec	(Am) Angular Acceleration g's	Power Req ft-lb/sec	Power Ratio must be >1
2X	24	0.7	0.00025453	0.00025453	1000	0.51	14.03	9.57	0.600	0.44	1.97E+05	392.71
2X	24	0.7	0.00025453	0.00025453	2000	1.02	28.07	19.14	0.600	0.88	7.89E+05	98.18
2X	24	0.7	0.00025453	0.00025453	3000	1.53	42.1	28.7	0.600	1.32	1.77E+06	43.63
2X	24	0.7	0.00025453	0.00025453	4000	2.04	56.13	38.27	0.600	1.76	3.16E+06	24.54
2X	24	0.7	0.00025453	0.00025453	5000	2.55	70.16	47.84	0.600	2.2	4.93E+06	15.71
2X	24	0.7	0.00025453	0.00025453	13000	6.62	182.42	124.38	0.600	5.71	3.33E+07	2.32
2X	24	0.7	0.00025453	0.00025453	21000	10.69	294.68	200.92	0.600	9.22	8.70E+07	0.89
2X	24	0.7	0.00025453	0.00025453	29000	14.76	406.94	277.46	0.600	12.74	1.66E+08	0.47
2X	24	0.7	0.00025453	0.00025453	37000	18.84	519.2	354	0.600	16.25	2.70E+08	0.29
2X	24	0.7	0.00025453	0.00025453	45000	22.91	631.46	430.54	0.600	19.76	3.99E+08	0.19
2X	24	0.7	0.00025453	0.00025453	53000	26.98	743.72	507.08	0.600	23.27	5.54E+08	0.14
2X	24	0.7	0.00025453	0.00025453	61000	31.05	855.98	583.63	0.600	26.79	7.34E+08	0.11
2X	24	0.7	0.00025453	0.00025453	69000	35.12	968.24	660.17	0.600	30.3	9.39E+08	0.08
2X	24	0.7	0.00025453	0.00025453	77000	39.2	1080.5	736.71	0.600	33.81	1.17E+09	0.07
2X	24	0.7	0.00025453	0.00025453	85000	43.27	1192.76	813.25	0.600	37.33	1.42E+09	0.05
2X	24	0.7	0.00025453	0.00025453	93000	47.34	1305.02	889.79	0.600	40.84	1.71E+09	0.05
2X	24	0.7	0.00025453	0.00025453	101000	51.41	1417.28	966.33	0.600	44.35	2.01E+09	0.04
2X	24	0.7	0.00025453	0.00025453	109000	55.49	1529.54	1042.87	0.600	47.87	2.34E+09	0.03
2X	24	0.7	0.00025453	0.00025453	117000	59.56	1641.8	1119.41	0.600	51.38	2.70E+09	0.03
2X	24	0.7	0.00025453	0.00025453	125000	63.63	1754.06	1195.95	0.600	54.89	3.08E+09	0.03
2X	24	0.7	0.00025453	0.00025453	133000	67.7	1866.32	1272.49	0.600	58.41	3.49E+09	0.02
2X	24	0.7	0.00025453	0.00025453	141000	71.78	1978.58	1349.04	0.600	61.92	3.92E+09	0.02
2X	24	0.7	0.00025453	0.00025453	149000	75.85	2090.84	1425.58	0.600	65.43	4.38E+09	0.02
2X	24	0.7	0.00025453	0.00025453	157000	79.92	2203.11	1502.12	0.600	68.95	4.86E+09	0.02
2X	24	0.7	0.00025453	0.00025453	165000	83.99	2315.37	1578.66	0.600	72.46	5.37E+09	0.01
2X	24	0.7	0.00025453	0.00025453	173000	88.07	2427.63	1655.2	0.600	75.97	5.90E+09	0.01
2X	24	0.7	0.00025453	0.00025453	181000	92.14	2539.89	1731.74	0.600	79.48	6.46E+09	0.01
2X	24	0.7	0.00025453	0.00025453	189000	96.21	2652.15	1808.28	0.600	83	7.04E+09	0.01
2X	24	0.7	0.00025453	0.00025453	197000	100.28	2764.41	1884.82	0.600	86.51	7.65E+09	0.01
2X	24	0.7	0.00025453	0.00025453	205000	104.36	2876.67	1961.36	0.600	90.02	8.29E+09	0.01
Late Zoom Factor 1X or 2X	k	b deg	a = b/2k radians	Tan(b/2k)	d1 in feet	d2 in feet	(Vm) Angular Velocity ft/sec	Angular Velocity mi/hr	tm sec	(Am) Angular Acceleration g's	Power Req ft-lb/sec	Power Ratio must be >1
1X	36	0.7	0.00016968	0.00016968	1000	0.34	13.05	8.9	0.47	0.87	3.62E+05	214.05
1X	36	0.7	0.00016968	0.00016968	2000	0.68	26.11	17.8	0.47	1.73	1.45E+06	53.51
1X	36	0.7	0.00016968	0.00016968	3000	1.02	39.16	26.7	0.47	2.6	3.26E+06	23.78
1X	36	0.7	0.00016968	0.00016968	4000	1.36	52.21	35.6	0.47	3.46	5.79E+06	13.38
1X	36	0.7	0.00016968	0.00016968	5000	1.7	65.26	44.5	0.47	4.33	9.04E+06	8.56

1X	36	0.7	0.00016968	0.00016968	13000	4.41	169.68	115.69	0.47	11.26	6.11E+07	1.27
1X	36	0.7	0.00016968	0.00016968	21000	7.13	274.11	186.89	0.47	18.19	1.60E+08	0.49
1X	36	0.7	0.00016968	0.00016968	29000	9.84	378.53	258.09	0.47	25.12	3.04E+08	0.25
1X	36	0.7	0.00016968	0.00016968	37000	12.56	482.95	329.28	0.47	32.05	4.95E+08	0.16
1X	36	0.7	0.00016968	0.00016968	45000	15.27	587.37	400.48	0.47	38.98	7.33E+08	0.11
1X	36	0.7	0.00016968	0.00016968	53000	17.99	691.79	471.68	0.47	45.91	1.02E+09	0.08
1X	36	0.7	0.00016968	0.00016968	61000	20.7	796.21	542.87	0.47	52.84	1.35E+09	0.06
1X	36	0.7	0.00016968	0.00016968	69000	23.42	900.63	614.07	0.47	59.77	1.72E+09	0.04
1X	36	0.7	0.00016968	0.00016968	77000	26.13	1005.06	685.27	0.47	66.69	2.15E+09	0.04
1X	36	0.7	0.00016968	0.00016968	85000	28.85	1109.48	756.46	0.47	73.62	2.61E+09	0.03
1X	36	0.7	0.00016968	0.00016968	93000	31.56	1213.9	827.66	0.47	80.55	3.13E+09	0.02
1X	36	0.7	0.00016968	0.00016968	101000	34.28	1318.32	898.85	0.47	87.48	3.69E+09	0.02
1X	36	0.7	0.00016968	0.00016968	109000	36.99	1422.74	970.05	0.47	94.41	4.30E+09	0.02
1X	36	0.7	0.00016968	0.00016968	117000	39.71	1527.16	1041.25	0.47	101.34	4.95E+09	0.02
1X	36	0.7	0.00016968	0.00016968	125000	42.42	1631.58	1112.44	0.47	108.27	5.65E+09	0.01
1X	36	0.7	0.00016968	0.00016968	133000	45.14	1736.01	1183.64	0.47	115.2	6.40E+09	0.01
1X	36	0.7	0.00016968	0.00016968	141000	47.85	1840.43	1254.84	0.47	122.13	7.19E+09	0.01
1X	36	0.7	0.00016968	0.00016968	149000	50.57	1944.85	1326.03	0.47	129.06	8.03E+09	0.01
1X	36	0.7	0.00016968	0.00016968	157000	53.28	2049.27	1397.23	0.47	135.99	8.92E+09	0.01
1X	36	0.7	0.00016968	0.00016968	165000	56	2153.69	1468.43	0.47	142.92	9.85E+09	0.01
1X	36	0.7	0.00016968	0.00016968	173000	58.71	2258.11	1539.62	0.47	149.85	1.08E+10	0.01
1X	36	0.7	0.00016968	0.00016968	181000	61.43	2362.53	1610.82	0.47	156.77	1.19E+10	0.01
1X	36	0.7	0.00016968	0.00016968	189000	64.14	2466.96	1682.02	0.47	163.7	1.29E+10	0.01
1X	36	0.7	0.00016968	0.00016968	197000	66.86	2571.38	1753.21	0.47	170.63	1.40E+10	0.01

Late Zoom Factor 1X or 2X	k	b deg	a = b/2k radians	Tan(b/2k)	d1 in feet	d2 in feet	(Vm) Angular Velocity ft/sec	Angular Velocity mi/hr	tm sec	(Am) Angular Acceleration g's	Power Req ft-lb/sec	Power Ratio must be >1
2X	36	0.7	0.00016968	0.00016968	1000	0.34	19.16	13.06	0.5	0.38	2.33E+05	332.87
2X	36	0.7	0.00016968	0.00016968	2000	0.68	38.32	26.13	0.5	0.76	9.31E+05	83.22
2X	36	0.7	0.00016968	0.00016968	3000	1.02	57.48	39.19	0.5	1.14	2.09E+06	36.99
2X	36	0.7	0.00016968	0.00016968	4000	1.36	76.65	52.26	0.5	1.52	3.72E+06	20.8
2X	36	0.7	0.00016968	0.00016968	5000	1.7	95.81	65.32	0.5	1.9	5.82E+06	13.31
2X	36	0.7	0.00016968	0.00016968	13000	4.41	249.1	169.84	0.5	4.93	3.93E+07	1.97
2X	36	0.7	0.00016968	0.00016968	21000	7.13	402.39	274.36	0.5	7.97	1.03E+08	0.75
2X	36	0.7	0.00016968	0.00016968	29000	9.84	555.68	378.87	0.5	11	1.96E+08	0.4
2X	36	0.7	0.00016968	0.00016968	37000	12.56	708.97	483.39	0.5	14.04	3.18E+08	0.24
2X	36	0.7	0.00016968	0.00016968	45000	15.27	862.26	587.9	0.5	17.07	4.71E+08	0.16
2X	36	0.7	0.00016968	0.00016968	53000	17.99	1015.55	692.42	0.5	20.11	6.54E+08	0.12
2X	36	0.7	0.00016968	0.00016968	61000	20.7	1168.84	796.94	0.5	23.14	8.66E+08	0.09
2X	36	0.7	0.00016968	0.00016968	69000	23.42	1322.13	901.45	0.5	26.18	1.11E+09	0.07
2X	36	0.7	0.00016968	0.00016968	77000	26.13	1475.42	1005.97	0.5	29.22	1.38E+09	0.06
2X	36	0.7	0.00016968	0.00016968	85000	28.85	1628.71	1110.49	0.5	32.25	1.68E+09	0.05
2X	36	0.7	0.00016968	0.00016968	93000	31.56	1782	1215	0.5	35.29	2.01E+09	0.04
2X	36	0.7	0.00016968	0.00016968	101000	34.28	1935.29	1319.52	0.5	38.32	2.37E+09	0.03
2X	36	0.7	0.00016968	0.00016968	109000	36.99	2088.58	1424.04	0.5	41.36	2.76E+09	0.03
2X	36	0.7	0.00016968	0.00016968	117000	39.71	2241.88	1528.55	0.5	44.39	3.18E+09	0.02
2X	36	0.7	0.00016968	0.00016968	125000	42.42	2395.17	1633.07	0.5	47.43	3.64E+09	0.02
2X	36	0.7	0.00016968	0.00016968	133000	45.14	2548.46	1737.58	0.5	50.46	4.12E+09	0.02

2X	36	0.7	0.00016968	0.00016968	141000	47.85	2701.75	1842.1	0.5	53.5	4.63E+09	0.02
2X	36	0.7	0.00016968	0.00016968	149000	50.57	2855.04	1946.62	0.5	56.53	5.16E+09	0.01
2X	36	0.7	0.00016968	0.00016968	157000	53.28	3008.33	2051.13	0.5	59.57	5.73E+09	0.01
2X	36	0.7	0.00016968	0.00016968	165000	56	3161.62	2155.65	0.5	62.6	6.33E+09	0.01
2X	36	0.7	0.00016968	0.00016968	173000	58.71	3314.91	2260.17	0.5	65.64	6.96E+09	0.01
2X	36	0.7	0.00016968	0.00016968	181000	61.43	3468.2	2364.68	0.5	68.67	7.62E+09	0.01
2X	36	0.7	0.00016968	0.00016968	189000	64.14	3621.49	2469.2	0.5	71.71	8.31E+09	0.01
2X	36	0.7	0.00016968	0.00016968	197000	66.86	3774.78	2573.71	0.5	74.75	9.03E+09	0.01
Late Zoom Factor 1X or 2X	k	b deg	a = b/2k radians	Tan(b/2k)	d1 in feet	d2 in feet	(Vm) Angular Velocity ft/sec	Angular Velocity mi/hr	tm sec	(Am) Angular Acceleration g's	Power Req ft-lb/sec	Power Ratio must be >1
1X	24	0.7	0.00025453	0.00025453	1000	0.51	13.05	8.9	0.47	0.87	3.62E+05	214.05
1X	24	0.7	0.00025453	0.00025453	2000	1.02	26.11	17.8	0.47	1.73	1.45E+06	53.51
1X	24	0.7	0.00025453	0.00025453	3000	1.53	39.16	26.7	0.47	2.6	3.26E+06	23.78
1X	24	0.7	0.00025453	0.00025453	4000	2.04	52.21	35.6	0.47	3.46	5.79E+06	13.38
1X	24	0.7	0.00025453	0.00025453	5000	2.55	65.26	44.5	0.47	4.33	9.04E+06	8.56
1X	24	0.7	0.00025453	0.00025453	13000	6.62	169.68	115.69	0.47	11.26	6.11E+07	1.27
1X	24	0.7	0.00025453	0.00025453	21000	10.69	274.11	186.89	0.47	18.19	1.60E+08	0.49
1X	24	0.7	0.00025453	0.00025453	29000	14.76	378.53	258.09	0.47	25.12	3.04E+08	0.25
1X	24	0.7	0.00025453	0.00025453	37000	18.84	482.95	329.28	0.47	32.05	4.95E+08	0.16
1X	24	0.7	0.00025453	0.00025453	45000	22.91	587.37	400.48	0.47	38.98	7.33E+08	0.11
1X	24	0.7	0.00025453	0.00025453	53000	26.98	691.79	471.68	0.47	45.91	1.02E+09	0.08
1X	24	0.7	0.00025453	0.00025453	61000	31.05	796.21	542.87	0.47	52.84	1.35E+09	0.06
1X	24	0.7	0.00025453	0.00025453	69000	35.12	900.63	614.07	0.47	59.77	1.72E+09	0.04
1X	24	0.7	0.00025453	0.00025453	77000	39.2	1005.06	685.27	0.47	66.69	2.15E+09	0.04
1X	24	0.7	0.00025453	0.00025453	85000	43.27	1109.48	756.46	0.47	73.62	2.61E+09	0.03
1X	24	0.7	0.00025453	0.00025453	93000	47.34	1213.9	827.66	0.47	80.55	3.13E+09	0.02
1X	24	0.7	0.00025453	0.00025453	101000	51.41	1318.32	898.85	0.47	87.48	3.69E+09	0.02
1X	24	0.7	0.00025453	0.00025453	109000	55.49	1422.74	970.05	0.47	94.41	4.30E+09	0.02
1X	24	0.7	0.00025453	0.00025453	117000	59.56	1527.16	1041.25	0.47	101.34	4.95E+09	0.02
1X	24	0.7	0.00025453	0.00025453	125000	63.63	1631.58	1112.44	0.47	108.27	5.65E+09	0.01
1X	24	0.7	0.00025453	0.00025453	133000	67.7	1736.01	1183.64	0.47	115.2	6.40E+09	0.01
1X	24	0.7	0.00025453	0.00025453	141000	71.78	1840.43	1254.84	0.47	122.13	7.19E+09	0.01
1X	24	0.7	0.00025453	0.00025453	149000	75.85	1944.85	1326.03	0.47	129.06	8.03E+09	0.01
1X	24	0.7	0.00025453	0.00025453	157000	79.92	2049.27	1397.23	0.47	135.99	8.92E+09	0.01
1X	24	0.7	0.00025453	0.00025453	165000	83.99	2153.69	1468.43	0.47	142.92	9.85E+09	0.01
1X	24	0.7	0.00025453	0.00025453	173000	88.07	2258.11	1539.62	0.47	149.85	1.08E+10	0.01
1X	24	0.7	0.00025453	0.00025453	181000	92.14	2362.53	1610.82	0.47	156.77	1.19E+10	0.01
1X	24	0.7	0.00025453	0.00025453	189000	96.21	2466.96	1682.02	0.47	163.7	1.29E+10	0.01
1X	24	0.7	0.00025453	0.00025453	197000	100.28	2571.38	1753.21	0.47	170.63	1.40E+10	0.01
1X	24	0.7	0.00025453	0.00025453	205000	104.36	2675.8	1824.41	0.47	177.56	1.52E+10	0.01
1X	24	0.7	0.00025453	0.00025453	1000	0.51	13.05	8.9	0.47	0.87	3.62E+05	214.05
Late Zoom Factor 1X or 2X	k	b deg	a = b/2k radians	Tan(b/2k)	d1 in feet	d2 in feet	(Vm) Angular Velocity ft/sec	Angular Velocity mi/hr	tm sec	(Am) Angular Acceleration g's	Power Req ft-lb/sec	Power Ratio must be >1
2X	24	0.7	0.00025453	0.00025453	1000	0.51	19.16	13.06	0.5	0.38	2.33E+05	332.87
2X	24	0.7	0.00025453	0.00025453	2000	1.02	38.32	26.13	0.5	0.76	9.31E+05	83.22
2X	24	0.7	0.00025453	0.00025453	3000	1.53	57.48	39.19	0.5	1.14	2.09E+06	36.99

2X	24	0.7	0.00025453	0.00025453	4000	2.04	76.65	52.26	0.5	1.52	3.72E+06	20.8
2X	24	0.7	0.00025453	0.00025453	5000	2.55	95.81	65.32	0.5	1.9	5.82E+06	13.31
2X	24	0.7	0.00025453	0.00025453	13000	6.62	249.1	169.84	0.5	4.93	3.93E+07	1.97
2X	24	0.7	0.00025453	0.00025453	21000	10.69	402.39	274.36	0.5	7.97	1.03E+08	0.75
2X	24	0.7	0.00025453	0.00025453	29000	14.76	555.68	378.87	0.5	11	1.96E+08	0.4
2X	24	0.7	0.00025453	0.00025453	37000	18.84	708.97	483.39	0.5	14.04	3.18E+08	0.24
2X	24	0.7	0.00025453	0.00025453	45000	22.91	862.26	587.9	0.5	17.07	4.71E+08	0.16
2X	24	0.7	0.00025453	0.00025453	53000	26.98	1015.55	692.42	0.5	20.11	6.54E+08	0.12
2X	24	0.7	0.00025453	0.00025453	61000	31.05	1168.84	796.94	0.5	23.14	8.66E+08	0.09
2X	24	0.7	0.00025453	0.00025453	69000	35.12	1322.13	901.45	0.5	26.18	1.11E+09	0.07
2X	24	0.7	0.00025453	0.00025453	77000	39.2	1475.42	1005.97	0.5	29.22	1.38E+09	0.06
2X	24	0.7	0.00025453	0.00025453	85000	43.27	1628.71	1110.49	0.5	32.25	1.68E+09	0.05
2X	24	0.7	0.00025453	0.00025453	93000	47.34	1782	1215	0.5	35.29	2.01E+09	0.04
2X	24	0.7	0.00025453	0.00025453	101000	51.41	1935.29	1319.52	0.5	38.32	2.37E+09	0.03
2X	24	0.7	0.00025453	0.00025453	109000	55.49	2088.58	1424.04	0.5	41.36	2.76E+09	0.03
2X	24	0.7	0.00025453	0.00025453	117000	59.56	2241.88	1528.55	0.5	44.39	3.18E+09	0.02
2X	24	0.7	0.00025453	0.00025453	125000	63.63	2395.17	1633.07	0.5	47.43	3.64E+09	0.02
2X	24	0.7	0.00025453	0.00025453	133000	67.7	2548.46	1737.58	0.5	50.46	4.12E+09	0.02
2X	24	0.7	0.00025453	0.00025453	141000	71.78	2701.75	1842.1	0.5	53.5	4.63E+09	0.02
2X	24	0.7	0.00025453	0.00025453	149000	75.85	2855.04	1946.62	0.5	56.53	5.16E+09	0.01
2X	24	0.7	0.00025453	0.00025453	157000	79.92	3008.33	2051.13	0.5	59.57	5.73E+09	0.01
2X	24	0.7	0.00025453	0.00025453	165000	83.99	3161.62	2155.65	0.5	62.6	6.33E+09	0.01
2X	24	0.7	0.00025453	0.00025453	173000	88.07	3314.91	2260.17	0.5	65.64	6.96E+09	0.01
2X	24	0.7	0.00025453	0.00025453	181000	92.14	3468.2	2364.68	0.5	68.67	7.62E+09	0.01
2X	24	0.7	0.00025453	0.00025453	189000	96.21	3621.49	2469.2	0.5	71.71	8.31E+09	0.01
2X	24	0.7	0.00025453	0.00025453	197000	100.28	3774.78	2573.71	0.5	74.75	9.03E+09	0.01

Sub-appendix D

Defintion of Early and Late Zoom Timing with video frame references

Zoom Phase	Frame Number	Time From Beginning of Video Min:Sec	Time From Beginning of Video (Sec)	Time In Zoom Phase (Sec)
Early Zoom 1X	2221	01:14.11	74.11	0.000
	2232	01:14.47	74.47	0.367
Early Zoom 2X	2233	01:14.51	74.51	0.000
	2251	01:15.11	75.11	0.600
Late Zoom 1X	2221	01:14.11	74.11	0.000
	2235	01:14.58	74.58	0.468
Late Zoom 2X	2236	01:14.61	74.61	0.000
	2251	01:15.11	75.11	0.500

APPENDIX K

A VIDEO ANALYSIS

Author: Larry Cates

Abstract

The analysis of F4.mpg was based on the results generated by a Python program that extracted data from each of the 2,228 frames of this video. These frame by frame measurements are available from SCU on request.

This appendix argues that there was one extreme displacement event of the video, if interpreted as an acceleration, that was both phenomenal and logically inescapable given only these two conditionals:

1. If the video was not a fabrication
2. If the accelerations were intrinsic to the target.

It was important to look closely at this one displacement event because, unless 1 and 2 are proven beyond all doubt, these measured accelerations could only be the product of technology in advance of human technology – a possibility that should not be dismissed. It is not proven that the displacements of the target as seen in the video were indeed accelerations of the target. Until more evidence appears, objective reasoning must acknowledge that any other possible reasons were equally far from proven. When *acceleration* is referenced in this appendix, the above conditionals will be assumed true.

Section 1 will examine the acceleration estimates. The accelerations were approximately between 2,200 g's and 4,500 g's given for target size of 30 feet to 60 feet as estimated by the F/A-18 pilots.

Section 2 details the Zoom 1 to Zoom 2 transition issues involving the acceleration path over Frames 2155-2157 that complicate acceleration estimates over these frames.

Specifically, the issues were

1. The accelerations were attributable to artifacts created by the zoom change.
2. Zoom changes over this event distorted the angular measurements needed to determine acceleration estimates.

A close investigation revealed this event was analytically accessible. Evidence will be given that counters the notion the assumed accelerations were zoom change artifacts and methodologies given that will address angular measurements over the zoom changes.

Section 3 examines the equation and includes descriptions of all associated variables used to plot the acceleration estimates.

Section 4 details the equation variables and some computer derived data that will provide background for the definition of the variables using that data.

Section 5 provides the steps required to derive the final equation used to estimate the accelerations.

Section 1

Acceleration Estimates for the Event of Frames 2155 to 2157

The "Rifle Shot Acceleration"

This event has been given the nickname Rifle Shot Acceleration because one F/A-18 pilot described the acceleration of an object leaving his area as exactly that, a rifle shot. Although a different incident, such a description seems to parallel the event seen in this video.

Figure 1 illustrates a basic relationship between the target size and the accelerations for a given distance. While distance needs to be acknowledged as a factor, it does not need to be explicit. This plot is based on an equation discussed in Section 3.

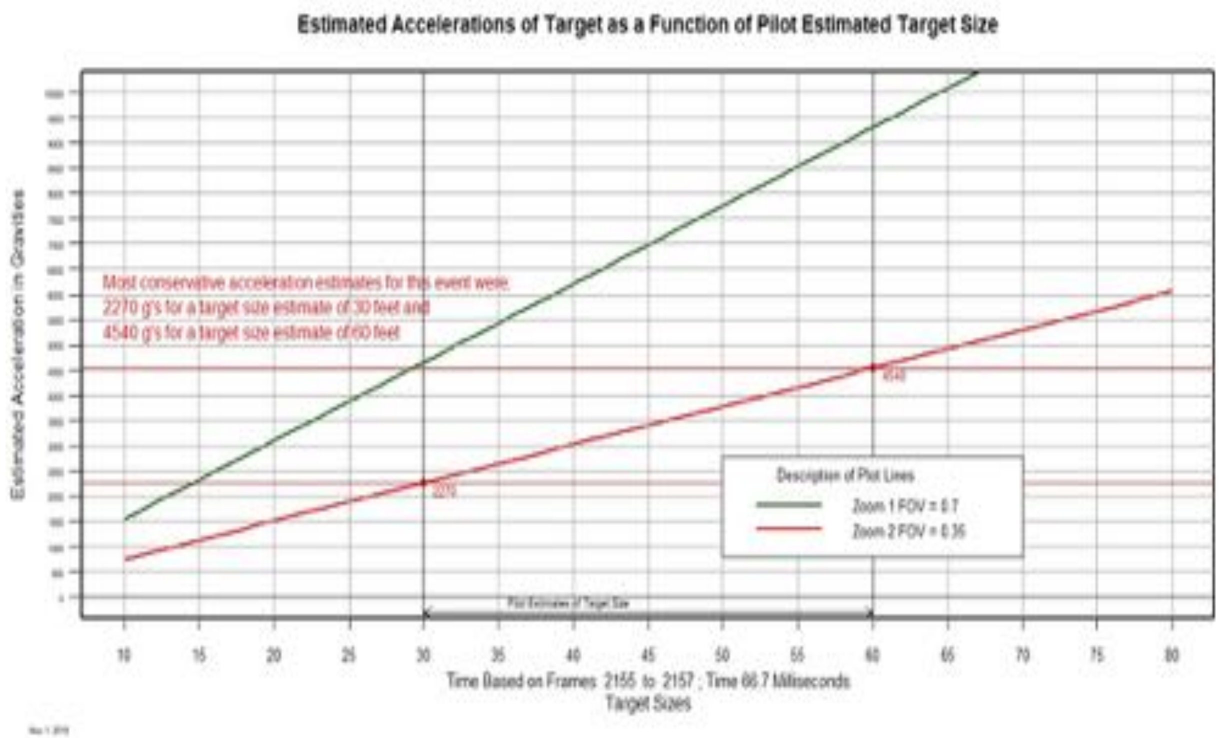


Figure 1

The red line is based only on Zoom 2 pixel measurements. The green line, the one with the steeper incline, is based only Zoom1 pixel measures. Since the event itself actually straddled both Zoom 1 and Zoom 2, the closest estimates are somewhere between these two lines. For reasons noted in Section 2, the line of closest estimates are probably right on or slightly above the red line. Conservatively, the acceleration estimates were between 2,270 and 4,540 g-forces. Figure 2 illustrates why these estimates should be so high and depicts more detail of the event.

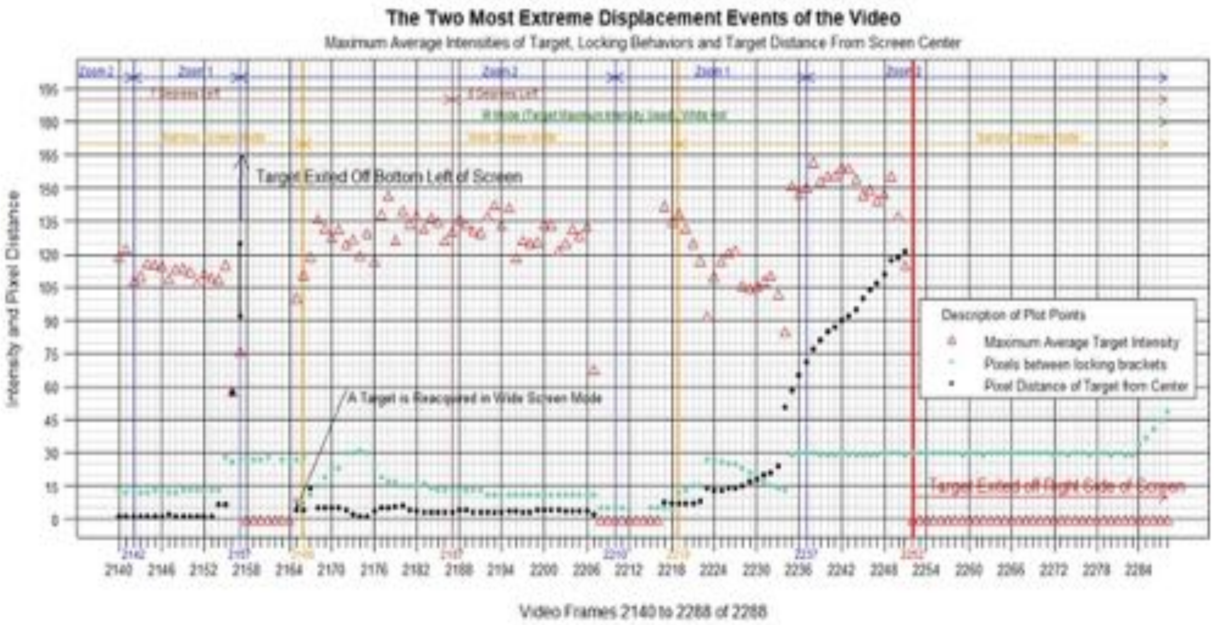


Figure 2

The initial position of the target near the center of the ASQ-228 display is indicated by the black point near the bottom of the graph. How the locations of the black points are derived from the video data are detailed in Section 4. The black point, the target, has an X, Y screen coordinate of 5, 2155. This means that in Frame 2155, the target was 5 pixels from the center of the video display.

Looking further up for the same frame number at Y = 107 you will see a red triangle. The red triangle, as seen in the Legend, is a maximum average intensity for the target. How the maximum average intensity is derived for the target is covered in Section 4.

The red triangle point indicates the given Y axis value for this point should be interpreted as a pixel intensity level rather than a pixel distance.

The Y axis of Figure 2 depicts both measures; in general for Figure 2, solid *points* indicate Y axis values are pixel distances and the red *triangle* points similarly indicate maximum average intensities.

The red triangle points at Y=-1 at the bottom of the Figure 2, along with the absence of black points, indicate no target was detected. The reasons no target was detected will be discussed.

Section 2 will argue the possibility that the maximum average intensity drop to 58, in Frame 2156, was due, not only to a change in zoom level, but also to the extreme speed of the target.

A displacement of 58 pixels in 33.4 milliseconds, a single frame, is an extreme angular change from, essentially, a dead standstill from the point of view of the video display.

The extreme displacement continued over Frame 2157 and, it appears created a smear analogous to the blur created by a camera set at a slow shutter speed while capturing a fast moving object in a snapshot.

Two separate displacement points connected with a solid line, in Figure 2, represented that smear; the target was detected over two locations at the instant of Frame 2157. Section 2 will provide evidence that this smear was not an artifact due to the zoom change. The acceleration seen for each of video frames 2155 through 2157, are shown in Figure 3.

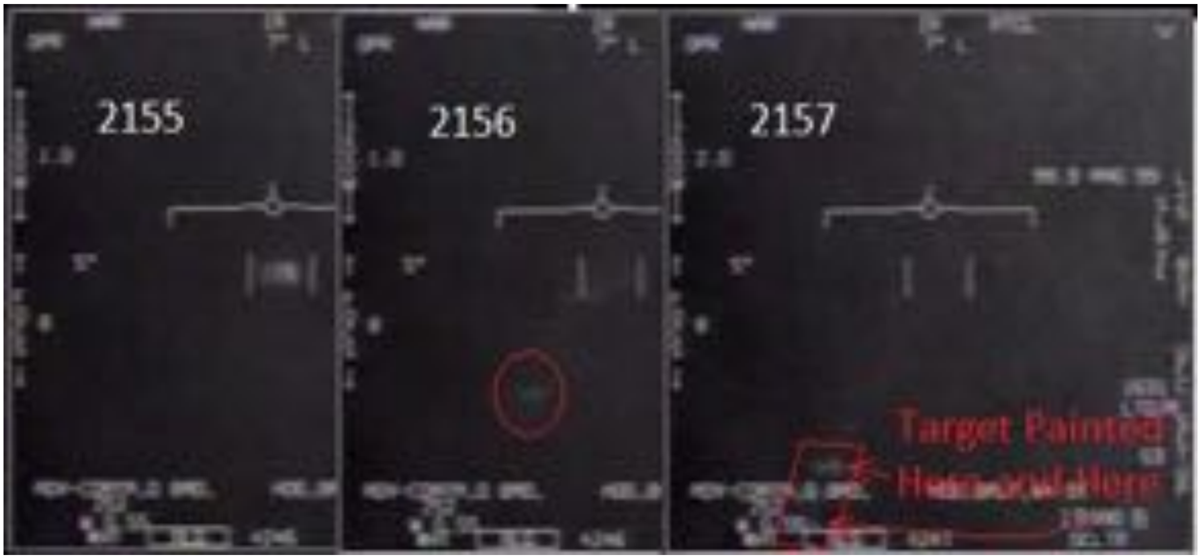


Figure 3

The target exited the video display screen completely after Frame 2157.

After the target was gone, apparently there was a gain, an amplification, of intensity as evidenced by the increased background snow. This gain appears to be due to the ASQ-228 coping with the absence of a bright IR target where background snow is seen in Frames 2158-2160.

The red triangles at the bottom, Y = -1, for Frames 2158-2164 indicated there was no target detected. Additionally, there is no locking bracket point (cyan) in Frame 2162. This is the frame where the video display went completely white, washing out nearly all the telemetry to include the locking brackets.

Apparently Frames 2161-2164, with interference and no target detected, were all associated with video display screen resets apparently in preparation for the Narrow to Wide Screen View telemetry change. This is a point Raytheon engineers could clarify; it would help vindicate the integrity of the video as well ensure that the proper interpretation of these events has been made.

It appears the WSO set the telemetry to Wide Screen View in an attempt to reacquire the target after it had leaped off the video display.

There was a target reacquired starting with Frame 2165. It seems probable that this was the same target that left the video display originally.

Section 2

Impact of Transition from Zoom 1 to Zoom 2 on Acceleration Measures

The path of the target seen on the video display over this event began under zoom 1 and ended under zoom 2.

Interestingly enough, the target motions began precisely when the WSO changed the zoom levels which created complications for any attempts to measure the target displacements captured by the ASQ-228 for this event.

The complications go a little deeper than measurements of acceleration derived from pixels. Were the observed target motions attributable to artifacts of the zoom change?

The artifact and the measurement issues will be each addressed under ***Algorithmic Steps of Zoom Changes*** and ***A Methodology to Bracket Acceleration Estimates***.

Algorithmic Steps of Zoom Changes

Comparisons made via Figure 6 will provide evidence that zoom processing has been finalized before the instant the video display telemetry is updated to reflect the new zoom number. Updates to the target intensities and locking brackets are completed prior to the frame, i.e. the *finalized frame*, with this telemetry update.

Evidence will be given that asserts frames at or beyond the finalized frame are stable enough for pixel measurements and beyond the effects of any zoom change**.**

With some close study, the steps in processing a zoom transition can be seen in the frame sequences of Figure 6. These sequences are shown side by side to enable direct comparisons of events/steps throughout each set of zoom transitions.

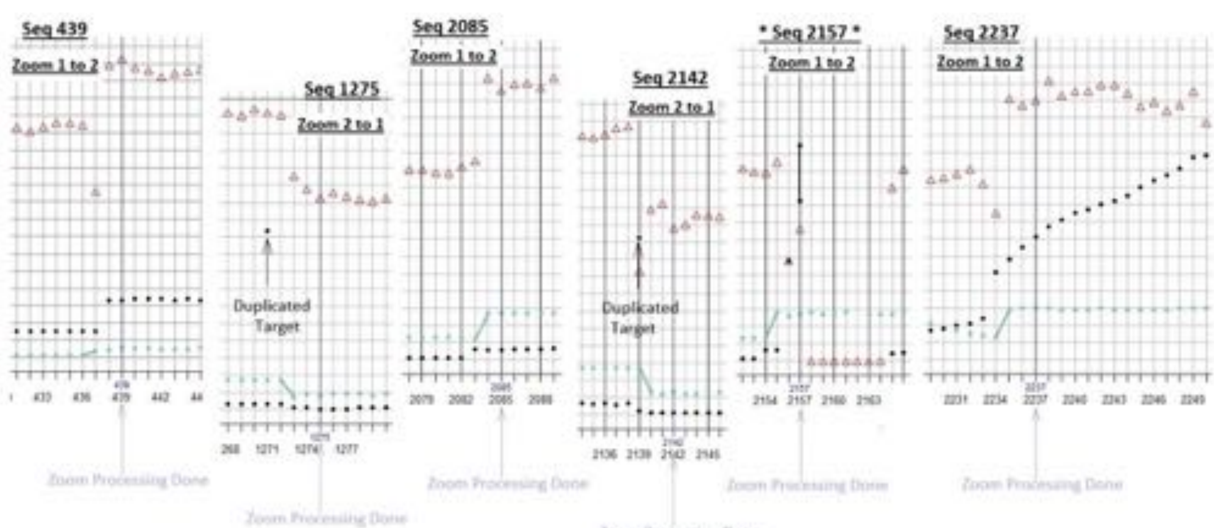


Figure 6

- There are 6 frame sequences with each sequence encapsulating effects of zoom change primarily on target intensities and the pixel distances between locking brackets.
- Each frame sequence is labeled ***Seq xxx*** where xxx is the frame number in which the video display zoom telemetry number is actually updated with the new zoom number; 1 to 2 or 2 to 1.

Because zoom processing has been completed by the finalized frame, it is likely the programmers of the ASQ-228 used this video display telemetry update to signal that zoom processing was completed. In Figure 6, the finalized frame is indicated in blue in several ways.

- The cyan points are the pixel distance between locking brackets. This distance is changed to accommodate the change in magnification and consequently indicates the change in the degrees of angular measure represented by each pixel.

  In each of the 6 sequences there is one cyan line connecting a pair of these points emphasizing the frame locations of pixel distance transition. Notice that the slope of the line is up or down appropriate to the magnification change; zoom 1 to 2, increased magnification and increased distance between locking brackets; zoom 2 to 1, decreased magnification and decreased distance between locking brackets.

In **Seq 2085**, the change in locking brackets was completed one frame (33.4 milliseconds) before the telemetry update and two frames (66.7 milliseconds) before in other 5 sequences.

- The target intensities were also modified during zoom changes with the updated results given in the same frame, for all but one sequence, as updated pixel distance for the locking brackets.

The most problematic aspect of the *rifle shot* acceleration is the scarcity of frames to analyze with most of those contaminated by the change of zoom.

One type of zoom change artifact not yet discussed is seen in **Seq 1275**, frame 1271 and **Seq 2142**, frame 2139, of Figure 6 where the target paint was duplicated in the same frame. The features of these duplications do not match the features of the "smear" seen in **Seq 2157**, Frame 2157, and discussed in Section 1.

First, the artifacts seen in frames 1271 and 2139 are nonsensical. There is no target motion in either frame. Both of these were an initial signal of the zoom change from 2 to 1 being first indications 4 and 3 frames prior to the telemetry update. The ghost target appears at the same screen coordinate location in frames 1271 and 2139 while both their counterparts were between the locking brackets.

Second, the paint of the ghost target in frame 2157 is clearly a continued motion of the target toward the lower left of the video display. A straight line can be drawn connecting all 4 target paints over the three frames demonstrating a logical continuation of motion as opposed to a nonsensical target paint. If indeed this reflects a real event, the ASQ-228 did a superb job of capturing an event for which it was not designed.

Third, the 2157 ghost is not in the initial stages of the zoom but in the last, final stage of the zoom with all prior zoom processing completed. Another bit of circumstantial evidence that this is not an artifact of the zoom change.

Fourth, every sequence of Figure 6, the intensities are seen to drop, for zoom changes 2 to 1, at or before the frame with the telemetry update and increase for zoom changes 1 to 2. This is an indication that the changes in zoom processing have been completed before the video display telemetry update. Note the target paint in 2157 was updated with an increased intensity in a manner consistent with other sequences. It should be noted that the intensity measure, as well as the location of the target, were both based on the target paint not entangled with the telemetry. See Figure 3, frame 2157.

Conclusion of this discussion: <u>Zoom changes were complete and frame data were stabilized at and beyond the frame having the telemetry update.</u>

If Raytheon engineers directly involved with the development and programming of the ASQ-228 could verify the specific measurement data referenced in the frame sequences of Figure 6 as operational characteristics typical of an (2004 model) ASQ-228. Such verification would provide strong circumstantial evidence for the validity of the video.

SCU is in possession of quite a bit more similarly detailed frame by frame data. SCU invites Raytheon to discuss these details with SCU to further vindicate the video.

The data from the video, f4.mpg, was quite detailed and quite precise.

It seems very unlikely that a fabricated video could correctly reproduce such operational detail. The specifics, such as the variation of the relative timing of the occurrence of certain same events across the given sequences, most certainly add realistic detail.

A Methodology to Bracket Acceleration Estimates

Pixels are an angular measure; the number of degrees represented by each pixel changes with the level of magnification. This was certainly a handicap in attempting to derive the angular measures where these measures were subject to change under zoom changes. The best indication of what frames pinpointed such pixel changes can be seen in the frame sequences of Figure 6.

For zoom changes 1 to 2 there were increased distances between the locking brackets. Figure 6 emphasizes this using the cyan colored line connecting pairs of locking bracket points in each sequence. The locking brackets widen to accommodate the increase in target size due to magnification that changed angular measure.

For zoom changes 2 to 1 it is reversed; the cyan line reflects a decreased distance between locking brackets. This decrease reflects the decrease in magnification and angular measure of the pixels.

In **Seq 2157**, the *rifle shot acceleration* sequence, the change in magnification can be seen over frames 2154 and 2155 where it is very likely, all frames 2155 and after are under zoom 2. It is reasonably asserted, that the data indicated for frame 2157, are under a stable zoom 2.

Given that the entire acceleration path of frames 2155 through 2157 is under zoom 2 then it seems likely the closest acceleration estimates seen in Figure 1 would be very close to if not the red line of estimates. However, to be sure that the best estimates are bracketed based on the data, the entire acceleration path can be treated under zoom 1, as seen by the green line in Figure 1, then again under zoom 2 as seen by the red line.

Specifically, deriving an angular pixel size for the path based on Zoom 1 and another angular pixel size for the path based on Zoom 2, enables bracketing the acceleration estimates.

In Seq 2157, the measured path of acceleration was approximately 91.55 pixels.

This measure was based on the length of the straight line connecting the beginning and ending points specified exactly by screen coordinates. This straight line enabled calculation of an acceleration average over 3 frames; 66.7 milliseconds of elapsed time.

There are two options for the angular size of the acceleration path, ϕ, based on Zoom 1 and Zoom 2; $\phi_1 \approx 91.55*\epsilon_1$ and $\phi_2 \approx 91.55*\epsilon_2$ where ϵ_1 is the degrees represented by each pixel under Zoom 1 and ϵ_2 the degrees for each pixel under Zoom 2.

The documented Field of View (FOV) for the video display is 0.7 degrees for Zoom 1 and 0.35 degrees for Zoom 2. As seen in the video, the video display boundary is the white rectangular border. This is 240 pixels wide.

Given an FOV of 0.7 for Zoom 1, $\epsilon_1 = 0.7/240 \approx 0.002917$ and an FOV of 0.35 for Zoom 2, $\epsilon_2 = 0.35/240 \approx 0.001458$ so $\phi_1 \approx 0.267$ degrees and $\phi_2 \approx 0.134$.

It is clear that $\phi_1 > \phi_2$. If ϕ_t is the true angular size of the path which may be based on some mix of zoom levels, then $\phi_1 > \phi_t > \phi_2$.

Envision substituting in a magnified Zoom 2 pixel, which is larger on the screen, for each Zoom 1 pixel, which is smaller on the screen, will result in a larger path but a smaller angular measure for that path. Reversing the substitution would make smaller path but a larger angular measure.

More concretely, if P is the path length in feet or meters and $P = D \tan(\phi)$ then it follows that $P_1 > P_t > P_2$ thus allowing the acceleration estimates to be bracketed for a given distance D, F-18 to target path.

This bracketing method sidesteps the issues created by a possible mix of zoom levels as the target traverses the acceleration path.

Section 3 discusses the equation used to derive the acceleration estimates of Figure 1. This equation was derived to use, among other variables, the derived pixel data as its variables.

Section 3

The Equation and Description of Its Variables

An equation was derived isolating only those variables needed to calculate acceleration estimates directly from pixel measurements, size of the target in feet and the elapsed time:

Equation 1:

$$A = S * \frac{2 * \tan((D_p * \epsilon)/2)}{t^2 * \tan((S_p * \epsilon)/2)}$$

The derivation of Equation 1 from initial considerations is detailed in Section 5, near the end of this appendix, so that it may be easily skipped if desired.
Equation 1 was used for all acceleration estimates graphically illustrated in this appendix.
The variables:

- **S** – The size of the target. This is the only independent variable in the equation as it was the only variable not able to be measured directly. There was insufficient data at the time of this writing to determine the actual size of the target. One notable reason for this insufficiency was the ASQ-228 telemetry failure to measure distance to target. As a consequence, the estimates of acceleration were dependent upon the size of the target.
- $\mathbf{D_p}$ – The pixel distance from acceleration start to end. This was measured using screen coordinates and the standard distance equation discussed earlier. This pixel distance is proportional to the angular measure of the acceleration. How the pixel distances were converted to angular magnitudes is discussed in Section 4.
- $\mathbf{S_p}$ – The measured (horizontal) size of the target in pixels. The number of pixels measured are exactly proportional to the angular measure of the target at a given distance and to the Field of View (FOV). How the target pixel sizes were converted to angular magnitudes is discussed in detail in Section 4.
- $\boldsymbol{\epsilon}$ - Degrees per pixel. This variable is derived from the ASQ-228 FOV specification and the number of pixels, as measured in the video, of the ASQ-228 Heads Up Display (video display). Only two values were used for $\boldsymbol{\epsilon}$ in the acceleration estimates. Documented in the ASQ-228 specs were Zoom 1 with an FOV of 0.7 degrees and Zoom 2 with an FOV of 0.35 degrees. Since the video display, as seen surrounded by a white border in the video measured 240 pixels wide then the two measures of $\boldsymbol{\epsilon}$ used were 0.7/240≈0.002917 for Zoom 1 degrees per pixel and 0.35/240≈0.001458 Zoom 2 degrees per pixel respectively.

- **t** – Elapsed time required for the target to traverse $\mathbf{D_p}$. This was derived from the frame number starting the pixel distance and ending frame number at the end of the pixel distance using the formula

t = (End Frame Number – Start Frame Number) / 29.97

where 29.97 frames per second was the EXIF documented frame rate for the F4.mpg video. The data used from Frames 2155 through 2157 were used to calculate the acceleration.

Notes

- Although distance from F-18 to target was a factor, the Equation 1 shows that it need not be explicitly used for the acceleration estimates.
- This equation also assumes that the initial velocity of the target was 0. In the case of the Frames 2155-2157, a close look at Figure 6, Seq 2157, reveals that the location of target begins essentially at the center the video display without motion. The reason for the slight rise from Frame 2153 to 2154 is the pixel change involved with the zoom change from 1 to 2. The rise was not due target motion away from the center. It is important to remember that the ASQ-228 was designed to keep the target fixed to the video display center.
- Once the numerator and denominator were calculated, once for Zoom 1 and then for Zoom 2, that quotient is completed, no more calculations need be done for these variables for the duration of the frames under consideration. The target size was then varied over the range 10 to 80 feet to generate the linear plot seen in Figure 1. Those with some mathematical background may note, despite the complexity of Equation 1, as applied to the case of the Rifle Shot Acceleration frames, is really just an equation for a straight line.

Section 4

Variables and Computer Derived Data Used as Input for Equation 1

Frame Number and Frame Size

Frame number is always used as the X axis for every graphic having frame sequences. The X axis frame numbers correspond frame numbers and distance between these frame numbers incremented by 1 frame represent an elapsed time increments of 33.4 milliseconds. The elapsed time between frames is derived from the EXIF specified video frame rate of 29.97 frames per second.

Each frame of the video was converted to a jpeg snapshot using ***Free Video to JPG Converter***, version 5.0.101 build 201 from DVDVideoSoft. These snapshots contain digital data representing the instantaneous state of that data at that frame number.

The converters can change the frame size of the snapshots and there are a number of such converters. They can also differ in the total number of frames (2,288 total frames for DVDVideoSoft converter).

The ***Free Video to JPG Converter*** generated snapshots with a frame size of 352x262 which does not correspond to the EXIF specification of 352x240 for the video frame size.

Frame Size Impact on Screen Coordinates and Pixel Distance Variables

The frame size directly affects measurements using XY screen coordinates. This is a nuisance that must be considered, for example, in calculation of pixel distances between screen XY locations.

Coordinate translation must be used if the frame size is not the same as the original video.

The frame by frame data available from SCU is based on the frame size 352x262.

To ensure the pixel distances are calculated accurately for 352x240 when getting the pixel distance between points on the 352x262 screen, coordinate translation is required:

Equation 1: $$X' = X$$

Equation 2: $$Y' = (240/262)\ Y$$

where X' , Y' and X, Y are the coordinates for the frame size 352x240 coordinates and the 352x262 frame size respectively.

All pixel distance calculations used this transformation to remain consistent with 352x240 screen size.

Pixel Distance Between video display Center and Target

To get this distance in pixels, two screen coordinate values are needed. The center of the video display screen is 176,132 but how was the location of the target determined?

Turns out the best way to identify the location of the target is to use the screen coordinate location of the maximum/minimum average intensity.

There were 3 reasons for choosing the screen coordinate location of the target to be the location of the maximum/minimum average intensity.

1. The single pixel maximum/minimum intensity was not a good choice because it may not be unique for the target in a given frame.
2. The 9 pixel maximum/minimum average intensity is a better choice as it will provide more stable screen coordinate locations for the target across frames as intensities for the target fluctuate.
3. The 9 pixel maximum/minimum average intensity has a far higher probability of being unique for the target in any given frame.

The location maximum/minimum intensity, being equivalent to the target position, was used to calculate the pixel distances from the video display center to the target.

Throughout the majority of the video, the target was at or near the video display center. Of interest is when the target moves away from the center since the tracking accuracy is reduced. This is one element for which the ASQ-228 was obviously designed - to track targets for combat purposes.

While we will be able to measure how well this tracking has been done, to date we have no baseline to measure normal operating behaviors under different circumstances other than the content of the first 54% of the f4.mpg video. In that region of the video, the target is stable at the video display center.

The pixel distance from the video display center can give us an approximate idea of how well the target is locked.

How the screen coordinates of the target are determined has been discussed earlier. If X2, Y2 are the screen coordinates of the target and screen coordinates of the video display center are X1, Y1 then that pixel distance **D** is

Equation 3: $$D=\sqrt{(X2-X1)^2+(Y2-Y1)^2}$$

Note, for example, that the center of the video display for video frame size 352x262 is 176,131 while for frame size 352x240 the center is 176,120. This creates different results in pixel distances. For graphics illustration purposes, the distance of the target from the video display center as well other graphic variables, the impact of these two screen size differences are minimal.

Maximum Average Intensity Value of Target

Some of graphics illustrate pixel values with highest average intensity or lowest average intensity pixel values of the target. Depending on IR or TV Mode, a highest (IR) or lowest (TV) intensity pixel was always found within the target screen paint and the screen coordinate location of this pixel documented.

Because the video was color, each pixel had 3 intensity values, one red (R), one green (G) and one blue (B). A single gray ***value***, an unweighted average of the RGB intensities, was derived which provided a single intensity value for each pixel

For example, a particular shade of cyan for example; Red intensity 42, Green 255 and Blue 170 makes an unweighted gray value intensity of (42+255+170)/3 = 155.67. This is an example how all gray intensities were derived.

The general algorithm, used to determine the maximum (or minimum) average intensity for the target, implemented the concept of enclosing the target in a rectangular region. Every RGB pixel within that region was converted to a Grey value. This procedure was done for every frame in the video adapting different sized regions as needed.

Two central concepts, to be discussed in more detail later, were algorithmically defined to derive both the maximum/minimum average gray value intensities as well as determine the sizes and edges of each target in any given frame:

1. A square region of 9 pixels was moved over every pixel within the entire selection region containing the target. See Figure 7 for an example of this 9 pixel region outlined in red. Each set of the 9 pixel gray value intensities were averaged. The highest (IR) or the lowest (TV) average was chosen as the maximum/minimum of the target. The screen coordinate of its center pixel documented the screen location of this maximum. It should be noted that the maximum/minimum averages, in the case of this video, were found to be unique within the target across every frame.
2. A gray value intensity threshold was determined for each frame that defined the sizes and edges of the target. The determination of the threshold value was based on background gray value intensities immediately surrounding the target. These background intensities provided a clear contrast to make an edge determination. For IR Modes, if a given pixel intensity was greater than the threshold, that pixel was considered part of the target. For TV Modes, if the pixel intensity was less than the threshold, that pixel was included as

In Frame 1, for example, every RGB pixel in a 19x22 selection area around the target was converted to a gray intensity value and depicted in Figure 7 is an array of gray level intensities.

In this frame, the telemetry IR Mode was specified white as hot so the gray pixel values for the target are in a range from 255 down to 0. The threshold was set to an intensity of 74.70, well above the overall background average which was below a gray level intensity value of

30.00. The threshold defined the edges of the target so that every pixel included as part of the target had an intensity of >= 74.70.

The maximum average intensity, from all possible average intensities within the entire selection area for Frame 1 was 144.41. This was the average of the 9 pixels within the red border in Figure 7 and within the black border, 158.00, the maximum intensity (not the maximum average at the center of the 9 pixels. For the screen size 352x262, the XY screen location of the maximum average intensity, which was unique within the selection area in this case, was (177,130).

In the instance of Frame 1, the screen locations of both the single pixel maximum intensity and 9 pixel maximum average intensity had exactly the same screen location.

This was not always true but the locations of the 9 pixel maximum/minimum averages and the single pixel maximum/minimum values were largely within one pixel of one another.

The exact values for the maximum/minimum intensity and maximum average/minimum average intensity and their locations are found in the raw data tables for every frame.

Frame 0001, Screen Coordinate of Top Left Selection Area: X 167, Y 121   Selection Width X Height: 19 by 22

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185
0 121	12.67	10.67	8.67	7.67	8.67	7.67	5.67	5.67	6.67	4.00	5.00	6.00	6.00	7.00	7.00	8.00	9.00	4.00	6.00
1 122	10.67	8.67	6.67	5.67	5.67	5.67	3.67	4.67	5.67	7.00	7.00	9.00	10.00	10.00	11.00	10.00	10.00	4.00	7.00
2 123	8.67	5.67	3.67	3.67	5.67	6.67	6.67	8.67	10.67	4.00	5.00	9.00	12.00	14.00	13.00	11.00	8.00	8.00	8.00
3 124	10.00	6.00	5.00	6.00	9.00	12.00	14.00	18.00	21.00	14.67	14.67	16.67	18.67	18.67	16.67	11.67	8.67	10.67	8.67
4 125	11.00	6.00	6.00	8.00	13.00	19.00	23.00	29.00	34.00	41.67	38.67	34.67	31.67	27.67	23.67	17.67	13.67	15.67	12.67
5 126	10.00	5.00	6.00	11.00	20.00	29.00	38.00	47.00	53.00	63.67	58.67	51.67	44.67	39.67	33.67	26.67	22.67	19.67	16.67
6 127	10.00	7.67	9.00	16.67	28.00	42.67	54.00	65.67	73.00	83.67	77.67	68.67	60.67	52.67	42.67	32.67	25.67	18.67	16.67
7 128	15.67	13.00	16.67	28.00	41.67	57.00	71.67	91.00	104.67	116.67	113.67	108.33	97.33	79.33	58.33	40.33	31.33	21.33	16.33
8 129	17.00	14.00	20.00	29.00	42.00	57.00	79.00	107.00	128.00	143.67	144.67	138.33	120.33	93.33	65.33	44.33	33.33	22.33	17.33
9 130	17.00	21.00	26.00	35.00	48.00	65.00	90.00	121.00	143.00	157.00	158.00	150.00	127.00	97.67	71.67	51.33	40.33	22.33	18.33
10 131	17.00	16.00	22.00	34.00	51.00	73.00	98.00	123.00	140.00	144.33	139.33	124.33	100.00	77.00	61.00	44.33	31.33	22.33	18.33
11 132	16.67	19.67	26.67	37.67	52.67	72.67	93.67	113.67	125.00	125.00	118.00	101.00	79.00	62.00	51.33	39.00	29.00	22.00	18.33
12 133	17.67	13.67	21.67	32.67	43.67	57.67	76.67	95.67	108.00	101.00	99.67	89.67	72.00	56.00	44.00	33.67	25.67	20.00	17.00
13 134	18.67	16.67	23.67	31.67	37.67	45.67	57.67	70.67	77.00	79.33	83.00	81.00	71.00	55.00	37.33	26.00	20.00	17.00	15.00
14 135	17.67	13.67	19.67	25.67	31.67	38.67	46.67	49.67	48.67	52.00	58.00	63.33	60.00	49.00	33.00	21.33	16.33	15.33	13.33
15 136	18.67	15.67	14.67	16.67	21.67	28.67	33.67	34.67	33.67	33.33	31.67	34.00	36.00	31.00	21.00	15.67	16.67	11.67	9.67
16 137	17.67	12.67	10.67	10.67	12.67	16.67	18.67	17.67	16.00	20.67	17.00	18.00	21.00	20.67	14.67	11.00	12.00	9.00	10.00
17 138	12.67	9.67	7.67	6.67	7.67	10.67	11.67	10.67	8.00	14.00	8.33	6.33	8.33	9.67	6.67	5.67	6.67	9.00	9.00
18 139	10.67	9.67	8.67	7.67	9.67	11.67	12.67	12.67	11.00	12.67	7.67	6.00	6.67	8.00	7.00	7.00	8.00	9.00	8.67
19 140	13.00	11.00	11.00	10.00	10.00	10.00	11.00	10.00	9.00	8.67	8.00	9.00	10.00	10.67	9.67	10.67	12.67	8.67	14.33
20 141	11.00	12.00	11.00	11.00	11.00	10.00	10.00	9.00	8.67	8.67	9.67	11.67	11.67	10.33	9.33	9.33	10.33	10.33	15.33
21 142	9.00	10.00	10.00	10.00	10.00	10.00	10.00	11.00	10.67	11.33	12.00	12.00	11.00	9.00	8.00	8.33	7.33	10.33	10.33

Figure 7

It should be noted in passing there is no exact comparison of pixel intensity values between different frame sizes because there is no exact digital locations between them. But for a given vicinity, they are analytically comparable.

Pixel Distance Between Locking Brackets

The pair of vertical bars on either side of the target are locking brackets. The distance between the brackets is the count of pixels between but not including the pixels belonging to either bracket.

An X location was found for a single vertical column of pixels associated with each bracket. A rectangular region surrounded each bracket and included areas that clearly did not have the bracket. A sum of gray pixel values for each and every column within the region was calculated. The X coordinate representing the X location of the bracket was associated with the column of single pixels having the largest sum.

If $\mathbf{X_L}$ and $\mathbf{X_R}$ are the designated X coordinate values for the left and right brackets respectively, then the pixel distance **D** between locking brackets is

Equation 3: $$\mathbf{D} = \mathbf{X_R} - \mathbf{X_L} - \mathbf{1}$$

Expanding distance between locking brackets indicate attempts to regain lock. Shrinking distance indicate increasing lock.

The measurements made directly from the video are:

1. Angular size of the target
2. Angular size of the target path
3. The time taken for the target to traverse the path; the elapsed time between each frame is known to be 33.4 milliseconds.

Pixel Distance of Acceleration ($\mathbf{D_p}$)

As seen in some sequence of frames in the video, the target traverses a path whose distance can be discretely measured as pixels. The nice thing about modern digital recordings is that each pixel has a unique screen coordinate so the distance, in pixels, can be measured by using these screen coordinates in the distance formula discussed earlier.

A pixel is actually a relatively precise angular measure with 1 pixel usually representing some small fraction of a degree. The count of pixels comprising the target path is therefore a multiple of that small fraction of a degree and so the pixel path is itself an angular measure on the video.

To know the physical distance of the path in feet or miles, not the angular measure of degrees, the distance to the target must be known. There is a mathematical relationship of target path, distance to the target from the F-18 and the angular measure of that target path:

Equation 6: $$D_p = 2 * D \tan(\phi/2)$$

where $\mathbf{D_p}$ is the target displacement, that is, the target path length in feet or miles.
D is the distance from the F-18 to the target.
$\boldsymbol{\phi}$ is the angular measure of the target path, or target displacement.

At the time of this writing, that distance, **D**, was not known for any acceleration estimates so, therefore, neither was the path length, $\mathbf{D_d}$.

Readers with some mathematical background may have noted the absence of these distances in Equation 1. In the final derivation, these distances can be substituted out distilling the input variables down to the measurements made directly from the video and the witness estimates of the target size.

Pixel Size of Target ($\mathbf{S_p}$)

The pixel size of the target was measured and 2 distinct measurements resulted as might be expected. Zoom 1 and Zoom 2 had to be included as this measure was included in various applications of Equation 1 in the variable $\mathbf{S_p}$ as constants for each plotted acceleration estimate.

This contributed somewhat to the range of acceleration estimates. I say somewhat because the term in the denominator of Equation 1, $\mathbf{\tan((S_p * \epsilon)/2)}$, was essentially invariant over a zoom change because Sp changes inversely with ϵ. This product ideally remains identical under zoom change. Using the measured pixel sizes for each zoom level the products are near identical.

The target pixel sizes varied across frames for any given Zoom and Mode. The results were as follows:

	IR Zoom 1	IR Zoom 2
Average	8.280	16.977
Standard Deviation	0.707	0.902
Average Based on N Frames	437	87

Table 1

Obviously, to determine the size of the target, the edge of the target had to be determined. A simplistic algorithm for edge detection was used that was computationally expedient. More rigorous algorithms would not contribute any particular refinements to what were already approximate estimates.

A fixed threshold gray level intensity was chosen based on the average gray level background intensity surrounding the target. This approach provided sufficient statistical contrast between the target and the background. The background and target pixel intensities did fluctuate in intensity so a statistical average and standard deviation was measured over the number of frames indicated (N Frames) for each mode and zoom.

A target pixel size average was a based on the width of a smaller rectangle within a larger rectangular region of pixels that excluded telemetry. The larger rectangular region was the selection rectangle.

The smaller rectangle got its size by ensuring that it contained only those pixels whose intensities satisfied the threshold requirement. A simplistic way of find the target edge.

For example, for an IR Mode Zoom 1 frame and threshold gray level intensity of 74.7, all pixels within the selection rectangle but not within the smaller rectangle would have had a guaranteed intensity < 74.7. In other words, all those pixels whose intensities are >= 74.7 define the target.

For IR Mode Zoom 1 frames, 437 of them, the widths of the smaller rectangles were measured for every frame and those widths averaged a target size of 8.28 pixels with a standard deviation of 0.707 so 68% of the target sizes measured based on a threshold intensity of 74.7 were between 7.573 and 8.987 pixels.

The 6 target pixel size numbers substituted into $\mathbf{S_p}$ for Equation 1 estimated acceleration graphic is found in Table 2:

	IR Zoom 1	**IR Zoom 2**
Average – 1 SD	7.573	16.075
Average	8.280	16.977
Average + 1 SD	8.988	17.879

Table 2

Section 5

Derivation of Equation 1

The derivation is a straightforward set of substitutions whose goal is to derive the acceleration strictly as a function of certain variables directly derived from the video.

Equation 5.1 expresses the relationship among the variables D[1], the distance from the F-18 to the target, and the angular size of the target's path, ϕ, to the physical length of the path traversed by the target, D_d, over the given set of video frames.

Equation 5.1 $$D_d = 2D \tan(\phi/2)$$

Equation 5.2 expresses the relationship among the variables D, again the distance from the F-18 to the target, and the angular size of the target, Θ, to the physical size of the target itself, S.

Equation 5.2 $$S = 2D \tan(\Theta/2)$$

Equation 5.3 is the standard acceleration formula but, as applied here, assumes the initial velocity to be zero. A, the acceleration, is a function of D_d , the length of the path, that is, the distance traversed by the target during the elapsed time t determined from the number of frames.

Equation 5.3 $$A = \frac{2*D_d}{t^2}$$

There is no need to address D in the final equation because both Eq 5.1 and 5.2 contain D and so

Equation 5.4 $$\frac{S}{2\tan(\Theta/2)} = \frac{D_d}{2\tan(\phi/2)}$$

Nor does the target displacement need to be explicit in the final equation because Dd is in equations 5.3 and 5.4, so

[1]The variables D, S, and D_d must all of the same units of measure. For example, if D is in feet so are S and D_d.

Equation 5.5
$$A = \frac{2\ S\ \tan(\phi/2)}{t^2 \tan(\Theta/2)}$$

Both ɸ, the angular size of the target's path, its displacement, and Θ, the angular size of the target can be derived from pixel data via equations 5.6 and 5.7.

There are only two values for ϵ in this application, either 0.7/240 for Zoom 1 or 0.35/240 for Zoom 2. This has been discussed in some detail in Section 3.

Equation 5.6
$$\phi = P_d\ \epsilon$$
where Pd is the measured pixel distance of the target path.

Equation 5.7
$$\Theta = S_p\ \epsilon$$
Where Sp is the measured pixel size of the target.
Substituting the right sides of equations 5.6 and 5.7 into equation 5.5 gives

Equation 5.8
$$A = \frac{2\ S\ \tan((P_d\ \epsilon\ )/2)}{t^2 \tan((S_p\ \epsilon)/2)}$$

Equation 5.8 The acceleration, A, is now completely a function of the video data with the exception of the independent variable S which is the only variable not able to measured. There was insufficient information to determine S beyond witness input. Section 1 plots the result for Zoom 1 and Zoom 2 for the given domain of S.

APPENDIX L

WITNESSES AND ASSOCIATED INFORMATION

by Robert Powell

Witnesses

The testimonies that have been made are of an event that occurred 14 years ago. It is expected that memories change over time and that once testimonies become public that they can contaminate other witness's memories of an event. The authors of this report have taken this into consideration and will note when important discrepancies between witnesses exists. The more important issue is whether the testimonies are sufficient to establish that the event occurred and whether the testimonies can establish that the object displayed extreme accelerations.

This section will provide the backgrounds of the witnesses interviewed as well as commentary on witness information.

Primary Witnesses

Commander David Fravor is considered one of the two strongest witnesses to this event because he was the senior officer and the pilot who engaged the "Tic-Tac". He graduated from the United States Naval Academy in 1988 with a degree in Oceanography, Chemical and Physical. He rose to the rank of Commander and was the Commanding Officer in 2004 of a Navy squadron of F/A-18F "Super Hornets" the VFA-41, also known as the "Black Aces". He had 16 years of experience, 3500 hours in the cockpit as a Navy pilot, and graduated from the Navy's TopGun program.[1]

David Fravor was not personally interviewed by SCU. His testimony was taken across multiple sources and found to be quite consistent from interview to interview. He has made a large number of interviews both to newspapers and via internet radio. He first discussed the "Tic-Tac" encounter publicly in March of 2015 through the *FighterSweep* article written by his friend, former Navy pilot Paco Chierici. Two of the better recorded interviews conducted were by Two The Stars Academy and Linda Moulton Howe. Both interviews allowed Mr. Fravor to discuss his experience with minimal interruptions.[1,2]

Lieutenant Commander James Slaight is also considered one of the two strongest witnesses to this event and was the senior officer and weapons operator in the aircraft overlooking CDR Fravor's engagement. He graduated from the United States Naval Academy in 1993 with a degree in Political Science. He rose to the rank of Lieutenant Commander and was the LCDR in 2004 for VFA-41. He was a naval officer for 20 years, made six deployments, and has over 2700 tactical jet aircraft hours of experience.[3]

James Slaight was first interviewed by retired Navy Captain Tim Thompson of the SCU on Feb. 19, 2018 and a followup interview by Robert Powell of the SCU on Feb 22. His replies were succinct and matter-of-fact. He had not had any substantial public interviews prior to that time and to our knowledge has not been interviewed publicly since then. It was clear in the interview with Mr. Slaight that he did not appreciate how the national media outlets had confused the IR video taken in 2004 with another video taken at a later date.[3,4]

1 David Fravor, interview by Linda Moulton Howe. KGRA radio, June 28, 2018.
2 David Fravor, interview by Jeremy Corbell, *Jeremy Corbell Radio Show*, internet radio, June 23, 2018.
3 Jim Slaight, interview by retired Navy Captain Tim Thompson, telephone interview, February 19,2018. (Some information unavailable on the recording due to a technical problem in the first 10 minutes of the interview.) Interview available at https://www.explorescu.org/papers/nimitz_strike_group_2004
4 Jim Slaight, interview by Robert Powell, telephone interview, February 22, 2018.

Senior Chief Kevin Day is a key witness from the USS *Princeton* because of his position, rank, and experience. He was the Air Intercept Control Supervisor for the *Princeton* and for the Nimitz Strike Group. He was responsible for the radar operators as well as the use of those radars for air defense. He has very extensive experience with the SPY-1 phase shifting radar used on the ship as he worked on one of the first SPY-1 radar systems on the USS *Vincennes*. His performance rating in January 2005 from Captain J.L. Smith of the USS *Princeton* indicated that he "greatly exceeded standards". The Captain made the comment on the rating document, which is available later in this appendix:

*"*He is my number #1 SCPO [Senior Chief Petty Officer]! A recognized expert in Air Defense, his impact within the Nimitz Strike Group has been phenomenal.*"*

The Senior Chief Day has 18 years of service at sea on Aegis radar systems and his medals included the Meritorious Service Medal and the Navy/Marine Corp Commendation Medal. He was also a Top Gun graduate for Strike-Fighter Tactics. He had seven deployments to the Middle East and has completed hundreds of air intercepts. A copy of these documents is available later in this appendix. This extended commentary is noted because it is important to understand the level of competence and the capabilities of Senior Chief Day. In civilian life he has earned a degree in Business Administration and a Master Degree in Education.

Kevin Day was first interviewed by Robert Powell on January 15, 2018. He indicated that he had not been interviewed by anyone else prior to that date. Mr. Day indicated that he had made notes of the November 14, 2004 event and was operating with his notes during the interview. Beginning in May of 2018 Mr. Day made several public interviews and became active on a Facebook chat site. Some of his comments are regarding topics to which he did not have first hand knowledge and may have been picked up from things either he read on Facebook sites or heard from others or just changes to memory. It is not the intent of this report to look for every inconsistency in a witness's testimony but instead to look for consistencies between witnesses and draw a conclusion as to what actually occurred. It is believed the most accurate recounting of the Senior Chief's experience was his original interview on January 15 with Mr. Powell.[5] Although not an interview, prior to his January 15th statements Mr. Day did make a posting on an internet forum known as *Open Minds* in December of 2010.[6] The details that he provided are very similar to the interview conducted on January 15. There are some statements made that are different such as a statement that the "Tic-Tac" entered the water or that the video was taken on a HUD display rather than a ATFLIR. But as a whole, Mr. Day's basic story has been consistent and in combination with statements from other witnesses allows the critical portions of this event to be pieced together.

Kevin Day's experience with this incident did affect him emotionally and his emotions are evident in his voice during the January 15 interview. The fact that this event had such an impact on Mr. Day, and that there are also multiple witnesses, only strengthens the argument that these witnesses experienced an extraordinary event. Nonetheless, the emotional impact on Mr. Day requires us to look for corroborating evidence on the details that he has recounted. This has been done and the critical facts recounted by Mr. Day are supported by other witnesses.

5 Kevin Day, interview by Robert Powell, telephone interview, January 15, 2018 by Robert Powell. Interview available at https://www.explorescu.org/papers/nimitz_strike_group_2004

6 *ATS: Above Top Secret*, "The *Nimitz* Story in the Former OMF Forum," http://www.abovetopsecret.com/forum/thread1207350/pg1. Accessed July 30, 2018.

Fire Controlman Petty Officer Third Class Gary Voorhis is also a key witness from the USS *Princeton* because he was in charge of the ship's Aegis computer suite known as the Cooperative Engagement Capability (CEC). This system allows the sharing of radar, electronic data, and any other sensor data between all the ships and aircraft in a Strike Group and coordinates this information with the ship's weapon systems.

Gary Voorhis was first interviewed by Robert Powell on April 6, 2018.[7]

Petty Officer Third Class Jason Turner was in Supply and did not have access to radar or electronic data on the ship. However, he had a security clearance and as a result was able to view the IR video with the ship's cryptology group. Jason was active in the service for 10 years and was stationed onboard the *Princeton* from January 2002 to March 2005.

Jason Turner was first interviewed by Robert Powell on January 11, 2018.[8]

SECONDARY WITNESSES

These are witnesses who are not anonymous but have either made statements or provided their story on social media sites.

Lieutenant Colonel Douglas S. Kurth is considered the strongest of the secondary witnesses. He was the commanding officer of the Marine squadron VMFA-232. While leading his group, they received the Chief of Naval Operations Safety Award. After leaving the service in 2006 he worked for Bigelow Aerospace and is now working for Lockheed Martin as a F-35 flight instructor and subject matter expert. He graduated from Iowa State University with a Bachelor of Applied Science in Mathematics.[9]

Mr. Kurth's testimony is made through the naval blog known as *FighterSweep* which is written and edited by retired Navy pilot Paco Chierici. Mr. Kurth talked to researcher Robert Klinn on November 9, 2017 by phone. He did not want to talk any details due to a commitment to a prior employer but indicated to Mr. Klinn that he knew Paco well and that 95% of what was written in the *FighterSwee*p article was correct.

CDR Fravor's Wingman Pilot and WSO both wish to remain anonymous. These two pilots are listed as secondary witnesses because the identity of the pilots is not truly anonymous and both have testified anonymously. The SCU has verified both pilots' identity and will honor their desire to remain anonymous. CDR Fravor's wingman pilot is the primary source for the document titled "2004 USS *Nimitz* Pilot Report" on the TTSA website and is listed as the "Source" on that document. The main value of both these witnesses is in confirming the activities of the "FastEagles" that day and as primary witnesses to CDR Fravor's engagement of the "Tic-Tac". These pilots also viewed the ATFLIR video.[10]

7 Gary Voorhis, interview by Robert Powell, telephone interview, April 6, 2018. Interview available at www.explorescu.org.

8 Jason Turner, interview by Robert Powell, telephone interview, 01-11-2018. Interview available at www.explorescu.org.

9 *Douglas Kurth* (2018) LinkedIn profile. https://www.linkedin.com/in/douglas-kurth-25195b145/.

10 "2004 USS *Nimitz* Pilot Report" from *"Two The Stars Academy".* https://coi.tothestarsacademy.com/nimitz-report Accessed 07/05/2018.

Pilot and WSO that took the ATFLIR video both wish to remain anonymous as of this writing. These two pilots are listed as secondary witnesses because the identity of the pilots is not truly anonymous and both have testified anonymously. The SCU has verified both pilots' identity and will honor their desire to remain anonymous. These two pilots were requested to video the object if possible by CDR Fravor.

Don Oktabinski had the call name 'Poison' on the USS *Princeton* and was the radio communication point between all aircraft and the ship. His photo in the 2003 *Princeton* cruise book indicates that he was an Operations Specialist Petty Officer Second Class.[11] The SCU contacted him for an interview but he did not reply.

Multiple Marine officers in addition to Lt. Col. Kurth were provided as possible witnesses that may have viewed the original IR video on FOIA requests dated August 13, 2017 and October 10, 2017. (See Appendix B.) All of these witnesses would definitely be aware of the "Tic-Tac" incident. Their names are as follows:

Lt. Col. Ryan McCaskill (serving with US Northern Command)
Lt. Col. Justin Knox (retired 2016)
Lt. Col. John Schares (retired 2013)
VFA-41 XO Dell Bull (currently Rear Admiral)
Major Richard Behrmann (current XO of VMA-232)
Lt. Col. Robert A. Tomlison (current CO VMFA-323)
Lt. Col. Warren Byrum (current CO VMFA-314)

Multiple Navy personnel from the USS *Princeton* commented on the November 2004 event six years ago on the public Facebook site called USS *Princeton* (CG-59). A copy of their commentary from July 9, 2012 is listed in later in this appendix. All of the following sailors have been verified as aboard the *Princeton* based on the 2003 *Princeton* Cruise Book.[11] Some of these sailors are listed elsewhere as witnesses, but are shown here for the record. The following sailors have indicated that they saw the IR video:

Chris Guilford, Petty Officer Third Class. Fire Controlman.
Karson Kammerzell, Petty Officer Third Class. Cryptologic Technician.
Joseph Wolschon, Junior Enlisted Seaman. Sonar Technician.
Jason Turner, Petty Officer Third Class. Supply.

The following sailors have indicated that they were aware of the event but did not state if they saw the video:

Jared James, (Name not verified in 2003 *Princeton* Cruise Book. Perhaps joined the ship in 2004.)
Joshua Newell, Petty Officer Second Class. Electronics Technician.
Jesse Tiffany, Petty Officer Third Class. Boatswain's Mate.

11 *U.S. Navy Cruise Book*, "USS *Princeton* (CG 59), Honor and Glory, Operation Iraqi Freedom", 2003 Westpac Deployment.

In January 2018, some of the same sailors comment about remembering the event as well as the following additional sailors:

Chris Brewer, Seaman. Gunner's Mate.
Ryan Gowin, Petty Officer Third Class. Sonar Technician.
Joe Juette, (Name not verified in 2003 *Princeton* Cruise Book. Others who were verified recognized this individual from that period of time.)
John Schwanke, Senior Chief Petty Officer. Fire Control Technician.
Duane VanDyken, (Name not verified in 2003 *Princeton* Cruise Book. Perhaps he joined the ship in 2004.)

JosephWolschon sent an email to the SCU on November 1, 2017. He did not respond for a request to be interviewed. It has been verified that he was a crewmember of the *Princeton* and he is listed in the 2003 cruise book as a Junior Enlisted Seaman with the role of Sonar Technician. A copy of his email is available later in this appendix.

Trevor Xxxxxx wishes to remain anonymous. He is listed as a secondary witness because he is not truly anonymous. The SCU has verified his identity as an Operations Specialist aboard the USS *Nimitz*. His desire for anonymity will be honored and his name will not be disclosed in this report. He has been contacted by the SCU for an interview but has not responded.

He participated in a recorded interview with Jeremy Corbell on June 13, 2018 that has been made public.[12]

ANONYMOUS WITNESSES

These are anonymous witnesses and are listed from oldest to newest. Witness statements prior to December 17, 2017 when the New York Times article was released are considered of greater value since the "Tic-Tac" event was not well known prior to that time. These witnesses are listed chronologically.

February 3, 2007 Two anonymous witnesses in 2007 using the name "The Final Theory" and "Cometa" posted on the forum *Above Top Secret*. This discussion is too long to post here but can be found at the forum site.[13] These two anonymous individuals also posted a copy of an IR video via YouTube of an unknown aerial object as filmed from an F-18. The video has since been removed from YouTube. This is the same video that was released ten years later by the group "To The Stars Academy" and the *New York Times* in December of 2017. "Cometa" seems to be an individual out of Germany who was not a direct witness to the event. "The Final Theory" also seems to be an indirect witness. He makes too many incorrect statements related to the November 14, 2004 which tends to support that he was not a direct witness to the event. However, he provides enough basic information that he likely had obtained information from someone else who was a direct witness involved in the 2004 event.

12 Terry V., interview by Jeremy Corbell, *Jeremy Corbell Radio Show*, internet radio, June 13 2018.
13 *ATS: Above Top Secret*, "Fighter Jet UFO Footage: The Real Deal," http://www.abovetopsecret.com/forum/thread265835/pg1. Accessed 08/05/2018.

There is a lot of internet banter on the *Above Top Secret* site as to whether or not the video posted is or is not a valid copy. There are comments from an Australian pilot regarding the video that are worth reading. His name on the site is "Willard856". The video will be discussed in detail later in this report.

The main value in the 2007 anonymous postings is that it indicates someone apparently made a copy of a portion of the IR video that was held on the classified Navy server system known as SIPRNet. It was first hosted on a German website probably in hopes of lessening the likelihood of the person copying the video being identified. Making a copy of a classified video could cause a lot of problems for the perpetrator.

November 19, 2013 An anonymous witness in 2013 posted a reasonable summary of the events surrounding the "Tic-Tac" encounter on the Reddit forum. This individual worked on the flight deck of the USS *Nimitz*. His story is based on information that he obtained from other sailors during the time of the event. Although some of his statements are not correct as would be expected with second hand testimony, he obtained sufficient verifiable facts of the event to include his story and discussion in this appendix. This is another example of the widespread knowledge of this event on the *Nimitz* as well as the *Princeton*.

July 13, 2017 Anonymous witness indicates that he attended flight school with CDR Fravor's WSO. The comment is posted on the blog site article "There I Was: The X-Files Edition" of *Fighter Sweep*.[14]

May 30, 2018 An anonymous witness indicates he was on the *Nimitz* during this event. His comment is posted on the blog site article "There I Was: The X-Files Edition" of *Fighter Sweep*[32] and is include in this appendix. This anonymous witness on the *Nimitz* also indicates he viewed a copy of the video on the ship.

14 Paco Chierici, *Fighter Sweep*, "There I Was: The X-Files Edition" https://fightersweep.com/1460/x-files-edition/. March 14, 2015. Accessed 08/08/2018.

DD214 Form –Senior Chief Kevin Day

CAUTION: NOT TO BE USED FOR IDENTIFICATION PURPOSES

THIS IS AN IMPORTANT RECORD. SAFEGUARD IT.

ANY ALTERATIONS IN SHADED AREAS RENDER FORM VOID

CERTIFICATE OF RELEASE OR DISCHARGE FROM ACTIVE DUTY

1. NAME (Last, First, Middle): DAY, KEVIN MARK
2. DEPARTMENT, COMPONENT AND BRANCH: NAVY-USN

4a. GRADE, RATE OR RANK: OSCS
4b. PAY GRADE: E8
5. DATE OF BIRTH (YYYYMMDD):
6. RESERVE OBLIGATION TERMINATION DATE (YYYYMMDD): N/A

7a. PLACE OF ENTRY INTO ACTIVE DUTY: OAKLAND, CA
7b. HOME OF RECORD AT TIME OF ENTRY (City and state, or complete address if known): ALBANY, OR

8a. LAST DUTY ASSIGNMENT AND MAJOR COMMAND: COMNAVAIRFOR NAS NORTH ISLAND, CA
8b. STATION WHERE SEPARATED: PERSUPP DET NORTH ISLAND, CA

9. COMMAND TO WHICH TRANSFERRED: NAVPERSCOM (PERS-4912) 5720 INTEGRITY DRIVE, MILLINGTON, TN 38055-4912
10. SGLI COVERAGE: NONE; AMOUNT: $ 400,000.00

11. PRIMARY SPECIALTY (List number, title and years and months in specialty. List additional specialty numbers and titles involving periods of one or more years.)
0319 - SUPERVISORY AIR INTERCEPT CONTROLLER (09YRS, 08MOS); 0348 - MULTI-TACTICAL DIGITAL INFORMATION LINK OPERATOR (TADIL) (13YRS, 03MOS); 0311 - AEGIS OPERATIONS SPECIALIST (CG47-64) (20YRS, 10MOS); 9502 - INSTRUCTOR (14YRS, 06MOS).
X X X X
X X X X

12. RECORD OF SERVICE	YEAR(S)	MONTH(S)	DAY(S)
a. DATE ENTERED AD THIS PERIOD	86	JUL	25
b. SEPARATION DATE THIS PERIOD	08	JAN	31
c. NET ACTIVE SERVICE THIS PERIOD	21	06	06
d. TOTAL PRIOR ACTIVE SERVICE	00	00	00
e. TOTAL PRIOR INACTIVE SERVICE	00	00	00
f. FOREIGN SERVICE	00	00	00
g. SEA SERVICE	14	04	27
h. EFFECTIVE DATE OF PAY GRADE	05	SEP	16

13. DECORATIONS, MEDALS, BADGES, CITATIONS AND CAMPAIGN RIBBONS AWARDED OR AUTHORIZED (All periods of service)
MERITORIOUS SVC MDL; NAVY/MARINE CORPS COMMENDATION MDL; NAVY/MARINE CORPS ACHIEVEMENT MDL; COMBAT ACTION RBN; NAVY UNIT COMMENDATION; MERITORIOUS UNIT COMMENDATION; NAVY "E" RBN; GOOD CONDUCT MDL (6); NATIONAL DEFENSE (CONT)

14. MILITARY EDUCATION (Course title, number of weeks, and month and year completed)
OPERATIONS SPECIALIST, CLASS A1" SCHOOL, 17WKS, FEB87; INSTRUCTOR COURSE, 4WKS, JUL91; ASSAULT BOAT COXSWAIN, 3WKS, SEP91; LEADER DEVELOPMENT PROGRAM (NAVLEAD) FOR LEADING PETTY OFFICERS, 1WK, JAN92 & FEB92 & DEC95; AIR INTERCEPT CONTROLLER, (CONT)

15a. MEMBER CONTRIBUTED TO POST-VIETNAM ERA VETERANS' EDUCATIONAL ASSISTANCE PROGRAM: NO X
15b. HIGH SCHOOL GRADUATE OR EQUIVALENT: YES X

16. DAYS ACCRUED LEAVE PAID: 41.0

17. MEMBER WAS PROVIDED COMPLETE DENTAL EXAMINATION AND ALL APPROPRIATE DENTAL SERVICES AND TREATMENT WITHIN 90 DAYS PRIOR TO SEPARATION: YES X

18. REMARKS:
"BLK 13 CONT" SVC MDL (2); ARMED FORCES EXPEDITIONARY MDL; [illegible] GLOBAL WAR ON TERRORISM SVC MDL; SEA SVC DEPLOYMENT RBN; [illegible] "BLK 14 CONT" [illegible] [illegible]
X X X X

19a. MAILING ADDRESS AFTER SEPARATION (Include ZIP Code): [illegible] SUPERIOR AVENUE, [illegible]

19b. NEAREST RELATIVE (Name and address - include ZIP Code): DEBBIE MITCHELL [illegible]

20. MEMBER REQUESTS COPY 6 BE SENT TO: A/ [illegible] OFFICE OF VETERANS AFFAIRS: YES X

21. SIGNATURE OF MEMBER BEING SEPARATED

22. OFFICIAL AUTHORIZED TO SIGN (Typed name, grade, title and signature)

SPECIAL ADDITIONAL INFORMATION (For use by authorized agencies only)

23. TYPE OF SEPARATION: TRANSFERRED TO FLEET RESERVE

24. CHARACTER OF SERVICE (Include upgrades): HONORABLE

[redacted]

28. NARRATIVE REASON FOR SEPARATION: SUFFICIENT SERVICE FOR RETIREMENT

29. DATES OF TIME LOST DURING THIS PERIOD (YYYYMMDD): NONE

30. MEMBER REQUESTS COPY 4

DD FORM 214, FEB 2000 — PREVIOUS EDITION IS OBSOLETE. STATE DIRECTOR OF VETERANS AFFAIRS - 6

Fitness Report and Counseling Record –Senior Chief Kevin Day

FITNESS REPORT & CO[illegible] SELING RECORD (E7-O6)

1. Name (Last, First MI Suffix): DAY, KEVIN M	2. Grade/Rate: OSCS	3. Desig: SW
5. ACT [X] TAR [ ] INACT [ ] AT/ADSW/265 [ ]	6. UIC: 21447	7. Ship/Station: CG-59 PRINCETON
8. Promotion Status: REGULAR	9. Date Reported: 03JAN06	
Occasion for Report: 10. Periodic [ ]	11. Detachment of Individual [X]	12. Detachment of Reporting Senior [ ] 13. Special [ ]
Period of Report: 14. From: 04SEP16	15. To: 05JAN10	
16. Not Observed Report [ ]	Type of Report: 17. Regular [X] 18. Concurrent [ ] 19. Ops Cdr [ ]	20. Physical Readiness: P/MS
21. Billet Subcategory (if any): NA		
22. Reporting Senior (Last, FI MI): SMITH, J L	23. Grade: CAPT	24. Desig: 1110
25. Title: CO	26. UIC: 21447	27. SSN: 231-92-1638

28. Command employment and command achievements:
CSRA-1; CART II/FEP-1; MARS/SFARP-1; COMPTUEX-1; POM/Upkeep/Maintenance-1.

29. Primary/Collateral/Watchstanding duties. (Enter primary duty abbreviation in box.)
DEPT LCPO/AAWO Assigned to Operations Department as LCPO and Assistant Air Warfare Officer-4. LCPO of 98 Sailors in OPS Dept. Provides LINK and AD expertise in support of PRINCETON as BSG ADC. COLL: OPS Dept LCPO-4, AAWO-4, AICS-4, CSTT Tactical-4, Duty Section Leader-4. WATCH: (U/W) Force Air Defense COORD-4; (IPT) OOD-4.

For Mid-term Counseling Use. (When completing FITREP, enter 30 and 31 from counseling worksheet, sign 32.)	30. Date Counseled: NOT REQ	31. Counselor:	32. Signature of Individual Counseled:

PERFORMANCE TRAITS: 1.0 - Below standards/not progressing or UNSAT in any one standard; 2.0 - Does not yet meet all 3.0 standards; 3.0 - Meets all 3.0 standards; 4.0 - Exceeds most 3.0 standards; 5.0 - Meets overall criteria and most of the specific standards for 5.0. Standards are not all inclusive.

PERFORMANCE TRAITS	NOB	1.0* Below Standards	2.0 Progressing	3.0 Meets Standards	4.0 Above Standards	5.0 Greatly Exceeds Standards
33. PROFESSIONAL EXPERTISE: Professional knowledge, proficiency, and qualifications	[ ]	[ ]	[ ]	[ ]	[ ]	[X]
34. COMMAND OR ORGANIZATIONAL CLIMATE/EQUAL OPPORTUNITY: Contributing to growth and development, human worth, community.	[ ]	[ ]	[ ]	[ ]	[X]	[ ]
35. MILITARY BEARING/CHARACTER: Appearance, conduct, physical fitness, adherence to Navy Core Values.	[ ]	[ ]	[ ]	[ ]	[ ]	[X]
36. TEAMWORK: Contributions towards team building and team results.	[ ]	[ ]	[ ]	[ ]	[ ]	[X]
37. MISSION ACCOMPLISHMENT AND INITIATIVE: Taking initiative, planning/prioritizing, achieving mission	[ ]	[ ]	[ ]	[ ]	[ ]	[X]

FITNESS REPORT AND COUNSELING RECORD (E7-O6) (cont 'd)

1. Name (Last, First MI Suffix)	2. Grade/Rate	3. Desig
DAY, KEVIN M	OSCS	SW

PERFORMANCE TRAITS	1.0* Below Standards	2.0 Progressing	3.0 Meets Standards	4.0 Above Standards	5.0 Greatly Exceeds Standards
38. LEADERSHIP: Organizing, motivating and developing others to accomplish goals. NOB	[illegible]		[illegible]		[illegible] X
39. TACTICAL PERFORMANCE: (Warfare qualified officers only) Basic and tactical employment of weapons systems. NOB X	[illegible]		[illegible]		[illegible]

40. I recommend screening this individual for next career milestone(s) as follows: (maximum of two) Recommendations may be for competitive schools or duty assignments such as: LCPO, DEPT CPO, SEA, CMC, CWO, LDO, Dept Head, XO, OIC, CO, Major Command, War College, PG School.	SEA/CMC	LDO

41. COMMENTS ON PERFORMANCE: [illegible]

Fitness Report submitted upon Senior Chief Day's transfer to COMNAVAIRPAC. He is my #1 SCPO! A recognized expert in Air Defense, his impact within the NIMITZ Strike Group has been phenomenal. His charismatic leadership has had a positive effect upon many enlisted Sailors and Officers onboard PRINCETON.

- Highly effective leader. Was OPS Department Leading Chief Petty Officer throughout an extremely arduous complex training cycle culminating in a highly successful group sail and COMPTUEX. His mentorship and exceptional knowledge were keys to PRINCETON's success.

- Superb Air Defense Tactician. PRINCETON was lauded by COMSTRKFORTRAPAC as having "the best Air Defense observed out of the last six Strike Groups". OSCS Day's his role as senior enlisted tactician and Force AAWC was crucial in NIMITZ Strike Group's unparalleled success.

- Master Trainer. As CSTT Tactical Coordinator, he developed the combined CSTT packages for PRINCETON's CART II and FEP, resulting the highest scores obtainable. He was the driving force behind NIMITZ Strike Group AIC's attendance at CVW-11 HARP and SFARP. This advanced training COMPTUEX 05-3 was completed with zero blue-on-blue engagements and a nearly perfect record in carrier air defense.

OSCS(SW) Day is an impact player with unquestionable competence and impeccable character. Promote to Master Chief NOW! He is a must select for CMC!

Promotion Recommendation	NOB	Significant Problems	Progressing	Promotable	Must Promote	Early Promote
42. INDIVIDUAL						X
43. SUMMARY		0	0	0	0	1

44. Reporting Senior Address: COMMANDING OFFICER, USS PRINCETON (CG 59), FPO AP 96675-1179

45. Signature of Reporting Senior: James L. Smith Date: 6 JAN05

46. Signature of Individual Evaluated. "I have seen this report, been apprised of my performance, and understand my right to make a statement." I intend to submit a statement [ ] I do not intend to submit a statement [X]

OSCS Date: 06 JAN 2005

Member Trait Average: 4.83 Summary Group Average: 4.83

47. Typed name, grade, command, UIC, and signature of Regular Reporting Senior on Concurrent Report

Date:

NAVPERS 1610/2 (10-05)

Social Media Discussion by *Princeton* Sailors and other Witnesses in Chronological Order

July 9, 2012   Facebook, Public Group, USS *Princeton* (CG 59)

Chris Guilford
July 9, 2012 · National City, CA

Anyone remember the UFO's during com2ex before the 05 deployment?

7   23 Comments 1 Share

Like   Comment   Share

Jared James I remember 2
6y · Like

Jason Turner I was just talking about it to my girlfriend the other day. It sounds SO unbelievable when I te... 2
6y · Like

Brian Wilkerson I wasn't on board yet, but I definitely remember the stories.
6y · Like

Jason Turner We went into battle formation for it. It was crazy not knowing what the heck was going on. Also, The Nimitz launched a few jets that captured video that was "leaked" somehow. 1
6y · Like

Matt Martinez Damn...where was I? I don't remember any of that?!?!?
6y · Like

Daniel Rafferty II There was no UFO, just atmospheric ice falling from the sky 2
6y · Like

Jason Turner Hahahaha, tell that to the guys in SS... 2
6y · Like

Chris Guilford I remember the flir video, sorry Dan but atmospheric doesn't make a horizontal 90 degree turn at 800 knots.... If it was man made I hope it was ours... 3
6y · Like

Joe Wolschon Nothing to see here, it was only ice. Didn't as soon as we pulled back into port suits came onboard and took any data that recorded them, or was that just a rumor? I do remember watching them from combat and also seeing the vid from the f18 a few days later. The thing looked like it was oscillating till bam right turn and outta sight instantly. Google UFO sightings in San Clemente islands.
6y · Like

Jason Turner Exactly! The video went around the ship for a little bit then I never saw it again!

5y · Like

Gary Voorhis I still tell the story. I am pretty sure no one believes me thou 1

5y · Like

Gary Voorhis I wonder what happened to the CEC data from it?

5y · Like

Jason Turner I could imagine that being a great possibility

5y · Like

Karson Kammerzell I tell it as well; of course I was a CT, so we got that video almost immediately. We had some discussions over the whole deal and OPs forwarded the information that was getting passed around higher up on the carrier about it. Officially it was 'refracting falling ice', but the Nimitz Airboss called bullshit that 'falling ice' doesn't turn 90 degrees and bolt like that. 2

5y · Like

Jesse Tiffany I remember talking about it. Never saw the video. I believe I was just about to go on watch late that night when all this was happening.

5y · Like

Karson Kammerzell Yeah, you were either on watch then, or just coming on watch. I swear I remember you asking me what was going on, because the watch logs 'rewrite' themselves like the event never happened. 1

5y · Like

Jesse Tiffany Sounds about right lol

5y · Like

Joshua Newell I remember pulling the voice recordings from it in combat, that pilot was pretty scar 1

5y · Like

Karson Kammerzell Yeah, the on duty guy listening to the pilot mentioned to me that they were freaking out.

November 9, 2013 Anonymous Witness Statement on Reddit

Witness Statement made in Reddit in 2013 before the public release of this information.
https://www.reddit.com/r/UFOs/comments/1qyu5i/my_ufo_encounterexposure_while_on_board_an/#bottom-comments

My UFO Encounter/Exposure While on Board an Aircraft Carrier in the Military (No Pics, Only Story) (self.UFOs)

submitted 4 years ago by anon402

I decided to create an account to tell this story of an experience I had while on board an aircraft carrier far from the coast of California in the Pacific.

*FIRST OFF, I am relaying information and supporting circumstances, I did not see a UFO personally. However, it is an interesting story.

I am intentionally going to be vague about certain specifics just to protect my identity, although this information was never told to be kept secret and was wide spread.

During a one or two month "work-up" on an aircraft in the Pacific Ocean, we encountered a UFO. For those that are unfamiliar, "work-ups" are training exercises in preparation for deployment. So, the ship will deploy for anywhere from 2-8 weeks and let the pilots get aircraft carrier experience.

So, we are on a routine "work-up" in the Pacific Ocean. However, this work-up involved multiple carriers and battleships in a rather large exercise. I have zero recollection of the time in the work up that the encounter occurred, but I believe it was a few weeks in.

I was attached to an F18 squadron and worked in a technical capacity, as opposed to working on the flight deck. For 3 days in a row, an Operations Officer noticed an aircraft breaching our restricted airspace. The aircraft was traveling at a low speed at around 20,000 feet. The first 2 days the aircraft was observed, it disappeared from radar after a few minutes before being able to investigate. In preparation for this aircraft, the carriers had f18s ready to scramble.

On the 3rd sighting, a formation of around 10 (very rough guess, but it was a large group) F18c&d's scrambled to the location to investigate including my Commanding Officer.

This is where the story becomes hard to believe and almost silly to tell.

According to the pilots and confirmed by a friend in intel, when they encountered the aircraft it had disappeared from sight. However, there was a large disruption in the ocean below and it was assumed that the aircraft crashed. So, the strike group circled the area and inspected the scene. OK, crazy part now, an object that was described by multiple pilots and a friend in intel as resembled a very large "tic-tac".

Sounds like the ultimate troll job, I know. So, the "tic-tac" oval object lifted from the water. Out of fear or impulse (I have no idea) our pilots decided to engage the object. After lifting from the water and sitting briefly, the object flew at a speed that none of the pilots had ever encountered. It was just gone.

The incident was not cloaked in secrecy. The entire carrier was buzzing with rumors. I was not able to see the COM/NAV actual flight recording, so I was very skeptical. Things get dull in the middle of the ocean and it is not uncommon for troll jobs. So I wasn't exactly sold.

That night in the berthing I asked a very close friend in intel if he could confirm the legitimacy of the film. Without speaking, he gestured that it was correct. So, my skepticism began to fade and that next day a group of individuals were "cod'ed" onto the carrier and they retrieved all the tapes. I can confirm they cod'ed onto the ship, but the seizure of tapes came from people that work in those shops.

Years later I had practically forgotten this experience and I was watching tv at a friend's house. The show was about UFO's and some Russian pilots were describing an experience they had and they actually released the flight footage. The object that captured on film was shaped just like a "tic-tac" and moved faster than anything in existence. If someone can find a video or pic of that doc, much love! It was on History Channel years ago.

Anyways, I hope you guys enjoyed the read. I will try to answer any questions if anyone has any! I don't want to go into details about dates, ship name, my job, etc.... although I don't think it matters, we weren't told to be quiet and it was pretty wide-spread (minus certain details I acquired through discussions)

[–]anon402[S] 1 point 4 years ago

Thank you freddy. I can honestly say that I am not trolling. I can't provide definitive evidence that proves my story and validates all of my allegations. However, the totality of the events that occurred validated the occurrence.

My only fear is that my command and the entire ship was involved in some sort of prank and that is a realistic possibility. However, given the circumstances that I investigated and the information I obtained from credibly sources validate most of the alleged events that occurred.

I could totally have been trolled. However, I am not the one trolling.

Just to give more specific info, i was aboard the USS Nimitz during the encounter. My job was to strip the black boxes from every plane. The black box tracks all of the flight data which tracks the life limits of aircraft parts. I was in charge of stripping black boxes. Although, I did not see the actual film, i replayed the flight in a 3d computer generated re-enactment. All of the evidence I could gather from my technical position verified the story.

Regarding earlier comments about the russian cockpit view. Our jets have FLIR's and are able to directionally position their FLIR's to capture all of the incident versus the russian pilots from years ago.

The Com/Nav video typically comes from FLIR's and not an actual "cockpit" view to my understanding.

[–]anon402[S] 6 points 4 years ago

No problem! When I say "engage," my understanding is that the planes that were equipped with ordnance went "hot" and all the planes assumed a tactical formation. However, I know for a fact no ordnance was fired from any jet.

Com/Nav is in charge of the inflight real time footage and they did have the real-time video of the event. The confirmation that I mention I received from my friend, was confirmation that the video exists and that it showed the events as we had been described.

Cod'ed is a term that refers to a small size passenger plane that the military uses to bring personnel on and off of aircraft carriers. The term that is commonly used is ...."People were cod'ed onto the ship today..."

The individuals that took our data were American and not in military uniform. They were also very well dressed. My shop personally had pertinent data that was collected. They did not personally collect it from me, but it was given to my supervisor and after he brought the required data, he was pretty vocal upon his return about how unusual this is/was.

The general consensus aboard the ship is that the individuals were from the government in some capacity and were there to obviously remove any evidence. Imagine if a Pfc. Bradley leaked that video hahaha? My personal belief is that it was a military project. I believe they were attempted to test its stealth/evasive capabilities by testing the strike group. We had 3 aircraft carriers in an unusually large exercise which would have provided a pretty good testing ground for such technology. That is just my opinion!

Thank you guys for the interest and taking the time to read! I'll keep trying to answer whatever I can!

July 13, 2017 Blog site, https://fightersweep.com/1460/x-files-edition/

woodsidetj - a month ago

I went to flight school in Pensacola with CDR Fravor's WSO on this flight. (I won't say his name on here.) Heard this story through the Hawkeye grapevine not long after it happened. We were down the hall from VAW-117. I would have thought it was BS if I didn't know the WSO that told the story. Most level headed guy you'll ever know. Smart as hell. He described it as a giant, flying Tylenol that could stop on a dime from super sonic speeds.

Thanks for sharing this, Paco. Can't believe I just now found your site!

--Boomhower

November 1, 2017 Email sent to SCU

Name Joe Wolschon

Email [redacted]

Subject 2004 Nimitz UFO Sighting

I was on board the USS Princeton during this event. I can remember it very well and can confirm that the video was released the day after the event on our secret email server from the Nimitz to the other ships in our battle group. I was a Sonar Technician and was on watch when this happened, I remember someone from combat told us to come over and check out these crazy contacts we were picking up on radars. We confirmed the targets with other ships in the battle group and the Nimitz then sent out jets to investigate. There were multiple targets that were drastically changing from sea level altitudes to 20k+ ft. I was excited to share the video with family members because I have been talking about this day for many years.

Sent on: 1 November, 2017

January 2, 2018 Facebook, Public Group, USS *Princeton* (CG 59)

Ben Bloeflat shared a link.
January 2

The Princeton is mentioned in this article. Thought that was interesting.

FOXNEWS.COM

Fighter pilot chases UFO, urges world leaders to take the threat of aliens seriously

Luke A. Fink You boys ever hear of UUWOs.... Hyper Velocity Underwater Objects... Been on record for years in the Navy....
Like · Reply · 28w

Ryan Gowin Was on watch in Sonar Control when this happ... 3
Like · Reply · 28w

Rich Hoffman Did you detect anything or just hear about it?
Like · Reply · 21w

Ryan Gowin We checked the displays for contacts and didn't see anything. I was in combat when it all went d... 2
Like · Reply · 21w

Write a reply...

John Schwanke Saw it on the scope. 2
Like · Reply · 21w

Karson Kammerzell Yeah, I remember that ni...

Like · Reply · 28w

Troy Lowe My son told me about this a week or so ago, thought he was talking out the side of his neck. Crazy stuff. I'm ready to go on another cruise on my favorite ship.

Like · Reply · 28w

Jared James Was onboard during this

Like · Reply · 28w

> **Michael Mitchell** I remember, nearly 14 years A...
>
> Like · Reply · 21w
>
> Write a reply...

Jason Turner I've been telling people about this for the last decade... Now, maybe they will finally start believing me!!! LOL

Like · Reply · 28w

Joe Juette Yep i was on watch when this happened. Ive been keeping it under w...

Like · Reply · 28w

> **Brian Langley** Csc
>
> Like · Reply · 28w
>
> **Joe Juette** Yes yes you were hey Brian!
>
> Like · Reply · 28w
>
> **Brian Langley** Joe Juette hey man long time
>
> Like · Reply · 28w
>
> **Corey Roth** Brian Langley what year was this?
>
> Like · Reply · 28w

January 21, 2018 Facebook, Public Group, USS *Princeton* (CG 59)

Kevin Day
January 21

Any former PRINCETON sailors onboard during the November 14, 2004 TIC TAC UFO incident off the San Diego coast, please contact me. Understand completely if you want to keep your anonymity. kevinmday@yahoo.com

Gary Voorhis, Jason Turner and 15 others — 64 Comments · 26 Shares

Like Comment Share

Patti Johnson Bechtold Oh I want to hear about this!

Like · Reply · 25w

Troy Lowe I read about it a few weeks ago. Please sh...

Like · Reply · 25w

Lyndon Veloso Alright Kevin Day, blurt it out. I want to kn...

Like · Reply · 25w

Beauford Shmuckatelly

5

Like · Reply · 25w

De Vante R Gunn I'm curious about this topic

Like · Reply · 25w

Travis Emery Was there. Why? Whatcha doin? 1

Like · Reply · 25w

Kevin Day What the hell, in the water with this now so I guess I'll swim. It happened, I was the AICS in Combat that morning. The Air side made those intercepts. So did teams onboard HIGGINS, CHAFEE, NIMITZ, and VAW117. I will post the whole story soon. However, please understand when I leave the names of those involved out of the story. 13 years ago now, yet incredibly important history, as things are turning out..

6

Like · Reply · 25w

Lyndon Veloso Maybe you can share it on "Ancient Aliens" with the History Ch... 2

Like · Reply · 25w

Jason Turner Was crazy when it happened that they wasn't it?! We went to GQ for a couple of hours when it happe... 2

Like · Reply · 25w

Craig White I don't recall GQ for this event ever, just doing circles seeing Coronado bridge on nvg's from a distance.

Like · Reply · 25w

Write a reply...

Stephen Sinur Tons of stories and videos have been written about it. Its not like your hiding top secret informa... 1

Like · Reply · 25w · Edited

Kevin Day VFA41, VMFA232..

Like · Reply · 25w

Kevin Day Very, very true. Damn glad about that... 1

Like · Reply · 25w

Jason Turner There are a lot of us on here who were there and who have been talking about it way before these articles finally came out. It's definitely quite the experience!

3

Like · Reply · 25w

Gary Voorhis I was there to. Aegis computer/C... 4

Like · Reply · 25w

Chris Brewer I was there. Remember it. 5

Like · Reply · 25w

Lyndon Veloso So, how about the snipes? Did they see anything too?
Like · Reply · 25w

Chris Miller I didn't see anything from CCS.
Like · Reply · 23w

Write a reply...

Brian Langley Ca 2
Like · Reply · 25w

Charles Kimbril Who was the IS then?
Like · Reply · 25w

Charles Kimbril Oh wow, I remember that name.
Like · Reply · 25w

Scott Robbins Charles Kimbril I was mistaken, I was ten years off. Him and I served onboard 94- 2
Like · Reply · 25w

Write a reply...

Jason Turner Cain (I think that's how he spelled his last name. It may be Kane... He passed a couple years ago.)
Like · Reply · 25w

Brian Langley Cain 1
Like · Reply · 25w

Charles Kimbril Oh really, sorry to hear that. I was IS1 1999-20 1
Like · Reply · 25w

Pat Cabrera ISC Cain passed away during our Chief's Initiation in 2006. Really g 5
Like · Reply · 25w

Write a reply...

Gary Voorhis It went on for over a week. The spy guys thought it might have been clutter at first and ran every diag they 2
Like · Reply · 25w · Edited

Kevin Day Tracks held by PRINCETON, CHAFEE, HIGGINS, NIMITZ, and VAW117. CEC and WAR DIARY.
Like · Reply · 25w

Write a reply...

Bob Teague All I can say is I'm not surprised it happened to the Princ...
Like · Reply · 25w

Mark Ashburn Personally I'm glad you're leaving names out. I remember when the MSS's name from the Vincennes Air Bus incident got published and I watched as a very good man broke down. Some things are just best left alone! On another note I'd love a link to your story!!!
Like · Reply · 25w

Joe Sun Same here, also were there when the CIWS took out the target just to watch it hit our port side Helo hanger bulkh...
Like · Reply · 25w

Jason Turner Yeah, I was picking up pieces of that thing in my storage space up at the top of the hanger. It went through two huge rolls of rope that were stored in there.
Like · Reply · 25w

Rick Shirer Man, HT1 Brock, Henley and myself were up there for hours patching the hole. I remember sticking my head out of the hole and look up and seeing one of the SPY antennas like 2-3 feet above me
Like · Reply · 25w

Karson Kammerzell Wasn't Snow taking an unauthorized nap in that area when it punched through the H...
Like · Reply · 25w

Matt Martinez I was playing poker with the ET's in the cal lab which was right above the hangar and he sound scared the crap out of us.
Like · Reply · 25w

Write a reply...

Troy Lowe Me too please
Like · Reply · 25w

Jack Gillies I was in the cal lab when that thing hit the ship. IC2 Bailey was on the flight deck filming and had to run for co...
Like · Reply · 25w

Bryan Bailey I remember that shit. Was standing in the hanger when the chain of command ra...
Like · Reply · 25w

Brian Tolle My beloved flight deck & hanger sound like they just fell apart without me.
Like · Reply · 25w

Mat Camara So wait. This thing got taken out by CIWS and hit the superstructure?
Like · Reply · 25w

Bryan Bailey The UFO thing was different, this was a drone that was being pulled to see if ciws and 5 inch could hit a low slow flier... It did lol
Like · Reply · 25w

Write a reply...

Jordan Udelhofen I'm curious, never heard of this before...
Like · Reply · 25w

Duane VanDyken I remember being shown the video in 2005.

https://en.m.wikipedia.org/wiki/USS_Nimitz_UFO_incident

Joe Juette I was in the comms shack on watch 2
Like · Reply · 25w

Kevin Day Would especially like to talk with crew that observe the objects through the bigeyes 3
Like · Reply · 25w

Chris Guilford I was standing guns/sws when it happened 2
Like · Reply · 25w

Artie Wall Yes I was onboard 1
Like · Reply · 25w

Brian Castro I was there 1
Like · Reply · 25w

Ron Robinson Bah 1
Like · Reply · 25w

Craig White Relieved the watch after the freak out, believe it was 2 to 7 a.m.
Like · Reply · 25w

Jake Bloss I was the EW on watch when it happened
Like · Reply · 25w

Kevin Day Agreed. No GQ during the TIC TAC incident. Also, the CIWS engagement was a totally separate event.
Like · Reply · 25w

May 30, 2018 Blog site, https://fightersweep.com/1460/x-files-edition/

The Best · 2 months ago

I was onboard the Nimitz when this took place. We called them "Zoomers". Flying up to 60k feet, back down to 100 in seconds. SH-60b's reporting them hovering over the waves kicking up steam. I saw the video of it that night. It moved in a manner that was impossible by anything we knew existed. The next day, the video had been erased and our ship had moved to a location further away to avoid any more contact.

I was under the impression an air force stratcom colonel was flown out to our ship to escort the involved pilot off ship for a debriefing. I'd like to know if that actually took place.

It could be our tech, or something else's. Confirmation one way or another would be very appreciated. I'm guessing by the pilot's response of "i want to fly one", he was briefed about it being ours. But personally I'm hoping he was told our government had no idea what it actually was.