

Inside the U.S. Government Covert UFO Program: Initial Revelations



James T. Lacatski, D.Eng.,
Colm A. Kelleher, Ph.D., and
George Knapp

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**RTMA, LLC
Henderson, Nevada**

*Inside the U.S. Government's Covert UFO Program:
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ISBN: 979-8-9891146-1-0 (paperback)

ISBN: 979-8-9891146-0-3 (ebook)

Cover image: Jaime B. Kelleher

Interior design: Mary Neighbour

For information, contact: RTMA LLC, PO Box 50790, Henderson, NV
89016

Department of Defense

Defense Office of Prepublication and Security Review

Case 22-SB-0151

CLEARED for Public Release

April 24, 2023

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*To Robert Bigelow and to Senator Harry Reid, without whom none
of this would have happened*

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Key to Abbreviations

AATIP Advanced Aerospace Threat Identification Program
AARO All-domain Anomaly Resolution Office
AAV Advanced Aerospace Vehicle or Anomalous Aerial Vehicle
AAWSAP Advanced Aerospace Weapon System Applications Program
AC Alternating Current
ACO Air Control Officer
ADC Air Defense Control
AEW Airborne Early Warning
AFB Air Force Base
AFRL Air Force Research Laboratory
AFSS Air Force Security Service
AI Artificial Intelligence
AIAA American Institute of Aeronautics and Astronautics
AOIMSG Airborne Object Identification and Management Synchronization Group
ATFLIR Advanced Targeting Forward Looking Infra-Red
BAASS Bigelow Aerospace Advanced Space Studies
BOAC British Overseas Airways Corporation
BRAA Bearing Range Altitude Aspect
CAP Combat Air Patrol
CIA Central Intelligence Agency
CMS Case Management System
CNES National Center for Space Studies (France)
CO Commanding Officer
COR Contracting Officer Representative
COTS Commercial-Off-The-Shelf
CPLO Community Planning and Liaison Office
CRC Control Reporting Center
CSG Carrier Strike Group
CVIC Carrier Intelligence Center
DEC Direct Energy Converter
DEW Directed Energy Weapon

DIA Defense Intelligence Agency
DIRD Defense Intelligence Reference Document
DNI Director of National Intelligence
DO Dispatch Operator
DoD Department of Defense
DOPSR Defense Office of Prepublication and Security Review
DPF Dense Plasma Focus
DT Deuterium-Tritium
DWO Defense Warning Office
ECM Electronic Countermeasures
ECCM Electronic Counter-Countermeasures
EMI Electromagnetic Interference
EV Electrum Validum
FAA Federal Aviation Administration
FAB Brazilian Air Force
FLIR Forward Looking Infra-Red
FOIA Freedom of Information Act
FTL Faster-Than-Light
GEO Geostationary Equatorial Orbit
GPS Global Positioning System
HOC House Oversight Committee
HUD Head-up Display
IBM International Business Machines
ICBM Intercontinental Ballistic Missile
IEC Inertial Electrostatic Confinement
IR Infra-Red
LENR Low Energy Nuclear Reactions
LEO Low Earth Orbit
LIDAR Light Detection and Ranging
MCAS Marine Corps Air Station
METOC Meteorological Officer
MHD Magnetohydrodynamics
MISREP Mission Report
MSL Mean Sea Level
MTRA Military Temporary Reserved Airspace
MUFON Mutual UFO Network

MW Megawatt
NASA National Aeronautics and Space Administration
NDAA National Defense Authorization Act
NERVA Nuclear Engine for Rocket Vehicle Application
NGA National Geospatial-Intelligence Agency
NIDS National Institute for Discovery Science
NHI Non-human Intelligence
NORAD North American Aerospace Defense Command
NPB Neutral Particle Beam
NRO National Reconnaissance Office
NYT New York Times
ODNI Office of the Director of National Intelligence
OUSD(I&S) Office of the Under Secretary of Defense for Intelligence and Security
PDE Pulse Detonation Engine
PMR Project Management Report
PRF Pulse Repetition Frequency
PV Polarizable Vacuum
QCD Quantum Chromodynamics
QED Quantum Electrodynamics
QFT Quantum Field Theory
RAF Royal Air Force
RF Radio Frequency
SAC Strategic Air Command
SASC Senate Armed Services Committee
SATP *Skinwalkers at the Pentagon*
SIP STAR Team Impact Project
STAR Strike Team Area Research
STT Single Track Target
SVP Source Visit Probability
TTSA To The Stars Academy
TSTA Tailored Ships Training Availability
TWDEC Traveling Wave Direct Energy Converter
UAL United Airlines
UAP Unidentified Aerial Phenomenon
UAPTF Unidentified Aerial Phenomena Task Force

UCT Uncorrelated Target
UER Unknown Event Report
UFO Unidentified Flying Object
UHF Ultra High frequency
UK United Kingdom
USAF United States Air Force
USG United States Government
UV Ultraviolet
VHF Very High Frequency
WSA Weapon Storage Area
WSO Weapon System Operator
ZPE Zero-Point Energy
ZPF Zero-Point Field

Preface

By the summer of 2023, the UFO mystery had surprisingly emerged as a front-burner issue in Washington. This development was not only unexpected but astonishing. Since before the end of World War II, the UFO topic has generated mostly scorn and ridicule from government, mainstream science, and major news media. UFO believers became the butt of jokes, ridiculed as ignorant rubes, tinfoil-hatted conspiracy nuts, or the gullible targets of slick hucksters out to sell books. Fear of ridicule, combined with the inaccurate perception that UFO tales were nonsense, combined to deter serious inquiries by Congress, major newspapers, and academicians.

By July 2023, everything had changed. Key congressional committees first began hearing closed-door statements from military pilots and other witnesses starting in early January 2018. At first, the testimony was heard mostly by senior staff members of the Senate Intelligence and Armed Services Committees. Over time, elected members of Congress began to sit in on the sessions. The late Senator Harry Reid told the authors that he was inundated with inquiries from former colleagues on Capitol Hill in the wake of the December 2017 *New York Times* article that reported the existence of a secret Pentagon-funded UFO program, which it identified (incorrectly) as the Advanced Aerospace Threat Identification Program (AATIP). The article asserted that AATIP had been the recipient (it wasn't) of \$22 million dollars in black budget funding secured with Reid's support. Although the story got a few key details wrong, such as the program name, its impact was undeniable.

After this front-page story in *The New York Times*, still considered as “the paper of record” in American journalism, other mainstream media organizations were emboldened to explore the subject of UFOs themselves. News organizations including the *Washington Post* and *60 Minutes* pursued and interviewed military witnesses and intelligence officials, explored close encounter cases, and developed their own sources and leads about previously-unknown government UFO studies, programs, and incidents. Increased media attention, in effect, gave cover to elected officials to admit their own interest in the subject. Harry Reid's courageous decision to

acknowledge his quiet pursuit of the once-taboo subject sent ripples through Washington. Reid's detailed defense of why the topic deserved to be investigated further struck a chord with key members of Congress.

At the end of 2022, the deeply divided, highly partisan members of the House and Senate managed to agree on an unprecedented piece of legislation that offered a degree of legal protection to potential UFO whistleblowers. Over the preceding four years, members and staff had heard incredible stories about crashed spaceships, reverse engineering efforts, and unacknowledged special access programs. Seemingly outrageous tales about flying saucer crashes, recovered alien bodies, and a massive coverup by the intelligence community and defense contractors have been a staple of UFO books and lectures for decades, to the point where Roswell, Wright Patterson Air Base, and Area 51 have fused together in the folklore of Ufology. For the most part, the stories were largely ignored as unsubstantiated rumors peddled by unreliable witnesses. Few members of Congress had been willing to put their credibility at risk by taking a closer look. That is no longer the case.

PUBLIC LAW 117–263, approved by Congress in December 2022, includes certain legal protections for current or former government employees or contractors who held security clearances who may have information about “any activity or program by a department or agency of the Federal Government or a contractor of such a department or agency relating to unidentified anomalous phenomena, including with respect to material retrieval, material analysis, reverse engineering, research and development, detection and tracking, developmental or operational testing, and security protections and enforcement.” In a nutshell, Congress wanted to encourage witnesses to come forward and tell what they know about secret programs that have used public money to hide what would amount to the biggest secret in human history.

Did the legislation achieve its intended goal? Congressman Mike Gallagher (R-Wisconsin), one of the most outspoken members of Congress regarding UFO secrecy, told reporters that “all sorts of (UFO whistleblowers) are coming out of the woodwork,” adding that the witnesses had identified multiple different UFO programs. (*The Hill*, July 7, 2023) Before entering Congress, Gallagher earned a PhD from Georgetown University. The first hint of his interest in the UFO issue became evident in

2022 when, in a public hearing, he peppered two Pentagon officials with pointed questions about previous well-publicized UFO matters. Gallagher expressed surprise when the military men claimed to have no knowledge of dramatic intrusions by UFOs at an American nuclear missile facility. He also asked about a now well-known transcript of an alleged meeting that took place in Las Vegas, the so-called Wilson Davis memo, in which a high ranking intelligence official acknowledged the existence of UFO crash retrieval efforts involving special access programs and unspecified defense contractors. Again, Gallagher's pointed question was met with blank stares on the faces of the bewildered witnesses.

Similar statements were made by members of the Senate. Sen. Marco Rubio (R-Florida), the ranking Republican on the Senate Intelligence Committee, acknowledged his interest in UFOs in multiple public statements. Rubio says he believes the issue deserves serious study because of its implications for national security and aviation safety. In the summer of 2023, he confirmed that Senate committees had heard hours of sworn testimony from multiple whistleblowers who spoke about multiple legacy UFO programs. "Most of these people," Rubio said "have held very high clearances and high positions within our government. So, you ask yourself: 'What incentive would so many people with that kind of qualification—these are serious people—have to come forward and make something up?'" (*The Hill*, August 4, 2023)

One of the witnesses who provided hours of sworn testimony in closed hearings is David Grusch, an Air Force veteran who spent more than a decade working as an intelligence officer assigned to the National Geospatial-Intelligence Agency (NGA). His boss at NGA appointed Grusch as the liaison to the newly created UAP Task Force, headed by the highly-regarded former DIA and US Navy intelligence official Jay Stratton. Stratton reportedly gave Grusch the assignment of looking for possible UFO legacy programs within the vast but hidden universe of special access programs. Grusch told Congress that he found definitive evidence of an illegal, decades-long effort to retrieve and back-engineer crashed UFOs. "I know the exact locations [of retrieved UFOs], and those locations were provided to the inspector general and...to the [congressional] intelligence committees," Grusch announced in a public statement. "I actually had the people with the first-hand knowledge provide a protected disclosure to the

inspector general.”

Grusch, who alleges that he was targeted for reprisals because of the blockbuster allegations, had taken his evidence to the office of the Inspector General for the intelligence community. That office, which oversees the operation of the most sensitive programs in the entire government, came to an astonishing conclusion. It said it found Grusch’s allegations to be “credible and urgent.”

In June 2023, after Grusch’s name was leaked to the media, he went public with his claims in interviews published by *The Debrief*, a digital publication, and on *NewsNation*, a national TV newscast. The explosive allegations were subsequently reported worldwide (although a few high profile newspapers in the U.S. did their best to ignore the story altogether). Members of Congress who had previously heard Grusch’s claims behind closed doors stepped forward in support of the UFO whistleblowers in general and Grusch in particular. “Either what [the whistleblower] is saying is partially true or entirely true,” Sen. Marco Rubio commented, “or we have some really smart, educated people with high clearances and very important positions in our government who are crazy and are leading us on a goose chase.” (*The Hill*, July 7, 2023)

The information provided to lawmakers painted a grim picture of excessive secrecy and an ongoing disinformation effort emanating from the Department of Defense, along with the possible unauthorized diversion of untold millions of taxpayer dollars, which might be the central reason why Congress became so interested in the UFO/UAP mystery. “If the allegations about legacy UFO operations hiding inside special access programs prove to be true,” Marco Rubio warned, then “there’s a group of people who believe that they possess something that they don’t need to share with anybody, including elected officials, whom they view as temporary employees of the government...an internal military complex that’s their own government and is accountable to no one.”

One of the most surprising developments in Washington during that unexpected summer of UFOs was when Senate Majority Leader Charles Schumer plunged into the deep end of the UAP pool. Schumer had not commented previously about UFO matters, or if he had, it received minimal media coverage. But the veteran New York Senator was a longtime disciple of his political mentor and predecessor, the late Harry Reid. And in mid-

July, Schumer uncorked a whopper of an amendment to the massive National Defense Authorization Act, in essence, the defense budget.

“The American public has a right to learn about technologies of unknown origins, non-human intelligence, and unexplainable phenomena,” Schumer’s announcement declared. “We are not only working to declassify what the government has previously learned about these phenomena but to create a pipeline for future research to be made public. I am honored to carry on the legacy of my mentor and dear friend, Harry Reid and fight for the transparency that the public has long demanded surrounding these unexplained phenomena.”

Schumer’s amendment, supported by multiple co-sponsors from both parties, referred to “non human intelligence” nearly two dozen times. It called for the declassification of all UFO related documents from throughout the federal government. Every department and agency of the federal government, including the Pentagon and CIA, would be required to gather all UFO-related material and submit it to a central clearinghouse. The records would be automatically declassified unless a specially appointed panel could justify withholding the material. This stunning development caught Washington by surprise, especially when it was learned days later that it was launched with prior approval from the White House. What in the world was happening in Washington, D.C.? The shift in attitudes toward the long-ridiculed UFO subject was not merely seismic but tectonic.

Adding a distinct punctuation mark to a remarkable summer of political change, a National Security subcommittee in the House of Representatives organized a special public hearing about UAP/UFO matters. Rep. Tim Burchett, a fiery conservative from Tennessee, was the driving force behind the hearing. Burchett reported that he had to overcome opposition within his own party and attempts by the intelligence community to scuttle the hearing altogether. But in late July, it happened. Staffers say the hearing generated requests for media credentials more than anything else since this congress had convened. On the day of the event (July 26, 2023), several hundred people lined up in hopes of getting inside the hearing room. Many of them showed up in the pre-dawn hours to wait. Some came from as far away as Alaska and Europe.

Three witnesses delivered prepared statements, then took questions from

the subcommittee. At least three of the congressmen who sat for the hearing had to seek permission to temporarily join the subcommittee. Political observers noted that the UFO subject had morphed into what might be the only truly bipartisan issue on Capitol Hill. Among those who appeared to be on the same page during the event were liberal icons Jamie Raskin and Alexandria Ocasio-Cortez along with ultra conservatives Matt Gaetz, Tim Burchett, and Anna Paulina Luna.

Unlike the two recent congressional hearings, this one did not include testimony from high-ranking pentagon officials. The committee wanted to hear from witnesses who had personal knowledge of the issues involved. Much of the attention was focused on Dave Grusch, considered the star witness, and Grusch did not disappoint. He repeated much of what he had revealed in media interviews, but stopped short of going into detail about things he shared in eleven hours of classified briefings with congressional staff. Grusch's attorney, former Inspector General Charles McCullough, sat directly behind Grusch during the hearing and whispered advice about what the witness could or could not say in an open hearing.

Two other witnesses delivered powerful statements and then answered a battery of questions from the committee. David Fravor, formerly the commander of the U.S. Navy's Black Aces squadron, perhaps the best military aviators in the world, told the committee about his now-infamous encounter with the so-called Tic Tac UFO off the coast of San Diego in 2004. Fravor's quiet confidence and mastery of the details impressed the committee and the audience. Fravor's personal credibility made him the central witness in what might be considered the most important UFO case of all time. Without Fravor, and without the video images recorded by a subsequent Black Aces flight, the famed *New York Times* expose would not have landed with such considerable force.

The third witness, former Navy aviator Ryan Graves, told Congress why he helped create an independent organization to accept testimony from pilots, both military and commercial. Graves had his own UAP encounter while flying off the East Coast and informed Congress that, during the years 2014 and 2015, military aviators encountered unknown objects and craft every day. Few of those airmen were willing to officially report the UFOs because of fears such an action might damage their careers and reputations. Graves says that stigma continues even now. His organization represents an

alternative for pilots and others to report UAP encounters without necessarily attaching their names to such reports, thus sidestepping the stigma and potential repercussions that are perceived to exist within government, even though there are now statutory protections for whistleblowers.

The summer of 2023 also saw surprising developments separate from DOD-related disclosures and testimony. NASA, which for decades has rigorously avoided UFO studies and the possibility of ET visitations, appointed an independent commission to investigate UAP matters. Former astronaut and US Senator Bill Nelson, who had attended closed-door briefings about UFO matters while in the Senate, became the most outspoken proponent of UAP transparency in the history of the space program. At his direction, NASA created a panel of academics and space experts to dip its toe into UFO waters to determine if a formal NASA program should be pursued. This represents a dramatic about-face for NASA, which has been overtly opposed to any kind of formal acknowledgement that UFO cases might represent technology controlled by an unknown non-human intelligence. The NASA advisory panel was expected to present its initial findings by the fall of 2023. (Back in the 1970s, newly elected president Jimmy Carter, himself a UFO eyewitness, tasked NASA with looking into the UFO question. NASA politely but firmly told the president to stuff it. Thanks but no thanks, Carter was told.)

Just as surprising is the about-face unfolding within academia and mainstream science. The bulk of the American scientific community likely still believes the UFO mystery is nonsensical tabloid fodder, not worthy of serious study. But the possibility that UFOs MIGHT represent technology made by a nonhuman—possibly extraterrestrial intelligence—has made major inroads in scientific circles in the past few years. Harvard astronomer Dr. Avi Loeb emerged as a serious proponent of multi-pronged investigations by mainstream science. Loeb's advocacy attracted support from other curious academics, including Dr. Garry Nolan of Stanford University and Tim Gallaudet, oceanographer and former Navy admiral who served as director of the National Oceanic and Atmospheric Administration (NOAA). Nolan and Gallaudet are among the two dozen or so professionals who joined Loeb's newly formed organization dubbed Project Galileo. In July 2023, the Galileo scholars met for their second

annual meeting and reviewed the findings from Loeb's field studies, along with other projects initiated by other factions within the project. For major scientific figures to be so outspoken in their defense of studies that would have been laughed out of the room a decade earlier is representative of a major shift in the attitudes of mainstream American science.

How and why did so many things change in such a short period of time? There are many factors involved, and many spokespersons are anxious to take credit for turning things around. But without question, the origin point for this astounding turnaround was the Defense Intelligence Agency's Advanced Aerospace Weapon System Applications Program (AAWSAP). Without AAWSAP, there would have been no AATIP, no Tic Tac investigation, no front-page expose' in *The New York Times*, and no closed-door testimony in front of Congress. AAWSAP is ground zero for the current public upheaval regarding UFO, UAP, non-human intelligence, and what these strange subjects might mean for humanity. AAWSAP was the larger mother program to AATIP. AATIP was a much smaller, more focused effort, a network of intelligence colleagues who evaluated UFO encounters involving military personnel. Just as AAWSAP preceded the creation of AATIP, AATIP eventually begat the UAP Task Force, which then morphed into the short-lived AOIMSG, then into the All-domain Anomaly Resolution Office (AARO), which is the acronym of the current UFO program.

Even though AAWSAP is the wellspring from which all the other UFO programs emerged, the secretive undertaking might have never seen the light of day without other subsequent events. The unlikeliest protagonist of all, rock star Tom DeLonge, co-founder of the band Blink 182, proved essential to the current explosion of interest in UAP matters. DeLonge created To The Stars Academy (TTSA), an ambitious plan to engage the public and to one day attempt to duplicate UFO technology. The existence of TTSA proved pivotal in that it provided a landing spot for Luis Elizondo, the career counterintelligence officer who had been invited to work with Dr. James Lacatski on AAWSAP if or when AAWSAP was granted the status of a Department of Defense Special Access Program (SAP). Sen. Harry Reid attempted to transition AAWSAP into a SAP in 2009. That request was denied, and once the plug was pulled on AAWSAP, Elizondo cobbled together a network of Pentagon and intelligence agency personnel to quietly

continue the analysis of military UFO encounters. After Elizondo became frustrated by the lack of attention being paid to dramatic UFO cases, he resigned in protest, then joined up with TTSA. Key team members at TTSA, including physicist Dr. Hal Puthoff, former DOD intelligence honcho Chris Mellon, former CIA operative Jim Semivan, and rocker Tom DeLonge began to share information with journalists at *The New York Times* (*NYT*). Much of the information supplied to the *NYT* for their blockbuster story published in December 2017 was, in fact, about AAWSAP, incorrectly attributed to AATIP, but the impact of that news story cannot be overstated. Factual errors aside, had Lue Elizondo not been part of the team that engaged with the *NYT*'s journalists, it seems doubtful that all of the other dominoes would have fallen as they did, and the world would likely still be in the dark about the work that was done by both AAWSAP and AATIP.

The full story of AAWSAP did not emerge until later. In 2018, after journalist George Knapp had met with Sen. Reid and Dr. James Lacatski in Washington DC, details about AAWSAP and its contractor Bigelow Aerospace Advanced Space Studies (BAASS), began to trickle out, one piece at a time. With the subsequent publication of *Skinwalkers at the Pentagon*, the world learned how AAWSAP was created and what it was designed to do. We also learned about the massive body of scientific papers and documents the program produced (most of which have yet to be made public) and about some of the startling phenomena encountered during the study. Certain bizarre events encountered by AAWSAP personnel in connection with Skinwalker Ranch, the Utah property owned by Robert Bigelow at the time, prompted criticism from a smattering of harsh critics who asserted the program had little to do with UFOs and everything to do with pseudoscientific phenomena such as poltergeists, animal mutilations, and cryptid creatures seen on or near the ranch by dozens of witnesses, including intelligence operatives. The critics used sarcasm and ridicule to try and dismiss the entire AAWSAP effort, even though the bulk of what the study produced has not been unveiled even now. Not even Congress has been able to access the vast data warehouse of the more than 100 detailed papers produced by BAASS.

Was AAWSAP a UFO program? Sen. Harry Reid, the lawmaker whose sponsorship led to the formation of AAWSAP, said in multiple interviews that it was always a UFO investigation. That is how Reid described it to his

two co-sponsors, Senators Daniel Inouye and Ted Stevens. Co-author Dr. James Lacatski, who first proposed the AAWSAP program and served as its director, said in his first and only television interview that AAWSAP “was absolutely a UFO program.” Robert Bigelow, the businessman whose company landed the AAWSAP contract from DIA, stated in very clear terms that it was always a UFO-centric investigation. Co-author Dr. Colm Kelleher, Dr. Hal Puthoff, Dr. Jacques Vallee, and others who played key roles in AAWSAP, have also made public statements explaining that AAWSAP was, in every sense, a UFO investigation.



Author Knapp Conducts his First Interview with Senator Harry Reid on UFOs

Many of the events described in *Skinwalkers at the Pentagon* were so strange and dramatic that they tended to overwhelm the UFO cases and incidents that had been investigated by teams from BAASS. The choice to include a litany of bizarre encounters was not an accident. “We wanted to make the point in that first book that the program was willing to follow the evidence wherever it led,” says Dr. Kelleher. “This was an important feature of the program, not a bug.” Since the days of the earliest UFO studies by the military, Projects Sign, Grudge, and Blue Book assiduously avoided any mention of seemingly paranormal events that often erupt in connection with UFO encounters. Civilian UFO organizations have done likewise. Their case files purposely avoid any details that might be considered “woo”, fearing that details about paranormal events, including creature sightings,

would damage the credibility of the UFO investigation. AAWSAP pointedly declined to adopt the same viewpoint. The brain trust of BAASS realized that the only way to eventually understand the UFO mystery was to examine the full spectrum of events that occur in proximity to close encounter incidents. Purposely excluding other data or details provided by first-hand witnesses would not only be unscientific but would mean the full picture of what UFOs represent would never be understood. The “woo” was included in the study and in the book.

Dr. Jeff Kripal, a distinguished professor of Religious Studies at Rice University is one of the academics who stepped forward to defend the approach taken by AAWSAP as described in *Skinwalkers at the Pentagon*. “The real gift of the book is its unflinching insistence on both the technological/scientific/material aspects and the paranormal/experiential/mental aspects of the UFO phenomenon,” Kripal wrote. “I was also deeply heartened to see a distinction drawn between the phenomenon’s threat to human health (the discussion of the immunological and hematological features of the human body as a “readout system” is amazing) and its possible threat to humans.”

Co-author Kelleher attended Kripal’s Second International Conference on Archives of the Impossible at Rice University in May 2023. The conference featured 30 speakers who set out to demystify the paranormal through their research and experiences regarding metaphysics, UFOs, and much more. It attracted 200 in-person attendees and more than 330 online viewers. Kelleher, who was a presenter, was surprised to learn during the coffee and lunch breaks at the gathering, that many conference attendees comprising university professors from around the world had actually heard of, and read, *Skinwalkers at the Pentagon*. This interest from academic scholars is another indication that the UFO topic has gone mainstream.

Finally, as of August 20, 2023, two separate events had emerged that appeared to have slowed the momentum of additional UAP hearings in the House of Representatives. James Comer, the Chairman of the House Oversight Committee (HOC), stated that any more hearings from the House Oversight Committee “would cause serious harm to the reputation of the Department of Defense in the eyes of the public, and should be avoided for the foreseeable future.” As a result of this decision, there will be no more hearings on this topic by the HOC. Secondly, Rep. Mike Turner from Ohio,

who is the Chairman of the House Permanent Select Committee on Intelligence and whose congressional district houses Wright Patterson Air Force Base, has conversed with and convinced HOC Chairman James Comer to stop any further HOC hearings forthwith.

— George Knapp, reporting from Capitol Hill and Las Vegas,
September 2023

Introduction

In September 2008 the Defense Intelligence Agency (DIA) initiated a \$22 million, two-year contract with Bigelow Aerospace Advanced Space Studies (BAASS) to scientifically study UFOs and their effects on humans. And so began one of the most controversial programs in the history of the United States Government (USG).

The program was named the Advanced Aerospace Weapon System Applications Program (AAWSAP) and was kept secret from the public until *The New York Times* broke the story in December 2017 (Cooper, Blumenthal & Kean, 2017).

Skinwalkers at the Pentagon, the authors' previous book, described the inception of AAWSAP and several key investigations conducted during the program.

Senior analyst James T. Lacatski, D.Eng., managed the Washington, D.C., operation at DIA, and Colm Kelleher, Ph.D., reporting to Robert T. Bigelow, was the program manager of the Las Vegas operation at BAASS.

Within five months of the AAWSAP start date in 2008, a fifty-strong team of PhD and Master-level scientists, technicians, engineers, analysts, military intelligence professionals, program managers, and security officers had been recruited, hired, and assigned security clearances.



James T Lacatski in More Tranquil Surroundings Prior to Visiting Skinwalker Ranch

At the end of eight months, investigations had commenced on reported UFO activities and technical data was being gathered to understand UFO

flight performance. The assembly of what would become the world's largest UFO database had also commenced.

During the twenty-four months' program duration plus a three-month no-cost extension, BAASS delivered over one hundred technical reports to DIA on different aspects of UFO performance and medical, psychological, and physiological effects of UFOs and associated phenomena.

Skinwalkers at the Pentagon in Context

Skinwalkers at the Pentagon (SATP) was released almost four years after *The New York Times* article on the Pentagon's secret UFO program misinformed readers regarding the name, leadership, and scope of that same UFO program.

Undoubtedly the *NYT* article was a watershed moment in the history of the UFO subject in the United States and globally because it tore the band-aid off the carefully controlled meme that the United States Government had assiduously built for decades: that the Pentagon had stopped looking into UFOs with the demise of Project Blue Book in 1969. The *NYT* article galvanized and awakened a somnolent public around the planet that had been lulled into sleep by decades of misinformation from the USAF and other arms of the USG that “there is nothing to see on UFOs here folks, please move on.”

The December 2017 article set in motion a chain of events that also involved the release of the details of the so-called Tic Tac case that in 2023 became the most celebrated UFO case on the planet and is so well known, it is not necessary to restate the details here. Suffice it to say that between 2018 and October 2021 a triple megaphone—the media reporting on the Tic Tac case and the outspokenness of retired Under Secretary of Defense for Intelligence and Security (OUSD(I&S)) officer Lue Elizondo and retired Staff Director of the United States Senate Select Committee on Intelligence Christopher Mellon—served to amplify the UFO topic into the hearts and minds of multiple Congressional committees and subcommittees that had drunk the USG's “nothing to see here” Kool-Aid for many decades.

While the *NYT* article changed the game, the many inaccuracies in the piece laid the foundation for a distortion of the record between late 2017 and 2021. Distortions included the nature, leadership, funding, and

execution of the original Advanced Aerospace Weapon System Applications Program (AAWSAP) UFO effort that it purportedly described. The article completely ignored the massive scope, the over 100 reports submitted, and the intense focus on the effects of UFOs on humans, of the September 2008-December 2010 DIA AAWSAP Program. These distortions were amplified and solidified in the minds of the public and of the media to the extent that the potential lessons learned from the original AAWSAP program were removed and lost from the public discourse that had opened up on UFOs as a result of said *NYT* article.

Then our book, *SATP*, dropped like a bombshell into the status quo in October 2021. Not only did it shatter long held assumptions about what AAWSAP actually was, but it corrected the record regarding the leadership of AAWSAP, the amount of money that AAWSAP had at its disposal, and most importantly, the very large scope of AAWSAP that encompassed studies on both UFO performance and effects of UFOs on humans. Pretty much all this information had been hidden because the media and other commentators made many mistakes and muddied the waters up to and including October 2021.

Students of the UFO topic since December 2017 will have noted the particularly convoluted path and the changing faces of the multiple organizations that the US Government deployed in a mere five and a half years to grapple with the UFO problem. Unknown to the public, between 2018 and 2021 were the various robust iterations of the so called UAP Task Force (UAPTF) run from the US Navy by the redoubtable Jay Stratton that covered an enormous amount of ground, often despite the bureaucratic hurdles that were placed in its way. Stratton was a master tactician, and he executed a lot of “under the radar” investigative pathways with very few resources, including a few talented part-timers drawn from multiple agencies and departments that were outside the US Navy. Stratton was also a consummate networker among interested groups, stakeholders, and private aerospace companies. In addition, he formed multiple productive relationships within the intelligence community as well as at the Pentagon itself. In short, while remaining very low-key between 2018-2021, Stratton was efficiently moving the UAP ball down the field.

Knowing the checkered and fraught history of the OUSD(I&S)’s relationship with UFOs, as well as their responsibility for the oversight

function of the UFO topic, it was unsurprising when Stratton announced quietly that he had been rotated out of the position as head of the UAPTF to make way for an officer who was both his junior in rank and was also overloaded with other priorities. The new appointment seemed like it was designed to “de-prioritize” the OUSD(I&S) and the Pentagon’s engagement with the UFO subject.

June 25, 2021, was a revolutionary day when the Office of the Director of National Intelligence (ODNI) made the long-awaited announcement that UFOs were real. In releasing their report, entitled “Preliminary Assessment: Unidentified Aerial Phenomena,” ODNI set the UFO public alight with their sober assessments that UFOs were no longer to be ridiculed and mocked. Part of the media coverage included statements like “We absolutely do believe what we’re seeing are not simply sensor artifacts. These are things that physically exist,” the official said, noting that 80 of the reported incidents included data from multiple sensors. In 11 cases, pilots reported a “near-miss” collision with these strange objects.

Five months later and six weeks after the release of *SATP*, on November 23, 2021, Deputy Secretary Kathleen Hicks announced the creation of a new organization run by the Pentagon called Airborne Object Identification and Management Synchronization Group (AOIMSG), which would be the official successor to take the place the US Navy’s UAPTF. The AOIMSG was tucked under the OUSD(I&S), which as readers of *SATP* know, was not exactly a blazing fire of activity and proactive investigations when it came to the UFO topic. For eight months, as predicted, basically nothing happened as AOIMSG treaded water and accomplished very little when viewed from the outside.

Then on July 15, 2022, Kathleen Hicks, in coordination with the DNI, amended her original direction to the Under Secretary of Defense for Intelligence & Security by renaming and expanding the scope of the Airborne Object Identification and Management Group (AOIMSG) to the All-domain Anomaly Resolution Office (AARO). At the same time, Secretary Hicks appointed Dr. Sean Kirkpatrick as head of AARO. The new AARO office, however, was to remain under the umbrella of OUSD(I&S), which to the watchful eyes of the UFO-engaged public was a signal that slow progress was again to be the order of the day.

The pronouncements from Dr. Kirkpatrick and from AARO during 2022

and 2023 emphasized the number of UAP cases that were flowing through the organizations; they numbered in the hundreds. The close coordination of Pentagon spokesperson Susan Gough and Dr. Kirkpatrick became obvious after the AARO report on UFOs was released on January 12, 2023. The report was notable for its blandness and lack of detail and noted that 510 reports had been accumulated by August 30, 2022.

“AARO’s initial analysis and characterization of the 366 newly-identified reports, informed by a multi-agency process, judged more than half as exhibiting unremarkable characteristics.” The AARO report continued, “This initial characterization better enables AARO and ODNI to efficiently and effectively leverage resources against the remaining 171 uncharacterized and unattributed UAP reports. Some of these uncharacterized UAP appear to have demonstrated unusual flight characteristics or performance capabilities, and require further analysis.” The phrase “demonstrated unusual flight characteristics or performance capabilities” drew the attention of the media, but the lack of details was overwhelming.

Then on April 19, 2023, Dr. Kirkpatrick testified before Senator Gillibrand’s Senate Armed Services Committee (SASC). “I want to underscore today that only a very small percentage of UAP reports display signatures that could reasonably be described as ‘anomalous,’” Sean Kirkpatrick, the director of AARO, told SASC.

“The majority of unidentified objects reported to AARO demonstrate mundane characteristics of balloons, unmanned aerial systems, clutter, natural phenomena, or other readily explainable sources,” Kirkpatrick added. By far the most reported of his comments in the media was: “AARO has found no credible evidence thus far of extraterrestrial activity, off-world technology, or objects that defy the known laws of physics.” This April 19, 2023, disclaimer from Kirkpatrick and AARO echoed around the world and basically underlined that the Pentagon had no knowledge of “extraterrestrial” or “off-world” technology. This message was consistent with decades of statements from the USAF and from the Pentagon that UFOs were of little to no interest to the USG.

And then a whistleblower named David Grusch came out of the shadows and, over a stunning two days in early June 2023, set the UFO world on fire. The contrast between Grusch’s incendiary claims and Kirkpatrick’s

bland assurances from AARO, a mere 7 weeks prior, could not have been more vivid.

As many readers are probably aware, on June 5, 2023, journalists Leslie Kean and Ralph Blumenthal broke the story detailing Grusch's claims of a sequestered UFO "craft" of unknown origin and of a UFO coverup by the government in the online news site *The Debrief*. Directly rebutting the recent AARO claims, Grusch went a lot further. He stated that the United States Government had multiple specimens of technology, including actual "craft" from off-world, and had been keeping them illegally hidden from Congressional oversight for decades. The recent NRO and NGA GS-15 claimed that "bodies" were also in the possession of the Government and/or private companies.

Grusch's claims were repeatedly rebutted by Pentagon spokesperson Susan Gough and others. They all insisted that "AARO has found no credible evidence thus far of extraterrestrial activity, off-world technology, or objects that defy the known laws of physics." But these rebuttals appeared to get lost in the massive media hysteria that erupted in early June 2023.

Grusch gave a lengthy interview with veteran Australian reporter Ross Coulthart on *NewsNation* in which he stuck to the story that the Pentagon had for decades illegally run multiple programs attempting to "reverse engineer" crashed flying saucers, "craft" from off-world that had crashed or had landed piloted by Non-Human Intelligence (NHI). For a few weeks during June 2023, the world held its collective breath, waiting for the inevitable rebuttal and backlash that would convince the UFO public that Grusch was mistaken or was not telling the truth. Apparently believing that the initial rebuttals were sufficient, further statements never came from the Pentagon.

Senator Marco Rubio abruptly waded into the game. Rubio took Grusch's claims a notch higher. On June 26, 2023, Rubio said to *NewsNation*'s Joe Khalil: "There are people that have come forward to share information with our committee over the last couple of years. ... I want to be very protective of these people. A lot of these people came to us even before protections were in the law for whistleblowers to come forward." And, Rubio told *NewsNation* that he has heard from firsthand witnesses in "high positions in our government" about some of the claims made by Grusch.

A day after Rubio's high profile pronouncements, *Newsweek* followed with "The senior senator for Florida and vice chair of the Select Committee on Intelligence was cautious not to reveal who had already come forward with information as part of an investigation by Congress into the matter when he spoke to *NewsNation*. 'Frankly a lot of them are very fearful,' the Republican senator [Rubio] said. 'Fearful of their jobs, fearful of their clearances, fearful of their career.'"

As of July 2023, there were multiple Congressional irons in the fire. Kirsten Gillibrand's well-written, carefully researched language in the "must pass" 2024 National Defense Authorization Act (NDAA) has already passed the Senate Committee on Intelligence and is shortly to be passed in the full Senate, and probably thereafter in the House, followed by the signature of the president. Gillibrand's uniquely forceful language in the bill puts a lot of onus on the putative agencies and contractors in the federal government that have allegedly sequestered and reverse-engineered technology of unknown origin.

Secondly, a small army of elected officials and their staffs in both houses of Congress, in a truly notable bipartisan framework, are doing their own investigating. They include Wisconsin Republican Mike Gallagher, Tennessee Republican Tim Burchett, Florida Republicans Matt Gaetz, and Florida Congresswoman Anna Paulina Luna, as well as Texas representative Mike McCaul, Democrat Representative André Carson from New York, and Democratic Congressman Ruben Gallego of Arizona.

As author Knapp describes in detail in the Preface of this book, the July 26 Congressional hearings that involved bombshell testimony from David Grusch as well as from retired F/A-18 pilots Ryan Graves and David Fravor dramatically increased the temperature of the UFO topic in Washington DC, the media and in the public at large.

Meanwhile in the Senate, Senator Marco Rubio and Senator Gillibrand are like two powerful terriers wrestling a bone. The two senators are from different political domains, but they both agree on the mandate to investigate, investigate, investigate.

It was not lost on the Pentagon that the July 26 Congressional hearings had created an overwhelming tide of public interest—the YouTube coverage of the Grusch testimony had garnered about 2 million views within a few days of going live. This coverage by any measure was an

astounding viewership for a Congressional hearing on any topic. On September 1, the news leaked that within two days of the bombshell hearing, Deputy Secretary of Defense Kathleen Hicks had assumed direct command of AARO and on August 31, the long-awaited and much delayed public website to encourage the public to submit their reports of UFO sightings to AARO was launched under DepSecDef Hick's eagle-eyed stewardship. The Pentagon had noticed, and swiftly acted on, the tsunami of public criticism after the Grusch hearings.

The origin story of the uniquely bipartisan nature of this 2023 drive to unearth the "truth" when it comes to UFOs can certainly be laid at the door of the original bipartisan collaboration between Senator Ted Stevens, Senator Daniel Inouye, and Senator Harry Reid, all now deceased, to gestate and, along with aerospace magnate Robert Bigelow, to give birth to, the \$22-million-dollar AAWSAP effort that initiated in September 2008. Then, and again in 2023, political bipartisanship may exist because of the recognition by both Republicans and Democrats of the existential ramifications of the UFO topic.

Skinwalkers at the Pentagon described the overall scope of the AAWSAP initiative and emphasized that AAWSAP focused on researching BOTH UFO performance AND the effects of UFOs on humans, including, physiological, pathological, psychological, and most controversially, paranormal effects. Some of the feedback we received is that the book described many of the florid paranormal sequelae of UFO effects on humans at the expense of describing "nuts and bolts" UFO performance. The purpose of the present book is to unravel more deeply the AAWSAP focus on the physics and engineering aspects of UFOs.

Chapter 1: AAWSAP Overview

This book describes the genesis and execution of a unique program run by the Defense Intelligence Agency (DIA) of the United States that was the first official, fully funded study of UAP since the termination in 1969 of Project Blue Book, which was run by the United States Air Force.

This covert two-year \$22 million DIA effort was the Advanced Aerospace Weapon System Applications Program (AAWSAP).

As the public is now fully aware, the United States Government has steadfastly denied any interest in, or work on, UAP for more than 50 years. Beginning with the publication of an article in *The New York Times* in December 2017, the world now knows that these denials were not factual.

There were two remarkable things about AAWSAP. The first was that it existed at all. Between September 2008 and December 2010, the Pentagon spent those millions investigating UAP, as well as the paranormal and psychic correlates to UAP.

The second remarkable feature that has been secret until the publication of our previous book, *Skinwalkers at the Pentagon*, was the breadth and scope of AAWSAP. The details of dozens of projects that comprised this large program were revealed for the first time on those pages. This book *Inside the U.S. Government's Covert UFO Program* details the *Initial Revelations* of the work conducted from September 2008 to May 2009.

As this book shows for the first time, the scope of the AAWSAP investigations at DIA, which were run by Bigelow Aerospace Advanced Space Studies (BAASS), was quite extensive and, as described in *Skinwalkers at the Pentagon*, followed the data into the psychic and paranormal relationships of UAP interactions.

To ensure that national security issues in this book were properly reviewed, the Defense Office of Prepublication and Security Review (DOPSR) sent this book out to cognizant government departments and agencies before being cleared by the Pentagon. Most names in this book are pseudonyms in order to protect the identity of private U.S. citizens.

What AAWSAP Was and Wasn't

AAWSAP was conceived as a program to evaluate the threat potential of UAP. BAASS was an organization specifically created to execute the AAWSAP contract to evaluate the threat potential of UAP. Throughout this book, “AAWSAP,” “BAASS,” and “AAWSAP BAASS” are used interchangeably to denote close operational similarity.

AAWSAP was not conceived to study projected advances in aerospace technology, except in relation to UAP.

From the beginning, AAWSAP was determined to cast as wide a net as possible to study all phenomena within the overall rubric of the UAP topic. That meant that if paranormal phenomena were known to collocate with, and overlap temporally with, UAP, then paranormal phenomena would also be studied by AAWSAP. The philosophy of AAWSAP was to study all phenomena observed in relation to UAP.

Since the publication of the December 2017 article in *The New York Times* titled “Glowing Auras and ‘Black Money’: The Pentagon’s Mysterious U.F.O. Program,” there has been a multiyear frenzy of speculation, misinformation, and confusion about the nature of the program.

AAWSAP Was Not AATIP

This book and our previous book, *Skinwalkers at the Pentagon*, were written by the two program managers, Drs. James T. Lacatski and Colm A. Kelleher, who oversaw the day-to-day operations of the AAWSAP BAASS program, and are attempts to accurately depict the record and present scientific data reinforcing the need to explore UAP and related phenomena. George Knapp, arguably the world’s premier journalistic authority on this program, contributed significantly to the books.

The New York Times article created enormous confusion by mistakenly linking the \$22 million funding to the small informal initiative called AATIP, the Advanced Aerospace Threat Identification Program. That funding was specifically targeted only to AAWSAP. The \$22 million was contracted through the Defense Intelligence Agency into AAWSAP to evaluate the threat potential of UAP. Not a dollar of that sum went to AATIP despite widespread statements to the contrary over the last several years.

Background

James T. Lacatski was the primary creator of AAWSAP. Lacatski was the DIA program manager, contracting officer representative (COR), security coordinator, and counterintelligence coordinator during the entirety of this multi-year, multi-million-dollar DIA contract. Lacatski was an intelligence officer serving in the Defense Intelligence Agency's Defense Warning Office (DWO).

Lacatski used Congressional interest from bipartisan Senate leadership and the assistance of two DIA Directors to obtain multiple years of funding directed to the DIA Directorate of Analysis, specifically the Defense Warning Office (DWO). AAWSAP, the program's name, was specifically chosen to assist in routing new congressional money to DWO. This is a crucial point because the use of any other name, for example AATIP, would have been problematic, as the routing of the money would not have gone to DWO.



Author Lacatski relaxes prior to assuming his managerial role at AAWSAP

Once the AAWSAP contract was awarded to BAASS, Colm Kelleher became the Deputy Program Administrator under Robert Bigelow, effectively the BAASS program manager. Lacatski and Kelleher held their positions until the end of the contract in December 2010.



Copy of the ID Badge of author Kelleher in 2008

What Is Skinwalker Ranch and How Is It Connected to AAWSAP?

Since 1994, humans and sensors have continuously studied the 500-acre property known as Skinwalker Ranch located in northeastern Utah. Metallic UAP, flying orbs of varying colors, otherworldly creatures, discarnate voices, poltergeists, electromagnetic anomalies, and orange “portals” have co-located as well as materialized separately on the property. These extraordinary phenomena have been witnessed by scores of independent visitors to the ranch almost continuously between 1994 and the present. Skinwalker Ranch became famous almost overnight after the publication of *Hunt for the Skinwalker* by Kelleher and Knapp about the scientific research conducted from 1996-2002 on these anomalies.

AAWSAP Contract Requirements and Operations

In response to the BAASS proposal, DIA awarded a two-year AAWSAP contract (HHM402-08-C-0072) commencing on September 22, 2008, \$10 million for the first year and \$12 million for the second year. BAASS was

to complete advanced aerospace weapon system technical studies in the following areas: 1. lift; 2. propulsion; 3. control; 4. power generation; 5. spatial-temporal translation; 6. materials; 7. configuration, structure; 8. signature reduction (optical, infrared, radiofrequency, acoustic); 9. human interface; 10. human effects; 11. armament (RF and DEW); and 12. other peripheral areas in support of areas 1-11.

AAWSAP BAASS successfully conducted efforts in seven multidiscipline departments. Those departments depicted the organizational structure under which AAWSAP BAASS operated in support of DIA: 1. Experimental; 2. Data Collection; 3. Data Analysis; 4. Advanced Technology; 5. Consciousness; 6. Medical; and 7. Integrative Research.

This structure comprised the operational functions of the AAWSAP contract, and the focus was never changed or modified during the life of the contract.

Ultimately, more than 75 contractor personnel performed exotic aerospace research, and several hundred part-time personnel conducted fieldwork. A multi-million-dollar database to store contract research data was developed. For contractor products that would be published by DIA, 38 Defense Intelligence Reference Documents (DIRDs), to be exact, were written by Earthtech International.

Voluminous high-quality material (more than a hundred separate reports) was submitted to the DIA in just over two years of the program's existence. In addition, the 11 databases within the AAWSAP BAASS Data Warehouse were delivered to DIA, while the massive holdings of the original analysts' journals, data, and photographs remain in storage.

This book will introduce the details of the initial implementation of the above requirements and operations. This book is not about flying saucer stories, paranormal tales, or fanciful descriptions of strange visitors from other worlds. Rather this book details the results of the day-to-day activities of AAWSAP, the U.S. government's secret UAP/UFO program, which was the real X-files.

The Logic of the Broad Scope of AAWSAP Research

From its inception, the AAWSAP BAASS program intended to keep the

scope of subjects for investigation as wide as possible with the understanding that narrowing the scope prematurely would result in a distorted dataset. The decision to research paranormal phenomena that co-locate with UAP and to examine the psychic effects in UAP witnesses, in addition to scrutinizing the core UAP technology itself, was not taken lightly because of the controversial nature of the UAP-paranormal debate.

At the inception of the program, the AAWSAP principals in Las Vegas and Washington, D.C., were aware that in previous in-depth investigations, the witnesses of core UAP technology also frequently reported paranormal fallout and psychic effects. When investigators took the trouble to repeatedly re-interview eyewitnesses, as trust was gained over multiple visits, witnesses began to surrender additional details of their experiences beyond encountering a metallic or solid-looking object. They frequently reported poltergeist effects, humanoid-shaped black shadows, loud footsteps, hauntings, discarnate voices, small flying orbs, or some combination thereof, in their homes. These people also regularly reported precognitive, clairvoyant, telepathic, or unusual electromagnetic phenomena and occasional increases in meaningful coincidences in their lives in the aftermath of a UAP encounter.

When NIDS, AAWSAP, or other program investigators interviewed eyewitnesses in Northeastern Utah, in Dulce, New Mexico, in the San Luis Valley, Colorado, around Malmstrom AFB in Great Falls, Montana, in Yakima, Washington, in the Hudson Valley, New York, or in “Marley Woods,” Missouri, the metallic UAP regularly occurred along with paranormal phenomena and psychic effects on witnesses. Without disclosing confidential information, we can say that this pattern also applied to pilots who encountered the Tic Tac object as well as to select members of AAWSAP and AATIP.

This overlap between the “nuts and bolts” UAP phenomena and psychic aftereffects and paranormal consequences is not new. In fact, this has been known to occur since the 1940s. It has not been widely reported that Kenneth Arnold, who became known as the father of the modern UFO era after he reported seeing some chevron-shaped metallic objects emitting or reflecting light on June 24, 1947, also subsequently saw balls of light or orbs in his home as well as experienced a litany of paranormal events unfolding in his life after his epoch-making sighting.

Thus, paranormal phenomena and psychic effects are closely related to the UAP phenomena and they cannot be dismissed. The relationship is unavoidable.

Chapter 2: AARO vs AAWSAP – AAWSAP Restarted in 2022-2023

Under the provisions of the “Gillibrand-Rubio-Gallego” law enacted by Congress in December 2021 (National Defense Authorization Act, Public Law 117-81, Section 1683, Establishment of Office, Organizational Structure, and Authorities to Address Unidentified Aerial Phenomena), “the head of the [UAP] office”—that is, the AOIMSG Director—will supervise key elements of the government’s UAP-investigatory apparatus. The Airborne Object Identification and Management Synchronization Group (AOIMSG) initially was created by a directive from the Deputy Secretary of Defense on November 23, 2021, but its scope and resources were substantially expanded under the legislation signed into law on December 27, 2021. The provisions of the new law state that the organization should:

- establish an office within a component of the Office of the Secretary of Defense,
- develop procedures for the collection, reporting, and analysis of incidents, including adverse physiological effects, regarding unidentified aerial phenomena across the Department of Defense and the intelligence community,
- evaluate the threat that such incidents present to the United States,
- rapidly respond to, and conduct field investigations of, incidents involving unidentified aerial phenomena (including transmedium objects),
- conduct scientific, technical, and operational analysis of data gathered by field investigations,
- test materials, conduct medical studies, and develop theoretical models to better understand and explain unidentified aerial phenomena,
- supervise the development and execution of an *intelligence collection and analysis plan* to gain as much knowledge as possible regarding the technical and operational characteristics,

origins, and intentions of unidentified aerial phenomena, including with respect to the development, acquisition, deployment, and operation of technical collection capabilities necessary to detect, identify, and scientifically characterize unidentified aerial phenomena,

- supervise the development and execution of a *science plan* to develop and test, as practicable, scientific theories to
- account for characteristics and performance of unidentified aerial phenomena that exceed the known state of the art in science or technology, including in the areas of propulsion, aerodynamic control, signatures, structures, materials, sensors, countermeasures, weapons, electronics, and power generation; and
- provide the foundation for potential future investments to replicate any such advanced characteristics and performance.

Notice how similar this science plan wording is to the wording of the technical studies stipulated in AAWSAP. According to our previous book *Skinwalkers at the Pentagon*, the AAWSAP contract solicitation states: “The contractor shall complete advanced aerospace weapon system technical studies in the following areas: 1. lift; 2. propulsion ; 3. control; 4. power generation; 5. spatial/temporal translation; 6. materials; 7. configuration, structure; 8. signature reduction (optical, infrared, radiofrequency, acoustic); 9. human interface; 10. human effects; 11. armament (RF and DEW); 12. other peripheral areas in support of (1- 11).”

In addition, *Skinwalkers at the Pentagon* states: “The departments depict the organizational structure under which AAWSAP BAASS operated in support of DIA:

1. Experimental Divisions
2. Data Collection Department
3. Data Analysis Department
4. Advanced Technology Department
5. Consciousness Department
6. Medical Department
7. Integrative Research Department”

The following table compares Public Law 117-81 Section 1683 and AAWSAP department functions. If functions of the Sec. 1683 Congressional language are completely implemented, then AAWSAP was effectively restarted by the U.S. Government in 2022.

Table 1. Public Law 117-81 Section 1683 vs. AAWSAP Functions

Function	Public Law 117-81 Section 1683	AAWSAP
Science Plan	X	X
Field Investigations	X	X
Comprehensive Database	X	X
Data Analysis	X	X
Reverse Engineering	X	X
Consciousness Studies		X
Medical Examinations	X	X
Long-range radar & satellite collection	X	
Short-range sensor collection	X	X
Threat Evaluation	X	X

Then on July 15, 2022, AOIMSG was renamed the All-domain Anomaly Resolution Office (AARO).

Chapter 3: AAWSAP Management Plan

The BAASS Project Management Plan was written in November 2008 for early December submission to DIA. This Project Manager Report (PMR) fulfilled the requirement to submit a planning report as part of the Advanced Aerospace Weapon System Applications contract HHM402-08-C-0072. The report was comprised of overview projects that are focused on the twelve following areas: (1) Lift, (2) Propulsion, (3) Control, (4) Power Generation, (5) Spatial/Temporal Translation, (6) Materials, (7) Configuration/Structure, (8) Signature Reduction (Optical/IR/RF/Acoustic), (9) Human Interface, (10) Human effects, (11) Armament (RF and DEW), and (12) Other areas in support of 1-11. The PMR addressed a Plan of Action, Milestones, and the composition of BAASS analytical teams for these twelve technical areas.

Throughout the PMR, the need for “examining more exotic possibilities that might account for reports of truly anomalous characteristics of the high-performance craft of unknown origin whose mode of operation appears to be well advanced beyond that presently known” was emphasized.

With that in mind, the Plans of Action and Milestones in this report comprised six major projects that collectively addressed all twelve technical areas. It should be emphasized that AAWSAP envisaged extension and expansion into 2011 and beyond for each of the six projects.

Note that in these descriptions, Project Database is at the center of all the other activities. As technical and observational data were obtained from the other projects, it was organized into the database in a coherent fashion for use in data mining. The AAWSAP BAASS Data Warehouse is the world’s largest coherent UAP/UFO database.

The seven proposed major projects were:

Project Database combined all data from multiple databases on advanced aerospace vehicle performances in the United States and other countries for the past 60 years. There have been displays of advanced aerospace vehicles in the skies of North America and around the world that have been witnessed by thousands of people, including military pilots and

ground crews, civil aviation pilots, law enforcement officers, and members of the public. Because these displays have not been taken seriously, few significant resources have been allocated to gathering the data from these sightings into a single place. Instead, data were scattered through more than twenty smaller databases in the United States and more than a dozen more internationally. These data have never been brought into a single storage site and consequently have never been analyzed using sophisticated search parameters. This AAWSAP effort sought to eliminate this shortcoming. The objective was to create the world's first comprehensive high-quality searchable database of advanced aerial technology maneuvers. A fundamental requirement for all inputs into the AAWSAP database was close scrutiny of the data prior to entry of each case. This "scrubbing" exercise proved to be enormously time and labor-intensive, but the intent was to avoid the "garbage-in-garbage-out" effect that is perhaps the greatest weakness of any database.

Project Physics studied the current research on all twelve technical areas. EarthTech and its subcontractors delivered approximately 38 in-depth position papers targeted to twelve technical areas. Perhaps this research could explain some aspect of behavior over the last six decades of very advanced spacecraft already known to exist. It should be stated at the outset that AAWSAP, both in Washington DC and in Las Vegas, deliberately adopted the stance that the most productive way to learn the maximum about the twelve technical areas was to study craft that are already displaying novel behavior in the twelve technical areas.

Project Engagement located and rapidly accessed geographic sites and areas that experienced displays of advanced aerospace vehicles. The purpose was to directly observe and measure advanced aerospace vehicle performance. Until BAASS had sufficient staff (possibly 250 people) and other internal capabilities, one way for BAASS to achieve this goal was to contract with an organization that had hundreds of investigators already in place around the United States. The Mutual UFO Network (MUFON) was such an organization. MUFON has been in existence for four decades and had approximately 1000 volunteers who can investigate reports of UAP sightings in all 50 states.

Project Northern Tier obtained all the information and case files pertaining to dozens of cases in which advanced aerospace vehicles flew

over restricted Air Force bases containing nuclear weapons, hovered over weapon storage depots, and interfered with the functional integrity of ICBM missile systems during the 1960s and 1970s. All of these cases potentially provide evidence of a threat to the national security of the United States.

Beginning in the 1960s, there were numerous well-documented sightings by multiple AFB personnel and pilots of incursions into the airspace over the “Northern Tier” Air Force bases in the United States by advanced aerospace vehicles of unknown origin. Incursions into restricted air space, hovering over nuclear armament locations, interference with ICBM functional integrity, or some combination occurred at Malmstrom AFB MT, Loring AFB ME, Wurtsmith AFB MI, Minot AFB ND, and Kirtland AFB NM during the 1960s and 1970s.

Project Colares obtained materials and case files from an extensive series of advanced aerospace incidents, many of which caused death and injury to indigenous inhabitants, occurring on Colares Island in northern Brazil in 1977. The Brazilian Air Force conducted an investigation and obtained multiple photographs, instrumented detection data, and eyewitness testimony, much of which pointed to potentially hostile activity by the advanced aerospace vehicles.

In 1977, the Brazilian island of Colares was the scene of some of the most aggressive close encounters recorded in the open literature. Only a minority of the island’s city of Colares’ approximately 2,000 inhabitants would be spared the light beams shot to the ground by various flying objects. A number of residents managed to take photographs of the flying aerospace vehicles, or “chupa-chupas,” as the locals called them. From June to December 1977, scores of reports of unknown flying objects with many different shape and size variations were collected.

Project Ranch involved the humans and sensors that have continuously studied the 500-acre property known as Skinwalker Ranch in northeastern Utah since 1994. Metallic UAP, flying orbs of varying colors, otherworldly creatures, discarnate voices, poltergeist, electromagnetic anomalies, and orange “portals” have co-located as well as materialized separately on the property. These extraordinary phenomena have been witnessed by scores of independent visitors to the ranch almost continuously between 1994 and the present. AAWSAP intended to use its unique access to Skinwalker Ranch as an opportunity for simultaneous paranormal and UAP data collection in a

single concentrated area in order to expedite the determination of the relationship of UAP to the paranormal.

Project Consciousness was the examination of the connection between UAP/UFO and paranormal phenomena and the human mind and body. It was considered imperative to determine what can be learned, analyzed, and evaluated with regard to the putative consciousness connection between UAP and humans.

Decades of research have suggested that consciousness (including telepathic communication) may play an integral role in human-UAP interactions. Many human eyewitnesses have interacted with alleged non-human intelligence in many different countries, which presents an intriguing commonality. Project Consciousness was proposed to be an umbrella organization that housed multiple programs involving telepathy, remote viewing, psychic functioning, and more. It was thus very high value as an important tool to obtain critical data with regard to the activity and behavior of UAP.

The present book will describe the first nine months of the AAWSAP effort and will focus on narrating the details of Projects Physics, Engagement, Database, Colares, Northern Tier, and will introduce the AAWSAP work on Skinwalker Ranch. Subsequent volumes will cover the remaining months of AAWSAP terminating in December 2010.

Chapter 4: AAWSAP Project Physics

As outlined in the BAASS September/October 2008 monthly report, the first deliverable to DIA from AAWSAP—the separate contracts to EarthTech International and to MUFON—were signed and initiated to deliver technical papers on subjects pertaining to the 12 technical focus areas of the contract. Separately, John Schuessler, a BAASS employee with over thirty years of experience in the aerospace field, was also assigned to write 12 position papers on each of the technical areas.

Accordingly, during the month of November 2008, information packets were delivered on time to BAASS in fulfillment of contracts 080930-1 with EarthTech International and 081006-1 with the Mutual UFO Network (MUFON). Further, John Schuessler completed the technical papers assigned to him. All three sets of information packets were then transmitted to the DIA for approval.

The combined information packets comprised twelve Project Physics topics:

- Technical Study 1: Lift
- Technical Study 2: Propulsion
- Technical Study 3: Control
- Technical Study 4: Power Generation
- Technical Study 5: Spatial/Temporal Translation
- Technical Study 6: Materials
- Technical Study 7: Configuration, structure
- Technical Study 8: Signature Reduction
- Technical Study 9: Human Interface
- Technical Study 10: Human Effects
- Technical Study 11: Armament (RF and DEW)
- Technical Study 12: Other Peripheral Areas

Project Physics studied the current research on all twelve technical areas. EarthTech International and its subcontractors were tasked to deliver 38 in-depth position papers targeted at these technical areas. Perhaps this research

could explain some aspects of behavior over the last six decades of observing very advanced spacecraft. AAWSAP deliberately adopted the stance that the most productive way to learn the maximum about the twelve technical areas was to study craft that are already displaying behavior in the twelve technical areas.

The present book will examine four of these technical studies: Lift, Propulsion, Spatial/Temporal Translation, and Power Generation. Because Project Physics is the most difficult area in the book to understand, this examination will be conducted at multiple levels. For example, lift observables, introduction to lift concepts, advanced lift concepts, summaries of in-depth lift position papers, and the in-depth lift position papers themselves will be utilized. The 38 in-depth position papers were published by DIA as Defense Intelligence Reference Documents (DIRDs) and are available at [Defense Intelligence Agency > FOIA > FOIA Electronic Reading Room \(dia.mil\)](https://www.dia.mil/foia/foia-electronic-reading-room/). Texts on observables and the introduction to concepts are written for the average reader. For the interested average reader and the science/technical reader, advanced concepts and the DIRD summaries are also included in this book. The 38 DIRDs available at the DIA Reading Room are recommended only for the science/technical reader, perhaps just those with advanced physics or engineering degrees.

Technical Studies 1, 2, 4, and 5 are described in Chapters 5 through 8. Associated DIRD summaries are in Appendices I through IV. Chapter 9 on DIRD research goals has been included for illustrative purposes. As shown in Chapter 9, two DIRDs are of particular importance in explaining some aspects of observed UAP/UFO design and performance characteristics.

Chapter 5: UAP Lift Overview

Background

Novel aerospace technologies have been demonstrating highly advanced lift characteristics from before WWII to the present. These lift characteristics are beyond the state-of-the-art of any known technologies. The craft of a wide range of configurations and sizes seem to defy gravity as they fly, maneuver, land, and take off. In addition, they have been observed to affect cars, people, and even huge chunks of the earth similarly, causing them to also seem to defy gravity. Harnessing this capability promises to drastically change the world of transportation, energy, and the environment, as well as the way of life for most humans. In addition, adoption of these exotic technologies could give the nation that is able to engineer them a huge political and military lead over all other nations.

The secondary effects of this very novel technology will revolutionize space travel and allow humans to migrate to space and develop medical, educational, and manufacturing facilities in a gravity-null environment. Tertiary effects, although longer coming, include the development of a whole new range of jobs and the associated training and education requirements, a move away from oil dependency, and the greening of the planet. No other breakthrough can match the positive effects of duplicating the well-documented futuristic lift technology.

UAP Lift Indicators

Characteristics of lift indicators are found in the thousands of well-documented military and civilian eyewitness unconventional flying object reports, videotapes, and movies from every country in the world every year since WWII and before. There is no shortage of materials to evaluate. Some of those indicators are:

- Physical Influences on Water
- Object Punches a Hole Through a Cloud
- Moving Purposefully in Various Directions
- Wavering Back and Forth in Flight (like a falling leaf)

- Flying Circles Around an Airplane
- Out-maneuvering an Airplane
- High Speed to Hover to High-Speed Flight
- Very Heavy Objects Leave Indentions yet Easily Lift Upward
- Evidence of Weight and Massiveness
- Mass Displacement

Physical Influences on Water: Water offers a unique opportunity to examine the lift characteristics of the large, metallic-looking, disc-shaped configuration with no visible means of propulsion. Similar reports are given for large spherical-shaped crafts. Witnesses have described how these vehicles slowly dip into the water and disappear below the surface, but more often they report how the water bulges and the craft seem to burst out of the water and fly away.¹

When flying near the surface of the water, the water is indented below the craft like a concave mirror. It appears a force is pressing the water downward. As the craft rises above the surface, the water mounds up. This appears to be the transition point where the water is no longer being pressed down but is tending to follow the craft upward. As the craft continues to rise, witnesses describe a column of fog, mist, haze, or water reaching from the surface to the craft.¹

As with all reports of unusual aerospace technology observations, the first step is to look for a natural explanation, and when that fails the reported observations are compared with other incidents of similar nature. The first hypothesis in the case of how the water seems to be affected by the craft is usually “a typical water spout.” However, when the other factors such as the size, shape, and appearance of the craft that is rising above the water are considered, the “natural waterspout” answer fails. Reports over lakes and rivers in the United States have led observers to believe the craft is purposefully picking up water. The problem with this explanation is that usually too much water is involved. The simplest hypothesis is that the lift mechanism of the craft is indeed causing the water to react as reported by eyewitnesses.¹

Object Punches a Hole Through a Cloud: An incident that offers clues to the operation of a disc-shaped craft occurred during the late afternoon on Nov. 7, 2006, over Chicago’s O’Hare International Airport. Eyewitnesses

included United Airlines (UAL) gate operations personnel, ground crews, a UAL manager, a UAL pilot taking a jet to the hanger, and a flight crew departing UAL Flight 446. According to all of the witnesses, the craft was hovering below a cloud layer determined to be 1,900 feet over terminal Gate C-17. The craft was reported to be disc-shaped, metallic, and gray in color. The pilot taking a Boeing 777 aircraft to the UAL hanger said atmospheric distortion around the bottom was similar to “heat rising off a desert road.” One of the pilots said strongly, “It wasn’t an object, it was a craft!” When the craft left, it went straight upward, punching an almost perfect circle in the cloud layer where the craft once was. The clear sky above could be seen through the hole in the cloud layer.²

Moving Purposefully in Various Directions: Crafts of various shapes have been reported to zip in close to witnesses, hover, and then make other unlikely moves. Such is the case reported by two people in Femvale, QLD, Australia. First, they saw a bright light in the sky directly in front of them. Then a bright flash emanated from the object that lit up the surrounding countryside. The object approached the car to a point directly above them for a few seconds and then it drifted to the right. Following this, it descended to about treetop level and paced the car. It then moved to about 30 meters in front of the car and proceeded to zigzag across the full width of the road, before returning to the car’s right. This is a classic case where a non- aerodynamically-shaped vehicle, a cigar-shape, transitioned from a light in the distance and emerged in a flash to approach and hover over the car. It then moved sideways, followed by zigzagging across the road and pacing the car while moving from side to side. Its movements in relation to the car continued until it disappeared to the southwest. The craft was silent throughout the whole event and no effects on the car were noted.³

Wavering Back and Forth in Flight (like a falling leaf): In a previously classified intelligence document, witnesses, which included a noted British scientist, said a circular shaped craft rose sharply from the level of the sea off Paphos, Cyprus, while emitting a luminous light. It appeared to waver back and forth for a brief interval before fading out of sight directly overhead. The sky was clear and there was no air traffic in the vicinity of Cyprus. Again, we have a case where the craft changed flight regimes (from near the water, to leaping upward, wavering back and forth, and then disappearing straight up), which required shifting the lift characteristics

several times.⁴

Flying Circles Around an Airplane: The act of flying circles around a moving airplane, whether a slow-moving private plane or a high-performance military airplane, demonstrates highly sophisticated lift technology. First, the craft must be able to go through the catch-up phase to approach, match the speed of the airplane, and then go into a corkscrew flight maneuver that allows it to circle around the airplane while continuing to match its speed. The final step in this process is to come out of the corkscrew maneuver and make a high-speed departure. The U.S. Army Flight Service at Hamilton Air Force Base in California reported to the Secretary of Defense, the U.S. Air Force, and the CIA on August 20, 1953, that one of their aircraft had encountered an unidentified craft. The message read: “At 1335P reported unidentified flying objects 3758N, 12030W, and 3748N, 11905W on TC of 096 degrees at 155 appeared to be in formation then break up and fly circles around aircraft.”⁵

Out-maneuvering an Airplane: Thousands of well-documented incidents by highly credible pilots and radar operators have been reported where unidentified objects outmaneuver military airplanes in flight. That includes near-instantaneous arrival in the airspace near the airplane, sometimes pacing, sometimes trailing, switching from port to starboard or the opposite, and zipping away in various directions at a high-speed relative to the aircraft. The credibility of the flight crews alone is enough to make this a valuable display of lift and other technologies. Added to that, sometimes there is active radar coverage of the event and/or onboard equipment that records the event electronically.

One such event took place on July 17, 1957, over the southern part of the U.S. An Air Force RB-47 equipped with electronic countermeasures (ECM) gear and manned by six officers was followed by an unidentified object for a distance of well over 700 miles and for a time period of 1.5 hours, as it flew from Mississippi, through Louisiana and Texas, and into Oklahoma. At various times, the cockpit crew saw the object as an intensely luminous light; it was also followed by several ground-based radars and detected on ECM monitoring gear aboard the RB-47. Of special interest, in this case, are several instances of simultaneous appearances and disappearances on three distinct “channels,” and the rapidity of maneuvers beyond the prior experience of the aircrew. From time to time the object would pace the

plane as verified visually and on several ground radars. The ECM operator observed the object move up-scope on the starboard side of the airplane, then cross the flight path of the RB-47, and proceed to move down-scope on the port side of the airplane. The airplane was flying at 34,500 ft. at Mach 0.75. This report contains a lot more detailed information that can be used to evaluate lift and other flight characteristics.⁶

High Speed to Hover to High-Speed Flight: In a maneuver that would make today's pilots that fly the F-35 envious, an object out-performed RAF Meteor NF11 interceptors. John Cotton was a National Service Fighter Plotter stationed at RAF Bawdsey and one night was in the middle of an exercise when over the intercom came the radar sighting of an unidentified flying object. He said: "At the time I was working the recording area so as soon as the Meteor NF11 interceptors we were controlling were sent to investigate, I started recording. This is a normal procedure. As the interceptors approached and made visual contact with the target, they reported that it was a stationary object (confirmed by radar) and 'saucer-like' in shape. On being ordered to approach closer, the target shot off at high speed and then hovered again. The second time the fighters neared, the target went straight up at very high speed until it disappeared off the Type 13 height radar."⁷

The shape of the object doesn't seem to affect the highly strange lift characteristics exhibited in hundreds if not thousands of reliable reports. Large and apparently very heavy triangular-shaped objects have the ability to silently hover without falling out of the sky and then zip away at high speed. One such incident happened near Franklin, NC, in February 1986. Two people riding a motorcycle saw lights in a triangular pattern. They stopped, turned the engine off, and stood in the silence of the night to watch the strange craft. They claimed it was huge—perhaps 300 feet long. It was so large that it blocked out the stars as it passed silently overhead and no more than 300 feet up. They said, "The thing felt like it weighed a million tons." They were afraid it would fall on them if it suddenly landed.⁸

The lift characteristics were well displayed in a classic incident on March 30, 1990, over the country of Belgium, involving a triangular object and military jets. The Glons CRC (Control Reporting Center) reported radar lock-on by F-16 jets with a triangular craft seen by police, citizens, and the military. Their official statement said: "First lock on the target designated

by the CRC, the position was ‘on the nose’ at six nautical miles, 9,000 feet, direction: 250. The target speed changes in minimal time from 150 to 970 knots, with altitude coming down from 9,000 feet to 5,000 feet, then up to 11,000 feet, and, shortly after, down to ground level.”⁹

Very Heavy Objects Leave Indentions, Yet They Easily Lift Upward: At numerous landing sites around the world, investigators have found evidence that very heavy objects have landed there. Counter to the belief that these objects can be dismissed as balloons or other lightweight structures, the evidence shows we are dealing with very heavy, solid, probably metallic, flying objects. For example, on February 10, 2004, at Meanwood, Leeds, U.K., numerous witnesses, including two policemen, observed an object 50 ft. in diameter and 18 ft. thick descending without sound. It appeared to land in an area named “The Witches Quarry.” Going to the scene of the landing, they found damaged trees and three triangular depressions in the ground. The object had flown away. The depressions were 25 ft. apart and depressed into the ground to a depth of 8 inches. Heat could be felt rising from the soil.¹⁰

The spacing between indentions in the ground seems to vary depending on the object’s observed size and the soil’s condition. In a similar case, two adults near New Berlin, NY, on the night of November 25, 1964, watched two objects come downward in controlled flight. The first object landed while the second hovered above the ground for several minutes then landed. The crews seemed to make repairs on the first craft. Both objects were 25-30 feet wide and sat on three legs. After nearly four hours both objects ascended vertically. The witnesses went to the landing site and found two sets of three indentions in a triangular configuration in the ground. Each side of the triangle was 15 to 20 feet. The indentions were on an angle and were 14 inches wide and up to 18 inches deep.¹¹

Evidence of Weight and Massiveness: The problem of defining the lift mechanism becomes more complex when considering the large size and heavy weight of these crafts. For example, a saucer-shaped craft, estimated to be 30-40 feet in diameter, landed on February 6, 1966, at Aluche, Spain, a suburb of Madrid. The craft landed in an open space larger than a city block. The flight of the disc was typical—it approached, hovered momentarily, extended tripod legs, and landed. After a few minutes, it rose, retracted the landing gear, and flew away. An examination of the landing

site revealed three neat footprints pressed into the hard Spanish soil. They were arranged in a triangle shape and were nearly 20 feet apart. Each print was rectangular, about 6 by 12 inches, and nearly 5 inches deep. A raised tread shaped like an “X” was at the bottom of each imprint.¹²

In a September 15, 1954, incident at Quarouble, Nord, France, the Air Gendarmerie (air police) examined an area where a craft three meters high by six meters long landed on the railroad tracks of the Saint-Amand-Blanc-Misseron rail line. The landing site was just a short distance from the home of M. Marius Dewilde, the primary witness. Some markings were found on the wood ties that hold the rails. The marks were all in a line. The three in the middle were separated by an interval of 43 centimeters, while the last two were 67 centimeters away from the preceding ones. The marks were fresh and sharply cut, showing that the ties’ wood had been subjected to very heavy pressure at those five points. Railroad specialists calculated that the pressure indicated by the prints corresponded to a weight of thirty tons. In an examination of the gravel roadbed, investigators found the stones were brittle as if they had been calcined at a high temperature. Some brackish traces were also found.¹³

Mass Displacement: In addition to the lift mechanism that keeps these large and very heavy craft from falling out of the sky during high-speed flight, low-speed flight, rapid, almost instantaneous stop-start operations, and hovering, lift may also be applied to other observables as well. This action is called “mass displacement.”

An event at Poncey, France, on October 4, 1954, keenly illustrates how an object can apply some type of lift force to the soil. Mrs. Foumeret said she saw a luminous object balancing itself lightly above the ground, appearing to be in the process of landing. She ran for help and two neighbors carrying guns joined her in examining the site. They said they found an area over a yard and a half long, twenty-seven inches wide at one end, twenty at the other, where the ground appeared to have been sucked up. On the fresh soil of the hole, they said, white worms wiggled; the earth that had been torn out was scattered all around the hole in clods ten or twelve inches across, over a radius of about four yards. On the inner edge of the hole, similar clods hung down. The earth had been pulled out in such a way that the diameter of the hole about halfway down was wider than at ground level. In addition, the little roots and rootlets in this fertile soil were

intact everywhere on the inner surface of the hole; not one had been cut, as would have been the case if the excavation had been made in the usual way. In summary, it looked as if the mass of earth spread over the surrounding grass had been sucked out by a gigantic vacuum.¹⁴

A fairly common example of mass displacement is the large number of cars lifted off the road when under the influence of an object overhead. Typically, the object passes over a car, takes control for several miles, releases the car, then flies away. In addition to being lifted up, the cars involved often also suffer from EM effects—the engines stopping temporarily while under the influence of the object.¹⁵

Case in point is the story of a large, gray metallic cigar-shaped object that flew on a collision course with an Army Reserve helicopter, matched speed with the helicopter, and then flew in front of it. The four-man crew was returning to Cleveland, OH, from taking an annual physical exam in Columbus, OH, on October 18, 1973. As the object approached the helicopter at high speed, the pilot took evasive measures by diving to a lower altitude. Starting at 2,500 feet the pilot last remembered crossing through 1,700 feet. After the object took up station in front of the helicopter and illuminated it with a green beam of light, the radios malfunctioned on both VHF and UHF. As the object made a sharp 45-degree turn and departed the area, the crew noticed they had moved upward and were at 3,500 feet even though the collective was still in the full-down position. They rose another 300 feet before the helicopter could be brought under control. This event occurred during one of the largest UFO flaps in history. During the month of October 1973, more than 500 UFO incidents were recorded.¹⁶

Introduction to UAP Lift Concepts

Discovering the “lift mechanism” demonstrated in thousands of civilian and military UAP cases worldwide is a huge task. It is known that airplanes fly because they are aerodynamically engineered and powered by a fuel-burning engine(s). A variation on that theme is the helicopter. It does not look at all aerodynamically pleasing, but the rotor blades’ aerodynamic shape provides the aircraft lift. The next step beyond that is a fire-breathing rocket that just goes where it is aimed. None of these common flight vehicles can duplicate the lift characteristics of the novel aerospace

technologies we are seeking.

By comparing the lift characteristics across a large number of well-documented incidents it may be possible to identify the common characteristics that will lead to a breakthrough. Although it appears that all the different shapes of objects involved have the same lift characteristics, perhaps this is not true. The different shapes may have subtle but important differences that allow disc, sphere, triangle, diamond, pentagonal, square, rectangular, and cigar-shaped vehicles to operate in the Earth's atmosphere. The propulsion system might be similar for each, but the way the craft operate may require different lift mechanisms in the same way the airplane and helicopter differ.

A number of commonly known systems do not appear to apply to the objects in question because, for the most part, the objects do not depend on aerodynamics or use rockets or jet engines unless it is an emergency situation and an auxiliary rocket-type system is employed. Nor do they depend on high-speed particle ejection for flight. That means it is necessary to conceive and model more exotic lift systems. The following ideas are offered as a starting place:

- Force Fields
- Anti-gravity
- Levitation
- Teleportation
- Exotic but Undefined Mechanism

Most researchers have toyed with the idea of being able to lift and move heavy craft in the same way as has been demonstrated by UFOs. Most, however, have given up because our science is in its infancy, extra-special propulsion and energy systems are not yet a reality, and materials are lacking to put it all together. For example, fusion in a small bottle could be the breakthrough needed to power the rest of the breakthrough technologies.

Force Fields: All five of the lift mechanisms mentioned may be a part of the same technology and could be covered under this heading, but more may be learned by expecting subtle differences.

Force field propulsion is consistent with all reported observations that fit a general UFO pattern, regardless of the type of UFO. It is important to pay

strict attention to the observed evidence, and not prejudge by our current knowledge as to how difficult it might be, or even how possible or impossible it might seem by our standards.

From direct observation, we know that the craft operate without visible external components that could be part of a propulsion system. According to the late NASA scientist and engineer Paul Hill, “Force field equipment could be located within the shell of the UFO, which the field would penetrate nondestructively while the field generators remain hidden within.”

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As may be found in the UAP Propulsion Overview, force fields would negate the effects of local gravitation fields by generating coherent patterns of electromagnetic energy.

Anti-Gravity: As the name implies, lift depends on reducing or canceling the effect of gravity or protecting against it. A negative gravity field is associated with negative matter and antiparticles. This field repels all matter.

Gravity shielding is a common practice in science fiction. In the science fiction novel, *The First Men in the Moon* (1901), H.G. Wells used movable shutters made of “Cavorite” to shield against gravity and fly a spacecraft to the Moon. In the 1920s, Italian Physicist Quirino Majorana came up with the idea of the Majorana shield, a hypothetical effect to block the gravitational force from distant objects such as the Moon. In 1690 a Swiss mathematician named Nicolas Fatio de Duillier, a friend of Isaac Newton, suggested that gravity works through a shadowing effect associated with the absorption by material bodies of minute particles. The push theory of gravity was developed further in the eighteenth century by Swiss mathematician George-Louis LeSage. He believed there was some kind of pressure in space. Masses, he thought, shield one another from this space pressure and are thus pushed together by the unshielded pressure on their opposite sides.

A more modern approach was taken in 1992 by Russian engineer Yevgeny Podkletnov when he reported an antigravity or gravitation shielding effect involving a spinning superconductor. He measured the gravitational acceleration above the device and made the discovery. He claimed to have created a force beam that is 200 times stronger than his first experiments. Boeing, BAE Systems, and NASA all funded research to try

to replicate the Podkletnov effect but with no reported success. Further classified work has not been exposed.

An American scientist, Ning Li, independently predicted a gravity-shielding effect with superconductors. In 1999, *Popular Mechanics* reported that Li and her team had built a working prototype to generate what Li described as AC Gravity. The results of her work are unknown.

Levitation: Scientists have already proven that strong varying magnetic fields could exert an upward force on objects in their path. Magnetic levitation occurs when the magnetic force is strong enough to overcome gravity and balance a body's weight. The objects could be moved simply by adjusting the magnetic field.

For levitation on Earth, a force is first required to be directed vertically upwards and equal to the gravitational force, then for any small displacement of the levitating object, a returning force should appear to stabilize it. Stable levitation can be naturally achieved by, for example, magnetic or aerodynamic forces. With the former, it is essential that diamagnetic elements be used. In this case, the returning force appears from the interaction with the screening currents. For example, a superconducting sample, which can be considered either as a perfect diamagnetic or an ideally hard superconductor, easily levitates in an ambient external magnetic field. In very strong magnetic fields, even small animals have been levitated.¹⁸

Eugene H. Burt (Clark College, Atlanta, GA) looked for a scientific explanation for the lift characteristics displayed by UFOs. He arrived at the theory that magnetic fields developed by positive electrical charges are visualized to be inverted compared to those developed by electrons. A repulsive force between positive charges and electrons was hypothesized, inversely proportional to the distance cubed between opposite electrical charges. This concept also agrees with scientific observations of diamagnetism and the reversal of magnetic flux developed by opposite electrical charges. He says his theory of how magnetic fields developed by positive electrical charges could explain many of the truly puzzling UFO observations: their silence; the lack of a sonic boom; their high accelerations and ability to make sharp changes in direction; clouds that form around them; halos which appear around them; the various colors emitted associated with the type of motion; radiation felt by observers; the

disruption of electrical circuits; the spinning of magnetic compasses in their vicinity; their shapes; and the principles by which they could make interstellar trips.¹⁹

Teleportation: Teleportation, while not exactly a “lift mechanism,” is the process of making information or objects disappear from one place so they can reappear in another. The science of today is having trouble dealing with this concept.

The belief that faster-than-light travel is impossible may limit scientists from seriously considering travel from one point to another instantaneously. The use of this form of transport for humans still has considerable unresolved technical issues, such as recording the human body with sufficient accuracy to allow reproduction elsewhere. Also, it is believed that quantum mechanics forbids one from making a wholly exact copy of an object.

It is not clear if duplication of a human would require reproduction of the exact quantum state, which necessarily destroys the original, or whether macroscopic measurements would suffice. In the non-destructive version, hypothetically a new copy of the individual is created with each teleportation, with only the copy subjectively experiencing the teleportation.

Exotic or Undefined Mechanism: A host of other “lift mechanisms” exists in the literature, but most of them are considered impossible. Creative and thinking people believe that going with the idea that if something is declared impossible by the experts, someone is going to discover how to do it. These exotic ideas should be fertile ground for defining new lift mechanisms. Some possibilities include:

- Dimensional teleportation involves the subject exiting one physical universe or plane of existence, then re-entering it at a different location. This is exactly what has been described in hundreds of UFO cases. Unfortunately, predominant theories about parallel universes currently assume that physical travel may not be possible between them.
- Another form of teleportation sends the subject through a wormhole or similar phenomenon, allowing transit faster than light while avoiding the problems posed by the uncertainty

principle and potential signal interference.

- In physics, a wormhole is a hypothetical topological feature of spacetime that is fundamentally a “shortcut” through space and time. Spacetime can be viewed as a two-dimensional surface, and when “folded” over, a wormhole bridge can be formed. A wormhole has at least two mouths that are connected to a single throat or tube. If the wormhole is traversable, matter can travel from one mouth to the other by passing through the throat. Wormholes are covered in more detail in the Spatial-Temporal Translation chapter.
- A “jumpgate” is an apparatus with the power to open a vortex that connects normal space with hyperspace, making interstellar travel an option.
- A “portal” is an opening in the spacetime continuum that allows travel between two different locations in space and time. Portals have been reported in detail in many UFO cases, and Native Americans have reported creatures moving through these portals in Utah, New Mexico, Arizona, and elsewhere.

Advanced UAP Lift Concepts

In the conventional view, non-aerodynamic lift encompasses all non-airfoil lift and could include the use of rockets, MHD, photon (e.g., AFRL’s laser Lightcraft), non-rocket ballistic approaches (coilgun, railgun), space elevator, etc. None of these, however, is of primary interest in the current study. Instead, we choose to interpret the domain of relevance for this study as those areas of specialty that are based on *non-conventional, non-aerodynamic* lift mechanisms. This would include areas such as negative energy states, gravity/spacetime modification, gravitoelectromagnetic forces, nuclear entropy control, etc. At this point, these mechanisms are primarily theoretical, so our task is to examine the extrapolation of known physics fundamentals into areas of advanced aerospace potentialities.

Though the term *antigravity* is not *per se* an oft-used term of reference in the scientific literature (i.e., it is only selectivity used in well-defined contexts), for ease of nomenclature in the following discussion we shall here use the term *antigravity* as a broad, general label for lift processes

whose defining function is to counteract the force of gravity. Though significant antigravity forces have yet to be demonstrated under laboratory conditions, the fundamental physics principles are well-understood and under investigation, both theoretically and experimentally, in a number of laboratories. Here we enumerate those proposals for advanced lift mechanisms that are being pursued and have passed peer review for publication in the scientific literature. It can therefore be assumed that these and related mechanisms are candidates worthy of consideration with regard to advanced aerospace applications.

Negative-Energy-Induced Antigravity for Lift: In modern physical theory, when one considers the basic properties of quantum states and the spacetime background, states of negative energy density and negative pressure are attributes found both in General Relativity and in quantum field theories—and in lab experiments—and the effects of negative energy/pressure manifest as gravitational repulsion (or antigravity). Negative energy processes, therefore, constitute candidate mechanisms to produce antigravity to counteract the Earth's gravitational field. To counteract or otherwise reduce the effects of gravity to generate lift one can in principle deploy a thin spherical shell (or bubble) of negative energy around an aerospace vehicle. Eric Davis²⁰ has quantified the negative energy density required to generate a repulsive gravitational lifting force that counteracts the Earth's gravity field from the surface of the Earth up to Low Earth Orbit (LEO). Crucial to the implementation of this concept is the generation of negative energy, of which there are in nature a variety of specialized quantum fields that can produce such negative energy/pressure states.

Antigravity via the Polarizable-Vacuum Representation of General Relativity: Adopting an approach in which the effect of a gravitational field in General Relativity is modeled in terms of an effective refractive medium, one can envision a method to generate levitation and a net upward thrust for lift via local *metric engineering* of the vacuum.^{21,22} In other words, the spacetime vacuum is treated as a non-uniform optical medium with a varying index of refraction that defines the components of a flat spacetime metric geometry.²³ In this model there is no spacetime curvature due to the sources of matter; instead, its equivalent general relativistic effects (i.e., gravitational forces) are produced by variation of the vacuum index of

refraction, comprised of the vacuum electromagnetic permittivity and permeability parameters. Lowering the vacuum index of refraction to values less than unity by technological means would allow for the generation of a repulsive gravitational field around an aerospace vehicle. Implementing such an approach would require deploying specially designed electromagnetic or other field structures yet to be specified in detail, possibly including specially-tailored negative energy distributions.

Antigravity via Quantum Vacuum Zero-Point-Fluctuation Forces: Researchers Calloni et al.^{24,25} and Bimonte et al.^{26,27} have applied semi-classical quantum gravity theory to evaluate the net lifting force produced by quantum vacuum zero-point fluctuations acting on a rigid Casimir cavity in a gravitational field.

Antigravity via Nonretarded Quantum Interatomic Dispersion Force: A lifting force produced by nonretarded electrostatic dipole-dipole interactions (i.e., nonretarded van der Waals dispersion forces) acting on a quantum system of polarizable particles in a gravitational field has been evaluated by Pinto.²⁸ The foundation of Pinto's study was the original discovery made by Fermi²⁹ that classical electrostatic theory must be reformulated in curved spacetime in order to properly evaluate the effects of gravitation upon the Coulomb electric field of a single charged particle.

Modification of Gravity/Inertia: If either inertia or gravity could be modified by technological means, then the effects of the Earth's gravitational field could be partially negated (locally) to augment the efficacy of conventional or unconventional aerospace lift-producing devices. The first hint of this possibility emerged from the concept that inertia and gravity might themselves be traceable to roots in the underlying quantum fluctuations of the vacuum, a proposal put forward by the well-respected Russian physicist Andrei Sakharov.³⁰ Sakharov suggested that gravity might actually be an induced effect brought about by changes in the quantum fluctuations of the vacuum due to the presence of matter. Though speculative when first introduced, this hypothesis has led to a rich and ongoing literature on quantum-fluctuation-induced gravity, including contributions by Puthoff who investigated the possibility that gravity might be modeled as a kind of long-range Casimir force due to interacting field fluctuations associated with particle motions driven by vacuum fluctuations.^{31,32,33}

Due to the deep connection between gravity and inertia (the Equivalence Principle) and the possibility of a connection between gravity and vacuum fluctuations, a similar connection would have to exist between these self-same vacuum fluctuations and inertia. A possible connection between quantum electromagnetic vacuum fluctuations and inertia was first published by Haisch et al.³⁴ In this work, it was shown that distortion of the quantum electromagnetic vacuum in accelerated reference frames results in a force that appears to account for inertia. If correct, this would imply that mass might be an electromagnetic phenomenon at the root and thus might also be subject to modification in principle.^{35,36} From another perspective, Rueda et al.³⁷ showed that the same effect occurs in a region of curved spacetime, thus elucidating the origin of Einstein's Principle of Equivalence. A further connection with General Relativity has been drawn by Nickisch and Mollere.³⁸

The possibility of altering mass with a view to easing the energy burden of future spaceships has been seriously considered by the Advanced Concepts Office of the Propulsion Directorate of the Air Force Research Laboratory (AFRL) at Edwards Air Force Base. Robert L. Forward (senior research physicist at Hughes Research Labs, Malibu, CA) accepted an assignment to review this concept. After a one-year investigation, Forward finished his study and submitted his report to the Air Force, which published it under the title "Mass Modification Experiment Definition Study."³⁹

Non-Newtonian Gravitational Forces (Gravitoelectromagnetic Forces): Heaviside (ca. 1880s), Einstein (prior to the 1915 publication of his General Relativity Theory), and Thirring (1918, 1921) showed that General Relativity Theory provides a number of ways to generate non-Newtonian gravitational forces. These forces could be used to counteract the Earth's gravitational field, thus acting as a form of antigravity.⁴⁰ General Relativity Theory predicts that a moving mass can create forces on a test body that are similar to the usual centrifugal and Coriolis forces, although much smaller in magnitude. These forces create accelerations on a test body that are independent of the mass of the test body, and thus the forces act on a test body in the same manner as does the usual Newtonian gravitational force. Therefore one can counteract the Earth's gravitational field by generating such forces in an upward direction at some spot on the Earth. Forward⁴¹

linearized the General Relativity field equations and developed a set of dynamic gravitational field relations similar to the Maxwell electromagnetic field relations. Forward⁴² used these linearized relationships to develop models for generating antigravity forces.

Alzofon's Antigravity (Nuclear Entropy Control): During the 1950s-60s, Boeing Aerospace scientist F. Alzofon⁴³ began investigating the fundamental nature of the gravitational force, specifically to explore whether it could be controlled by artificial means. He later began a phenomenological study in which he proposed that a specimen composed of a very pure isotope of aluminum (e.g., Al²⁷) with small spherical iron inclusions (or magnesium plus chromium inclusions), embedded in a static magnetic field, and undergoing excitation by pulsed microwave radiation, would generate a net decrease of the alloy's weight to the point of levitation.^{44,45}

Some effort must be directed toward matching the mechanisms mentioned in this chapter with the claimed observations of apparently advanced exotic craft of unknown origin by seemingly credible witnesses. The anecdotal literature is rife with reports of ground and water effects due to nearby landing, hovering, or take-off of such craft.⁴⁶ The effects include grass/soil/water being sucked up, consistent craft attitude on lift, specific forms of ground traces left behind, consistent acceleration profile accompanying lift (e.g., slow take-off, then high acceleration), etc.

Advanced UAP Lift Concepts DIRDs

Two Defense Intelligence Reference Documents (DIRDs) were written for AAWSAP on UAP lift topics:

- *Antigravity for Aerospace Applications*, Dr. Eric Davis
- *Laser Lightcraft Nanosatellites*, Dr. Eric Davis

Short summaries are in Appendix I.

Chapter 6: UAP Propulsion Overview

Background

Novel aerospace technologies have been exhibiting unusual propulsion characteristics since before WWII to the present. A summary of well-documented incidents where indicators of unusual propulsion characteristics may be found serves as a basis for this overview. These propulsion indicators are used to suggest how breakthrough technologies can be applied to the definition of advanced spacecraft systems and technologies.

UAP Propulsion Indicators

Private, commercial, and military airplanes, helicopters, remotely piloted vehicles, and spacecraft all demonstrate propulsion characteristics easily recognized by the public and military personnel. By comparison, when novel aerospace technologies are observed, their propulsion characteristics are so radically different that the observers are compelled to notice and accurately report these differences. For distant observations, weather conditions and the flight of birds, balloons, and the like can obscure important details; however, this is not the case for close encounter observations. Therefore, only close and clearly observed characteristics are included in this analysis.

Researchers have accumulated a vast number of observations of craft displaying unusual propulsion characteristics while operating in Earth's atmosphere, so that becomes a natural starting place for the study and modeling of these systems. Some examples of these characteristics are shown below.

A large number of well-documented reports show craft operating in the Earth's atmosphere and then zooming out into outer space. Whether or not the same propulsion systems are used for both operating regimes is unknown at this time but needs to be considered in this study. The category "unusual propulsion characteristics" includes the following:

- No Visible Means of Propulsion

- Silent Flight
- Instant Acceleration/Stopping
- Sudden Reversal of Direction
- Hovering
- Transition from Hovering to High-speed Flight to Stopping
- Abrupt Directional Changes
- Color Changes associated with Changes in Speed
- Interference
- Disappear/Reappear
- Fly in and out of Water

No Visible Means of Propulsion: A commonly reported characteristic is the lack of evidence of propulsion systems: engines, rockets, air intake openings, and exhausts. In the daytime, their outer skin is said to be metallic-looking and seamless. At night, witnesses report a glow or protective field layer around the object.

For example, on September 10, 1951, two Air Force officers flying a T-33 over Sandy Hook, NJ, spotted, dove on, pursued, and timed an object flying at 8,000 feet until it disappeared. It was midday and the weather was CAVU, ceiling and visibility unlimited. The object was the size of a fighter aircraft, disc-shaped, silver in color, flying at 900+ mph, steady in flight, and had no visible means of propulsion. The Ft. Monmouth ground radar station plotted an unidentified at the same time at above 700 mph.¹

Silent Flight: At times, various sounds are reported, but more often than not, the object is said to be completely silent. This is regardless of the object's shape, size, or configuration. When sounds are heard they are usually buzzing or humming, but the whooshing of air movement is also noted.

In a November 2004 report, a family of four encountered a triangular-shaped craft that flew right over their car at an altitude of 300 feet. Since it was moving very slowly, about five miles per hour, they were able to observe its size, shape, and color. They said it made no sound.²

Instant Acceleration/ Stopping: Pilots report objects nearing their aircraft at high speed and instantly slowing to match the airplane's speed, only to immediately accelerate and disappear in the distance within seconds. Witnesses on the ground report high-speed approaches, transitioning into a

hover mode, and then zipping away at high speed.

In 1952, the Commander of the Belgian Congo airport in Elisabethville, along with other witnesses, spotted two 12-15-meter diameter disc-shaped objects hovering in one spot near uranium mines. He used a fighter plane to pursue the objects and got within 120 meters of one of the craft. They took off in a zig-zag flight, changing elevation from 800 to 1,000 meters in a few seconds, before shooting down to within 20 meters of the treetops. He chased the objects for 15 seconds before they disappeared in a straight line toward Lake Tanganyika. He estimated their speed at about 1,500 kilometers per hour.³

Sudden Reversal of Direction: This particular maneuver is often reported by eyewitnesses. They say the object zooms in and then seems to sense them in the area, instantly zooming out and away. This characteristic is seldom accompanied by sound.

An Aerolineas Argentina pilot reported a version of this maneuver in August 1995. He was making his final approach to the resort town of San Carlos de Bariloche when he saw a white light coming at high speed directly toward his plane. Then it halted just 100 meters away. As he took drastic evasive action, the object made a bizarre turn and flew in tandem with the aircraft for a short distance. An Argentina Air Force officer and several others saw the object and reported a simultaneous power cutoff throughout the city.⁴

Hovering: The ability to hover, as if observing something or someone, has been reported by objects of various sizes and shapes (triangle, disc, sphere, rectangle, orb, etc.). As noted in thousands of observations, this is one of the most interesting flight characteristics that have been reported.

On October 3, 1961, a private pilot flying out of Utah Valley Airport, UT, spotted a disc-shaped object at an altitude of 6,500-7,000 feet and flew directly toward it. It moved to the south, stopped, and *hovered* over the Utah Lake Omni Station. Then it went straight up, then west, and out of sight in a few seconds. During the whole event, the pilot was in contact with the tower. A total of 8 people witnessed the event.⁵

Transition from Hovering to High-speed Flight to Stopping: On January 8, 2008, a radar analysis of the track of an object (no transponder) near Stephenville, TX, for more than one hour showed the object either hovering or moving slowly (60 mph). At one point the object accelerated to 532 mph

in 30 seconds and then decelerated to 49 mph ten seconds later.⁶

Abrupt Directional Changes: Objects are reported to make right-angle turns when near the ground, at high altitudes, and at orbital altitudes. Sometimes the objects stop momentarily and then shoot off in a different direction, as evidenced by videotapes and eyewitness reports. More often, however, the object just makes a right-angle turn without hesitation. This action seems to indicate that the object can isolate itself from the environment while flying.

For example, at 6 am July 11, 1959, five pilots on three different Pan-Pacific flights and a B-50 bomber pilot reported that they observed an object on a parallel course at high speed. They said, "It was flying faster than anything I have ever seen." It maintained its course for ten seconds and then "made a sharp right turn at a speed inconceivable for any vehicle we know and then suddenly disappeared."⁷

Color Changes associated with Changes in Speed: Over the years, objects have been reported to change color as their speed changes. This characteristic has been documented in numerous official U.S. Government reports, reports from private investigative organizations, and from the public.

In the early 1970s, police officers from seven different locations in Florissant, Missouri, witnessed the flight of a red object overhead. They had been alerted by police radio when the object approached from the northeast. All seven watched as the object slowed and stopped over a heavily wooded area. As it slowed, stopped, and hovered, the color changed to orange. After a short time interval, it appeared to discharge some bright glowing material, before the object changed back to red and sped back in the direction from which it came. Orange-colored objects have frequently been reported worldwide and they often show a color change as their speed changes.

Interference: Objects cause a broad range of interference conditions, including interference with electrical and electronic systems; plant damage (internal cell breakdown) or inhibition of subsequent plant growth; effects on watches, compasses, cameras, and other electronic devices; increased agitation of pets, farm animals, and wild animals; stopping of automobile engines; and various physiological effects on humans. This phenomenon has happened many times dating back to the mid-1940s and is still happening.

For example, ten cars were stopped on U.S. Highway 54 in New Mexico in 1957 when a silent egg-shaped object made a pass over the highway. The interference was first noticed as a fading of the automobile's radio signal, followed by the failure of the engines. Drivers felt a heat wave as the incident progressed. A post-incident inspection of the automobiles revealed steam coming from their batteries.⁸

Disappear/Reappear: In the radar analysis for the January 8, 2008, Stephenville, TX, incident, the object disappeared from 7:03 to 7:10 pm, then it reappeared. Reports of objects being observed flying and instantaneously disappearing are fairly common.⁹

Fly in and out of Water: A unique characteristic is the ability to fly in the atmosphere, dive and move underwater, and fly back into the atmosphere. This ability is now known as transmedium performance. Observations have also revealed that objects flying above the water and emerging from the water disturb the water in a way that suggests the existence of a displacement field. Researcher Carl Feindt has collected a significant database of the physical influences of a UFO on water.¹⁰

In August 1981, three men and two women were riding in a car near Hamilton, Ontario, Canada, when they saw a disc-shaped object about 50 feet in diameter approach their car and cross the road. Static began coming from their radio. The craft continued over the bay and dropped slowly into the water. As it submerged, the lights on it faded into darkness.¹¹

Introduction to UAP Propulsion Concepts

At some time in the past, every propulsion concept was a mystery, needing a lot of research and development, and some needed lucky “wow” type events to make them a reality. That is the way science and technology work. Today, many futuristic propulsion concepts have gotten a lot of attention but are still awaiting a breakthrough. Some will require the discovery of new and novel materials and processes, or materials made in a zero-g environment.

An important part of this effort is to focus on what breakthroughs are needed, which are most likely to have a near-term payoff, which should be considered in later phases of the program, and who are the key individuals already involved in breakthrough research.

Some concepts to be considered include the following but are not limited

to:

- Antigravity
- Antimatter
- Force Field Effects
- Fission/Fusion
- Lasers and Microwaves
- Other

Antigravity: This long-sought-after propulsion concept depends on reducing or canceling the effect of gravity or protecting against it to enable a craft to fly. Evgeny Podkletnov claims to have devised a machine that will shield matter from the Earth's pull. He convinced NASA to spend \$600,000 to replicate the machine. There are now claims that private aerospace companies are also pursuing this line of research.¹²

Antimatter: Antimatter systems are common to science fiction stories, but in reality, a lot of theoretical research and experimentation has been conducted to define antimatter systems. When matter meets antimatter, both annihilate in a flash of energy. Researchers have found that using antiprotons in the interaction produces high-energy gamma rays when they annihilate and would be hazardous to flight crews. However, by using positrons, the gamma rays would have about 400 times less energy. While antimatter reacts every time in a well-described manner, propulsion systems based on antimatter are still a mystery. What makes antimatter so attractive is that it would take only 100 milligrams of antimatter to equal the propulsive energy of the former Space Shuttle.¹³

Force Field Effects: Field propulsion develops force and acceleration by the action of fields rather than by expulsion of mass. In a field theory that describes matter and energy, mass must be dependent on moving fields. A field resonance spacecraft would negate the effects of local gravitational fields by generating coherent patterns of electromagnetic energy in a doughnut-shaped piece of metal. By interacting with hyperspace energy currents, the spacecraft would reduce or amplify the local gravitational field. Though yet to be demonstrated, such concepts are still under investigation.¹⁴

Fission/Fusion: Nuclear energy stores more than 5,000,000 times as

much energy per unit mass as chemical reactions, therefore its use is an interesting alternative to current rocket propulsion. Fission systems are common for energy production but not for space launch propulsion. Millions have been spent on fusion systems with slow but steady progress. However, recent significant progress in high-field, high-temperature superconducting magnet development may lead to construction in the near term of small DT (deuterium-tritium) fusion reactors suitable for use by electric utilities.¹⁵ How fusion reactors will be used in space is still a question.

Lasers and Microwaves: Beamed propulsion systems use directed energy from a laser or microwave source to heat the air inside a chamber into an explosive plasma that is then forced through the chamber to generate thrust. Laser-based beamed propulsion systems are further along than microwave systems. Leik Myrabo at the Rensselaer Polytechnic Institute has demonstrated laser propulsion for the U.S. Air Force.¹⁶

Other: Researchers have identified a host of boundary-pushing concepts such as Heaviside and Slepian forces, quantum vacuum energy, transient inertia, parametrized post-Newtonian gravity geometry, and deep Dirac energy theory. At this point, these and other futuristic concepts are just beginning to get the attention of researchers, so they should be viewed as drivers of the design of futuristic propulsion systems.¹⁷

Advanced UAP Propulsion Concepts

In the present scientific and engineering literature concerning advanced propulsion concepts for aerospace applications, one can find a series of rich and variegated technical approaches. Under present development are advanced R&D engine designs such as scramjet and pulse detonation engines (PDE) that involve combustible fuels.^{18,19} Though advanced with regard to presently deployed commercial and military flight systems, these are not under consideration here. Here we focus on more advanced concepts proposed for future energy/propulsion techniques for spaceflight. For example, an advanced propulsion study carried out for the Air Force by Davis summarizes in detail the concepts presently under consideration that have some level of maturity in their investigation.²⁰ In addition, an AIAA scholarly trade book *Frontiers of Propulsion Science* published in 2009 maps out the territory for future development.²¹

With peer-reviewed papers appearing in Tier 1 physics journals with such titles as “Wormholes in Spacetime and Their Use for Interstellar Travel,” “The Warp Drive: Hyper-fast Travel within General Relativity,” “On Superluminal Barrier Traversal,” and “Bell’s Inequalities versus Teleportation: What is Nonlocality?” it is clear that science fact is beginning to outstrip science fiction. As a result, superficial consideration of advanced propulsion concepts runs the risk of being too cautious rather than too avant-garde. That said, in assessing advanced propulsion concepts, one must consider a range that encompasses various forms of fusion,^{22,23,24} plasma,²⁵ and matter-antimatter^{26,27,28,29} drives that are under present development as well as more exotic options such as the manipulation of gravity (spacetime metric),^{30,31,32,33} so we begin with a short review of these.

Fusion Propulsion: With regard to fusion-powered propulsion drives, an exemplar is provided by G. H. Miley’s IEC (Inertial Electrostatic Confinement) fusion propulsion unit.^{22,23,24} The IEC fusion propulsion concept, undergoing laboratory testing and design evaluation at the Fusion Studies Laboratory, University of Illinois, Urbana, promises a high power-to-weight ratio as compared to conventional fusion approaches.

Plasma Propulsion: Intermediate between flight in the atmosphere and in space is the region labeled Near Space (60 km to Low Earth Orbit, LEO) for which new, somewhat exotic forms of plasma propulsion are now being developed: (1) plasma concentrated into a hypersonic engine, and (2) plasma diffused over a large surface area to provide boundary-layer acceleration. These approaches take advantage of the fact that Near Space can host platforms and systems that operate and maneuver at high speed with only a fraction of the energy that space vehicles would need for the same maneuver.²⁵

Antimatter Propulsion: Another potential revolutionary aerospace transportation system under consideration incorporates propulsion and power systems utilizing positron-electron annihilation.^{26,27,28,29} This concept is different from previously proposed antimatter-based systems because it uses positrons, not antiprotons, and is a viable alternative to nuclear fission systems. There are distinct advantages to using antimatter, specifically positron annihilation. First, the energy density of antimatter (180 Megajoules per microgram) is ten orders of magnitude greater than chemical and three orders of magnitude greater than nuclear fission or

fusion energy. Second, the annihilation of a positron and an electron creates two soft 511 keV gamma rays. These gamma rays can be easily absorbed to heat a working fluid in a closed, high-efficiency thermodynamic power system, or directly into a propellant. Third, unlike nuclear fission or antiproton systems, no residual radioactivity is created. Fourth, unlike nuclear fission or antiproton systems, the presence of soft gamma-rays and lack of residual radiation will result in a lower-mass, compact system that does not require heavy radiation shields or large separation between the power source and the payload. Positron-powered systems are inherently safer, more reliable, and offer fewer operational concerns than their nuclear-fission- and antiproton-based counterparts. Positron production technology is a mature science, with worldwide facilities in operation in government, university, and commercial laboratories.

We now turn to examine more exotic possibilities that might account for reports of truly anomalous characteristics of the high-performance craft of unknown origin whose mode of operation appears to be well advanced beyond that which we presently know. Such currently inexplicable phenomena include hovering followed by essentially instantaneous accelerations to high velocity; high-velocity “right-angle” turns; “falling leaf” nutating motions on ground approach; apparent shape changes; color variations with acceleration; other optical changes during acceleration, such as polarized optical rings formation; supersonic trajectories without sonic booms; strong EM and human effects at short-range distances; optical or plasma beam phenomena terminating mid-space; the appearance of blinking in and out during flight, including instantaneous “jumps” or total disappearance; and so forth.³⁰

For such exotic phenomena, it is understood that mainstream gravitational theory (General Relativity Theory) today permits in principle the possibility of gravity (spacetime metric) manipulation with implications for exotic forms of propulsion.^{31,32,33,34,35,36} To provide a pithy example of what such technology might explicate, analyses performed by NASA Langley Chief Scientist-Manager Paul Hill showed that with spacetime metric manipulation principles applied, a craft could maintain constant-pressure flow at supersonic speeds, would be surrounded by a subsonic flow-pattern of streamlines with subsonic velocity ratios, and thus be shock-free (i.e., free of the sonic boom).³⁷

Warp Drives: Alcubierre’s formulation of the “warp drive” represents a class of spacetime metric solutions of Einstein’s General Relativity field equation.^{32,33} He derived a spacetime metric motivated by cosmological inflation that would allow arbitrarily short travel times between two distant points in space. The behavior of the warp drive metric provides for the simultaneous expansion of space behind the spacecraft and a corresponding contraction of space in front of the spacecraft. The warp drive spacecraft would appear to be “surfing on a wave” of spacetime geometry. A spacecraft can in principle be made to exhibit an arbitrarily large apparent faster-than-light (FTL) speed as viewed by external observers while its moving local rest-frame never travels outside of its local co-moving light cone and thus does not violate Special Relativity. In order to implement a warp drive, one must construct a “warp bubble” that surrounds the spacecraft by generating a thin shell or surface layer (like a thin film of soap stretched across a loop of wire) of exotic matter, i.e., a quantum field having negative energy and/or negative pressure. Recent theoretical advances suggest that low-power drive fields can be made using resonances in a metamaterial fuselage of a spacecraft, controlling each meta-atom in the metamaterial lattice.³⁴

Traversable Wormholes: Traversable wormholes represent another class of spacetime metric solutions of Einstein’s General Relativity field equation.^{35,36} Wormholes are hyperspace tunnels through spacetime connecting together either remote regions within our universe or two different universes; according to General Relativity solutions, in principle, they can even connect together different dimensions and different times. Travelers would enter one side of the tunnel and exit out the other, passing through a throat along the way. The travelers would move at much less than the speed of light through the wormhole, but external observers would see the travelers as having traversed multi-light-year distances through space at FTL speed. There are a number of different traversable wormhole throat designs that are cubic shaped, polyhedral shaped, flat face shaped, generic shaped, etc. As in the case of constructing a thin shell of exotic matter for a warp drive, one might construct wormholes of various geometries by generating in an appropriate configuration a thin shell or surface layer of exotic matter, i.e., a quantum field having negative energy and/or negative pressure.³⁷ Anecdotal reports of anomalous craft seemingly emerging from

“holes in the sky” might constitute examples of observations of such technology.³⁸

Negative Matter Propulsion: In yet another approach to exotic propulsion mechanisms one can consider the use of negative matter, should it be shown to either exist naturally or be artificially generated. Negative matter is a hypothetical form of matter whose active and passive gravitational, inertial, and rest masses are opposite in sign to those of ordinary (positive) matter. Thus, negative matter has a negative mass. (Negative matter is not to be confused with antimatter because antimatter is a form of positive matter having positive mass but possessing quantum properties—i.e., spin and electric charge—that are opposite to its positive matter counterparts.) Forward and others^{39,40,41,42,43,44,45,46} have studied the physics of negative matter within the context of both Einstein’s Special and General Theories of Relativity and discovered many unusual properties that could provide a form of propulsion. These properties are: (1) an object with negative mass gravitationally repels all other types of matter, both positive and negative; (2) the gravitational coupling between a negative mass and a positive mass during motion does not lead to a violation of the conservation of momentum because negative matter in motion has negative momentum; (3) the gravitational coupling between a negative mass and a positive mass during motion does not violate the conservation of energy, because negative matter in motion has negative kinetic energy; and (4) the total energy required to create negative matter, along with an equal amount of positive matter, is zero because negative matter has negative rest-energy. One consequence of this unique gravitational coupling is that a rocket made of positive mass and a ball made of negative mass would move off in the same direction with accelerations that are proportional to the force of gravity between them. Such a mechanism would appear to provide an unlimited amount of unidirectional acceleration without requiring either a reaction mass or an energy source.

Advanced UAP Propulsion Concepts DIRDs

Seven Defense Intelligence Reference Documents (DIRDs) were written for AAWSAP on UAP propulsion topics:

- *Advanced Nuclear Propulsion for Manned Deep Space Missions,*

Dr. Friedwardt Winterberg

- *Positron Aerospace Propulsion*, Dr. Gerald Smith
- *Advanced Space Propulsion Based on Vacuum (Spacetime Metric) Engineering*, Dr. Hal Puthoff
- *Aneutronic Fusion Propulsion*, Drs. V. Teofilo, R. White, S. Petrinec
- *Aneutronic Fusion Propulsion*, Dr. William Culbreth
- *Magnetohydrodynamics (MHD) Air Breathing Propulsion and Power for Aerospace Applications*, Drs. S. Macheret and K. Goodfellow
- *Negative Mass Propulsion*, Dr. Friedwardt Winterberg

Short summaries are in Appendix II.

Chapter 7: UAP Spatial/Temporal Translation Overview

Background

The novel aerospace technologies that have been observed from before WWII to the present have presented a futuristic picture of air and space vehicle operations far beyond the capabilities of known designs, methods, and technologies. Those reports suggest spatial/temporal translation concepts that not only explain the observed vehicle flight characteristics, but go on to provide a basis for very advanced lift, propulsion, and structural materials.

UAP Spatial/Temporal (Space/Time) Translation Indicators

For more than sixty years, reports of craft flying in Earth's atmosphere have consistently demonstrated flight characteristics that illustrate revolutionary technology.

It is often claimed that these objects may access other dimensions. This is because numerous close encounter reports detail spatial or temporal anomalies such as invisibility and distorted time. UFO research, like any field of science, can be seen as one facet of the investigation of the unknown. As with physics, not only is it important that reliable field data be collected but the equivalent of theoretical physicists are needed to review that data, suggest theories that attempt to make sense of it, and search for clues to similar aspects of the UFO phenomenon to research in other fields.¹

Some of those oft-described characteristics are:

- Change Shape and Size
- Multiple Craft Merge into One
- Become Fuzzy in Appearance
- Suddenly Appear in the Sky
- Disappear from View
- Balls (orbs) Under Intelligent Control

- Doppler Red Shifting Before Disappearing

Change Shape and Size: Virtually every configuration of craft has been reported to change shape from time to time. An observer near Woodbridge, NJ, reported at 10:25 am on April 30, 2004, that a jet black glossy cylinder-shaped craft was moving to the northeast at less than 1,000 feet. The witness stated: “It had to be huge, more than 75 feet in length and at least 10 feet in diameter. It was shaped like a glossy black sausage casing, and it would periodically go into a formal V-shape and then speed up in that direction of travel.” As it crossed in front of the witness, the Sun would glint off the object. It maintained a true and straight attitude and height throughout the event.²

Multiple Craft Merge into One: Reports of several small craft coming out of, or going into, a larger craft have been consistently reported throughout the past 60 years. Researchers coined the term “mother craft” to describe the apparent purpose of the big vehicle. Some reports say that the larger craft changes shape just before ingesting the smaller ones. That was the situation when a British Overseas Airways Corporation (BOAC) airliner was en route to London from New York on June 29, 1954. Just south of Goose Bay, Labrador, while flying at 19,000 feet, the crew noticed an object west of their plane at a distance of five miles. As they drew closer, the crew could see a large pear-shaped object flying in formation with six other smaller objects. The smaller objects flew around the large craft as it changed into a triangle shape with definite, clearly-defined edges. As the jetliner grew closer, the smaller objects formed into a regular line and seemed to merge into the larger object. Then the remaining larger object appeared to suddenly shrink and vanish right before the eyes of the startled crew.³

Become Fuzzy in Appearance: An otherwise solid-looking object may suddenly start to become fuzzy looking and even become transparent before disappearing. While this may be a defensive maneuver, it could also be the start of a spacetime transition event. The opposite scenario is also reported. On June 13, 2004, four people in Sandy, UT, saw a triangle-shaped object fly over. There was no sound and there were no lights on the object. They said it became transparent and looked fuzzy on the edges before zipping away in a couple of seconds.⁴

Suddenly Appear in the Sky: People report being amazed how something big and solid looking can just suddenly appear in the sky before them. Some even report the appearance of a door or hole in the sky before the object appears, as if it became visible as it came through this portal. In talking about dimensional portals, Carl Sagan said: “Black holes may be apertures to elsewhere. Were we to plunge down a black hole, we would re-emerge, it is conjectured, in a different part of the universe and in another epoch of time... Black holes may be entrances to Wonderlands.”⁵ An example of sudden appearance took place over Hanover, MA, on July 11, 2001, when a man driving a car said he noticed a “white flash as if something popped below the clouds ahead.” As he got closer, he could see it was disc-shape and had no wings or tail. He also observed “a strange aura/trail around it similar to heat that rises off a hot road. It seemed to have a slight wobble, perhaps caused by the aura, as it seemed to blur the outline. It continued its approach and passed directly overhead.”⁶

Disappear from View: In a large number of cases, a craft is being watched by any number of witnesses as it passes overhead. As it continues along its course, it suddenly disappears from view, often in a clear and unobstructed blue sky. This was the situation on June 19, 1973, when Dr. Harley Rutledge, head of a university physics department, observed an object in daylight. He said, “It was not like anything I had ever seen before.” A gray, stubby, wingless object was clearly visible. As he watched it and framed it between his thumb and forefinger to estimate its size, it changed color from dull gray to light green, and in two seconds it was gone. It was nowhere in the sky. It had simply disappeared.⁷

Balls (Orbs) Under Intelligent Control: Balls of various sizes, from baseball-sized to basketball-sized, arrive and come into close proximity to the witness as if observing or sensing what the witness is doing. Orbs have been witnessed around and near farm animals, automobiles, and coming close to people both indoors and out. They maneuver easily through and between the limbs of trees, around solid objects, and sometimes through solid walls. On October 10, 1962, residents on Springs Park Road in Jacksonville, FL, reported small balls with fuzzy outlines moving around between houses. When a ball was nearby, the house lights would grow dim. A man went into the kitchen to tell his wife about one of the glowing balls moving through a field behind the house. She looked out and saw a

blindingly bright ball of pink light within six feet of the house. As she watched, it went around the corner of the house and down the street where it was seen by two other people.⁸ An example of orbs seen inside a house took place in Mt. Holly, NJ, at 3 am on December 11, 2004, when a woman awoke and saw two, red, basketball-size lights floating in the corner of the bedroom. She said she watched as they floated and hovered in the corner. A third orb entered the room and flew towards the bed and hovered over her sleeping husband. It was a red ball with a red light shining down at him. It remained there for about a minute before flying outside through the wall.⁹

Doppler Red Shift before Disappearing: Color changes seem to go along with speed changes. Objects are often reported to move from very slow speeds, or from hovering, to accelerate faster and faster. Their color changes as their speed increases and then they disappear. A lot of people have puzzled over the color change phenomenon. Typical of this type of report is an incident that happened on January 10, 2003, in Lockport, NY. The witness, who was working at the computer at 4:45 am, opened a window for some fresh air. In the distance was a hovering light with pulsating colors. It looked like somebody took a flashlight and shut it off and on repeatedly but very fast. The main color was white. Near the end of this event, the light became very bright and then dimmed out with a reddish hue and vanished.¹⁰

Introduction to Spatial/Temporal Translation Concepts

In physics, spacetime is any mathematical model that combines space and time into a single construct called the spacetime continuum. Spacetime is usually interpreted with space being three-dimensional and time playing the role of the fourth dimension. The four-dimension perspective allows you to fly right past, over, or around any solid barrier in three dimensions.¹¹

Simon Harvey-Wilson, an Australian UFO researcher, said: “When creating a four-dimensional object, things start to get interesting. What one does is imagine moving our three-dimensional, six-sided cube in a direction that is at right-angles to all its current dimensions. What we get then is an object whose borders are eight cubes, thus giving an inhabitant of such a realm eight degrees of freedom. Most people have great difficulty

visualizing four or more dimensional objects, but that does not mean that such objects cannot exist, or that there are no rules that govern their shape and behavior.”

- Concepts to be considered include the following topics:
- Spacetime
- Wormholes
- Black Holes
- Teleportation
- Faster-than-light
- Time Travel

Spacetime: In physics, the combination of space and time is used in the theory of relativity. When developing the theory of relativity, Albert Einstein showed that time was in many respects like an extra dimension (or direction) to space. Space and time can thus be considered as entwined into a single entity, rather than as two separate things. The general theory of relativity describes how spacetime is distorted by the presence of material bodies.¹²

While spacetime is generally interpreted with space being three-dimensional and time playing the role of the fourth dimension, string theorists believe that a total of 10 dimensions exist, including height, width, length, and time. The other six dimensions exist largely as unknowns, but everything is based on hypothetical one-dimensional strings. A new theory, called M-theory, suggests that those strings all vibrate in yet another dimension. Manipulating that additional dimension would alter dark energy in terms of height, width, and length. Such a capability would permit the altering of spacetime for a spaceship, taking advantage of dark energy’s effect on the universe. Gerald Cleaver, a physicist at Baylor University, said: “The dark energy is simultaneously decreased just in front of the ship to decrease (and bring to a stop) the expansion rate of the universe in front of the ship. If the dark energy can be made negative directly in front of the ship, then space in front of the ship would locally contract. This loophole means the spaceship would not conflict with Einstein’s Theory of Relativity, which states that objects accelerating to the speed of light require an infinite amount of energy.”

Wormholes: In physics, a wormhole is a hypothetical topological feature of spacetime that is fundamentally a “shortcut” through space and time. Spacetime can be viewed as a 2D surface, and when “folded” over, a wormhole bridge can be formed. A wormhole has at least two mouths that are connected to a single throat or tube. If the wormhole is traversable, matter can “travel” from one mouth to the other by passing through the throat. The name “wormhole” comes from an analogy used to explain the phenomenon. If a worm is traveling over the skin of an apple, then the worm could take a shortcut by burrowing through its center, rather than traveling the entire distance around, just as a wormhole traveler could take a shortcut to the opposite side of the universe through a topologically nontrivial tunnel.¹³

Black Holes: A black hole is a theoretical region in space in which the gravitational field is so powerful that nothing, not even electromagnetic radiation (visible light), can escape its pull after having fallen past its event horizon. The term derives from the fact that the absorption of visible light renders the hole’s interior invisible and indistinguishable from the black space around it. While general relativity describes a black hole as a region of empty space with a point-like singularity at the center and an event horizon at the outer edge, the description changes when the effects of quantum mechanics are taken into account. Research on this subject indicates that rather than holding captured matter forever, black holes may slowly leak a form of thermal energy called Hawking radiation and may well have a finite life.¹⁴

Teleportation: Teleportation is the movement of objects from one place to another, more or less instantaneously. The general idea is that the original object is scanned in such a way to extract all the information from it. Then this information is transmitted to the receiving location and used to construct the replica. A teleportation machine would be like a fax machine, except that it would work on 3-dimensional objects as well as documents. In 1993, an international group of six scientists, including IBM Fellow Charles H. Bennett, confirmed teleportation is indeed possible in principle. In subsequent years, other scientists have demonstrated teleportation experimentally in a variety of systems, including single photons, coherent light fields, nuclear spins, and trapped ions. Teleportation promises to be quite useful in information processing, facilitating long-range quantum

communications and making it easier to build a working quantum computer. Because of engineering limitations, no one expects to be able to teleport people in the foreseeable future, even though it would not violate any fundamental law of physics to do so.¹⁵

Faster-than-light: Faster-than-light (also known as superluminal or FTL) communications and travel refer to the propagation of information or matter faster than the speed of light. Under the special theory of relativity, a particle with subluminal velocity needs infinite energy to accelerate to the speed of light, although special relativity does not forbid the existence of particles that travel faster than light at all times. Large quantities of energy leave our sun every day at the “default” speed of light. Put another way, this implies the speed of light is an observation that a certain amount of energy travels at or very near light speed. On the other hand, what some physicists refer to as “apparent FTL” is the hypothesis that unusually distorted regions of spacetime might permit matter to reach distant locations faster than what it would take light in the “normal” route. Apparent FTL is not excluded by general relativity. Examples of apparent FTL proposals are the Alcubierre drive and the traversable wormhole.¹⁶

Time Travel: Time travel is the concept of moving between different moments in time in a manner analogous to moving between different points in space, either sending objects backward in time to a moment before the present or sending objects forward from the present to the future without the need to experience the intervening period. Some interpretations of time travel also suggest that any attempt to travel backward in time might take one to a parallel universe whose history would diverge from the traveler’s original history after the moment the traveler arrived in the past. One-way travel into the future is arguably possible given the phenomenon of time dilation based on velocity in the theory of special relativity (exemplified by the twin paradox) as well as gravitational time dilation in the theory of general relativity. It is currently unknown whether the laws of physics would allow backward time travel. Some theories, most notably special and general relativity, suggest that suitable geometries of spacetime, or specific types of motion in space, might allow time travel into the past and future if these geometries or motions are possible. There are known to be solutions to the equations of general relativity that describe spacetimes that contain closed time-like curves.¹⁷

Advanced UAP Spatial/Temporal Translation Concepts

Fortunately for our understanding, the anomalous phenomena subsumed under the heading Spatial/Temporal Translation appear to be reconcilable with mainstream General Relativity Theory, at least in principle. On the theoretical side, studies of warp drives, traversable wormholes, and time machines find acceptance and publication in Tier 1 physics publications.^{[18,19,20,21](#)}

With regard to observational data, a relatively hefty body of anomalous craft reports of varying degrees of credibility has been generated over the past 60 years or so, and a serious attempt at documenting these cases has been made.^{[22](#)} Though it is often difficult to establish ground truth authenticity for any given case, it is possible to examine these reports as a totality to determine whether meaningful patterns emerge, and, if so, can they be rationalized within our present understanding of physical law?^{[23,24](#)} Beyond this, specifically of interest is whether the reported effects would constitute a potential threat if deployed by a hostile force.

To be specific, let us briefly consider the evidence-based reported observations of anomalous phenomena associated with exotic-craft-induced effects. The following examples are found to be completely explainable on the basis of the principles of General Relativity Theory, subject only to the hypothesis that the spacetime metric can be engineered with advanced technology. The spacetime metric change effects of interest described below can be explicated on the basis of direct application of the curved-spacetime formulations of General Relativity Theory, or by the use of less abstract formalisms such as the Polarizable Vacuum (PV) Representation of GR found to be useful for many engineering calculations.^{[25](#)}

Time Alteration: Under conditions in which the local time in a region of spacetime is sped up by exotic technological means, from within this region external events would—relatively speaking—appear to be in slow motion, or, in the extreme, frozen in time. An oft-reported example is that of close encounters with exotic craft in which the people in a stalled car are left with an impression of a 20-minute experience (corroborated by their watches) whereas only a few minutes had passed in “real-time.” Such reports are rife

in the literature. The “Oz Factor” (normal environmental sounds ceasing) would also fit this model since external sounds would, under these conditions, be expected to redshift below the auditory range.

An additional implication of time speedup within the frame of a craft is that its motions that might seem precipitous from an external viewpoint (e.g., sudden acceleration or deceleration) would be experienced as much less so by the craft’s occupants. From their viewpoint, observing the external environment to be in relative slow motion, it would not be surprising to consider that one’s relatively modest changes in motion would appear precipitous to an external observer.

Yet another implication of such time-accelerated distortion is that some portion of the heat spectrum of the craft not normally visible to the unaided eye would appear to an external observer to “blueshift” up into the visible spectrum, adding to its luminosity. An additional corollary would be the blueshifting of the visible spectrum up into the ultraviolet and soft x-ray frequencies with the potential for the generation of sunburn or more general radiation exposure effects on nearby observers. There are many such documented cases.²⁶

Furthermore, given that the binding energy of atoms in materials is proportional to frequency ($E \sim \hbar\omega$) and is thus increased in such a time-accelerated reference frame, a craft’s material properties operating in such a frame would appear “hardened” relative to the environment. This might explain the occasional observation of rapid entry into the water, or even the ground, with no apparent ill effect. A corollary is that the potential radiation exposure effects mentioned here would not be hazardous to craft occupants since for those totally within the field of influence the biological chemical bonds are similarly hardened. Finally, nearby plants caught in the accelerated time field would show the effects of accelerated aging (senescence), an occasionally-reported phenomenon.^{27,28} We note that such inferred attributes appear to dovetail with a significant number of anomalous craft sighting claims.

In the opposite case (where time is slowed), an individual who has spent time within such a temporally-modified field would, when returned to the normal environment, find that more time had passed than could be experientially accounted for, and the individual might therefore be inclined to interpret the experience in terms of “missing time,” an oft-reported

experiential aspect of claimed abductions.^{29,30}

Spatial Alteration: As in the case of temporal distortion, the option exists (at least in principle) for the manipulation of spatial variables as well. For example, a craft whose exterior dimensions might be relatively modest might appear spacious in the interior, an observation sometimes reported.³¹ Given the relative absurdity of this type of report, it tends to counter the hoax hypothesis wherein an individual would presumably attempt to have his story appear more credible than this would appear to be. Additional dimensional aspects such as the observation of rapid dimensional changes are discussed in “Refractive Index” effects.

Velocity Measurements in Spacetime-Altered Regions: Interior to a *spacetime-altered* region, the locally-measured velocity of light c is given by the ratio of (locally-measured) distance/time intervals for a propagating light signal. From a viewpoint exterior to the region, however, the observed coordinate ratio measurement can yield a different value greater or less than c .³² As an example of measurement less than c , one speaks of light “slowing down” as a light signal approaches a dense mass (e.g., a black hole). With regard to exotic propulsion, on the other hand, an engineered spacetime metric can in principle establish a condition in which the trajectory of a craft approaching the velocity of light in its own frame would be observed from an exterior frame to exceed light speed, i.e., exhibit motion at superluminal speed; this is the basis for discussion of *warp drives* in the GR literature.^{18,19} Therefore, although present technological facility in the hands of the human race is far from mature enough to support the development of warp drive technologies,³³ the possibility of such technologies being developed by advanced species cannot be ruled out. In other words, travel at speeds exceeding the conventional speed of light could occur, and therefore the possibility of reduced-time interstellar travel by extraterrestrial civilizations is not fundamentally constrained by physical principles.

“Refractive Index” Effects: Speed-of-light effects in a spacetime-distorted region, as viewed from an external frame, can be expressed in terms of an optical refractive index n , where n is an effective refractive index of the (spacetime-distorted) vacuum. This widely-known result in General Relativity Theory has resulted in the development of refractive-index models for GR^{34,35,36,37} that have found application in problems such as gravitational lensing.³⁸ The estimated electric or magnetic field strengths

required for a given refractive index change (a.k.a. the Levi-Civita Effect) can be found in the literature.³⁹

With regard to exotic propulsion, the reported observation of refractive light phenomena is consistent with the signature of such spacetime alteration. An oft-reported observation, for example, is the appearance of a light beam that may bend or even terminate in mid-space. Such observations exhibit features that under ordinary circumstances would be associated with a high-refractive-index optical fiber (well-defined boundaries, light trapped within, bending or termination in mid-space) and ultracold atomic gases. Thus the reported observations could be a consequence of a structured beam configuration within which the spacetime variables are altered. Additional observations include apparent changes in size or shape (changes in lensing magnification parameters) or sudden “cloaking” or “blinking out,” which would at least be consistent with strong gravitational lensing effects that bend a background view around a craft, though other technical options exist as well.

Time Machines: As bizarre as it may seem to our everyday experience, the equations of rigorous mainstream General Relativity Theory permit, at least in principle, the construction of time machines.²¹ Specifically, according to general relativity, if the laws of physics permit the use of advanced technology to create and maintain a traversable wormhole in space for interstellar travel, then that wormhole can be converted into a time machine so that causality is not violated. In such a case, distortions of time and space are inextricably intertwined. In a recent proposal to construct a proof-of-principle device in the laboratory, researchers propose the generation of a time travel effect via the utilization of what is known as the Gravitational Faraday Effect, a form of inertial frame-dragging. The approach is based on the use of a laser beam sent on a helical path through a photonic crystal.^{40,41,42} Accepting the predictions of General Relativity Theory at face value, a future deployed version of such a device could in effect permit “time jumps.”

Warp Drive: Alcubierre’s “warp drive” formulation represents a class of spacetime metric solutions of Einstein’s General Relativity field equation.^{18,33} Alcubierre derived a spacetime metric motivated by cosmological inflation that would allow arbitrarily short travel times between two distant points in space. The behavior of the warp drive metric

provides for the simultaneous expansion of space behind the spacecraft and a corresponding contraction of space in front of the spacecraft. The warp drive spacecraft would appear to be “surfing on a wave” of spacetime geometry. A spacecraft can be made to exhibit an arbitrarily large apparent faster-than-light speed as viewed by external observers while its moving local rest-frame never travels outside of its local co-moving light cone and thus does not violate Special Relativity. In order to implement a warp drive, one must construct a “warp bubble” that surrounds the spacecraft by generating a thin shell or surface layer (like a thin film of soap stretched across a loop of wire) of exotic matter, i.e., a quantum field having negative energy and/or negative pressure. There have been many different types of warp drives designed by physicists.³³

Traversable Wormholes: Traversable wormholes represent another class of spacetime metric solutions of Einstein’s General Relativity field equation.^{20,21,33,43} Wormholes are hyperspace tunnels through spacetime connecting together either remote regions within our universe or two different universes; in principle, they could even connect together different dimensions and different times. Travelers would enter one side of the tunnel and exit out the other, passing through the throat along the way. The travelers would move at much less than the speed of light through the wormhole, but external observers would see the travelers as having traversed multi-light year distances through space at faster-than-light (FTL) speed. There are a number of different traversable wormhole throat designs that are cubic-shaped, polyhedral-shaped, flat-face-shaped, generic-shaped, etc. A “stargate” is a very simple special class of traversable wormhole solutions.⁴⁴ A Stargate is essentially a wormhole with a flat-face shape for the throat, flat like a doorway. A traveler encountering and going through such a wormhole will simply be shunted into another remote region or another universe. We might construct such a stargate or other types of wormholes by generating a thin shell or surface layer (like a thin film of soap stretched across a loop of wire) of exotic matter, i.e., a quantum field with negative energy and/or pressure.³³ Wormholes can also be turned into time machines.

Advanced UAP Spatial/Temporal Translation

Concepts DIRDs

Two Defense Intelligence Reference Documents (DIRDs) were written for AAWSAP on UAP spatial/temporal translation topics:

- *Warp Drive, Dark Energy, and the Manipulation of Extra Dimensions*, Dr. Richard Obousy and Dr. Eric Davis
- *Traversable Wormholes, Stargates, and Negative Energy*, Dr. Eric Davis

Short summaries are in Appendix III.

Chapter 8: UAP Power Generation Overview

Background

The novel aerospace technologies that have been observed from before WWII to the present involve a wide range of vehicle configurations and sizes and appear to utilize technological breakthroughs not yet accomplished by any world government. Therefore, understanding and copying the power generation systems, including power distribution and storage, is a necessary step in being able to duplicate the vehicles themselves.

UAP Power Generation Indicators

It is easier to find examples of futuristic configuration designs, armament, and flight characteristics than it is for power generation. We are left to look at vehicle operating parameters requiring power, vehicle lighting and color changes, effects on humans, plants, and animals, and secondary effects such as local, city, and whole power grid blackouts in order to scope out the power generation mechanisms involved. Some examples of those indicators are:

- Haloes Surrounding the Craft
- Color Changes associated with Flight Regime Changes
- Blinding Lights Emitted by Craft
- Generation of Lift Forces
- Creation of Invisibility
- Changing the Shape of the Craft
- Powering Armament Systems
- Affecting Automobile and Electronic Systems
- Causing Blackouts

Haloes Surrounding the Craft: Various vehicle configurations, ranging from clean efficient disc-shaped designs to blunt body configurations such

as spheres and rectangles, have been observed flying at various speeds in the atmosphere without motor noise, the sound of rushing air, or sonic booms in high-speed flight. Some witnesses claim they have seen a shimmering of the atmosphere around the craft in the daytime and haloes at night. Researchers have postulated that these observations indicate the generation of a field of some type that isolates the vehicle from the atmosphere and explains the observed flight characteristics.

An example of the observed “field effect” during a daylight incident took place on November 7, 2006, at 4:30 pm, over Chicago’s O’Hare International Airport at United Airlines Gate No. C17. Gate, ground crewmembers, and pilots saw a disc-shaped object hovering over the airport beneath a cloud layer located at 1,900 feet above the gate. Then it departed straight up at high-speed leaving a hole in the cloud, revealing the clear blue sky above. A pilot moving a Boeing 777 aircraft from the gate to a hanger facility said the gray disc-shaped vehicle was clearly visible, but there was a significant atmospheric distortion around the bottom of the object, similar to “heat rising off a desert road.”¹

Nighttime haloes are even more pronounced. The brightness statements made by witnesses suggest that a very strong power source is required to operate the craft and generate the field around the craft. An example of the brightness is found in a case that took place on October 24, 2008, along the Ohio River near the Ohio, West Virginia, and Pennsylvania border. According to truck driver Tim Comstock, cars were stopped along the road to observe a very bright object hovering near the top of a hill ahead. He slowed his truck to a crawl to view the object and take some cellphone photos. He said: “I looked up and there was a very bright object just above the treetop level. I can’t really say for sure what it was because I’ve never seen anything like it. It seemed self-luminescent. It was the size of a large pickup truck and it was very bright whenever I looked at it.”²

Color Changes Associated With Flight Regimes: The archives are full of reports of bright hovering objects changing color as they accelerate away. A family living near a Minuteman missile site near Garrison, ND, on July 25, 1967, said their cattle were nervous and their dog was whining, so they looked to see what was wrong and spotted a glowing blue-white object hovering about a mile away near the Minuteman missile site. Shortly afterward the object began to move north from the missile site, darting with

rapid bursts of speed, before slowing to a stop again. Each time it accelerated, its color changed to bright red, then gradually back to blue-white as it slowed and stopped.³

Blinding Light Emitted by Craft: A characteristic of many UFO sightings is the intensely brilliant light, typically described as being “blinding” or “bright as daylight.” An object seen hovering over Bennett Lake in Deerfield Township, MI, on November 21, 2003, is fairly typical of the bright light produced by UFOs. The witnesses were a 20-year-old man and his mother. The object was about 500 yards away and motionless. He said: “the light was brighter than anything I have ever seen.” Eventually, it started to move toward town and came within 250-300 yards of the witnesses. Gradually the light began to dim and they could see a definite disc shape with white lights around its perimeter.⁴

Generation of Lift Forces: Very heavy large objects are reported to silently rise from the ground and fly away with ease. Their size and weight are verified from the ground traces they leave and the indentations in the ground where they sat while landed. The generation of power to maintain the lift and flight characteristics requires a reliable high-performance power system. For example: At about the same time that police officer Lonnie Zamora witnessed a UFO landing at Socorro, NM, on April 24, 1964,⁵ a similar incident happened at La Maderia, NM. A thirty-five-year-old man was visiting his father at La Maderia and went out to tend to some nervous horses in the middle of the night. He saw an object shaped like a butane tank, twelve-to-fourteen feet high and as long as a telephone pole, sitting on the ground about 300 feet away. The object was completely silent. In the daylight, they found evidence of landing gear indentations in the ground and a large area of scorched grass.⁵

Creation of Invisibility: Objects are clearly seen and photographed in broad daylight in the unobstructed sky. Then suddenly they just disappear from view. The mechanism for creating invisibility is just now being scientifically studied. The amount of power necessary to either mask a large flying object or move it to another dimension or time frame must be tremendous. This type of flight activity even dazzles physics professionals. Watching a daylight object disappear before his eyes convinced Missouri Professor Harley D. Rutledge that UFOs are very real. He was the former head of the Missouri Academy of Science and the head of the Physics

Department at Southeast Missouri State University. He had been given the job of gathering scientific information about a rash of UFO sightings over southern Missouri in 1973. He was loading his car with instruments on June 19, 1973, when he looked up and saw a dull gray object. He said it was not a plane and “it was not like anything I had ever seen before.” He said the wingless stubby untapered body and flat rear end reminded him of a .45 caliber bullet. He used 10x binoculars to view and estimate its angular width and then photographed it. As he watched, the object changed from dull gray to light green in color. Then suddenly it was gone. It had completely disappeared from the clear blue sky.⁶

Objects that suddenly become invisible to the eye are not necessarily invisible to radar. In an official government report about Russian UFO reports released under the Freedom of Information Act in 1994, interceptor pilot S. Proshkin, the Commanding Officer of an Air Force Unit, reported that a blip designating an “aerial target” had suddenly appeared on radar screens at 1100 on October 8, 1990. He said: “At 1122 I received the coordinates of the target and the mission to take a look at it. According to the information from the Command Post, the object was located at an altitude of 4.5 kilometers. The weather was clear and cloudless, the visibility excellent.” At first he did not see the two large objects, but looking back to the rear and to the right, he saw two objects “of considerable dimension.” He said: “I turned and began to close in and both targets disappeared from the field of vision, but the blips stayed on the radar and were verified by the Command Post to be only 15 kilometers from the aircraft.”⁷

Changing the Shape of the Craft: Aircraft technologists have been looking at shape-changing for a long time. The early way of changing shape was to design an aircraft that could move its wings in flight. For slow flight, the wings would be at 90 degrees to the body of the aircraft, but for high-speed flight, the pilot would swing the wings backward to a forty-five-degree position. Current attempts at shape-changing have become more exotic by making the wing sections flexible so they can change shape and thickness to match different parts of the flight regime. Even that capability pales when compared with the many reports of objects changing shape as they go from slow flight to fast flight to shooting away at high speed. On April 30, 2004, a Woodbridge, NJ, man saw a jet black, glossy,

cylindrically-shaped object about 1,000 feet above the ground. He said it was huge, more than 75 feet in length, and at least 10 feet in diameter. It was shaped like a black sausage casing, and it would periodically go into a formal V-shape, and then speed up in that direction of travel.⁸

Powering Armament Systems: Observed characteristics of a whole array of armament systems have been noted by reports of electronic pulses, beams of energy, light rays, and systems disrupters. Some of these reports are akin to the work that Boeing Aerospace is currently doing to develop aircraft-based laser canons. The amount of power required for weapons of this type is enormous. Consider the amount of power needed to destroy an airplane. In March 1967, Detachment A of the 6947th Security Squadron of the U.S. Air Force Security Service (AFSS) was located at the Key West Naval Station at Boca Chica Key, Florida. The Spanish-speaking intercept operators heard Cuban air defense radar controllers report a UFO approaching the island from the northeast. Once the UFO entered Cuban air space at 660 mph and at 33,000 feet, two MIG-21 jet fighters scrambled to meet it. Guided by ground radar to within three miles of the “bogey,” the pilots could visually resolve it as a bright metallic sphere with no markings or appendages. Radio contact attempts proved fruitless, so the flight leader was ordered by Cuban Air Defense Headquarters to destroy the object. Within seconds, the wingman screamed to the ground controllers that the flight leader’s jet had exploded. Regaining his composure, he reported there was no smoke or flame, and that his leader’s MIG-21 had disintegrated. The Cuban radar operators watched the UFO rapidly accelerate and climb to above 100,000 feet. It was later tracked heading south-southeast toward South America.⁹

Affecting Automobiles and Electronic Systems: Close encounter incidents have resulted in car engine stoppage, failure of car lights, radio static and loss of signal, compass needle deflections, and television disruptions. Interestingly, there were far more car engine cases when automobiles used a 6-volt electrical system and before the electrical system was hardened to allow computer chips in the control system. A recent car stoppage may be related to the type of UFO that was involved. The incident occurred on a country road near Sargent, TX (in Matagorda County along the Gulf of Mexico), on July 5, 2005, at 8:50 pm. The driver said the lights blinked twice and the car went dead. She coasted to the top of the hill and saw a

bright bluish glow in the adjacent wooded area. It grew in intensity and went bright like a blue-white light bulb. It moved slowly upward in complete silence. When it was above the trees, she could clearly see it. It was a huge bluish translucent ball of light with the center of the ball much darker than the outer edges. The outer edges seemed to vibrate or tremble slightly. She estimated it was 30 to 40 feet across, much larger than her car. It continued to rise and increase in speed and went straight up until it disappeared from sight. As soon as it was gone, the car started without a problem.¹⁰

Cause of Power System Blackouts: In various parts of the world, people have reported seeing UFOs near high-voltage power lines or power substations at the time of area blackouts. This had led some to believe the UFOs were draining power from the grid. Since a lot of the power grids are aging, have problems that weaken them, and contain equipment that is prone to failure, perhaps the drain on the system caused by the UFO caused the already weakened system to fail. In March 2005, people living in the cities of Copiapo and Caldera, Chile, claimed that two UFOs flying in tandem over the cities caused a blackout for over an hour. The power system failure investigation found the source of the failure was the malfunction at the 110,000-volt transformer substation.¹¹

Introduction to UAP Power Generation Concepts

In each of these examples, the power requirements are much in excess of what could be produced by batteries, electrical generators, jet engines, air-driven turbines, or the like. In fact, from all indications, when it comes to UAP we are looking at power generation systems of the future. For example, the Space Shuttle's main engine has a specific impulse, a measure of efficiency, of 455 seconds; nuclear fission could reach 10,000 seconds; fusion could provide 60,000 to 100,000 seconds, and matter/antimatter annihilation up to 100,000 to 1,000,000 seconds.

Concepts to be considered include the following technologies:

- Nuclear Fission
- Nuclear Fusion
- Magnetohydrodynamic (MHD)
- Anti-Matter

- Black Holes
- Laser Beams
- Microwave Beams
- Particle Beams

Nuclear Fission: Nuclear fission is the splitting of the nucleus of an atom into parts (lighter nuclei) often producing free neutrons and other smaller nuclei, which may eventually produce photons (in the form of gamma rays). The fission of heavy elements is an exothermic reaction that can release large amounts of energy both as electromagnetic radiation and as kinetic energy of the fragments (heating the bulk material where fission takes place). Fission is a form of elemental transmutation because the resulting fragments are not the same element as the original atom.

Nuclear fission produces energy for nuclear power systems and drives the explosion of nuclear weapons. Both uses are made possible because nuclear fuels undergo fission when struck by free neutrons and in turn generate neutrons when they break apart. This makes possible a self-sustaining chain reaction that releases energy at a controlled rate in a nuclear reactor or at a very rapid uncontrolled rate in a nuclear weapon.

Substantial research and design work has been conducted to define nuclear rockets for space missions. Nuclear reactor power plants in space can deliver high power in compact, low-mass packages, able to operate reliably while unattended in harsh environments for long periods of time.

Nuclear Fusion: Nuclear fusion is the process by which multiple like-charged atomic nuclei join together to form a heavier nucleus. It is accompanied by the release or absorption of energy. Iron and nickel have the largest binding energies per nucleon of all nuclei. The fusion of two nuclei with lower mass than iron generally releases energy while the fusion of nuclei heavier than iron absorbs energy; it's vice-versa for the reverse process, nuclear fission.

Fusion power is power generated by nuclear fusion reactions. In this kind of reaction, two light atomic nuclei fuse together to form a heavier nucleus and, in doing so, release energy. In a more general sense, the term can also refer to the production of net usable power from a fusion source, similar to the usage of the term "steam power." Most design studies for fusion power plants involve using the fusion reactions to create heat, which is then used

to operate a steam turbine, similar to most coal-fired and fission-driven nuclear power stations.

Fusion energy has many potential benefits, including:

- Provide a very abundant supply of energy worldwide
- An environmentally cleaner source of energy (no air pollution and little if any high-level nuclear waste), as well as an alternative to fossil fuels and fission reactors
- No creation of material for weapons
- Research and development into fusion could create technological spin-offs (superconducting magnets, high-power lasers, high-speed computing, etc.)
- No chance of runaway reactions leading to accidents

Magnetohydrodynamic (MHD): MHD is the academic discipline that studies the dynamics of electrically conducting fluids. Examples of such fluids include plasmas, liquid metals, and salt water. The word “magnetohydrodynamics” derives from magneto, meaning magnetic field; hydro, meaning liquid; and dynamics, meaning movement. The idea of MHD is that magnetic fields can induce currents in a moving conductive fluid, which create forces on the fluid and also change the magnetic field itself.

Anti-Matter: Anti-matter has been discussed in the UAP Propulsion chapter but will be briefly touched on again as follows. Dr. George Schmidt of the NASA Marshall Space Flight Center said: “Anti-matter has tremendous energy density. Matter-antimatter annihilation—the complete conversion of matter into energy—releases the most energy per unit mass of any known reaction in physics. The belief is that an antimatter particle coming in contact with its matter counterpart yields energy. That’s true for electrons and positrons (anti-electrons). They’ll produce gamma rays at 511,000 electron volts. But heavier particles like protons and anti-protons are somewhat messier, making gamma rays and leaving a spray of secondary particles that eventually decay into neutrinos and low-energy gamma rays.” Two additional problems to be overcome are the production of anti-protons and the storage of anti-protons.

Black Holes: A black hole is a theoretical region of space in which the

gravitational field is so powerful that nothing, not even electromagnetic radiation (i.e., visible light), can escape its pull after having fallen past its event horizon. The term is derived from the absorption of visible light, which renders the hole's interior invisible and indistinguishable from the black space around it.

Stephen Hawking at the University of Cambridge calculated that black holes slowly but inexorably evaporate. According to the laws of quantum mechanics, pairs of "virtual" particles and antiparticles continually bubble up in empty space. Hawking showed that gravitational energy could be lent to virtual particles near the event horizon. These could then become real and escape, carrying away positive energy. Over time the black hole will bleed away into outer space. Can this black hole evaporation mechanism be harnessed for power systems?

Whether or not extraterrestrial civilizations have been able to harness the energy of black holes is not known. However, if they have already done this, they have essentially tapped an infinite power source.

Laser Beams: Laser beam-powered propulsion is a class of spacecraft propulsion mechanism that uses energy beamed to the spacecraft from a remote power source. With beamed propulsion one can leave the power-source stationary on the ground or in a large spacecraft, and directly heat propellant on a micro-spacecraft (i.e., mini-disc or orb). Laser beams transport the power to the spacecraft and still require a major power source to supply the beamed energy.

Microwave Beams: Microwave beam-powered propulsion transports the power to the spacecraft from the ground or large spacecraft somewhat like the laser-beamed approach. For low-speed maneuvers, radially oriented linear accelerators ionize nearby air to propel the spacecraft. Focusing pulsed microwaves "aft" of the saucer-shaped craft converts air molecules to plasma, driving the craft through Mach 1. For hypersonic flight, the craft employs a microwave-heated magnetohydrodynamic (MHD) rocket generator to produce as much as 520 MW of electric power. This power drives a vectoring MHD "fanjet" that allows the ship to reach orbital speed.

Particle Beams: Neutral Particle Beam (NPB) devices are an alternative to Laser and Microwave beam devices and were conceived as a part of the "Star Wars" program. An NPB generator produces a high-velocity stream of hydrogen or deuterium atoms. This concept was conceived as a space

weapon, but the potential for power transmission has yet to be fully explored.

Advanced UAP Power Generation Concepts

Power is an integral part of any aerospace vehicle system—without a power source, nothing else works, including the propulsion system. Moreover, in a number of advanced or exotic aerospace propulsion concepts (e.g., nuclear fusion, matter-antimatter annihilation, warp drives, traversable wormholes, repulsive gravity forces, or the alteration of spacetime via a polarizable vacuum modification approach, etc.) power is essential for the propulsion concept to function. In very simple terms, a power system can be thought of as consisting of three basic elements: (1) power source; (2) power management and distribution; and (3) energy storage. The occurrence of credible reports of observations of high-performance advanced craft of indeterminate origin appears to be consonant with emergent, compact high-power generation technologies, so we consider here the physics, engineering, and correlates/consequences of the generation of such high-power-density sources. In addition to onboard systems, one can envision energy being beamed from an external source, e.g., an orbiting spaceship, or from fixed or mobile ground-based sources. This section will focus on power sources and/or energy storage systems.

Historically, aerospace power sources have been divided into nuclear and non-nuclear categories, where the former has included radioisotope power sources and fission power sources, while the latter has generally included solar power and energy storage (e.g., batteries or fuel cells). Looking to advanced “classical” systems, one can include nuclear fusion and matter-antimatter annihilation in the nuclear category. In terms of performance, whether for energy release or for propulsive specific impulse, the classical nuclear systems (fission, fusion, antimatter) have a clear advantage. Of these, matter-antimatter annihilation offers the highest possible classical physical specific energy of any known reaction substance. The matter-antimatter annihilation specific energy of 9×10^{16} J/kg is many orders of magnitude greater than chemical (10^7 J/kg), fission (8×10^{13} J/kg), or even fusion (3×10^{14} J/kg) reaction energies. Moreover, matter-antimatter annihilation can be induced spontaneously without the use of complex reactor systems or catalysts.

Extending our reach beyond these classical approaches, however, there are other potential exotic sources of energy available. For example, quantum field theory predicts that the vacuum of space throughout the universe is filled with fluctuating electromagnetic fields that propagate in all possible directions and with a cubic frequency distribution. This is referred to as the quantum electromagnetic vacuum, or quantum electrodynamic zero-point field (ZPF), which is the lowest energy state of otherwise empty space. When integrated over all frequency modes up to the Planck frequency (10^{43} Hz), it represents an energy density of as much as 10^{113} J/m³ which is far in excess of any other known energy source, even if only an infinitesimal fraction of it is accessible. Even if we are constrained to integrate over all frequency modes only up to the nucleon Compton frequency ($\sim 10^{23}$ Hz, the characteristic frequency associated with nucleons), this energy density is still enormous ($\sim 10^{35}$ J/m³). In addition to the quantum electromagnetic vacuum ZPF, there are other vacuum structures associated with the other interaction forces inherent in the Standard Model, i.e., the weak and strong force vacua.

With regard to observational data, a relatively hefty body of anomalous craft reports of varying degrees of credibility has been generated over the past 60 years or so, much of it very well documented.¹²⁻¹⁷ Crude approximations have been made from a number of highly credible visual sightings of advanced unconventional craft that result in luminous power output estimates of from several megawatts to several gigawatts.¹⁸ However, these estimates derived the luminous power output solely from the amount of observed visible light emitted by the advanced craft. Such craft may also be radiating energy in other parts of the electromagnetic spectrum (e.g., radiofrequency, microwaves, IR, UV, X-ray, gamma rays, etc.) not detectable by visual observation alone. Because such advanced unconventional craft are observed to have a material and physical structure, they will as well require energy to overcome gravity and execute their (well-documented) extreme spacetime translations, even if they use exotic propulsion techniques. Though it is often difficult to establish ground truth authenticity for any given case, it is possible to examine these reports to determine whether meaningful patterns emerge and, if so, whether they can be rationalized within our present understanding of physical law.¹⁹ Beyond this, specifically of interest is whether the reported effects would constitute

a potential threat if deployed with hostile intent.

Given the present global energy concerns, if there exists an alternative to the major energy sources that could fill the demand immediately at hand, we would likely see its deployment. Since this is not the case, extrapolations into the future must necessarily be considered with some caution. Nonetheless, observations of the performance of advanced exotic craft would appear to indicate the existence of yet-untapped, possibly exotic, sources of energy. Therefore, on a best effort basis, with regard to exotic possibilities for power generation for far-future advanced craft, let us examine the following approaches based on the principles of quantum field theory (QFT), quantum electrodynamics theory (QED), elementary particles physics theory, electrodynamic-plasma theory, and nuclear fusion theory, in roughly the order of decreasing exoticism.

Extracting Energy from the Quantum Vacuum: There is a force associated with the QED vacuum: the Casimir force.²⁰ This is a force of attraction between closely-spaced conductive cavity walls (or plates) that has now been well measured and can be attributed to a minute imbalance in the vacuum zero-point energy density inside the cavity between the plates versus the region outside the plates.²¹⁻²³ In other words, the imposition of boundary conditions (the cavity plates) modifies the energy distribution of the vacuum ZPF.

QED theory allows for the operation of one-shot transient Casimir energy extraction devices in which the plates, if left unfettered, will collapse together and energy is converted from the ZPF into heat (or other forms of energy) without violating either energy conservation or thermodynamic principles.²⁴ After delivering its energy, E , the matter that comprises the machine (i.e., the plates) is in a “used” state (i.e., can be said to constitute “ash”) and cannot be restored to its original state without an input of energy that is greater than or equal to E .

On the other hand, one could envision a continuous Casimir energy extraction device in which vacuum zero-point energy (ZPE) is converted to a useful form on a recycling basis without net alteration to its own matter state. The possibility of continuous conversion of ZPE to other forms requires that, in principle, vacuum energy must be continuously degradable (i.e., continuously consumable), not just that there be a surfeit of energy in place to harvest.

In what follows, we list the strongest candidates for the potential to extract energy from the vacuum via Casimir-Effect-like devices and other alternative concepts.

1. ZPF Energy Extraction by Ground State Energy Reduction

As first analyzed by Boyer²⁶ and later refined by Puthoff,²⁷ the paradox was addressed that even though atomic ground states involve electrons in accelerated motion, such states are nonetheless radiationless in nature. This ground state characteristic was shown to be interpretable (for the standard Bohr ground state orbit of the hydrogen atom) as an equilibrium process in which radiation by the electron in its ground state orbit was compensated by absorption of radiation from the background vacuum electromagnetic zero-point energy (ZPE). This interpretation has recently been strengthened by the analyses of Cole and Zou.^{28,29}

By passing monatomic gas atoms through specially constructed microcavities (e.g., resonant conducting Casimir cavities), which suppress the background vacuum ZPE at the ground state frequency (thereby upsetting the balance), one might expect the ground state orbit to drop in energy to a new equilibrium orbit and release the energy difference. The estimated power output under optimized conditions from this approach is estimated to be on the order of Watts to kilowatts for very small-sized devices.^{25,30}

2. ZPF Energy Extraction via the Tunable Casimir Effect

Although the Casimir force is conservative, and thus the Casimir device might appear to be a one-shot device, the fact that the attractive Casimir force is weaker for dielectric plates compared to conductive plates raises the possibility for the use of thin-film switchable mirrors to obtain a recycling engine, should the energy difference from the switched Casimir process be greater than the energy required for switching.^{25,31-33}

3. ZPF Energy Extraction via EV Phenomenon

Shoulders³⁴ developed an experimental program to explore the physics of

microscopic plasma vortices (a.k.a. force-free plasmoids), which are postulated to be a microscopic form of ball lightning. This study was motivated by the earlier experimental work of D. R. Wells at the Princeton University Plasma Physics Laboratory, W. H. Bostick and V. Nardi at the Stevens Institute of Technology, and their collaborators. Given occasional observations of seemingly anomalously large energies being liberated by the collapse of ball lightning structures, Shoulders became interested in the possibility of stable, quantized force-free structures that could be triggered by some process to yield a net energy gain for power generation. The foundation for this speculation was Nardi et al.'s³⁵ observation of strange electron concentrations they called vortex filaments that formed in an electron beam made by plasma focus or relativistic electron beam machines, which exhibited electron concentrations that appeared to violate the space charge law and which exploded with an anomalously large force, creating copious X- rays.

Shoulders and collaborators subsequently investigated different approaches to extracting useful energy from the vacuum ZPF by way of exploiting EV phenomenon. Shoulders reported that anomalous EV observations together with corresponding energy measurements showed excess energy generation at the pW to mW level that is 30 times the total input energy.^{36,37} However, to date all efforts to scale up the process indicate that plasma losses increase at a rate sufficient to swamp out the apparent energy gain, so the utility of the *micro-ball-lightning* approach is yet to be determined.

4. ZPF Modes and Vacuum Field Energy

Quantum field theory (in flat or curved spacetimes) allows for a variety of degradable vacua in which the vacuum energy of any quantum field or interaction of fields can be driven down below zero (i.e., negative energy). The vacuum becomes degradable when perturbed or distorted under certain conditions, as follows:

- i. “Sparking” the Vacuum³⁸
- ii. Magnetically Induced Vacuum Decay^{39,40}
- iii. Gravitational “Squeezing” of the Vacuum²⁵

- iv. Gravitational Redshifting of the Vacuum²⁵
- v. “Melting” the QCD Vacuum^{41,42}
- vi. Casimir Effect Revisited.⁴³ Theoreticians have been exploring new types of boundary conditions (e.g., new cavity geometries, topologically non-trivial spaces, fiber bundles, quantum spin, quantum fields or their interactions, etc.) for the purpose of discovering new ways to modify the vacuum and induce corresponding new Casimir vacuum effects. This effort could elucidate new facets of the Casimir Effect that could lead to new types of vacuum ZPF interactions with matter or with “matter-less” boundary conditions. This line of investigation should be supported and pursued because it serves as a very useful probe to explore other avenues for the possibility of vacuum energy extraction.
- vii. Dynamical Casimir Effect^{44,45}

Extracting Energy from the Gravitational Field: In view of the Alzofon antigravity method discussed in the UAP Lift Concepts, the cyclic spin nuclear alignment and relaxation process absorbs local gravitational energy during relaxation. This energy, in the high RF (microwave and above) part of the EM spectrum, needs to be conducted away from the material undergoing cyclic polarization. In principle it could be converted into any form for on-board use; in other words, gravitational energy is converted to EM radiation as a consequence of the antigravity mechanism. Therefore, if verified as a viable energy-producing mechanism, the Alzofon technology could act as a gravitational energy conversion source.

Electroweak-Induced Low Energy Nuclear Reactions (LENR): Although there have been many claims concerning Cold Fusion published in the literature (now discussed under the rubric, low-energy nuclear reactions or LENR), the acceptance of the reality of this phenomenon by the scientific community remains problematical because of (a) the lack of robust experimental replication, and (b) the lack of a compelling theory to account for the claimed nuclear interaction results under the experimental conditions described. Recently, however, a theoretical structure has been proposed as accounting for the observations that involve electro-weak interactions.^{46,47} Although weak interactions are an integral part of the Standard Model,

nonetheless low energy applications of weak interactions in condensed-matter devices are novel and hence unfamiliar. If verified, the Widom & Larsen approach could lead to realistic possibilities for designing LENR devices capable of producing excess heat at a low cost without lethal nuclear waste, dangerous gamma rays, or unwanted neutrons. The necessary tools and the essential theoretical know-how to manufacture such devices appear to be well within the reach of presently available technology.

Electron-Positron Annihilation: Another potential revolutionary aerospace power system is one that incorporates systems utilizing positron-electron annihilation.⁴⁸⁻⁵¹ This concept is different from previously proposed antimatter-based systems because it uses positrons, not antiprotons, and is a viable alternative to nuclear fission systems. There are distinct advantages to using antimatter, and specifically positron, annihilation. First, the energy density of antimatter (180 Megajoules per microgram) is ten orders of magnitude greater than chemical energy and three orders of magnitude greater than nuclear fission or fusion energy. Second, the annihilation of a positron and an electron results in the creation of two soft 511 keV gamma rays. These gamma rays can be easily absorbed to heat a working fluid in a closed, high-efficiency thermodynamic power system. Third, unlike nuclear fission or antiproton systems, no residual radioactivity is created. Fourth, unlike nuclear fission or antiproton systems, the presence of soft gamma-rays and lack of residual radiation will result in a lower-mass, compact system that does not require heavy radiation shields or large separation between the power source and the payload. Positron-powered systems are inherently safer, more reliable, and offer fewer operational concerns than their nuclear-fission-based and antiproton-based counterparts. Positron production technology is a mature science with worldwide facilities in operation in government, university, and commercial laboratories.

IEC Fusion: With regard to fusion-powered aerospace systems, an exemplar is provided by G. H. Miley's Inertial Electrostatic Confinement (IEC) fusion power generation unit.⁵²⁻⁵⁴ The IEC fusion propulsion concept, undergoing laboratory testing and design evaluation at the University of Illinois-Urbana's Fusion Studies Laboratory, promises a high power-to-weight ratio as compared to conventional fusion approaches. An IEC fusion power source can attain a very high power-to-weight ratio because it does not require heavy magnetic components, high-power drivers, and the other

massive structural (radioactive shielding) components normally required by conventional fusion propulsion and power devices. An additional, but very important, feature of IEC devices is that they possess an excellent efficiency for burning advanced (aneutronic) fuels as a result of the highly non-Maxwellian energy distribution attained by the reacting ions. Aneutronic reactions are very suitable for direct energy conversion without the need for an intermediate energy conversion medium. The charged particle reaction products can be captured by external magnetic and/or electric fields and directly converted to electrical power, or used to directly heat and expand a rocket propellant.

Miley's present experimental unit integrates an IEC device designed to burn D-³He, with an electrical system direct energy converter (DEC). Current design parameters provide for the generation of 6 MW of thrust power from a 10.6 m diameter, 5 metric ton reactor capable of propelling a 300-metric ton spacecraft from low Earth orbit to Mars in less than 120 days. With some additional work, the IEC system can also be modified to enable (the very-difficult-to-do) proton-Boron fusion reaction, which is the cleanest aneutronic reaction known to directly produce very high-energy output.

Advanced UAP Power Generation Concepts DIRDs

Four Defense Intelligence Reference Documents (DIRDs) were written for AAWSAP on UAP power generation topics:

- *Inertial Electrostatic Confinement Fusion*, Dr. George Miley
- *Concepts for Extracting Energy from the Quantum Vacuum*, Dr. Eric Davis
- *Ultracapacitors as Energy and Power Storage Devices for Commercial and Military Applications*, Drs. J. Golightly and V. Teofilo
- *Quantum Tomography of Negative Energy States in the Vacuum*, Dr. Eric Davis

Short summaries are in Appendix IV.

Chapter 9: DIRD Research Goals

At the conclusion of a 2011 meeting in the Capitol building with a U.S. Senator and an agency Under Secretary, Lacatski, the only one of this book's authors present, posed a question. He stated that the United States was in possession of a craft of unknown origin and had successfully gained access to its interior. This craft had a streamlined configuration suitable for aerodynamic flight but no intakes, exhaust, wings, or control surfaces. In fact, it appeared not to have an engine, fuel tanks, or fuel. Lacatski asked: What was the purpose of this craft? Was it a life-support craft useful only for atmospheric reentry or what? If it was a spacecraft, then how did it operate?

Two of the DIRDs reviewed in this book are of particular importance in possibly explaining some aspects of observed UAP/UFO design and performance characteristics.

Negative Mass Propulsion, Dr. Friedwardt Winterberg, University of Nevada-Reno, January 3, 2011, allows for one possible solution to this quandary. We have already learned in Chapter 6 that a craft made of positive mass and a ball made of negative mass would move off in the same direction with accelerations that are proportional to the force of gravity between them. Such a mechanism would appear to provide an unlimited amount of unidirectional acceleration without requiring either a reaction mass or an energy source. Under its self-acceleration, the mass dipole would eventually reach the velocity of light. It is this property of self-acceleration without the expenditure of energy that has intrigued many researchers and raised the prospect of a propulsion system without limits.

Advanced Space Propulsion Based on Vacuum (Spacetime Metric) Engineering, Dr. Hal Puthoff, EarthTech International, March 29, 2010, is the second of the two DIRDs. Let us examine the concepts in that document more closely than we did in Chapter 7.

In addressing AAWSAP's DIRD research goals, we can examine the hypothesis that exotic technologies involved in energy/propulsion mechanisms result in the alteration of spacetime variables. Under this hypothesis, we compare predicted corollary consequences against claimed

characteristics of UFO observations to determine whether there is a sufficient match to conclude that (at least some) observations appear to provide support for the spacetime alteration hypothesis.

Spacetime Measurement: The observation of apparent alteration of spatial and temporal variables as sometimes reported in UFO sightings can for analytical purposes be expressed in terms of the metric tensor that describes the measurement of spacetime intervals. Such an approach, well known from studies in GR (General Relativity), has the advantage of being *model-independent*, i.e., does not depend on knowledge of the specific mechanisms or dynamics that led to the spacetime alterations (though it is known that, at a minimum, such alterations do occur as corollaries of GR-type effects). Thus the only assumption required to explore the spacetime alteration hypothesis is that the technology of interest incorporates a source that can alter (i.e., engineer) the spacetime metric to its advantage.

Table 2 shows the metric effects on physical processes in an altered spacetime. The metric tensor coefficients g_{00} and g_{11} are as defined in the *Vacuum (Spacetime Metric) Engineering DIRD*.

Table 2. Metric Effects on Physical Processes

Variable	Spacetime-Engineered Metric $g_{00} < 1, g_{11} > 1$	Spacetime-Engineered Metric $g_{00} > 1, g_{11} < 1$
Time Interval	Processes (e.g., clocks) run slower	Processes (e.g., clocks) run faster
Frequency	Redshift toward lower frequencies	Blueshift toward higher frequencies
Energy	Energy states lowered	Energy states raised
Spatial Measure	Objects (e.g., rulers) shrink	Objects (e.g., rulers) expand
Velocity of Light	Effective $v_L < c$	Effective $v_L > c$
Mass	Effective mass increases	Effective mass decreases
Gravitational Force	Gravitational	Antigravitational

Time Distortion: Under conditions in which the temporal variable is altered by exotic technological means (e.g., a spacetime “bubble” in which

time is *sped up*), from a position *inside* the bubble, external events would, relatively speaking, appear to be in slow motion or, in the extreme, frozen in time.

Abduction researcher Budd Hopkins describes a case in which two girls were abducted from a recreational swimming pool area. They reported that, as they were being whisked away, they noticed that divers were frozen in mid-air, as were also drops of water and other swimmer activities, causing them to wonder how their alien abductors could freeze time. In yet another case, a close encounter by occupants in a stalled car left them with an impression of a 20-minute experience (corroborated by their watches) whereas only a few minutes had passed in “real-time.” (Budd Hopkins, *Missing Time*, 1988)

An additional implication of such temporal manipulation in the frame of a craft is that its motions, which might seem precipitous from an external viewpoint (e.g., sudden acceleration or deceleration), would be experienced as much less so by the craft’s occupants. From the occupants’ viewpoint, observing the external environment to be in relative slow motion, it would not be surprising to consider that one’s relatively modest changes in motion would appear unbelievable to an external observer.

In the opposite case (where time is slowed), an individual having spent time within such a temporally-modified field would, when returned to the normal environment, find that more time had passed than could be experientially accounted for, and the individual might therefore be inclined to interpret the experience in terms of “missing time,” an oft-reported experiential aspect of claimed abductions.

Frequency: Yet another implication of such time-accelerated distortion is that some portion of the heat spectrum of the craft not normally visible to the unaided eye would appear to an external observer to “blueshift” up into the visible spectrum, adding to its luminosity. An additional corollary would be the blueshifting of the visible spectrum up into the ultraviolet and soft x-ray frequencies with the potential for the generation of sunburn or more general radiation exposure effects on nearby observers, of which there are many documented cases.

Energy: Furthermore, given that the binding energies of materials are proportional to frequency (E) and are thus increased in such a time-accelerated reference frame, a craft’s material properties operating in such a

frame would appear “hardened” relative to the environment. This might explain the occasional observation of rapid entry into water, or even the ground, with no apparent ill effect. A corollary is that the potential radiation exposure effects mentioned would not be hazardous to craft occupants since for those totally within the field of influence the biological chemical bonds are similarly hardened. Finally, nearby plants caught in the accelerated time field would show the effects of accelerated aging (senescence), an occasionally-reported phenomenon. We note that such inferred attributes appear to dovetail with a significant number of UFO sighting claims. Such reports are rife in the literature. The “Oz Factor” (such as normal environmental sounds ceasing) would also fit this model since external sounds would under these conditions redshift below the auditory range.

Spatial Distortion: As in the case of temporal distortion, the option exists (at least in principle) for the manipulation of spatial variables as well. For example, one might have a spacious craft appear relatively small in the exterior environment. In other words, via metric engineering of the metric coefficients, a craft whose exterior dimensions might be modest would appear spacious in the interior, an observation sometimes reported. (L. Stringfield, “UFO crash/retrievals: Is the coverup lid lifting?” *MUFON UFO Journal* 250, 3, 1989, Case 14.) Given the relative absurdity of this type of report, it tends to counter the hoax hypothesis, as an individual would presumably attempt to have his or her story appear more credible than this would appear to be.

Velocity of Light: With regard to exotic propulsion, an engineered metric would indicate that the trajectory of a craft approaching the velocity of light in its own frame would be observed from an exterior frame to exceed light velocity, i.e., exhibit motion at superluminal speed; this is the basis for discussion of *warp drives* in the GR literature. Therefore, although the present technological facility at the hands of the human race is far from mature enough to support the development of warp drive technologies, the possibility of such technologies being developed by advanced species cannot be ruled out. In other words, travel at speeds exceeding the conventional velocity of light could occur, and therefore the possibility of reduced-time interstellar travel by extraterrestrial civilizations is not fundamentally constrained by physical principles.

Refractive Index Effects: With regard to exotic propulsion, the reported

observation of refractive light phenomena is consistent with the signature of such spacetime alteration. An oft-reported observation, for example, is the appearance of a light beam that may bend or even terminate in mid-space. Such observations exhibit features that under ordinary circumstances would be associated with a high-refractive-index optical fiber (well-defined boundaries, light trapped within, bending or terminating in mid-space). Thus the reported observations could be a consequence of a structured beam configuration within which the spacetime variables are altered. Additional observations include apparent changes in size or shape (changes in lensing magnification parameters) or sudden “cloaking” or “blinking out,” which would at least be consistent with strong gravitational lensing effects that bend a background view around a craft, though other technical options exist as well.

Mass: Of special interest is the case in which the effective mass is decreased by the application of spacetime metric engineering principles. Effective reduction of inertial mass as viewed in an observer frame of reference would appear to mitigate against untoward effects on craft occupants associated with abrupt changes in movement.

Evaluation of the Spacetime-Alteration Hypothesis: A relatively hefty body of UFO reports of varying degrees of credibility has been generated over the past 60 years or so of a serious attempt at documentation. Though it is often difficult to establish ground truth authenticity for any given case, it is possible to examine these reports to determine whether meaningful patterns emerge, and, if so, whether they can be rationalized with our present scientific understanding of physical law.

Under consideration here is what can be labeled a minimal assumption approach—a model-independent, spacetime metric approach in which the only assumption required is that the technology under investigation incorporates a source that can distort the spacetime metric in the vicinity of a craft.

Given the plethora of data/observations that appear to correlate with the spacetime-alteration hypothesis in a most parsimonious way, we take the data to constitute strong support for the hypothesis that (at least some) exotic propulsion is based on control and manipulation of the vacuum spacetime structure. Furthermore, independent of the specific mechanisms involved, such manipulation can be understood in terms of

alteration/distortion of the spatial and temporal variables of the well-understood spacetime metric formalism.

Chapter 10: UAP Encounter with F-15Cs near RAF Lakenheath UK

The following incident happened in 2007 and is probably similar to many of the 144 encounters with unknown objects that are detailed in the June 25, 2021, *UAPTF Report*. This case, the first investigation completed by AAWSAP, was submitted to the Defense Intelligence Agency in May 2009 and is reproduced here in its entirety.

On the afternoon of January 12, 2007, amateur radio enthusiasts in England made a recording of airborne U.S. Air Force F-15C aircraft stationed at RAF Base Lakenheath, United Kingdom. The recording is a 4 minutes and 32-second audio clip which captures two USAF F-15Cs that had numerous radar tracks and a few visual sightings of an unidentified object. The radio enthusiasts released their recordings to UFO enthusiasts in London. The event was first publicly reported by the *Bury Free Press* on March 27, 2007. Subsequently, three internet reports have been found that discuss the event. The History Channel's television series *UFO Hunters* mentioned this event on one of their shows.

A phone conversation with the former Commanding Officer, 493rd Fighter Squadron, and a face-to-face interview with the lead pilot involved in this event confirmed that the recording is authentic and the event did take place. Although the internet news articles reported that London military air traffic control contacted the flight of F-15Cs after a UFO was picked up by military air traffic control radar, this information is incorrect. The F-15Cs were the first to detect the unidentified object via their airborne radar.

Summary of the F-15C Pilots' Radar and Visual Contact

- Two separate F-15Cs tracked the object on radar numerous times.
- The F-15C pilots reported the unidentified object to their military air traffic controller, who also had intermittent radar contact with the unidentified object, but was disinterested.

- Two separate pilots visually acquired the object.
- The object was seen or tracked between 17,000 and 18,000 feet mean sea level, and apparently “not falling.” In retrospect, the lead pilot believes the object was traveling with the prevailing winds (west to east) at a slow speed (less than 60 knots).
- The object was described as looking like a “rock” and “a very small black object” that “did not look like a bird.”
- The object was “softball to watermelon” sized.
- The object was black and “did not appear to be uniform” (smooth or symmetrical) and “may have had a red dot or discoloration.”
- The flight made (at least) four passes by the object to try and identify it.
- The squadron or pilots did not officially report the incident to any U.S. or DoD agencies, except their air traffic controller.
- A British UFO enthusiast made a request for information through the UK government. The lead pilot was aware of this but did not recall if he spoke with anyone about the request for information.
- The lead pilot, in retrospect, believes the object may have been some type of a balloon because it had a velocity closely associated with normal wind speed. During the event, however, he did not think that the object was a balloon.

Primary Points of Contact

- Lead Pilot: Captain Albert Douglas, USAF
- Wingman Pilot: Major Tim Perez, USAF
- Former Commanding Officer, 493rd Fighter Squadron: Lieutenant Colonel Ryan Allenson, USAF (Retired)

Detailed Report of Interview with Lead F-15 Pilot

On April 18, 2009, Doug Kurth and Larry Grossman of AAWSAP interviewed Captain Albert Douglas, USAF, regarding the events that transpired on or about the afternoon of January 12, 2007, near RAF Lakenheath, UK. The following details the events that occurred according to Captain Douglas.

Captain Douglas was stationed at RAF Lakenheath, UK, and assigned to the 493rd Fighter Squadron in January 2007. Currently, Captain Douglas is stationed at Nellis AFB, NV, and assigned to the 65th Aggressor Squadron. Captain Douglas openly stated that he does not believe in UFOs.

Captain Douglas believes the sighting event occurred in January or February 2007. [The audio recording of their radio transmissions was reportedly made on the afternoon of January 12, 2007.] Captain Douglas was leading a formation of two F-15C aircraft on a routine training flight. Captain Douglas's wingman (number two aircraft) for this event was Major Tim Perez. The flight was conducted in the East Anglian MTRA (Military Temporary Reserved Airspace), over land and just north of RAF Lakenheath. The flight used RAF Lakenheath as their "bullseye" reference point. The flight was monitoring "London Mil"—an air traffic control agency—on their primary radio and was operating on a discreet frequency assigned by London Mil on their auxiliary ("aux") radio. The F-15Cs had APG-63v1 Suite 4, a modern, mechanically scanned pulse-doppler radar.

Once the flight arrived in the airspace, Captain Douglas separated the two aircraft, with him going west and his wingman going east. While they were separating, Captain Douglas gained a radar lock of unreported traffic approximately 15 nautical miles in front of him. Because the velocity of the track was very slow (less than 60 knots), he thought it was a spurious lock with no valid target similar to chaff. Captain Douglas stated this was not unusual for the radar to falsely display contacts or tracks that are not valid. Captain Douglas executed a bump acquisition (break lock and attempt re-lock) to validate the target. The radar reacquired the track indicating something at 17,700 feet mean sea level (MSL) and low speed. Captain Douglas maneuvered his aircraft to fly near and attempt to visually identify the track. Captain Douglas flew an intercept profile and visually acquired an object, which he estimates he maintained approximately 500 feet of separation with. This is when the recording of the radio transmissions on their auxiliary radio begins (a discreet frequency that only the two aircraft are operating on). Captain Douglas stated the object appeared to be a single object with one main body and no discernible attachments. The object's size was between that of a softball and a watermelon. The shape did not appear to be uniform, not necessarily jagged, but the edges did not appear to be smooth or symmetrical. The object was black and may have had a red dot or

some reddish discoloration. The object did not appear to be highly reflective. The object looked like a “meteor rock.”

Captain Douglas and his wingman subsequently made at least three additional passes by the object. On two of those passes, Captain Douglas was able to visually acquire the object. The wingman visually acquired the object in one pass. The object was tracked on radar by both aircraft multiple times using “auto guns” mode to achieve the lock, a medium pulse repetition frequency (medium PRF) mode. The radar tracks appeared stable, with no real swings of the vector stick and no memory cues. On each visual sighting, Captain Douglas believed the object appeared to look like a small black rock that was not falling. The object was always seen and tracked between 17,000 and 18,000 feet MSL. Captain Douglas’s recollection is that the object was moving east-north-easterly at less than 60 knots. [Prevailing winds are typically east-south-easterly in that location with velocities of 15-45 knots, but excursions exist to 100+ knots.] Captain Douglas did not believe the object reacted to their aircraft maneuvers.

Captain Douglas reported the sighting of the unidentified object to London Mil on their primary radio. This transmission is not on the recording since it is on a different frequency. However, these transmissions were most likely also overheard, leading to the media reporting that “F-15s were scrambled to intercept a UFO.” Captain Douglas stated that the London Mil controller had intermittently observed the object on their radar, but the controller seemed disinterested. No further discussion occurred with the London Mil controller.

Captain Douglas was recording his cockpit displays and radio transmissions during this flight but recorded over them when using the same tapes on his next mission. No authentic cockpit media exists today. Captain Douglas listened to the copy of the recording that is available on the internet. He believes that version has been edited because it does not contain all of the transmissions he believes were made. However, Captain Douglas does not recall any transmissions he might have made that are not on the recording. Indicative of probable editing, there does not appear to be time available during the recording when Captain Douglas was talking to London Mil on the primary radio.

After the flight returned to base, neither Captain Douglas nor his wingman reported the sighting to anyone. A couple of months after the

event, the local media reported the intercepted radio transmissions. At that time, Captain Douglas reported that they were his radio transmissions to his squadron mates. The predominant discussion among squadron personnel was of “ridicule” and “teasing” of Captain Douglas regarding his UFO sighting. Captain Douglas was aware that someone did make an official request for information about the event to the UK government. However, Captain Douglas was not sure if he spoke with anyone about this request for information. He believes he might have been interviewed regarding this but is not sure. He does not know if it was government or military personnel, or UK or US personnel that were handling the request for information.

Captain Douglas now believes that the object he observed was most likely a weather balloon. His belief is based on his understanding of the size of weather balloons and that the object appeared to be traveling with the wind, and no other logical explanation exists for the sighting.

Captain Douglas was asked whether he was aware of whether any procedures were in place to report UFO sightings via the military. Captain Douglas replied that he was not aware of any military procedures or processes for reporting UFOs. When he was informed that procedures did exist in the *Flight Information Handbook*, he was not surprised that he was not aware of the procedures.

Some of Captain Douglas’s current recollection does not appear to correlate with the information transmitted during the recording. However, Captain Douglas did appear credible and openly willing to discuss all details associated with the sighting. Items that are contradictory between his current statements and the radio transmissions recording include:

- The recording indicates that all radar contact by the aircraft was not a radar track, that the object was also picked up in search mode.
- The recording indicates that the radar tracks were not always stable tracks, that the vector stick was sometimes erratic. This is not abnormal or unusual for very slow speed targets (less than 100 knots).
- The recording indicates that the radar did break lock without him commanding bump acquisition. Again, this would not be abnormal for very slow-speed targets and does not necessarily

indicate any unusual conditions, such as jamming.

- The recording states the radar depicted the object traveling at 80 knots at times, and Captain Douglas’s recollection was that the object never exceeded 60 knots.
- During the interview, Captain Douglas stated he did not recollect speaking with anyone after the request for information to the UK government. In a previous phone conversation, Captain Douglas stated he was interviewed by someone but didn’t recall who that person was or what agency they worked for.

Radio Communications Transcript

This 4-minute and 32 seconds recording was widely available on the World Wide Web. This transcript was made from the recording published on a website titled *Internet Archive*. The audio file was a 642 kb Wave file titled “F15sANDUFO(2)”.

Statements made in brackets [] are not part of the radio transmissions. Information within brackets is intended to give a general interpretation for people not familiar with military aircraft communications. Ellipsis (...) are used to indicate inaudible portions of radio transmissions. The radio transmissions on the recording state:

Captain Douglas: “... Dude, no kidding, I just flew over on bullseye zero zero eight for twenty. I had a radar hit, and it was swinging, it looked like thirty knots. And there was something there. It looked like a, uh, it didn’t look like a bird. It looked like no kidding a rock to me. I,... negative. I have no idea what it was, but basically, just heads up. Try and stay away from seventeen thousand. Keep your nugget on a swivel, I have no idea what it was. I want to use my radar to see if I can pick this object up again. I picked it up twice. The first time I picked it up my radar broke lock, so I thought it was just, uh, some kind of bad lock, or... chaff. I’m going to turn back north for a little bit.” [“Bullseye 008 for 20” refers to a position from a common airborne reference point called “bullseye.” During this flight, RAF Lakenheath’s location is used as the bullseye reference point. From the bullseye reference point, the object beared 008 degrees for 20 nautical miles. A radar “hit” means a radar contact from a search mode, not a radar track.]

Major Perez: “Two will pick up trail.” [Wingman will assume a trail formation position.]

Captain Douglas: “..., I’m gonna go, uh, start turning back towards the west... I think it was zero zero four for about twenty. I’ve got it again. It’s seventeen seven. Three miles off my nose at, yea, seventeen seven. I’m flying that way now. I’m gonna slow down. I’m not gonna get below three hundred knots, but, uh. Back towards you, dude I can’t tell, something small, very small black object. I had it at seventeen seven. He just flew, it just flew right over me.” [“Seventeen seven” means 17,700 feet MSL.]

Major Perez: “Confirm the object appears stationary?”

Captain Douglas: “Well it, I couldn’t tell ‘cause it was... small, I think it was moving about thirty knots.”

Major Perez: “Eighty knots.” [Major Perez is reporting the object’s speed as 80 knots.]

Captain Douglas: “Yea, my radar was showing between thirty and sixty, so I have no idea what it, actually doing. ... it went from seventeen the first time I saw it to seventeen seven, so it’s not falling. I don’t think it was a bird.”

Major Perez: “... radar lock or... hits?”

Captain Douglas: “What was that?”

Major Perez: “Were you taking a manual lock or was it an auto guns lock?”

Captain Douglas: “No I’ve been getting it with auto guns every time. ...bullseye zero zero nine for fifteen. Showing, yea, basically no airspeed on it.”

Major Perez: “Two is clean.” [Wingman has no radar contact.]

Captain Douglas: “Say again.”

Major Perez: “Two is clean. Two is locked, bullseye zero one two, fifteen, eighteen thousand.”

Captain Douglas: “Alright, I’m going to, uh, climb up slightly here. I want to try and look at it, then you, follow in behind me if you can.”

[Both pilots transmitting at the same time, inaudible.]

Captain Douglas: “Dude, I have no idea what that is. But it just passed over me. I’ve got it at, uh, seventeen thousand feet, eight miles off my nose, bullseye zero four nine, for twenty, seventeen thousand. I’m gonna get down to sixteen five. It’s, uh, two point five miles off my nose right now,

seventeen thousand feet. Yea, I'm not going to be able to slow down as much as you are. Maybe you can slow down just a little bit more and get a better look."

[Both pilots transmitting at the same time, inaudible.]

Captain Douglas: "... two hundred and twenty knots, non-maneuvering."

Major Perez: "Copy, confirm you've merged with it?"

Captain Douglas: "I am about to merge right now, I'm seeing him, ...now, and I'm gonna get my airspeed back before I maneuver. Are you locked or clean?"

Major Perez: "I'm no joy. Approaching line abreast with you, two thousand feet high, eighteen five."

Captain Douglas: "Copy that, I'm coming in an easy right-hand turn. You said you're at eighteen?"

Major Perez: "Yea, I climbed back up to nineteen five now. You're six o'clock for about ten miles."

Captain Douglas: "Copy that."

Major Perez: "If we are well clear, I will descend at this time. Aux, are we clear? Um, posit?" ["Aux" indicates he is transmitting on the auxiliary radio.]

Captain Douglas: "I, uh, I'm not sure. Again, it stayed between seventeen and eighteen. So, I believe I'm in the vicinity of it. I'm not, uh, a hundred percent positive. One's blind. I am visual now. I am gonna fly underneath you." ["One's blind" means lead has lost sight of his wingman. "Visual" means he has regained sight of his wingman.]

Major Perez: "Copy. I saw it that time. I could not make out what it was."

Captain Douglas: "You did see it?"

Major Perez: "Affirm."

Captain Douglas: "Alright, I'm gonna circle back around. Don't know if we'll be able to see it through the HUD?"

Major Perez: "We have somebody out here with us." [Indicating that other aircraft are now operating in the same airspace.]

Captain Douglas: "Yea, I see him. Two, did you see anything?"

Major Perez: "Negative."

Chapter 11: Original Tic Tac Investigation

AAWSAP was the first to hear about and investigate the Tic Tac case back in January-June 2009. After Doug Kurth, a new BAASS employee, had apprised Kelleher of the Tic Tac case and Kelleher had informed Lacatski, the investigative wheels of AAWSAP moved into high gear. Between January and June 2009, Jonathan Axelrod, a Naval Intelligence analyst, and his team of investigators first tracked down and interviewed the four pilots, each of whom had independent visual sightings of the Tic Tac. *The New York Times* initially broke the Tic Tac story in December 2017.

In an ironic presaging of the June 25, 2021, Unidentified Aerial Phenomena Task Force (UAPTF) Report, Axelrod's team had concluded twelve years prior to the UAPTF Report that the Tic Tac was not owned by the United States or China, or Russia. Since the Tic Tac investigation was initiated and executed by AAWSAP BAASS, Axelrod's 13-page report was the second detailed investigation AAWSAP submitted to the Defense Intelligence Agency.

The original Tic Tac report as received from Naval Intelligence by AAWSAP is reproduced below in its entirety with minimal editing. In order to avoid confusion, names changed to protect personally identifiable information coincide with those names changed in the abbreviated narrative about the Tic Tac event in the book *Skinwalkers at the Pentagon*.

Executive Summary

During the period of approximately November 10-16, 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 November 14, 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 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.

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

Anomalous Aerial Vehicle (AAV) Detection by AN/SPY-1:The USS *Princeton* was part of the Nimitz Carrier Battle Group during the period of approximately November 10-16, 2004, while completing Tailored Ships Training Availability (TSTA) in preparation for their deployment to the Arabian Sea. During COMPTUX, 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 its location. The Fire Control Officer, LT Colton Walsh, and his technician, FCCS Shawn Pearson, initially thought the contacts were part of the COMPTUX exercise. According to Senior Chief Pearson, 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 turn rates, demonstrating an advanced acceleration (G) capability. Senior Chief Pearson 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 while 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 phenomenon where ice

crystals can form and be detected by the AN/SPY-1. On November 14, 2004, after again detecting an AAV, *Princeton* 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 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.

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 100 E-2Cs 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.

- 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 by APS-145: On November 14, 2004, LT Paul LeBlanc, 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 LeBlanc 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 flying as part of their workups 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 LeBlanc 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 and was 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 November 14, 2004, at approximately N31 20' W117 10' about 70nm south of the U.S./Mexico Border 30 nm off the Baja Mexico Coast.

Additionally is the statement provided by the Commanding Officer (CO) of VMFA-232.

Pilot: Lt. Col Douglas “Cheeks” Kurth, USMC: Lt. Col Douglas “Cheeks” Kurth, 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 on board, which was odd since no controller had ever asked that question during a situation of identifying an unknown contact over the U.S. or International territory. He responded that he had no ordnance onboard. The controller provided vectors to the vicinity of contact. The object was reported to be at “slow speed and low altitude.” While in route at approximately 250 knots indicated/400 knots groundspeed at medium altitude (15-25,000 feet), he gained radar contact with 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 a 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 on the ocean surface. He recalled that the sea state was low (calm). At approximately 15 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 by an AAV but that the AAV was “cloaked” or invisible to the human eye.

Lt. Col Kurth recovered aboard the *Nimitz* at approximately 1200L. He reported to the Carrier Intelligence Center (CVIC) and was asked by his Intelligence Officer, 1st Lt. Aden Patel, if he saw the “supersonic Tic Tac”? We questioned now Capt. Patel 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 Fravor, USN/WSO: LT John Agnelli, USN
- FastEagle 02: Pilot: LT Alex Dietrich, USN/WSO: LCDR James Slaughter, USN

CDR Fravor, Commanding Officer VFA-41, was the pilot of FastEagle 01. He and LT Agnelli 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* (call sign “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 Agnelli 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 the onboard 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 Agnelli were attempting to acquire the object visually as they heard “merge plot” from Poison. Situational awareness of 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 Agnelli 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 of 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 FastEagle 02, which held at approximately 20,000 feet, and FastEagle 01 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 Cueing System that 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 Agnelli 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 Agnelli 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

whiteboard.” His report differs from CDR Fravor’s 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 descent as they rolled in from about 10,000 ft 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 its 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, it’s 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 relocate 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 were 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 Agnelli, when asked, said that all aircraft systems were functional, that there were no mission computer issues or avionics issues, that there was no radio or communication interference, and that they had entry into the Link-16 network. When asked, LT Agnelli couldn’t confirm any physiological or psychological feelings that were out of the ordinary.

The flight met up with LT Ann Bradford and LT Chad Underwood’s flight in the paraloft and passed what they had seen. The flight proceeded to

the CVIC. LT Agnelli noted that the sailors in CVIC had donned tin foil caps and wanted to know about the “UFO flight.” They reviewed the tapes and described to CVIC 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 Ann Bradford, USN/WSO
- LT Chad Underwood, USN

LT Underwood was a member of VFA-41 and was the Weapons and Sensors Officer (WSO) flying with LT Ann Bradford. 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 Underwood’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 Underwood, 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 onboard 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 the 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 Underwood 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 Underwood 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 the direction of the initial track flies as the radar attempted lock. The FLIR showed an object at 0 ATA and approximately -5deg elevation. According to LT Underwood, “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. There was no discernable movement from the object with the only closure being a result of the aircraft’s movement. As LT Underwood watched the object, it began to move out of the FLIR field of view to the left. LT Underwood made no attempt to slew the FLIR and subsequently lost situational awareness of the object. The Flight continued with the training mission with no further contact with the object. LT Underwood 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 the CVIC and debriefed. LT Underwood 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 Underwood 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 Underwood 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* (SSN-724) is a Los Angeles-class nuclear fast attack submarine. She was operating in the vicinity of the USS *Nimitz* as part of the CSG during the detection and intercept of the AAV. According to former LT Andy Stewart, 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 any

time during the operations off the coast of California. The former commander of the USS *Louisville*, CAPT Daxton Morris, 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 inflight.

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 be invisible to the human eye based on pilot reporting of the water disturbance with no visible craft. Based on the assessment of Mr. Stewart, 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 Nicholas Watson, the Carrier Air Wing Intelligence Officer. According to LCDR Watson, 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 Watson 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 Donald Briggs, also a highly experienced aviator but he did not take it very seriously. LCDR Watson

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 Aaron Morris at 3rd Fleet Intelligence, their higher echelon command. Finally, LCDR Watson 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 Rylan Thomas, the CSG-11 Senior Intelligence Officer (N2). CAPT Thomas 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 Aaron Morris. CAPT Morris has since retired from the US Navy and could not be located; however, his deputy N2 was CAPT Matt Murphy. CAPT Murphy 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 Murphy 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 a 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 RADM D.C. Curtis, now a Vice Admiral (VADM). He is the 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 conversations 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 Nicolas Foster was the Director of Operations (N3) for CSG-11 at the time of the intercept. CAPT Foster 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.

Chapter 12: AAWSAP-MUFON Collaboration

Given that the AAWSAP contract had only begun to be executed in September 2008, in order for AAWSAP-BAASS to best serve the government, it needed to instantaneously become the central information source on UAP in the United States and around the world. As described in detail in our previous book, a brand new organization was successfully created *de novo*, including hiring 50 personnel and building the entire security infrastructure in weeks, not years. For AAWSAP to simultaneously become the central clearing house of UFO cases on the planet, it needed to contract with a well-established intermediary.

It was essential that AAWSAP receive information on UAP that were occurring in real-time in the United States. But BAASS did not have sufficient staff (planning was for a staff of possibly 250 people) and other internal capabilities right from the beginning. So, one way for BAASS to achieve this goal was to contract with an organization that had hundreds of investigators already in place around the United States. The Mutual UFO Network (MUFON) is such an organization. MUFON had been in existence for four decades and had approximately 1,000 volunteers who could investigate reports of UAP sightings in all 50 states.

In February 2009, BAASS executed a purchase order with MUFON that entitled BAASS to: (a) receive notification of significant reports on UAP sightings from anywhere in the United States within hours, (b) receive timely reports from MUFON investigators regarding investigations of these incidents, and (c) receive physical evidence (including photographs, digital recordings, samples of soil, insects, plants, and animals) for scientific analysis. BAASS had multiple laboratories that were ready to conduct forensic, photographic, metallurgic, isotope, biological, and chemical analyses of any specimens that BAASS received from MUFON. One of the immediate changes made was to give BAASS real-time access to witness contact information for cases in MUFON's Case Management System (CMS) where the witness agreed to have their information released to third parties. MUFON was able to successfully initiate Dispatch and Field

Deployment operations on April 1, 2009.

In addition to MUFON resources, BAASS hired a small team of ten high-quality investigators with extensive intelligence and law enforcement investigative experience. These investigators were located in Las Vegas and trained to deploy as “special forces” rapid reaction investigative teams anywhere in the United States if BAASS determined that high-value UAP cases warranted additional investigations. However, this investigative group was still too small to cover the geographic area needed in the United States.

Richard Lang was hired by MUFON as the STAR Team Impact Project (SIP) Coordination Manager with an effective hire date of March 9, 2009. STAR stands for Strike Team Area Research, a specialized paid team of investigators who could be rapidly deployed to the most compelling UAP cases. When a shift started, Dispatch Operators (DO) logged on to the website MUFONCMS.com to monitor all incoming cases. When a new case arrived in CMS, the DO contacted the witness to verify their identity and the details of the case. They then immediately categorized the case. If a case was a high priority and was recent, Richard Lang was immediately notified that a case existed for potential deployment. Lang then contacted the State Coordinator and they jointly discussed logistics and available personnel for the field investigation. Once a decision had been made to deploy, BAASS was notified via the BAASS duty cell phone number or during the work day by calling the BAASS office.

The excellent performance of Mr. Lang and his STAR investigators contributed greatly to the success of AAWSAP operations. MUFON proved that timely reports could be written and physical evidence could be collected by a specialized investigative team at minimal cost in what otherwise is the most manpower-intensive aspect of UAP investigations, original data collection on-site at a rapid pace.

Chapter 13: AAWSAP's MUFON Case Studies

(Sep 08-May 09)

AAWSAP BAASS MUFON collaboration commenced operations on April 1, 2009. MUFON submitted the following investigated cases from April and May 2009. The cases were reported to DIA in the April 2009, May 2009, and June 2009 monthly reports from BAASS.

April 2009 Monthly Report

Russellville, AR

Date of Event: April 20, 2009

Witness Narrative in CMS: I left my house in Ranger, Arkansas, at approx. 5:20 am to pay a bill at Chickalah at the drop-off box. I then took Hwy 27 but as I got on the long quiet highway that seems to take forever to get to Russellville, a long boring road, I noticed a star in the sky that had a tail attached. It seemed to be way out in the universe, a few minutes later, I saw the same star a lot closer up, in the upper left of my driver's side window, and it appeared to be a lot closer... as in hovering over Mount Nebo. I thought "Oh, it's the radio tower" but still felt on edge and watched as it moved within 100 feet of me and I could see fluorescent lights, 3 on each side of a triangular figure. I kept thinking I am close to Mount Nebo that has to be their lights, but the lights moved closer. I became really scared... rolled up my windows, ran off the road twice trying to get a good look and I saw the same rotating lights, 3 on each side of a triangle. My car started a constant vibrating sound (sounded like a flat tire), I started to call 911 and my phone was dead, it had been fully charged. Then all of a sudden there was a flash like a light bulb had totally illuminated the road and my vehicle. The remaining drive was non-eventful, my car was driving sound and secure and as I drove further I was nowhere near Mount Nebo. Also, we have a nuclear plant in London, Arkansas, which is not far from us. We are in the evacuation route area. When I got to work I checked my tires and

all were fully inflated, with no signs of a flat. My phone did not work the rest of the day. I had to fully recharge it when I got home.

Discussion with MUFON Dispatcher: At 5:20 am witness was on her way to work on Apr. 20, 2009. The witness is a nurse. The witness was driving on the highway and encountered a large triangular-shaped craft—proximity within 100 feet at the closest point. The witness said the triangular vehicle was the size of a B-1 bomber (her husband was in the US Air Force and she has been to many air shows). Heard a loud rumbling sound, describes as like when you get a flat tire (there were no flat tires on the vehicle after the event).

As the vehicle was directly over her car, there was a bright flash of light that illuminated the road surrounding her vehicle and lit up the inside of the car. The car ran off the road twice. The event blew out her cell phone—the battery was dead (was fully charged before the incident) and would not hold a charge for a long time. She tried to call for help without success. Witness experienced physical effects upon arriving at work. Co-workers indicated she looked very ill; she tried to speak and could not talk (no voice, hoarseness) for a while and the co-workers' voices were very loud (so loud, the sound reverberated in her head causing pain).

MUFON Interview: We arrived in Little Rock late and by the time we drove to Russellville it was 6:00 p.m. There, we met with the experiencer, Noel, and her son.

Since it was due to rain the next day, we felt it best to go immediately to the site. Noel had driven the road again in the morning to determine just where she was when this happened, and she was able to go right to the spot where she saw the flash. The fence was marked with duct tape. As we drove out, we noticed power lines that sometimes crossed over the road. Noel had not even noticed them. There is also a power plant nearby, Arkansas Nuclear One.

The first thing Noel saw looked like a distant star but what drew her attention to it was that there was a straight line in the back of it. It got larger as she watched it. She also started thinking that her right rear tire was getting flat because she heard a noise but she didn't really feel anything different. The car wasn't swaying. It seemed to her like the dashboard wasn't lit up as it should have been. Her headlights weren't illuminating as they should have either. She got concerned for her safety and rolled up her

windows. She tried to call 911 but her phone wouldn't work. She had used it the night before and that morning and believed it to be fully charged. As the craft got even closer, all of a sudden she could see three silver-ish, metallic blue rotating lights on each side of two sides. She started running off onto the side of the road trying to watch it. She watched the lights for approximately 20 minutes. At first, she thought the light was coming from Mt. Nebo. In the early morning light, she could see the line of the hill but the object was lower than that. The body of the craft was black, dark. There were 3 lights on each side of two sides on the bottom of the craft. She couldn't see anything on the back side but there is no doubt in her mind that the craft was triangular. When she held her hand out in front of her, the size of the object was larger than a baseball. The craft appeared to be tilted. She was then absolutely stunned by a flash...it reminded her of a camera flash and illuminated everything below it....going several feet in front of her car. She wondered to herself if she was having her picture taken and if they could read her thoughts. The craft was hovering but made no noise. After the flash, she looked back and the craft was gone. Her tires are just as they were, with no apparent damage. The noise that Noel thought was a bad tire on her car could actually have been an extremely low resonance frequency emitted by the craft, which went away when it departed.

At the time, Noel was fearful of being stranded and alone on a deserted road that she was not familiar with. Later, she felt she was in shock. She walked into work and one of the girls came up to her and said "What's wrong with you?" The night nurse's voice was killing her ears. She went to say good morning and couldn't; her throat felt like it was choked up from the experience (rather than something that was done to her). She went out and had a cigarette. She felt very irritable...with raw nerves. She managed to get through the day and forgot about it.

When she got home from work, she started researching on the internet. She didn't tell her son until a couple of days later. It was her son who encouraged her to file a report with MUFON.

April 2009 Monthly

Jacobsville, MD

Date of Event: April 16, 2009

Witness Narrative in CMS: I was dead asleep at about 3 am on April

16, 2009. My fiancée woke me up to hear what I thought at first was a street sweeper. I told her to go back to bed but she insisted I get up and look outside. I admit at first I was sure it was a street sweeper a couple of streets over. It was a very dull humming like an electrical transformer. I looked out the window on my side of the bed...nothing. I walked to the front room facing our street nothing. The sound kept a steady volume. I told her it had to be a street sweeper. So I walked over to her side of the bed and looked out the window being sure that I would see some sort of sweeper or utility truck a street or two over between the houses ... nothing. The sound stayed stationary at what seemed to be just over our house to the wood line. That area of the sky is pretty dark but against the sky, which was slightly cloudy, I could make out this very large shadow or just a black diamond boomerang-shaped-looking thing drifting over the tree line and the humming. I can't get over the humming. No visible lights nothing but blackness and an ever-constant humming. I didn't want to alarm my fiancée so I told her nothing was there, it must have been a sweeper a couple of streets over. I don't know how to take this. We live around a lot of military-type bases in Maryland so that was my first thought but I never have seen or encountered a sound like that. I don't know ... I'm puzzled. I'm not sure if this has anything to do with this but I felt a little weird after that and saw my Dr. the next day with pains in my back and chest. I wasn't feeling the best before but the next day I felt very strange, nevertheless, maybe it's nothing.

MUFON Interview: Jay Fuller is a laboratory director and has been living in his newly renovated single-family home since September of 2008 along with his fiancée, Melisa Adams, a chemist.

April 16, 2009, at approximately 3:15 in the morning, Melisa was awakened by a loud humming and she then woke up Jay to have him check out where this strange sound was coming from. Jay walked from bedroom to bedroom to look through the windows to see what was causing this humming, thinking to himself that it may be a street cleaner sweeping the area roads or some sort of utility truck working on something. He returned to the master bedroom to look through the window that was next to Melisa, and he noticed a very large triangular craft hovering above. The craft was totally black with no lights and, from his point of view, had a boomerang shape resembling a very large "stretched out" F117 Nighthawk with about

300 feet wingspan. The UFO was hovering, slowly heading towards SE, and took about 17 minutes to pass over their house and fade at a distance. Jay said that the humming was very loud, constant, and sounded like an electrical transformer. That Saturday, he mentioned to one of his neighbors about the strange incident that occurred early Thursday morning and the neighbor did state that he heard the humming but appeared reluctant to continue the conversation.

Fuller was perplexed and a bit shaken by this incident and wondered if this was a US military aircraft, why would they build such a thing? He also stated that most of the home occupants who reside on his street are either with the military, law enforcement agencies, or working as government contractors. I found Fuller to be very credible and logical, and he really isn't into the whole sci-fi scene or the UFO phenomena.

I did not notice any high power lines in the area. There are the Calvert Cliffs Nuclear Plant facilities about 35 miles south of Jacobsville.

A similar case involving a black triangular craft sans lights was witnessed five years ago in Owings Mills, Maryland, about 20 miles NNW from Jacobsville. On February 9, 2005, a software engineer witnessed a low-altitude triangle, about 500 to 800 feet above ground with no lights.

April 2009 Monthly

Crestline, Kansas

Date of Event: April 4, 2009

Witness Narrative in CMS: At 1:23 am on 4/4/09, my 17-year-old son and I were pulling out of our driveway to pick up my other son. As we driving down the street heading east a huge bright light came up above the tree line to our north. We both turned and saw a large orange light just above the trees. It was not round nor square nor oval, I could not make out the shape as it was so bright. My first thought was that we were being bombed, but then I realized that it was going up not coming down. My son is yelling "What is that?" We turned the car north and sped to where it was; just before we got near it started moving east across the sky. My son is telling me to call the police. I told him they would think I was crazy. We could not hear anything but as it started moving east it looked as if it had a net over the top of it. Just above the orange light something was visible but not lit up and this was what appeared to have a huge net over it. You could

see something under the net. The only way to describe it is like a huge mobile home in the sky with the back of it having large bright orange lights brighter than any light I have ever seen. My son and I were both scared. He told me to give him my cellphone so he could get a picture of it before it moved too far away. The picture was taken on my cellphone and the object was much closer to us than it appears in the picture. The object went east and less than a minute after taking the picture we could no longer see it. We tried calling my younger son's cellphone several times and he did not answer. I really feared that he had been taken by this strange object as he always answers for me. My 17-year-old was saying the same thing to me. We drove the 5-6 blocks back to our house and I pulled into the driveway. My son went in to get his cell to see if his brother would answer for him. As I sat in the driveway the object appeared to be coming back toward us. My son saw it as he came out of the house and ran to the car yelling "It is coming back, chase it." We pulled out of the driveway and just before it looked to have reached the edge of town, our visibility was blocked by trees for a split second and then it vanished. We noticed about 5 minutes later that a sheriff's patrol had come into town. I think that he was there because he had seen the light also.

MUFON Interview: I visited the witness, Iris Waters, and her 17-year-old son, Michael. We met at her place of employment in Kirkwood, KS. After brief introductions, I asked Iris and her son to describe what they saw. They drew sketches describing the size and shape of the craft. Iris and Michael chose to draw their descriptions using the same sheet of paper. Iris also showed me the picture she had taken of the craft with her "Razor" cellphone. I then followed them out to the site of the encounter.

We drove from Kirkwood, Kansas, to Crestline where they live, and where the sighting occurred. Crestline is about 10 miles down Hwy 160. We decided that the best way to re-enact the night of the sighting was for me to enter their vehicle sitting in the front seat and have Iris drive, taking the same route as that night. Michael sat in the back seat. While I video-taped, Iris drove as they both described the craft, where they saw it, and its placement in the sky and over the trees. They described the craft as being as large as a small house hovering over the tree tops about 200 feet in the air. I asked them to describe the size by their arm at length showing my fist as a size comparison, and they said bigger. I spread my fingers, and they said

bigger, more the size of both of my hands side by side. The color was an orange light undefined. Michael said it looked like the center was dark, and the light was coming from a tube light surrounding the craft. Iris didn't see that from her angle but saw one large round/oval odd shape indescribable light with what looked like an army net attached above it. It made no sound and had no smell, they followed the craft with their car and there were no electromagnetic effects. There were dogs barking, but they claimed that there are a lot of dogs in the area and that they bark all the time. I asked them what made them notice the object.

They were out at 1:23 in the morning looking for Iris's missing 14-year-old son. He ended up being at the Clark residence, which is a neighbor down the street a couple of blocks away. The boys were in the basement working on a car. Both boys were thought to be missing. What made Iris look in the direction they did was the train. A Burlington Northern freight train passes through the edge of town quite frequently. There are 3 intersections so as it passes them, the train blows its whistle in 3 separate bursts. That night there was one long whistle burst. They thought the kids might be in trouble on the tracks so with hearts beating fast they headed that way. That is when they spotted the large craft hovering at the end of the street.

As they drove towards it, the craft moved about 1 mile an hour to the left, and as they approached closer, it shot off backward out of sight. They described the craft as being as big as a small house, hovering 200 feet over the tree tops, and only about 4 to 5 blocks away. She was afraid that her missing son may be aboard the craft because he wasn't answering his phone. They decided to drive home and retrieve Michael's phone to see if the younger son would answer a call from his older brother. When Michael came out of the house, he noticed that the craft was back. This time he said, "Mom, let's chase it!" They raced towards it and found it at the end of the street. They were at 2nd Street and it was about 5 blocks away. As they slowly moved forward, it moved slowly to the left behind some trees. They drove faster to get a better look and it was gone.

Iris and Michael pointed out the houses where the possible other witnesses lived. The first was Tom Clark, the father of the other missing boy. They didn't think he saw anything but showed me his house. The other witness was Tom Clark Sr., grandfather of the other missing boy. Tom Clark

Sr. claimed to have seen a Chinese lantern in the distance, floating by his window while he was in bed that night. In fact, the local sheriff's office also reported that a deputy had seen three Chinese lanterns in the early morning hours of April 4.

It is not believed that the Waters saw Chinese Lanterns. What they saw they described as being as large as a small house. They viewed this from 4 to 5 street blocks away hovering at times about 200 ft above the tree tops. They watched this object leave at a high rate of speed, and then return, finally disappearing behind trees and out of sight.

May 2009 Monthly

Maricopa, AZ

Date of Event: April 28, 2009

Witness Narrative in CMS: Went out on my porch this evening about an hour ago and saw a bright, amber-colored light in the southwest sky, low above the horizon at about 25 to 30 degrees. The light was stationary. Earlier in the evening I was driving on my way home and saw a pair of lights that looked similar but further away as if on a distant mountain. But these lights I viewed from my porch were bright and would then dim, sometimes releasing new lights that would go dark. I then got into my truck and began to drive south toward the Ak-Chin Indian community that was a few miles down the road which would provide me a better view. Driving south I saw about a mile behind the Ak-Chin casino the lights were then on the ground (landed) with flashing orange strobe lights as if from emergency vehicles spaced about a hundred yards apart in a line parallel to the road I was on. I proceeded to make a U-turn and saw the lights on the ground once I had passed the casino and lost my line of sight. On the northbound portion of my car ride, I again saw the yellow emergency lights within close proximity to the bright amber lights on the ground. I decided to head home after not finding any viable way to drive any closer.

MUFON Interview: Drove to Ak-Chin Indian Reservation area. Headed out in search of Police Dept., passing and stopping at Tribal Council Office. Seeking access to Indian lands, we were informed that nothing could be picked up from the ground and that we should be very careful not to do anything which might be disrespectful to the residents of this area. I left a message and card at Police Department.

Drove out to the house of the witnesses, John, his sister, Kate, and William, his father. Only John and William were home. We asked John to relate his experience by starting with what was going on right before the sighting. He said that the first time he saw the light, he was coming home from getting some food and saw the light sitting in the sky. It was similar to lights he had seen on the other side of the mountain (but never saw on this side). John said his father William was sitting on the couch and he called him and his sister Kate to go out and watch an event that was going to happen that night with the moon and Venus. John said he saw the moon but not Venus. What he did see was an amber-colored (“like sodium vapor street lights”) light, but it appeared much larger than a street light and it “was dimming and coming back bright” so he ran in and called his dad again to come out. William looked and he noticed the light too. Then the light started to reappear in different areas and then he saw more, smaller lights that seemed as if they were coming from the original light source. John said Kate saw the same thing.

William decided to go back into the house, but Kate and John continued to watch; in fact, Kate got on the roof of their pickup truck in order to see better. John told her to get down and that they would drive south. They headed to the Ak-Chin Casino. As one faces the casino from the road, the area where they saw the lights would be in the back and to the right of the casino. John estimated the lights to be about a mile behind the casino. He thought that the lights were spaced about 100 yards from each other. Some of the lights looked like emergency-type lights (“orange...pulsating lights”) but he did not see any vehicles. John made a U-turn at the casino and the lights were still there. Since there was no way to get back into the reservation property, John and Kate went home. The lights were still there when they left. When they got home, they couldn’t see anything. John said that amber lights have been showing up everywhere in this area but prior to this time appeared to be on the mountain. He thought it was about 10:30 p.m. when they arrived home and they reported the sighting within perhaps 20 minutes. After the event, John went on Google Earth and felt that the lights were near the Estrella Mountain area.

William felt that the lights were much further away than John did, 10-12 miles away from where they were standing. He said the lights moved around and while they were somewhat like streetlights “they seemed

brighter and mellower at the same time.” They were totally round. John said that when he first saw one, he tried to think of something that would make that kind of light but you could see one, and then one might appear to the left, and then one might appear to the right—and this happened three times. Spatially, William felt that the lights were hundreds of feet apart. He felt that they definitely were distinguishable from a helicopter. He thought that some of the lights were smaller, sharper, and moving around the other lights so he felt that they were faster. William tried to determine a trajectory but had no reference points to do so in the dark.

At this point, William went back into the house and John rode in our car with us to the actual place on the Ak-Chin Reservation where he saw the lights. He didn’t see any lights on the way the night of the event. He said that they made a U-turn at the casino and they saw the lights on or near a berm. They then slowed down (we parked our car there to allow for taking pictures of the area). There was a larger light right in the middle. John pointed toward a red-colored building in the approximate direction where he saw the lights. There were red/orange and yellow emergency-type lights; he thought that there were two on the left and one on the right. There were smaller lights just sitting there pulsating or flashing. John assumed that there were vehicles there but didn’t actually see any. He and Mary then drove home. John does not know of anyone else that saw anything that night (see CMS case below for a similar report).

After John showed us where he saw the lights, we drove to the Police Department to tell them that we now had the actual witness with us and that we knew where the lights were sighted. Allowed onto the reservation, as we drove along the side road we looked at the area where John thought he saw the lights. We saw tractor tracks in the dry dirt but did not see any evidence that a number of vehicles had gone into the area.

May 2009 Monthly

El Mirage, AZ

Date of Event: April 28, 2009

Witness Narrative in CMS: While in El Mirage, Arizona, I was looking south toward Estrella Mountain (southwest of Phoenix, directly west of South Mountain). Right above the horizon, I saw 3 amber lights that didn’t move. I had seen them before I went into the store but didn’t pay that much

attention, thinking they were two planes together because it was at a distance from where I was. I only glanced that way and noticed it but went into the store as I was in a hurry and on the phone at the same time. When I came out of the store around 5 minutes later, the 3 amber lights were still there, hovering, not moving since I had gone in the store, in the same exact spot and they looked like they were twinkling. There were 3 distinctive lights. What I noticed was they seemed way too large to be a plane on approach to Sky Harbor (my son and I watch planes on approach all the time). While I was watching them, a plane came from the west and was dwarfed in size by these three lights. If I had to estimate the size, I would say 3-4 jet planes size-wise at least. Way too big to be a regular plane. Plus they were amber in color, not like any normal aircraft lights. It was not a helicopter as they were far too big. And they run with white, green, and red lights. As I was watching these 3 lights, I called my son on the phone to try to get him to see them, but he was in an area where the tree lines near our house blocked the view. I stood there for 3-4 minutes watching then I couldn't believe my eyes as the lights started to twinkle brighter then dim. Then the center light went out first, then the one on the right, then the one on the left. The lights were in a line next to each other but what was weird is that it was parallel, or slightly above the nearby South Mountain lights but not too far above the horizon. About 5-10 degrees above the ground but more over the Estrella Mountain side of the southland. It was not like flares I have seen in the past, it was not like blimps or balloons we see here often in Arizona, it was 3 amber lights close together but separate.

MUFON Interview: Met with Nancy and her son, Bill, at the site. Nancy noticed some lights before she went into a store on Olive Street. When she came out of the store about 5 minutes later, three lights were in the same spot and hovering. She crossed the street to where there is an open field. Although Olive Street can be quite busy during the day, it was about 9:45 p.m. and the traffic was light. As we approached the spot where she stood to watch, Nancy immediately pointed out a tall palm tree saying "It was about there."

When asked what drew her attention to the lights, Nancy said that there were three lights above the skyline and that they were similar in color to the amber color of streetlights. It seemed odd because the lights were stationary, not moving left or right. She felt sure it wasn't a helicopter

because it was far too big for that. She also noticed that the lights were pulsating “slightly.” The lights weren’t high, being just above the horizon, and didn’t seem normal. She waited and watched to see if they would move. Eventually, she tried to get her son, Bill, on the phone but he couldn’t see the lights because of the trees at his location. At the edge of the field where she stood, however, there was nothing obstructing her view. Nancy knows the general area and said that it was near Estrella Mountain peak. She knew it wasn’t South Mountain and it was only 5-10 degrees off of the ground. It just was there. She thought she might have seen a glimmer of red light but didn’t seem certain. She said that the middle light flickered and then went out...then the other two went out. Nancy’s family is “into aircraft” and technology. They watch the skies and have attended air shows for many years. She said that this wasn’t something usual that you would see in aircraft around this area and it was too large to be anything routine. She saw a normal size plane and it was dwarfed in comparison to these lights.

Nancy commented on the Goldwater Military Range where they do testing but that’s off of the reservation area. She was quite confident in stating “I’ve seen flares...these didn’t have the behavior of flares...even in their alignment.” She said that it had to be three lights on one craft or three crafts traveling together. They were in the exact same spot minutes after she first saw it. When questioned about her eyesight, Nancy said that she wears glasses and was wearing them that night. Relative to her hearing, she does not have any hearing problems and she heard nothing related to this sighting.

Regarding the sky on that evening, Nancy said there was a “little bit of light covering...nothing major...moon not bright or light enough to see anything.” It was clear without much humidity. When asked about the size of the object if she held her hand out in front of herself, Nancy said the object would be about an inch wide across the three different lights. She didn’t see a craft or form or object. She didn’t see anything land. She saw three distinct lights, pulsating. There were no other pulsating lights.

Nancy doesn’t know of anyone else who saw the lights. She did call the police. They didn’t want to take her report but they did come out to her house about an hour later.

Not much is out there in the area where she saw the lights; there are farms and housing, but no mining, mostly Indian reservation land. Nancy doesn’t

know what Indian nation resided there but knew that Ak-Chin was “right over there.”

May 2009 Monthly

BAASS Case B-005

Phoenix, AZ Area

Date of Event: April 28, 2009

BAASS Follow-Up: On May 5, 2009, BAASS investigators drove to Phoenix, AZ, to meet with witnesses in reference to strange lights. Witnesses state that on April 28, 2009, they saw strange amber-colored lights over Estrella Mountain, which is just south of Phoenix. MUFON interview data for two similar CMS cases above in Maricopa and El Mirage were confirmed by the BAASS investigators.

We went to the Ak-Chin Casino and were able to speak to an on-duty security guard. He informed us that he has worked at the casino for approximately 15 years and lives in the area. He further stated that he has never heard of, nor seen, anything out of the ordinary in the area. We then went to the Ak-Chin Indian Reservation to make contact with the Reservation Police Department. We met with the Police Chief. He informed us that there have not been any reports filed that were out of the ordinary. He took our contact information and said he would contact us if anything should arise.

On May 8, 2009, we contacted the Marine Corps Air Station (MCAS) Yuma Public Affairs Office, in reference to the Military Training Exercise, Weapons and Tactics Instructor Course. They forwarded us to the Legal Office (FOIA), who in turn passed us on to the Community Planning and Liaison Office (CPLO).

We spoke to the manager of the CPLO. She plans and schedules the air training and airspace authorizations for military ranges and public land use. The manager was able to confirm the training schedule for March through April. She told me that exercises included low-level air warfare training, air-to-air simulations, air-to-ground simulations, and ground troop training, including electronics tactics.

We inquired specifically in reference to the training that would have been conducted on April 28, 2009, at approximately 2200 hours. She informed us that on that specific date, she had reserved ground troop and air training

access to public land areas. The land areas included the local Indian Reservations. These outlying air/ground operations were in effect from April 17 through April 30, 2009. The request included verbiage to allow the use of civilian airfields, parks, recreational areas, and flyovers of Indian reservation areas, all of which were authorized for that time frame.

This latter portion of training included mass combined unit exercises and training to end the training session. In addition, it should be noted that during the training exercises, the MCAS Unmanned Aerial Vehicles (Pioneer and ScanEagle) were operating reconnaissance mission training.

It is our opinion, that the lights that were witnessed were associated with the scheduled Military Training Exercise, Weapons, and Tactics Instructor Course.

May 2009 Monthly

Rillito, AZ

Date of Event: April 29, 2009

Witness Narrative in CMS: On April 28, 2009, at 9:05 p.m., I went outside into my backyard to let my dog out when I immediately noticed in the sky three bright white strobe lights in the shape of a triangle. These lights were in a northwesterly direction, approximately one mile away and at a height about level with the moon and just west of the moon. The three strobe lights flashed in sync with one another about every second. The space between the lights or objects was about the size of a football field. These lights appeared to be hovering in the air in a perfect triangular shape with absolutely no sound. The sky was clear and calm. I did not see any stars in between the lights as if the lights were attached to a solid object. After watching this for about two minutes, I ran over and banged on my bedroom slider to alert my wife, who then came outside to join me. As she was coming out, the three lights moved very slowly toward the northwest, changing shape into a straight line, then into a stretched backward letter "C" shape, and added four or five more strobe lights. The strobes changed as well, with three strobes in sync with one another, then two with another two or three at the far end of the line of lights or objects where it had curved into the backward C shape. I then ran into the house to get my binoculars. When I came back out (which took about 15 seconds), I looked at the lights through my binoculars to see when the strobe lit up, and it illuminated a

dark-colored object behind the lights. My wife and I then watched this move off toward the northwest. The whole experience lasted about five to seven minutes. To make this even more interesting to me, was the fact that this object or objects were flying in the flight pattern toward the Tucson Airport, and at the time, I saw no airplanes flying south in the flight pattern until the end of my sighting, a plane was flying south but east of the normal flight pattern. I believe this plane may have seen the object or it was diverted.

MUFON Interview: Arrived at home of witnesses, Jon and Hazel Brooks. Jon is retired law enforcement and Hazel previously worked for the same agency.

Jon went out on the porch to let their dog out at 9:05 p.m. on 4/28/09. When he went out the door, he noticed 3 lights in the shape of a “perfect” triangle, with each point having a bright white light. The lights flashed in synch, approximately every second. Jon feels that they were about one mile away. The object was just about at the height of the moon. No stars or other objects could be seen between the three lights even with binoculars; the witness, therefore, feels that it was a solid object. The object appeared to be very large, about the size of a football field. Jon is a football fan and is well-acquainted with the size of a football field; he, therefore, felt comfortable in reporting that as its size. Jon could see the object right over the top of the house next door. He said it was just left of the center of the roof, past the rim of the hills.

Jon banged on the sliding door of the house to get Hazel’s attention. He motioned her forward with his arm so that he did not have to turn and lose sight of the object. Hazel didn’t comment much on the event but she did confirm the sighting and said they were “amazed.”

Jon said that he felt a little “goofy” relating this to us but also added that he “all of a sudden was back on the job,” using his powers of observation so that he would be able to accurately describe what he saw. He also drew a picture for us prior to our arrival.

As Hazel was coming out onto the porch, the lights started changing formation and moving toward the northwest. They went into a straight line and then into what Jon referred to as a backward “C,” adding 4-5 more lights. To illustrate this form, Jon held up both hands, using his thumbs and pointer fingers to form a triangle. He then rotated his hands so that the top

of the triangle came down. He said that it was his impression that the object was turned down as opposed to something that was completely breaking up, but admitted that he was not sure.

Jon then described how the lights would come on and off again. He described the lights going on and off in a “violent” manner. Three lights might go on then “bang” there were two, then three, then two. He said that at this time he got a “scary” feeling because it seemed “synchronized as if it was one.”

The usual flight pattern from Tucson is from North to South, and the planes fly just behind Sombrero Mountain. On the evening of the event, the object was in that area moving towards the northwest so that a plane flying the usual pattern might cross paths with the object. At the end of the event, Jon saw a plane that flew east of the flight pattern, so that it would go right over the couple’s house. He wondered whether the plane might have changed its path in order to avoid the course the object was on. Jon said that the entire event may have taken longer than he originally reported—possibly as long as 10 minutes. There was no sound associated with this event.

Jon tried to contact Marana Airport and the KOLD news site; he could not obtain any information about the sighting.

In addition to the information submitted on CMS, the next night (and on a couple of subsequent nights) Jon noticed two identical helicopters flying about a 5-mile radius, which included an area over the Sombrero Mountain area, hour and after hour. This is seen only at night and, according to our witnesses, there is nothing there (other than a mine and cotton fields). Jon did see a helicopter cockpit fully lit up.

We spoke very briefly (she was just about ready to drive away) with Gail, Brooks’ neighbor. At about 9 p.m. that same night, Gail was talking on the telephone and looking at the moon at the same time. The neighbor said that it was a 1/3 or a crescent moon. What drew her attention was that she saw lights that seemed to her like sparklers, like her uncle used to light for her. She said that it was really pretty like the 4th of July. She did not feel there was any pattern to the lights but that they were “all over the place under the moon.” She started talking on the telephone again, and then the lights went away. Next, she saw them to the right of their original position, and then they seemed to form a backward C shape; after that, she “lost it.” She didn’t

hear any noise associated with the sighting. It seemed as though Gail was distracted from observing the lights closely by her telephone conversation.

Later on, spoke briefly on the telephone with Roger from Blockbuster (an acquaintance of Jon) who did not have a sighting at the same time. He did confirm, however, that on the night of 5/3/09, he saw black helicopters in the air near his home between 8:30 p.m.-9:00 p.m.

May 2009 Monthly

BAASS Case B-008

Marathon, TX

Date of Event: April 22, 2009

Witnesses were together during the event but filed separate reports in CMS with MUFON.

Witness #1 Narrative in CMS: On a recent trip with my friend heading towards Big Bend National Park. Just past Marathon, Texas, while I was driving around noon on a sunny day, I noticed a shadow cross over the hood of the car. I thought it was probably a bird casting a shadow. Within seconds out of the corner of my right eye, I saw something very bright heading toward the passenger side of the window at a rapid speed. I turned my head towards the passenger window and noticed that my companion was staring out at the same object. It looked like an extremely bright form with blowing arm-like extensions. Faster than seconds it appeared to pass thru the car. The entire car interior was white, absolutely white, I could not see anything outside nor inside, although I was still facing the passenger. The stereo was on but I don't remember any sound, just glowing bright light. I have no idea how long the form took to pass completely thru the car. The car seemed to move back and forth with a jolt. The next thing that I remember is that my hands grabbed the steering wheel tightly and I turned toward my friend and said "Why are we doing this?" We apparently were still facing each other. He has a terrified look on his face and shakes his head. I said, "What happened?" He said something hit the car. I reached out and stopped the swinging motion of the cross hanging from the rearview mirror. Realizing that the swinging motion supported the fact that the car had moved violently, I look in the rearview mirror to see if anything was behind the car, as if I had hit something. There is nothing behind us. Both of us turn and look out of the window trying to determine what had slammed into the

automobile. Nothing around us or behind us. I almost stopped but thought that whatever had hit the car might somehow, somewhere be outside. I slowed down still visually searching for some kind of animal, object, or thing but nothing seemed visible. Let me mention that it was around noon on a clear day. I had a clear mind and was in a calm mood. I am a logical person and do not seek fiction in life. Factual and sensible. This is an occurrence that both my friend and I witnessed at the exact same time.

Witness #2 Narrative in CMS: My friend and I were driving to Big Bend National Park for a vacation. We were about 50 miles south of Marathon, TX, on 385 heading south. It was a clear day, and we were both well-rested and excited about our trip. I was gazing out the window at the mountains and the desert terrain. We had to be doing about 85 mph. I was in the passenger seat. I noticed out of the corner of my eye something extremely bright and moving fast toward the car. I saw what looked like a teardrop-shaped head for lack of better words with a thin line of what appeared to be a shiny band of silver wrapped around the center. I thought I saw what looked like a figure in a running man pose supporting the teardrop head, but I couldn't be absolute because the entire thing was engulfed in an indescribable white light and was followed by light tracers. I don't know if the figure or thing moved through the vehicle but as quickly as I saw the thing the cab of the SUV was filled with the light. The vehicle moved in an upward circular motion but never left the ground. The light exited the vehicle on the driver's side. I saw my partner who was driving look at me. He was pale white and disoriented, and he said to me "What are we doing?" I said, "I don't know." And that was it. A few things: #1. The radio was playing in the car quite loudly, however, when the light moved through the vehicle there was no noise, not even the sound of the car on the road. #2. When the light was in the vehicle, it was all you could see. No definition to anything, just white light. After it was over I did not see spots like one normally would after being exposed to UV lights. #3. My partner was driving the whole time and never lost control. #4. It was not cloudy, it was broad daylight. #5. There were no other cars in sight. #6. There were no bumps or dips in the road to cause the motion of the vehicle. #7. No dust devils in sight before or after. #8. The vehicle was not damaged in any manner. #9. We were completely sober. #10. We had the same experience with slight detail differences. #11. We panicked right after it occurred, but

shortly after we were very giddy. #12. We didn't discuss it much after the vacation was over, however, when we got home, every time we discussed it together we would get extreme anxiety. When we discussed it separately with our friends we were okay.

MUFON Interview: An interview with Austin Cruz and Matt Harrison was arranged on June 1, 2009. There were several details that I was able to obtain from the interview that were not mentioned in the CMS narratives.

Shortly before the incident while Austin was driving he noticed a prairie dog sticking its head out of a small hole in the middle of the road. After a near-miss, he decided to pull over and take a few pictures of it. To his astonishment, there were around 20 or 30 prairie dogs scattered around both sides of the road. While Austin insisted that the animals were at the normal size of 12 to 15 inches, Matt was absolutely certain that they were at least two or three times that size. While taking the pictures, Austin felt a weird sensation. He described it as "a feeling of being watched." His intuition was telling him to get in the car and leave. Matt also felt uneasy at this particular moment but when Austin and he got back in the car they both felt better. They traveled some distance down the road but Austin could not be sure of exactly how far. He estimated it could have been from 1 to 20 miles. It was somewhere between there where the close encounter occurred.

During the close encounter when the light engulfed the vehicle, Austin described it as "being inside a mayonnaise jar but still able to breathe." He also noticed tiny "dot-sized" metallic objects which appeared to be floating in the light.

In Matt's description of the incident, he said that "it was like having white paper surrounding him." They also said that once the encounter was over, they felt strange or "sort of out of it." As they continued to drive, it was several hours before the full realization of what had happened occurred to them. According to the witnesses' description, it might indicate that they were in an altered state of consciousness as a result of the encounter. Sometimes referred to as the Oz phenomenon as described in UFO literature.

Witness testimony indicates that Austin and Matt had an unusual encounter. They appeared to be sincere and truthful in their testimony to this investigator, although no physical evidence was obtainable at this time.

BAASS Follow-Up: On June 9, 2009, a BAASS investigator conducted

an interview with Austin Cruz. Another BAASS investigator conducted an interview with Matt Harrison, the other witness involved in the case. Both interviews were conducted at the same time at an IHOP restaurant in Houston, TX. MUFON interview data for these two CMS cases were confirmed by the BAASS investigators. Austin Cruz did not provide additional details beyond his original statements to MUFON. Matt Harrison, however, did provide more info, in particular concerning missing time and an odd encounter at their destination, Big Bend National Park. Matt Harrison, riding in the front passenger seat, stated that he was looking at the scenery to his right, when in his peripheral he saw what appeared to be a bright light, with some sort of mass under it. This light was about 300 yds. from them and came at about a 45-degree angle to the vehicle. Because this light had an appearance of a bicyclist-type helmet, his first thought was “What is a bicyclist doing way out here?”

He watched the object and at about 150 yards, it appeared to “condense” itself, similar to a bicyclist “crouching down” to gain speed, the light also got brighter. Within seconds, the light hit the vehicle in the area of the right front fender/wheel area, and though there was no sound to the impact, he felt the car “rock.”

The interior of the vehicle became very bright, like a solid white color. He had no idea how long the light was within the vehicle but remembers that he could not hear anything. He also could not see anything in or out of the vehicle. He could not even see Austin, he just saw white. The light then disappeared from the vehicle, and he looked over to Austin. He looked very pale and had small beads of sweat on his forehead. Austin asked “Why are we doing this?” and he responded by saying “What just happened?” Matt also stated that Austin had a cross hanging from the interior vehicle mirror, and this cross was now moving in a circular-like motion.

As they drove on, Matt related that he looked out of the window to try and see if there was any damage to the vehicle, and he observed none. When they finally decided to pull over at a gas station, he again checked the vehicle and saw no damage.

Matt remembers that right after the incident, he noted the time on the car clock as 12:39 p.m. When they stopped at the gas station, he noted that the time on the receipt showed 3:14 p.m. He can’t explain exactly why he feels this, but he thinks he may have lost about 1 hour of time. He feels that from

the location of the incident, to where the gas station was, should only have been about a 1 ½ hr. drive. But, he wasn't sure.

Matt said that after reaching their destination, Chisos Basin Campground, they set up their camp. Later, a male on a motorcycle came up to them and started talking. Matt thought this was "odd," and it seemed that the male was almost "forcing" a conversation with them, asking things like who they were, and where they came from. This male later set up a small tent not far from them. Matt stated that he later saw the male talking on what he believed to be a cellphone. He could hear the male talking but did not know what was being said. He again felt this was strange, as earlier, both he and Austin had tried to check their cellphones, but had no signal. The next morning, they noticed the motorcycle rider was gone, though they did not hear the motorcycle leave.

May 2009 Monthly

Fallon, NV

Date of Event: May 8, 2009

Witnesses were together during the event but filed separate reports in CMS with MUFON.

Witness #1 Narrative in CMS: My boyfriend and I were driving around the desert. We had been out there a while, and soon it got very dark. We were driving back on our way home, when we both saw 3 objects in the distance, with lights we had never seen before, and flying in an unusual way, in a group. We got very excited while watching, and suddenly they started breaking away from each other. One started going down toward the ground and disappeared like it had crashed. The other two continued to fly, almost toward us.

We decided to chase them! We started after them, and they flew right by us many times. One specifically seemed to keep coming back to us. We tried to confirm it as a military aircraft, but it was nothing either of us had seen before. We thought maybe it could be a drone, but the more we looked we knew it wasn't. At first, there were 3 flying objects, but by this time there were only 2. Only one seemed to acknowledge us. We parked the truck after watching it fly by us and over us several times. It was completely silent. And hovered slowly, although in the distance it went faster. I decided to plug the spotlight in and try and get its attention. It

worked! We were parked on a dirt road, next to a water canal. Across from the canal was a small pasture, the hovering craft flew directly at us, and stopped facing us. We shined the light at it, and put our hands over the light to make it strobe. The craft sat there for a good 5 mins and seemed like it was getting closer, so close it was almost as if we could throw something at it. And there was no sound. I tried to get pictures but they came up as all black on the screen. We started to get scared and jumped back in the truck, as soon as we did the craft moved and went behind us as if it was following us. The other craft was in the distance as if it was watching.

My boyfriend and I both called our parents freaking out and not knowing how to explain the events that were going on. We watched them fly around us constantly. But when we reached the highway, and back on our way into town, they disappeared. When we made it back into town to my house, I was standing outside and saw a C-130 fly over our heads. I knew this wasn't the craft I had seen because it was too large, was too high up, and wasn't silent. I could also see the shape of it and it was obviously a plane.

But these hovering crafts we saw were black, almost invisible except for the lights. When they turned you couldn't see them. The only time they were all visible was when they were facing you, and that was because of the 5 aligned lights.

I went inside my house and drew a picture for my father, he called the naval base here in Fallon. They told us they had no reports of any aircraft besides the C-130. But I knew it wasn't a C-130! My boyfriend and his father went back out to where we were. When they got there, there were helicopters with spotlights on the ground and several trucks with spotlights driving through the desert. A black SUV with very dark tinted windows was driving towards the area we had seen the crafts. Men walking around with spotlights in the desert. As if they were all looking for something. But if they were looking for the craft that we thought we saw crash, they were in the wrong area, they were looking where we had first seen the crafts from a distance. Miles off.

Witness #2 Narrative in CMS: I have lived near the Top Gun base in Fallon all of my life. I have become used to seeing weird lights in the sky but this was totally different. My girlfriend and I were returning from the desert when we saw 3 strange aircraft flying together erratically in a triangle formation. They stopped at once and one of the UFOs fell in slow

motion to the ground as if it had crashed. The other two separated and flew southwest. We followed them until one of them was parallel to the truck. I was going 35 mph and so was the craft. I sped up to 50 mph and so did the craft. It shadowed me until I drove to a dead-end in an attempt to follow the other one. When I reached the dead end the craft that had been parallel to us flew over the top of us twice then sort of drifted back the way it came then hovered maybe 200-300 yards away. My girlfriend plugged in my 3 million candle power spotlight to see if I could make contact with the seemingly translucent craft. I covered the lens until I was sure to be aimed at the craft. As I uncovered the light it was close enough that the light reflected off of it so we put the spotlight away. The craft swooped in like an airplane would banking until it was facing us with five super bright white-orange lights. It stayed and hovered at less than 100 yards away for about ten minutes. This is when we first heard the craft. It was so quiet, almost silent. There was only a slight hum then it flew off and back going over us twice and then hovering again. It seemed as if it was playing with us which pretty much rules out the military. In my opinion, it hovered for maybe another ten minutes as the other circled behind us almost like a backup to make sure we weren't hostile. Then the first craft turned hard to the left making the craft's lights shift from five lights to one light then, as it turned, it became completely invisible only to reappear over Highway 50 revealing many little yellow lights then shifted back to five lights. It stayed parallel with me on the highway until I got closer to the lights of town when it pulled up behind me and hovered for maybe a minute. As I got closer to town they flew back to where the dead-end was. My girlfriend and I were pretty shaken after seeing this and I had my dad and my brother go with me back to where we had originally seen the craft. We saw one of them but much farther away this time. At first, we thought that this was just an airplane but more lights became visible on it. Three in the front. It stopped and hovered for about half an hour when we were out there. We noticed a truck with a spotlight looking for something. When we stopped to look for the aircraft, the truck killed all his lights. As we were leaving we saw a black SUV with tinted windows driving toward the truck's location. We also saw a helicopter spotlighting the ground (we think looking for the third craft) and people in nearby fields with spotlights.

MUFON Interview: These two CMS cases were reported by two

individuals who were together (in the same vehicle) at the time of the event. Witnesses were Tyler Wood and Kinsley Brown. Tyler Wood (age 18) is a high school student and is near graduation. Tyler's father is a security officer, who formerly worked for Fallon Naval Air Station security. Kinsley Brown (age 18) is a recent high school graduate. Both witnesses are living with their respective parents and have resided in Fallon all of their lives.

MUFON Investigators met with Tyler and Kinsley on May 9, 2009. That night the witnesses and investigators went to the area where the sighting first occurred and then on to the site of the alleged encounter at Depp Rd and US95. The event itself occurred on 05/07/2009 around 9:18 PM. Witnesses were parked off of Sandhill Rd, near the Fallon Naval Air Station bombing range, an area frequented by couples party-goers. Witnesses were alone and no other witnesses were present when they first saw strange lights to the east of their location.

They saw three boomerang-shaped objects with five lights on each, one in the center, one in the middle of each side, and one on both ends of each object. As they watched intently, one of the objects separated, shut off three lights, and appeared to be landing or crashing in the vicinity of Depp Rd. Tyler was very emphatic and noted to investigators that he grew up in Fallon near the Naval Base area and has seen "every type" of aircraft, and these did not resemble the usual normal aircraft by any means.

Tyler decided to chase the objects at that time. He drove North on Sandhill Rd. 3.5 miles to Lone Tree, then went east when one of the objects (boomerang-shaped) came alongside to his left and began pacing their truck. According to witness testimony, the object was about 100 yards away, and about 20 ft off of the ground. There was also an object behind them following them. Tyler drove about 30 miles an hour and the object stayed alongside then he accelerated to 50 mph and the object stayed with them increasing its speed to match his. At this time he noted that the objects appeared to be about fifty feet across. He could not determine the thickness of the objects. Tyler drove about five miles on Lone Tree to US95, crossed US95 which became Depp Rd, drove approximately 1000 yards to a dead end, and turned around (actually it is not a dead-end, but continues on a private drive to a dairy farm). They went about 300 yards from US95 and stopped. They pulled off on soft dirt next to an irrigation canal that was on the right side of the road.

At this time witnesses indicated there was an object behind their location (east of their location) on Depp Rd at an altitude of about 50 ft., and an object above them, at about 50 ft., which was circling them. Kinsley noted that the main body of the craft appeared silvery, but when it banked and turned it appeared to be transparent. She remembered this because it is usually cloudy in Fallon, according to both witnesses, but this night it was very clear, and she could see the stars through the hull of the craft. Tyler also confirmed seeing this phenomenon. Also, Kinsley noted that when the object passed them, she could see two horizontal “grills” on the back of the object. She said, “Yeah, like the grills on a toaster or heater” meaning red glowing heating elements.

The investigator noted that the objects were shaped almost like a horseshoe with two rear ends and a “grill” on each end. Also, Tyler noted that the object “banked like a plane would” and “made smooth movements as a plane would.” They both also noted that one of the objects stayed to the rear of them at all times as if to be watching. Also, it should be noted that the moon was nearing full and was up that night, according to the witnesses.

At this point, Tyler decided to grab his dad’s spotlight and shine it on the circling object. In clarification to his original report, the spotlight was actually a million candle power light (not a three million candle power light). Tyler then took his hand and shaded the light off and on to “signal” the object, and the object descended and approached even closer while circling above them at about 20 ft altitude. At this point in the witness’s conversation, they immediately began to discuss how they were driving down US95 to the north and saw the object behind them. The investigators stopped them and asked them to go back and review their motions and emotions step by step. It was then they realized that they could not remember what had transpired after the light was directed at the object and they began signaling it. Kinsley said the next thing she remembered was being afraid and jumping in the truck. Tyler said he remembers doing the same and starting to turn the key in the ignition, looking over at Kinsley, and then he can remember no more until he was traveling north on US95 about five miles from Depp Rd.

Later that evening (May 9, 2009) after the interviews, the investigators and witnesses went to the site and examined the truck tracks on Depp Rd. in the soft dirt. They noted that the tracks stopped on the dirt, but, oddly, did

not continue back to the pavement. Investigator made note of the fact that according to the witnesses, the objects were almost completely silent except for a slight hum at all times. The lights were bright yellow/orange.

Also noted is the fact the Depp Rd. location is near a dairy farm with several hundred heads of Holstein dairy cattle, a herd of llamas, goats, dogs, etc. Both Tyler and Kinsley noted very strongly that there was not a sound coming from any of the animals during the incident, which is uncharacteristic for farm animals at night. Usually, they are very “chatty” and are constantly making sounds. Farm dogs bark almost constantly at night. Also, since the irrigation canal is always full, there are a lot of insects (mosquitoes, gnats, moths, etc.) during this season, and that night no insects were seen or heard during the event. They remember this because when the spotlight hit the canal and illuminated the area, there was nothing. Moths should have been attracted to the spotlight, but there were none. The witnesses demonstrated this to investigators on the night of May 9, 2009, when they were at Depp Rd and US95 (9:45 PM). They shined the spotlight on the water of the canal and flying insects could be seen above the water and landing on top of the water. Also, moths were attracted to the spotlight at that time.

Investigator noted that Tyler indicated he had an iPod and the cable for the iPod did not work prior to the incident, but for some reason, it was plugged into the cigarette lighter in the truck during the event. Tyler told the investigator that suddenly music began playing during the event. After the event was over the cable was once again malfunctioning as before.

According to the witnesses’ testimony, the next recollection that both Tyler and Kinsley had was of driving north on US95, about three to five miles from Depp Rd. Looking back in the rearview mirror and the driver’s side mirror, Tyler noted that one of the objects was back behind them to the south at a considerable distance. There was a semi-truck behind them, and the object was behind and above that. Then the object disappeared.

It takes about 10 to 15 minutes to go from Sandhill Rd to town. Sandhill Rd is about 8.5 miles from Depp Rd. Tyler and Kinsley noted that it took them an hour and twenty minutes to get back to town that night. They thought they parked on Depp Rd for only five minutes. They now think they had to have been there for at least an hour. They had originally put in their report that the event lasted for one hour, but it was one hour from the

beginning of the Depp Rd. event to when they remember driving into town, so the whole event was closer to one hour and twenty minutes.

Tyler took Kinsley home and went to his house at approximately 11 pm. They both told their parents what had happened. At first, their parents thought the witnesses were joking but then changed their minds when their children were obviously still in shock at what had just occurred. This emotional state carried over to when the witnesses met with investigators. Kinsley's mom called the Churchill County Sheriff's Office dispatch and asked if there had been any other calls on the event. She was told there was not.

Tyler's dad (Mr. Wood who formerly worked as a security officer at Fallon Naval Air Station) called Fallon Naval Air Station Security (sometime after 11 pm) and asked if there had been anything unusual on the radar. He was told there were "three C-130s in formation." Mr. Wood confirmed to the investigators that he was told by Base Security that "There had been an 'unspecified aircraft incident' in addition to the three C-130s on the radar."

Mr. Wood went back to Sandhill Rd with his son Tyler that night (the night of the incident about an hour after the witnesses initially arrived home) and the area was being combed by military helicopters and black SUVs with dark windows. Military personnel were also combing the area on foot with flashlights. The witnesses and Mr. Wood decided not to approach the area further. The helicopters were using spotlights to examine the area from the air. This shows possible confirmation of an "unspecified aircraft incident." Investigators later tried to talk to Tyler's father, but he did not want to discuss the event.

Investigators spoke with Public Affairs duty officer on May 14, 2009, requesting information about an "unspecified aircraft incident" that occurred at 9:30 pm on May 8, 2009. The duty officer confirmed that there was an "unspecified aircraft incident" that occurred between 12 midnight and 1 am.

Also noteworthy is the fact that both witnesses have told all of their friends, family, and acquaintances of the incident.

**May 2009 Monthly
BAASS Case B-007**

Woodward, OK

Date of Event: May 18, 2009

Witness Narrative in CMS: I was feeding my horses last Sunday at about 12:30 am. I was standing facing west, and all of a sudden some very low-flying lights caught my eye. I first noticed that the lights were flying very low, and then that they were going way too slow to be an airplane. There was a blue, red, and white strobing light and they appeared to have just flown over Buffalo. The lights were large and in line with each other, with quite a bit of distance between all three. The middle light was white and strobed very slowly, and the red/blue lights were on the ends. The lights turned and were coming directly toward me at a diagonal angle. The white light was covered with a round, concave, clear, glass-type covering which appeared to be very thick glass, and had some type of circular design on it. The red and blue lights were different than the center light. They were tall and cylinder-shaped, more like beacons, and they appeared to be sitting on top of something. They appeared to be covered by a different type of material, it looked more like some type of colored plastic, but transparent enough that the lights underneath could shine through. I never saw a shape or even any type of structure behind the lights. Within 10-15 seconds the lights had reached the dirt road in front of me and were crossing over the top of the power lines. It became apparent that the lights were slowing down as they got closer, and were now nearly at a complete stop. I turned and ran from the corral to my pickup and jumped inside, which took about 15 seconds because I was wearing flip-flops. Once in the pickup, I was now facing north, and the lights had moved just behind the corral and had turned south, facing me again. The lights were sitting completely still, hovering, with absolutely no movement, other than the strobing white light. The distance between me and the lights at this point was probably around 150'. I felt it was a single craft, and judging by the distance of the lights from end to end would have been anywhere from 25' to 50'. I cannot judge distance very well, plus I was busy running to my vehicle. I lean more toward 40-50'. For about another 5 seconds I fumbled trying to find my cellphone and stared at the lights in disbelief. This was the most terrifying moment I have experienced, I threw the pickup in reverse, then drove forward, and when I got to the gate leading out of the pasture, I stopped to look over my

shoulder, the lights were still sitting in the same place, not moving. I couldn't go towards town without passing close by the lights, so I turned south and laid the pedal down. About a 1/4 mile down the road, I turned and looked over my shoulder, and the lights were not anywhere in sight. Since the incident, I have driven behind the corral, and a large portion of the grass is laid down, which may be due to wind current.

MUFON Interview: Arrived in Woodward, OK, at 2:30 pm on May 29, 2009. I contacted the witness, Susan Allen, and made arrangements to meet at the site. Arrived on scene at 5:30 pm.

Upon meeting Susan her sincerity and creditability were very evident. So were her fear and apprehension. It appeared that she experienced something traumatic. An introductory discussion ensued followed by a site evaluation. Initial photographs of the affected area were taken and measurements of that same area were acquired. As dark fell it became apparent that a lot can be seen in the dark sky, and Susan appeared nervous over every moving light but all observed that night was explainable.

Initial evaluation of the site showed a definite disruption of the area where the alleged craft hovered or landed. The entire area appears dead with three areas where the vegetation is crushed in a swirled pattern. A scan using a handheld Geiger counter showed no abnormal reading and no evidence of radiation.

Two of Susan's horses had a material "splattered" on their backs. It did not appear to be lather as the horses were not worked or ridden. Furthermore, "Red" the alpha horse had developed 4 perfectly round, white spots on its coat. Three on her front flank in the form of a triangle and one lone spot on her rear flank. Now, Susan knows her animals and swears that the spots literally "appeared." It was not a stain but rather the hair had changed or had lost its color. According to Susan, there were behavioral changes as well. The horse generally eats uninterruptedly but now will just stop in mid-chew as if pondering or sensing something, stand perfectly still, then shiver and continue eating. Furthermore, she contends that her dog, which was present during the event, refuses to return to the site. It will not even willingly get in the car and if forced to go just lies on the floor and quivers.

This investigator has consulted with an equestrian expert who advised that horses do not lather on their backs but they do sweat. Also after

reviewing the white spots it was determined that it could be something called a “Freeze Fire,” which occurs as a result of a medical procedure whereby an extremely cold instrument is applied for whatever purpose. However, it must be noted that this type of phenomenon can also be caused by certain bug bites.

Arrived back at the site at 10:30 am on May 30, 2009. I arrived early so as to collect samples and specimens alone. Samples of the affected grass were taken as well as control samples from an area about 200 ft. from the subject area. The same procedure was used to acquire soil samples. Investigator then proceeded to Susan’s home to begin the formal debriefing. Following a detailed discussion in which she repeated the events cited in the background report and also revealed her growing sense of apprehension, we proceeded back to the site to attempt a video interview and to acquire additional video of the area of concern. We also wanted to take specimens of the anomalies on the horse’s coat.

Everything was accomplished with the exception of the horse samples. Seems they were not willing to return to the corral until their nighttime feeding. That necessitated another trip to the field the next day.

I met again with Susan at about 8:30 am on May 31, 2009, and secured the specimens. After a final discussion in which the stated details of the case were reaffirmed, I drove from Woodward to Oklahoma City. On the way, I contacted the Harper County Sheriff Dept. to inquire as to any other reports or sightings in the area. I was told no, but the person who answered the telephone, talking on the promise of anonymity, revealed that starting around 2000 or 2003 there were multiple cases of cattle mutilation. The town of Selman was mentioned as well as Doby Springs.

According to Susan’s testimony (in subsequent telephone conversations), she claims to be experiencing recall and shadowy memories. She apparently was a lot closer than she initially reported. She remembers actually standing next to the craft but still cannot recall specific details of the craft. She is also remembering strange markings and bruises on her body that she didn’t recall at the time she reported the event.

BAASS Follow-Up: On Tuesday, June 9, 2009, BAASS Investigators responded to Woodward, Oklahoma, to investigate the possible landing or low hovering of an unknown object. This information was provided to BAASS by MUFON.

The witness, Susan, stated that she was feeding her horses at 0030 on May 18, 2009, when she noticed several strange lights in the sky. Upon stopping her work and watching the lights, she noticed that a white light floated to the ground, and either landed or was hovering just above the ground on the far side of the corral. She stated that the light was very bright, made no noise, and was unable to see if there was any sort of structure associated with the light. After watching the light for several seconds, she became afraid and left the area in her truck.

Upon looking at the area where this event occurred, we determined that the light was approximately 100 feet north of where Susan was standing. As she showed us the exact spot, she said that when she came to the spot and looked in the daylight, she thought at first the areas of flattened grass looked like deer beds. Samples of the grass and dirt of both the supposed landing site and surrounding area as control samples were taken by BAASS Investigators.

During the time spent with Susan, she seemed sincere about this sighting, and her story never varied. When asked about the event in different contexts, the answers were always the same. The witness credibility for this event is good.

Throughout the time spent with Susan, she related many other strange occurrences. She stated she sees “ghost shadows” almost nightly in her bedroom (with a follow-up phone call on June 18th, she stated that she now sees these even outdoors). She reports hearing a loud hum every night starting at 2 am, and that it sounds as though something is walking on her roof. One of her friends is now also starting to see the “ghost shadows.” Since all the investigators involved in this case are familiar with similar occurrences at Skinwalker Ranch, at the Axelrod home in Virginia, etc. (see *Skinwalkers at the Pentagon*), details of both Susan’s UFO and paranormal encounters are maintained in AAWSAP records.

May 2009 Monthly

Browning, KY

Date of Event: May 31, 2009

Witness Narrative in CMS: This morning I witnessed a UFO. I went to my back door to let in my cats. I looked into the sky as the day was dawning and saw a very bright object. It changed shape a couple of times.

In some moments it appeared as a cross, in some moments it appeared as a disk with 2 light rays shooting from the top. There were occasional dimmer lights moving to and from the object. It also had 2 lines shooting out from the sides. The 2 bars of light from the top were red and blue and formed a V shape, the 2 on the sides were blue. It also would flash lights brighter than itself, and it was very bright. I got goosebumps when I realized it wasn't a star. As it would change, I had fear mixed with excitement. Right now, it is still out there. Dimmer, but still clearly visible. I just went out to look at the object again, it is gone now.

Discussion with MUFON Dispatcher: The witness Jim doesn't know why he woke up except he felt immediate fear and was compelled to go outside.

The light was up high, large as a baseball with colored bars on all four sides (light blue on each side, red on top, blue on the bottom), they did not change size or shape, the object in the middle did change shape continually. Smaller objects kept going in and out of it constantly. The object was a baseball size and seemed to emit some kind of energy, "like looking through a prism."

Jets all over the sky, stayed in the sky for over 3 hours, the object moving 3 to 4 times faster than the other jets. The object was so bright. Jim had red patches on his arm, his chest is red and patchy, and the top of his head is very red, looks like red skin, not a burn. Seemed to witness it as if it was only 15-20 minutes that he was watching this, but as he thinks back at it now he first saw it about 3 am and finished at 6 am. It took 3 hours but didn't seem like it. He did feel some dizziness, heart rate increased exactly like he had too much caffeine, at other times he was calm, other times afraid.

MUFON Interview: A visit by a MUFON investigator was deemed unnecessary in this case. The event consisted of the observation of a distant craft with an unusual configuration. A telephone discussion with the MUFON Dispatcher yielded a sufficient description of the sighting.

Chapter 14: UAP Incursions into Northern Tier Air Force Nuclear Missile Bases

AAWSAP BAASS initiated the creation of a detailed database comprising the names, contact info, and event details of any and all eyewitnesses of the sightings of unusual aerial phenomena on and around Air Force bases in the United States. Since the so-called Northern Tier bases received a lot of media attention during the 1970s following numerous incursions, these AFBs to date have had the most attention from investigators over the years. Nevertheless, BAASS intended to examine each and every AFB that was in any way associated with nuclear weapons during the 1970s, 1980s, and 1990s. During the month of January 2009, one of the BAASS analyst/investigators was assigned to review the publicly available documentation available on the Northern Tier sightings. All information was reviewed from the earliest incidents (Project Blue Book, the 1960s), through the 1970s. The analyst also proceeded to conduct open-source searches on more recent events at the Northern Tier Air Force bases which included through 1994.

A considerable amount of time was spent on the Loring AFB, Wurtsmith AFB, Malmstrom AFB, and Minot AFB incidents; including the Wolverton files. The Wolverton files contain a significant amount of information and are very well documented. Keith Wolverton was a Deputy Sheriff in Cascade County, MT, during the time when numerous sightings of aircraft of unknown origin were reported by Malmstrom AFB personnel. In fact, Captain Wolverton and the local sheriff's office became a focal point for reports of unusual sightings from both AFB personnel and from the greater community at large. During the period August 1975 through December 1977, Wolverton documented over 250 UAP events in and around the geographic area of Malmstrom AFB.

Additional research was also conducted to establish any correlation with other nuclear-capable military (USAF) installations. The list of these includes, but was not limited to, Whiteman AFB, MO; Holloman AFB,

NM; Kirtland AFB, NM; F.E. Warren AFB, WY; as well as a few others that are now closed (Castle AFB, CA, for example).

An example of the type of event that AAWSAP wanted collection on is illustrated by the following event that occurred at Wurtsmith AFB, Oscoda, MI. During the late evening hours of October 30, 1975, several ground personnel reported seeing an airborne unidentified (reported as a helicopter) in the area of the perimeter of the base.

Initially, the sighting was near the base entry point in the Capeheart housing area. The personnel making the initial sightings were Security Police. Based on the time of the incident (2200), these personnel would have been in the final hour of their 1500-2300 shift. The unidentified began its flight on the southeast side of the base and followed the perimeter, traveling to the north passing the main gate, where it was again sighted by the on-duty gate guard. Another USAF enlisted member who was in the area of the Base Motor Pool also observed the unidentified as it traveled along the perimeter. The unidentified then purportedly traveled on to the north, approaching the Strategic Air Command (SAC) Alert Facility and the area of the Weapons Storage Area (WSA). The reporting was not clear on the amount of time this covered or how long the unidentified loitered in the area of either the Alert Facility or the WSA. The unidentified then departed the WAFB area and proceeded to the east over Lake Huron.

A KC-135 aircraft was returning from a routine flight at the time of this incident. The 135 was tasked with locating and identifying the unidentified based on ground-based radar confirmation of the ground sightings. The aircrew indicated they were vectored to the general area of the unidentified over Lake Huron by air traffic control personnel. Reporting shows they made contact with the unknown over the lake and followed it to the general area of Bay City, MI, where they lost contact. Shortly after losing contact, the 135 turned in a northerly direction and began their return to Wurtsmith AFB. Shortly following their turn, the unidentified reappeared, appearing to follow the 135. It followed for a short time and then departed. The 135 crew returned to base and landed.

While the sighting would be questionable had it only been seen by one person on the ground, the fact three separate ground personnel made the same basic observation enhanced the credibility. Further enhancing is that ground-based radar detected an unknown target in the air in the general area

of the Alert Facility/WSA. The fact that the aircrew had visual and electronic verification of the unidentified made this an excellent example of the type of event that AAWSAP wanted for the database.

Chapter 15: AAWSAP Data Warehouse

A significant achievement of the AAWSAP program was the successful development of the Data Warehouse. To accomplish this large task, AAWSAP BAASS hired ten people who spent their time, forty hours per week, developing it. The AAWSAP BAASS Data Warehouse broke new ground because it included several new databases developed specifically by AAWSAP BAASS and databases from sources never collectively analyzed, all of which were then incorporated into a format that covered all the layers of information associated with UAP events.

On November 10, 2008, BAASS awarded a contract to Documatica Research, LLC (Dr. Jacques Vallee) to outline and describe technical approaches to the classification, codification, and retrieval of civilian and military sightings of anomalous aerial vehicles possibly representing breakthrough technologies and possibly constituting a threat to the United States.

In addition, in November 2008, BAASS acquired the complete electronic (formatted in Microsoft Access) and paper copy database of eyewitness sightings that had been compiled over several years by the National Institute for Discovery Science (NIDS). The database comprised approximately 1,600 reports from eyewitnesses of putative advanced aerospace vehicles. BAASS also initiated the acquisition of two more databases: the Project Blue Book and the UFOCAT databases.

In January 2009, the BAASS Data Warehouse structure and database format was finalized. The Data Warehouse was electronically formatted using Microsoft Office Suite and Adobe software and was maintained on an access-controlled server network. Each database in the warehouse was entered into the BAASS-developed CAPELLA format with the help of Dr. Jacques Vallee.

Ultimately, the Data Warehouse comprised eleven separate databases and their associated supporting documentation in electronic format—witness interviews, photographs, videos, recordings, sketches, analytical reports, and more. Each of the databases contained UAP sighting events that related to the purpose of that particular database, although some of the reported

cases did overlap. These databases were purged of all cases that did not conform to AAWSAP requirements.

The eleven databases included in the AAWSAP BAASS Data Warehouse were: (1) NIDS Database, (2) Airline and Military Pilot Database, (3) Project Sign/Grudge/Blue Book Database, (4) UFOCAT Database, (5) MUFON Case Management System Database, (6) Project Colares Database, (7) Canadian Government UAP Release Database, (8) United Kingdom Government UAP Release Database, (9) AAWSAP BAASS Database of cases investigated internally 2008-2010, (10) Skinwalker Ranch Database, and (11) An “eyes only” database documenting physiological effects from individuals who had spent time on the Skinwalker Ranch.

The AAWSAP BAASS Data Warehouse was an electronic repository for historical, ongoing, and future UAP reporting and investigations. It was designed to facilitate sophisticated analyses and data mining to improve the understanding of the extent, structure, and frequency of unusual aerial phenomena, as well as their potential correlation to known physical, environmental, biological, or socio-political factors. The primary consultant behind the AAWSAP BAASS Data Warehouse was Jacques Vallee.

There was a very large effort in the creation of the database by investigators, MUFON, database experts, French and Portuguese translators, and scientific analysts scrubbing data prior to data entry. The database was also populated with scrubbed cases from Danish (translated from Danish), French (translated from French), Brazilian (translated from Portuguese), as well as Canadian and British cases. Additionally, the AAWSAP database format captured administrative details associated with the UAP event, such as witness information, location, date, time, duration, etc. This yielded arguably one of the most comprehensive UAP databases in the world.

Each case that went into the Data Warehouse was allocated an index of credibility (SVP) and was assigned a Vallee classification number. (For a thorough methodological description of the SVP and Vallee Classification Number, see *Confrontations: A Scientist's Search for Alien Contact*.) The foundational configuration of the database format was based upon the “Six Layer Model for Anomalous Phenomena” developed by Jacques Vallee and Eric Davis. This six-layer model encapsulated all of the potential

characteristics of UAP events that can be studied. It includes:

1. The Physical Layer: those physical characteristics associated with a UAP event
2. The Anti-Physical Layer: the patterns that conflict with those predicted in modern physics
3. The Psychological Layer: the psychological impacts on the witness(es) and the social conditions that surround them
4. The Physiological Layer: the effects perceived by humans
5. The Psychic Layer: the effects commonly found in parapsychology literature
6. The Cultural Layer: the primary and secondary effects upon society.

Inherent in the six-layer design of the database was an extensive focus on the UAP effects on humans. The six-layer model published by Vallee and Davis included both the physical layer (layer 1), but also the effects on the human being (layers 3–6). Details are described in the following chapter. It cannot be overstated that any major study on UAP going forward MUST include all six layers, otherwise, the entire picture of the UAP encounter cannot be properly understood.

For example, there will be a strong temptation in current and future UAP investigations of military pilot encounters with UAP to focus ONLY on sensor-derived data (layer 1) in the name of “national security” or “congressional mandates” and ignore layers 3–6 (the effects on witnesses). Disparaging comments about “things that go bump in the night” are constantly being leveled in the media at suggestions to broaden the scope of UAP investigations. But to focus only on level 1 investigations is to ignore the voluminous data on UAP interactions that have been collected globally since 1945.

The authors are aware that the AAWSAP BAASS Data Warehouse had been reactivated in 2021 and is currently in use in various locations related to the government study of UAP. The significant advantage of the AAWSAP BAASS Data Warehouse architecture was its modular design. This means that current users can utilize individual databases while adding or discarding others. At the cessation of the AAWSAP program, an

enhanced analytical layer was about to be overlaid on the database with the intent to eventually incorporate an AI interrogation capability. This feature has now been added to the upgraded AAWSAP BAASS Data Warehouse and is a useful tool in beefing up UAP analytical capability.

BAASS DATA WAREHOUSE: The BAASS Data Warehouse consists of eleven databases in CAPELLA format and associated supporting documentation. Five of the databases contain historical reporting information (NIDS, Dominique Weinstein, Blue Book, UFOCAT, and MUFON). The MUFON database is continuously updated with current reports. The BAASS database will contain all documentation associated with current and future BAASS case studies.

Total Reports: 248,141

Event Timeline: 593 B.C. – Present

SUBSECTIONS OF BAASS DATA WAREHOUSE: Note: Event statistics may change as additional reports are analyzed and input in the CAPELLA format.

1. **NIDS Database.** Database developed by the National Institute for Discovery Science containing reports on the full spectrum of anomalous activity.

Total Reports: 1,570

Event Timeline: 1946-2004

2. **Dominique Weinstein's Pilot Database.** Database of international reports of anomalous activity observed by pilots. Database was filtered to contain only unexplained phenomena.

Total Records: 483

Event Timeline: 1942-2007

3. **Project Sign/Grudge/Blue Book Database.** Database of all cases reported as part of U.S. Air Force operations Sign, Grudge, and Blue Book.

Total Records: 15,674

Event Timeline: 1947-1969

- 4. UFOCAT Database.** Database was initiated at the conclusion of Project Blue Book to continue cataloging reports. Duplicate reporting from various sources occurs in numerous cases.

Total Records: 203,805

Event Timeline: 593 B.C.-2008

- 5. MUFON Case Management System Database.** Database of cases reported to MUFON via their web-based reporting system initiated in mid-2003. Does not contain MUFON's 13,000 reports received from 1969 through mid-2003.

Total Records: 22,000

Event Timeline: 1890-2010

- 6. Project Colares Database.** Database containing all UAP sighting events related to the 1977-1978 Colares, Brazil, UAP flap.

Total Records: 356

Event Timeline: 1977-1978

- 7. Canadian Release Database.** Database containing UAP sighting events reported in the Canadian release of UAP information.

Total Records: 779

Event Timeline: 1951-1981

- 8. United Kingdom Release Database.** Database containing UAP sighting events reported in the United Kingdom Ministry of Defense release of UAP information.

Total Records: 2879

Event Timeline: 1950-2000

9. AAWSAP BAASS Database. Database contains all documentation associated with on-site UAP investigations conducted by BAASS.

Total Records: 49

Event Timeline: 2008-2010

10. Skinwalker Ranch Database. Database contains information on anomalous events occurring within an approximate 15-mile radius around the Utah ranch property. The database is not restricted to airborne phenomena.

Total Records: 537

Event Timeline: 1950-2010

11. Post-Utah Ranch Effects Database. Database contains information on anomalous events reported by individuals who had previously visited the Utah Ranch. This database contains anomalous activity that did not occur at or near the Utah Ranch. The database is not restricted to airborne phenomena. The database is updated as new anomalous activity is reported by people who have previously visited the Utah Ranch.

Total Records: 9

Event Timeline: 2009-2010

Also included in the database are French and Danish UAP cases:

- Throughout 2005-2008, GEIPAN, a department of CNES (French civilian space agency), released about 100,000 pages comprising investigative reports from approximately 1,650 cases, including 6,000 eyewitness interviews involving UAP, the majority of which have been investigated by the Gendarmerie. BAASS translators/analysts sorted and codified the cases so that only the highest value cases for BAASS will be translated and entered into the BAASS database.
- On January 29, 2009, the Danish Air Force released 329 pages of

reports on unusual aerial phenomena. All reports were in Danish; therefore, BAASS contracted a Danish-English translator to produce English translations of all 329 pages of released files. The translation was complete by March 13, 2009.

The AAWSAP BAASS Data Warehouse was a central electronic repository for historical, ongoing, and future UAP reporting and investigations. This manpower-intensive effort was necessary to achieve consistency in the data files. The roughly 234,000 UAP cases originated from numerous disparate databases in multiple languages. Now interrogation of the data warehouse for a variety of UAP parameters and trends is possible. Also, alignment with the results of Project Physics, which itself can yield a database, is now more feasible.

Data Warehouse Example Cases. A few examples of the type of cases within the Data Warehouse are:

1. Location: **Carteret, New Jersey** Date: July 15, 2001

Summary: For a half-hour period in the middle of the night, numerous witnesses (over 100 from varying locations) reported 12-15 yellowish-orange lights in the sky that moved slowly in formation. At various times the lights were reported to pulsate, hover, and change formation. FAA radar at Newark International Airport detected numerous unidentified contacts without operating transponders.

2. Location: **Southern Illinois** Date: January 5, 2000

Summary: A witness reported to local police regarding an object like “a floating house” with very bright internal lights flying at low altitude traveling southwest. The object was two to three stories high and the length of a football field. Approximately nine minutes later, a police officer responding to the dispatch reported a low flying “massive elongated triangle” emitting intense white light. The object moved within 1,000 feet of the officer and hovered with a slow rotation. The object then suddenly and silently flew at a high rate of speed covering several miles in a few seconds where it was observed by a second police officer responding to the

dispatch. The second officer reported a large black triangular shaped craft with several bright white lights on it that hovered, but also flew at a very high rate of speed. The object was observed by a third police officer about 20 minutes later in a neighboring community. The third officer stated the object was flying very slowly between 500 and 1000 feet in altitude. The object was very large, shaped like a fat arrowhead, and the rear was concave and appeared to contain dim, white flashing strobes. The object was also observed by several civilian witnesses.

3. Location: **San Carlos de Bariloche Airport, Argentina** Date: July 31,1995

Summary: During approach for landing, the pilot of an Argentina Airlines B-727 had to make an aggressive maneuver to avoid collision with a strange object. The pilot described the object as a white light that approached at high speed on collision course, then halted 100 meters away from the airliner. After the pilot's maneuver, the object turned and flew parallel to the airliner. The object looked like an inverted saucer that was the size of an airliner. It changed colors, with two green lights at each end and a flashing orange light in the middle. On final approach, the runway and airport lights went out and control tower personnel reported equipment malfunctions. The pilot discontinued the approach and climbed, still accompanied by the object. When the runway lighting returned, the pilot began another landing approach at which time the object departed at "fantastic" speed. The object was observed by 4 crew members aboard the B-727, an airborne B-747 pilot, a police officer piloting a Gendarmerie aircraft, and two air traffic controllers in the tower.

4. Location: **Coulommiers, Seine et Marne, France** Date: January 28, 1994

The pilot and two additional crew members of an Air France A320 Airbus observed what first appeared as a dark, bell-shaped object several miles away. The pilot reported the object regularly changed shape. As the object flew closer to the airliner, it looked like a gigantic brownish-red disc with fuzzy edges. The object flew in formation, 4,200 feet below the

airliner for about one minute. Then the object became translucent and suddenly disappeared. The crew members estimated the object was 200-300 meters in diameter and 20-30 meters thick. At the same time, the military radar at Cinq-Mars-La-Pile tracked an unidentified radar contact within one nautical mile of the airliner for 50 seconds.

Chapter 16: CAPELLA Six Layers of UAP Analysis

AAWSAP BAASS management believed that UAP can be thought of both as physical and as “psychic.” We hoped that it will prove stimulating as a unified approach to a puzzling phenomenon that presents both undeniable physical effects suggesting a technological device or craft *and* psychic effects reminiscent of the literature on poltergeists and psychokinetic phenomena. Here we use the word “psychic” in the sense of interaction between physical reality and human consciousness.

The feeling of absurdity and contradiction in these two aspects is not worse than scientific puzzlement over the particle/wave duality or, more recently, quantum entanglement and multi-dimensional transport controversies. The contradiction has to do with the inadequacy of our language to grasp a phenomenon that defies our attempts at classification.

The SVP Credibility Rating

No classification system is complete without a way of assigning credibility or “weight” to an observation. While such a procedure is an integral part of any intelligence evaluation, UFO researchers have rarely applied it in support of their work. The system needs to be simple enough to be applied quickly, and with enough mnemonic value to ensure it does not require constant reference to a thick codebook.

In our own work, we use a simple, three-digit code to indicate the weight of a UFO report. Each of the three digits has a value from zero to four, as follows:

The first digit, “S” indicates the reliability of the source:

0 is used for an unknown source or an unreliable source

1 is for a report attributed to a source of unknown reliability

2 is from a credible source, second hand

3 is from a credible source, first hand

4 is a firsthand personal interview with the witness, by a source of proven reliability

The second digit, “V” indicates whether or not a site visit took place:

- 5 is used when there was no site visit, or the answer is unknown
- 1 indicates a visit by a casual person unfamiliar with such phenomena
- 2 flags a site visit by a person familiar with the range of phenomena
- 3 is a site visit by a reliable investigator with some experience
- 4 indicates a site visit by a skilled analyst

The third digit, “P” indicates the probability of natural explanations:

- 5 is used when the data is consistent with one or more natural causes
- 1 means that a natural explanation only requires a slight alteration of the data
- 2 means that a natural explanation would demand gross alteration of one parameter
- 3 means that a natural explanation demands gross alteration of several parameters
- 4 means that no natural explanation is possible, given the evidence

Thus, a rating of 222 or better (meaning that each of the three digits is 2 or higher) indicates *events reported through a reliable source, in which a site visit has been made, and where a natural explanation would require the gross alteration of at least one parameter.*

The Six Layers of UAP Analysis

Let us consider the characteristics of the sightings that are not explained by trivial natural causes; we can recognize six major “layers” in terms of our perceptions of these characteristics of UAP phenomenology (Vallee, 1975a, 1975b).

Layer I: First is the *physical layer*, evident in most accounts describing an object that:

- occupies a position in space, consistent with geometry
- moves as time passes
- interacts with the environment through thermal effects
- exhibits light absorption and emission from which power output estimates can be derived
- produces turbulence

- when landed, leaves indentations and burns from which mass and energy figures can be derived
- gives rise to photographic images
- leaves material residue consistent with Earth chemistry
- gives rise to electric, magnetic, and gravitational disturbances

Thus UAP, in a basic physical sense, are consistent with technology centered on a craft that appears to be using a revolutionary propulsion system.

Layer II: For lack of an adequate term, we will call the second layer *anti-physical*. The variables are the same as those in the previous category but they form patterns that conflict with those predicted by modern physics: Objects are described as physical and material, but they are also described as:

- sinking into the ground
- shrinking in size, growing larger, or changing shape on the spot
- becoming fuzzy and transparent on the spot
- dividing into two or more craft, several of them merging into one object at a slow speed
- disappearing at one point and appearing elsewhere instantaneously
- remaining observable visually while not detected by radar
- producing missing time or time dilatation
- producing topological inversion or space dilatation (the object was estimated to be of small exterior size/volume, but the witness(s) saw a huge interior many times the exterior size)
- appearing as balls of colored, intensely bright light under intelligent control

Layer III: The third layer has to do with the *psychology* of the witnesses and the *social* conditions that surround them. Human observers tend to see UAP in their normal environment and in normal social groupings. They perceive the objects as non-conventional but they try to explain them away as common occurrences until faced with the inescapable conclusion that the object is truly unknown.

Layer IV: *Physiological* reactions are another significant layer of

information. The phenomenon is reported to cause sounds (beeping, buzzing, humming, sharp/piercing whistling, swooshing/air rushing, loud or deafening roaring, the sound of a storm, etc.)

- vibrations
- burns
- partial paralysis
- extreme heat or cold sensation
- odors (powerful, sweet, or strange fragrance, rotten eggs, sulfurous, pungent, musky, etc.)
- metallic taste
- prickling
- temporary blindness when exposed to the objects' light
- nausea
- bloody nose and/or ears
- severe headache
- difficulty in breathing
- loss of volition
- drowsiness in the days following a close encounter

Layer V: The fifth category of effects can only be labeled *psychic* because it involves a class of phenomena commonly found in the literature of parapsychology, such as

- impressions of communication without a direct sensory channel
- poltergeist phenomena: motions and sounds without a specific cause, outside the observed presence of a UAP
- levitation of the witness or of objects and animals in the vicinity
- maneuvers of a UAP appearing to anticipate the witness' thoughts
- premonitory dreams or visions
- personality changes promoting unusual abilities in the witness
- healing

Layer VI: The sixth category can be called *cultural*. It is concerned with society's reactions to the reports, the way in which secondary effects (hoaxes, fiction, and science-fiction imagery, scientific theories, cover-up or

exposure, media censorship or publicity, sensationalism, etc.) become generated, and the attitude of members of a given culture towards the concepts that UAP observations appear to challenge. The greatest impact of the phenomenon has been on the general acceptance of the idea of life in space and a more limited, but potentially very significant, change in the popular concept of non-human intelligence.

Possible Nature of UAP Technology

A framework for scientific hypothesis on the UAP observations can be built on the identification (admittedly very coarse) of the six major layers of UAP effects. If we must formulate a view of the problem in a single statement at this point, that statement will be:

Everything works as if UAP were the product of a technology that integrates physical and psychic phenomena and primarily affects cultural variables in our society through the manipulation of physiological and psychological parameters in the witnesses.

This single statement can be examined as follows:

a) The phenomenon is the product of technology. During the observation, the UAP is a real, physical, material object. However, it appears to use either very clever deception or very advanced physical principles, resulting in the effects we have called “anti-physical,” which must eventually be reconciled with the laws of physics.

b) The technology triggers psychic effects either purposely or as a side effect of its manifestations. These consciousness phenomena are now too common to be ignored or relegated to the category of exaggerated or ill-observed facts. All of us who have investigated close-range sightings have become familiar with these effects.

c) The purpose of the technology may be cultural manipulation—possibly but not necessarily under the control of a form of non-human intelligence—in which case the physiological and psychological effects are a means to that end. But the parapsychologist with a Jungian framework may argue that the human collective unconscious is also a potential source of such effects without the need to invoke alien intervention.

The AAWSAP BAASS data warehouse (named CAPELLA by its designer, Dr. J. Vallee) currently includes 248,141 unusual aerial

phenomena reports of sightings occurring from 593 B.C. to the present time. Some of the sightings in the data warehouse are duplicated reports and some have received classical explanations as natural phenomena. Sighting reports of sufficient intent for further analysis within the warehouse are divided into one of four classifications:

- 48% of reports are considered “flyby” (FB) events where the observed object(s) travel without discontinuity
- 31% of reports are considered “close encounters” (CE) where an object(s) is observed on or near the ground
- 15% of reports are considered “maneuver” (MA) events where an observed object(s) displays a discontinuous trajectory
- 6% of reports are considered “anomalies” (AN) events which include sightings such as amorphous lights, and other unexplained anomalous activity

These four classifications are further divided into categories that define whether the events were associated with lasting physical effects, living entities, reality transformation, or physical injuries. BAASS does not believe that the breakdown of reports in the data warehouse accurately reflects the percentage of actual sightings. The high percentage of reports of close encounters (31%), for example, actually reflects the witnesses’ increased likelihood to report their sightings when it is a close encounter compared to an unexplained phenomenon far away from the witness. Significant statistics from the CAPELLA data warehouse include:

- Approximately 1.9% of sightings were reported by military personnel
- Approximately 0.6% of sightings were reported by police officers
- Approximately 0.3% of sightings were reported by pilots
- Approximately 0.8% of sightings reported physical traces
- Approximately 0.5% of sightings reported physiological reactions by witnesses
- Approximately 2.1% of sightings reported entities or lifeforms
- Approximately 0.6% of sightings reported sightings with correlated radar data

- Approximately 0.6% of sightings reported electromagnetic effects

Term	Acronym	Definition
Flyby	FB	A Vallee classification used when the observed object(s) travel without discontinuity.
	FB1	A simple sighting of an unexplained object "flying by" in the sky without discontinuity.
	FB2	A flyby with physical evidence, such as a recorded sound or radar tracking.
	FB3	A flyby where a report of an object is accompanied by the observation of beings on board.
	FB4	A flyby in connection with which the witness claims he or she has undergone a transformation of reality.
	FB5	Where witnesses of a flyby suffer serious injuries.
Maneuver	MA	A Vallee classification used when the observed object(s) displays a discontinuous trajectory, leading to the determination of specific ground locations where actions occurred.
	MA1	An object with a discontinuous trajectory such as a drop, a maneuver, a hovering stop, or a loop.
	MA2	The cases that give rise to physical effects in addition to a discontinuity in trajectory.
	MA3	The cases of objects with discontinuous trajectories when beings are observed on board.
	MA4	Instances of maneuvers accompanied by a sense of transformation of reality for the percipient.
	MA5	When permanent injury or death is related to a maneuvering object.
Close Encounter	CE	A Vallee classification used when an object(s) is observed on or near the ground.

	CE1	Objects seen on the ground or close to the ground.
	CE2	Close encounters where physical effects or traces were reported.
	CE3	Close encounters where "occupants" or "entities" were present.
	CE4	Close encounters with abduction reports in which the witness claims not only to have seen occupants but to have extensively interacted with them inside their vehicle or craft.
	CE5	Close encounters in which the witnesses have suffered permanent injury or other physiological or pathological effects.
Anomalies	AN	A Vallee classification used which includes sightings such as amorphous lights and other unexplained anomalous activity.
	AN1	Anomalies like amorphous lights or unexplained explosions in the sky that do not have lasting physical effects.
	AN2	Reports involving lasting physical effects, such as poltergeist phenomena, anomalous photographs, flattened grass, or "apports".
	AN3	Anomalies with associated entities—could involve reports of ghosts, yeti, and other types of cryptozoological creatures, or elves or spirits.
	AN4	Anomalous reports in which witnesses describe personal interaction with entities in the reality of the entities themselves.
	AN5	Anomalous injuries or deaths are reported, such as unexplained wounds or spontaneous combustion.

Color Coding: Each database is identified by its own autonomous color-coding identifier in the “Catalogue Entry” and “Location” columns.

Screen Format: Each CAPELLA spreadsheet is a Microsoft Excel flat file. The spreadsheet is formatted in a series of “screens.” Each screen is designed to be presented or printed as a set of congruent information based on the Vallee and Davis Six-Layer Model. All Data Warehouse spreadsheets maintain identical data fields in the first ten screens, which represent the Vallee CAPELLA format. Some spreadsheets contain an eleventh screen that displays supplemental information that was contained in the originating database but does not have a corollary data field in the ten-screen format. The eleventh screen is used so that information from original databases is not lost.

SCREEN 1 WHEN-WHERE-WHAT

Line Number

Catalog Entry (e.g., BAASS database, NIDS database, etc.)

Day, Month, Year

Location

Summary Description

Vallee Classification

Time of Day

Duration

SCREEN 2 WITNESSES AND REFERENCES

Witnesses

Investigator

Other Witnesses

SCREEN 3 QUALITY CONTROL

Region code

Country code

Julian date

Time zone

Local time

UTZ time

Longitude

Latitude

Accuracy code (of year, month, day)

Accuracy code (time)

Accuracy code (location)

SVP code

SCREEN 4 PHYSICAL LAYER

Weather

Terrain

Number of and Description of Object(s)

Shape

Size

Sound

SCREEN 5 PHYSICAL LAYER (cont'd)

Light Emissions

Electromagnetic effects

Ground Traces

Materials recovered

Trajectory (Lift/Propulsion)

Radar data

Photographs or video

SCREEN 6 ANTI-PHYSICAL LAYER

Reported events in apparent conflict with known laws of physics

SCREEN 7 CONSCIOUSNESS EFFECTS LAYER

Witness reactions

Witness relationships

SCREEN 8 PHYSIOLOGICAL LAYER

Physiological effects

Pathological effects

Animal Reactions

SCREEN 9 HUMAN INTERACTION LAYER

Consciousness effects

Witness heritage or culture

Lifeforms

SCREEN 10 NOTES & HYPERLINKS

Hyperlinks

Special Comments

SCREEN 11 SUPPLEMENTAL INFORMATION

Chapter 17: Reporting on Skinwalker Ranch Events

This chapter is a compilation of events that occurred on the Skinwalker Ranch between September 1, 2007 and July 15, 2008. This time period starts just after Lacatski first visited the ranch from DIA and ends just prior to the beginning of AAWSAP by BAASS. The events, which are listed chronologically, were reported by Bigelow Aerospace security personnel—Salinas, Cross, Fisher, and Norton—and do not include events reported by the property caretakers, Richard and Jean Dietz, unless witnessed by additional personnel.

The reported events include:

- Sensed or perceived presence
- Perceptions of being watched
- Observations of paranormal events
- Perceptions of emotional distress
- Observations of Unidentified Aerial Phenomena

These events were considered by DIA in determining whether the Ranch should remain under continuous 24/7 collection by security personnel. Continued collection by the security force was determined to be beneficial to AAWSAP. Guards were rotated from Las Vegas to the ranch every couple of weeks, residing in a trailer home in the Homestead 1 area.



Author Kelleher Spent Dozens of Hours at this Location on the Ranch Investigating Anomalies

September 1, 2007

Salinas moved toward the ranch vehicle to initiate a western patrol. Salinas noticed one of the ranch dogs huddled at the back of the vehicle. As Salinas attempted to get the dog to move, the dog crawled underneath the vehicle. Caretaker Dietz had to assist in getting the dog out from under the vehicle by coaxing it with a dog biscuit. This was abnormal behavior for the animal. As Salinas was driving west along the dirt road at approximately 9:17 p.m., he suddenly got goosebumps on his arms and the hairs on his arms stood straight up. He looked to his left (south) and observed a softball-sized round orb in the field about 25 to 30 yards away. The orb traveled through the field and disappeared around the first incline heading west. Salinas stopped the vehicle, then turned the vehicle around and returned to Homestead 1. Salinas reported what he had observed to Dietz and entered the trailer and reported the incident to the Security Chief via telephone. Dietz, standing in the backyard of Homestead 1, then observed a white orb come down from the sky and hit the ground in the pasture. Dietz reported this to Salinas. While Salinas and Dietz were watching for additional events, they observed several abnormal “blinking stars.” While looking through binoculars they observed these were not stars; they were some sort of object that remained in place with red, green, and white lights spinning around the lower half of the object. This sighting occurred to the South at a

great distance at a low angle above the horizon. Salinas and Dietz observed one to two dozen more of these objects throughout all quadrants of the sky. Salinas and Dietz entered the vehicle and began traveling west on the dirt road. As they approached Homestead 2, Salinas looked over his left shoulder, (southeast) and observed a red orb traveling through the trees. They continued to the West Gate where they continued to see the distant objects in the sky. These objects usually appeared in pairs low above the horizon. Throughout the sightings, Salinas and Dietz were excited and thought it was wonderful they were experiencing this. After the sighting experience while in the Homestead 1 trailer, Salinas was exhausted, tired, and sore; he felt as if he'd been beaten up.

September 7, 2007

Salinas and Dietz were outside at Homestead 1 observing the area. At approximately 8:38 p.m. both witnesses saw a blinking object due south approximately 30 degrees above the horizon. They saw an additional similar object due west at a great distance. At approximately 9:03 p.m. the two witnesses observed an object high in the eastern sky traveling west, but could not discern the shape. This object had two bright blinking white lights and was moving erratically—up, down, and zigzagging—at a high rate of speed (2-3 times faster than normal aircraft). There was no sound apparent from any of these objects. After a few minutes of watching the zigzagging blinking object, Salinas and Dietz observed a sphere appear in the pasture to their southwest (about 30 yards from Dog Run 1). The sphere was a solid, dull off-white color. The sphere hovered for a second or two, then disappeared into the trees. Both witnesses were very excited. Salinas admitted some fear and four hours later reported having a headache.

September 9, 2007

Cross and Dietz were standing at the south end of the trailer at Homestead 1 at approximately 9:00 p.m. and observed a flashing red and white object traveling west to east at approximately 20,000-30,000 feet elevation. The object was moving at a high rate of speed and reversed course (without turning) and traveled down its original path in the opposite direction.

September 30, 2007

At approximately 10:00 p.m. Fisher observed some abnormal lights in the

distant southwest sky about 12 fingers above the tree line. Using binoculars, he observed four white lights forming a square with one red light in the center and a second red light just to the right of the center. Collectively, the lights would remain stationary, then move as a whole, and become stationary again. This happened several times. The lights were last observed making a rapid upward turn to the southeast. Immediately following the observation, Fisher's eyes began to hurt and he felt a slight pain across his eyebrow from temple to temple, which lasted five minutes.

October 3, 2007

While Fisher and Dietz were on the back porch of the trailer at Homestead 1 throughout the evening, they observed numerous soft, milky-white round lights that ranged in size from a tennis ball to a softball. The objects appeared sporadically and usually originated to the northwest by the mesa. At one time there were approximately six of these round lights visible together. The closest light came within approximately 30 feet of the porch.

October 5, 2007

While standing on the back porch of the trailer at Homestead 1 at 7:50 p.m., Fisher observed a single soft, milky-white round light about ten feet due west. The light was the size of a tennis ball and only about one foot off the ground and lasted for only one second.

October 6, 2007

While lying in bed inside the trailer at Homestead 1 at approximately 3:30 a.m., Fisher felt something graze the top part of the blanket above his feet. In his peripheral vision, he observed a blackish-foggy mist with gray edges at the foot of the bed. The misty object moved from the foot of the bed out the door into the hallway and appeared to move into the southeast bedroom. The misty object was described as two feet wide by two feet high and five feet in length.

October 10, 2007

While Fisher and Dietz were on the back porch of the trailer at Homestead 1 throughout the evening, they observed numerous soft, milky-white round lights that ranged in size from a tennis ball to a softball. The objects appeared sporadically and usually originated from the tree line near

Homestead 2 or to the northwest by the mesa. At one time they observed three light blue lights just east of Dog Run 1 about one foot above the ground. The three lights were about five feet apart and lined up from north to south. Later they observed a set of three green softball-sized lights one foot above the ground. All of the lights were only observed for approximately one second each.

October 31, 2007

While driving west along the road as he approached Homestead 2 at approximately 8:10 p.m., Cross observed a single dim white light with a tint of blue glowing from it. The light was softball-sized about four feet above the ground near the corral area north of the road and about 15 yards from Cross. He watched the object sit stationary for 15-20 seconds, then the light suddenly disappeared as if it extinguished. While Cross watched the object he was excited; the hair stood up on the back of his neck and he had goosebumps on his arms.

November 4, 2007

At approximately 11:15 p.m. Cross placed his wallet, watch, and wedding ring on the nightstand beside the bed in the bedroom with the queen bed. Cross then departed the trailer to begin a patrol. He returned to the trailer at 1:45 a.m. and noticed that his wedding ring was not on the nightstand with the other items. Cross had an uneasy feeling as if he were not alone. He searched the bedroom for the ring. When he moved a pair of jeans (washed and placed in position two days prior) that were positioned on top of the dresser inside the closet, the ring fell out of the jeans pocket. This freaked him out and made the hair on his entire body stand up. He thought someone or something was next to him. The uneasy feeling cleared after a few minutes.

November 12, 2007

While Fisher and Dietz were on the back porch of the trailer at Homestead 1 between 6:00 to 9:00 p.m., they observed numerous soft, milky-white round lights that were softball-sized. The lights were sporadic and appeared from the southwest through the northwest of the back porch. The closest light appeared approximately 35 feet away in the direction of Dog Run 1. Fisher attempted to signal the lights by using varying sequences of flashes

from a flashlight. Sometimes, after the flashlight sequences, he would observe the lights appearing, but it was not consistent.

November 13, 2007

While Fisher and Dietz were on the back porch of the trailer at Homestead 1 between 6:00 to 7:30 p.m., they observed numerous soft, milky-white round lights that were softball-sized. The lights were sporadic and appeared from the southwest through the northwest of the back porch. Fisher attempted to signal the lights by using varying sequences of flashes from a flashlight. Sometimes after the flashlight sequences, he would observe the lights appearing, but it was not consistent.

November 14, 2007

While Fisher and Dietz were on the back porch of the trailer at Homestead 1 at 6:51 p.m., Fisher observed a single soft, milky-white round light the size of a tennis ball. He only saw the light for just over one second, but the light started about three feet above the ground and made a half-moon shape traveling toward the southwest.

November 19, 2007

While Fisher and Dietz were on the back porch of the trailer at Homestead 1 at 6:25 p.m., Fisher observed two soft, milky-white round lights the size of a baseball to the west in the pasture. At 6:37 p.m. he observed a single soft, milky-white object the size of a golf ball 35 feet to the southwest in the direction of Dog Run 1. He only saw the lights for approximately one second each.

December 1, 2007

Salinas had just laid down in bed to go to sleep. At approximately 4:16 a.m. with his head on top of the pillow facing the east wall, he suddenly noticed a bright red light appear in his right eye (closed). He could see the light clearly. Salinas opened his eyes and looked around the room and observed nothing abnormal. Although he thought the light was peculiar, he rolled over and fell asleep. He had a normal eight hours of peaceful sleep.

December 1, 2007

Salinas and Dietz were in the yard at Homestead 1 at 6:17 p.m. when they both observed a brilliant flash of light in the sky above them. They could

not identify any source.

January 24, 2008

Daily from January 24 through January 30, 2008, Norton was awoken in the morning by rhythmic tapping sounds inside the bedroom of the Homestead 1 trailer. The sounds were heard once awake and then would fade away. He described the sound as drops falling on the roof or light tapping on the roof/walls. Norton attempted to record the sounds while they were occurring, but nothing appeared on the recordings except his own voice.

January 30, 2008

Norton finds two doors closed on one of the bedrooms. He previously recalls the doors being open, and there was no one in the trailer to shut the doors. Previous photographs taken by Norton indicate the doors were open.

July 15, 2008

At 3:44 p.m. while sitting in the living room of the Homestead 1 trailer, the hairs on the back of Cross's neck stood up and he had a very strong feeling that he was not alone in the room. He audibly asked for a sign from the presence. Within a couple of minutes, he smelled a strong odor resembling a fruity perfume. The odor dissipated and the uneasy feeling ended at 3:53 p.m. Cross could not find anything inside or out that resembled the odor.

July 15, 2008

Cross and Dietz noticed an opened box of bandages lying on its side. The box was on a dresser in Mr. Bigelow's bedroom in the Homestead 1 trailer. Both witnesses remembered this box was standing upright the last time they looked inside the bedroom. A photograph of the bedroom on July 13, 2008 depicted the box standing upright on the dresser.

Chapter 18: Integrated Sensor Package to Detect UAP

An autonomous sensor package to detect UAP for AAWSAP BAASS was developed by an engineering team located at Bigelow Aerospace.

The following is a short summary of the specifications by which the BAASS engineering team began designing an autonomous sensor package. The project started at the conceptual stage with a meeting in late January 2009 and a complete operational prototype was built by August 2009.

Design Goals:

- Device will operate unattended
- Autonomous data collection
- Survivability: weather, vandalism, critters
- Portable: “Two men and a truck.”
- Limited power
- No reliance on AC power
- Must be sized for full nighttime operations
- Sufficient communications
- May use WiFi, satellite phone, and cellular phone transmissions as the situation warrants
- Internet appliance for remote connection
- Short-range sensing (<20ft.)
- Long-range sensing (up to 5-mile planar radius, indeterminate altitude)
- Internal clock: GPS or network time-based
- COTS or very near COTS components only
- Reduce on-site maintenance to the minimum possible
- Camouflage based on geographic location
- Sensor Suite
 - Visual, IR, near-IR, and UV spectra cameras
 - Microwave band detection
 - Radio band detection

- EMI detection in the electronics emission band
- RADAR
- LIDAR (Light Detection and Ranging)
- Audio
- Radiation (gamma, beta, alpha)
- Gravimeter

After several months of researching optimal COTS equipment, the following equipment was decided upon:

Table 3. Proposed COTS sensor suite to measure signatures of Advanced Aerospace Vehicles

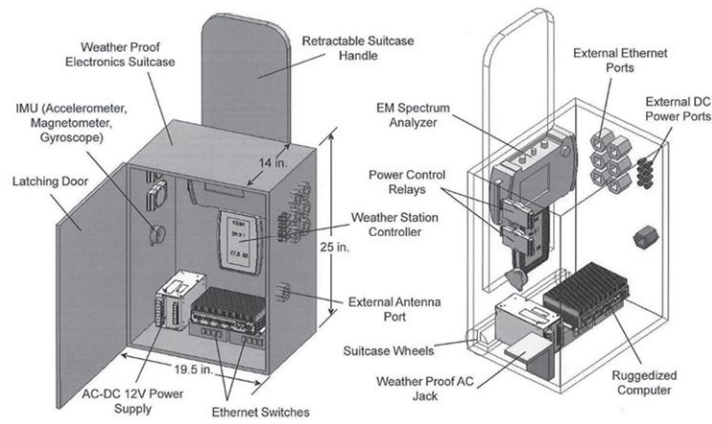
Manufacturer	Model #	Description	Vendor
Agilent	N9340B	EM Spectrum Analyzer handheld outdoor. 100kHz-3GHz	Newark
Agilent	U2004A	EM Spectrum Power Meter - USB, 6GHz	Newark
Knowles	MR23151-000	Omni-directional microphone - audible frequencies	Newark
TDK Lambda	SWS1000 L-12	Power Supply- 12V 1054W AC to DC	Allied Electronics
McMaster-Carr	6409A39	Electronic Suitcase - Water and Dust Sealed with wheels and handle.	McMaster-Carr
Memsense	IM02-0150C050 T00	Inertia Measurement Unit for gravitational and magnetic field sensing	Memsense
Advantech	UNO-2182	Embedded Computer	Advantech
Batbox	Batbox Duet	Ultrasonic Microphone - heterodyne and freq. division up to 120kHz	Batbox.com
LaCrosse	WS2308 AL	Weather Station with Rainfall/ Wind/ Pressure/ Humidity/ Temperature	WeatherShop
Sony	VC-CA-I P1100	Outdoor IP Infrared Camera	HomeSecurityStore

Table 4. Operational specifications of the sensor suite

Sensor	Range
EM Spectrum Analyzer	100kHz to 3GHz
EM Power Meter	up to 6GHz
Gyroscope - 3-axis	+/- 2g in each axis
Magnetometer - 3-axis	+/-1.9 gauss in each axis
Accelerometer - 3-axis	+/-150 deg/sec in each axis

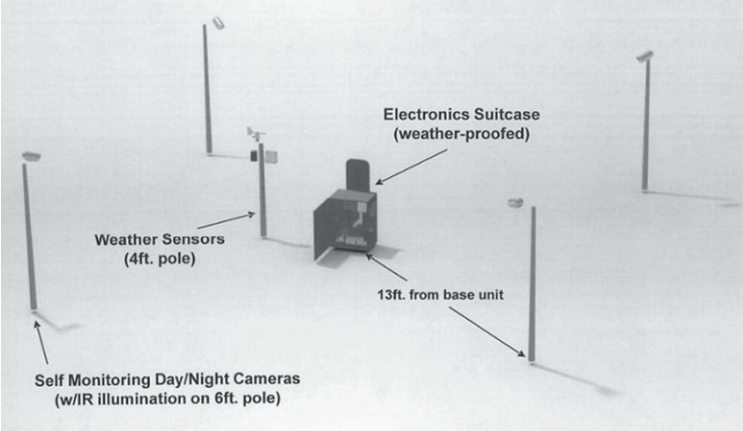
Temperature	-21.8°F to 157.8°F
Pressure	4.35 psia to 15.94 psia
Humidity	10% to 99%
Rainfall	0.0 in. to 98.4 in
Wind Speed	0 mph to 112 mph
Audible Microphone	20Hz to 20kHz
Ultrasonic Microphone	17 kHz to 120 kHz (converted)
Day/Night Cameras for 360° self-observation	80 feet w/IR illumination

Figure 1: Electronics Case



Not Pictured: Audio and ultrasonic microphones, weather station, and Day/Night self viewing cameras with mounting posts.

Figure 2: Deployment Configuration



Chapter 19: The UFO Assault on Brazil

This chapter is from a report written by John Schuessler, a BAASS senior scientist, that documents the enormous impact of the UFO assault on the people of Brazil from 1977 to 2003. It began in the town of Colares, in the state of Para, and spread throughout the country. The contents of this chapter served as an introduction to AAWSAP BAASS management and employees in 2008 to the importance of data collection in Brazil. As with the case of Northern Tier Air Force nuclear bases discussed previously, the major Colares events began in the 1970s, and by September 2008 the last opportunities to conduct additional interviews and collect new data were coming to a close. With the passage of time, memories fade, and witnesses pass away. Fortunately, AAWSAP BAASS endeavors for North Tier and Brazil yielded substantial additional material for the Data Warehouse.

Introduction

Since the 1970s, and probably much earlier, unidentified flying objects have been inflicting injuries, some of which proved fatal, to people in Brazil—perhaps more so than in all other countries combined. This fact has been documented by extensive on-the-scene investigations conducted by Robert Pratt, a well-known journalist, and Dr. Jacques Vallee, an eminent scientist from the United States. The accumulated result of Pratt’s work was organized for BAASS into eight 1” thick three-ring notebooks amounting to several thousand pages of data. The purpose of this summary was to reduce the mass of that information down to an easy-to-understand record of what took place in Brazil over a period of nearly three decades starting in the 1970s. In addition, Bob Pratt’s book *UFO Danger Zone* documents a number of Brazilian UFO encounters in extensive detail.¹

Possibly more important than just recording what happened to the people of Brazil is the fact that the reports document hundreds of incidents demonstrating advanced technologies that we are yet to understand and duplicate. The human physiological effects recorded across hundreds of square kilometers of jungles, river banks, hills, and small towns and villages gave BAASS clues to the types of technologies being demonstrated

there. In addition, accounts describing the appearance and operational characteristics of the craft gave BAASS a broader view of how advanced technologies operate while on Earth and are completely unmatched by our own Earth-based technologies. These technology demonstrations included human effects, lift, propulsion, control, power generation, spatial/temporal translation, materials, configuration, structure, signature reduction, human interfaces, and armament—all the central investigation areas of AAWSAP.

To illustrate the potential impact on the future of the world, BAASS summarized the results of Pratt's Brazilian flap investigations under the following five categories:

- Human Effects
- Geographic Data
- Spacecraft Data
- Occupants
- Government Interactions.

The data given below has been extracted from the transcripts of more than 370 on-site investigations, involving 514 victims, as conducted by Robert Pratt beginning in the late 1970s and running through 2003. Pratt's work was further verified by the on-site investigations conducted by Dr. Jacques Vallee. Their work is reinforced by summaries of the additional investigations done by the following Brazilian experts, as shown in the "Government Interactions" section of this report:

- Lt. Colonel Uyrange Hollanda and his Brazilian Air Force (FAB) intelligence team
- Dr. Wellaide Cecim Carvalho, a medical doctor who treated the Colares victims
- Dr. Wilton Gilhermo Alcantara Reis, Medical Examiner for the Legal Medical Institute in Belem.

In addition, Hulvio Brant Aleixo, head of CICOANI, a private Brazilian UFO investigative group, conducted a series of expeditions to UFO hot spots beginning in 1969 and continuing into the early 1990s. He and his team traveled more than 41,000 kilometers and spent over 2,000 hours

conducting on-site investigations. They traveled more than 16,000 kilometers during the 1977 -1979 Colares assault alone.

Other than this brief summary of the work done by Professor Hulvio Brant Aleixo, this report does not attempt to cover the huge number of investigations conducted by as many as a dozen other private Brazilian UFO investigative organizations working throughout the country at the same time. Very little of that body of work has been translated into English.

Human Effects

People living in northeastern Brazil since the 1970s have been exposed in a variety of ways to UFO technologies. Reports have included lights that fly, change direction, or drop to the ground. Bob Pratt documented that the fear factor becomes worse when an object suddenly appears overhead, bathing the victims in glaring light and extremes of temperature, often causing their horses, pets, or other farm animals to bolt and run away. In many of the more extreme cases, people are burned, wounded, and left unconscious, with after-effects ranging from headaches, nausea, and scarring, to long-term illnesses and death. Many must deal with various kinds of physical evidence, extremes of reality transformations, and exposure to strange entities. These human effects incidents have been thoroughly documented by Robert Pratt, the families of the victims, government officials, multiple private investigators, and medical practitioners.

Robert Pratt traveled to Brazil numerous times and worked with a group of Brazilian investigators, translators, and medical people to show the important but sinister nature of what happened to the people there. The data summarized below are based on an evaluation of Pratt's detailed investigative reports.

- Deaths: 10 humans died after periods of prolonged illness following their exposure to this technology. More than 300 animals were found dead of unknown causes during the same period and in the same area of the country.
- Burns: 54 people were burned during close encounters.
- Comas: 14 people were left in an unconscious state for short periods of time.
- Paralysis: 54 people suffered from paralysis of fairly short

duration, while paralysis plagued a few people for several weeks.

- Puncture wounds: 23 of the people suffering from burns also had puncture wounds within the burned areas of their skin. Most felt that blood had been taken via the puncture wounds.
- Scarring: 8 of the burned individuals had fairly extensive permanent scarring resulting from the burns.
- Rashes: 2 people had a rash from an unknown allergen, perhaps because of climate and living conditions.
- Itching: one person mentioned being bothered by itching. Again, this may be because of climate and living conditions.
- Eye Irritation: 34 people complained of irritated eyes.
- Temporary blindness: 5 people suffered from blindness for a short period of time.
- Vision acuity changes: 8 people suffered from vision changes.
- Nausea/Vomiting: 41 people suffered from bouts of nausea, with some having to deal with vomiting as well.
- Headaches: 55 people reported extreme headaches.
- Hot: 46 people described extensive heat during their close encounter.
- Cold: 28 people felt like they were enveloped in a pocket of cold air during the event.
- Prolonged illness: 36 people were ill for long periods of time, ranging from months to years. The deaths reported above came from this select group of people.
- Anemia: Pratt located 3 people who were found to be anemic during periods following their encounter; however, most victims were not tested for anemia. Two additional women suffered from anemia following their separate UFO encounters. Both women reported being engulfed by a beam of light that burned them and left each of them physically debilitated.
- Weight loss: 2 people reported extensive weight loss.
- Extreme fear: 423 people claimed to be terrified by their close encounters and the resulting physiological effects. Thousands of other citizens who lived in the area where the incidents were occurring also claimed to live in fear because of what had happened to people they knew, and many of them would no longer

go outside at night. Many people completely changed their lifestyles because of this fear. Lt. Colonel Hollanda and the FAB team said: “The town of Colares, Para, lives in a state of ‘collective hysteria.’ The inhabitants don’t sleep, or fish (which is their main occupation). As soon as night falls, bands of 20-30 people, mostly men circulate around the town. The population lives in a state of terror.” This situation eventually spread throughout the region.

- Abductions: 18 people claimed to have been abducted. Most were found afterward in a location other than where the original encounter occurred.
- Nearness to the craft: people with injuries claim to have been as near as 2-4 meters (i.e., right over their heads) and others were up to 200 meters away. Non-affected observers were at distances of more than 200 meters to as much as 6,000 meters.

Geographic Data

Brazil is one of the largest nations in the world, with more than one hundred seventy-five million people living in a land almost as big as the United States. However, most of the investigations covered by this report are from northeastern Brazil, ranging from the Amazon to northern Maranhao, to Colares, and down the Atlantic coast to Uruguay. No one has fully recorded when the UFO activity actually started or how much of Brazil it covered, but we do know it started in northern Maranhao as early as April 1977, continued there for four months, and apparently then moved on to the Colares region for much of the rest of the year. It could have started earlier elsewhere in Maranhao or Piaui or other states, but at this time we do not have the records to establish that fact. And it may have continued after 1977 in other parts of Para, Amapa, Amazonas, Roraima, or even farther north or west beyond the borders of Brazil. What we have been able to document about the flap is the intensive level of activity taking place in Maranhao and the Colares area in 1977 and 1978, and continuing sporadically for years after that time, extending to surrounding areas. In many cases, the same individuals were revisited approximately one decade following their initial exposure. The following facts illustrate the breadth of the problem:

- Land Statistics: Brazil has a land area of 8,465,510 square kilometers (3,265,075 square miles), with 7,491 km (4,655 miles) of coastline. The Brazilian UFO assault began in the state of Para, in the wetlands and tropical forests at the mouth of the Amazon River. By comparison, the Brazilian wetlands are ten times the size of the Florida Everglades. As time passed, the UFO activity moved through the states of Maranhao and Ceara and down the coastline along the Brazilian highlands from Fortaleza to Rio de Janeiro and beyond. In all, Pratt investigated incidents at 371 locations, with Colares, Belem, and Rio Grande do Norte having 213 of them.
- Type of terrain where the incident occurred:
 - Land: 281
 - Water: 38
 - Unspecified: 52
- Number of towns/villages affected: Not specified but thought to be in the thousands. Lt. Colonel Hollanda and his FAB team said the objects were covering Brazilian air space in strips much the way aerial photographers would. Each strip could cover dozens to hundreds of villages. For example, the state of Para has a population of more than 8 million inhabitants living in 1.2 million homes. The village of Colares, the focal point of the 1977 UFO assault, has a population of more than 10,000 people, living in 3,200 homes. Nearly everyone living in Colares was impacted by the UFO activity there.
- Number of physically affected victims interviewed by Pratt: 514.
- Number of people not directly affected: 10,000 to one million. People across northeastern Brazil watched the sky with fearful eyes, worrying that they would become victims. Fortunately, the UFOs usually kept their distance as they traversed the area. Pratt's work indicates that the UFOs needed to be closer than 200 meters to do any significant harm to humans.

UFO Data

In all cases where human effects were noted, some type of craft was

reported. Sometimes the craft is seen coming from great distances, traveling at high speeds, and suddenly stopping in close proximity to the victims. At other times and without any warning, a blinding light suddenly turns on above the heads of the victims. They are subjected to variations in hot and cold temperatures. Some are wounded, burned, and/or left unconscious at the scene.

The terrified victims almost always try to flee to a safe location, but many are pursued by the blinding light and have trouble hiding. Sometimes they flee to the interior of a nearby building, but the light continues searching for them, shining through a tiled or thatched roof as if it were transparent. When pursued out in the open, victims have described how the craft tries to lift them from the ground, perhaps in an attempt to abduct them. And in some cases, the abduction attempt appears to have been successful.

The presence of craft of a variety of shapes and sizes have been seen and documented during the close encounters, leaving little doubt about the reality of the situation. An extensive analysis of this data may give clues about how these objects operate and perhaps lead to reverse engineering of the technology involved.

- Shape (Multiple crafts were observed in some of the incidents)
 - Lights: 279
 - Orbs: 120
 - Discs: 46
 - Spheres: 19
 - Triangles: 5
 - Cylinders: 18
 - Other (unusual shapes): 6
- Size: Ranges from baseball to basketball size for orbs, while the more structured type of craft ranges from a few feet to “huge.”
- Speed:
 - High speed: 51
 - Hover: 62
 - Low speed: 78
 - Rapid speed change: 21
 - Landed: 16
- Color (The color often changes during the event. For example, a

high-speed object may appear yellow as it approaches but turns red before harming an individual, or may suddenly project a blue beam. The victims often described a bright light without specifying a color.)

- Yellow: 59
- White: 30
- Silver: 2
- Multi-colored like fire: 47
- Red: 116
- Blue: 69
- Orange: 4
- Light beams:
 - Engulf victim in light (sudden illumination): 184. This action was extremely terrifying to the victims. Many of them lived in areas without electricity and bright lights at night, other than an occasional automobile's headlights, were unheard of.
 - Pursue victim: 54
 - Switch on/off: 58
 - Penetrate roofs/walls: 20
 - Search the area: 18
- Craft becoming visible or invisible: 2. Many other victims said the craft just disappeared or the craft just appeared above them but didn't elaborate, therefore the measure of invisibility is thought to be greatly understated here.
- Noise:
 - No: 82. The victims seem to be amazed that something so frightening can come so close to them and yet is completely silent.
 - Yes: 35. When noises were noted, the victims usually said it was a "whooshing" or a low humming sound.
- Levitation of witnesses: 30
- Car/truck engine failures: 11. In a high percentage of the cases investigated, the victims were either on foot, bicycle, or horseback. Nevertheless, 11 cases occurred where people were trapped on the road when their car or motorcycle engine died and

would not restart as long as the UFO was present.

- Occupants

In many incidents, the craft seemed to operate intelligently but independently and no occupants were seen. One might equate such cases to our UAVs and drones. In specific instances, however, solid, physically real craft were observed at close range, and occupants from the craft interacted with the victims on the ground. Some of the reported characteristics of the occupants are as follows:

Size (Approximate):

- Three feet tall: 51
- Four feet tall: 10
- Adult human-sized: 35
- Animal-like: 1

Features: Since the majority of the incidents occurred at night, the features of the occupants were not clearly visible to the victims, therefore the information in this category is sparse at best.

- Big head: 2
- Frail body: 7
- Large eyes: 7
- Normal human features: 8
- Wearing special clothing: 16

Government Interactions

The Brazilian incidents beginning in 1977 are unique in that they were intensively investigated by an official Brazilian Air Force team that had the time, equipment, and authority to spend four months in the field observing events, interviewing victims, and officially recording the extent of the problem. This was an intelligence operation led by Lt. Colonel Uyrange Hollanda and included First Air Force Command Sergeants who were technicians, photographers, and other specialists.

Lt. Colonel Hollanda, a graduate of the National School of Intelligence in

Brasilia, and his Air Force team interviewed around three hundred people who had had close encounters, including dozens of men and women who had been burned by UFOs. Villagers in Colares reported that sometimes UFOs would hover in the dark sky at night and beam down rays of light at houses, beams that passed through the tile roofs as if they did not exist. At times the rays were seen circling around inside the houses as if searching for someone or something.

Hollanda admitted he was once badly frightened when a huge UFO hovered just 100 meters above him and his men. "I was terrified," he said. "They could have done anything they wanted to with us. It was about seven o'clock, just after sunset. We never saw anything approaching. Suddenly a big disc-shaped object thirty meters in diameter was hovering exactly above us. It was emitting a yellow glow that would grow and dim, grow and dim, every two or three seconds. And after the fifth time, the lights turned light blue, dimmed—and then it disappeared with incredible speed toward the sea."

During the Brazilian Air Force investigation at Colares, Hollanda said "we took about 300 photographs of eight different shapes of UFOs." At one point, Hollanda said they photographed a huge ship that was 100 meters long. Small craft would come out of it and later go back in.

In addition, local mayors, police, and aviation officials became involved in the events over the next two decades.

Forty-eight doctors were involved. As an example, Dr. Wellaide Cecim Carvalho, Para State Department of Public Health, located in Belem, treated approximately 40 injured individuals during the rash of UFO incidents in Colares in 1977. She said most of the injured had burns on their chest and throat. These burns healed fairly quickly and the skin peeled off, but a few individuals had significant scarring following the healing process. Two small puncture wounds were almost always found in the center of the burned areas. She ran blood tests on the burn patients and all of them had low levels of hemoglobin.

Carvalho was also one of the officials who witnessed a metallic, cylindrical UFO in Colares. It happened in November 1977, at 6 pm, when most of the stores were closed and many people had fled from the horror there. She, the sheriff, and a priest were the only officials left in town. At the time, she was down by the beach and the craft was about 200 meters

away. People were imploring her to flee with them, but she wouldn't go. She was too fascinated by it. She said it was beautiful as it circled in the sky.

Conclusion to Colares Report

The documentation shows that northeastern Brazil was a UFO hotspot for at least two decades. Since the activity may be continuing in some form, a follow-up investigation of the current UFO situation in that region may be warranted.

From the analysis of the rich treasure trove of recorded data from that era, it is evident that it is fertile with clues about the technology involved and how that technology is used in the surveillance of the native population. Consideration should be given to a renewed on-site examination of the situation as it appears today with the goal of using high-technology remote sensing equipment to record as many operational parameters of the craft as possible.

Chapter 20: Future Work

Unfortunately, due to both budget and time constraints, there were projects that AAWSAP was unable to fully pursue during the project timeframe, 2008-2010. Those efforts include:

- Establish liaison operations (relationships) with DoD Data Facilities such as the Aerospace Data Facility/Denver Security Operations Center at Buckley Air Force Base in Colorado
- Collect and Analyze Uncorrelated Target Data
- Collect and Analyze Radar and Radar/Visual Case Data
- Build a Database of Sounds detected in Novel Spacecraft Incidents
- Build a Database of Odors detected in Novel Spacecraft Incidents
- Develop a Plan for Locating and Monitoring “Windows” or “Portals”
- Define a Plan to Attract Novel Spacecraft
- Collect Oral/Written Histories

Establish Data Facility Liaison Operations

All of the tasks listed under the DIA AAWSAP contract started by taking a backward look to determine the amount of baseline data that was available for analysis and drew on the BAASS technical expertise to exploit that data and plot a course for the future, which was aimed at defining novel space systems, processes, and operations. We have already noted that there has been a nearly continuous evolution over the past 50+ years in the observed characteristics of the novel spacecraft documented in unknown event reports (UER). That means a backward look is just a starting place and current high-quality data is also necessary for BAASS to complete its mission and to assure the path to the future is success oriented. So it is important to stay current with intelligence operations assessments in the area of novel spacecraft. This mission can be at least partially accomplished by the establishment of a liaison operation with the Aerospace Data Facility/Denver Security Operations Center at Buckley Air Force Base,

Colorado (Aurora/Denver locale).

The focus of this task is to provide BAASS researchers with the latest intelligence data as it is related to novel technologies and these thus far unidentified novel spacecraft. As an example, the detection of “thermal activity” by Earth orbiting satellites will at times be related directly to the mission of this contract. Noting that the 23rd Legacy Satellite that was launched in 2007 is five times faster in processing data than previous satellites and has four times the infrared detection technology, it could be the prime supplier of data necessary for developing a signature of novel spacecraft so that this thermal activity data stream can be separated out and used for knowledge discovery by BAASS researchers.

Collect and Analyze Uncorrelated Target (UCT) Data

Uncorrelated targets have been the topic of discussion for more than three decades and have been seen as a rich source of data about the flight characteristics of novel spacecraft. In fact, they were discussed at the 1968 House of Representatives Hearing on UFOs. At the time, Congressman Roush was pushing for the release of data about UCTs, or “fastwalkers” as they are sometimes called. UCTs are collected by NORAD, documented, evaluated briefly, and depending on the results of the evaluation, sent to an appropriate agency or discarded. The main concern of NORAD is not to find UFOs but to protect the nation against hostile attacks.

UCTs are objects approaching from space, entering our atmosphere, maneuvering strangely about, and then leaving the atmosphere again in a manner that is not consistent with our spacecraft, space junk, or astronomical objects such as meteorites or bolides. UCTs have been classified in various ways over the years. One classification had four categories: 1) Significant UCT, 2) Non-significant UTC, 3) Critical UCT, and 4) False UCT. Each category has its own disposition.

This task requests a link with NORAD, or the appropriate agency, for BAASS to obtain on a timely basis, a copy of all UCT reports. BAASS will then subject the UCT reports to established evaluation criteria that can be compared with the past, present, and future novel spacecraft reports (UFOs). Also, the UCT reports will be compared with the radar and

radar/visual database to determine the track, flight characteristics, and possibly the intent of the flight. Wherever the data is available, it will be analyzed for clues about the propulsion and other advanced technical characteristics.

Collect and Analyze Radar and Radar/Visual Case Data

Military (DoD), FAA, and weather radar reports from the WWII era to the present contain valuable information about the location, speed, maneuverability, and size of novel spacecraft operating at all altitudes and at most locations around the world. Many of these reports were responsible for military pilots being involved in intercept missions.

However, during a high percentage of these missions, the interception was not possible because the radar bogey outperformed our best jets. Nevertheless, over the years, many pilots were successful in obtaining gun camera films, videotapes, and digital images of their targets. In addition, in a portion of these missions, the flight crews were able to visually verify their target at the same time as it was displayed on ground and aircraft radar equipment. Pundits have suggested that the radar equipment may have been faulty because of beyond-the-state-of-the-art performance of the bogeys, but they are wrong. In many of the cases, the ground radar teams immediately called for verification by expert technicians that the equipment was operating properly and found no problems with the equipment. And the same is true for the airborne radar equipment—no problems were found.

The radar and radar/visual reports constitute a valuable source of technical data about novel spacecraft performance and operations. To maximize the use of this data, BAASS needs to rapidly obtain and input data from presently available sources into the master database to establish a radar and radar/visual baseline. Since many of the several hundred available reports are from older sources, they may contain only narrative information about the case and may not include the actual radar plots. Nevertheless, this baseline may then be used for a preliminary assessment of novel spacecraft performance and the development of a model for the analysis of new incidents from this time forward into the future.

Build a Database of Sounds Detected in Novel Spacecraft Incidents

As case data is loaded into the BAASS database, one of the sub-categories should contain data related to sounds heard and/or recorded during the incidents. Using keywords such as: humming, buzzing, clicking, beeping, swooshing, roaring, etc., the various sounds may be analyzed and compared to the craft configurations. Of particular importance is the analysis of sound recordings. The evaluation will pinpoint the sounds associated with the configurations and operating parameters of the craft. This will give researchers clues about the propulsion and power systems that are involved.

Build a Database of Odors Detected in Novel Spacecraft Incidents

As case data is loaded into the BAASS database, one of the sub-categories should contain data related to odors detected in relation to the novel spacecraft, keeping in mind that odors detected inside the craft may be related to materials, operating equipment, and the occupants themselves. Odors detected external to the craft may be related to interactions with the atmosphere, plants, and soils, as well as heating of the craft's exterior during various flight phases. An evaluation of this data will give researchers clues about the materials and operating systems of the craft. Nearly all reports of odors noted up to this time have been based on witness descriptions. In future incidents, it may be possible to obtain samples of the air (gas) in and around the craft that may be subjected to laboratory analysis for materials out-gassing products, traces of plant or animal life-forms, and munitions-related systems.

Develop a Plan for Locating and Monitoring “Windows” or “Portals”

There are well-documented reports of novel spacecraft appearing or disappearing in unobstructed sky and areas near the ground. Since this unusual arrival and departure characteristic can explain a lot about their systems and operations, it would be beneficial to be able to monitor these

“windows” or “portals.”

Novel spacecraft seem to frequent a number of locations around the world, often for months or years; BAASS researchers can start by locating past windows, looking for characteristics of the physical site, and then projecting those characteristics to new sites, as well as monitoring some of the existing sites.

At times the windows start as a point of light and grow into a large and interesting opening in the sky before something either enters or leaves the portal. A lot of data can be obtained by taking spectral measurements, sensing field effects, recording temperatures, and recording the events in the visible light spectrum as well as infrared, near and at the mouth of the window area. A very good place to start this monitoring operation would be at the Skinwalker Ranch in northeastern Utah.

Define a Plan for Attracting Novel Spacecraft

There is solid evidence that novel spacecraft have been attracted by various events and activities. War zones from WWII to the Korean War and now the Middle-East wars have shown a high rate of instances where novel spacecraft seem to be monitoring the war making activities, especially when there is a significant increase in activity. For example, our bombers over Korea and Viet Nam recorded a number of instances where their missions were observed at fairly close range by novel spacecraft.

Unusual construction projects where there is a lot of disruption of the natural countryside seem to coincide with the appearance of novel spacecraft during the earth-moving phase of the project. This happened when the East Texas Nuclear Energy Production facility was built in the 1970s, during which construction continued 24 hours per day. Earth-mover operators said they were observed, especially at night when the project was brightly lit, by novel spacecraft coming in from the Gulf of Mexico on a regular basis.

Observations of smaller-scale events also take place. For instance, when “Jet Man” Yves Rossy flew across the English Channel in September 2008 with a small carbon-composite fixed-wing strapped to his back and propelled by four kerosene-burning jet turbines, photographs of the event showed a novel object following him as he made the 13-minute flight.

A plan for staging events, or at least monitoring ongoing commercial and

military events for intrusion by novel spacecraft, could have a high payoff in terms of tracking, recording, and observing their actions. Special equipment could be set up to collect spectral data, monitor temperatures of the craft and the air around and behind them, look for disruptions in the atmosphere that could be related to their propulsion system, and seek signals from any sensing equipment they may be using. Evaluation of this data could provide a lot of clues about how they function. As a side benefit, we might be able to determine their purpose by observing which types of projects are most interesting to them and what they seem to be sensing at the projects.

Collect Oral/Written Histories

Collect, under appropriate security caveats, oral/written histories from individuals with firsthand exposure to apparent exotic technologies and/or circumstances surrounding the same. This would include seeking out and contacting military and civilian personnel, scientists and engineers, and companies that may already have had access to firsthand data concerning novel technologies. We consider it important to mount such an effort, with official documented approval and under appropriate conditions of security, in order to obtain from a host of individuals important historical information that would in some cases almost certainly be lost as time progresses due to their advancing ages or loss of institutional history. To the degree possible, this should be a global collection effort.

Chapter 21; What's Next?

This book, *Initial Revelations*, covered AAWSAP startup issues from November 2008–May 2009. Within *Project Physics*, UFO lift, propulsion, spatial-temporal translation, and power generation concepts were introduced, both basic and advanced. AAWSAP DIRD summaries associated with these four topics were included in the appendices. *Project Engagement* was described illustrating the collaborative effort of AAWSAP and MUFON, allowing for investigative teams to be deployed within hours of a UFO/UAP event for timely data collection.

Project Northern Tier was initiated to revisit the numerous UFO incursions at USAF nuclear missile bases in the 1970s. Likewise, *Project Colares* was initiated to revisit the UFO encounters with the Brazilian people during the 1970s and up to the present day. The amount and quality of the data still available for research and inclusion in *Project Database's* CAPELLA justified the effort. As described in this book, when the USAF Sign/Grudge/Blue Book, UFOCAT, and MUFON data are all converted into CAPELLA format, along with the Colares data, the world's largest, searchable research database was the result, with nearly 250,000 detailed cases.

The readers of this book no doubt have noticed that *Project Ranch* and *Project Consciousness* are barely mentioned, and with good reason. *Project Physics*, *Engagement and Database* were all very manpower and time intensive and needed to commence as soon as possible in the AAWSAP startup during November 2008–May 2009. *Project Ranch* was slowly activated utilizing personnel already on-site at Skinwalker Ranch for data collection on “unusual activity,” with AAWSAP personnel later involved.

Project Consciousness, the examination of the connection between UAP/UFO and paranormal phenomena and the human mind and body, was a completely new type of initiative. Decades of research have suggested that consciousness (including telepathic communication) may play an integral role in human-UAP interactions. *Project Consciousness* was an umbrella project that would eventually house multiple programs involving telepathy, remote viewing, psychic functioning, and more, to obtain critical

data with regard to the activity and behavior of UAP. In fact, *Project Consciousness* was an umbrella over all aspects of AAWSAP research.

So, what's next? Our next book will continue to examine *Project Physics* topics such as materials, configuration, and control. Several topics must be addressed: how and why large UFOs slowly fade into and out of our visual perception, why they are designed in odd triangular/boomerang configurations, and how a triangular UFO can turn on edge and do cartwheels across the sky. *Project Database* has many such cases in CAPELLA. Also, in the next book's timeframe coverage, *Project Engagement* with AAWSAP and MUFON collaboration was in full operation. Exceptionally interesting visions and cryptids in *Project Ranch* will be described. Personnel were deployed to Brazil for *Project Colares*, seeking evidence of one of the most dramatic of UFO occupant encounters in history.

Acknowledgements

In addition to Robert Bigelow and Senator Harry Reid, the authors wish to acknowledge the contributions of Senators Ted Stevens and Daniel Inouye who played large roles in securing the \$22 million in funding for AAWSAP.

The authors wish to acknowledge the extraordinary intelligence, vision, and decades of knowledge of UAP history that John Schuessler, Hal Puthoff, and Eric Davis contributed by advising both BAASS and DIA on designing the multiple projects that constituted AAWSAP. Dr. Jacques Vallee's advice in designing the AAWSAP BAASS CAPELLA Data Warehouse was invaluable.

The hard work of the 50 BAASS employees who worked under unusual secrecy in executing the AAWSAP contract is also acknowledged. From military counterintelligence professionals, retired police officers, project managers, PhD-level scientists, engineers, skilled technicians, Russian, French and Portuguese translators, database analysts, security officers, and administrative staff, each of the BAASS employees contributed a lot of diligent work during the two-year contract.

We wish to acknowledge Brandon Fugal for his vision and for assembling the team that has wholeheartedly continued the research on Skinwalker Ranch from 2016 to the present.

CK wishes to acknowledge the loving support of his wife, Shane, and his sons, Devon, Jaime, and David, who have *always* been there. JL acknowledges the love and support of his wife, Wisal, and GK, his wife Anne.

We thank Patrick Huyghe for excellent editorial advice and Mary Neighbour for internal book design as well as cover formatting design.

Appendix I: Lift DIRDs

Two Defense Intelligence Reference Documents (DIRDs) were written for AAWSAP on UAP lift topics:

- *Antigravity for Aerospace Applications*, Dr. Eric Davis
- *Laser Lightcraft Nanosatellites*, Dr. Eric Davis

Short summaries in this appendix were created using extracts taken from the documents themselves.

Antigravity for Aerospace Applications

Dr. Eric Davis, EarthTech International, 30 March 2010 (44 pages)

Antigravity effects can be implemented by manipulating spacetime. This paper reviews several different theoretical approaches for exploring the possibility of controlling gravity by generating forces that counteract, or otherwise modify, gravity for the purpose of aerospace propulsion. Einstein's General Theory of Relativity is the theoretical framework guiding this study.

The paper also reviews other antigravity approaches via the interaction of quantum theory with gravitation. And it explores the question of which method or technique is best suited for aerospace applications and evaluates the make-or-break issues that limit them. Gravity is the bane of aerospace transportation. The force of the Earth's gravitational field acts to pull all objects, whether in motion or at rest, downward toward the Earth's surface. Because aerospace transportation involves the motion of vehicles through the atmosphere and/or into space, propulsion engineers are always faced with the requirement that aerospace vehicles will have to carry enough propellant and associated tankage in order to provide enough propulsive thrust to overcome the downward pull of gravity and achieve rectilinear motion. Energy has to be expended by a propulsion system to overcome the force of gravity in addition to providing for rectilinear motion, and the majority of propulsive energy is dedicated to overcoming gravity. The

aerospace propulsion engineer is faced with two choices for the control of gravity in this regard: passive control and active control.

Modern aerospace propulsion technology, which is based on accumulated scientific knowledge since recorded history, can only achieve the passive control of gravity whereby a given propulsion device must develop a thrust that will passively counteract the Earth's gravitational pull, lift a vehicle off the surface, and propel it through the air or into space. Newton's laws of motion and gravity require that the fuel fraction of any aerospace vehicle can never be less than that given by a simple function of the ratio of the vehicle's maximum speed to the speed of its rocket plume, jet, fan, or propeller wake. For example, this limit implies that a single-stage rocket that accelerates to escape velocity must be composed of more than 93 percent fuel. That is because a rocket must accelerate its working fluid from rest (relative to the rocket) up to its exhaust speed. Thus, exhaust speeds for aircraft and chemical rockets are limited by material science, chemical reaction rates, and engineering factors to only a few thousand meters per second.

To date, there is no technology that can achieve the active control of gravity. If one could eliminate or otherwise control the Earth's gravity field, then one has the ability to dramatically reduce the amount of propellant, its tankage, and the overall structural size and mass of an aircraft or rocket because there will no longer be any need for these to overcome the pull of Earth's gravity while transporting a payload across the globe or into space. Instead, aerospace vehicles will only need to have the propellant mass and infrastructure necessary to change their kinetic energy from rest to a final velocity necessary to achieve atmospheric flight or space orbit. If one achieves active gravity control, the Earth's gravitational well will no longer impact aircraft, launch vehicles, or spaceflight dynamics. Aerospace vehicles would merely "levitate" in the air and their propulsion systems would be optimized for change-in-velocity missions.

One of the primary concepts for the goal of affecting gravity is "antigravity," which is a colloquial expression that specifically means the negation or repulsion of the force of gravity. A more general term that encompasses this notion and other possibilities is "gravity control." If antigravity exists, it can be exploited to counteract or nullify the gravitational pull, or attraction, of a planetary (or stellar) body that acts

upon a much smaller body. Einstein's General Theory of Relativity gives a prescription for a variety of different antigravity generators. Even Newton's law of gravity offers several different classical prescriptions. Newton's law of gravity can be used to nullify the gravity field of one body acting on another body by using a clever arrangement of masses, but it is impractical in real-life application. The theoretical possibility of antigravity also appears in quantum gravity theories, cosmological vacuum or dark energy, and quantum field theory. This report reviews all of these topics. The report will also review the topics of gravity control that include the production of antigravity (self-lifting) forces induced by quantum vacuum zero-point energy and by non-retarded quantum interatomic dispersion forces in curved spacetime (that is, in a background gravitational field). The reader should bear in mind that many of these concepts are nowhere near having any form of practicable engineering implementation. However, the report will provide theoretical estimates to guide the way toward the technological implementation of antigravity.

Laser Lightcraft Nanosatellites

Dr. Eric Davis, EarthTech International, 1 November 2010 (77 pages)

Laser propulsion is a new and exceptional method for reaching space. By launching spacecraft on a beam of electromagnetic radiation, researchers will have developed the first new method of achieving orbit since the late 1950s. In this concept, a remote or ground-based energy source, such as a ground- or space-based laser beam generator, transmits power to a spacecraft via a beam of electromagnetic radiation. The spacecraft collects the beam energy and uses it to power the propulsion system. This concept has the advantage of using the ambient air as the working fluid in the atmosphere and carrying propellant only for use outside the atmosphere, leaving the energy source for heating the propellant on the ground. This results in a tremendous weight reduction and improved performance benefit for the spacecraft because a large propellant mass and heavy energy source are not carried on board. The laser-propelled vehicle, called "Lightcraft" because it flies on a beam of laser light, is designed to harness the energy of a laser beam and convert it into propulsive thrust.

In the earliest laser-propelled rocket designs, beamed energy from a

ground-based laser (with near-visible wavelengths) is absorbed by a heat exchanger on board a rocket and is transferred to a working fluid. The heated fluid (hydrogen, ammonia, etc.) then produces thrust by expansion through a nozzle as in a conventional chemical rocket. An alternative to this scheme is to use the beamed energy to ablate an onboard solid propellant (such as Delrin) to generate thrust. However, a more recent incarnation of this concept, developed by the Air Force Research Laboratory (AFRL) at Edwards AFB, CA, is for the Lightcraft to operate in two propulsion modes: air-breathing (detonation wave) and rocket ablation (deflagration). The Lightcraft operates in air-breathing mode up to Mach 5 and 30 km altitude, and in laser thermal rocket mode (using a liquid, gaseous, or Delrin ablation propellant) in space.

In the two-mode propulsion concept, a forebody aeroshell acts as an external compression surface for the air-breathing engine inlet. A parabolic-shaped afterbody mirror is affixed to the bottom of the craft, which serves as a primary receptive optic for the laser beam and an external plug nozzle expansion surface. The primary thrust structure is the centrally located annular shroud, which provides air through the inlet and also acts as a ring-shaped energy “absorption/propulsion” chamber for plasma formation. The air inlet is closed when the Lightcraft operates in rocket mode. The Lightcraft is very lightweight and uses its shape to facilitate vertical flight. The craft has the appearance of a fat acorn when viewed from the side. The lower portion of the craft is a very highly polished metal mirror, whereby the lower point of the acorn shape is the midpoint of a stretched-out parabolic mirror.

The Lightcraft receives kilojoule pulses from a ground-based infrared laser at a rate of 25 times per second. The axisymmetric, off-axis parabolic collection mirror facilitates flight by concentrating the pulsed laser light into an annular focus. The laser beam’s pulse interacts with the mirror, spreading out and focusing into an annular area inside the circumference of the craft. The intensity of the 18-microsecond pulsed laser is sufficiently high that atmospheric breakdown occurs in the annular area causing inlet air to momentarily burst into a highly luminous plasma (10,000 - 30,000 K), thereby producing a superheated plasma shock wave (with instantaneous pressures reaching tens of atmospheres) that generates thrust in the direction of the laser beam. A lip around the craft’s circumference, akin to a

plug nozzle, directs the expansion of the plasma, creating downward thrust expansion. Multiple laser pulses and an atmospheric refresh of breakdown air generate the flight. This air-breathing pulsed-detonation engine concept owes its origins to the German V-1 “Buzz Bomb” of WWII, which ran on aviation fuel.

For the purpose of this report, we envision a Lightcraft Earth-to-Orbit (ETO) transportation system that operates according to the following scenario. The air-breathing engine mode develops quasi-steady thrust by pulsing at a variable rate that depends on the Mach number and altitude flown along the flight trajectory to orbit. Once the Lightcraft reaches a very high altitude and climbs above the atmosphere, it begins to operate in the thermal rocket mode using onboard propellant to convert and expand the laser energy for propulsion. The Lightcraft is spin-stabilized and can be launched vertically upward or on a slant upward trajectory, hover in mid-air, and undergo powered descent and landing. The ground-based laser beam generator system consists of the following: 1) power supply; 2) high-power (megawatt-class) laser beam generator/transmitter using novel beam optics; and 3) automated tracking, hand-off, and safety systems.

Appendix II: Propulsion DIRDs

Seven Defense Intelligence Reference Documents (DIRDs) were written for AAWSAP on UAP propulsion topics:

- *Advanced Nuclear Propulsion for Manned Deep Space Missions*, Dr. Friedwardt Winterberg
- *Positron Aerospace Propulsion*, Dr. Gerald Smith
- *Advanced Space Propulsion Based on Vacuum (Spacetime Metric) Engineering*, Dr. Hal Puthoff
- *Aneutronic Fusion Propulsion*, Drs. V. Teofilo, R. White, S. Petrinec
- *Aneutronic Fusion Propulsion*, Dr. William Culbreth
- *Magnetohydrodynamics (MHD) Air Breathing Propulsion and Power for Aerospace Applications*, Drs. S. Macheret and K. Goodfellow
- *Negative Mass Propulsion*, Dr. Friedwardt Winterberg

Short summaries in this appendix were created using extracts taken from the documents themselves.

Advanced Nuclear Propulsion for Manned Deep Space Missions

Dr. Friedwardt Winterberg, Univ. of Nevada-Reno, 1 December 2009 (37 pages)

If large-scale manned spaceflight has any future, a high-specific-impulse, high-thrust propulsion system is needed. The only known propulsion concept with this property is nuclear bomb propulsion. However, since large-yield nuclear explosions are for obvious reasons undesirable, the nuclear explosions should be comparatively small. But because of what Freeman Dyson described as the “tyranny of the critical mass,” small fission bombs or fission-triggered fusion bombs become extravagant, with only a fraction of the nuclear material consumed. The same is true for

nuclear fission gas core rocket reactors, where much of the unburned fission fuel is lost in the exhaust.

In the original Orion bomb propulsion concept, the propulsive power was through the ablation of a pusher plate. There the energy is delivered to the pusher plate by the black-body radiation of the exploding bomb. The propulsion by non-fission-triggered fusion bombs not only has the advantage that it is not subject to the “tyranny of the critical mass,” but the propulsive power is delivered by the kinetic energy of the expanding hot plasma fireball repelled from the spacecraft by a magnetic mirror. This is particularly true for a pure deuterium bomb, where, compared with a deuterium-tritium (DT) bomb, more energy is released into charged fusion products (in a DT bomb, 80 percent of the energy goes into neutrons).

Whereas in a fission explosion most of the energy is lost into space by the undirected black-body radiation, much more propulsive energy can be drawn from the plasma of a pure deuterium fusion bomb explosion, in conjunction with a magnetic mirror.

Manned space flight requires lifting large masses into Earth orbit. While this can be done with chemical rockets, it would be much more economical to do it with a chain of small nuclear explosions. Without radioactive fallout, this can be done with a chain of laser-ignited fusion bombs, with one laser for each bomb, where the lasers become part of the exhaust. Ignition can be done not by infrared chemical or CO₂ lasers, as was suggested by the Los Alamos team, but rather by an ultraviolet laser driven by high explosives, as suggested by the author.

Looking to the future, using deuterium—widely available on most planets of the solar system and in the Oort cloud outside the solar system—as the nuclear rocket fuel would make manned space flight to the Oort cloud possible, at a distance of about one-tenth of one light year.

Positron Aerospace Propulsion

Dr. Gerald Smith, Positronics Research, 2 March 2010 (35 pages)

Antimatter is considered an extremely attractive fuel for aerospace propulsion because of its enormous advantage in energy density over all other known sources of energy. However, because antimatter does not occur naturally and is unstable in the presence of matter, no vehicles have ever

flown using it.

After a short overview of the various aerospace applications of antimatter, this paper provides a detailed analysis of air-breathing turbojets and turbo-ramjet missiles, as well as rockets for manned interplanetary missions. It discusses new methods of producing and storing large numbers of antielectrons, or positrons, and compares their costs with those of antiprotons. Finally, the paper considers the prospects for the first, modest demonstration of positron propulsive flight within the next 10 years. Interplanetary missions on positron-propelled spaceships are described in detail, with estimates of positron requirements for each mission. Standalone positron power systems are described briefly.

Studies of positrons as fuel for aerospace propulsion applications have been sponsored by the Air Force Research Laboratory, Eglin Air Force Base, Florida, and the NASA Institute for Advanced Concepts, Atlanta, Georgia. This paper is an anthology of that work and not a general review of antimatter propulsion.

The positron was predicted by Dirac in 1929 and discovered by Anderson in 1932. Along with the antiproton, which was discovered in 1954, the positron has the largest specific energy of any known material. This advantage was immediately appreciated because aerospace propulsion performance is ultimately limited by specific power. However, compared with chemical sources of energy, positrons presented new and serious production and storage challenges.

Positron aerospace propulsion is now entering a critical period owing to new technologies that bear on production and storage issues. To their advantage, positrons, unlike nuclear fission and antiprotons, present no radiation or environmental safety issues.

Advanced Space Propulsion Based on Vacuum (Spacetime Metric) Engineering

*Dr. Hal Puthoff, EarthTech International, 29 March 2010 (17
pages)*

A theme that has come to the fore in advanced planning for long-range space exploration in the future is the concept that empty space itself (the quantum vacuum, or spacetime metric) might be engineered to provide

energy/thrust for future space vehicles. Although far-reaching, such a proposal is solidly grounded in modern physical theory, and therefore the possibility that matter/vacuum interactions might be engineered for spaceflight applications is not a priori ruled out. Given the current development of mainstream theoretical physics on such topics as warp drives and traversable wormholes that provide for such vacuum engineering possibilities, this paper provides a broad perspective of the physics and consequences of the engineering of the spacetime metric.

The concept of “engineering the vacuum” found its first expression in mainstream physics literature when it was introduced by Nobelist T. D. Lee in his textbook *Particle Physics and Introduction to Field Theory*. There he stated, “The experimental method to alter the properties of the vacuum may be called vacuum engineering... If indeed we are able to alter the vacuum, then we may encounter new phenomena, totally unexpected.” This legitimization of the vacuum engineering concept was based on the recognition that the vacuum is characterized by parameters and structure that leave no doubt that it constitutes an energetic and structured medium in its own right. Foremost among these is that (1) within the context of quantum theory, the vacuum is the seat of energetic particle and field fluctuations, and (2) within the context of general relativity, the vacuum is the seat of a spacetime structure (metric) that encodes the distribution of matter and energy. Indeed, on the flyleaf of a book of essays by Einstein and others on the properties of the vacuum, there is the statement, “The vacuum is fast emerging as the central structure of modern physics.”

Perhaps the most definitive statement acknowledging the central role of the vacuum in modern physics is provided by 2004 Nobelist Frank Wilczek in his book *The Lightness of Being: Mass, Ether and the Unification of Forces*: “What is space? An empty stage where the physical world of matter acts out its drama? An equal participant that both provides background and has a life of its own? Or the primary reality of which matter is a secondary manifestation? Views on this question have evolved, and several times have changed radically, over the history of science. Today the third view is triumphant.”

Given the known characteristics of the vacuum, one might reasonably inquire why it is not immediately obvious how to catalyze robust interactions of the type sought for spaceflight applications. For starters,

uncertainties regarding global thermodynamic and energy constraints remain to be clarified in the case of quantum vacuum processes. Furthermore, it is likely that energetic components of potential utility involve very small-wavelength, high-frequency field structures and thus resist facile engineering solutions. With regard to the perturbation of the spacetime metric, the required energy densities predicted by the present theory exceed by many orders of magnitude values achievable with existing engineering techniques. Nonetheless, one can examine the possibilities and implications under the expectation that as science and its attendant derivative technologies mature, felicitous means may yet be found to exploit the enormous, as-yet-untapped potential of engineering so-called “empty space,” the vacuum.

This paper introduces the underlying mathematical platform for investigating spacetime structure, the metric tensor approach. It then outlines the attendant physical effects that derive from alterations in the spacetime structure. Finally, the paper examines these effects as they would be exhibited in the presence of advanced aerospace craft technologies based on spacetime modification.

The author has considered the possibility—even likelihood—that future developments with regard to advanced aerospace technologies will trend in the direction of manipulating the underlying spacetime structure of the vacuum of space itself by processes that can be called vacuum engineering or metric engineering. Far from being simply a fanciful concept, significant literature exists in peer-reviewed, Tier 1 physics publications exploring the topic in detail.

The analysis presented herein, a form of general relativity (GR) for engineers, takes advantage of the fact that in GR a minimal-assumption, metric tensor approach can be used that is model-independent—that is, it does not depend on knowledge of the specific mechanisms or dynamics that result in spacetime alterations but rather only assumes that a technology exists that can control and manipulate (that is, engineer) the spacetime variables to advantage. Such an approach requires only that the hypothesized spacetime alterations result in effects consonant with the currently known GR physics principles.

In the metric engineering approach, the application of the principles gives precise predictions as to what can be expected as spatial and temporal

variables are altered from their usual (that is, flat space) structure. Signatures of the predicted contractions and expansions of space, slow down and speedup of time, alteration of effective mass, speed of light, and associated consequences, both as occur in natural phenomena in nature and with regard to spacetimes specifically engineered for advanced aerospace applications, are readily identifiable.

Of particular interest with regard to innovative forms of advanced aerospace craft are the features that presumably describe an ideal craft for interstellar travel: the ability to travel at superluminal speeds relative to the reference frame of background space, energy bonds of materials strengthened (that is, hardened) relative to the background environment, a decrease in effective mass vis-a-vis the environment, an accelerated timeframe that would permit rapid trajectory changes relative to the background rest frame without undue internal stress, and the generation of gravity-like forces of arbitrary geometry—all on the basis of restructuring the vacuum spacetime variables. As avant-garde as such features appear to be, they are totally in conformance with the principles of GR as currently understood. A remaining challenge is to develop insight into the technological designs by which such vacuum restructuring can be generated on the scale required to implement the necessary spacetime modifications.

Despite the challenges, sample calculations as presented herein indicate the direction of potentially useful trends derivable on the basis of the application of GR principles as embodied in a metric engineering approach, with the results constrained only by what is achievable practically in an engineering sense. The latter is, however, a daunting constraint. At this point in the consideration of such nascent concepts, given our present level of technological evolution, it is premature to even guess about an optimum strategy, let alone attempt to form a critical path for the engineering development of such technologies. Nonetheless, only through rigorous inquiry into such concepts can one hope to properly assess the possibilities inherent in the evolution of advanced spaceflight technologies.

Aneutronic Fusion Propulsion

*Drs. V. Teofilo, R. White, S. Petrinec, Lockheed Martin, 1
November 2010 (36 pages)*

Controlled fusion energy production has been under development for 60 years. The primary objective has been gaining the ability to create terrestrial power plants using deuterium and tritium as fuel. Unfortunately, this objective has been eluded for both technical and economic reasons. However, the threshold for achieving success in applying fusion to propulsion is considerably relaxed, especially if fuels that do not use tritium are used. Tritium has to be continuously bred; these reactions yield fast neutrons, which require shielding and cause structural materials to be periodically replaced. Such “aneutronic” fusion fuels, such as hydrogen fusing with Boron-11, have been studied extensively for space propulsion applications since the 1980s.

This report reviews the basic fusion plasma physics, design concepts that apply aneutronic fusion for propulsion, and the requirements for transitioning to space. The predominant concepts studied include magnetic field reversed configuration, dense plasma focus, and inertial electrostatic confinement. All of these concepts have venture capital-funded programs for terrestrial fusion power. When applied to space or near-space propulsion, they can exceed the performance of any conventional electric thruster.

The future technology development of aneutronic fusion propulsion will initially be motivated by the very large GEO satellites that will be developed in the next 20 years for commercial and military broadband communication. Further development of very high-power propulsion systems (> 100 kW) to Mars and beyond will require major developments in all technology areas for confinement pulsed power and ion fuel beam accelerators.

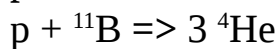
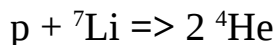
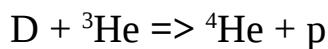
Controlled thermonuclear fusion has been the aspiration of nuclear scientists and engineers for the last 60 years. During that time, tens of billions of dollars have been invested in this endeavor with the expected fruition being pushed even further into the future. When Lyman Spitzer invented the Stellarator in 1951, it was expected to take only 5 years of concentrated plasma physics experiments to harness the fusion of hydrogen ions confined by magnetic fields. However, the numerous new instabilities that arose under increasing higher magnetic confinement pressures have been a roadblock to the success of controlled fusion.

In 1983, a rediscovery was made by Robert Bussard of a fusion device

invented by Robert Hirsch in his 1966 Ph.D. thesis. The Fusor, as Hirsch named it with his thesis advisor and famous inventor Philo Farnsworth, simply used spherically concentric electrodes in a vacuum chamber. When a deuterium gas was supplied to the chamber and a few-microsecond pulse at 30 kV was applied to the electrodes, D-D fusion occurred, releasing He and neutrons. Although it released less energy than was needed to supply the initial electric pulse, it provided evidence for a method to obtain supplementary heating for the ignition of magnetically confined plasmas.

The Fusor led to the continued development of what is now called Inertial Electrostatic Confinement (IEC) devices. Amongst these were the Dense Plasma Focus (DPF), a plasma production tube invented in 1961, and several other devices. Magnetic confinement devices utilized the IEC method with imploding layers of lithium or applying intense beams from either end of a linear magnetic pinch device. This resurgence of alternate confinement concepts was immediately applied to fusion space propulsion since it was recognized that there would be an advantage over nuclear fission propulsion with its costly safety requirements. Non-neutron-generating “aneutronic” fusion fuels were also adopted to mitigate shielding mass and tritium fuel launch safety concerns.

Aneutronic fusion fuels include those isotopes of light elements that when fused produce no neutrons or very few from the fusion of daughter products. Although there are eight such reactions for light nuclei, the most practical for fusion reactors include the following:



Chapter 2 of the paper reviews the fusion plasma physics needed to apply these aneutronic reactions to a confinement device to make a fusion reactor practicable for propulsion, described in Chapter 3. In Chapter 4, the relevance of these aneutronic fusion propulsion concepts is reviewed and assessed for aerospace applications including near-space, orbital, interplanetary propulsion, and the potential for interstellar use. In Chapter 5, the recent national, international, and privately funded R&D that may expedite development is summarized, while in Chapter 6, an R&D path forward for the aneutronic fusion technologies and systems needed for the

next 50 years is outlined. Finally, a summary is in Chapter 7 that conveys aneutronic fusion propulsion

- may have near-term applications to replace current satellite ion thrusters and extend the application to interplanetary flight,
- requires extensive technology development for air and near-space applications,
- and will not be practical beyond the solar system unless breakthrough propulsion physics can assist the flight to the next stellar system, where fusion “ion thrusters” can then be used.

Aneutronic Fusion Propulsion

*Dr. William Culbreth, Univ. of Nevada- Las Vegas, 1 November
2010 (50 pages)*

Space exploration is limited by existing propulsion technology. Up to now, chemical rockets have been used to reach low-Earth orbit, the Moon, and the solar system’s outer regions. Chemical rockets can use either solid or liquid fuel. Regardless of the type of fuel, their design is similar. Oxygen is combined with hydrogen or hydrocarbon fuel in a combustion chamber where high temperatures and pressures cause the exhaust to be ejected through a supersonic nozzle to provide thrust to the rocket. The momentum of the fuel ejected through the nozzle provides the force or thrust that accelerates the rocket forward.

There are many variations of chemical rockets, but they all suffer from the need to carry copious amounts of fuel. Other methods have been proposed to decrease the need to carry such a significant mass of fuel into space. Ion drives, for example, are used to provide the very low thrust required to maintain satellites in Earth orbit. The “fuel” that they carry is xenon gas accelerated by electric fields.

Nuclear fission propulsion has been proposed for space missions, and thermal nuclear fission reactor rockets were constructed and tested at the Nevada Test Site through Project Rover between 1956 and 1971. In these rockets, a nuclear reactor provides heat to liquid hydrogen through nuclear fission and ejects the hydrogen gas through a Laval nozzle to generate thrust. While these rockets must still carry hydrogen fuel as a propellant,

these rockets can provide more than twice the performance of chemical rockets by using heat through fission rather than reactive chemicals. The results of the 72 reactor tests conducted under Project Rover were very promising and culminated in the successful 12-minute test of the Phoebus-2A NERVA (Nuclear Engine for Rocket Vehicle Application) reactor that generated over 4 gigawatts of thermal power. One problem associated with nuclear fission rockets is radioactive contaminants. These contaminants in the exhaust make this technology impossible to use in launching payloads from Earth. Additionally, for applications in space, radiation protection must be provided for the crew by adding heavy shielding materials or by locating the crew as far as possible from the reactor propulsion system.

Nuclear fusion, as opposed to fission, provides another potential propulsion technology. In a fusion propulsion system, isotopes of light elements are fused together under extreme conditions to form heavier elements, releasing large amounts of thermal energy. This thermal energy can be used to heat liquid hydrogen to high temperatures and expand it through a Laval nozzle to provide thrust. Typically, isotopes of hydrogen and helium would be used in fusion propulsion systems. Deuterium is an isotope of hydrogen and can be separated from the hydrogen in water. Fusion reactions are difficult to initiate due to the high temperatures and pressures required. Thermonuclear bombs, for example, combine a fusion device with a nuclear fission bomb to provide the high temperatures required to initiate the fusion reaction. Regardless of the conditions required to induce nuclear fusion, the energy release is large. From a propulsion standpoint, an advantage of fusion over fission is that for a given amount of thrust, the fusion reaction requires less fuel than either fission or chemical propulsion systems.

Fusion reactors using deuterium or tritium fuels are the easiest to initiate, however they generate significant amounts of neutron radiation. This is a hazard for the crew on a spaceship, and there is a high probability that neutrons produced by fusion reactors would escape into space without providing much of their energy to a hydrogen propellant. Other fusion reactions using isotopes of helium and lithium will generate only charged particles, such as protons, that travel very short distances before giving up all of their energy as heat. These “aneutronic fusion” reactions take place without neutron production and decrease the need to carry large amounts of

radiation shielding material for the crew. The energy from charged particles generated by aneutronic fusion can also be captured in conductive coils and converted directly into electricity. Aneutronic fusion promises to be an important mechanism for future space propulsion, although novel accelerator or laser systems must be researched and developed in order to initiate, sustain, and control the fusion reaction.

Another futuristic method of spacecraft propulsion involves the use of antimatter. Antimatter includes antiprotons, antineutrons, and positrons (anti-electrons). Although this propulsion process may be the most efficient, antimatter has some drawbacks. For example, antimatter is generated in only minute quantities at accelerator facilities around the world. Although it has been captured and stored, containment remains a problem. When antimatter combines with matter, it completely annihilates and converts to energy, which then can be converted into heat for a propulsion system. Antimatter reactions provide the greatest amount of energy per unit mass of any potential fuel, but the ability to generate significant quantities of antihydrogen or similar antimatter fuels at an accelerator facility is very limited.

The focus of this study is on aneutronic fusion propulsion. Integral to this study are the topics of fuel, rocket design, and the organizations that research aneutronic fusion development.

Magnetohydrodynamics (MHD) Air Breathing Propulsion and Power for Aerospace Applications

Drs. S. Macheret and K. Goodfellow, Lockheed Martin, 21

November 2010 (32 pages)

The paper reviews novel propulsion concepts utilizing plasmas (ionized gases) and magnetohydrodynamics (MHD). These concepts are shown to be attractive due to their potential to achieve propulsion and aerodynamic performance far beyond current conventional technologies. However, significant difficulties impede the development and application of these technologies; these include weight, complexity, higher power, and the need for complex and energy-consuming artificial ionization in “cold” air (at Mach <12).

A well-publicized Ajax concept of MHD energy bypass has been shown

to be meaningless below at least Mach 12. In contrast, a new “reverse energy bypass” with Virtual Cowl is potentially practical for air-breathing hypersonic vehicles. Applications of the Virtual Cowl and other plasma/MHD devices to reentry, global-strike hypersonic gliders and aero-assisted orbital maneuvering are identified as promising in the near future. The ability of a plasma/MHD system to generate high power onboard and to provide L/D (lift-to-drag ratio) far beyond that possible conventionally makes these applications both feasible and desirable for national defense.

The outlook for uses and applications of MHD propulsion could increase dramatically if high-speed (hypersonic) vehicles begin to carry powerful onboard electricity sources, such as nuclear (fission or fusion) reactors.

High-speed air-breathing propulsion, based on ram/scramjet engines, has well-known difficulties: external and internal flow compression and shock control; shock-shock and shock-boundary layer interactions in the propulsion flow path; mixing, ignition, and flame holding in the combustor; incomplete combustion and chemical energy release; and very high temperatures and wall heat fluxes in the combustor. There are limits to what can be done about these problems with conventional technologies, which is why the use of plasma (ionized gas) with or without electric and magnetic fields can offer additional opportunities for control and propulsion enhancement.

Onboard generation and storage of electric power are one of the main problems encountered with respect to high-altitude, high-speed flight. Hypersonic vehicles, both air-breathing and unpowered reentry gliders, have no rotating turbomachinery to which an electrical generator could be connected. An attractive power option can be offered by magnetohydrodynamic (MHD) devices. For example, placing an MHD generator immediately downstream of a scramjet combustor can, given the high velocities and temperature of the flow and with metallic additives to the fuel, provide high power (from tens of kW to several MW) with no moving parts. For reentry vehicles, both external (i.e., surface-integrated) and internal-duct MHD generators can generate high power also without moving parts.

Negative Mass Propulsion

Dr. Friedwardt Winterberg, Univ. of Nevada-Reno, 3 January 2011

(43 pages)

It is easy to prove that there are negative masses all around us, albeit hidden behind positive masses. But their use for propulsion by reducing the inertia of matter, for example in the limit of macroscopic bodies with zero rest mass, depends on a technical solution to free them from their imprisonment by positive masses. It appears that there are basically two ways this might be achieved: 1. by the application of strong electromagnetic or gravitational fields or by high particle energies; 2. by searching for places in the universe where nature has already done this separation, and from which the negative masses can be mined.

The first of these two possibilities is for all practical means excluded because, if possible at all, it would depend on electromagnetic or gravitational fields with strengths beyond what is technically attainable, or on extremely large particle energies likewise not attainable.

With regard to the second possibility, it has been observed that non-baryonic cold dark matter tends to accumulate near the center of galaxies or places in the universe that have a large gravitational potential well. Because of the equivalence principle of general relativity, the attraction towards the center of a gravitational potential well, produced by a positive mass, is the same for negative masses. Large amounts of negative masses might have been trapped in these gravitational potential wells over billions of years.

Now it just happens that the center of the Moon is a potential well, not too deep that it cannot be reached by making a tunnel through the Moon, not possible for the deeper potential well of the Earth, where the temperature and pressure are too high. A tunnel through the Moon, providing a good supply of negative mass, could revolutionize interstellar space flight. A sequence of thermonuclear shape charges would be required to make such a tunnel technically feasible.

If we extend the law of gravity to negative masses but hold onto the equivalence of inertial and gravitational masses, we have to distinguish between the following four cases, if a test particle is placed near a gravitational field producing mass (Table 5):

Table 5. Interactions


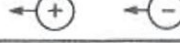


Case	Gravitational field producing	Mass of test	Motion of test
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	mass	particle	particle
1	+	+	attraction
2	+	-	attraction
3	-	+	repulsion
4	-	-	repulsion

Under the principle of equivalence, if a negative test mass particle would be placed in the Earth's gravitational field, it would not fall upwards, as happens in science-fiction antigravity machines. A test particle would always fall down regardless of whether it has a positive or negative mass. It would fall upwards only if placed in the field of a large negative mass.

A somewhat different situation arises if both masses, the field producing mass and the mass of the test particle, have the same absolute value but are permitted to have different signs. There we have to distinguish between the cases shown in Figure 3.

Figure 3. Forces

Case		
1		attraction
2		} selfacceleration
3		
4		repulsion

If both masses are positive, we have the usual Newtonian attraction. For negative masses, the force has the same magnitude but is repulsive. A quite different situation exists if one mass is positive and the other one is negative. With both forming a mass dipole, the system becomes self-accelerating because one mass is repelled and the other one attracted. With the two masses having opposite signs, the total energy and momentum of

the combined system remain zero at all times, leaving the conservation laws of energy and momentum intact. Under its self-acceleration, the mass dipole would eventually reach the velocity of light. It is this property of self-acceleration without the expenditure of energy that has intrigued many researchers and raised the prospect of a propulsion system without limits.

Appendix III: Spatial/Temporal Translation DIRDs

Two Defense Intelligence Reference Documents (DIRDs) were written for AAWSAP on UAP spatial/temporal translation topics:

- *Warp Drive, Dark Energy, and the Manipulation of Extra Dimensions*, Dr. Richard Obousy and Dr. Eric Davis
- *Traversable Wormholes, Stargates, and Negative Energy*, Dr. Eric Davis

Short summaries in this appendix were created using extracts taken from the documents themselves.

Warp Drive, Dark Energy, and the Manipulation of Extra Dimensions

*Dr. Richard Obousy, Obousy Consulting, and Dr. Eric Davis,
EarthTech International, 2 April 2010 (33 pages)*

If one is to realistically entertain the notion of interstellar exploration in the timeframe of a human lifespan, a dramatic shift in the traditional approach to spacecraft propulsion is necessary. It has been known and well-tested since the time of Einstein that all matter is restricted to motion at sublight velocities ($\ll 3 \times 10^8$ m/s, the speed of light, or c), and that as matter approaches the speed of light, its mass asymptotically approaches infinity. This mass increase ensures that an infinite amount of energy would be necessary to travel at the speed of light; thus, this speed is impossible to reach and represents an absolute speed limit to all matter traveling through spacetime.

Even if an engine were designed that could propel a spacecraft to an appreciable fraction of light speed, travel to even the closest stars would take many decades in the frame of reference of an observer on Earth. Although these lengthy transit times would not make interstellar exploration impossible, they would certainly dampen the enthusiasm of governments or

private individuals funding these missions. After all, a mission whose success is perhaps a century away would be difficult to justify. In recent years, however, physicists have discovered two loopholes to Einstein’s ultimate speed limit: the Einstein-Rosen Bridge (commonly referred to as a “wormhole”) and the warp drive. Fundamentally, both ideas involve the manipulation of spacetime itself in some exotic way that allows for faster-than-light (FTL) travel.

Essentially, the wormhole involves connecting two potentially distant regions of space by a topological shortcut. Theoretically, one would enter the wormhole and instantaneously be transported to the exit located in a distant region of space. Although no observational evidence of wormholes exists, theoretically they can as a valid solution to general relativity.

The warp drive—the main focus of this paper—involves local manipulation of the fabric of space in the immediate vicinity of a spacecraft. The basic idea is to create an asymmetric bubble of space that is contracting in front of the spacecraft while expanding behind it. Using this form of locomotion, the spacecraft remains stationary inside this “warp bubble,” and the movement of space itself facilitates the relative motion of the spacecraft. The most attractive feature of the warp drive is that the theory of relativity places no known restrictions on the motion of space itself, thus allowing for a convenient circumvention of the speed of the light barrier.

An advanced aerospace platform incorporating warp drive technology would profoundly alter the capacity to explore—and potentially colonize—the universe. Because a warp drive is not limited by the speed of light, one can only guess the top speeds such a technology might be capable of achieving. For the sake of argument, let’s consider the duration of trips taken by a spacecraft capable of 100c (one hundred times the speed of light) for an array of exotic destinations of possible interest. As Table 6 shows, trips to the planets within our own solar system would take hours rather than years, and journeys to a local star system would be measured in weeks rather than hundreds of thousands of years.

Table 6. Transit Times to Various Exotic Destinations at 100 Times the Speed of Light

Destination	Transit Time
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Mars	193 seconds
Jupiter	36 minutes
Neptune	4 hours
Alpha Centauri	15 days
Epsilon Eridani	38 days
The Orion Nebula	1.3 years

Until recently, the warp drive was a concept reserved for science fiction. However, a 1994 paper by Miguel Alcubierre placed the idea on a more solid theoretical footing. Alcubierre demonstrated that a specific Lorentzian manifold could be chosen that exhibited bubble-like features. The bubble allowed for the surrounding spacetime to move at FTL speeds, and the inhabitants of the bubble would feel no acceleration effects because spacetime itself would be in motion instead of the spacecraft and its occupants.

A number of papers have emerged in recent years that build on this original idea. However, these papers do not typically address how one might actually create the necessary spacetime bubble. Our own research directly addresses this question from a new and unique perspective and introduces a novel paradigm shift in the field of warp drive study. More formally, our work approaches the physics of warp drive from the perspective of quantum field theory; this diverges from the more traditional approach to warp drives, which utilizes the physics of general relativity. One of the improvements the model introduces is a dramatic reduction in the overall energy required to create such a phenomenon.

The roadmap to this new idea was the observation that spacetime is currently known to be in a state of accelerated expansion, as demonstrated by the redshifting of galaxies, and the belief that if the mechanism for this expansion could be understood, then it might ultimately be controlled. A popular term used by cosmologists today is “dark energy,” an exotic and ubiquitous form of energy that is believed to constitute over 70 percent of the matter-energy content of the universe. One salient feature of dark energy is its intrinsic ability to generate negative pressure, causing the fabric of space to expand in the way that is currently observed.

Although we know what dark energy does, we do not yet fully understand its nature. We do not understand why it exists or how it is created; we

simply know it provides an ever-present force on spacetime, causing the universe to expand. Indeed, recent high-precision experimental observations indicate dark energy may be cosmological vacuum energy. These observations are based on the magnitudes of high-redshift supernovas and have been a source of high research activity of late owing to the unexpected discovery that the rate of expansion of the universe is increasing (commonly referred to as accelerated expansion).

One tantalizing aspect of dark energy is that if it were fully understood, and if technology were developed that could generate and harness the exotic effects of dark energy on the fabric of space, then a warp drive would be one step closer to technological reality. While a full understanding of the true nature of dark energy may be many years away, it is entirely feasible that experimental breakthroughs at the Large Hadron Collider or developments in the field of M-theory could lead to a quantum leap in our understanding of this unusual form of energy and perhaps help to direct technological innovations.

Our own research focuses on gaining an understanding of the physical origin of dark energy. By exploring novel ideas at the forefront of theoretical physics, one is able to propose a physically viable model incorporating some of the cutting-edge ideas emerging from string theory and quantum field theory. This leads to a deeper understanding of the possible origin of dark energy and allows consideration of a mechanism that would allow sufficiently advanced technology to control the dark energy density in any region of space, and thus the expansion of space. This work has clear implications for the advancement of warp drive research.

This paper initially reviews the more traditional general relativistic warp drives, the energy required to create them, and the physics required to understand them. The cosmological constant, a term featured in Einstein's equation that regulates the contraction and expansion of spacetime, is discussed. The Casimir energy is introduced, which, under certain conditions, may be the phenomenon that physically generates the cosmological constant. Higher dimensions in physics and their importance in the context of Casimir energy calculations are discussed. Formulas are introduced that demonstrate that the Casimir energies in higher dimensions may in fact be the dark energy that is responsible for the accelerated expansion of the universe. All the previous concepts are related together

and the novel warp drive paradigm is introduced. Original calculations of the energy required to create a superluminal warp drive are made. Finally, the paper speculates on the technological progress that would be necessary to turn this model into a reality.

Traversable Wormholes, Stargates, and Negative Energy

Dr. Eric Davis, EarthTech International, 6 April 2010 (42 pages)

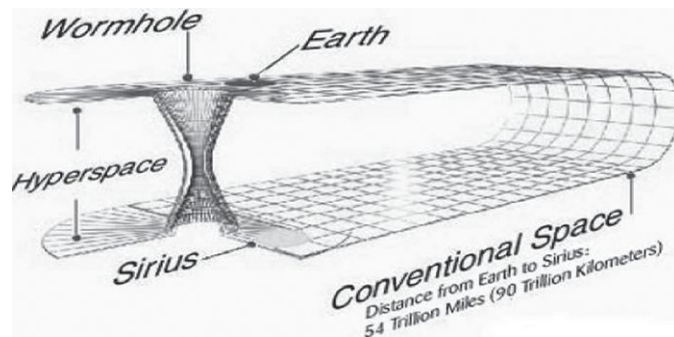
Implementation of faster-than-light (FTL) interstellar travel via traversable wormholes generally requires the engineering of spacetime into very specialized local geometries. The analysis of these via Einstein's General Theory of Relativity, plus the resultant equations of state, demonstrates that such geometries require the use of "exotic" matter. It has been claimed that since such matter violates the energy conditions, FTL spacetimes are not plausible. However, it has been shown that this is a spurious issue. The identification, magnitude, and production of exotic matter are seen to be a key technical challenge, however. These issues are reviewed and summarized, and an assessment of the present state of their resolution is provided.

In 1985 CalTech physicists M. Morris and K. Thorne discovered the principle of traversable wormholes based on Einstein's General Theory of Relativity (published in 1915). Morris and Thorne and Morris et al. did this as an academic exercise at the request of Carl Sagan, who had completed the draft of his novel *Contact*. This little exercise led to the development of two new cottage industries in spacetime physics research: the study of traversable wormholes and the study of time machines. Wormholes are hyperspace tunnels through spacetime connecting either remote regions within our universe or two different universes; they even connect different dimensions and different times. Space travelers would enter one side of the tunnel and exit the other, passing through the throat along the way. The travelers would move at $< c$ (c is the speed of light, 3×10^8 m/s) through the wormhole and therefore not violate Special Relativity, but external observers would view the travelers as traversing multi-light-year distances through space at FTL speed; Figure 4 illustrates this effect. A "stargate" is a special class of traversable wormhole solutions to Einstein's general

relativistic field equation that possesses very simple physics and flat entry and exit openings.

Traversable wormholes are unlike the well-known, non-traversable Einstein-Rosen Bridges or Schwarzschild wormholes that are formed from collapsed stellar matter (that is, black holes) or spherically symmetric vacuum regions. Black holes are collapsed stars that have all their mass concentrated at an infinitesimal point where the induced gravitational field crushes all matter and spacetime. However, even Einstein-Rosen bridges can be made traversable by an infinitesimal tweaking of their spacetime metric. In the case of black holes, the singularity of collapsed matter, along with its crushing gravity field, totally blocks the way through the tunnel. A traversable wormhole does not have a singularity blocking the tunnel or any crushing gravity field. Explorers would enter one side of the tunnel, travel through the throat, and exit the other side. Traversable wormholes also do not possess an event horizon, a region of high gravitational field strength separating the inside space surrounding the black hole's singularity from the outside universe. Once you go through a black hole's event horizon, you can never come back out because you will have to attain FTL speed to escape it. Not even light can escape from an event horizon.

Figure 4: Intra-Universe Wormhole as a Hyperspace Shortcut through Conventional Space



Traversable wormholes are creatures of classical general relativity theory allowing for very comfortable travel through the Cosmic Neighborhood. But from the viewpoint of modern physics, the Cosmic Neighborhood can encompass other universes, other space dimensions, and other times beyond the four-dimensional spacetime realm. Mankind has certainly not discovered all of the universe's facets and will need to continue to construct

new experiments and technology in order to verify (or not) these undiscovered facets. Wormholes can possess normal or backward (in special cases) motion through time and normal or nonexistent gravitational stresses on space travelers, and their entry/exit openings (or throats) are spherically shaped, flat, cubic shaped, polyhedral shaped, generic shaped, and so forth.

Why consider wormholes for travel through space, time, and other dimensions? All standard space propulsion engineering is based on Newton's three laws of motion, which is dependent on the expenditure of propellant to induce thrust generating momentum transfer on a spacecraft. Many investigators have proposed interstellar propulsion schemes based on a variety of nuclear (fission, fusion, and pulsed) rockets, electric (ion or plasma) rockets, matter-antimatter annihilation rockets, solar or laser sails, fusion or laser ramjets, interstellar ion scoops, beamed energy propulsion (sails, rockets, and ramjets), and so forth. Many of these modes either have been experimentally tested at one time or another in our recent history or remain as theoretical proposals, but all are based on Newtonian mechanics. The limiting speed of space flight, based on any of these modes, is the speed of light. It is important to point out that for the interstellar travel application, Newtonian rocket propulsion modes suffer from enormous mass ratios $> 10^5 - 10^{100}$ (depending on the specific impulse) for spacecraft cruise velocities $> 0.05c$, if the travel time is constrained to within 100 years for a one-way interstellar voyage. If the cruise velocity is increased to sub-relativistic, near-relativistic, or even ultra-relativistic speeds and thus reduces the one-way travel time, then the mass ratio increases (exponentially!). The mass ratio is the initial spacecraft mass (payload + structure + propellant) at launch divided by the final spacecraft mass (payload + structure) at "burnout." The large ratios given above show that Newtonian rockets consist mostly of propellant in order to propel the propellant, along with a given tiny payload, through interstellar space. The specific impulse is a measure of rocket propulsion system efficiency: how much impulse (thrust multiplied by time) is produced per unit of mass of propellant expenditure. It is desired that rocket propulsion systems possess a very high specific impulse in order to reduce the mass ratio, and hence propellant mass requirement, to reasonable levels.

The non-traditional propulsion modes (sails, ramjets, beamed power, etc.)

have different efficiencies and constraints, but they are all still dependent on Newtonian mechanics, even though their mass ratio and specific impulse characteristics are slightly improved over that of the traditional modes. But all traditional and non-traditional propulsion modes come with a great cost in interstellar voyage travel time. At non-relativistic and sub-relativistic cruise speeds, it will take explorers several human lifetimes to reach stellar destinations. At low relativistic to ultra-relativistic cruise speeds, the travel time will be reduced to hours, days, weeks, months, or years. However, at these cruise speeds, relativistic time dilation will kick in, and the returning interstellar voyagers will find that decades to thousands of years have elapsed on Earth since their launch date and that their families and culture no longer exist or are unrecognizable. This is a very undesirable outcome for an interstellar voyage. Furthermore, traditional Newtonian propulsion cannot transcend time or spacetime dimensions or universes.

The solution to this problem is to dispense entirely with long interstellar voyage times or the undesirable outcome of relativistic time dilation. Explorers could deploy a wormhole-stargate near the Earth's surface, in Earth's orbit, or anywhere in the solar system they like and just pass through the "stargate" and come out the other side in remote spacetime within seconds, moving through the throat at low cruise speeds (30 mph!) and with no time dilation effects. Explorers could travel through the wormhole stargates in small scout ships or send probes unencumbered by either enormous propellant mass ratios or extensive life support provisions. Effective travel time through the Cosmic Neighborhood via stargates would become irrelevant but could be estimated to be many times or thousands of times the speed of light. Explorers could spend all day investigating the remote spacetime location and then return home through the stargate in time to have dinner with their families. If explorers were to really push the envelope, they would design their stargate so they could return from their voyage in time to wave goodbye to themselves as they see themselves depart on their journey. This is no longer recognized in classical general relativity physics as a time paradox issue. Given a traversable wormhole, it is very easy to build a time machine. But time travel via wormhole is beyond the scope of this paper. Suffice it to say that classical general relativity theory is seriously infested with time machines; the theory both allows for and demands time travel in order to preserve the self-consistency

of dynamic spacetime solutions for just about every problem ever studied.

Implementation of FTL interstellar travel via traversable wormholes generally requires the engineering of spacetime into very specialized local geometries. Analysis of these via the general relativistic field equation, plus the resultant source matter equations of state, demonstrates that such geometries require “exotic” matter to produce the requisite FTL spacetime modification. Exotic matter is generally defined by general relativity physics to be matter that possesses (renormalized) negative energy density (sometimes negative stress-tension = outward pressure, aka gravitational repulsion or antigravity). This term is very misunderstood and misapplied by the non-general-relativity community. This misconception can be cleared up by defining negative energy and where it can be found in nature and reviewing the proposed experimental concepts for generating negative energy in the laboratory. In addition, it has been claimed that FTL spacetimes are not plausible because exotic matter violates the general relativistic energy conditions. However, this has been shown to be a spurious issue. The identification, magnitude, and production of exotic matter though are seen as key technical challenges. FTL spacetimes also possess features that challenge the notions of causality, and quantum effects allegedly place constraints on them. These issues are reviewed and summarized, and an assessment of the present state of their resolution is provided.

Appendix IV: Power Generation DIRDs

Four Defense Intelligence Reference Documents (DIRDs) were written for AAWSAP on UAP power generation topics:

- *Inertial Electrostatic Confinement Fusion*, Dr. George Miley
- *Concepts for Extracting Energy from the Quantum Vacuum*, Dr. Eric Davis
- *Ultracapacitors as Energy and Power Storage Devices for Commercial and Military Applications*, Drs. J. Golightly and V. Teofilo
- *Quantum Tomography of Negative Energy States in the Vacuum*, Dr. Eric Davis

Short summaries in this appendix were created using extracts taken from the documents themselves.

Inertial Electrostatic Confinement Fusion

Dr. George Miley, Univ. of Illinois, 10 March 2010 (72 pages)

This report provides an overview of the basics, current experimental status, supporting theory, and potential applications of inertial electrostatic confinement (IEC) fusion. Emphasis is placed on work in these areas at the University of Illinois Urbana-Champaign, although some other research is brought in. The report shows that IEC is a unique approach to fusion in that it offers a number of “spin-off” applications, such as a small neutron source for neutron activation analysis on the route to fusion power. The report further shows that IEC is one of the few potential fusion approaches that can potentially burn aneutronic fuels like p-¹¹B (hydrogen–Boron 11). In aneutronic fusion, neutrons carry no more than 1% of the total released energy, greatly reducing problems associated with neutron radiation. That ability, combined with its simple mechanical structure and small size, make the IEC reactor, if achieved, an ideal fusion power unit. Present experimental devices are four to five orders of magnitude below breakeven (energy out/in = 1) energy gain for p-¹¹B. However, it is argued that the

ability to study operational physics in very-small volume plasmas makes it possible to rapidly investigate scale-up to a power-producing device.

In summary, the basic IEC approach is to create a potential well through electrostatic confinement of one of the plasma species in a dynamic (inertial) configuration. “Inertial” effects associated with dynamic motion of the confined species are essential to avoid plasma losses. The two primary approaches can be termed “ion injected” or “electron injected,” with the “injected” species being the one forming the potential well. In order to maintain the well, the second species brought in with the injected one must not completely neutralize the plasma, i.e., the IEC plasma is inherently “quasi-neutral.” This well then provides trapping and convergence of the ion “streaming” towards the center of the trap region, forming a dense fusing plasma there. For a power reactor, the objective is to obtain ion beam-beam collisions in this central core.

The key to developing an IEC power device is to use external ion “guns” to form and inject ions into the spherical IEC chamber. Theoretical studies confirm that such an IEC plasma can exist stably and has sufficient confinement time for aneutronic fusion. This assumes, however, very precise control is maintained over the energy and angular momentum of injected ions, and a balanced supply of electrons is provided. A radio-frequency (RF) ion injector (or “gun”) capable of such operation has already been developed.

An IEC D-³He fusion-powered deep space propulsion design has been conceptualized. The overall spaceship length is 300 meters and the initial mass at the mission start is 500 metric tons. Crew and avionics/computers are located in a central compartment at the forward end of the vehicle. The crew compartment uses a 12-m diameter chamber and could contain a rotating centrifuge for sleep and exercise. A steerable antenna located on the side of this module provides communication. Twin 175-meter-long assemblies, comprised of 5 D-³He spherical IEC reactors and Traveling Wave Direct Energy Converters (TWDECs) each, generate 1394 MW of 14.7-MeV proton flux and 469-MW of thermal heat which is converted to 1197 MWe of RF electric power. 242 MW of the electrical power, then recirculates to run the reactors, while 750 MWe is used to drive ion thrusters while the remainder of the energy is rejected as waste heat. A fusion fuel recirculation and separation system is operated continuously to remove the

fusion product ${}^4\text{He}$ from the $\text{D}-{}^3\text{He}$ reactants. Any unburned fuel is collected via the TWDEC energy converters and recirculated back to the IEC reactors. This conserves the valuable fuels, especially the ${}^3\text{He}$. The ion thrusters run on Argon propellant at a specific impulse of 35,000 sec and an efficiency of 90 percent. The thrust produced is 4370 Newtons, probably an initial acceleration of $.0087 \text{ m/s}^2$. A typical trip time for an out-and-back mission to Jupiter is 210 days out and 153 days to return.

Concepts for Extracting Energy from the Quantum Vacuum

Dr. Eric Davis, EarthTech International, 6 April 2010 (57 pages)

For a summary, see the “Extracting Energy from the Quantum Vacuum” section in the Advanced UAP Power Generation Concepts section in Chapter 8. This paper provides detailed physics in support of that summary.

Ultracapacitors as Energy and Power Storage Devices for Commercial and Military Applications

Drs. J. Golightly and V. Teofilo, Lockheed Martin, 1 November 2010 (34 pages)

Ultracapacitors, also known as supercapacitors, hybrid capacitors, electrochemical capacitors, electrochemical double-layer capacitors, or ultracaps, are energy-storage platforms that offer energy storage capable of extremely rapid charge and discharge rates. Ultracapacitors also have the ability to be cycled hundreds of thousands of times. The phenomenal charge and discharge capabilities make them ideal for supporting volatile memory and computing applications, energy efficiency/capture processes, and high-power applications. Ultracaps store their charge in the electrical double layer between the electrode and the electrolyte. Charge storage is a physical mechanism rather than a chemical phase change, so these are theoretically capable of cycling an infinite number of times. One of the disadvantages of ultracaps can be a high self-discharge rate. The charge and discharge voltage output for an ultracap is a sloping linear curve, which allows for straightforward and accurate state-of-charge monitoring. The real advantage of an ultracapacitor is the ability to deliver or accept bursts of power in a

short time.

Ultracaps were introduced in 1966 and found initial use 12 years later as backup power devices for volatile memory and clocks. Over the last 30 years, numerous advances have been made that have led to many uses of ultracaps, from transportation to portable electronics and more. Ultracaps are becoming more affordable as activated carbon electrodes and manufacturing improvements have driven costs down. Several companies now make ultracapacitors to fill a broad spectrum of applications. Transportation, microelectronics, and aerospace markets are some of the many areas where ultracaps have become enablers. Advanced materials and improved cell designs will lead to improvements in both power density and energy density. The improved performance is expected to make ultracaps important components for efficient power leveling and high-power receiving and delivery. The unique importance of ultracapacitors must be understood for aerospace and military applications.

As electrochemical capacitors, ultracapacitors store energy within the electric double layer formed at the interface between the electrode and electrolyte. In a conventional capacitor, the energy is stored by moving charge carriers from one plate to another, and the charge separation creates a potential. Voltage differentials in a conventional capacitor are dependent upon the dielectric material separating the plates. In the ultracap, the electrical double layer is the separation of charge in a vanishingly thin gap between two plates. The basic principles of operation have not changed with improved technologies, only the materials and cell design.

Quantum Tomography of Negative Energy States in the Vacuum

Dr. Eric Davis, EarthTech International, 11 January 2011 (51 pages)

Future aerospace vehicles could have an advanced propulsion system that uses negative quantum vacuum energy to modify the spacetime geometry in the immediate vicinity surrounding the vehicle in order to induce faster-than-light motion via traversable wormholes or warp drives, or even levitation via antigravity. These exotic propulsion concepts are well-known

in mainstream general relativity and quantum field theory research. The notion of a physical state with negative energy is not familiar in the realm of classical physics. However, it is not rare in quantum field theory to have quantum states with negative energy density or a negative energy flux. Even for a quantum scalar field in the flat Minkowski spacetime, it can be proved that the existence of quantum states with negative energy density is inevitable.

Although all known forms of classical matter have a non-negative energy density, it is not so in quantum field theory. A general quantum state can be a superposition of particle number eigenstates and may have a negative expectation value of energy density in certain spacetime regions due to quantum coherence effects. These considerations remain true even for quantum fields in a curved spacetime where the effects of gravitational fields, or equivalently, accelerations, can be observed due to the mass of astronomical bodies or the motions of astronomical bodies.

There are two key examples of specially prepared quantum vacuum states that are known to produce small amounts of negative energy density in the laboratory. These are the well-known Casimir effect and the squeezed vacuum states of the electromagnetic field. The former is a static quantum vacuum effect while the latter is a time-domain quantum vacuum effect. There are several other examples of special quantum vacuum or particle states that produce negative energy density, but they are beyond the scope of this report because they remain mathematical curiosities or are not practicable to implement in the laboratory in the foreseeable future.

We already make small amounts of negative energy in the laboratory via the Casimir effect and squeezed electromagnetic vacuum states, but we do not yet know if we can access larger amounts for extended periods of time over extended spatial distributions for the purpose of modifying spacetime for aerospace propulsion applications. It will be necessary to first explore the quantum nature of the Casimir effect and squeezed electromagnetic vacuum states to determine whether we can measure and spatially map their negative energy density. This is a necessary first step to take before beginning any study on producing large quantities of negative energy because we will first need to know how to measure and spatially map negative energy in order to properly control it after producing it. This is the motivation for this report.

We need to firm up our understanding of how lab detectors will respond to negative energy in situ. A first step in this direction was already taken by Hansen et al. in 2001 for the time-domain negative energy pulses in squeezed electromagnetic vacuum states, and more recently Marecki generalized the analysis of the output of balanced homodyne detectors (BHDs) for the case of static negative energy states.

References

Chapter 1

Consists of edited excerpts from the following document:

Skinwalkers at the Pentagon, Lacatski, Kelleher, and Knapp, RTMA, LLC, 2021

Chapter 2

Consists of edited excerpts from the following documents:

National Defense Authorization Act for Fiscal Year 2022, Public Law 117-81, 117th Congress, Section 1683: Establishment of Office, Organizational Structure, and Authorities to Address Unidentified Aerial

Phenomena, December 27, 2021

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Skinwalkers at the Pentagon, Lacatski, Kelleher, and Knapp, RTMA, LLC, 2021

Chapter 3

Consists of edited excerpts from the following AAWSAP document:

BAASS Project Management Plan (Overview), 2 December 2008 (49 pages)

Chapter 4

Consists of edited excerpts from the following AAWSAP documents:

AAWSAP Technical Studies 1-12 Approaches - MUFON, November 2008 (26 pages)

AAWSAP Technical Studies 1-12 Approaches – John Schuessler, 23 October 2008 - 5 December 2008 (164 pages) – UAP Lift Indicators and Introduction to UAP Lift Concepts

AAWSAP Technical Studies 1-12 Approaches – EarthTech (H.E. Puthoff, G.D. Hathaway, E.W. Davis), November 2008 (125 pages) – Advanced UAP Lift Concepts

Chapter 5

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Chapter 6

Consists of edited excerpts from the following AAWSAP documents:

AAWSAP Technical Studies 1-12 Approaches – John Schuessler, 23 October 2008 - 5 December 2008 (164 pages) – UAP Propulsion Indicators and Introduction to UAP Propulsion Concepts

AAWSAP Technical Studies 1-12 Approaches - EarthTech (H.E. Puthoff, G.D. Hathaway, E.W. Davis), November 2008 (125 pages) – Advanced UAP Propulsion Concepts

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Chapter 7

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Chapter 8

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Chapter 9

Consists of edited excerpts from the following AAWSAP documents:

Negative Mass Propulsion, Dr. Friedwardt Winterberg, Univ. of Nevada-Reno, 3 January 2011 (43 pages)

Advanced Space Propulsion Based on Vacuum (Spacetime Metric) Engineering, Dr. Hal Puthoff, EarthTech International, 29 March 2010 (17 pages)

Chapter 10

Consists of edited excerpts from the following AAWSAP document:

RAF Lakenheath F-15C Investigation, BAASS, 21 April 2009 (15 pages)

Chapter 11

Consists of edited excerpts from the following AAWSAP document:

Tic Tac (Nimitz Carrier Strike Group) Investigation, BAASS, 7 January 2009 - 18 May 2009 (28 pages)

Chapter 12

Consists of edited excerpts from the following AAWSAP documents:

BAASS March 2009 Monthly Report: Recruiting, Clearances, Development of UAP Databases, EarthTech Contract, Reporting from FAA, MUFON Contract, *The UFO Assault on Brazil with its Epicenter at Colares (19772003)* by John Schuessler, and British, Canadian, and Danish Governments UAP Reports Assessment (42 pages)

BAASS April 2009 Monthly Report: Recruiting, Clearances, EarthTech Contract, MUFON Contract, Project Northern Tier, and British, Canadian, French, and Danish Governments UAP Reports Assessment (50 pages)

Chapter 13

Consists of edited excerpts from the following AAWSAP documents:

BAASS April 2009 Monthly Report: Recruiting, Clearances, EarthTech Contract, MUFON Contract, Project Northern Tier, and British, Canadian, French, and Danish

Governments UAP Reports Assessment (50 pages)

BAASS May 2009 Monthly Report: Additional Facilities, Recruiting, EarthTech Contract, MUFON Investigations, Deployment to Brazil, and British, Canadian, French, and Danish Governments UAP Reports Assessment (39 pages)

BAASS June 2009 Monthly Report: Additional Facilities, Recruiting, EarthTech Contract, MUFON Investigations, Deployment to Brazil, Project Northern Tier, and British, Canadian, French, and Danish Governments UAP Reports Assessment (134 pages)

Chapter 14

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Chapter 15

Consists of edited excerpts from the following AAWSAP document and databases:

CAPELLA Data Warehouse Database / Spreadsheet User's Guide (12 pages)

NIDS Spreadsheet (Historical 1946-2004), 11 September 2009 (1570 cases)

Dominique Weinstein's Pilot Spreadsheet (Historical 1942-2007), 3 June 2010 (483 records)

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MUFON Case Management System (1890-2009), 23 February 2009 (15381)

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United Kingdom Release Spreadsheet (Historical 1950-1997), 9 June 2010 (2879 cases)

BAASS Spreadsheet (Current Reporting 1999-2010), 16 April 2010 (27 cases)

Utah Ranch Spreadsheet (Historical and Current Reporting 1950-2012), 3 April 2012 (582 cases)

Chapter 16

Consists of edited excerpts from the following AAWSAP document:

AAWSAP CAPELLA Data Warehouse Development Plan - Jacques Vallee, 10 December 2008 (42 pages)

Chapter 17

Consists of edited excerpts from the following AAWSAP document:

Utah Ranch Events: 1 September 2007-2 April 2012, BAASS (26 pages)

Chapter 18

Consists of edited excerpts from the following AAWSAP document:

Unmanned Autonomous Surveillance Platform - Prototype Design, BAASS, 6 April 2009 (7 pages)

Chapter 19

Consists of edited excerpts from the following AAWSAP document:

BAASS March 2009 Monthly Report: Recruiting, Clearances, Development of UAP Databases, EarthTech Contract, Reporting from FAA, MUFON Contract, *The UFO Assault on Brazil with its Epicenter at Colares (1977-2003)* by John Schuessler, and British, Canadian, and Danish Governments UAP Reports Assessment (42 pages)

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BAASS Project Management Plan (Overview), 2 December 2008 (49 pages)

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Appendix I

Has summaries of the following AAWSAP DIRDs:

Antigravity for Aerospace Applications, Dr. Eric Davis, EarthTech International, 30 March 2010 (44 pages)

Laser Lightcraft Nanosatellites, Dr. Eric Davis, EarthTech International, 1 November 2010 (77 pages)

Appendix II

Has summaries of the following AAWSAP DIRDs:

Advanced Nuclear Propulsion for Manned Deep Space Missions, Dr. Friedwardt Winterberg, Univ. of Nevada-Reno, 1 December 2009 (37 pages)

Positron Aerospace Propulsion, Dr. Gerald Smith, Positronics Research, 2 March 2010 (35 pages)

Advanced Space Propulsion Based on Vacuum (Spacetime Metric) Engineering, Dr. Hal Puthoff, EarthTech International, 29 March 2010 (17 pages)

Aneutronic Fusion Propulsion, Drs. V. Teofilo, R. White, S. Petrinc, Lockheed Martin, 1 November 2010 (36 pages)

Aneutronic Fusion Propulsion, Dr. William Culbreth, Univ. Of Nevada- Las Vegas, 1 November 2010 (50 pages)

Magnetohydrodynamics (MHD) Air Breathing Propulsion and Power for Aerospace Applications, Drs. S. Macheret and K. Goodfellow, Lockheed Martin, 21 November 2010

(32 pages)

Negative Mass Propulsion, Dr. Friedwardt Winterberg, Univ. of Nevada-Reno, 3 January 2011 (43 pages)

Appendix III

Has summaries of the following AAWSAP DIRDs:

Warp Drive, Dark Energy, and the Manipulation of Extra Dimensions, Dr. Richard Obousy, Obousy Consulting and Dr. Eric Davis, EarthTech International, 2 April 2010 (33 pages)

Traversable Wormholes, Stargates, and Negative Energy, Dr. Eric Davis, EarthTech International, 6 April 2010 (42 pages)

Appendix IV

Has summaries of the following AAWSAP DIRDs:

Inertial Electrostatic Confinement Fusion, Dr. George Miley, Univ. Of Illinois, 10 March 2010 (72 pages)

Concepts for Extracting Energy from the Quantum Vacuum, Dr. Eric Davis, EarthTech International, 6 April 2010 (57 pages)

Ultracapacitors as Energy and Power Storage Devices for Commercial and Military Applications, Drs. J. Golightly and V. Teofilo, Lockheed Martin, 1 November 2010 (34 pages)

Quantum Tomography of Negative Energy States in the Vacuum, Dr. Eric Davis, EarthTech International, 11 January 2011 (51 pages)

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“Initial Revelations” is the follow up book to “Skinwalkers at the Pentagon” and digs deeply into the behind-the-scenes research of the biggest and most far-reaching United States Government covert UFO program in history. The Pentagon’s landmark UFO study ran from the Defense intelligence Agency (DIA) in Washington, D.C., and was executed by Bigelow Aerospace Advanced Space Studies in Las Vegas, Nevada.

Quote from this book: “At the conclusion of a 2011 meeting in the Capitol building with a U.S. Senator and an agency Under Secretary, Lacatski, the only one of this book’s authors present, posed a question. He stated that the United States was in possession of a craft of unknown origin and had successfully gained access to its interior. This craft had a streamlined configuration suitable for aerodynamic flight but no intakes, exhaust, wings, or control surfaces. In fact, it appeared not to have an engine, fuel tanks, or fuel. Lacatski asked: What was the purpose of this craft? Was it a life-support craft useful only for atmospheric reentry or what? If it was a spacecraft, then how did it operate?” The authors reveal the deep commitment to physics and engineering of the United States Government- contracted UFO researchers as they sought to answer Lacatski’s seminal questions.

DIA’s Advanced Aerospace Weapon System Applications Program investigated both UFO performance and effects on humans, including, most controversially, the paranormal.

Initial Revelations has been reviewed by the U.S. Department of Defense and CLEARED FOR PUBLIC RELEASE

