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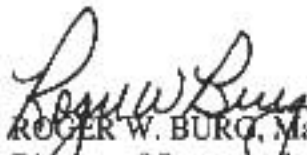
Colonel Howard Richardson (USAF, Ret)
39 Westridge Drive
Brandon MS 39047

Dear Colonel Richardson

As you know, in September 2004 the Air Force sent a team to investigate reports that an area of enhanced radiation had been discovered in Wassaw Sound. The team included experts from the Department of Energy and its national laboratories, Defense Threat Reduction Agency, Georgia Department of Natural Resources, and group members that reported the area of enhanced radiation, led by Mr. Derek Duke. The data collected by the Air Force was independently analyzed and an official Air Force report has been written and approved.

On Friday, 17 June 2005, the Air Force will brief the results of this investigation in the Savannah District Army Corps of Engineers Executive Conference Room. Following this brief, my Associate Director, Dr. Billy Mullins, will formally announce the results to the media and public that the radiation in Wassaw Sound was from naturally occurring minerals and not the lost Mk-15. At that time the media will have an opportunity to ask questions. I have attached for your information copies of this official report together with the report issued in April 2001. I trust you will find these reports informative. I appreciate all of your efforts on this issue, from valiantly saving your aircraft and crew that night long ago, to your constant defense of the truth that the Mk-15 did not have the capsule installed. If you have any questions, please feel free to contact Dr. Mullins or myself at (703) 693-9747.

Sincerely


ROGER W. BURG, Maj Gen, USAF
Director of Strategic Security
DCS/Air & Space Operations

Attachments:

1. Official Air Force Report, 2005
2. Air Force Report, April 2001

**Air Force Assessment of
Reported Elevated Radiation
Resulting from a 1958 B-47 Accident**

**AF Nuclear Weapons
And
Counterproliferation Agency**

31 May, 2005

The Air Force has reaffirmed that the lost incomplete bomb is the property of the United States Government, and has consistently asserted that the best course of action in this matter is to not continue to search for it and to leave the property in place. Due to the concerns previously expressed, the Air Force continues to reject any offer of salvage

INTRODUCTION

This report contains the findings of the Air Force coordinated multi-agency inquiry into the possibility that the location of the Air Force nuclear weapon lost in 1958 in the vicinity of Wassaw Sound near Savannah, GA, had been identified. Information had been provided to the Air Force from local Georgia residents that elevated radiation readings and abnormal magnetometer readings may have indicated that the location of the weapon had been discovered. A team composed of personnel from the Defense Threat Reduction Agency, National Nuclear Security Administration, and Georgia Department of Natural Resources, led by Headquarters United States Air Force, was sent to determine if elevated radiation readings were in fact present; if so, was the radiation indicative of the lost nuclear weapon; and if not, what was the source of the elevated radiation levels. In addition, the team was to evaluate available magnetometer data, and all data acquisition methods to determine if the lost nuclear weapon had been discovered.

EXECUTIVE SUMMARY

On 5 February 1958, a B-47 bomber, carrying a single transportation-configured (no nuclear capsule on board) Mk15 Mod 0 nuclear bomb, had a mid-air collision with an F-86 fighter. Three attempts to land at Hunter AFB, GA were unsuccessful. The Mk15 Mod 0 bomb was jettisoned several miles from Savannah, GA in the Wassaw Sound area of the Atlantic Ocean. Search efforts were conducted from 6 February 1958 until 16 April 1958. A three square mile area was searched using the Air Force 2700th Explosive Ordnance Disposal Squadron and approximately 100 Navy personnel equipped with hand held sonar and galvanic drag and cable sweeps. The Air Force declared the bomb irretrievably lost on 16 April 1958.

In 2001, in a study led by the Air Force Nuclear Weapons and Counterproliferation Agency, the Air Force concurred with expert conclusions that it is in the best interest of the public and the environment to leave the bomb in its resting-place and remain categorized as irretrievably lost.

The Air Force considered the case to be closed until 2004, when media reports indicated a citizens group named ASSURE (American Sea Shore Underwater Recovery Expedition) had discovered enhanced levels of radiation and were concerned that the elevated readings were associated with the lost bomb. In response, the Air Force organized a team of experts to evaluate these reports, with representatives from several organizations. It was determined that the next step was to conduct a radiological survey of the area to ensure valid survey methods, equipment, and readings.

Using sodium iodide detectors, the Air Force-led team surveyed the Wassaw Sound area identified by ASSURE, detecting variations in radioactivity, although the magnitudes reported by the ASSURE team were greater. By utilizing high purity germanium detectors, the source of the radiation was identified as naturally occurring radioactivity. Specific emphasis was placed on determining the presence of the two isotopes of uranium that would indicate presence of the Mk15. These two uranium isotopes were not detected using gamma-ray spectral analysis.

Sediment samples were retrieved from the Wassaw Sound bottom for radio-chemical analysis using a chain-of-custody procedure. In this much more sensitive laboratory analysis, primordial uranium (uranium deposited at the creation of the earth's crust) was detected. Uranium isotope ratio analysis confirmed that the small quantities of uranium present were from natural sources, and not anthropogenic (human influenced). No traces of reactor waste or any effluent from sources such as the Department of Energy Savannah River Site were detected in any of the samples.

A wide area survey was performed using an array of six sodium iodide detectors towed behind one of the team boats. This allowed a larger area to be covered during the radiation survey. The broad area survey results detected approximately the same radiation levels found by a second team boat, but no indication of the Mk15.

No new information was uncovered that would lead the Air Force to modify the conclusions reached in 2001. Valuable experience was gained in utilizing modern radiation detection methodology in this endeavor.

BACKGROUND

In April 2001, the United States Air Force Nuclear Weapons and Counterproliferation Agency compiled a report on the current feasibility of recovery options, in the event that the location of the bomb was uncovered. This was undertaken in response to a request from Representative Jack Kingston (R-Ga), who had received information from a group of concerned constituents. The Background and Executive Summary sections of the 2001 report are reproduced here to provide background for this report.

On 5 February 1958, a B-47 bomber was on a simulated combat mission from Homestead AFB, FL. The B-47 was carrying a single transportation-configured (see Bomb description section below) Mk15 Mod 0 nuclear bomb. The bomb weighed approximately 7600 lbs. The B-47 had a 10,000-lb. maximum payload capacity. It was common practice to train with transportation-configured bombs.

The B-47 had a mid-air collision with an F-86 fighter at approximately 2:00 AM on 5 February 1958. The F-86 crashed after the pilot successfully bailed out. The F-86 was not directly involved with the B-47 simulated combat mission. The B-47 was damaged but flyable. Three attempts to land at Hunter AFB, GA were unsuccessful. The Mk15 Mod 0 bomb was jettisoned to avoid possibility of conventional explosive detonation caused by a crash landing at Hunter AFB, GA. The jettison location was several miles from Savannah, GA in the Wassaw Sound area of the Atlantic Ocean. The drop elevation and air speed were approximately 7200 feet and approximately 200 knots respectively. The B-47 crew did not see an explosion upon impact. The B-47 landed safely at Hunter AFB, GA.

Recovery efforts were conducted from 6 February 1958 until 16 April 1958. A three square mile area was searched using the Air Force 2700th Explosive Ordnance Disposal Squadron and approximately 100 Navy personnel equipped with hand held sonar and galvanic drag and cable sweeps. Water depth in the search area was approximately 8-40 feet. The Air Force declared the bomb irretrievably lost on 16 April 1958.

The bomb contained less than 500 lbs of conventional explosive as well as uranium (considered to be a heavy metal).

The Mk15 bomb type utilized a removable nuclear capsule, which was required for a nuclear explosion, but was not present in this transportation-configured bomb.

An Atomic Energy Agency (AEC) to Air Force "Transfer of Custody" receipt, dated 4 February 1958, confirms no nuclear capsule was present, therefore no nuclear yield was possible.

The Mk15 bomb was produced in two versions: the Mod 0 and Mod 2. The Mod 2 version of this bomb type replaced the removable nuclear capsule of the Mod 0 with a non-removable nuclear capsule, thus making the Mod 2 version a self-contained fully functional nuclear bomb.

Concern has been raised as to which version of the bomb was present. The AF and DOE have concluded that the bomb was a Mod 0, based on the following facts:

- Maintenance records for this specific bomb indicate the only maintenance activity during which the Mod 0 to Mod 2 conversion might have been completed took place in July 1956.
- AEC production records indicate Mod 2 conversion kits were not ready until December 1957.
- AEC production records indicate Mod 0 to Mod 2 conversions did not begin until March 1958.
- As the accident occurred in Feb 1958, the evidence is conclusive that the bomb involved was a Mod 0.

In early August 2000, Congressman Jack Kingston (R-GA) requested the Air Force reinvestigate the accident following inquiries from constituents and the media.

The Air Force consulted the Navy, the Department of Energy (DOE), the Savannah District Army Corps of Engineers, and the Skidaway Oceanographic Institute to investigate the details surrounding the incident, the most likely current condition of the bomb, associated hazards, and to determine whether search and subsequent recovery operations should be attempted.

Assuming the bomb did not detonate on impact, the Department of Energy analysis concluded the bomb probably survived the accident intact and is believed to be resting 5-15 feet under the seabed. If the bomb did not survive intact, its components would have been dispersed and location/recovery is not possible.

Assuming the bomb is intact, the DOE evaluated its status given the accident and subsequent 40 years of exposure to ocean water, silt and mud. The DOE determined that there is no current or future possibility of a nuclear explosion; the risk associated with the spread of heavy metals used in the bomb is low; and if undisturbed, the explosive in the bomb pose no hazard. However, intact explosive would pose a serious explosion hazard to personnel and the environment if disturbed by a recovery attempt.

Cost estimates for search and recovery operations are difficult to pinpoint due to the uncertainty of the impact point and the uncertainty in the condition of the bomb. Search and recovery costs would most likely start at over \$5 Million.

Based on the available data, the suspected orientation of the bomb, the search methods and available equipment, the Navy Supervisor of Salvage estimates there is a very low possibility of successfully locating the bomb.

Recovery operations could not begin until after an approximate 2 plus year environmental decision-making process.

Disposition costs following a successful recovery are also difficult to quantify and would need to be determined by the Department of Energy.

There could be substantial economic impact to the region if an accidental detonation of the conventional explosive occurred during search or recovery operations. The shipping, fishing and recreation industries in the area account for over \$28 million in annual economic activity.

Impact to the regional aquifer and the local drinking water supply due to search and recovery operations could be significant.

The Air Force concurs with expert conclusions that it is in the best interest of the public and the environment to leave the bomb in its resting-place and remain categorized as irretrievably lost.

There may be unacceptable environmental impact associated with search and recovery operations.

The full report is available through the Air Force Nuclear Weapons and Counterproliferation Agency.

2004 SEQUENCE OF EVENTS

The Air Force considered the case to be closed until late July 2004, when media reports indicated a citizens group named the American Sea Shore Underwater Recovery Expedition (ASSURE) had detected enhanced levels of radiation and were concerned that these elevated readings were associated with the lost bomb. According to these media reports, radiation readings of 7 to 10 times normal levels had been discovered, and together with additional information and conclusions drawn by the ASSURE team, ASSURE's estimation of the location of the missing bomb had been narrowed down to an area the size of a football field in the waters of Wassaw Sound. The Air Force organized a team of experts to evaluate these reports, with representatives from several organizations including Sandia National Laboratories, Los Alamos National Laboratory, Lawrence Livermore National Laboratory, Navy Supervisor of Salvage and Diving, Defense Threat Reduction Agency (DTRA), plus several Air Force staff offices in the fields of safety, environmental protection, legal affairs, Congressional liaison, and public affairs. Additionally, liaison was established with the appropriate experts at the Savannah District Army Corps of Engineers and the U.S. Coast Guard. Team members reviewed the original accident information, the actions taken in the 2000-2001 time frame and the recent media reports, and determined they needed further information to evaluate the situation.

Senior military personnel contacted the ASSURE team leader requesting additional information, including specific information on the reported radiation readings and the equipment and methodology used to collect those readings. The ASSURE team provided magnetometer readings and location information. Additionally, one of the ASSURE team members who had collected radiation data met with Air Force team members at the Pentagon, including the Air Force Associate Director of Strategic Security, an Air Force nuclear engineer, and representatives from the three national laboratories. The ASSURE member provided specific information on radiation readings, the radiation detection equipment, and the methodology used; however, the information could not be correlated with the magnetometer and location data previously provided by the ASSURE team. After evaluating all available information, the Air Force-led team determined that further clarification on the radiation readings and methodology was required. It was determined that the next step was to meet directly with the ASSURE team. In conjunction with the meeting, the Air Force-led team conducted a radiological survey of the Wassaw Sound area.

Planning and preparations began in late August 2004 to organize a highly specialized technical team to visit the Savannah area. Led by the Air Force Associate Director of Strategic Security, the technical team consisted of Navy Salvage and Diving experts, radiation experts from the National Nuclear Security Administration (NNSA), an Air Force nuclear engineer, an Air Force health physicist and safety officer, a DTRA technical collection team, radiological experts from the Georgia State Department of Natural Resources (GaDNR), and public affairs experts. The GaDNR members served as independent data collectors and evaluators. Planned team visits were twice delayed by inclement weather, and the team finally traveled to Savannah on September 28, 2004. A marine security and safety officer from the US Coast Guard (Port of Savannah), and a liaison from the Department of Energy Savannah River Site also joined the technical

team in Savannah. Hosted by the Savannah District Army Corps of Engineers, this team, together with staff members from the local Congressional delegation, met with ASSURE team members at the Army Corps of Engineers building in Savannah on September 29, 2004. They provided interviews and answered questions for local and national media and gathered information on the ASSURE team's previous data collection efforts. Additionally they completed planning for the next day's on-water radiological survey in Wassaw Sound.

DATA COLLECTION AT WASSAW SOUND, 29-30 SEP 04

The 29 September meeting started with an introduction of attendees, their professional qualifications, and a review of Air Force goals.

The purpose and goals of the two-day meeting were discussed with all participants to maximize the effectiveness of both the meeting and the data collection efforts planned for the next day.

At the conclusion of the two-day trip (and subsequent analysis of data) the Air Force desired to answer three questions:

1. Has the ASSURE team identified an area of enhanced radiation?
2. If yes, is the enhanced radiation attributable to the Mk15?
3. If it is not from the Mk15, can the radiation source be characterized?

The face-to-face meeting was to clarify information previously provided by ASSURE. The meeting included technical discussions aimed at understanding all aspects of the information provided by ASSURE, their collection techniques, and any other information pertinent to comprehending what the information truly indicated.

Around the midpoint of the meeting, a break was taken to accommodate a press conference. The press opportunity was used to fully explain to the media the goals of the Air Force in this endeavor. Air Force and ASSURE team leaders, organizational public affairs representatives, and Congressional Staff representatives from the offices of Senator Miller, Senator Chambliss, and Congressman Kingston were in attendance.

At the conclusion of the meeting, plans were confirmed for the next day's activities, which would include on-water data collection in and around the area identified by the ASSURE team. DTRA, NNSA, Georgia, and ASSURE radiation experts agreed that three initial reference background measurements (to be made at marker buoys 1, 3, and 14) would be adequate.

On September 30, 2004, team members set out to make measurements in Wassaw Sound. The DTRA technical team utilized two boats and was accompanied by a radiation expert from NNSA. These boats were equipped with radiation detectors for a wide-area survey and for conducting full-spectrum (gamma) radiation sampling at specific locations on the ocean floor. The DTRA technical team possessed the capability to collect sediment samples from the ocean floor for subsequent laboratory analysis. A third boat was used by a joint ASSURE, NNSA and GaDNR team. This boat was equipped with radiation detectors belonging to NNSA and the state of Georgia for more detailed point measurements; additionally, this third boat was equipped with the ASSURE radiation detection equipment used during their previous efforts. The personnel on this third boat became known as the radiation detection team. All three radiological survey boats were equipped with global positioning system (GPS) equipment to provide precise location data. A fourth boat was used by leadership from the various organizations -- including ASSURE. An additional boat was leased by the Air Force for media members to visit the survey site and conduct an on-water interview with the team leaders. An Air Force shore team provided logistical support and helped manage media activities.

The reasoning behind formation of these teams and their particular members was to assign technical tasks to those most qualified and experienced in the respective fields, while providing a single "Command Team" to help coordinate efforts. The ASSURE

team had previously indicated they would be unable to utilize their boat so a decision had been made to accommodate ASSURE members on government-leased boats. This decision proved most useful as the Air Force was able to have direct communication with the ASSURE leadership and thus was able to address all concerns as they arose.

Weather was fair, partly overcast with mild temperatures and light and variable winds. Seas were calm for most of the day but increased to approximately 2-foot swells in the late afternoon. Water depths in the survey area varied from 5 to 17 feet, including tidal variation throughout the day.

DESCRIPTION OF THE RADIOLOGICAL SURVEY OPERATIONS

The missions of each survey team varied. The primary mission of the radiation detection team was to establish a background reference by taking gamma radiation measurements at the three predetermined locations outside the area identified by ASSURE using both sodium iodide (NaI) and high purity germanium (HPGe) detectors. The secondary mission of the radiation detection team was to perform any additional point measurements at locations indicated by the command team. The DTRA team mission was to map the gamma radiation in the area identified by ASSURE and collect seabed samples for further analysis. Samples were collected from predetermined locations as well as at any location that real-time analysis indicated may be of interest.

Upon arrival at the morning meeting location, buoy 1, both the DTRA team and the radiation detection team made initial background measurements.

The radiation detection team continued making reference background measurements using a NaI detector for count rate measurements and a stationary HPGe detector, which was placed on the seabed for 30-minute duration measurements. After completing the reference background measurements, the command team was to direct the radiation detection team to specific spots (primarily areas of interest to be identified during DTRA's wide-area survey) for detailed measurements.

Meanwhile, the DTRA team mapped an area measuring approximately 800 feet by 300 feet and oriented along and centered upon the same axis as the "football field" described by ASSURE. The entire command team agreed upon the corners of the box to be mapped. The mapping performed would identify areas of interest that the radiation detection team would further evaluate utilizing more precise instrumentation. Additionally 12 seabed samples were collected by the DTRA technical team, 10 coinciding with the magnetometer readings provided by ASSURE and two identified by the command team.

As the day progressed, the ASSURE leader indicated an uneasiness with the GPS coordinates provided to the Air Force and that the survey may be in the wrong area. The Air Force asked the ASSURE leader what measurements or survey areas would make him feel more confident that the proper area was being surveyed. As a result, the radiation detection team's mission was modified to include using ASSURE's equipment, methods, and techniques in an attempt to locate the elevated radiation described by ASSURE. The initial technique requested by the ASSURE lead was to drift with the tide through an area of interest making measurements. The ASSURE lead identified the starting point of four drifts. These measurements had two goals: 1) provide data for later comparison to DTRA measurements, and 2) provide a simplified contour which should show the radiation feature anecdotally reported by the ASSURE team.

After completing the drifts and a short meeting between the Air Force, the ASSURE lead, and the ASSURE radiation expert, it was decided that the DTRA mission was progressing favorably (the DTRA team was just reaching the quadrant of the survey area where ASSURE believed the Mk15 to be located). However, the ASSURE lead then requested a particular "line" along which he would like the radiation detection team to take measurements. The Air Force agreed to this request as well as two other requests (described below) so that all parties could feel confident the survey was thorough.

After measurements were made along this line, the ASSURE lead requested he personally guide the radiation team to an additional location. The ASSURE lead and an Air Force member boarded the radiation detection boat for these readings. The ASSURE lead then guided the boat to the desired location. After a few readings for orientation, measurements were made along a direction back towards the original survey area. At this point the ASSURE lead indicated he was confident the Air Force-led radiation teams had measured the ambient radiation in all areas of concern. However, since low tide was expected within 30 minutes and since ASSURE made their best measurements at low tide, one more "line" of measurements was requested and performed.

At approximately the same time, the radiation detection team completed the low tide measurements and the DTRA boat finished their tasks; both came alongside the command boat. All parties verified that measurements had been made to each other's satisfaction, and preliminary review of the data indicated nothing out of the ordinary or that required further investigation. The ASSURE team affirmed that all the areas had been surveyed to their satisfaction. The ASSURE team was asked if they would like the DTRA team to survey a modified area the next day. After consultation the ASSURE team replied that a modified survey would not be necessary.

The data collection teams were then released from the mission and to return to their home stations. Each collection authority (DTRA, NNSA, and GaDNR) would evaluate their data independently and provide technical input to the Air Force. The Air Force would then consolidate information from each into an overall report to be released upon completion of the evaluation, report writing, and required management outbriefs.

In the days following the survey ASSURE and the Georgia State Department of Natural Resources personnel determined that the survey area was correct -- partially due to the Air Force-led team purposely covering an area larger than the specific spot identified by ASSURE.