

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF NORTH CAROLINA
NORTHERN DIVISION**

WASHINGTON COUNTY, NORTH
CAROLINA and BEAUFORT COUNTY,
NORTH CAROLINA,

Plaintiffs,

v.

UNITED STATES DEPARTMENT OF THE
NAVY; GORDON R. ENGLAND, in his
official capacity as Secretary of the Navy, and
HANSFORD T. JOHNSON, in his official
capacity as Assistant Secretary of the Navy for
Installations and Environment,

Defendants.

Civil Action No. 2:04-CV-3-BO(2)

THE NATIONAL AUDUBON SOCIETY,
NORTH CAROLINA WILDLIFE
FEDERATION, and DEFENDERS OF
WILDLIFE,

Plaintiffs,

v.

DEPARTMENT OF THE NAVY; GORDON
R. ENGLAND, Secretary of the Navy;
HANSFORD T. JOHNSON, Assistant
Secretary of the Navy; R.M. FLANAGAN,
Major General, U.S. Marine Corps,
Commanding General, Marine Corps Air
Station, Cherry Point

Defendants.

Civil Action No. 2:04-CV-2-BO(2)

AFFIDAVIT OF RONALD L. MERRITT

I, Ronald L. Merritt, being first duly sworn, depose and say:

1. My name is Ronald L. Merritt. I reside at 414 Colorado Avenue in Lynn Haven, Florida.
2. I earned a B.S. in Zoology from the University of Arkansas in 1975, and a M.S. in Biology from North Texas State University in 1978. I also pursued a Ph.D. from the University of North Texas State University, and completed all the requirements for the Ph.D. except the dissertation in 1987.
3. I am a former officer in the U.S. Air Force (“USAF”). I was commissioned in May 1975 and was promoted to the rank of Major in March 1988. I retired from the USAF in September 1994. From March 1988 until my retirement in September 1994, I was the Chief of the USAF Bird Aircraft Strike Hazard ("BASH") Team and was assigned to the Environmental Engineering Division, Headquarters, United States Air Force, Pentagon, Washington D.C., and later at the Air Force Civil Engineering Support Agency at Tyndall Air Force Base in Florida. As Chief of the USAF BASH Team, my responsibilities included providing on-site technical assistance to the USAF Major Commands as well as over 85 USAF flying installations worldwide to reduce the bird strike hazards posed on airfields, low-level routes, and weapons ranges. In addition I assisted in the investigation of eleven aircraft mishaps involving bird strikes. I also served as the expert witness for the USAF in public hearings and legal proceedings that concerned off-base land use issues that posed bird and wildlife hazards to aircraft operations. As Chief of the BASH Team I was also responsible for securing funding, providing technical direction, and evaluation for all USAF BASH related research and development programs. This included updating the USAF Bird Strike Database into PC formats, development of the first GIS-based Bird Avoidance Model (BAM), research on the use of the Next Generation Weather Radar (NEXRAD/WSR 88-D) as a sensor for a nationwide bird detection/advisory system, and the development of local/regional BAMs using mobile and fixed marine radar systems. Prior to my

appointment as Chief of the BASH Team, I worked as a wildlife biologist for the USAF and as an Assistant Professor of Biology at the USAF Academy.

4. After retiring from the USAF in 1994, I began working for Geo-Marine, Inc., a company that provides environmental services such as natural resources management, wetlands delineations, marine surveys, and cultural resources inventories. Geo-Marine was, and continues to be, a contractor with the Navy for various projects. In June 2003, I resigned from Geo-Marine and, with other former Geo-Marine employees, founded DeTect, Inc. I now am employed as the President of DeTect, a company that specializes in consultations and technologies specifically related to the reduction of bird strikes to civilian and military aviation. Detect, Inc., staff includes internationally recognized experts in the field of BASH reduction and are world leaders in development and operation of bird detection radar systems. A copy of my resume, which outlines my relevant experience with bird/aircraft strike issues, is attached as Exhibit A.

5. Bird Strikes are a serious threat to aviation safety. Each year the U.S. military suffers millions of dollars in damage and loss due to bird strikes. The increased importance of low-level training operations, which places aircraft in the path of the majority of non-migratory bird flight activity, continues to have potentially devastating impacts on military flight operations. Both military and civilian aircraft face similar risks in flight patterns around the airport. Civilian airports and military flight installations take extreme precautions in managing airfield habitats and actively harass birds from the area to prevent catastrophes such as the bird strike in 1995 at Elmendorf AFB in Alaska, when an AWAC aircraft was lost shortly after takeoff, killing all 24 aircrew members.

6. Bird strike avoidance during low-level flight has become a priority concern, especially for fighter-type aircraft. The high speeds make dodging birds impossible and result in impact

energies that often exceed aircraft design criteria. In 2002 alone, the USAF reported more than 3,700 bird strikes. Waterfowl represent the largest percentage of reported bird strikes causing damage to aircraft. Based on data collected from 1990 to 2002, the Federal Aviation Administration estimates that bird strikes cost civil aviation more than \$480 million per year in the United States.

7. I am familiar with all of the various types of risk assessment models and radar systems used to evaluate and manage the risk posed to aircraft by birds and wildlife. These tools include the Bird Avoidance Model (BAM). The BAM is a historical risk model that distributes bird populations across the lower 48 states in the United States. The model is integrated by a GIS system, which interpolates bird density data taken from nationwide databases. These databases include 30 years of Christmas Bird Counts (CBC) conducted by the National Audubon Society, Breeding Bird Surveys (BBS) conducted by the U.S. Fish and Wildlife Service, and wildlife refuge data. The model is chronologically divided into 26 two-week periods, each of which is further divided into Dawn/Dusk, Day, and Night. The BAM was originally developed to assist military pilots in selecting low-level training routes and ranges with the lowest bird strike risk and was later modified for use in environmental assessments. The BAM is available on-line at www.usahas.com/bam. The BAM provides hazard assessment in three major categories (Severe, Moderate, and Low) with each category having three sub-levels (e.g. Severe 1, Severe 2, Severe 3).

8. I am familiar with the proposal by the Department of the Navy (“Navy”) to develop and operate an outlying landing field (“OLF”) in Washington and Beaufort Counties, North Carolina (“Site C”). I have reviewed the parts of the Draft and Final Environmental Impact Statements

(“DEIS” and “FEIS,” respectively) prepared by the Navy that are relevant to impacts to waterfowl and bird strike hazards, and the Navy’s Record of Decision.

9. While employed at Geo-Marine, Inc., I was the office manager and program director of the company’s Avian Research Lab, based in Panama City, Florida. In January 2003, Geo-Marine was contacted by Navy personnel requesting a more detailed bird hazard study at the proposed OLF Site C. I personally cautioned the Navy that it would be difficult to get a radar unit ready on such short notice, that the requested 4-week time frame was too short for a meaningful study, and that the wintering season for migratory waterfowl would be nearly over by the time a radar unit could be operating in the area – a factor that would severely limit the utility of the study. I further personally informed the Navy’s representatives that a study of this limited duration at the end of the migratory season would be insufficient to quantitatively assess bird numbers or bird movements. Despite these clear qualifications, the Navy’s representatives chose to move forward with the limited study of Site C.

10. Geo-Marine entered into a contract with the Navy to conduct a brief study of bird activity at the proposed OLF Site C and to conduct a review of bird strike issues at the other five alternative sites for the OLF. I served as the primary investigator working on the BAM analysis and radar study data for the Navy’s proposed OLF.

11. My staff and I deployed one radar unit that was placed at Site C in Washington County. The radar unit, a 25 kW X-Band radar, was unable to run both vertical and horizontal scans simultaneously. Consequently, the protocol was to alternate the horizontal and vertical scanning modes every 24 hours. The horizontal scanning mode would detect bird movement patterns in an X, Y axis, and the vertical scanning mode would detect the altitude distribution of any birds moving through the area (Z axis).

12. The mobile radar unit was inoperative from February 24th to February 26th. As a result, data were collected for 12 days in the horizontal scan mode, and for 12 days in the vertical scan mode.

13. During the 12 days of vertical scanning at one location in Site C, more than 450,000 birds were detected moving through the radar beam. Over 40,000 of these targets were classified as flocks and 70,000 targets were classified as large birds. This number of large bird targets is extremely high and presents an extraordinary risk to aircraft operating at altitudes associated with take off and landings in the area.

14. The numbers of birds passing through the radar beams tapered off significantly toward the end of the study, which corresponded with the end of the wintering season and the departure of the majority of large waterfowl from the region. According to data I have reviewed from the U.S. Fish & Wildlife Service Field Office at the Pocosin Lakes National Wildlife Refuge, by the time our radar unit was deployed and collecting data, few migratory waterfowl remained in the area. Consequently, I would expect significantly higher numbers of bird targets – corresponding to a heightened risk of collision – during the peak migratory and over-wintering months of October, November, December, January, and February.

15. Soon after completing the Site C radar study, I resigned from Geo-Marine and entered into a settlement agreement with the company that barred me from contacting any of Geo-Marine's current clients, including the Navy. Consequently, I never received any comments back from the Navy, Geo-Marine's Newport News office, or the contractor who was preparing the FEIS for the Navy. I thus was unaware of further developments with the Navy's environmental review until the Record of Decision was issued in September 2003.

16. Based on my professional experience, familiarity with Site C and work on the radar study conducted for Site C, it is my firm opinion that the bird hazard assessment that the Navy conducted was wholly inadequate and dangerously underestimates the risk that this site poses to aircraft safety during the peak winter months. I wrote a letter to the Secretary of the Navy on October 13, 2003 sharing my concerns about the significant dangers posed by the wintering birds at Site C and advising the Navy to revisit the bird strike issue and consider a safer location for the OLF. A copy of this letter is attached is Exhibit B.

17. Another shortcoming of the radar study was that it was conducted at only one site: Site C in Washington and Beaufort Counties. To accurately evaluate and understand the result of the radar study, comparable studies should have been conducted at the other alternative sites to ensure that the decision-makers fully understood the relative risks of each site and could make a selection that would minimize aircraft damage and the risk to human life.

18. The BAM analysis for Site C documented that the site would have a severe rating for 50% of the year. There are few places in the United States that have such severe ratings for this length of time. I can think of no other U.S. military airfield located in an area with this degree of risk rating.

19. The BAM is a useful planning tool, but is a predictive model, useful for identifying periods of time when bird activity historically has been a problem. The BAM is useful only if those periods of severe activity are avoided. Avoiding the OLF for 50% of the year would make it a waste of money and would not further the Navy's stated goal of improved jet training and military readiness.

20. In public and written statements, including the FEIS for the Introduction of Super Hornets to the East Coast, the Navy has asserted that it manages similar bird strike risks at

several of its other installations on the east coast. This statement is incorrect. The examples offered by the Navy -- NAS Oceana, and NALF Fentress and Dare County Bombing range are each in stark contrast to Site C.

21. Neither NAS Oceana nor NALF Fentress is located in such close proximity to an internationally significant wildlife refuge that is managed for the sole purpose of attracting and protecting migratory waterfowl. Neither is located in an area with significant wintering populations of large waterfowl, such as snow geese and tundra swans. Moreover, most of the large birds moving through NAS Oceana and NALF Fentress are migratory (generally traveling to and from their winter homes) whereas the tens of thousands of large birds near Site C actually live there during the winter (winter residents) and make random trips day and night to forage and loaf. Neither NAS Oceana nor NALF Fentress has a BAM risk rating comparable to Site C. The BAM rating for NAS Oceana is severe for 31% of the year, while NALF Fentress is severe for 36% of the year, compared to a severe rating for Site C of 50% of the year.

22. The Navy has stated publicly that the BASH risk at Site C is comparable to that at the Dare County Bombing Range. This assertion is also incorrect and misleading. My opinion is based on my personal involvement, as Chief of the USAF BASH Team (and later when employed with Geo-Marine), in a multi-year study of bird movements at the Dare County Bombing Range. OLF flight activities require that aircraft fly at low altitudes and descend to the ground for take-off and landing practice, continually placing the aircraft within the flight altitudes of these large waterfowl. In contrast, flight patterns at the Bombing Range may occur at a higher altitudes where waterfowl are far less likely to be encountered during routine feeding flights. More importantly, the Dare County Bombing Range is a heavily wooded area that does not typically experience daily over-flights by wintering tundra swans.

23. The Navy has not yet determined how it will manage the risk of collision with birds and wildlife at Site C. The use of the BAM will serve to identify heightened bird activity that poses a risk to pilots and aircraft, but will not in itself manage the problem of bird strikes. To manage bird and wildlife hazards, the Navy will have to develop a site-specific BASH management plan. Neither the DEIS nor the FEIS contain information about a BASH management plan for Site C. To my knowledge, the Navy has not yet developed this management plan or assessed its impacts, and has not released it for public review and comment. The use of historical radar survey data will only provide general guidance concerning periods when severe bird activity occurs and would require significant periods of time be set aside to avoid hazardous movements. Daily bird movements are significantly influenced by daily weather changes and seasonal crop rotations that vary greatly each year.

24. Bird strike hazards exist throughout the world. However, the threat of a catastrophic bird strikes is much higher in major migration routes and near favorable wintering environments. Site C is located in the Atlantic Flyway, within five miles of a wildlife refuge that is managed specifically to attract migratory waterfowl, and within a region marked by large open bodies of water, wetlands and most importantly agricultural fields. It is difficult to imagine many regions within the continental United States that are more favorable and attractive to birds, or more dangerous to aircraft activity than this site.

25. My expert opinion is that it would be reckless for the Navy to construct and attempt to operate an OLF at Site C. I firmly believe that the Navy has seriously underestimated and failed to consider the risks posed by this site, and a more suitable location for the OLF should be sought.

I declare under penalty of perjury that the foregoing is true and correct. This sixth day of February 2004.

Signature

Date

FLORIDA
BAY COUNTY

I, _____, A NOTARY PUBLIC FOR SAID COUNTY AND STATE, DO HEREBY CERTIFY THAT RONALD L. MERRITT PERSONALLY APPEARED BEFORE ME THIS DAY AND HAVING BEEN DULY SWORN, ACCORDING TO LAW, MADE THE ATTACHED AFFIDAVIT.

WITNESS MY HAND AND OFFICIAL SEAL, THIS THE _____ DAY OF _____, 2004.

NOTARY PUBLIC

MY COMMISSION EXPIRES ON: