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NAVAL AIR STATION  
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COMTRAWING ONE INSTRUCTION 5090.10  
NASMER INSTRUCTION 5090.10

From: Commander, Training Air Wing ONE  
Commanding Officer, Naval Air Station, Meridian, MS

Subj: BIRD/ANIMAL STRIKE HAZARD (BASH) PLAN

Ref: (a) OPNAVINST 5090.1B  
(b) NAVFAC P-73, Vol II  
(c) OPNAVINST 3750.6R  
(d) OPNAVINST 3710.7T  
(e) FAA Handbook 7110.65

Encl: (1) TW-1/NAS Meridian OLF Joe Williams BASH Plan

1. Purpose. To issue enclosure (1), which provides a program per references (a) through (e), to reduce the potential for collisions between aircraft and birds or other animals.

2. Background. No single solution exists to the BASH problem; a variety of techniques and organizations must be involved to ensure success of this program. The program encompasses all actions which may identify, reduce, or eliminate bird or other animal hazards to aviation. Specifically, bird avoidance and animal control (including harassment, grounds maintenance, habitat modification, hunting, and depredation).

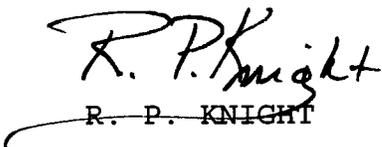
3. Objectives. A BASH exists at this installation and within the immediate vicinity due to resident and migratory bird species and other wildlife. Daily and seasonal bird movements create various hazardous conditions to aviation. This plan is designed to reduce wildlife hazards in and around Naval Air Station (NAS) Meridian and Outlying Field (OLF) Joe Williams.

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4. Administration. This plan shall be reviewed and updated as required. Recommended changes should be submitted to the NAS Meridian Air Operations Officer and Training Air Wing ONE (TW-1) Safety Officer.



JOHN R. WOOD



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Distribution:

COMTRAWINGONEINST 5216.4G (List I, II)

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**TW-1/NAS MERIDIAN OLF JOE WILLIAMS BASH PLAN**

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- Appendix (A) NAS Meridian BASH Information Form
- Appendix (B) NAS Meridian BASH Reporting Flow Chart

## CHAPTER 1

### GENERAL

#### 1.1 PURPOSE

1.1.1 **What is BASH?** BASH is an acronym that stands for Bird/Animal Strike Hazard. The purpose of a BASH program is to mitigate the hazards associated with collisions between wildlife and aircraft. The program focuses on managing the airfield to reduce the quality and attractiveness of it as habitat for wildlife, managing wildlife populations to minimize potential for wildlife/aircraft strikes, and working with installation personnel to improve the reporting and communicating of wildlife activity and wildlife/aircraft strikes (both damaging and non-damaging). Damaging strikes include holes in the body of aircraft, broken engine fan blades, cracks to the canopy, etc, and cost the Navy millions of dollars per year in repairs to naval aircraft, and loss of training opportunities. Damaging strikes have the potential of resulting in loss of life to aircrew. Non-damaging strikes usually involve blood smears or feather fragments stuck to the aircraft without penetration to the body of the aircraft, and need to be reported as well in order to effectively understand and mitigate any future hazard.

1.1.2 **Why is BASH Important?** It is important to institute a proactive BASH program at naval airfields for several reasons. The primary goal of the BASH program is to minimize the potential for loss of life and damage to aircraft. The BASH program achieves this objective by addressing the aviation safety hazard associated with wildlife near airfields. An effective BASH program also strives to minimize secondary BASH impacts, such as impairment of training. Aircraft collisions with wildlife are too costly and hazardous to not be properly addressed or managed.

a. Bird strikes have plagued naval aviation since its early beginnings. The Navy's first loss of life due to a bird strike occurred in 1914, coincidentally the same year it obtained its first aircraft. Since 1980, the Naval Safety Center has recorded over 13,000 wildlife strikes. Aviation-mishap reports show strike events have caused the death of two naval aviators, 14 crashed aircrafts, 21 ejections, 38 injured aircrew, and have resulted in 272 incidents documented as Class A, B, C or FOD engine mishaps.

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These reports also indicate the top four wildlife species involved in mishap events are gulls, vultures, waterfowl, and deer. The cost to the Navy is over \$330 million. This expense does not accurately reflect the total cost, since it doesn't include the damage estimates found in the thousands of hazard reports. From March 1995 to March 1997 alone, naval aviators reported 1,420 bird strikes, which resulted in 107 aircraft mishaps, 32 FOD engines and over 108 million dollars in damages. Fortunately, there were no fatalities. However, within that same period, the USAF had two major BASH-related mishaps with two aircrafts totally destroyed and 24 fatalities. Naval Safety Center data shows that 65 percent of all bird strikes occur within the airfield environment, and estimates that only one of four bird strikes is reported, suggesting that an even larger hazard exists.

**1.2 MISSION.** NAS Meridian and Outlying Field (OLF) Joe Williams have a potentially dangerous wildlife population. Daily and seasonal bird and animal movements in the vicinity of the airport create various hazards to aircraft. Accordingly, the BASH Program is designed to reduce the possibilities of BASH incidents and to provide increased levels of safety during the critical phases of flight. This plan establishes specific procedures to reduce known and future BASH hazards. There is no single solution or agency that can solve BASH problems. Therefore, a variety of techniques and organizations must be involved in the overall program. This plan is designed to:

- a. Minimize the potential for loss of life and equipment through management and control of wildlife hazards.
- b. Increase awareness among military and civilian personnel of the issues central to the success of the NAS Meridian BASH program.
- c. Establish a Bird/Animal Hazard Working Group and designate responsibilities to its members.
- d. Deter and manage wildlife hazards based on scientific research, improved wildlife/aircraft strike reporting, and information gathered through communication of wildlife hazards and activity.
- e. Establish passive techniques to decrease airfield attractiveness to all wildlife.

- f. Establish active/static techniques to disperse/remove birds/animals from the airfield.
- g. Establish procedures to aid supervisors and aircrew in identification and mitigation of high hazard situations.
- h. Establish local procedures for reporting ALL bird/animal strikes, both damaging and non-damaging.
- i. Establish procedures for collecting bird/animal strike remains.

### **1.3 LOCAL AREA AND SETTING**

#### **1.3.1 Airfield Installation Description**

- a. McCain Field (NAS Meridian) is an active military airfield. The primary aircraft types using the airfield runways include the assigned T-45, as well as occasional transient aircraft from various Navy and other military commands.
- b. OLF Joe Williams is an active military airfield used by NAS Meridian-based T-45 jet aircraft for Field Carrier Landing Practice (FCLP) and local flight training operations.

#### **1.3.2 Local Area**

- a. NAS Meridian is one of the largest naval bases in the southeastern United States, encompassing 8,061 acres. It is located in Lauderdale and Kemper Counties, 15 miles northeast of Meridian, MS, and 11 miles west of the Alabama state line. Elevations at NAS Meridian range from 200' above sea level in creek bottoms to 380' above sea level on upland sites.
- b. Two outlying facilities, OLF Joe Williams (formerly Bravo Field) in Kemper County (1,255 acres), and Searay Target Range in Noxubee County (654 acres), are 12 miles northwest and 37 miles north of the Station, respectively. Elevation at Searay Target Range is approximately 350' above sea level, with OLF Joe Williams ranging from 500' to 560' above sea level.

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**1.3.3 General Topography.** Slopes vary from rolling hills to steep narrow riparian zones along creeks. Most of the land base is characterized by gently sloping terrain, with the flattest areas occurring in alluvial floodplains of major creeks.

**1.3.4 Vegetation Cover Types.** NAS Meridian lands are located in the pine-barrens region of the Gulf Coastal Plain (known as the Coastal Plains) Middle section of the Southeastern Mixed Forest Province. Forest cover is comprised primarily of loblolly pine, shortleaf pine, and mixed pine-hardwood forest in upland sites. Diverse hardwoods dominate alluvial floodplain and riparian sites. Isolated longleaf pine stands are distributed on sandy ridges. Early-successional plant communities include forest regeneration sites, fallow roadsides and fields, tornado pathways, and runway safety zones. Forested acreage totals 5,248 acres, 80% of which is dominated by pine and pine-hardwoods. The majority of the station's forests range in age from 45-65 years. Plant communities are comprised of a diversity of native woody vines, legumes, forbs, and grasses. Some non-native plants are used in landscaping and erosion control and pose no problem. However, other non-native plants are invasive and cause problems in localized colonies on the station, including Chinese privet, kudzu, cogongrass and wisteria.

**1.3.5 Landfills and Sewage Ponds.** There are no active landfills or sewage ponds on station.

**1.3.6 Habitats.** The habitats at NAS Meridian and OLF Joe Williams can be grossly divided into ponds/wetlands, bottomland hardwoods, large upland tracts of managed pine timber, small mixed timber, large areas of open cutover, drainage ditches, natural streams, open grasslands, and a golf course (NAS Meridian only). The combination of all these environments and attractors increases the potential for a bird strike incident.

**1.4 SPECIES.** Chapter 5 contains a comprehensive list of birds and mammals which may be observed in the airfield area. Although avian surveys on NAS Meridian have tallied over 200 different bird species during migration periods, this list is considered thorough for BASH purposes.

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## 1.5 EXPLANATION OF TERMS

1.5.1 **BDDT**. BASH Detection and Dispersal Team. All personnel operating within the airfield (Airfield Manager, Emergency Responders, Air Operations, Security, Environmental, Arresting Gear, Wildlife Biologist, Sweepers, Ground Electronics, etc.) that are working cooperatively to recognize and report hazardous conditions to the Control Tower. A limited number of these personnel will be trained to disperse problem wildlife using various methods depending on their level of training (i.e. vehicle chase, pyrotechnics, bioacoustics, depredation). Responsibility for bird/animal detection and dispersal is an airport management function, and falls under the control of the Air Operations Officer.

1.5.2 **Depredation**. Technique used to remove problem wildlife permanently from the airfield and hangars when other tactics are ineffective. Permits for most species are required.

1.5.3 **Pyrotechnics**. Noise-producing devices fired from pistol or shotgun by trained BDDT personnel to scare birds away from airfield areas. Pyrotechnics are Class 1.4 explosives.

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CHAPTER 2

**ORGANIZATIONAL TASKS AND RESPONSIBILITIES**

**2.1 AUTHORITY.** The Commanding Officer, Naval Air Station Meridian and Commander, Training Air Wing ONE (CTW-1) are jointly responsible for the BASH Program and are the approval authorities for all Bird/Animal Hazard Working Group recommendations. The BASH Program is part of the Aviation Safety Program, and as such, the TW-1 Safety Officer shall monitor the effectiveness of the program. Active participation by the Air Operations and Environmental Departments is key in ensuring the success of the program.

**2.2 BIRD/ANIMAL HAZARD WORKING GROUP (BHWG).** The Bird Hazard Working Group is a committee of Station departments and TW-1 personnel concerned with bird/animal hazards, which is organized to implement and monitor the BASH Plan. It allows base personnel affected by bird problems the opportunity to meet and discuss possible solutions.

**2.2.1 Composition.** At a minimum, the group should contain the following:

- a. NASMER Air Operations Officer (Co-chairman)
- b. TW-1 Safety Officer (Co-chairman)
- c. Squadron Aviation Safety Officers
- d. Station Wildlife Biologist
- e. Airfield Manager
- f. Air Traffic Control Representative
- g. Maintenance Support Detachment Representative (as needed)
- h. Aircraft Maintenance Contractor Representative (as needed)

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- i. Environmental Department Representative (as needed)
- j. Public Works Representative (as needed)
- k. Weapons Representative (as needed)
- l. Security Representative (as needed)

**2.2.2 BHWG Meeting Schedule.** The BHWG shall meet quarterly to stay current on bird and animal hazards and to discuss results, solutions, and effectiveness of the program. An important concept is that the BHWG address problems as they develop, before they create a serious safety hazard. Due to the continuous rotation of Squadron Safety Officers, Wing Safety Officers, etc, the BHWG should be kept informed of changing personnel, and inform new personnel of their duties.

### **2.2.3 BHWG Function**

- a. Execute and update, as required, this BASH Plan.
- b. Monitor base-wide compliance with reference (c).
- c. Collect, compile, and review data on all wildlife hazards.
- d. Identify and recommend actions to reduce wildlife hazards.
- e. Recommend changes in operational procedures.
- f. Prepare informational programs and safety briefings for aircrews.

## **2.3 TASKS AND RESPONSIBILITIES**

### **2.3.1 COMMANDING OFFICER, NAS MERIDIAN**

- a. Publish operating instructions, conduct training, and provide resources as appropriate to support this BASH plan.
- b. Ensure representatives are assigned to the BHWG.
- c. Issue specific guidance for Airfield Support personnel on:

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(1) Procedures and restrictions to be followed under each of the Bird Hazard Conditions.

(2) Bird/Animal remains collection and preservation.

(3) Mandatory reporting of all known bird/animal strikes to the Wing Safety Officer as illustrated in Appendix (B), and to the Station Wildlife Biologist via Appendix (A).

d. Issue specific guidance to facility support personnel for reporting observed hazardous bird/animal activity to the Tower or Operations Duty Officer.

e. Issue specific guidance to BDDT personnel for the reporting and preservation of all bird/animal remains found on or near the runway environment, as illustrated in Appendix (B).

#### **2.3.2 COMMANDER, TRAINING AIR WING ONE**

a. Publish operating instructions and conduct training as appropriate to support this BASH plan.

b. Ensure representatives are assigned to the BHWG.

c. Issue specific guidance for units on:

(1) Procedures and restrictions to be followed under each of the Bird Watch Conditions.

(2) Bird/animal remains collection and preservation.

(3) Mandatory reporting of all bird/animal strikes to the Naval Safety Center in compliance with reference (d), and to the Station Wildlife Biologist via Appendix (A).

d. Issue specific guidance to maintenance support for reporting observed hazardous bird/animal activity to the Tower or Operations Duty Officer.

e. Issue specific guidance to maintenance personnel for reporting of all discovered bird/animal strikes on aircraft to the Wing Safety Officer as illustrated in Appendix (B) and for the preservation of bird/animal remains if discovered on an aircraft.

f. Brief bird/animal hazard awareness and this BASH program to all hosted aviation units.

#### **2.3.3 SQUADRON COMMANDING OFFICERS**

a. Conduct training as appropriate to support this plan and Wing directives.

b. Designate a representative (squadron ASO) to attend BHWG meetings.

c. Monitor, on a regular basis, aircrew mission briefings to ensure existing BASH information is briefed.

d. Ensure aircrew compliance with reference (c) mandatory reporting of all bird/animal strikes, damaging and non-damaging to the Naval Safety Center, and to the Station Wildlife Biologist as illustrated in Appendix (B).

e. Make seasonal bird/animal hazards a regular topic at flying safety meetings. Use movies, articles, and other information, as appropriate, to maintain awareness.

#### **2.3.4 NASMER AIR OPERATIONS OFFICER**

a. Co-chair BHWG meetings.

b. Assist Wing in development of in-flight avoidance procedures.

c. Serve as a liaison for all aviation activities at NAS Meridian concerning BASH issues.

d. Monitor the effectiveness of this BASH program.

e. Conduct periodic reviews of this BASH program.

f. Ensure this BASH program is a part of safety reviews conducted by the Naval Safety Center.

g. Establish a BASH awareness training program for all airfield management, ATC, and airfield facilities personnel.

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**2.3.5 TW-1 SAFETY OFFICER**

- a. Co-chair BHWG meetings.
- b. Develop in-flight avoidance procedures.
- c. Monitor the effectiveness of this BASH program.
- d. Conduct periodic reviews of this BASH program.
- e. Ensure this BASH program is a part of safety reviews conducted by the Naval Safety Center.
- f. Ensure ALL bird/animal strikes are reported per reference (d) and Appendix (B) to the Naval Safety Center and the Station Wildlife Biologist using the BASH INFORMATION FORM, Appendix (A).
- e. Make seasonal bird/animal hazards a regular topic at flying safety meetings. Use movies, articles, and other information, as appropriate, to maintain awareness.

**2.3.6 AIRFIELD MANAGER**

- a. Attend BHWG meetings
- b. Help develop procedures to reduce BASH hazards.
- c. Monitor grass height, drainage ditches, etc., and report problems to NAS Public Works.
- d. Develop a continuing information and education program to disseminate bird/animal hazard information.
- e. Report all bird/animal strikes as illustrated in Appendix (B).
- f. Remove bird/animal remains and deliver to Station Wildlife Biologist as illustrated in Appendix (B).

**2.3.7 AIR TRAFFIC CONTROL TOWER**

- a. At the discretion of the Tower Supervisor, declare BWC based on reported sightings or BWC criteria in Paragraphs 3.2 and 3.3.

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- b. Pass BWC information to Base Operations.
- c. Advise the Operations Duty Officer anytime Condition SEVERE is declared.
- d. Alert BDDT (Airfield Manager and Station Wildlife Biologist) of observed bird/animal hazards.
- e. Allow BDDT priority movement on the airfield to disperse birds/animals on or near active runways.
- f. Include BWC and bird/animal advisory information in ATIS broadcasts. Update frequently.
- g. Issue bird/animal advisory information, to include numbers and location, to aircraft over air traffic control frequencies per FAA Orders 7110.65 and 7210.3. Due to continuous flow of aircraft into pattern, ATC will be the primary continuity of bird activity reports.
- h. Establish a training program covering this instruction for all ATC personnel. This training will be documented in training jackets and reviewed annually.

#### 2.3.8 STATION WILDLIFE BIOLOGIST

- a. Conduct weekly/semi-weekly bird surveys on ponds adjacent to airfield to determine population trends. Report hazardous trends that may be developing to the BHWG for immediate action.
- b. Ensure that the Station hunt program maintains a wildlife population at an acceptable level to decrease BASH incidents.
- c. Strategically place wildlife food plots in remote locations on Station to draw animals away from the airfield area.
- d. Actively harass or "take" birds within the airfield area using pyrotechnics and live ammunition, as necessary.
- e. Obtain Federal and State permits required for depredation, salvage, collection, and possession of all protected species.
- f. Collect BASH INFORMATION FORM and bird/animal remains, if any, from Wing Safety Officer as illustrated in Appendix B. Identify remains, if possible, to detect developing trends.

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g. Maintain a database of reported BASH incidents on Station.

#### **2.3.9 MAINTENANCE SUPPORT DETACHMENT**

- a. Designate representative to attend BHWG meetings, when required.
- b. Ensure that contract Aircraft Maintenance personnel report all BASH incidents, as illustrated in Appendix (B).

#### **2.3.10 AIRCRAFT MAINTENANCE CONTRACTOR**

- a. Designate representative to attend BHWG meetings, when required.
- b. Follow requirements for reporting BASH incidents according to Appendix (B), using the BASH INFORMATION FORM, Appendix (A).

#### **2.3.11 ENVIRONMENTAL DEPARTMENT**

- a. Provide representative for BHWG, in addition to the Station Wildlife Biologist, when required.
- b. Recommend changes to the BHWG regarding environmental conditions and management practices to reduce BASH potential.
- c. Initiate necessary environmental documentation for airfield modifications as required by law.

#### **2.3.12 PUBLIC WORKS**

- a. Designate a representative to attend BHWG meetings, when required.
- b. Based upon the direction of the BHWG, maintain runway lateral and approach zones in a manner that is least attractive to birds/animals.
- c. Ensure training is conducted for all PW and base support personnel (sweepers, etc) covering responsibilities, actions, and techniques applied under this instruction.

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- d. Ensure all trash receptacles within the airfield boundary have covers which prevent bird/animal access and are emptied on a timely basis to prevent overflowing.
- e. Incorporate practices described in Chapter 3 into the base land management plan.

**2.3.13 NASMER WEAPONS DEPARTMENT**

- a. Provide representative for the BHWG, when required.
- b. Provide Ready Storage Lockers (RSL) for BASH Class 1.4 pyrotechnics.
- c. Provide weapons storage and firearms safety training for certain BDDT members.
- d. Develop and maintain Standard Operating Procedures (SOP) for BDDT members for the use and handling of pyrotechnics and firearms (NAVSEA Op 5 Vol. 1, Rev 6).

**2.3.14 NASMER SECURITY DEPARTMENT**

- a. Provide representative for BHWG, when required.
- b. Develop firearm check-in/out procedures.

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## CHAPTER 3

## CONCEPT OF OPERATIONS

**3.1 GENERAL.** The BASH program is an ongoing process which includes information dissemination and active/passive bird/animal control techniques. Of these, the most critical is the aircrew notification and warning system, which establishes procedures for the immediate exchange of information between ground agencies and aircrews concerning the existence and location of birds/animals that pose a hazard to flight safety. Additionally, a cautionary advisory is published in the DOD Flight Information Publication AP/1 under Supplementary Aerodrome Remarks.

**3.2 BIRD/ANIMAL WATCH CONDITIONS.** A Bird/Animal Watch Condition (BWC) is a hazard alert condition used to inform aircrew of bird/animal activity. The following standardized BWC system will be used at NAS Meridian/OLF Joe Williams to warn aircrew and support personnel of the current bird/animal threat to operations (Table 1). These codes are identical to the USAF codes in section B of the DOD FLIP (Flight Information Handbook). Bird/Animal locations should be given with the condition.

**3.2.1 BWC Severe (Red).** Generally defined as a heavy concentration of birds (more than 15 large or 30 small), or any animal, in a location that presents an immediate hazard to flight operations. Active dispersal techniques, as detailed in section 3.6, shall be initiated, and BDDT personnel shall remain on the airfield actively involved in dispersal techniques until this BWC is downgraded. Aircrews should apply applicable Go/No-Go criteria.

**3.2.2 BWC Moderate (Yellow).** Generally defined as a moderate concentration of birds (2-15 large or 15-30 small) in locations that represent a probable hazard to flight operations. Positive actions should be taken to disperse the birds/animals causing the hazard.

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**3.2.3 BWC Low (Green).** Generally defined as sparse bird activity (less than described in Moderate) in locations with a low probability of hazard.

**Table 1. NASMER BIRD/ANIMAL WATCH CONDITIONS**

BWC	COLOR CODE	BIRD ACTIVITY
SEVERE	(RED)	15+ large birds or 30+ small birds, or animal(s) in location hazardous to aircraft
MODERATE	(YELLOW)	2-15 large or 15-30 small birds, in location hazardous to aircraft
LOW	(GREEN)	Sparse bird activity

**Note:** The numerical numbers in Table 1 are just a guide. If, in the judgement of the observer, the number of birds is less than those indicated for a specific BWC, but a greater hazard is deemed to exist, a higher BWC may be declared. Example: Condition RED may be declared if a single vulture is observed on or immediately adjacent to the active runway.

**Note:** BWC descriptions will be reported using the modifiers (SEVERE) vice colors (RED). Either of these terms may be encountered at other airfields. While each base may have a slightly different definition for its hazard conditions, an associated level of danger can reasonably be ascertained from either reporting standard. Requests for clarification from ATC or airport management are recommended when confusion or doubt exists. Equally important is verbal repetition of bird/animal location with reference to runway/altitude.

**3.2.4 Bird Watch Alert.** A general warning that indicates when weather, time of day, and seasonal conditions make an influx of birds onto the airfield likely. Upon receipt of special conditions, the ODO will set the alert and the Tower will include a general statement in ATIS broadcasts.

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**3.2.5 BASH Window.** A known period of severe bird activity where restrictions to flight operations may be automatically imposed. BASH windows are based on historical bird survey data that show specific times when a hazard is known to exist. If BASH windows are set, aircraft operations during these time frames are not recommended. General guidance for aircraft operations is contained in Chapter 4.

**3.2.6 BASH Advisory.** A radio transmission from Air Traffic Control (ATC) or aircrew reporting specific bird/animal hazard information. These transmissions may be real time or disseminated via Automated Terminal Information Service (ATIS) broadcasts.

### **3.3 BIRD/ANIMAL WATCH CONDITION REPORTS**

**3.3.1 Bird/Animal Hazard Reporting.** The NAS Air Operations Officer, ODO, or designated representative ensures hazardous conditions are reported. Declaration of a BWC will be based on the following:

- a. Visual observation of bird/animal activity on or near the airfield by Tower, aircrew, or BDDT personnel.
- b. ATC or weather radar observation.
- c. Observations relayed to the Tower by any of the following personnel: weather observers, LSO, RDO, crash crews, security police, or transient line personnel.

#### **3.3.2 BASH Detection/Dispersal Team Reporting**

- a. The most accurate and real-time reporting of bird/animal hazard information is obtained from control Tower, aircrew, and BDDT personnel. At a minimum, reports will be made hourly for inclusion in tower ATIS broadcasts.
- b. If a BWC SEVERE has been declared, the condition will be updated, at a minimum, every five minutes until downgraded. During BWC SEVERE, the BDDT shall remain on the airfield and be actively involved in dispersal techniques until BWC SEVERE is downgraded.

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### 3.3.3 OLF Joe Williams Reporting

- a. Prior to scheduled FCLP operations, OLF personnel will make a BASH sweep of the runway and pass BWC reports to the Tower and LSO.
- b. OLF personnel will make periodic sweeps of the runway when breaks in flight operations allow, and report BWC to the Tower and LSO as necessary.
- c. When present, the LSO shall also report BWC to the Tower. Radio advisories of BWC to inbound and pattern aircraft shall be issued.

**3.3.4 BWC Declarations by Maintenance Personnel, Sweepers, Grass Mowers, and Others.** If a bird hazard exists, other personnel may notify the Tower or ODO by radio or telephone. Reports should include Identity of caller, Location, Altitude, Time of sighting, Approximate number of birds/animals, Type of birds/animals (if known), and Behavior of birds/animals (soaring, flying to or from a location, etc).

**3.3.5 Aircrew Reporting.** Aircrews should report significant activity as follows:

- a. Notify Tower and/or LSO.
- b. On a low-level route/range area, notify ATC and/or FSS enroute, squadron ODO, and NAS Meridian Base Operations after landing.

**3.4 DOWNGRADING BWC.** Once a BWC has been declared, it shall be downgraded commensurate with updated information. The Control Tower will make the final determination on BWC.

**3.5 BIRD/ANIMAL HAZARD COMMUNICATION.** Disseminating BWC is critical to BASH effectiveness. The agencies below will disseminate the BWC by the following means:

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### 3.5.1 Control Tower Communications

- a. Include BWC for NAS Meridian and OLF Joe Williams on ATIS Broadcasts.
- b. Notify inbound/departing aircraft of BWC if aircraft has received ATIS and the BWC has changed.
- c. Provide additional bird/animal advisories to aircrew per reference (e), including location and altitude.
- d. The Tower Supervisor will direct the BDDT to the location where the wildlife is posing a problem.
- e. Pass BWC to ODO/Flight Planning.
- f. For rapidly changing BWC place a statement on ATIS advising aircrews to contact Ground, Tower, or Final Controller for the latest BWC.
- g. Notify other area airfields via ATC direct lines of all sightings of large flocks or migratory movements.
- h. If BWC RED is declared for extended periods of time and will impact flying operations, Tower will notify Meridian Approach Control.

### 3.5.2 ODO Communications

- a. Notify the NASMER Air Operations Officer, TW-1 Operations, and Squadron Duty Officers when the BWC is changed to SEVERE.
- b. Notify NASMER Weather Office of BWC reports for inclusion on Weather Vision.
- c. Pass OLF Joe Williams BWC to NAS Meridian Tower for ATIS Broadcasts.

**3.5.3 NASMER Weather Office Communications.** NASMER Weather Office will post BWC in the remarks section of the Weather Vision display for NAS Meridian and OLF Joe Williams.

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#### **3.5.4 Flight Planning Communications**

- a. Flight Planning Office will, upon receiving a BWC update from the Tower, post the appropriate BWC in a visible location in Base Operations.
- b. Provide BASH information and warnings to local and transient aircrews.

#### **3.6 BIRD/ANIMAL DISPERSAL TEAM PROCEDURES**

- a. Prior to initiation of dispersal actions, the BDDT will coordinate the location and methods with the Tower and ensure that BWC RED has been declared.
- b. Active harassment techniques used to disperse or remove birds/animals from airfield and surrounding areas include horns, vehicle chase and pyrotechnics. Horns and vehicle chase should be used as a first effort.
- c. If the methods above do not work or the birds/animals become accustomed to the hazing, it may become necessary to remove several birds/animals via lethal methods, according to depredation permit guidelines, to reinforce the dispersal methods.
- d. When the target flock or problem birds/animals are dispersed, Tower shall be notified so the BWC can be lowered.

#### **3.7 BASH DISPERSAL EQUIPMENT**

**3.7.1 General.** There are a variety of methods for dispersing birds/animals using static, pyrotechnic and depredation equipment. Any or all of these may be used at NAS Meridian/OLF Joe Williams to control bird/animal locations. Certain members of the BDDT (and OLF personnel) shall be trained in use of this equipment.

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**3.7.2 Pyrotechnics.** Pyrotechnics are effective for dispersing most bird species and should also be used for coyotes, deer and other animals. Pyrotechnics are fired from modified pistols or 12-gauge shotguns, and may include a variety of devices similar to commercial fireworks, including bangers, whistlers, screamers, and salutes. These small but very loud firecrackers are shot from the pistol/shotgun into flocks or near individual animals to frighten them away upon discharge. Proper procedures for using pyrotechnics are as follows:

a. Liaison with the Tower prior to discharging pyrotechnics and coordinate the location. If aircraft operations are imminent, ensure the BWC is raised prior to initiating dispersal operations.

b. Inform Security prior to discharging pyrotechnics.

c. Use ear and eye protection, and gloves.

e. **DO NOT LOAD THE GUN IN THE VEHICLE!** Step outside, cock the gun, load the cap then load the explosive in the barrel of the gun.

f. Point the gun at 45 degrees or higher into the air, preferably toward the flock of birds. Turn AWAY from the gun and pull the trigger.

**3.7.3 Lethal Control (Depredation).** Occasional depredation of birds reinforces the other methods. Shooting one or two from a flock then following with a volley of pyrotechnics is generally a

very effective strategy for deterrence. Domestic pigeons, European starlings, and House sparrows may be removed without permit. All birds (except the three mentioned above) that are removed using lethal methods must be reported to the U.S. Fish and Wildlife Service under the Depredation permit process. Any mammals removed may require a state equivalent permit.

**3.7.4 Record Keeping.** BDDT will maintain activity logs to document all bird/animal dispersal operations, including species, location, methods, and number dispersed. These will be forwarded on a weekly basis to the Wildlife Biologist. Data will be summarized at BHWG, Aviation Safety, and FOD Council Meetings.

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**3.8 CRASH CREW PROCEDURES.** If fire-fighting crews detect the presence of birds/animals within the airfield boundary, they will pass the information to other BDDT members, or crash vehicles may be used to disperse birds/animals.

**3.9 LAND MANAGEMENT PROCEDURES.** One of the most effective and permanent methods of discouraging all wildlife from using the airfield is by removing the habitat features that attract the animals. Before implementing habitat modifications, however, careful consideration should be given to secondary effects. Decreasing the attractiveness for one species may increase the attractiveness to another, more potentially-hazardous species. In addition, wildlife that are displaced from one area due to habitat alteration or other dispersal techniques, may create a much more hazardous situation (i.e. geese that are dispersed from the golf course may move to the airfield areas).

#### **3.9.1 Managing Grass Height**

a. Mow to maintain a grass height between 7"-14". Grass kept within these heights discourages flocking species to land due to reduced visibility on the ground, which disrupts interflock communication and their feeling of security. Grass heights in excess of 14" attract rodents, which attract predators (coyotes, bobcats, foxes, hawks, owls, etc) to the airfield, substantially

increasing the possibility of a BASH incident. Grass heights below 7" are more attractive to birds that feed on the easily-accessible worms and insects. Begin mowing adjacent to runways and finish in the outer-most grassed areas of the clear zone. This will keep insects and wildlife farther away from aircraft take-off and landing areas.

b. Mow grass before it produces a seed head. This discourages seed eating birds, especially turkeys, from coming in close proximity to runways.

c. Use Chemical Plant Growth Inhibitors to stunt seed head production of grasses. This reduces the need for mowing, and decreases the number of wildlife attracted to the runway.

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**3.9.2 Controlling Broad-leafed Weeds.** Keep broad-leafed weeds to a minimum on the airfield by applying herbicides as necessary for control. Broad-leafed weeds attract a variety of wildlife by producing seeds or berries, and may limit grass growth. Obtain assistance in herbicide selection for weed control, appropriate grass seed selection, fertilization, and erosion control from the Wildlife Biologist, Station Pest Control, U.S. Natural Resources Conservation Service, or the Agricultural Extension Service.

**3.9.3 Planting Bare Areas.** Eliminate bare areas on the airfield through fertilization and planting appropriate grass species to maintain ground cover between 7"-14".

**3.9.4 Fertilizing.** Selectively stimulate grass growth to promote a uniform cover of 7"-14" in height. Irrigation may be required to support turf growth.

**3.9.5 Removing Edge Effect.** Maintain the airfield as uniformly as possible to reduce the transition zone between two distinct habitat types (e.g., trees, shrubs, grasses).

**3.9.6 Leveling of Airfield.** Level or fill high or low spots to reduce attractiveness to birds and prevent standing water.

**3.9.7 Removing Dead Vegetation.** Immediately remove dead vegetation, such as brush piles, and the cover it affords.

**3.9.8 Removing Animal Carcasses from the Airfield.** Promptly remove carcasses to avoid attracting vultures, coyotes, etc. that may feed on it. Forward remains which may have been caused by collision with an aircraft to the Station Wildlife Biologist for identification and disposal.

**3.9.9 Pest Control.** Invertebrates and rodents are key food sources for many wildlife species. Periodically survey and reduce these pests, when required, with pesticides and traps. Only EPA approved pesticides are authorized, and they must be used strictly according to label instructions.

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**3.9.10 Maintaining Drainage Ditches.** Regularly inspect ditches to keep them clear. Maintain ditch sides as steeply as possible (minimum slope ratio of 5:1) to discourage wading birds and emergent vegetation. Improve drainage to inhibit ponds or puddles. If necessary, cover ditches with netting/fencing.

**3.9.11 Employing Erosion Control Vegetation.** In areas where erosion is a problem, re-vegetate with native plants whose plant parts (stems, leaves, seeds, etc) do not attract wildlife.

**3.9.12 Eliminate Roosting and Breeding Sites.** Remove roosting and breeding trees in close proximity to airfield.

**3.9.13 Bird Proofing Buildings and Hangars.** Exclusion of birds from buildings and hangars is required to ensure a clean and safe work atmosphere. Denying access by screening windows, closing doors, and blocking entry holes is most effective. However, excluding birds from a structure they currently utilize will often displace them to an adjacent structure. If exclusion doesn't work, problem birds should be destroyed (in accordance with the depredation permit). Use of poisons or toxic bait is not recommended due to the public panic that may occur when birds that have died as the result of poisoning are found throughout the base. Instead, consider:

a. Pellet guns. A short term solution only. Proper safety equipment and skilled personnel are required.

b. Netting. Install under superstructure to exclude birds from roosting areas.

c. Trapping and removal. Use a large cage with food and water to trap birds. Permits are required, and will be coordinated through the Environmental Department and the USFWS.

d. Design features. If designing a new hangar, consider locating supports on the exterior.

e. Door coverings. Use netting or plastic strips suspended over the doors to exclude birds. Ensure no tears or holes are present that allow birds access to the hangar.

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f. Bird spikes. Use in limited areas such as ledges and overhangs, or small places where birds cannot be allowed. May be too expensive for large areas.

g. Night harassment. Use high-pressure air or water to make hangars an undesirable roosting site. Persistence is the key.

**3.10 MANAGING OFF-BASE LAND USE.** The Navy cannot control off-base land use. However, when a proposed land use may increase or alter bird/animal populations and habits (i.e., landfills, new crops, etc.), the Navy concerns should be addressed at public hearings and zoning meetings. The Environmental Department, the NAS Meridian Community Liaison Office, and Public Works shall monitor off-base land use and report findings to the BHWG.

**3.11 AGRICULTURAL OUTLEASES.** Currently, there is no agricultural out leasing on Station. Public Works, and the Environmental Department will consider the effects of future out lease contracts on the BASH Program. No agricultural leases should be allowed within the airfield boundaries. Agricultural leases that will attract birds away from the airfield boundaries may be considered, much the same as wildlife food plots are utilized to attract animals AWAY from the air operations area.

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## CHAPTER 4

# AIRCREW PROCEDURES

### 4.1 PLANNING THE FLIGHT

- a. Check FLIP AP/1 (for military/co-use fields) and the FAA Airport/Facility Directory (for civilian fields), as well as NOTAMs for information about permanent and seasonal bird problems at both departure and destination airports and on route of flight. Consider contacting the Airfield Manager or control tower supervisor for the latest information.
- b. Check Weather Vision, rolling local NOTAMs and flight planning displays for BWC and BASH Windows in effect.
- c. Consult with the Squadron Safety Officer or Squadron Duty Officer for additional BASH information.
- d. Brief all crewmembers on potential bird/animal problems and a strong lookout doctrine.
- e. Discuss emergency procedures before departure, including aborts following a strike and engine failure.
- f. Discuss procedures for cockpit lost communications induced by a birdstrike, including change of aircraft control.
- g. Consider using combination sunglasses and visor during daylight hours and stress the use of a clear visor at night during all phases of flight.

### 4.2 AT THE AERODROME

- a. Prior to taxi, listen to ATIS for current BWC. Ask Tower for specific bird/animal locations or additional information.
- b. When taxiing, watch for birds/animals on the airport. Flocking birds may be partially hidden in grass areas. Look for vultures, hawks, and other raptors circling overhead, perched in trees, tall bushes and on airfield structures. Report all bird/animal sightings to the Tower.

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c. Birds on the ground face into the wind and may not see or hear you coming. They may take flight just prior to you reaching them.

d. If birds/animals are observed, notify the Tower and request that BASH personnel disperse them before takeoff if they are in a location that presents a likely danger to your or another aircraft.

e. Increase interval on section departures to 10 seconds or longer during condition Yellow. The lead aircraft in flight can cause birds to lift and circle behind causing a strike to the wingman.

f. Use landing lights during takeoff, climb, descent, approach and landing. Although there is no conclusive evidence that birds see and avoid aircraft lights, they will make the aircraft more visible.

g. Travel as much as possible above the bird layer. More than 50% of all strikes occur below 100' and 88% of all strikes occur below 2000 feet. In practice, this means to climb above 100 feet AGL as rapidly and safely as possible and continue to pattern altitude or above 2000 feet if on departure.

h. If you see birds ahead, attempt to pass above them, as birds usually break away downward when threatened.

i. If dense bird concentrations are expected, avoid excessive speed during descent and approach. Reducing speed can significantly reduce impact energy. The force of impact is roughly proportional to the square of the aircraft speed.

j. If flocks are encountered during approach, go around for a second attempt; the approach area may then be clear.

k. When able, descend and climb-out in a straight line. This makes it easier for the birds to anticipate your flight path and thus get out of your way.

**4.3 LOW-LEVEL ROUTES.** All flights should avoid those segments that are under BWC SEVERE (RED) based on migration patterns or Weather Radar reports. Additional low-level hazard guidance may be obtained from Bird Hazard Avoidance data provided by the United States Air Force BASH Team via the Aviation Hazard Advisory System website, <http://www.usahas.com>. Each squadron safety office should maintain a copy of this data. The following are some general operational recommendations to reduce threats from bird strikes, mission permitting:

- a. When practical, reduce low-level flight time. Ninety-nine percent of all bird strikes occur below 2300 feet AGL.
- b. When practical, reduce formation flying below 2300 feet AGL. The first aircraft can redirect birds into trailing aircraft.
- c. Reduced airspeeds will allow birds to be seen sooner and lessen damage in event of a strike.
- d. Avoid areas with known raptor concentrations during summer, especially during 1000-1700 timeframe due to increased thermals.

#### **4.4 ACTIONS FOLLOWING A BIRD/ANIMAL STRIKE**

- a. If a bird/animal strike occurs during takeoff or planned touch and go, the pilot in command/instructor should assess the option of aborting if enough runway remains to stop. Bird strike damage cannot be accurately assessed in flight and may result in a complex airborne emergency. Only maintenance personnel on the ground can make accurate damage assessments. Several bird strikes that appeared to cause minor damage have proven to be much more substantial and, had aircrews continued the mission, a serious emergency could have resulted. Structural damage, such as a dent in the wing, has led to fuel and hydraulic system failures. Birds lodged in landing gear have prevented gear extension.
- b. If airborne, follow NATOPS procedures for engine malfunctions or structural damage.
- c. Aircrew experiencing en route bird strikes should abort the mission when possible.

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d. After landing, if you suspect or have had a strike, check the aircraft for damage. Any remains shall be collected by maintenance personnel and forwarded to the Station Wildlife Biologist.

**4.5 BIRD/ANIMAL STRIKE REPORTING (SEE APPENDIX (B)).** Post flight follow-up and reporting of bird strikes are an essential and important part of the BASH program. After a strike:

a. If airborne, inform Control Tower and complete emergency landing and arrestment, as required. Notify Tower even in the case of a possible strike. Notify the ODO via squadron base as soon as practical, as aircraft damage may require post-flight mishap procedures.

b. After post-flight inspection, collect any remains (however slight). If the aircrew was aware of the strike, then they shall complete a NASMER BASH INFORMATION FORM [Appendix (A)] and deliver to the Wing Aviation Safety Officer. If the aircrew was unaware of the BASH, and it was discovered during turnaround inspection by maintenance personnel, then maintenance shall complete a NASMER BASH INFORMATION FORM and deliver it to the Wing Safety Officer.

c. **REPORT STRIKES EVEN IF THERE IS NO DAMAGE TO AIRCRAFT AND NO BIRD REMAINS ARE FOUND ON THE AIRCRAFT.** BASH Team and airfield facilities personnel may be able to retrieve the bird on the airfield. Complete a NASMER BASH INFORMATION FORM even if only a blood smear is found.

d. The Wing Aviation Safety Officer shall ensure that the necessary local "Bird/Animal Strike Hazard Report" via the Web-Enabled Safety System (WESS) is completed. Both damaging and non-damaging strikes are required to be reported. Forward a copy of the NASMER BASH INFORMATION FORM and any remains that were collected to the Station Biologist via the Wing Safety Officer.

**4.6 BIRD IDENTIFICATION.** It is necessary to know which species are causing bird strike problems so appropriate measures can be taken. Identification of bird remains is essential. If bird remains are found on the aircraft, the following preservation procedures shall be followed:

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a. Remove remains from aircraft, and place in a zip-lock plastic bag. It does not take much (remains) to identify the bird species. Even a small part, feather or bloody smear with down can be identified through microscopic techniques. Call the Wildlife Biologist (679-3539) for pickup of remains along with the completed NASMER BASH INFORMATION FORM. If the biologist is unable to procure the remains immediately, place them in a cold area or refrigerator until pickup.

#### **4.7 OPERATIONAL LIMITS AND GO/NO-GO CRITERIA**

**4.7.1 BWC SEVERE (Red).** BASH dispersal efforts will be initiated immediately after Condition SEVERE is set. The Control Tower will update delay information in five minute intervals to allow aircrew ample time to calculate fuel/divert/ mission planning. In lieu of specific COMTRAWING ONE Instruction, the following aircrew actions are recommended for BWC SEVERE:

a. Departures: Departing aircraft should hold on deck until BDDT actions or natural movements have lowered the hazard condition. Wind and weather permitting, request an off-duty runway from ATC if that runway hazard/BWC is lower.

b. Arrivals: Fuel and weather permitting, inbound aircraft should hold until BDDT actions or natural movements have lowered the hazard condition, or proceed to an alternate. Wind and weather permitting, request an off-duty runway from ATC if that runway hazard/BWC is lower.

**4.7.2 BWC MODERATE (Yellow).** In lieu of specific COMTRAWING ONE Instruction, the following aircrew actions are recommended for BWC MODERATE:

a. Departures: Pilot in Command should consider delaying departure until BASH condition is changed to GREEN. If decision is made to depart, consideration shall be given to greater than 10 second interval between departing aircraft.

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b. Arrivals: Pilot in Command should consider location of BASH threat prior to determining type of approach and/or altitude of break. Student or IUT syllabus hops may continue with normal landings. Non-syllabus hops (flight leads, FCFs, student front seat landings, etc) should consider departing the tower pattern or executing a full stop landing as soon as safely practical.

4.7.3. **BWC LOW (Green)**. Normal flight operations with no restrictions.

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## CHAPTER 5

## LOCAL BIRD AND MAMMAL SPECIES

**5.1 GENERAL.** There are numerous wildlife species found within the airfield environment. Below is a list of animals and a brief description of how they can be controlled or avoided. Each control measure will require action by one or more tasked organizations as described in Chapter 2. It is very important to know which wildlife species or airfield attractants are present before control techniques can be effectively applied.

**5.2 NAS MERIDIAN/OLF JOE WILLIAMS ANIMAL HAZARDS****5.2.1 AVIAN SPECIES**

**5.2.1.1 Waterfowl (Ducks and Geese).** A distinction must be made between resident and migrating populations. Resident waterfowl are attracted to an area to breed or feed. Ponds, lakes, drainage ditches, etc., may attract these birds, particularly if these areas contain emergent or submerged vegetation for feeding, nesting, or shelter. Steepening ditch and pond banks and removing vegetation will reduce waterfowl numbers. When possible, drainage of water sources should be accomplished. Grain fields will also attract waterfowl in large numbers and should be eliminated. Use of pyrotechnics and live ammunition, along with continued waterfowl hunting, should also be used for control. Resident birds are most active at dawn and dusk, moving at low altitudes to and from feeding areas. Aircrew should avoid flying near wildlife refuges, or any ponds, lakes or rivers with known waterfowl concentrations during these times. Migrating waterfowl are particularly dangerous to flight safety from September through February due to the large numbers and generally higher altitude of the birds. Large flocks of waterfowl travel along traditional flyways to their breeding and wintering grounds during spring and fall. Flocks may stop along the route awaiting favorable weather conditions to continue. Migrating birds are most active from sunset through midnight, with numbers decreasing in the early morning hours. Wintering concentration areas should be avoided.

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**5.2.1.2 Loon, Grebes, Cormorants, Mergansers.** These are fish eating birds, and can be occasionally found on Station ponds. Removal of the food source is not always possible, though pyrotechnics can be used to effectively frighten the birds from the area. Avoid flying at sunrise and sunset if large flocks (very unusual in this area) are flying to and from feeding areas.

**5.2.1.3 Long-legged Waders (Herons and Egrets).** These species are attracted to water where they feed on fish, amphibians, reptiles, and arthropods. Control is best accomplished by eliminating the water/food sources, steepening the sides of ditches and ponds, and removing emergent vegetative cover. Pyrotechnics should be used to disperse any birds that remain after habitat modification. Depredation should be used if pyrotechnics fail.

**5.2.1.4 Raptors (Hawks, Falcons, Kites, Eagles, Vultures).** These birds can be particularly hazardous to aircraft because of their size and widespread distribution. Raptors (particularly vultures) use thermals to their advantage to search for prey. These birds become active during mid-morning and remain aloft until late afternoon. Avoid areas with thermal-generating terrain such as ridgelines, rolling hills, water. Landfills are particularly attractive to soaring vultures. In the fall, raptors migrate by day to areas of heavy winter concentrations in the southern states. These birds can be controlled by removing dead animals, dead trees, and other perching sites on the airfield. During hunting seasons, do not allow gutting of deer or other animals in the field to prevent attracting vultures to the airfield. Pyrotechnics may be used to frighten raptors from the airfield.

**5.2.1.5 Quail.** This game bird is most effectively controlled through proper grass-height management. Do not allow grass to exceed 17 inches and eliminate all weeds and brush patches, particularly if the plants are seed producing. Pyrotechnics and live ammunition or periodic hunts will keep them dispersed. Taking these birds outside the normal hunting season requires special permits from the U.S. Fish and Wildlife Service and the state wildlife agency.

**5.2.1.6 Killdeer.** The most significant hazard from these birds occurs when large numbers flock in tight groups. They prefer nesting on areas of small, gravel-sized rocks, such as around runways and access roads. To control these birds, proper grass

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height management must be observed, and water in puddles should be eliminated. They are quite adept at avoiding aircraft. Pyrotechnics and bioacoustics can be used if necessary.

**5.2.1.7 Owls.** Most owls are nocturnal and attracted to rodents as a food source. Rodent control may be necessary on the airfield, mainly through grass-height management. Remove unnecessary fence posts and dead trees. Avoid flying over landfills at night to reduce hazards from owls.

**5.2.1.8 Goatsuckers (Nighthawks), Whippoorwills, etc.** These birds are particularly active at sunset when insects are abundant. Insect control around the airfield will help control their activity. Aircrew should avoid low level flight near lakes, streams, or other areas with large insect populations.

**5.2.1.9 Woodpeckers.** Woodpecker strikes are extremely rare. These birds are most common in forested areas. On the airfield, elimination of trees should eliminate strikes with these birds. Migratory birds may be encountered, but are rarely struck.

**5.2.1.10 Flycatchers.** These birds feed on insects, and strikes are infrequent. Control insects by spraying, and removing perch sites such as fence posts, tree limbs, bushes, etc.

**5.2.1.11 Horned Larks.** These birds are attracted to bare spots, such as along runways, where they eat weed seeds and insects. The best control is thick, uniform grass with no bare spots. Pyrotechnics can be used, but they tend to fly short distances and land. Persistence is the key.

**5.2.1.12 Swallows and Swifts.** These birds eat insects in flight and are commonly found above airfields. Insect control will reduce their numbers. Discourage nesting by removing mud nests prior to egg laying. Nest removal shall be performed by the Wildlife Biologist, and is covered by a permit with the USFWS.

**5.2.1.13 Crows and Ravens.** These omnivorous birds are common in open areas and landfills. They may occur in large flocks, particularly at sunset, as they return to roost sites. Proper

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grass-height management will reduce population numbers. Remove any known roost sites or roost trees. Landfills must be operated in a manner to discourage them. Pyrotechnics and depredation can be used if they occur around the field.

**5.2.1.14 Blackbirds, Grackles, Cowbirds, and Starlings.** These birds can be particularly hazardous because they frequently occur in huge flocks. Blackbirds and starlings are attracted to flat, open areas to feed, rest, or stage/pre-roost. Maintenance of grass height between 7"-14" is imperative to reduce their numbers. They respond well to an intense frightening program using bioacoustics, pyrotechnics, and depredation. Starlings are not federally protected and may be removed without permits. Permits are required for other species. Occasional shooting of birds will reinforce other frightening techniques. Trapping may be considered with U.S. Fish and Wildlife Service and USDA Wildlife Service assistance. Aircrew should avoid flying near known blackbird and starling roosts, especially at sunrise and sunset and during spring and fall migration.

**5.2.1.15 Meadowlarks.** These birds occur on nearly every airfield and are attracted to grasslands and low weeds. Eliminate broad-leaved weeds and maintain grass height at 7"-14". Eliminate suitable perching sites. Pyrotechnics can be used, but they usually only fly a short distance before settling down again. Persistence is the key to control.

**5.2.1.16 House Sparrows.** These birds are not frequently struck by aircraft, but are common pests around structures. House sparrows often nest in hangars and dense shrubs and trees. These birds are not protected by law and may be destroyed without permit. Frightening techniques are usually ineffective.

**5.2.1.17 Eastern Wild Turkeys.** These large game birds are a distinct threat to aircraft due to their size and population on Station. They are attracted to clovers and the seed heads of grasses located in close proximity to the runways. Maintain grass height at 7"-14" and prevent seed head production through the use of Chemical Plant Growth Inhibitors. Maintain cooperation with the Mississippi Department of Wildlife, Fisheries, and Parks to continue an "either sex, any age" fall turkey season on Station in areas adjacent to the runways.

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**5.2.2 MAMMALIAN SPECIES.** While concern is mostly centered on birds, several mammals also pose threats to flight operations and must be considered. Close coordination with the station Integrated Natural Resources Management Plan is necessary to reduce this type of hazard. One option being considered to reduce mammal related aviation incidents will be to construct a 10 feet high fence with a concrete base and 3-strand outward facing barbwire around the airfield. This fence will restrict movement of deer and smaller mammals from the runway and airport environment.

**5.2.2.1 Predators (Coyotes, Foxes, and Bobcats).** These animals are attracted to airfields by rodents, rabbits and other food sources. Dens may be found in banks, culverts, or other suitable areas. Rodent control will reduce the numbers of these animals. Pyrotechnics can be used, and occasional shooting and trapping of individual animals or recurrent pests will also reduce the hazard. Permits are required.

**5.2.2.2 Rabbits.** Although no direct hazards to aircraft, these animals often attract raptors and predators that can cause damage to aircraft. Proper grass management is imperative. Rabbit hunting in the clear zones when flight operations are curtailed will also reduce their population.

**5.2.2.3 Rodents.** These animals attract raptors. Control by maintaining a uniform turf at the proper heights. Traps and rodenticides may be used in some cases.

**5.2.2.4 Deer.** This is the mammal that poses the greatest threat to aircraft due to its size and preferred nocturnal activities. The best techniques to decrease BASH incidents with deer are:

a. Maintaining an active deer-hunting program on Station (including harassment techniques such as "dog drives" in the clear zones and woods adjacent to the runways when the airfield is closed to prevent deer from becoming "settled" there)

b. Procuring extra doe permits for hunters that reach their doe limit for the year,

c. Allow no gutting of deer in the field to prevent attracting vultures. Have a centralized location far removed from the airfield for cleaning deer.

- d. Preserving hunter access to the entire base,
- e. Strategically planting wildlife food plots in remote locations on Station to attract deer away from the airfield area, and
- f. Replacing plants around the airfield that are preferred by deer with unpalatable ones.

**5.2.2.5 Bats.** These mammals are active in late evening and night. NAS Meridian has a few BASH incidents with bats each year. However, none have resulted in damage to aircraft. Some bats inhabit NASMER forests, while others inhabit the large-chambered culverts that run under the north and south runways that drain Big Reed and Ponta Creeks, respectively. It is important to note that the bats occupying the culverts have not been identified as species involved in BASH incidents to date.

**5.2.2.6 Beavers.** Although these animals don't affect aircraft directly, their dam-building skills, habitat modifications, and resultant increase in wetlands around the runways can have devastating effects due to the increased number of migratory waterfowl attracted to their newly-established habitat. For these reasons, beaver activity around the airfield should be closely monitored and curtailed by cutting dams and trapping the beavers using Conibear 330 traps. Trapping should only be performed by Station Natural Resources personnel or their agents.

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APPENDIX A

**NAS MERIDIAN BASH INFORMATION FORM**

FORWARD TO WING/SQUADRON SAFETY OFFICE AND CALL NASMER BIOLOGIST (3539)

- 1) WHEN WAS BASH FIRST DISCOVERED:    PRE-FLIGHT    IN-FLIGHT    POST-FLIGHT
- 2) DATE / TIME OF BASH OCCURRENCE: \_\_\_\_\_  
IF TIME OF BASH IS UNKNOWN, A/C TAKEOFF AND LAND TIMES: \_\_\_\_\_/\_\_\_\_\_
- 3) AIRCRAFT SIDE NUMBER: \_\_\_\_\_ T-45    OTHER: \_\_\_\_\_
- 4) TYPE OF FLIGHT (FAM, FORM, ETC): \_\_\_\_\_
- 5) PILOT(S) NAME AND CONTACT NUMBER: \_\_\_\_\_  
VT-7    VT-9    OTHER \_\_\_\_\_
- 6) WHAT PHASE OF FLIGHT DID BASH OCCUR:    UNKNOWN    TAKEOFF    LANDING  
PUBLISHED APPROACH    LOW LEVEL ROUTE    (ROUTE NUMBER: \_\_\_\_\_)
- 7) CONFIGURATION OF AIRCRAFT AT TIME OF BASH:    CLEAN    DIRTY
- 8) IF BASH OCCURRED IN PATTERN, CIRCLE RUNWAY: 1L 1R 19L 19R 28  
10  
IF BRAVO FIELD:    13    31    OTHER AIRFIELD: \_\_\_\_\_
- 9) ALTITUDE AT TIME OF BASH: \_\_\_\_\_ AGL OR MSL
- 10) AIRSPEED AT TIME OF BASH: \_\_\_\_\_ KIAS
- 11) WHAT PART OF AIRCRAFT WAS STRUCK: \_\_\_\_\_
- 12) IF BASH OCCURRED IN-FLIGHT, WHAT ACTIONS WERE TAKEN: (ABORT, CONTINUE,  
DECLARED EMERGENCY, TYPE APPROACH, PA, ARRESTED LANDING, ETC.)  
\_\_\_\_\_
- 13) REMAINS COLLECTED:    YES    NO
- 14) WHERE ARE REMAINS LOCATED: \_\_\_\_\_
- 15) DESCRIPTION AND NUMBER OF BIRDS/ANIMALS OBSERVED AT TIME OF STRIKE:  
\_\_\_\_\_
- 16) AIRCRAFT VISIBLY DAMAGED:    YES    NO
- 17) IF YES, DAMAGE COST (IF KNOWN): \_\_\_\_\_

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APPENDIX B

BASH Reporting Flow Chart

