LEVEL II

AFESC TM - 4 - 79

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AN EVALUATION OF THE BIRD/ AIRCRAFT STRIKE HAZARD AT CHIEVRES AIR BASE, BELGIUM

JAMES S. KENT, 1LT, USAF
JOAN SCOTT, WILDLIFE BIOLOGIST
WILLIAM H. NIEMEIER, SRA, USAF

AUGUST, 1979

UNITED STATES AIR FORCE ENGINEERING AND SERVICES

AFESC

DIRECTORATE OF ENVIRONMENTAL PLANNING
AIR FORCE ENGINEERING AND SERVICES CENTER
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Chievres Air Base, Belgium, was surveyed 4-8 December 1978 by the Air Force Engineering and Services Center's Bird/Aircraft Strike Hazard Team. During the survey, operational and environmental factors which combine to create bird strike hazards were observed. Specific recommendations based on observations are provided to reduce the bird strike hazard.

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PREFACE

This study was performed under Program Element 91212F, AFESC JON ØØDEVN 11. Inclusive dates of the study were 4 December through 8 December 1978.

This report has been reviewed by the Information Office (OI) and is releasable to the National Technical Information Service (NTIS). At NTIS it will be available to the general public, including foreign nations.

This memorandum has been reviewed and is approved for publication.

Jeffrey J. Short

JEFFREY J. SHORT, Capt, USAF
BASH Team Leader

William M. Kornman

WILLIAM M. KORNMAN
Chief, Natural Resources Division

Sterling E. Schultz

STERLING E. SCHULTZ, Col, USAF
Director, Environmental Planning

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SECTION I

INTRODUCTION

The Bird/Aircraft Strike Hazard (BASH) Team visited Chievres Air Base from 4 to 8 December 1978. The trip was requested by HQ USAFE to evaluate bird problems at the base. Chievres AB is located eight kilometers (five miles) from Mons, Belgium. The base's mission supports logistics requirements of Supreme Headquarters of Allied Powers in Europe (SHAPE). In 1978 aircraft from the United States, United Kingdom, Canada, France, Belgium, Turkey, Netherlands, Germany, Italy, Norway and Denmark used the base. Chievres AB averaged 186 aircraft movements per month in 1978. The US Air Force is responsible for operation and maintenance of the airfield and is the primary user (98 aircraft movements per month). Birds create a severe flying safety hazard in the airdrome environment. Lapwings (*Vanellus vanellus*), Woodpigeons (*Columba palumbus*), Feral Pigeons (*Columba livia*), Pheasants (*Phasianus colchicus*), Red-legged Partridge (*Alectoris rufa*) and Partridge (*Perdix perdix*) live on base and were observed near the runway and taxiways. Few bird strikes are officially reported, but the airfield manager indicated a much higher bird strike rate. Dead birds are found daily on the airfield during runway checks.

Operations at Chievres AB are conducted in a politically sensitive environment. The airfield is leased from the Belgian government and was operated by German forces in World War II. Many of the buildings and much of the equipment on the base date from that period. A hunting lodge for high ranking Belgian officials is maintained on the base, and the airfield is part of the lodge's hunting preserve. The agricultural area that surrounds the base is intensively managed for corn and sugar beet production. The Belgian Farms Union exerts strong political pressure to increase farming activity on the base. Farmers have access to the runway and taxiways. Airfield Management presently has no control of these activities.

This report outlines a program for bird hazard reduction which is effective and legal on US Air Force bases. Before any recommendations dealing with active bird control or habitat modifications are implemented, careful coordination with the Judge Advocate is essential. Consultation with the US Embassy in Belgium will also be helpful. Documentation of the severity of the bird strike problem is necessary to provide the rationale behind a comprehensive bird hazard reduction program. Both US and Belgian officials must be convinced that a safety hazard exists before the program will receive the support it requires.

SECTION II

RECOMMENDATIONS FOR BIRD HAZARD REDUCTION

A. Bird Hazard Reduction Program.

AFR 127-15 requires bases to address bird hazards on their airfields. A bird hazard reduction plan adds continuity to the program and provides the means to document the severity of the bird/aircraft strike hazard at Chievres AB. The Detachment Commander, Safety Officer, Chief of Operations and Training, and the Airfield Manager should form a Bird Hazard Working Group (BHWG). The Group's purpose would be to draft the bird hazard reduction plan and meet on a regular basis to address current airfield bird problems. The BHWG would interact with farmer groups, government officials and SHAPE and USAFE personnel when discussing farming practices, operational changes and active control measures necessary to discourage birds from congregating in the airdrome.

The Bird Hazard Reduction Plan should define local bird problems and identify possible changes in procedures to avoid birds. The plan should provide a format for reporting bird strikes for all nations that use the airfield, describe the severity of the bird problem, list equipment for bird control, document periods of the most intense bird activity, and contain legal opinions regarding agricultural practices and liability for bird strikes. The plan could be a supplement to AFR 127-15 or an Operating Instruction. A sample plan that has been useful at another base is provided in this report (Appendix A).

B. Bird Hazard Documentation.

Complicated coordination involved in changing management of the airdrome requires comprehensive documentation of the severity of the bird problem to draw attention to the hazard. If a severe bird strike hazard can be demonstrated, actions necessary to reduce bird populations are easier to justify. Personnel at USAFE and SHAPE and Belgian officials must be convinced of the hazard before active control and habitat modifications can be used to reduce bird populations.

The large number of nations that use the airfield complicates documentation of bird strikes. The Bird Hazard Reduction Plan should outline a procedure and format for recording bird strikes. When dead birds are discovered on the airfield following aircraft departures, the aircraft should be contacted and questioned about the possible bird strike. After the aircraft reaches its destination, Base Operations or Safety

personnel should request that ground crews provide information about damage that may have been done by the birds.

The number of dead birds found on the airfield is a good indicator of the severity of the bird hazard. A dead bird does not automatically mean a bird strike has occurred. Birds are often killed by aircraft vortices that force birds into the ground. The dead birds indicate "close calls" and can help document the hazard. These dead birds should be recorded photographically and in a bird strike log. Keeping monthly and yearly running counts of dead birds in a visible place such as Base Operations will help draw attention to the problem and make pilots more aware of the hazards.

C. Agricultural Practices.

Many Belgian farming practices near Chievres AB create flying safety hazards. Farmers are currently permitted to cultivate within 30 meters (90 feet) of active taxiways and the runway. They plow closer than the permitted distance and must often be reminded of the legal restrictions. The airfield lease prohibits raising crops that may attract birds and create safety hazards near the airfield; however, crops such as corn are raised adjacent to the airfield. Taxiways are used to store silage, sugar beets and agricultural by-products. Farmers cross the runway at various points to reach stored crops. Sugar beets are often dropped on the runway and create a FOD problem. The stored crops attract numerous birds. Pheasants, Partridge and Woodpigeons were observed near both sugar beet and silage piles on the airfield.

Several changes regarding agricultural practices will reduce bird attractants. These changes must be coordinated through Belgian officials to be implemented. Crops should not be stored on the airfield. These provide an abundant food source for birds. When crop storage is stopped on the airfield, farmers no longer need to cross the runway, and sugar beets will be eliminated as a FOD problem. Belgian officials should be asked to help enforce distance limits and crop restrictions on farming near the airfield. The Judge Advocate should also be asked to determine if farmers can be held liable for bird strikes because bird attracting crops are grown near the airfield in violation of the lease. Farmers must be informed of the potential liabilities so they can take corrective action.

D. Active Control.

Active bird control is not currently practiced at Chievres AB. A conflict arises between scaring birds and maintaining the Belgian hunting preserve. A local game warden lives on

the base, and his help should be sought to reduce the bird strike threats. An active control program will be easier to initiate and justify when the severity of the bird strike problem has been demonstrated. A logistics problem for receiving and storing pyrotechnics exists, but this problem can be resolved internally.

Active control of birds provides short-term, immediate protection for departing aircraft. At Chievres AB active control would be the most effective method for reducing bird strike potentials and involves pyrotechnics, bioacoustics and depredation. Equipment authorized for bird control is available through Air Force supply channels and is listed in this report (Appendix B). Birds should be cleared from the airdrome prior to aircraft departures. Because aircraft arrivals are not known until ten minutes before landing, scaring birds before arrivals will only compound the bird strike threat. Proper use of the bird control equipment will keep it effective for bird dispersal.

1. Vehicle. A vehicle must be made available for bird dispersal. Since driving off paved surfaces may be required, four-wheel drive is essential. Open tread tires will help keep sod from adhering to the vehicle and reduce FOD on runways. When M-74 airbursts are used, a Standard Form 432 sign saying "Class B Explosives" must be placed on each side of the vehicle during transport from munitions storage to the airfield. These may be attached by welding metal brackets to the sides of the vehicle so signs can be removed when pyrotechnics are not being carried. Two fire extinguishers in the vehicle are required by AFR 127-100 when transporting pyrotechnics.

2. Bioacoustics. Bioacoustics is a bird control technique using recordings of distress calls emitted by birds under stress. A speaker is mounted on a vehicle containing sound equipment capable of producing 30 to 50 watts of distortion-free sound in 90 to 110 dB with a frequency response of 14,000 HZ. Tapes are available free of charge by mailing empty single loop TDK EC-1 cassettes and a list of species needed to the Ministry of Agriculture Fisheries and Food, Hook Rise South, Tolworth, Surbiton, Surrey TK6 7NF. In operation, the vehicle is driven 100 to 150 meters upwind of the birds and stopped with the speaker pointed toward the birds. The operator identifies the birds and selects the proper tape. Proper identification is important because distress calls are species specific. Lapwings are the species that can be most effectively controlled with bioacoustics. The distress calls are played for 15 to 20 seconds and shut off. If the birds have not moved within 20 seconds, a second playing of the same duration should be

used. If the birds have not moved by the third attempt, it is unlikely that they can be moved with this method. Do not allow the tape to continue playing indefinitely. Birds may become habituated, and the calls will be ineffective. When birds react to the distress tapes they frequently fly toward the vehicle to investigate the "hurt" bird. They may circle overhead for a short time before leaving. At this time pyrotechnics may be used to hasten the birds' dispersal and control their direction of flight. Using pyrotechnics earlier may confuse birds and cause them to remain near the airfields longer. Distress tapes require some time to remove birds, and this method is the most useful during breaks in flying and before flying operations begin each day.

3. Pyrotechnics. Pyrotechnics are noise producing devices which are extremely effective for scaring birds. They include airbursts, scare cartridges, and gas cannons. The only pyrotechnics presently approved for permanent use by the Air Force are gas cannons and airbursts. The M-74 airburst is fired from the M-1 flare pistol and Marshall-Hyde scare cartridges are fired from a single shot break-open 12 gauge shotgun. The pyrotechnics fire an explosive projectile about 100 meters before a secondary explosion occurs. To be most effective, airbursts should be exploded above flocks on the ground on the side opposite the desired direction of the birds. Ear protectors, gloves and goggles are required when using any pyrotechnic device. Pyrotechnics must never be fired towards aircraft, and Security Police and Control Tower personnel must be contacted before their use. Pyrotechnics training is necessary for each person involved in scaring birds. Such training is provided by the NCOIC for Small Arms. A sample of the Safety Operating Instruction for handling pyrotechnics is provided in this report (Appendix C). This sample must be modified for use by Chievres Air Base.

E. Operational Changes to Reduce Bird Hazards.

Active control and changed farming practices will not eliminate all airfield bird hazards. Intense bird migration can increase hazards to the extent that changing operations will be required. The runway at Chievres AB is often used for training by other aircraft. When bird densities are high, touch-and-go landings should be eliminated. When large numbers of birds are on the airfield, aircraft departures should be delayed until the birds are dispersed. An incremental BIRD WATCH system similar to METWATCH for weather can be initiated to warn pilots about local bird hazards (Appendix A). Pilots can be informed about bird hazards through Mishap Prevention Bulletins, IFR Supplements for

Transient Aircrews and Birdtams which describe current bird migration forecasts in Europe. When bird numbers cannot be controlled and extreme safety hazards result, temporarily closing the airfield should be considered.

APPENDIX A

SAMPLE BIRD HAZARD REDUCTION PLAN

HEADQUARTERS

56TH TACTICAL FIGHTER WING

MACDILL AFB, FLORIDA

56 TFW PLAN 127-15

BIRD AIRCRAFT STRIKE HAZARD

30 JULY 1978

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 56TH TACTICAL FIGHTER WING (TAC)
MACDILL AIR FORCE BASE FLORIDA 33608

REPLY TO ATTN OF: SE

SUBJECT: 56 TFW Plan 127-15 Bird Aircraft Strike Hazard

TO: See Distribution (ANNEX Z)

1. Forwarded herewith is the 56 TFW Plan 127-15 which provides guidance for reducing the bird strike hazard in the areas where the 56 TFW conducts flying operations.

2. This plan is effective for planning on receipt and for execution when directed by this Headquarters.

3. This plan was coordinated with all tasked organizations.

4. Tasked organizations will develop necessary checklists for implementation. Supporting plans are not required.

5. This plan will be reviewed as of 30 July each year and updated as appropriate. Tasked organizations will review this plan 30 days prior to that date and forward comments to 56 TFW/SEF by 30 July.

6. The Office of Primary Responsibility (OPR) for this plan is the 56 TFW Office of Safety, this Headquarters.

CHARLES J. CUNNINGHAM, JR.
Colonel, USAF
Commander

Readiness is our Profession

HEADQUARTERS 56TH TACTICAL FIGHTER WING
MACDILL AFB, FLORIDA 33608
30 JULY 1978

56 TFW PLAN 127-15
SECURITY INSTRUCTIONS/RECORD OF CHANGES/ANNUAL REVIEW

1. The long title of this plan is 56 Tactical Fighter Wing Bird Aircraft Strike Hazard Plan 127-15. The short title is 56 TFW BASH Plan.

2. The overall classification of this document is UNCLASSIFIED.

3. Reproduction of this document in whole or in part is prohibited except as required for preparation of supporting directives, operating instructions or checklists.

RECORD OF CHANGES

CHANGE NUMBER	DATE	DATE POSTED	POSTED BY

RECORD OF ANNUAL REVIEW

REVIEWED BY	DATE REVIEWED	REMARKS

12

OPR: 56TFW/SE

HEADQUARTERS 56TH TACTICAL FIGHTER WING
MACDILL AFB, FLORIDA 33608
30 JULY 1978

56 TFW PLAN 127-15
PLAN SUMMARY

1. PURPOSE: To provide a base program designed to minimize aircraft exposure to potentially hazardous bird strikes where the 56 TFW conducts flying operations.

2. CONDITIONS FOR EXECUTION: This plan is based on hazards from both indigenous bird populations and seasonal bird migration. Implementation of specific portions of the Plan are continuous, while other portions require implememtation as dictated by bird activity.

3. OPERATIONS TO BE CONDUCTED:

a. Specific Operations Include:

(1) The establishment of a Bird Hazard Working Group.

(2) Procedures for reporting hazardous bird activity and altering/discontinuing flying operations.

(3) Provisions to provide information to all assigned aircrews and transient aircrews on specific bird hazards and procedures for avoidance.

(4) Actions to eliminate/reduce environmental factors which attract birds to the airfield.

b. Organizations Tasked: As listed in ANNEX A

c. Supporting Plans not required.

OPR: 56 TFW/SE

HEADQUARTERS 56TH TACTICAL FIGHTER WING
MACDILL AFB, FLORIDA 33608
30 JULY 1978

56 TFW PLAN 127-15
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OPR: 56 TFW/SE

HEADQUARTERS 56TH TACTICAL FIGHTER WING
MACDILL AFB, FLORIDA 33608
30 JULY 1978

56 TFW PLAN 127-15 - BIRD AIRCRAFT STRIKE HAZARD
BASIC PLAN

REFERENCES: AFR 127-15
BASH Survey
Other (Reports, letters and supportive material provided by competent biologists or wildlife managers)

TASK ORGANIZATION: ANNEX A

1. SITUATION:

a. GENERAL. This Plan establishes an overall bird control program for MacDill Air Force Base and is designed to minimize aircraft exposure to potentially hazardous bird strikes or strikes with terrestrial animals. The hazards to safe flying operations posed by birds are so varied that no single solution to the bird strike problem exists. This Plan is designed to:

(1) Establish a Bird Aircraft Hazard Working Group.

(2) Establish procedures to identify and to communicate high hazard situations to aircrews and supervisors to determine if altering/discontinuing flying operations is required.

(3) Determine aircraft and airfield operating procedures to avoid high hazard situations.

(4) Provide for dissemination of information to all assigned aircrews and transient aircrews on specific bird hazards and procedures for avoidance.

(5) Decrease the attractiveness of the airfield to birds by eliminating, controlling or reducing environmental factors which support the birds.

b. AIRFIELD/LOCAL AREA. MacDill AFB occupies 5620 acres in Hillsborough County, Florida, and is located on a natural peninsula between old and new Tampa Bays. The mean elevation of the base is 13 feet above Mean Sea Level (MSL). MacDill AFB is drained into several natural creeks, drainage ditches and by tidal action. There are approximately 890 acres of undeveloped land on MacDill AFB most of which is on the south side of the base complex. The underdeveloped land mainly consists of Red, Black, and White Mangrove with a small proportion being planted Pine with varied understory, mature Pine with mixed understory of Pine, Grass, Pine Brush, Scrub Oak and Palmetto.

The southwestern portion of the base is being invaded by Florida Pepper and mixed brush. The area adjacent to the runway consists of a mix of Florida grasses where closely maintained. The infield area which is only periodically maintained is being invaded by Dog Fennel, Ragweed, Sesbania and some brush, consisting of Wax Myrtle, Florida Pepper, Willow and Scrub Oak. In addition, there is a 13 acre borrow pit which has been turned into a pond located just north of the field boundary adjacent to the runway and a sanitary landfill 8500 feet southeast of the runway. The Mangroves, wooded areas, pond and grasslands surrounding the airfield and the landfill provide a large variety of habitats capable of supporting birds hazardous to aircraft. In particular, the pond is attracting waterfowl; the landfill, seagulls, and the invasion by uplands vegetation is attracting upland species which have become permanent residents of the area. More specific hazards are listed in ANNEX C.

c. ENROUTE/LOW LEVEL FLYING AREAS. Aircraft flying out of MacDill generally use southern Florida as the primary enroute and low level flying area. This area has many features which attract a variety of birds from migratory waterfowl through upland species, to shore birds. The two most hazardous species being the raptors (vultures) and the migratory waterfowl. Specific enroute hazards are outlined in ANNEX C.

d. AVON PARK GUNNERY RANGE. Avon Park occupies 107,000 acres of land in Polk and Highlands counties in central Florida and most of the area is typically Southern Florida flatwoods comprised of nearly level sandy flatlands interspersed with small swamps and wet grasslands. Other parts of the area are fragmental remains of a relatively high sand ridge consisting of droughty sands interspersed with small, poorly drained areas and few ponds. The flatwoods represent approximately 57,000 acres of the area. Of this, 27,000 acres have been reforested with slash pine, starting in 1965. Plantations were established in various sized blocks and are distributed throughout the type. Approximately 4,000 acres of this type are stocked with natural stands of slash pine of 30-50 years of age. The remaining area is essentially unstocked, with saw palmetto, gallberry, and native grasses comprising the majority of the cover. Approximately 20,000 acres of small swamps and wet grasslands are interspersed throughout the flatwoods type. These areas vary considerably in size and vegetation, from open ponds with marsh grasses; dense hardwood swamps with various species of gums, bays, ash and maple; pond and bald cypress stands of varying ages; and two extensive marshes, one of approximately 3200 acres located along the southwest boundry of the installation, the other approximately 2800 acres located along the southeast boundry. The sand ridge area comprises 9400 acres, oriented north-south in the center of the installation. This type is made up of sand pine of 10-40 years of age in dense stands, open scrub oak associations with scattered long leaf pine, and long leaf pine stands, 40-60 years old. The terrain in and around Avon Park provides an abundant variety of habitats for birds that are hazardous to aircraft. Specifics are outlined in ANNEX C.

3. EXECUTION:

a. CONCEPT OF OPERATIONS:

(1) Overall OPR and monitor for the implementation of this Plan is the 56 TFW Office of Safety.

(2) Bird Aircraft Hazard Working Group.

(a) Function. Review data on bird strikes, identify and initiate actions to reduce hazards, review and implement changes in operational procedures, prepare informational programs for aircrews.

(b) Authority. The BASH Working Group submits all efforts to the operational commander for approval. Implementation is through normal chain of command.

(c) Composition. The chairman, as appointed by the Commander, will be the 56TFW Vice Commander. As a minimum, the group will consist of a representative from Current Operations, Standardization/Evaluation, Flight Safety, Airfield Management, Civil Engineering, the flying organizations and representatives from other Task Organizations (ANNEX A) as required.

(d) Meeting Schedule. Quarterly.

(3) Operating Procedures. (As defined by the BASH Working Group and approved by the Commander of Higher Headquarters as appropriate).

b. TASKS: ANNEX B outlines the general and continuing tasks and responsibilities for each organization. ANNEX C lists specific tasks to counter hazards that are discovered and will remain in effect only until the hazard is removed or reduced sufficiently as determined by the seasonal nature of the hazard or by the BASH Working Group.

ANNEXES:

A - Task Organization

B - Tasks and Responsibilities

C - Operations

Q - Maps and Charts

R - Reports and Forms

S - Bird Hazard Warning System, Operation Birdwatch

Z - Distribution

CHARLES J. CUNNINGHAM, JR.,
Colonel, USAF
Commander

HEADQUARTERS 56TH TACTICAL FIGHTER WING
MACDILL AFB, FLORIDA 33608
30 JULY 1978

ANNEX A TO 56 TFW PLAN 127-15
TASK ORGANIZATION

ORGANIZATION	COMMANDER
56 TFW	Commander
56TFW/DO	Deputy Commander
56 TFW/MA	Deputy Commander
56TFW/SE	Chief
56TFW/OI	Chief
USAF Regional Hospital	Commander
56CSG/DE	Chief
56CSG/SV	Chief
56CSG/DC	Chief
56CSG/OTM	Chief
56CSG/SS	Chief
56CSG/SP	Chief
1928CG/FFA	Chief
13TFTS	Commander
61TFS	Commander
62TFS	Commander
63TFS	Commander
56CSS/OT	Operations Officer
Det 32, 3US	Commander

CHARLES J. CUNNINGHAM, JR.
Colonel, USAF
Commander

OPR: 56TFW/SE

HEADQUARTERS 56TH TACTICAL FIGHTER WING
MACDILL AFB, FLORIDA 33608
30 JULY 1978

ANNEX B TO 56TFW PLAN 127-15
TASKS AND RESPONSIBILITIES

1. Safety:

a. Include BASH group recommendations and actions in the agenda and minutes of the Wing Aerospace Safety Council.

b. Establish procedures for reporting and recording all birdstrikes at MacDill or involving 56TFW aircraft.

c. Monitor activities of all tasked agencies for compliance with this directive.

d. Disseminate trend data to BASH group and flying units.

e. Coordinate with Safety Offices at Homestead and Patrick AFB concerning their BASH activities in the local flying area and at Avon Park. (Crosstell)

f. Provide the BASH Working Group with the current BASH reduction data received from Higher Headquarters, the U.S. Fish and Wildlife Service and other agencies.

g. Provide a capability for and maintain a current bird situation/activity chart for use by all flying units. This will include:

(1) BASH activity plotting/recording for low level and Avon Park operations.

(2) MacDill activity, sightings and strikes.

h. Provide in addition to the above, as much information concerning bird migratory activities as can be obtained through contact with the U.S. Fish and Wildlife Service and local bird study groups.

i. Provide a capability for declaring, disseminating, and terminating BIRDWATCH Conditions on the Low Level routes and at Avon Park.

j. Coordinate and establish procedures with the Security Police to provide an individual to use pyrotechnic devices for bird dispersal as required when Security Police personnel are not available.

2. HOSPTIAL:

a. The MacDill Regional Hospital will provide assistance, advise

and support to the MacDill BASH Program as required and within capabilities to include:

(1) Provide storage space within mortuary area for the storage of perishable bird remains.

(2) Assistance in packaging remains in dry ice for shipment to the bird and mammal laboratories.

3. MORALE, WELFARE AND RECREATION:

a. The 56CSG Chief of Morale, Welfare and Recreation will establish a program to minimize the attractiveness of assigned facilities to bird activity.

4. OFFICE OF INFORMATION:

a. The 56TFW Office of Information will participate as required and upon request will provide a public information program designed to inform base personnel, dependents and the general public on the hazards of uncontrolled bird activity and the measures being taken to minimize them.

5. BASE AUDIOVISUAL SERVICES:

a. Provide photographic services as required to document bird strikes and related activities as required.

b. Provide graphics as required to publicize the hazards and actions required to minimize them.

6. BASE CIVIL ENGINEER:

a. Provide an environmental officer to the BASH Working Group to monitor and advise the group on Environmental Modification. The Base Civil Engineer is responsible for developing procedures for removal or control of as many bird attractants as possible and initiating the necessary surveys and writing of environmental impact assessments and statements on procedures undertaken as required by law.

b. In addition to providing those services as required to eliminate specific habitats to counter identified hazards, the Civil Engineer should develop a long range program, in conjunction with all base improvements and modifications, in an attempt to make the airfield as unattractive to birds as feasible. This project/program should be termed operation "Bird Bare."

c. To assist in these programs the following general Civil Engineering considerations are provided:

(1) Control vegetation

(a) Mowing Operations - (Time - height)

(b) Ditches (cut) 50 to 1 slope (See (2)(a)

(c) Filling low spots (See (2)(a))

(d) Planting bare areas

(e) Removing dead vegetation/rubble (Perches)

(f) Remove high spots (Perches)

(g) Remove edge effect

(h) Remove plants with berries

(2) Control water

(a) Modify ditches - slope and clear (See (1)(b))

(b) Consider covering/culverts

(c) Eliminate standing water (See (1)(c))

(d) Patrol/clear beaches and rip edge of feeding materials

(e) Drain marsh areas

(3) Control waste

(a) Collect appropriately

(b) Dispose of rapidly

(4) Control birds (Chemical/Physical Alterations)

(a) Check/bird proof buildings - hangers

(b) Check other perches towers, etc.

(c) Use avitrol as required

(d) Use naphthlene around perches (Alt)

(e) Sticky material around perches (Alt)

(f) Electrical charge around perches (Alt)

(g) Strobes in buildings

(h) Queletox (Kill)

(i) Control insects

7. FLYING ORGANIZATIONS:

a. Will insure aircrews participate in the BASH reduction program by promptly reporting all bird strikes and hazardous conditions IAW this directive.

b. Will coordinate unit flying activities, through scheduling, to minimize exposure to migratory birds based on data obtained from SEF/BASH.

c. Unit FSOs will periodically visit SEF, obtain the current bird activity data and post the information so that it is readily available for briefing aircrews. Frequency of visits will be determined by phase of training unit is currently undergoing.

d. Unit FSOs will insure that the current bird activity data is available and briefed in conjunction with the prephase briefing for both the ground attack and low level phases.

e. Unit FSOs will insure an adequate supply of bird strike/activity report forms are readily available for the aircrews.

8. STANDARDIZATION/EVALUATION:

a. Review with 56TFW/DOO all proposed new low level routes or changes to existing low level routes for BASH impact.

b. Monitor, on a regular basis, aircrew preflight briefings to insure BASH is covered during the briefing.

9. AVON PARK OPERATIONS:

a. Establish procedures to report significant bird activity noted on the gunnery ranges to SEF and advise aircrews under their control of same.

b. Establish procedures to notify SEF of any bird activity or strikes reported to Avon Control by aircrews.

10. FLIGHT FACILITIES:

a. Establish procedures to observe bird activity on and above the airfield visually and by radar, and report such to Wing Safety during normal 56TFW flight operations and to Airfield Management at other times.

b. Issue Birdwatch advisories to aircraft as required.

c. Provide Airfield Management immediate access to the runway under Birdwatch Condition Red if required.

d. Insure airfield lighting remains off except as required for aircraft operations.

11. AIRFIELD MANAGEMENT:

a. IAW ANNEX S of this Plan, during normal 56 TFW flight operations the authority to declare a Birdwatch condition is solely vested with the 56 TFW Safety Office. The MacDill AFB Chief of Airfield Management or his designated representative, is the declaring authority during all other periods.

(1) Declaration of a Birdwatch condition by the Chief of Airfield Management should be based upon the following:

(a) Information relayed by airborne aircraft.

(b) Observations made by and relayed to Base Operations by MacDill AFB Tower and Transient Alert personnel.

(c) Observations made by Base Operations personnel.

(2) Once a Birdwatch condition has been declared by Base Operations personnel, it is their sole responsibility to either cancel or downgrade the condition, commensurate with updated information.

b. The Chief of Airfield Management or his designated representatives, will be a prime source for observing conditions that could create a bird strike hazard and will react to disperse flocks of birds using available bioacoustic equipment when required.

(1) Primary Means (Prevention). Environmental conditions observed in the runway vicinity that could attract birds will be reported to the Environmental Section, 56CSG/DE, (ex., standing water areas/areas of recently mowed grass/confirmed and suspected roosting areas.)

(2) Secondary Means (Dispersal). The Chief of Airfield Management will:

(a) Insure the Base Operations emergency response vehicle is equipped and operationally maintained with bioacoustical equipment.

(b) Insure assigned personnel are properly trained to utilize the equipment.

(c) Coordinate directly with the 56TFW BASH Officer on results of bioacoustical dispersal of birds to insure tapes on hand are identifiable to bird species which are presenting a hazard to flight operations at MacDill AFB.

(3) Carry out those actions as required for implementation of Birdwatch procedures as outlined in ANNEX S.

12. 3RD WEATHER WING:

a. Display Birdwatch Condition notice on TV briefing equipment as required.

b. Advise aircrews of Birdwatch Conditions when briefing weather if required.

13. DEPUTY COMMANDER FOR OPERATIONS:

a. Issue specific guidance for aircrew and the SOF on procedures to be followed under Birdwatch Conditions.

b. Issue specific guidance to the Command Post concerning actions required to implement this Plan.

14. DEPUTY COMMANDER FOR MAINTENANCE:

a. Issue specific guidance to AGS personnel for the reporting of discovered bird strikes on aircraft to Quality Control and Safety.

b. Issue procedures for the preservation of bird remains (feathers) during non-duty hours if discovered on an aircraft.

15. SECURITY POLICE:

a. Provide location and procedures for storing pyrotechnic bird dispersal devices.

b. Train personnel to use pyrotechnics as required.

c. Coordinate with Safety for alternate users from Safety when Security Police personnel are not available.

CHARLES J. CUNNINGHAM, JR.,
Colonel, USAF
Commander

HEADQUARTERS 56TH TACTICAL FIGHTER WING
MACDILL AFB, FLORIDA 33608
30 JULY 1978

ANNEX C TO 56 TFW PLAN 127-15
OPERATIONS

REFERENCES: (Bird/Aircraft Strike Hazard Team Reports, Reports from other wildlife agencies, etc.)

1. GENERAL:

a. PURPOSE. This ANNEX provides information on the different types of bird strike hazards and recommendations on countering each hazard.

b. MISSION. See Basic Plan.

2. CONCEPT OF OPERATIONS. The following is a summary, in order of seriousness, of the bird strike hazards and recommendations for reducing each hazard to flight operations. A brief description of each bird and how each method of control or avoidance is to be employed is provided. Each control measure will have a corresponding tasked organization in the Basic Plan.

3. SPECIFIC HAZARDS:

a. MACDILL AFB AREA:

(1) Brown Pelican (Pelecanus Occidentalis).

(a) Hazard: This protected species can be seen frequently on the catwalks of the approach lighting for runway 04. It also flies in small flocks (3-6 birds) in varied formations. Pelicans feed primarily on small fish and dive from altitudes of 30 feet of less. The primary threat occurs when the small flocks transit the runway approaches and departures in search of food.

(b) Hazard Reduction: Habitat modification is not feasible nor desirable for this species. The primary counter to this hazard is increased awareness by aircrews and runway supervisory personne. The approaches should be closely monitored for their activity and appropriate advisories should be transmitted as required. OPR: 56TFW/DO/OTM.

(2) Seagulls (Charadriformes, Laridae).

(a) Hazard: This species provides the largest threat to flight operations in the airfield area. Several subfamilies are permenant residents of the bay area as well as a migratory hazard. Seagulls are primarily scavengers and gather at garbage dumps, docks and other lucrative sources of food. Their travels from roost to food source to loafing areas constitute the greatest hazards.

OPR: 56TFW/SE

(b) Hazard Reduction: Habitat modification and control techniques must be devised to effectively reduce the threat.

1. The source of easy food within the general airfield area must be reduced to an absolute minimum. The sanitary landfill operation must be closely monitored as it is the major attractant and food source. OPR: 56CSG/DE

2. Once the food source is eliminated, action should be taken to reduce the attraction of the loafing areas such as clear ramp space and closely mowed fields through the use of harassment and dispersal procedures such as:

a. Pyrothechnics

b. Bioacoustics

c. Chemicals

d. Mowing operations

OPR: 56CSG/OTM/DE

3. Sources of fresh drinking water near loafing areas must also be eliminated. OPR: 56CSG/DE

(Other resident species in the immediate area which need to be studied include:

Raptors; owls, nighthawks, doves, cattle; egrets, common crows, shorebirds, plovers, pipers, upland species;blackbirds, starlings.

In addition to the migratory species: Waterfowl, Ibus, Cranes.)

JOHN R. VICK, Major, USAF
Chief, Safety Division

HEADQUARTERS 56TH TACTICAL FIGHTER WING
MACDILL AFB, FLORIDA 33608
30 JULY 1978

ANNEX Q TO 56 TFW PLAN 127-15
MAPS AND CHARTS

1. GENERAL. This ANNEX outlines the use and requirements for the maps and charts required to implement the BASH Program to include:

a. MacDill AFB Habitat Map.

b. Low level Activity map.

c. Avon Park Activity Plotting Charts.

d. Airfield Activity Plotting Charts.

e. (As required).

2. MACDILL AFB HABITAT MAP:

a. Background: A habitat survey was conducted at MacDill AFB in August 1978 and the specific habitats which are available to birds were determined. The description of the habitats and modifiers are in APPENDIX Q-1-1 of this ANNEX. A copy of the survey is maintained at the Environment Office (DEEV) and the Safety Office.

b. Use: Once a specific hazard is identified and the location of the activity can be isolated, the habitat map should be consulted to determine if a specific attractant to that species exists which can be altered within the scope of this program.

c. The habitat map will also be used as a guide for the long range Civil Engineering Program of removal of actual and potential habitats on MacDill AFB; proposed Operation "Bird Bare."

3. LOW LEVEL ACTIVITY MAP:

a. A large scale map with a depiction of all the current low level routes will be maintained at the Office of Safety, (SEF).

b. All bird strikes, near misses and areas of observed significant bird activity which are reported on the low level routes will be plotted on this chart.

c. This data will be studied and disseminated to the flying units IAW the procedures outlined in ANNEX B.

d. This data will also be used to determine if certain route usage be discontinued or altered.

4. AVON PARK ACTIVITY MAP:

a. A large depiction of the Avon Park Gunnery complex will be maintained at the Office of Safety, (SEF).

b. This depiction will be used in the same manner as the Low Level Map.

5. AIRFIELD ACTIVITY PLOTTING CHARTS AND LOGS:

a. Sufficient quantities of the Airfield Activity Plotting Chart will be kept available for use during surveys and bird study operations.

b. The specific use of these charts and log, APPENDIX Q-1-3, 4 and 5 will be outlined as required during the specific operation or as determined by the BASH Working Group.

6. (Other Maps & Charts will be added as required)

JOHN R. VICK, Major, USAF
Chief, Safety Division

HEADQUARTERS 56TH TACTICAL FIGHTER WING
MACDILL AFB, FLORIDA 33608
30 JULY 1978

APPENDIX 1 TO ANNEX Q TO 56 TFW PLAN 127-15
MACDILL AFB HABITATS

Water:
Modifier - Drainage ditches
- Borrow ponds
- Natural ponds
- Tidal creeks
- Open bay

Varies from fresh to salt. Strength depending upon site.

Mangrove: Red, Black and White
Modifier - Mangrove along drainage ditches and on higher sites invaded by Florida Pepper bushes

Hardwood Hammock: Oak

Grass:
Modifier - Closely maintained in and around runway and primary roads.
- Periodically maintained in fields, irrigation site, etc. May be invaded by Dog Fennel, Ragweed, Sesbania and some brush.
- Disturbed sites where grass is primary invader, but being replaced by brush.

Wet Grass:
Modifier - Areas, either natural or manmade, where moist soil, plants, red root, Saggitaria, Beakrush, Cyperus, etc, dominate.

Borrichia, Glasswort Flats:
Modifier - Type is largely being lost in invasion by Florida Pepper.
- Type also contains Slat bush (Baccharis) invaders.

Brush: Wax Myrtle, Florida Pepper, Willow and Scrub Oaks
Modifier: Bush areas closest to salt water environments are predominantly Florida Pepper which has invaded and masked native species.
- Upland sites are Wax Myrtle and Saltbush. They contain a variety of species as transition area to high uplands.
- Upland brush contains Saw Palmetto, Scrub Oaks, Wax Myrtle, etc.
- Disturbed areas contain a mixture of broad leaf (Dog Fennel and Ragweed) and brush (Wax Myrtle, Florida Pepper, etc.)

Planted Pines:
Modifier - Understory varies depending upon original site.

OPR: 56TFW/SE

Mature Pines:

Modifier - Pine hardwood where pine is mixed with Scrub Oak and Palmetto.

- Pine/grass where grasses are mixed with broadleaf plants and appear to vary from closely to occasionally maintained.

- Pine/brush where pine over-story is reduced with heavy brush under-story varying with site from Florida Pepper to Palmetto, Cabbage Palm, Vita and Wax Myrtle.

JOHN R. VICK, Major, USAF
Chief, Safety Division

BIRD ACTIVITY PLOTTING CHART

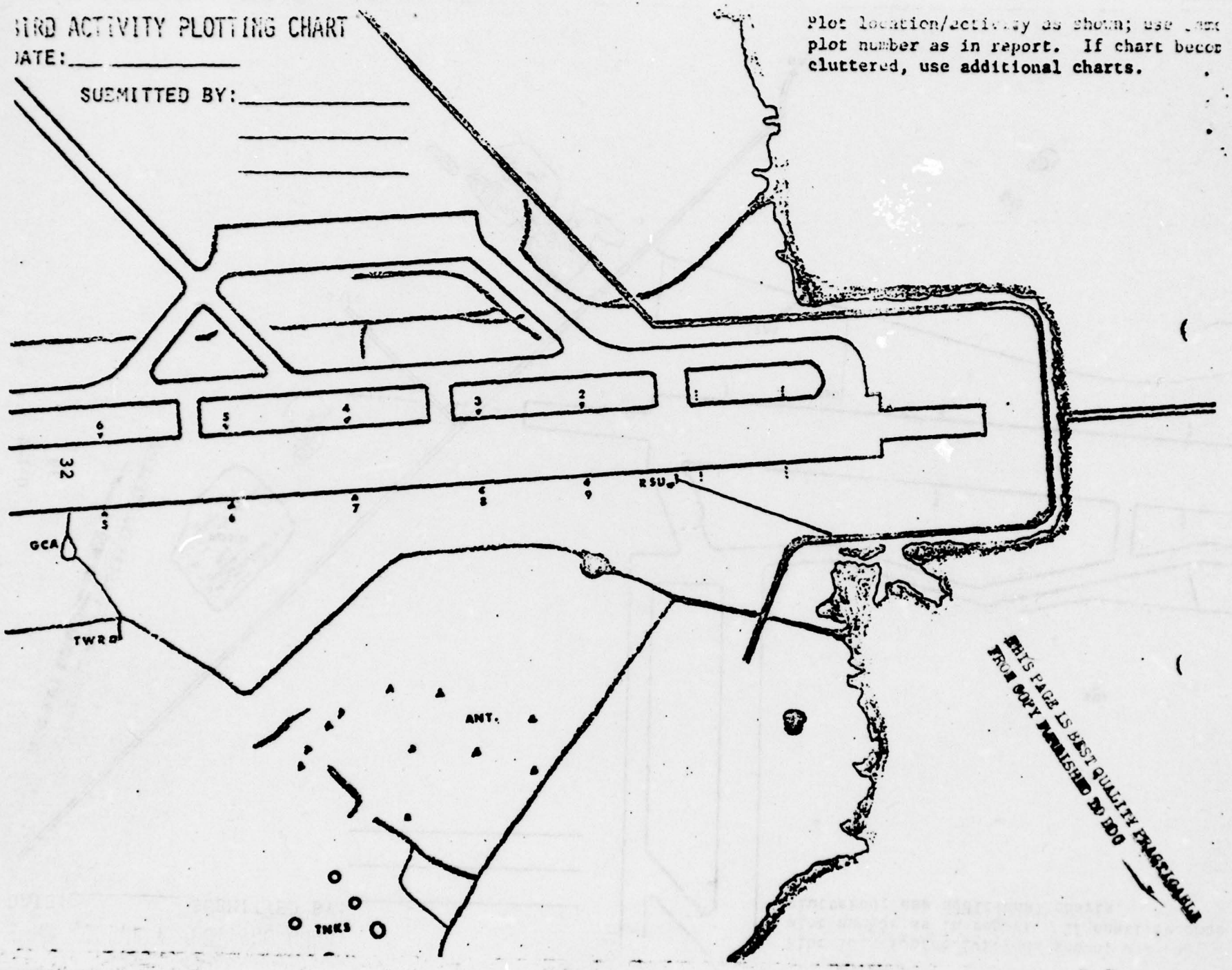
DATE: _____

SUBMITTED BY: _____

_____

_____

Plot location/activity as shown; use same plot number as in report. If chart becomes cluttered, use additional charts.



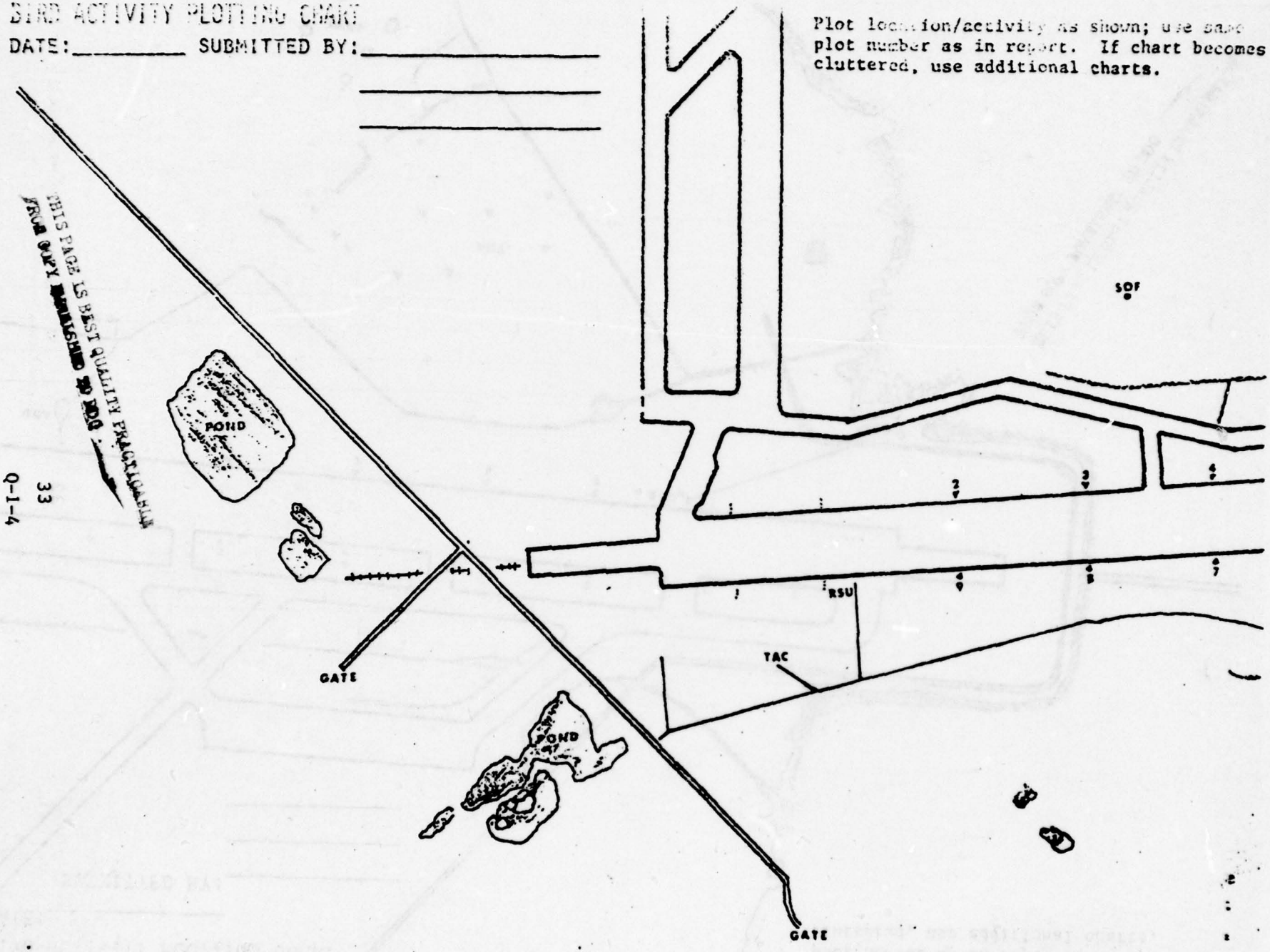
BIRD ACTIVITY PLOTTING CHART

DATE:_____ SUBMITTED BY:_____

_____

_____

Plot location/activity as shown; use same plot number as in report. If chart becomes cluttered, use additional charts.



DATE_____ SUBMITTED BY:_____

_____

_____

BIRD SIGHTING/ACTIVITY REPORT

FILL OUT THIS REPORT WHENEVER SIGNIFICANT ACTIVITY IS NOTED. PLOT FLIGHT PATH/LOCATION ON CHART USING SAME PLOT NUMBER. SEND BOTH CHART AND REPORT TO 56TFW/SEF THROUGH NORMAL DISTRIBUTION CHANNELS.

PLOT #	TIME OR TIME SPAN	WEATHER BRIEF DESCRIPT	NUMBER AND SPECIES (OR DESCRIPTION) AND ACTIVITY NOTED

MACD FORM JUL 70 100 (Test) (Expires 31 DEC 70)

HEADQUARTERS 56TH TACTICAL FIGHTER WING
MACDILL AFB, FLORIDA 33608
30 JULY 1978

ANNEX R TO 56 TFW PLAN 127-15
REPORTS AND FORMS

1. GENERAL. This ANNEX outlines the procedures and forms required to report birdstrikes IAW AFR 127-15 and near misses to enhance the BASH Program at MacDill AFB.

2. AFR 127-15, BIRD STRIKE REPORT. The Office of Safety will compile all reported bird strike data and submit the completed AF Form 441 to 9th Air Force not later than the 15th of the month following the reporting period (Quarterly). Information copies of this report will be furnished to the Wing Commander and the BASH Working Group. The data will be collected as indicated below:

56 TFW Bird Aircraft Strike Hazard (BASH) Report Form Letter.

a. 56TFW/SEF will insure sufficient copies of the form letter (R-1-1) are available to all squadron FSOs and at Base Operations.

b. This form letter is dual-functioned and only the actual strike function of the form will be discussed in this ANNEX. Near miss or activity reporting is discussed in ANNEXES B and Q.

3. PROCEDURES. All personnel discovering a bird strike will notify Safety as soon as possible. This is required to insure that the evidence and any remains are preserved to enable identification of the species of bird involved in the strike. During non-duty hours, Maintenance and Base Operations personnel will make arrangements for the preservation of remains until Safety assumes responsibility for them.

a. The aircrew involved in the strike will fill out the form, providing as much information as possible concerning circumstances of the incident.

b. Base Operations personnel will assist transient aircrews in this when applicable and will obtain unit/organization information when damage occurs.

c. For MacDill AFB aircraft, if the damage is sufficient for AFR 127-4 Mishap Reporting, a Mishap Report will be submitted in addition to the Bird Strike Report.

OPR: 56TFW/SE

BIRD STRIKE REPORT (Note: Complete all columns. If any item is unknown, enter "UNK")					MAJCOM			BASE				REPORT PERIOD		REPORT CONTROL SYMBOL	
MONTH AND DAY	LOCAL TIME	LIGHT CONDITIONS	AIRCRAFT TYPE	AIRCRAFT SERIAL NUMBER	LANDING LIGHTS (On or Off)	STROBE LIGHTS (On or Off)	PHASE OF FLIGHT	AIRCRAFT SPEED (KIAS)	AIRCRAFT HEADING	ALTITUDE (AGL and AMSL)	FLIGHT PATH (In relation to clouds)	GEOGRAPHIC LOCATION	SPECIES AND NUMBER OF BIRDS	IMPACT POINT ON AIRCRAFT	REMARKS (Extent of damage and impact home unit, mishap control number, cost of repair in dollars and manhours)
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P

AF FORM FEB 77 441

FROM: SQUADRON:_____AIRCREW:_____CALL SIGN:_____DATE:_____

SUBJECT: Bird Aircraft Strike Hazard (BASH) Report

TO: 56 TFW/SEF

This report is to be filled out for all actual birdstrikes and any near-miss situations. Your help, in particular, on close encounters will greatly help in getting action taken to reduce the hazards involved with birds in our local flying area. Fill in all blocks as well as you can. Give approximations if exact data is unknown and indicate that it is an approximation. If you have any questions, call 56 TFW/SEF, 3384.

a. Month/day of occurrence:_____ Local time:_____

b. Light conditions (circle or use other is significant): Dawn, Hazy, Bright, Dull, Dusk, Dark, Night, other;_____.

d. Aircraft type:_____ Aircraft serial number:_____.

e. Landing light (ON/OFF):_____ Beacon (ON/OFF):_____.

f. Phase of flight (describe):_____
_____.

g. Aircraft speed:_____ Heading:_____ Altitude:_____MSL.

h. Flight path (in relation to clouds if any, i.e., above, below, etc.)
_____.

i. Geographic location: (try to be as specific as possible)_____
_____coordinates:_____if in pattern (flare, short final, etc.)_____any ground references:_____
_____.

j. Species and number of birds (if unknown, try to describe color, size, etc.:)_____
_____.

k. Impact point on aircraft (if applicable):_____
_____.

l. Remarks (any information you may feel valuable to the program, i.e., what were the birds doing when you saw them?)_____
_____
_____
_____
_____.

m. Evasive action:

(1) By pilot (YES/NO)_____What?_____
_____
_____.

(2) By bird (YES/NO)_____What?_____
_____
_____

n. Bird remains on aircraft (YES/NO):_____
Scoop whatever feathers, flesh, etc., that are available into a plastic bag (obtainable from Maintenance) and notify Safety, ext. 3384 ASAP. The remains will be collected by a representative from Safety for evaluation.

HEADQUARTERS 56TH TACTICAL FIGHTER WING
MACDILL AFB, FLORIDA 33608
30 JULY 1978

ANNEX S TO 56 TFW PLAN 127-15
BIRD HAZARD WARNING SYSTEM: OPERATION BIRDWATCH

1. GENERAL. This operation establishes procedures to be used for the immediate exchange of information between ground agencies and aircrews concerning the existence and location of birds which could pose a hazard to flight.

2. BIRD WATCH CONDITIONS. The following terminology will be used for rapid communications to disseminate bird activity and implement unit operational procedures. The terminology will also be included and updated as required in the MacDill AFB portion of the Flight Information Publication (IFP Supplement -United States).

a. Bird Watch Condition Red. Heavy concentrations of birds above and immediately in the vicinity of the runway pose an immediate hazard to safe flying operations. The area declared "Red" shall be open only by specific pilot request upon being advised of the condition.

b. Bird Watch Condition Yellow. Concentrations of birds observed or predictable in locations which represent a probable hazard to safe flying operations. Declaration of Condition "Yellow" requires increased vigilance by all agencies and extreme caution by aircrews. Bird Watch Condition Yellow will also be used for warning aircrews of conditions on low level routes and at Avon Park as warranted.

c. Bird Watch Condition Green. Normal bird activity in the area. This condition will be in effect for the remainder of the flying day whenever a red or yellow condition had been declared and subsequently downgraded. Upon extended normal bird activity, no bird watch condition need be declared.

3. AUTHORITY. During normal 56TFW flight operations the authority to declare a Bird Watch Condition is solely vested with the 56TFW Safety Office. The MacDill AFB Chief of Airfield Management or his designated representative, is the declaring authority during all other periods.

Bird Watch Condition Yellow will be declared for a special area upon the advice of tower, RSU Officers, RCO at Avon Park, GCA, or flight leads on low level routes when significant activity is observed visually or on radar. All operations personnel should be alert for bird activity and should report such directly to Safety (ext 3384) or Airfield Management (ext 2231) as applicable, or through one of the following agencies:

a. Wing SOF

b. Control Tower or GCA

OPR: 56 TFW/SE

c. Command Post

d. RSU

e. Avon Operations

4. COMMUNICATIONS. Bird Watch Conditions will be disseminated by the following means:

a. During periods of 56 TFW Flight Operations:

(1) The reported Bird Watch Condition at MacDill AFB and associated low level routes will be displayed on Det 32, 3rd Weather Wing TV briefing equipment. The display (Attachment S-1-1) will be prepared and updated by Base Operations personnel based upon inputs from the 56TFW Safety Office. In addition to posting the Bird Watch Condition on the weather TV equipment, Base Operations personnel will insure that a duplicate copy of the information is posted in the Flight Planning Room to advise Transient aircrew personnel.

(2) Base Operations personnel will telephonically notify the following agencies of Bird Watch Conditions:

(a) 56TFW Command Post

(b) MacDill AFB Tower

b. During period of non-56TFW flight operations all procedures listed above will be implemented with the exception of posting the Bird Watch Condition on the TV briefing equipment.

c. The primary means of transmitting Bird Watch Conditions to airborne aircraft will be via ATIS. However, under Bird Watch Condition Red, the MacDill Air Traffic Control Agency will insure that the pilot understands the condition and is provided the option to delay, divert, or to continue the proposed operation into the hazardous area.

5. AIRCREW RESPONSIBILITIES AND PROCEDURES. If while in flight, an aircrew observes or encounters any bird activity that would constitute a hazard to flight the aircrew should contact either the SOF, Control Tower, Command Post, or Avon Operations and request that the observed bird activity be passed to SEF at extension 3384. The following information should be included:

a. Call Sign

b. Location

c. Altitude

d. Local time of sighting

e. Approximate number of birds

f. Type of bird (if known)

6. PROCEDURES FOR SOF AND DOC. If a bird activity report is received from an airborne aircraft, the Wing Safety Office or Base Operations will be notified as appropriate.

7. DOWNGRADING. Once a Bird Watch Condition has been declared by Safety or Base Operations personnel, it is their sole responsibility to either cancel or downgrade the condition commensurate with updated information.

8. BIRD WATCH ALERT. In addition to Bird Watch Conditions of RED, YELLOW and GREEN, a Bird Watch Alert may also be declared. This indicates that the weather, time of day and/or seasonal conditions are such as to expect an influx of birds onto the airfield.

JOHN R. VICK, Major, USAF
Chief, Safety Division

BIRD WATCH

CONDITION

	MCF	IRs	Remarks
GREEN			
YELLOW			
RED			

HEADQUARTERS 56TH TACTICAL FIGHTER WING
MACDILL AFB, FLORIDA 33608
30 JULY 1978

ANNEX Z TO 56 TFW PLAN 127-15
DISTRIBUTION

ADDRESSEE	NO. COPIES
AFCEC/EVP, Tyndall AFB, FL 32403	1
56TH TACTICAL FIGHTER WING	
CC	1
DO	4
MA	2
SE	3
OI	1
13 TFTS	1
61 TFS	1
62 TFS	1
63 TFS	1
56TH COMBAT SUPPORT GROUP	
DE	3
SV	1
DC	1
OTM	2
SS	1
SP	1
CSS	2
OTHER UNITS	
1928 CG/FFA	1
USAF Regional Hospital	1
Det 32, 3 WS	1

OPR: 56 TFW/SE

APPENDIX B

For bases requiring active bird scaring techniques the following equipment is authorized for bird identification and dispersal:

Nomenclature	National Stock Number	Part Number	Table of Allowances
Binoculars, prism type	1240-00-5300959YB	PN6702513	483
Shotgun, single barrel	1005NC121528L	PN870	483
Pistol, pyrotechnic	1095-00-726-5657	PN7265657	483
Simulator airburst	1370-00-028-6007		-
Scare Cartridges, 12 ga.	1305ND042951G		-
Cassette Tape Player	5835-01-053-3152	PNRS248S	483
Speaker	5965-01-053-6210	PN Model AP30	483
Amplifier, mobile	5830-01-054-4954	PN Model BT35A	483

This memorandum may be referenced to justify procurement of items from TA 483, which is a Civil Engineering TA. Any organization responsible for bird control on the base may procure this equipment.

DIRECTORATE OF ENVIRONMENTAL PLANNING
AF Engineering and Services Center
Tyndall Air Force Base Florida 32403

DEV Operating
Instruction 127-1

Safety

HANDLING OF PYROTECHNICS

This OI establishes policies and procedures for safe handling of pyrotechnics used at Air Force installations by the Bird/Aircraft Strike Hazard (BASH) Survey team. It applies to all members of the BASH team conducting such surveys and to personnel at survey bases instructed in the use of pyrotechnics by BASH team personnel.

References: (1) AFR 127-100, Explosive Safety Standards; (2) 11A-1-10, Munitions Serviceability Procedure; (3) TO 11A10-24-7, Storage and Maintenance Procedures for Pyrotechnics; (4) TO 11A-1-42, General Instructions for Disposal of Air Munitions; (5) TO 11A10-27-7, Storage and Maintenance Procedures Simulators (Battlefield).

1. This OI covers the M74A1 simulator airburst and 12 gauge scare cartridges.

2. RESPONSIBILITIES:

a. Explosives Safety Officer/NCO: Responsible for insuring compliance with this OI by all personnel who are involved in Air Force Engineering and Services Center field assistance and training activities. They will periodically review and update this OI as safety and training requirements dictate.

b. Officer in Charge, BASH Reduction Program: Responsible under the guidance of the Explosive Safety Officer/NCO and acts in their absence to insure compliance with this OI by all personnel involved with AFESC field assistance activities.

c. BASH Survey Team Chief: Under the guidance of the Chief, BASH Reduction Program, performs all actions necessary to issue and control pyrotechnics as outlined in this OI and stated references.

d. Other BASH Team members: All field assistance team personnel must be fully knowledgeable of and adhere to the contents of this OI. Negligence or noncompliance will be considered grounds for dismissal from that portion of field assistance training and use, or administrative disciplinary action. This OI is part of the training/evaluation program and will be part of the AFESC/DEVN required reading file.

3. PROCEDURES:

a. Nature of Operations: The BASH Team frequently uses and recommends the use of the M74A1 Simulator Airburst, NSN1370-00-028-6007 or the 12 gauge scare cartridge, NSN 1305ND042951G for use on the airfield to disperse birds which pose a threat to aircraft. These items are shipped from Hill AFB to the AFK account (Munitions Supply) at the base to be surveyed. All team members will strickly adhere to the following rules when pyrotechnics are being used or demonstrated.

(1) Pyrotechnics will be fired at an angle of not less than 45 degrees from ground level and never in the direction of any person, vehicle, or building closer than 1,000 feet.

(2) For shellcrackers, a single barrel, break open shotgun, NSN 1ØØ5NC121528L, or other approved methods will be used. The weapon will be visually inspected following each round fired to insure that it is free of obstructions. After each days use, the barrel will be thoroughly flushed with hot water, dried and oiled.

(3) All firearms safety rules listed on AF Form 497, Air Force Policy Statement - Firearms Safety and Use of Force will be followed (Atch 1). Failure to adhere to additional safety precautions could result in loss of limb, oversight, or life.

(a) No person shall ignite the M74A1 Airburst or 12 gauze scare cartridges without wearing leather gloves, goggles and earprotectors.

(b) There will be no smoking at any time within 50 feet of pyrotechnics.

(c) No pyrotechnics will be handled near open flames.

(d) Pyrotechnics will be kept under visual observation at all times after they are issued and until they are expended.

(e) If at any time any pyrotechnics malfunction, all personnel will stay clear of that area for a minimum of 30 minutes. The exact position of the malfunction will be brought to the attention of the OIC of the BASH team. If the malfunction presents a potentially greater hazard to personnel, it will be placed in a wooden lined, metal container and removed from the immediate area. The BASH team

chief will then notify the Base EOD and inform them of the malfunction. They will send a team out to the area for proper disposal. At no time will the BASH personnel dispose of any malfunctioned pyrotechnics.

b. Storage of Weapons: All weapons will be stored each night at the Security Police Armory and checked out on a daily basis to support the BASH survey.

c. Storage of Pyrotechnics: All pyrotechnics will be returned to Munitions Supply each night and taken from the armory on an "as needed" basis. Cartridges will be stored in sealed metal ammunition boxes when not in use. Spent M74A1 casings will be turned in for disposal.

d. Location of Operations: The location of operations will be on the airfield of the surveyed base for active bird repulsion only. The Explosives Safety Officer at the base being assisted may opt to use an area other than the airfield for pyrotechnic demonstration and personnel training. In such situations, the BASH team will insure that personnel being directed in pyrotechnic use strictly adhere to this OI.

e. The following equipment is required, as a minimum, when transporting pyrotechnics.

(1) Four "Explosives 'B'" placards for vehicle transporting pyrotechnics (provided by AFESC for BASH surveys only).

(2) Pyrotechnics carrying bags/boxes and leather gloves (provided by AFESC for BASH team members only).

(3) Portable 2-way radio for control tower clearance prior to firing pyrotechnics (provided by AFESC).

f. Procedures for Pyrotechnic Operations:

(1) Demonstrations and Training.

(a) Notify all applicable offices of the location and nature of pyrotechnic operations.

(b) Proceed to area where demonstration/training is to be conducted.

(c) Brief attending personnel on the proper, safe use of pyrotechnic devices. Insure that personnel firing pyrotechnics don all applicable safety equipment.

(d) Remove pyrotechnics from storage box and insert into the flare pistol/shotgun.

(e) Grip the pistol/shotgun with both hands, angle at a minimum 45 degrees, and fire.

(f) Inspect the weapon chamber prior to each loading to insure that it is free of obstruction.

(g) After demonstration, clear the weapon, return pyrotechnics to storage container, and return them to the appropriate office.

(2) BASH team dispersal of birds:

(a) Proceed to area identified to have birds.

(b) Obtain control tower clearance to fire pyrotechnics.

(c) Don all applicable safety equipment.

(d) Remove pyrotechnics from storage box, exit vehicle, and load the flare pistol/shotgun.

(e) Grip the weapon with both hands, angle high toward target and fire.

(f) Inspect the weapon chamber and barrel prior to reloading to insure that it is free of obstruction.

(g) After bird dispersal, return pyrotechnics to storage box and return to the appropriate office.

g. Personnel Safety Requirements.

(1) BASH team personnel must annually attend the AFESC/DEOT explosive safety training course at Tyndall AFB.

(2) Personnel receiving pyrotechnics instructions will be given a safety briefing prior to BASH demonstrations.

h. Issue of Pyrotechnics:

(1) Issuance will be by the BASH team chief in the minimum quantities required for a specific portion of bird control or pyrotechnics demonstration.

(2) Pyrotechnics will not be used on the airfield without advance coordination with the following base organizations:

(a) Command Post
(b) Hospital
(c) Security Police
(d) Fire Department
(e) Ground Safety
(f) Base Commander

In the event of an emergency situation requiring birds to be dispersed from the airfield, the BASH team will request by radio to the control tower that tower personnel notify the appropriate offices of pyrotechnics use and the general location of BASH team personnel.

i. Fire Protection:

(1) All personnel using pyrotechnics will comply with regulations, directives, manuals, and TO's pertaining to fire prevention/protection.

(2) Two class 10 B/C fire extinguishers will be immediately available and in operating order.

(3) In the event of a fire on the airfield or at the demonstration area, BASH personnel will:

(a) Halt use of pyrotechnics.

(b) Attempt to extinguish the fire using the fire extinguishers.

(c) Notify the control tower and have them relay information the the Fire Department.

OFFICIAL

Sterling E. Schultz

STERLING E. SCHULTZ, Col, USAF
Director of Environmental Planning

1 Attachment
AF Form 497

AIR FORCE POLICY STATEMENT - FIREARMS SAFETY AND USE OF FORCE

1. Every member and civilian employee of the United States Air Force has the right under the law to use reasonable, necessary force to defend himself against violent and dangerous personal attack. The limitations described herein are not intended to infringe this right but to promote weapons safety, and prevent the indiscriminate use of firearms and other types of deadly force. This policy statement applies to all personnel who bear firearms in accordance with AFR 125-26.

2. FIREARMS SAFETY RESPONSIBILITIES:

a. To lessen the possibility of accidental discharge, firearms must be loaded and unloaded, whenever possible, at a clearing pit established at each firearms storage facility. As a minimum, loading and unloading will be supervised by a knowledgeable NCO who is also qualified with the weapon. *(See AFR 125-26, paragraph 10c.)*

b. Firearms will not be drawn or aimed except in compliance with Air Force policy on the use of force, if necessary to lawfully apprehend or if their authorized use appears imminent or the weapon is turned into storage.

c. Warning shots will not be fired. This firing is a hazard to innocent persons and may prompt a suspect to return the fire, further endangering innocent bystanders.

d. If firing at a person, the marksman should aim to wound, rather than to kill.

e. Because of the solemn responsibilities involved, it is imperative that prior to being authorized to bear firearms, all personnel are thoroughly indoctrinated in their use and the circumstances in which firearms may be justifiably used.

f. The unauthorized discharge of any firearm, whether it is an accidental or deliberate act, is a serious matter and must be thoroughly investigated. Any person who is aware of such an incident will report it to the Chief of Security Police who will immediately initiate an investigation.

3. FIREARMS SAFETY RULES: I will:

a. Promote firearms safety through my own actions.

b. Never carry a round of ammunition in the chamber of any weapon that uses a bolt assembly or slide operating mechanism, except at my commander's direction when in combat or other hostile situation.

c. Never draw firearms as a joke or jest.

d. Never use a firearm to play tricks, games, quick-draw, or engage in any other form of horseplay, or allow myself to become involved in unauthorized acts.

e. Never use firearms against individuals who have committed only minor offenses or crimes.

f. Regard all firearms as being loaded.

g. Know and use the safety devices of all firearms with which I am armed.

h. Never aim or point a firearm unless I intend to shoot.

i. First identify my target and insure a clear field of fire before discharging a weapon.

j. Be especially cautious when loading and unloading a firearm.

k. Never arm myself with a weapon I am not fully qualified to use.

l. Bear in mind at all times that my conduct in handling the weapon is my own responsibility.

4. USE OF FORCE:

a. Personnel may use force to discharge assigned duties only when force is absolutely necessary. The degree of force used must be the minimum necessary to accomplish the duty. Application of an excessive amount of force is detrimental to the maintenance of law and order and may subject the one who applies it to disciplinary action. The minimum force necessary may include physical apprehension and restraining techniques, chemical dispersers, the baton, or the military working dog; all of which result in an application of less than deadly force.

b. The use of deadly force (that force applied with the intent of causing, or which a reasonable person should know would cause, death or serious bodily harm) is prohibited, except as a last resort. The use of deadly force is justifiable only as a last resort under the following circumstances:

(1) To protect themselves from loss of life or serious bodily harm.

(2) To protect the life of another, or to prevent the commission of a serious offense involving violence and threatening death or serious bodily harm (such as arson, armed robbery, aggravated assault, or rape).

(3) To remove the threat of theft, destruction, or espionage aimed at property or information designated by an installation commander or other competent authority, as vital to national security.

(4) To prevent actual theft or destruction of property designated by an installation commander or other competent authority which – although not vital to the national security – is of substantial importance to the national security. Falling within the purview of this instruction is property specifically designated as having substantial importance to the national security under the Base Resource Protection Program, for example mission essential fuel storage areas, data processing installations, and other major support facilities or equipment.

(5) To prevent the actual theft of property which is inherently dangerous to others, for example: property which, in the hands of an unauthorized individual, presents a potential threat of death or serious bodily harm to others. This includes weapons, ammunition, explosives, and chemical munitions.

(6) To apprehend or prevent the escape of a person reasonably believed to have committed an act of the nature specified in paragraph 4b(2) above. If the official did not witness the offense, he must have sufficient information to know as a virtual certainty that the suspect either has committed, or attempted to commit, the offense.

(7) To apprehend or prevent the escape of a person whose unauthorized presence in the vicinity of property or information vital to the national security has presented an actual threat of theft, sabotage, or espionage.

(8) To apprehend or prevent the escape of a prisoner whose escape has been determined by the corrections officer or installation commander to create a threat of death or bodily harm to others.

(9) When directed by the lawful order of a superior official governed by AFR 125-26.

I HAVE READ AND U	FETY AND USE OF FORCE.
DATE	
PRINT FULL NAME (Last, First,	

AF FORM JUN 77 497 (REVISED)

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