

# CAPA Pyrotechnic Bird Scare Cartridge System



**1. INTRODUCTION:** From FY 95-FY11 a total of 69,417 USAF wildlife strikes were reported with an associated cost of nearly \$478 million including 8 destroyed aircraft and 25 human fatalities. Not all wildlife species react the same to stimuli; thus the most effective strategy to resolve wildlife hazards at airfields is to integrate the use of several methods or approaches. Having several tools and employing different techniques will also alleviate wildlife habituation to a specific mitigation or harassment technique. Historically, harassing and depredating high-flying birds has been an issue due to limited resources. Available and authorized USAF resources were not suitable to harass hazardous birds at higher altitudes. CAPA cartridges have been successfully and safely employed at numerous civilian and military airfields in the United States and internationally for wildlife control by contracted wildlife damage control specialists. It is important to recognize CAPA cartridges are expensive and should be utilized sparingly when required. However, they are economical when considering the possibility of significant damage to or loss of equipment, personnel, and mission capability. Commanders wishing to employ the CAPA pyrotechnic bird scare cartridge system as part of their integrated pest management program must ensure their BASH personnel are familiar with and abide by these CONOPs for the safe and effective employment of this tool.

**2. SCOPE/OBJECTIVE:** The purpose of this document is to provide airfield wildlife damage control personnel with basic operating, storage, transportation, handling procedures, and accountability associated with the safe employment of the high altitude CAPA pyrotechnic bird scare cartridge system.

**3. INFORMATION:** High-altitude (<1,000 feet AGL) bird scare cartridges commercially known as “CAPA cartridges” are manufactured by the Etienne LaCroix Company of France. These cartridges are intended to be used to frighten high-flying birds which pose a strike risk to aircraft in the vicinity of airfield runways and associated flight corridors/patterns. CAPA cartridges are launched using a 4 caliber signal launcher (26.5mm flare gun) with a sub-caliber sleeve insert. CAPA cartridges are 91mm (3.58 in) long and 18.2 mm (.72 in) in diameter. The four primary components that make up the cartridge are the primer, ignition propellant composition, delay composition, and sound composition. When engaged, the primer ignites the propellant composition, quietly boosting the entire cartridge to nearly 300 m (1,000 feet) AGL within seven seconds where a small secondary charge detonates the sound composition creating a publicized 150 decibel noise.

**4. CLASSIFICATION:** In accordance with internationally recognized munitions designations; the CAPA cartridge has a Hazard Classification of 1.4E, UN Serial Number of UN0471, and US DOT EX Code of 9810074 (Attachment 1). The USAF granted an Interim Hazard Classification for transportation and handling of the CAPA cartridge system (Attachment 2) which is updated annually and accessible on

the Global Ammunition Control Point (GACP) web site. The 4 caliber signal launcher (26.5mm flare gun) with its associated sub-caliber sleeve insert designed to support the 18.2mm CAPA bird scare cartridge are not considered a firearm system as defined in 18 U.S.C., Chapter 44, Section 921 (a) (3) (A) (Attachment 3) but will be treated as such after initial commercial off-the-shelf (COTS) purchase for storage and accountability. The only authorized sub-caliber sleeve insert is designed specifically for the 18.2mm CAPA cartridge. No other sub-caliber sleeve inserts are authorized for use with the 4 caliber signal launcher (26.5mm flare gun). The Air Armament Systems Safety Office evaluated the design of the CAPA bird scare cartridge system to include the associated signal launcher and found the system provides adequate safety design for USAF operational use. Subsequently, the USAF Nonnuclear Munitions Safety Board issued a USAF operational use certificate for the CAPA bird scare cartridge system (Attachment 4). The GACP evaluated and approved the CAPA system for COTS purchase. The CAPA COTS package is accessible on the GACP web site under approval number 20080003. Numerous on-line vendors sell the CAPA pyrotechnic signal launcher with its associated sub-caliber sleeve and cartridges.

**5. HAZARDS:** If any incident involving the CAPA system is classified as a mishap (Class A-E to include High Accident Potential occurrences or HAP), notify the organizational safety personnel and appropriately document the details within the Air Force Safety Automated System. HAPs should include but are not limited to multiple (3 per case) misfires, partial deployment, or observed/reported launch from inside a vehicle.

Treat every pyrotechnic signal launcher as though it was loaded.

Excess dirt, particles, powder residue, and general soiling within the barrel, barrel pin groove, breach, and firing pin will increase firing failure potential and could result in stuck cartridges or barrel detonations.

Do not position any of the cartridge pins within the vertical markings on the barrel when inserting a cartridge into the barrel sleeve insert. Positioning any one of the pins within the markings will increase the probability of a misfire or partial deployment. Refer to Attachments 5, 6, and/or 7 for detailed instructions and associated diagrams.

Forcing the cartridge into the barrel or pushing on the end of the cartridge once it is inside the barrel may break the delicate cartridge pins rendering the cartridge unable to fire.

Do not fire a CAPA cartridge directly into the wind.

In the rare event a CAPA cartridge misfires (cartridge does not deploy from the signal launcher), do not look down the muzzle end of the signal launcher. Keep the barrel pointed in a safe direction (elevated away from people, structures, and trees) and be prepared for a delayed firing. Wait at least one (1) minute. Continue to point the barrel and muzzle in a safe direction, reengage the signal launcher hammer, and reattempt employment. Misfires are typically caused by incorrectly positioning the cartridge pins within the vertical markings on the barrel when inserting and seating the cartridge into the barrel sleeve insert (see Attachments 5, 6, and/or 7). If the cartridge still does not deploy after a second attempt, eject the cartridge from the signal launcher onto the ground, mark the area, and contact Explosive Ordinance

Disposal for final disposition of the unspent cartridge. Do not pick up the unexploded cartridge. Take time and pay particular attention to cartridge loading procedures on subsequent cartridge employments ensuring cartridge pins are not between barrel vertical markings. Report any problems directly to the manufacturer if misfires are common amongst a batch or case of cartridges.

In the rare event a CAPA cartridge partially deploys (cartridge motor partially/fully fired and deployed from the signal launcher) but did not explode; mark the area and contact Explosive Ordinance Disposal for final disposition of the unspent cartridge. Do not pick up the unexploded cartridge. Partially deployed cartridges are typically caused by incorrectly positioning the cartridge pins within the vertical markings on the barrel when inserting and seating the cartridge into the barrel sleeve insert. Pay particular attention to cartridge loading procedures on subsequent cartridge deployments ensuring cartridge pins are not between barrel vertical markings. Report any problems directly to the manufacturer if partial cartridge deployments are common amongst a batch or case of cartridges.

Always carry a fire extinguisher for use in case of a small ground fire. Contact the fire department prior to conducting CAPA operations as a proactive preventative measure. Contact the security forces prior to conducting CAPA operations so they are aware munitions are being expended on the installation.

CAPA cartridges, specifically the spent motors, create FOD debris. Exercise diligence when expending CAPA cartridges over the Aircraft Movement Area. Immediately retrieve any FOD debris when detected and dispose of properly.

**6. OPERATING AND SAFETY PROCEDURES:** The CAPA pyrotechnic bird scare cartridge system, manufactured by Etienne LaCroix and certified for operational use by the USAF Nonnuclear Munitions Safety Board, as outlined in these CONOPs, is the only commercially available off the shelf pyrotechnic harassment system authorized for use by USAF personnel other than the centrally managed pyrotechnics (15 mm Bangers and Screamers and 12 ga Bird Scare Shell Crackers) listed in the Ground Munitions Authorization Tables (GMAT) Module on the GACP web site. All users of the CAPA pyrotechnic bird scare cartridge system on USAF-managed airfields and properties must be familiar with and abide by these procedures:

Anyone employing CAPA cartridges on USAF-managed airfields or properties must be familiar with and abide by these CONOPs and the host installation's BASH Plan. Modify the installation BASH Plan to incorporate these CONOPs if CAPA cartridges will be used on that installation. A briefing and video on CAPA system employment are attached for reference (Attachments 6 and 7).

Acquire the CAPA pyrotechnic bird scare cartridge system in accordance with AFI 21-201 (COTS procedures). Consult with the installation Munitions Accountable Supply Officer prior to the formal coordination process.

Personnel at non-US Territory, OCONUS, airfields must seek counsel with host nation's Aviation Department for regulations prior to, and pertaining to the use of pyrotechnics for wildlife hazard mitigation.

Coordinate with Air Traffic Control Tower personnel prior to employing the CAPA system to avoid harassing wildlife into an airborne aircraft's flight path. Ensure Tower Controllers are aware that CAPA cartridges explode much higher (up to 1,000 feet AGL) than conventional pyrotechnics (up to 200 feet AGL).

Wear protective gloves, hearing protection, and approved safety glasses when loading and employing the CAPA system. Leather or "aircrew" style nomex gloves will provide adequate protection. "Insert plug" or "ear-muff" style hearing protection will offer sufficient noise dampening and must be worn when operating the CAPA pyrotechnic bird scare cartridge system. Use safety glasses with an ANSI Rating of Z87 (or MIL-V-43511C) or greater.

Treat every pyrotechnic signal launcher as though it were loaded.

Do not alter or modify the pyrotechnic signal launcher or CAPA cartridges in any way.

Do not load the cartridge into the signal launcher or transport a loaded signal launcher while in a vehicle or building.

Do not employ any cartridge from within a vehicle (moving or stationary).

Never point the signal launcher at anyone or look into the muzzle end of the barrel.

Never employ the signal launcher toward aircraft, people, or human inhabited structures.

Never employ the CAPA system inside a structure.

Do not employ the CAPA system in the vicinity of other flammable/combustible material.

Do not employ the CAPA system from within or directly toward trees or shrubbery.

Analyze the surroundings to best determine possible inadvertent outcomes. Consider and evaluate areas where unexpended CAPA cartridges may fall and explode with ground contact.

Do not fire CAPA cartridges when remaining cartridge engine debris or unexploded ordinance may depart USAF property. Take care to aim CAPA cartridges so any remnants fall on government property.

Accurately identify the targeted species prior to harassment. Do not harass Federally-listed Threatened and Endangered species or species covered under other USFWS Regulations without a proper permit.

To load a cartridge into the signal launcher, point the signal launcher muzzle at the ground, open the signal launcher by simultaneously pulling on the two side buttons. Confirm the barrel, pin groove, breech, firing pin, and barrel sleeve are free from particles and powder residue. Clean all components with the provided wire brush and solvent if required. Insert the CAPA cartridge sleeve into the breeched end of the barrel, accessible only when the signal launcher is "cracked" open. Slide a CAPA cartridge

into the sleeve and barrel, seating the CAPA cartridge pins carefully into the barrel pin groove. Pay particular attention not to position any cartridge pins between the vertical markings on the barrel near the “hinge.” Do not force the cartridge into the barrel or push on the end of the cartridge once in the barrel. Excess force can break the delicate cartridge pins. Close the signal launcher using both hands, one on the barrel and the other on the grip. Do not “wrist-snap” the signal launcher closed. Keep fingers away from the trigger until ready to employ the system. Refer to Attachments 5, 6, and/or 7 for detailed instructions and associated diagrams.

Excess dirt, particles, powder residue, and general soiling within the barrel, barrel pin groove, breach, and firing pin will increase firing failure and could result in stuck cartridges or barrel detonations.

Do not position cartridge pins within the vertical markings on the barrel as this will increase the probability of firing failure.

Forcing the cartridge or pushing on the end of the cartridge into the barrel may break the delicate cartridge pins rendering the cartridge unusable.

Do not fire a CAPA cartridge directly into the wind. Be aware of the approximate wind direction and velocity. Use the wind direction and velocity to gauge where the CAPA cartridge will detonate. Adjust aim accordingly to take advantage of the wind.

Ensure the CAPA system, when employed, is always pointed vertically “down range” towards the intended target.

Activate the hammer by manually pulling it back. Using a fully extended arm, point the signal launcher toward the intended target at an angle equal to or greater than 45 degrees above the surrounding terrain. Pull the trigger.

Do not employ the CAPA cartridge at intended targets positioned at or below a 45 degree angle to the horizon.

Open the signal launcher immediately after firing by simultaneously pulling on the two side buttons to allow faster dissipation and discharge of the propulsive gases.

The CAPA pyrotechnic bird scare cartridge system is designed and intended to be used as a wildlife harassment/hazing and dispersal tool. Using the CAPA system for purposes other than wildlife harassment/hazing and dispersal is inappropriate and is subject to disciplinary actions.

**7. HARASSMENT TECHNIQUES:** Employ CAPA cartridges sparingly against high altitude flying birds (400-1,000 feet AGL). Use the economical 12 gauge Shell Crackers and 15 mm Bangers and Screamers against low altitude birds (100-400 feet AGL).

Do not employ the CAPA cartridge at intended targets positioned at or below a 45 degree angle to the horizon.

Always discharge the CAPA signal launcher with a fully extended arm.

Do not fire a CAPA cartridge directly into the wind. Be aware of the approximate wind direction and velocity. Use the wind direction and velocity to gauge where the CAPA cartridge will detonate. Adjust aim accordingly to take advantage of the wind.

**8. STORAGE, TRANSPORTATION, AND HANDLING PROCEDURES:** The Air Force Small Arms Program Office evaluated the CAPA signal launcher with its associated sub-caliber sleeve insert and does not consider it a firearm system (in agreement with BATF document, Attachment 3). However, after COTS acquisition, treat the launcher and sleeve as a Class IV weapon and major subassembly respectively for storage and accountability purposes.

Maintain an empty signal launcher at all times until ready to employ the cartridge system.

Do not load a CAPA cartridge into the signal launcher or transport a loaded signal launcher while in a vehicle (moving or stationary).

Do not discharge any cartridge from within a vehicle (moving or stationary).

Unload the signal launcher prior to transport or storage.

Remove the sleeve insert and any cartridge prior to storing the signal launcher.

Clean the signal launcher prior to storage after each shift (if used).

Store and transport CAPA cartridges in approved containers. The manufacturer's original packaging is approved for routine storage and transport of cartridges.

When not in transport or use, store all CAPA cartridges along with the signal launcher and sleeve insert in a GSA-Approved Class 5 weapons storage container.

Ensure the location of the storage container received an approved munitions site license through the host installation's Weapon Safety (SEW) office. Store and maintain only mission-essential quantities of CAPA cartridges. Refer to AFMAN 91-201 for site license requirements and procedures.

Secure all CAPA system components when not in use in approved portable safes or lockable containers. Refer to AFMAN 91-201 for site license requirements and procedures.

Do not leave any CAPA system components unattended or unsecured.

**9. ACCOUNTABILITY:** The 4 caliber signal launcher (26.5mm flare gun) with its associated sub-caliber sleeve insert designed to support the 18.2 mm CAPA bird scare cartridge are not considered a firearm system as defined in 18 U.S.C., Chapter 44, Section 921 (a) (3) (A) (Attachment 3) but will be treated as Class IV firearm and major subassembly respectively after initial purchase for storage and accountability purposes.

Annotate the signal launcher's unique identification markings (model/serial number) on the Unit's locally managed accountability list (i.e. Logistics Readiness Squadron R-15 Listing).

Classify and store the signal launcher and associated sub-caliber sleeve insert as if they were a Class IV firearm and major subassembly (GSA-approved Class 5 safe). Facilities where GSA-Approved Class 5 weapons storage containers are used to store firearms and major subassemblies must be approved by the Installation Commander or designee. All approved BASH-related weapons, launchers, subassemblies, and munitions have the same security requirements as each other and may be stored together if the site is properly licensed (AFI 31-101 and AFMAN 91-201) and Commander approval is granted.

The only authorized sub-caliber sleeve insert is designed specifically for the 18.2mm CAPA cartridge. No other sub-caliber sleeve inserts are authorized for use with the 4 caliber signal launcher (26.5mm flare gun).

Create a manageable database system to account for each expended CAPA cartridge as well as other munitions used for wildlife management

Document types of birds harassed and what type of behavior was experienced pre and post harassment operations. Also document what type of flight operations were being executed at the time (if any).

## **10. ATTACHED REFERENCES:**

1. Material Safety Data Sheet (MSDS)
2. Interim Hazard Classification (IHC) 13-70
3. DOT BATF Letter
4. NNMSB Certification
5. CAPA Signal Launcher Firing and Maintenance Procedures
6. CAPA System Operation Briefing
7. CAPA System Operation Video

## **11. POC:**

HQ AFSEC/SEFW  
9700 G Ave SE, Bldg 24499  
Kirtland AFB, NM 87117  
Commercial 505-846-5673 or 5674  
DSN 312-246-5673 or 5674