5 June 2008

MEMORANDUM FOR REGION AND WING COMMANDERS

SUBJECT: ARCHER Program and Policy Update

1.   An ARCHER summit was held at the National Headquarters to discuss the future of the program with federal customers, support agencies, and CAP leaders. Numerous improvements were discussed and many of their recommendations will take shape over the next year.

2.   The summit attendees analyzed the missions CAP has performed and determined that ARCHER is most useful in assisting with aircraft SAR missions and it is also good for documenting the extent of tree/plant diseases, looking for man-made objects in the water, and for assisting with the secondary effects of situations like oil spills on the surface of the water. ARCHER is also good for detecting hematite soil and other "disturbed earth" that has been dug up and placed on the surface (e.g., it could aid in tunnel detection) or "disturbed earth" caused by tire tracks of vehicles operating on unpaved surfaces. This and the ARCHER change detection feature could be especially helpful along the U.S. border or around military base perimeters. Finally, the group determined that ARCHER is great for providing hyperspectral data for universities and research agencies such as the Air Force Research Laboratory. One point to highlight is ARCHER is very good at automatically geo-referencing imagery with a high degree of accuracy. While we have had many positive opportunities, it is important to note that after extensive testing for counterdrug missions, the experts have concluded that ARCHER in its present configuration will not be effective (without an unacceptable false alarm rate) at detecting specific plants. However, the Air Force is studying a proposal on how to upgrade the ARCHER system so that it can effectively conduct these missions in the future.

3.   The summit also determined that there are some things that CAP leaders need to address right away to be sure the program continues to be successful:

     a.   There is a joint ownership responsibility between the region and wing commander where the systems are based. The region and wing commanders need to personally take "ownership" for all aspects of the GA-8 and ARCHER system. This includes care of the aircraft/equipment and responsibility to ensure all aircrew members are trained and ready to execute ARCHER missions.

     b.   Past experience has shown that CAP needs more ARCHER operators and also needs more personnel in the pipeline to become operators. Several things are being done to fix this problem. One of those things is to create two different qualifications for ARCHER operators. The first qualification will be the same fully qualified ARCHER console operator that we have now, and the other one will be an ARCHER TRAC operator (basically a navigator) who will help the pilot and ARCHER console operator ensure that the sensor images 100 percent of the search area. Additional details for these qualifications are in Attachment 1.

     c.   There have been some reports of ARCHER operators and GA-8 pilots not maintaining proficiency for various reasons. These personnel have had a difficult time completing their assignments for real-world missions and this reflected poorly on CAP.   To address this problem CAP is going to require ARCHER crews to conduct training on a periodic basis. Details are in Attachment 1.

d.   There are still many personnel unfamiliar with ARCHER, especially commanders and key incident staff. Training materials are already available on the WMIRS main page and ARCHER instructors will be developing additional materials in the future. There will also be qualification tasks for incident staff officers to make sure they are trained and proficient in how to properly employ ARCHER. Details for this are being finalized.

e.   There have been problems with some of the ARCHER systems and GA-8s not being properly maintained or stored. These systems are expensive and cannot be easily replaced. Therefore, we need to be extra cautious to protect them. Details are in Attachment 1.

f.   Just like our aircraft and vehicles, CAP has to be able to justify and document the usage of our ARCHER equipment. In order to facilitate this, an ARCHER log sheet was developed to assist with tracking the usage of both the ground station and the in-flight system; both have Hobbs meters to accurately track usage. (see Attachment 3) System custodians will be expected to begin tracking usage monthly starting on 1 July and will be required to input usage data into WMIRS by the same monthly deadline required for aircraft.

g.   CAP charges a $235 hourly fee (listed in CAPR 173-3, "Payment for Civil Air Patrol Support") for the use of ARCHER on state or other agency missions. All funds generated are managed by NHQ. These funds are used to replace components in systems that break and also to purchase items like hard drives.

4.   Thank you for your support of this important advanced technology program. Please contact the Advanced Technology Group Team Leader, Col Gene Hartman, at nodak1@verizon.net (703) 451-2853; the National Headquarters Director of Missions, John Salvador, at jsalvador@capnhq.gov (888) 211-1812, extension 301; or his deputy, John Desmarais, at jdesmarais@capnhq.gov (888) 211-1812, extension 303 if you have any questions or suggestions on how to make this program better.

AMY S. COURTER
Brigadier General, CAP
Interim National Commander

Attachments:
1. ARCHER Program and Policy Update
2. ARCHER Aircrew Proficiency Flight Profile
3. ARCHER Log Sheet

cc:
HQ CAP/CS/EX/EXA/GC/MD/DO/LG/MX/IT
Senior Advisor for Operations (Col Skiba)
Senior Advisor for Administration (Col Guimond)
Strategic Missions Advisor (Brig Gen Anderson)
Advanced Technology Team Leader (Col Hartman)
Wing Administrators
HQ CAP-USAF/CC/CV/XO
CAP-USAF LR/CCs
State Directors

ARCHER Program and Policy Update

June 2008

1. There is a joint ownership responsibility between the region and wing commander where the systems are based. The region and wing commanders need to personally take "ownership" for all aspects of the GA-8 and ARCHER system. This includes care of the aircraft/equipment and responsibility to ensure all aircrew members are trained and ready to execute ARCHER missions.

2. Past experience has shown that CAP needs more ARCHER operators and also needs more personnel in the pipeline to become operators. Several things are being done to fix this problem. One of those things is to create two different qualifications for ARCHER operators. The first qualification will be the same fully qualified ARCHER console operator that we have now, and the other one will be an ARCHER TRAC operator (basically a navigator) who will help the pilot and ARCHER console operator ensure that the sensor images 100 percent of the search area.

    a) Additional console operator qualification (4 day class) ARCHER program instructors from each region are being trained. These personnel will provide additional courses in their current 4 day format at Maxwell AFB and at the National Emergency Services Academy (NESA) and they will also assist with qualifying trainees to become fully qualified operators. ("Trainees" are personnel who come close to passing but are not able to satisfactorily complete the course at Maxwell/NESA.)

    b) Region commanders will work with the National Operations and NHQ staff to identify ARCHER TRAC instructors from the list of fully qualified ARCHER console operators in their region. ARCHER TRAC instructors are being identified and they will soon begin providing training locally. The region/wing will determine how much training is needed based on their crew requirements. ARCHER TRAC trainees do not have to complete the ARCHER prescreening course. Software to support ARCHER TRAC training will also be distributed to the wings for use on other computers.

    c) Four console operator qualification classes have been held at Maxwell AFB this FY. Two classes will be held at NESA this summer and we expect additional courses to be held there in the future. Additional ARCHER training courses will be held at Maxwell AFB this FY if funds are available.

3. There have been some reports of ARCHER operators and GA-8 pilots not maintaining proficiency for various reasons. These personnel have had a difficult time completing their assignments for real-world missions and this reflected poorly on CAP. To address this problem CAP will require the following:

    a) ARCHER operators will be required to fly at least one full proficiency sortie annually and conduct one equivalent training sortie on the ARCHER ground station every six months. Details of sortie requirements will be provided separately to qualified operators. Mechanisms will be put in place to track this in Ops Quals.

    b) All GA-8 pilots need to be able to support the ARCHER program, but many have not been trained to do that. An ARCHER mission profile has now been developed for all ARCHER aircrew members. Please note that it requires the training profile to be conducted as a crew. That

means that a full four person ARCHER crew including an ARCHER TRAC and ARCHER console operator must be aboard. GA-8 pilots will also be required to complete this training profile at least annually. Ops Quals will also be updated to track this requirement.

c) During GA-8 training missions everyone should practice working together as a crew. There are only a few types of missions the GA-8 should be flying without ARCHER operators being onboard practicing. CAP regions/wings need to maximize the training opportunities available for all ARCHER operators and this will help do that. Also, at least one of the wing funded missions every year needs to involve a GA-8/ARCHER. (Required for wings that have a GA-8/ARCHER assigned and highly recommended for all others.)

d) Mission Commander. The most experienced ARCHER aircrew member (no matter what position this person occupies in the plane) should be designated Mission Commander. This person has the responsibility for the overall success of the mission and is the final authority on all aspects of the mission. The Mission Commander will be responsible for prebriefing all mission details. The PIC (who could also be the Mission Commander) will brief (as a minimum) weather, NOTAMS, aircraft safety and emergency procedures. Note: This does not override the PICs responsibility for the aircraft and overall safety of flight.

e) Training funds for GA-8/ARCHER proficiency will come out of the budgets NHQ provides to the regions/wings each year. Region and wing commanders need to ensure that adequate funds are set aside for crewmembers to maintain their proficiency to conduct ARCHER missions.

4. There are still many personnel unfamiliar with ARCHER, especially commanders and key incident staff. Training materials are already available on the WMIRS main page and ARCHER instructors will be developing additional materials in the future. There will also be qualification tasks for incident staff officers to make sure they are trained and proficient in how to properly employ ARCHER. Details for this are being finalized.

5. There have been problems with some of the ARCHER systems and GA-8s not being properly maintained or stored. These systems are expensive and cannot be easily replaced. Therefore, we need to be extra cautious to protect them. The following should clarify the requirements for these systems:

a) All GA-8s are expected to be hangared at their home stations and when deployed for extended periods. This will provide security for the ARCHER system and help prevent sun and other weather-related damage to the aircraft. Additional funding is not available from NHQ to pay for hangaring expenses. Regions/wings should base the aircraft at locations where hangaring can be provided free-of-charge if possible.

b) Only software and hardware modifications or installations approved by the National Technology Center (NTC) will be made to the ARCHER systems. The NTC staff has already had to repair a few systems that had unauthorized software installed and it interfered with the operation of the ARCHER system.

6. Just like our aircraft and vehicles, CAP has to be able to justify and document the usage of our ARCHER equipment. In order to facilitate this, an ARCHER log sheet was developed to assist with tracking the usage of both the ground station and the in-flight system; both have Hobbs meters to accurately track usage. System custodians will be expected to begin tracking usage monthly starting

on 1 July and will be required to input usage data into WMIRS by the same monthly deadline required for aircraft.

7. CAP charges a $235 hourly fee (listed in CAPR 173-3, "Payment for Civil Air Patrol Support") for the use of ARCHER on state or other agency missions. All funds generated are managed by NHQ. These funds are used to replace components in systems that break and also to purchase items like hard drives.

ATTACHMENT 9-8 – APPROVED ARCHER AIRCREW PROFICIENCY FLIGHT PROFILE #8
ARCHER Mission Profile

This profile may only be flown by GA-8 pilots (who are qualified SAR/DR Mission Pilots) and ARCHER aircrew members or properly supervised trainees. If onboard, Instructor Pilots must be qualified PICs in the GA-8 flown since they are expected to be able to assume command of the flight as needs dictate. The following is an approved profile for "Proficiency Flight Training for Mission Pilots." Proficiency flights are designed to prepare crews to fly Air Force missions, and though routine flight procedures can be practiced, the majority of a proficiency flight must be focused on the training outlined in the profile below. For example, crews flying the ARCHER mission profile can reasonably conduct pattern work with multiple touch and go landings, but should not plan to spend the majority of the flight time in the airport traffic pattern. PICs will fly as much of the approved mission profile as safely possible understanding that requirements for trainees, weather, or other factors may prevent the completion of all listed events. This proficiency flight can be an Air Force assigned non-reimbursed mission authorized by the State Director that is released by a flight release officer using mission symbol B-12 (reference CAPR 60-1, attachment 10). The monthly mission number and mission profile number will be noted on the CAPF 99 by the FRO. Alternatively, this proficiency flight can be an Air Force assigned reimbursed mission authorized by the wing commander, SD, and LR and released by a flight release officer using mission symbol A-7 (reference CAPR 60-1, attachment 10). Requests for this training profile under this option will be made through WMIRS.

This profile is meant to exercise the entire ARCHER Crew (Archer Pilot, Archer Co-Pilot/Observer, ARCHER TRAC Operator, and ARCHER Console Operator). Successful completion of this training will require crew coordination and interaction to fly the ARCHER mission profile with good sensor coverage of the search area.

Primary ARCHER Crew Position Duties:
> **ARCHER Pilot:** Ensure safe operation of the aircraft, PIC; Provide stabilized platform for ARCHER data collection.
> **ARCHER Co-Pilot/Observer:** Clear for traffic; Provide situational awareness assistance to the ARCHER Pilot (especially when in the grid); Maintain radio communications with CAP mission base.
> **ARCHER TRAC Operator:** Conduct mission planning for sortie; Provide track guidance to ARCHER Pilot to maximize sensor coverage; Coordinate mission execution with ARCHER Console Operator.
> **ARCHER Console Operator:** Setup and operate ARCHER equipment and conduct in-air review of targets. Responsible for ground analysis of ARCHER data.

Mission Commander: The most experienced ARCHER aircrew member (no matter what position this person occupies in the plane) should be designated Mission Commander. This person has the responsibility for the overall success of the mission and is the final authority on all aspects of the mission. The Mission Commander will be responsible for prebriefing all mission details. The PIC (who could also be the Mission Commander) will brief (as a minimum) weather, NOTAMS, aircraft safety and emergency procedures. Note: This does not override the PICs responsibility for the aircraft and overall safety of flight.

Plan and brief an ARCHER sortie as a crew. Special emphasis should be placed on mission risk assessments, the routes to and from the search area, aircraft limitations and operating procedures, and crew communications procedures.

Brief the overall mission objectives, crew member in-flight communication procedures, mission responsibilities (ARCHER Console Operator, ARCHER TRAC Operator and ARCHER Pilot and CoPilot/Observer) as appropriate. Brief search area planning, coverage, estimated time, method of track alignment (turns) and return to base. Review ground and in-flight emergency procedures, taxi, takeoff, and in-flight procedures with each crew member.

Construct an ARCHER search grid using the following parameters:
Standard Quarter Grid Search or, Contour Search of a terrain feature.
Leg direction: Grid Search or Free rotate
Heading: 090° or as appropriate for Contour Search
Latitude: Appropriate for Locality
Longitude: Appropriate for Locality
Altitude: 2500 ft AGL
Leg overlap: 20%
Leg length: 5.0 nm

The ARCHER TRAC Operator will guide the pilot to enter the search grid at the planned entry point. The aircraft should be at search speed, altitude and lined up for entry no less than 3 miles prior to grid entry.

During the flight, the ARCHER TRAC Operator shall provide continuous course, altitude and ground speed corrections to the pilot to ensure proper sensor coverage of the search area. The ARCHER TRAC Operator will also complete the control manipulations and activities as outlined in the ARCHER TRAC Operator Task Guide.

During the flight, the ARCHER Console Operator shall coordinate with the ARCHER TRAC Operator, and complete the control manipulations on the ARCHER Console and activities as outlined in the ARCHER Operator Task Guide.

An ARCHER instructor may review the ARCHER TRAC mission data after the flight, so do not delete any mission data from ARCHER TRAC computer.

An ARCHER instructor may review the ARCHER console mission data after the flight, so do not delete any mission data from the Archer System.

Perform a normal landing to a full stop.
Shut-down, tie-down, and refuel as appropriate.
Close the flight plan as necessary.

After the flight, the Mission Commander will review the in-flight coverage data with the crew. Areas to be debriefed include: efficiency and search pattern coverage, inter-plane communications between all crew members, overall mission effectiveness and lessons learned/areas needing improvement. A review of ARCHER TRAC coverage data and ARCHER Console data should be done to help visualize the actual course flown and to aid in the debriefing of the training activities. The Mission Commander should also debrief each crew member on how well they accomplished their mission responsibilities.

ARCHER LOG PAGE

TO BE FILLED OUT EVERY ARCHER MISSION

SYSTEM LOCATION: ☐ AIRCRAFT ☐ GROUND STATION

N _____ **C P F -** _____ **PAGE #** _____

DATE	MISSION NUMBER	SORTIE NUMBER	ARCHER HOBBS STOP / ARCHER HOBBS START / ARCHER HOBBS TOTAL	ARCHER CONSOLE OPERATOR	ARCHER TRAC TECHNICIAN
FILE LOCATION:					
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LOCAL REPRODUCTION AUTHORIZED