

McMillan Airfield Operations Procedures

The
Naval Postgraduate School's
Center for Interdisciplinary Remotely-Piloted Aircraft Studies

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INTRODUCTION

Operating Concept: All CIRPAS flight operations are conducted by the Naval Postgraduate School (NPS) or our Caltech contractor(s) for NPS. In agreement with the CAARNG CIRPAS maintains and manages a UAV Range within the restricted air space (RAS) designated R-2504. CIRPAS invites other UAV organizations to utilize the UAV Range on a cost reimbursable non-interference basis.

1. General Information:

- a. Camp Roberts, CA: Camp Roberts California Army National Guard Training Site is located in the California Central Coast region approximately half way between Los Angeles and San Francisco, CA, about 110 miles south of Monterey, CA and the Naval Postgraduate School and approximately 25 miles east of the Pacific Ocean.
- b. McMillan Airfield: McMillan Airfield (designated CA62) is located near the base's southern boundary at 35° 43'N 120° 46'W, UTM Grid 10SGQ 025546. McMillan's runway is 3500' long, 65' wide with 10' shoulders and lays on a heading of 281 degrees and at an elevation of 920'.
- c. Restricted Air Space (RAS). The airfield is located within restricted area designated R-2504 (surface to 15kft MSL). R-2504 is approximately 5 x 9.5 miles (8K x 16K). R-2504 extends from the surface to 15,000 feet above Mean Sea Level (MSL). The RAS is only available between 0600 to 2359.
- d. Facilities include:
 - i. Office space with conference room and theater type briefing room with a large screen monitor, telephones and internet connectivity available to our users.
 - ii. 40'x70' hangar
 - iii. Limited Material Handling Equipment is on site.
 - iv. The airstrip is paved and marked with centerline and limit line markings. Wind socks are located on the north side of the runway at either ends. Currently the airfield is daytime operations only and non-instrumented. The runway is a B-II category airstrip, adequate for a maximum 12,500 lbs. aircraft.
 - v. Various antenna masts and stands.
 - vi. Dedicated repeated voice frequencies and radios for our users.
- e. SUAV Range: CIRPAS also manages a Small UAV Range (SUAV) on Camp Roberts for SUAVs that do not require a runway to take off or land. The SUAV Range allows for multiple use of the restricted air space.

Facilities located at the SUAV Range include an Office/classroom, storage area, and work area.

2. Battlespace

- a. The RAS allows for flights over three unique geographic areas:
 - i. The southern portion of the installation is rugged and heavily wooded.
 - ii. The central area is characterized by low rolling hills, grasslands and oak trees.
 - iii. The northern area is mostly defined by the winding Nacimiento River
- b. The training site also contains ranges, firing points, helipads, parachute drop zones and other miscellaneous facilities. An 8,130-acre designated impact area supports live-fire training from any of the 39 artillery firing points and the 24 live-fire ranges available for use at Camp Roberts.
- c. Targets:
 - i. Various old military vehicles “hulks” are located throughout the base and can be used as targets. These include tanks, infantry fighting vehicles, helicopters, trucks, etc. If desired, user may provide their own targets if coordinated with the base.
 - ii. CIRPAS owns and operates an operational Saracen APC which can be positioned as desired.
 - iii. Potential exists to coordinate flight activities with existing National Guard or other military activities.

3. Scheduling:

- a. Military units always have priority of use of the Camp Roberts Range and airspace.
- b. The Naval Postgraduate School conducts a two week quarterly exercise in conjunction with SOCOM at McMillan Airfield and has priority of use of the runway and facility.
- c. After one and two above, CIRPAS services and assets are available on a first-come, first-served basis. Normal flight times are 0800 to 1700 unless coordinated and approved 3 weeks prior to the event.

4. **Procedures for Requesting Range Time:** The procedures for coordinating CIRPAS support are specified in the Annex A. Basic requirements are:

- a. Identification of air vehicle and payloads
- b. Schedule
- c. Description of Planed Activity
- d. Provisions for liability There are three acceptable solutions:
 - o Government organizations flying government-owned aircraft with government employees are assumed to be 'self-insured.'
 - o Contractor personnel operating government-furnished aircraft under DCMA Inst 8210.1/NAVAIRINST 3710.1E of 13 NOV 2002 approved procedures. A copy of DLA form 8.4-1 with Government Flight Representative Authorization covering the activity must be provided before flight occurs.
 - o Contractor personnel operating aircraft not under DCMA Inst 8210.1/NAVAIRINST 3710.1E of 13 NOV 2002 must provide proof of liability insurance showing limits of coverage of at least \$1 million and naming both California Institute of Technology, CIRPAS/NPS and the CAARNG as an additional insured.
- e. Airworthiness Certification or Safety of Flight Statement. A "Safety of Flight Statement" from the Sponsor or from the Contractor, if no sponsor is involved. Statement needs to show, at a minimum, that the aircraft has undergone a risk analysis, mitigation, and sufficient engineering review to warrant a high state of confidence in its flight capabilities and that the Sponsor or Contractor assumes all responsibility for flight. See example in appendix D.

7. Responsibilities:

- a. The CAARNG has ultimate responsibility over the Range and the restricted airspace. Camp Roberts is designated by the Federal Aviation Administration (FAA) as the Using Agency for R-2504. The Controlling Agency is the FAA Oakland FSS in Oakland, CA.
- b. CIRPAS is responsible for:
 - i. Scheduling Range Usage with the CAARNG IAW established Camp Roberts Directorate of Plans, Training, Mobilization and Security (DPTMS) procedures.
 - ii. Opening and closing Range usage with Range Control.
 - iii. Providing positive control of all airspace activities and establishing procedures and separation standards to apply between restricted

- area activity for all Users under agreement with CIRPAS and NPS to conduct flights in RAS 2504.
- iv. Providing a Range Safety Briefing to all personnel.
 - v. Receiving and approving the Flight Safety Review Brief.
- c. Users are responsible to:
- i. Provide CIRPAS with the information required in Annex A.
 - ii. Provide a weekly schedule of their planned activities
 - iii. Fund the activities a minimum of 30 days prior to the planned deployment.
 - iv. Appoint a Unit Safety Representative, who has thorough knowledge of the UAV capabilities, limitation and safety devices of launch, control, and recovery systems.
 - v. Have thorough knowledge of the boundary of RAS-2504 and take maximum safety precautions to ensure that no UAV is flown outside of the RAS. Altitude, area and time restrictions commensurate with the Restricted Area being utilized will be followed.
 - vi. Provide safety and environmental awareness for all personnel involved in UAV operations.
 - vii. To be knowledgeable about these Procedures and ensure compliance.
 - viii. Conduct the Flight Safety Review to CIRPAS unless waived.

8. Policy:

- a. CIRPAS will assign a Range Safety Officer (RSO) for all users. The CIRPAS RSO will open/close the range, conduct all communications with Range Control, and ensure compliance with range safety procedures. The RSO will post a Range Flag when the Range is HOT. Flight activities are permitted only when the Range Flag is up.
- b. Normal Range times are 08:00 to 16:30, M-F. No flights will be conducted outside of these hours without specific approval.
- c. The individual Users are responsible for Airworthiness and Flight Safety.
- d. Scheduling for use of R-2504 will be for a specific period of time. Activity will not begin prior to, or extend beyond, the scheduled time period without specific approval from CIRPAS.
- e. The approval and scheduling of the range does not in itself indicate sole occupancy of the airspace. Other activities may be authorized. CIRPAS will provide deconfliction measures which must be complied with.

- f. All UAV operations or operational plans will be reviewed by the CIRPAS Site Manager, or representative, and by the CIRAS Government Flight Representative when warranted, to assure all operational and safety factors have been considered and that the mission is compatible to range safety considerations. Flights are not authorized until satisfactory completion of this flight review.
- g. A maximum of two aircraft will be flown in the SUAV Range at any one time.
- h. A maximum of one aircraft will be flown at McMillan Airfield unless multiple use has been approved. Multiple use approval requires a higher level of assurance of deconfliction.
- i. All User personnel will receive an initial Range Safety briefing prior to conducting UAV operations.

9. Airspace Safety Procedures:

- a. Lost Link Procedures: Lost link procedures will be established, and demonstrated, that ensure the aircraft will not leave the RAS.
- b. Flight Termination System: May be required if appropriate for the aircraft.
- c. Surveillance requirements.
 - i. One or more methods of surveillance will be provided for all UAV operations (e.g. visual, GPS tracking).
 - ii. Information obtained from the surveillance system, such as position, speed, altitude and heading will be available upon request to the RSO.
 - iii. If, at any time, the position of an UAV becomes unknown and the UAV fails to respond to programmed “lost link” instructions, if design capability exists, the flight will be terminated in time to preclude the possibility of impact outside the approved designated flight area.
- d. Safety factors for Operational Planning: See Appendix C for maps.
 - i. Operational plans for UAV test and training flights must take into consideration the type of vehicle and the area in which operations have been approved to be conducted.
 - ii. Refer to the Restricted Operation Zones map in Appendix C and specify which ROZ(s) you will need and at what altitude layer(s).

iii. At no time will any participants operate an Unmanned Aircraft (UA) outside of the boundaries of R-2504. Doing so is a violation of Federal Aviation Regulations. Each section of airspace is identified as follows: (NOTE: ALL MEASUREMENTS ARE IN FEET UNLESS OTHERWISE SPECIFIED.)

1. **R-2504.** (Note: Camp Roberts Installation boundaries are **NOT** the same as R-2504 airspace boundaries, **Altitude SFC – 15,000’ MSL.** A 300 FOOT SAFETY BUFFER HAS BEEN PLACED INSIDE OF THE R-2504 BOUNDARY TO ENSURE UAs REMAIN WITHIN THE RESTRICTED AIRSPACE.

N35°42'18.00" W120°47'59.00" to
 N35°42'44.00" W120°48'52.00" to
 N35°43'08.00" W120°49'04.00" to
 N35°44'03.00" W120°48'12.00" to
 N35°46'00.00" W120°49'59.00" to
 N35°48'50.00" W120°50'02.00" to
 N35°51'11.00" W120°47'59.00" to
 N35°51'00.00" W120°46'29.00" to
 N35°49'10.00" W120°45'44.00" to
 N35°47'54.00" W120°45'53.00" to
 N35°47'18.00" W120°44'49.00" to
 N35°46'38.00" W120°44'42.00" to
 N35°42'58.00" W120°45'37.00" to
 N35°42'18.00" W120°47'24.00" to first point.

iv. Each Airspace Safety Plan must take into considerations:

1. The capabilities of the UAVs, such as max altitude, max range, and max speed. Also, what are the wind speed limitations both head and cross, that the UAV may accept prior to launch.
 2. System for flight termination and recovery e.g. parachute, and/or other functions which would affect flight safety.
 3. The methods for obtaining real-time position of the UAV in flight.
 4. Aerodynamic data used to determine flight safety grids which will include, but not be limited to glide ratio of the UAV; detailed performance data; location of launch site, intended recovery site, and parameters of the flight area; method of area surveillance
- v. Fire Hazards in the event of a crash must be evaluated and precautionary measures will be taken. Users must always have a fire extinguisher on the flight line any time they are doing engine**

run ups and using a generator. If the fire danger is high CIRPAS will position its quick reaction fire truck and request on site support from the Camp Roberts Fire Department. Fire Extinguishers are located throughout the hangar and field. It is the user's responsibility to ensure that they are familiar with their locations and use.

e. **NO-FLY ZONES:** Various areas of Camp Roberts are off-limits to both manned and UA. These "off-limit" areas are identified as "No-fly Zones".

i. SATCOM No-Fly Zone.

Altitude SFC – 15,000' MSL
 N35°44'06.30" W120°45'14.15"
 400 meter radius

ii. Ammunition Storage facility No-Fly Zone.

Altitude SFC – 15,000' MSL
 N35°46'58.00" W120°47'01.00"
 350 meter radius

iii. Range Control No-Fly Zone.

Altitude SFC – 15,000' MSL
 N35°47'14.50" W120°47'07.04"
 140 meter radius

iv. Purple Amole No-Fly Zone.

Altitude SFC – 15,000' MSL
 N35°46'22.04" W120°49'24.21";
 N35°45'31.06" W120°49'24.53";
 N35°45'31.79" W120°50'08.86";
 N35°45'46.36" W120°50'11.11";
 N35°46'21.56" W120°50'41.63";
 N35°46'33.46" W120°50'43.23";
 N35°46'32.48" W120°49'38.99";
 N35°46'22.04" W120°49'25.50"
 N35°46'22.04" W120°49'24.21";

(NOTE: NO OFF-ROAD AUTHORIZED FOR VEHICLES OR PERSONNEL).

v. Eagle Nest No-Fly Zone.

Altitude SFC - 1200' MSL.
 N35°45'37.68" W120°48'47.69"
 600 meter radius

10. General Safety Procedures:

- a. UAS operations will be conducted unless positive and reliable communications are between the UAS Ground Control Station and the CIRPAS RSO at all times. It is the discretion of the CIRPAS RSO if he will be co-located at the GCS. If communications are lost, the activity will cease.
- b. CIRPAS will be notified a minimum of two hours prior to planned launch and then, again, fifteen minutes prior to launch.
- c. CIRPAS will be notified when the aircraft has landed and will be given a total sorties count at the end of the day.
- d. No antennas, towers or temporary facilities will be established without direct approval from CIRPAS.
- e. Flight Line: During air operations, only required personnel and vehicles are allowed on the flight line. Those in violation may be removed from the site.
- f. Safety Equipment: All personnel are responsible to insure that proper safety equipment is used for any maintenance or flight operations. Standard safety items, such as fire extinguishers, eye wash station, and ear plugs will be provided by CIRPAS
- g. Mishaps/Accidents: All mishaps, injuries and incidents must be immediately reported to the CIRPAS Site Manager. If warranted, a formal Naval Mishap Report and/or a report to the National Guard may be required.
- h. Driving Laws: Stay on established roads unless mission essential. Obey all speed limits. Speed limits are 25 MPH on paved roads and 15 MPH on tank trails and dirt roads.

11. Administrative Information:

- a. Passes: The California Army National Guard requires personnel to obtain vehicle passes for entrance onto Camp Roberts. All Visitors must stop at the Security Office near the Main Gate and show proof of vehicle registration, driver's license, and proof of insurance to obtain a pass. Visitors are required to maintain these passes at all times while on Camp Roberts. No one is allowed to drive past McMillan Airfield or off of Perimeter Road without specific coordination with CIRPAS and Camp Roberts Range Control. Anyone violating this rule will have his or her pass revoked.

- b. FedEx/UPS/Direct Shipping: Ship to the Camp Roberts Shipping and Receiving Division of DOL at Bldg 907, Camp Roberts CA 93451-5000, phone 805-238-8033, ATTN: CIRPAS 805-227-1313. Direct delivery may be made to the Airfield or any other point on Camp Roberts if you arrange to have a POC meet and escort the shipper. A 5K fork lift is available at the airfield. Please provide the site manager with a date of delivery and POC NLT five working days prior to delivery.
- c. Medical Procedures:
 - i. Emergencies: In any emergency requiring medical attention call Range Control at 238-8269 or the Fire Department at 238-8117, do not dial 911.
 - ii. Routine: No routine medical care is available at Camp Roberts for civilian or military personnel visiting McMillan Airfield. The nearest military care is in the Presidio of Monterey. Civilian care is available in Paso Robles.
 - iii. Hospital Facilities: The nearest hospital is Twin Cities in Templeton, 805-434-4550.
 - iv. Environmental Concerns and Issues:
 - 1. Endangered Species. Several threatened and endangered species are present on Camp Roberts to include the San Joaquin Kit Fox, Bald Eagle, and Vernal Pool Fairy Shrimp. The basic rule is “look but don’t touch.” Avoid excluded zones, look out for endangered species while in field training areas, and report any sick, injured, or dead animals to CIRPAS. Note and observe posted speed limits and exercise caution when driving, especially at night. DO NOT feed or handle any animals: Penalties for killing, injuring, or harassing protected species can be severe (>\$50,000).
 - 2. Hazmat Disposal. All hazardous materials, i.e. POL and vehicle maintenance wastes, are to be properly disposed of. Designated disposal points are located at McMillan Airfield. Any POL or hazardous material spill must be immediately reported to CIRPAS who will report to Range Control or the Environmental Office.
 - 3. Markers. Survey stakes and site markers have been placed at many locations in field training areas. These markers are vital for environmental review, coordination, site protection, and construction purposes. Known endangered species dens and other habitat sites are identified by blue and pink marker flagging. Marked sites are off limits to personnel and equipment. DO NOT remove or obscure placed markers: Consequences of lost markers can be serious!

4. Forest Protection. Oak forests at Camp Roberts are a valuable and delicate resource, and are currently in decline due to adverse conditions. Do not cut or damage live trees for any reason.

12. Status Report: A brief status report will be emailed to the CIRPAS Site Manager within the week after activity completion. The status report should include items such as (1) number of sorties (2) duration of each sortie (3) time of day of flight(s) (4) synopsis of flight activity (5) personnel onsite.

POINTS OF CONTACT

CIRPAS:

Responsibility	POC	Code/Phone/E-Mail
CIRPAS Director	Bob Bluth	(831) 384-2776 x16 rtbluth@nps.navy.mil
CIRPAS GFR	Milt Bank	(831) 384-2776 x20 (831) 384-2645 (cell) MBank@cirpas.org
CIRPAS UAV Program Manager/ McMillan Airfield Site Manager	Ray Jackson	(805) 227-1314 (805) 610-5735 (cell) rpjackson@cirpas.org
Assistant Site Manager	Dirk Hale	(805) 227-1311 dhale@cirpas.org
Operations	John Bendall	(805) 227-1324 jbendall@cirpas.org
SUAV Manager	Sal Nunez	(831) 241-4804 snunez@cirpas.org

Camp Roberts:

Camp Roberts' Range Control	805-238-8269
Camp Roberts' Fire Department	805-238-8220
Emergencies	805-238-8117
Red Cross	805-238-4914

Telephone Procedures:

McMillan Airfield has a limited number of commercial telephone lines on site. Cell phone reception is excellent at the airfield and most locations on base.

Wireless Internet access is available at McMillan and at the SUAV Range. Access codes can be obtained for our users.

Frequency Management:

Camp Roberts is a relatively frequency ‘clean’ zone, however, commonly used UAV Frequencies can be an issue and must be deconflicted.

CIRPAS will coordinate with the CAARNG for frequency de-confliction within the confines of Camp Roberts. Camp Roberts only clears frequencies within the borders of Camp Roberts. If your influence will extend beyond the borders of Camp Roberts you must make direct coordination with your sponsors designated regional frequency manager.

The following administrative frequencies are in use. These frequencies may be programmed and used on your radios if coordinated with CIRPAS. Any other frequency request must be submitted to the Camp Roberts Site Manager to be cleared with Camp Roberts Frequency Manager. A limited number of radios are available for our users.

	<u>Receive</u>	<u>Transmit</u>
CIRPAS	141.1875	139.0125
McMillan	151.775	151.775
CIRPAS Special (RED)	148.5875	142.3125

As well as:

Camp Roberts Range Control/Medevac	38.90 MHz “Camp Roberts Range Control”
Range Control VHF	126.2 MHz “Camp Roberts Range Control”
Oakland Center	128.7 MHz
CIRPAS GCS	5800 MHz & 5850 MHz uplink*
	5300 MHz & 5350 MHz downlink*
Paso Robles Weather	132.175 (805-239-3593)

Restricted Frequencies: The following frequencies are reserved and not to be used by CIRPAS Users:

SATCOM	X-Band 7.25 through 8.4 GHZ
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WEATHER

General: The Camp Roberts Area has mild weather most of the year, but extremely hot summers. Temperatures will often exceed 100° from June-August during the daylight hours. However, the temperature can drop by as much as 50° when the sun goes down due to the low-level temperature inversion and the close proximity of the cold Pacific Ocean Current just 30 miles to the west. For current conditions go to:

http://www.weather.nps.navy.mil/profiler/mcm_sfc.gif.

Historical Weather Data: (Source: NCDC TD 9641 Clim 81, 1961-1990)

AVERAGE TEMPERATURE													
	Year	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
°F	58.6	46.4	50.2	52.6	56.1	61.6	67.1	71.6	71.5	67.5	61.2	51.7	46.1
°C	14	8	10	11	13	16	19	22	21	19	16	10	7

AVERAGE High TEMPERATURE													
	Year	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
°F	76.3	61.2	64.7	67.3	72.8	79.8	86.5	92.8	92.4	88	81.0	68.1	61.3
°C	24	16	18	19	22	26	30	33	33	31	27	20	16

AVERAGE Low TEMPERATURE													
	Year	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
°F	40.9	31.6	35.5	37.8	39.4	43.3	47.6	50.4	50.4	46.9	41.4	35.4	30.9
°C	4	0	1	3	4	6	8	10	10	8	5	1	0

AVERAGE Precipitation													
	Year	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
in.	13.95	3.01	2.72	2.08	1.05	.17	.02	.03	.06	.32	.57	1.72	2.20
mm	354	76	69	52	26	4	0	0	1	8	14	43	55

ANNEXES

A – Request Procedures

B – UAS Data Sheet

C – Maps

D – Example of Safety of Flight Declaration

E – Example of Pre-Mishap Plan