

PLAN OF DEVELOPMENT

HIGH ALTITUDE MOUNTAIN ENVIRONMENT TRAINING

Fort Carson and the U.S. Army Corps of Engineers, Omaha District

1. Purpose and Need

Fort Carson provides High Altitude Mountain Environmental Training (HAMET) for the Combat Aviation Brigade stationed at Ft. Carson (as a tenant unit – permanently based at Fort Carson) as well as for deploying Combat Aviation Brigades throughout the Army and other armed services (non-tenant units).

The purpose of HAMET is to provide helicopter pilots the experience and skills required to operate aircraft safely at high altitude in mountainous terrain prior to deploying to areas with high elevations and rugged topography. Fort Carson is the preferred site for this type of aviation training, which is conducted by units deploying to mountainous regions in support of the Global War on Terrorism. This training is imperative for combat deployments to mountainous regions because it prepares aviators to operate at high altitudes where there is less power available to conduct maneuvers such as takeoff and landings. The Army has determined that HAMET is a priority and recommends it for units deploying to areas of high elevations as an effective way to reduce the large number of helicopter accidents and resulting casualties attributed to crews lacking the skills necessary to safely operate at high altitude in mountainous environments.

The use of public land in Fremont, Park, and Teller Counties is necessary to ensure the HAMET program exposes pilots to a wide variety of situations and challenges. The HAMET program utilizes 16 landing zones on public land through a special use permit issued by the Forest Service. These LZs are not adequate to meet the need for a variety of locations, and limiting HAMET activities to the Forest Service LZs could result in a higher rate of use than is desired by the Army, the Forest Service, and the public.

Therefore, the need of the Army is for the Bureau of Land Management to issue a right-of-way grant (ROW) to allow Fort Carson access to certain public land, as described in Section 2 below, to provide an additional 43 LZs for the HAMET program (approximately 234.676 Acres). BLM is authorized by Title V of the Federal Land Policy Management Act of 1979, as amended, to issue such grants.

2. Right-of-Way Locations

The location of each of the 43 landing zones is described in Table 2.1 below. (Illustrated in Exhibits 1 and 2). Total ground area involved is 234.676 acres.

TABLE 2.1 Location of Proposed Landing Zones

LZ #	MGRS Grid	LAT	LONG	Elevation	Size	Acreage
401	13S DC 77 85	N 38 42.715	W 105 15.775	8166	280'x280'	1.799
402	13S DC 76 83	N 38 41.952	W 105 16.316	7833	570'x355'	4.645
403	13S DC 76 84	N 38 42.030	W 105 16.532	7881	1127'x283'	7.321
404	13S DC 76 84	N 38 42.133	W 105 16.337	7917	714'x336'	5.507
405	13S DC 77 81	N 38 40.746	W 105 15.973	7998	155'x155'	0.551
406	13S DC 77 80	N 38 40.204	W 105 15.859	7995	321'x303'	2.232
407	13S DC 75 79	N 38 39.641	W 105 17.416	8092	1225'x678'	19.066
408	13S DC 74 78	N 38 38.962	W 105 17.892	8374	413'x974'	9.234
409	13S DC 75 76	N 38 38.19	W 105 17.370	8487	839'x579'	11.151
410	13S DC 77 86	N 38 43.526	W 105 15.809	7828	452'x599'	6.215
501	13S DC 87 72	N 38 35.587	W 105 08.644	8985	393'x914'	8.246
502	13S DC 87 71	N 38 35.424	W 105 08.682	8998	655'x533'	8.014
503	13S DC 87 71	N 38 35.132	W 105 09.251	9063	891'x480'	9.818
504	13S DC 87 69	N 38 33.955	W 105 08.708	8480	439'x211'	2.126
505	13S DC 80 64	N 38 31.670	W 105 13.945	6360	275'x385'	2.43
506	13S DC 77 67	N 38 33.241	W 105 15.952	6268	917'x362'	7.62
507	13S DC 77 69	N 38 33.991	W 105 16.014	6586	236'x398'	2.156
508	13S DC 78 68	N 38 33.784	W 105 15.148	6492	432'x250'	2.479
509	13S DC 70 74	N 38 36.694	W 105 20.847	7587	563'x230'	2.972
510	13S DC 73 66	N 38 32.567	W 105 18.709	7805	393'x342'	3.085

LZ #	MGRS Grid	LAT	LONG	Elevation	Size	Acreage
511	13S DC 73 63	N 38 31.130	W 105 18.703	7656	400'x434'	3.985
601	13S DC 59 80	N 38 40.431	W 105 28.156	9082	819'x697'	13.104
602	13S DC 52 84	N 38 42.670	W 105 33.026	9390	262'x395'	2.375
603	13S DC 54 84	N 38 42.617	W 105 31.664	9021	328'x612'	4.608
604	13S DC 53 83	N 38 41.670	W 105 31.768	8900	491'x783'	8.825
605	13S DC 47 84	N 38 42.428	W 105 36.019	9509	885'x539'	10.95
606	13S DC 66 69	N 38 34.312	W 105 23.190	7313	675'x263'	4.075
607	13S DC 60 61	N 38 30.175	W 105 27.305	8554	603'x474'	6.561
608	13S DC 59 62	N 38 30.411	W 105 27.944	8642	426'x809'	7.911
609	13S DC 58 62	N 38 30.489	W 105 28.598	8767	321'x789'	5.814
610	13S DC 54 62	N 38 30.379	W 105 31.061	9097	314'x579'	4.173
611	13S DC 54 60	N 38 29.254	W 105 31.097	8617	328'x632'	4.758
612	13S DC 54 58	N 38 28.678	W 105 31.117	8470	197'x678'	3.066
613	13S DC 58 60	N 38 29.559	W 105 28.538	7355	328'x868'	6.535
614	13S DC 56 61	N 38 30.071	W 105 29.959	7924	419'x375'	3.607
615	13S DC 31 67	N 38 32.975	W 105 47.249	10646	426'x645'	6.307
616	13S DC 33 68	N 38 33.491	W 105 45.902	10242	288'x178'	1.176
701	13S DC 75 88	N 38 44.550	W 105 16.622	7969	609'x362'	5.061
702	13S DC 76 88	N 38 44.619	W 105 16.059	8113	695'x368'	5.871
703	13S DC 76 89	N 38 45.076	W 105 16.492	8202	622'x467'	6.668
704	13S DC 75 89	N 38 45.420	W 105 16.758	7919	157'x109'	0.392
705	13S DC 77 89	N 38 45.044	W 105 15.299	8087	387'x184'	1.634
706	13S DC 78 90	N 38 45.980	W 105 14.777	8467	131'x184'	0.553

3. Landing Zone Design Factors

a. Definitions:

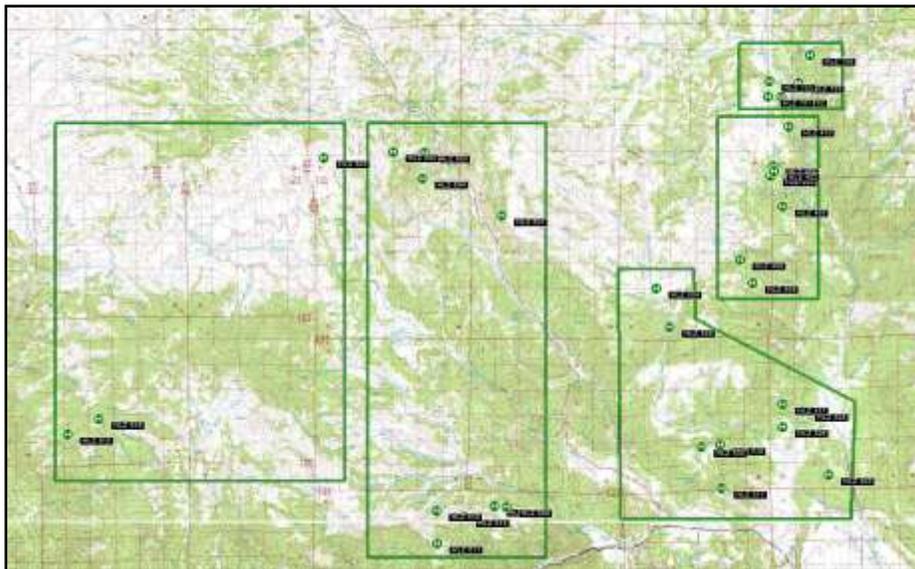
1) Landing Zone (LZ): An area large enough to allow a helicopter(s) to land on the surface of the ground, as illustrated in Picture 3a. Each LZ is assigned a number (ie. LZ 401, 402, etc.)

Picture 3a



2) Mountain Training Area (MTA): A group of LZ's within relatively close proximity to one another that are assigned similar numbers (example: MTA 4 = Mountain Training Area 4 comprised of LZ 401, 402, 403, 404, 405, 406, 407, 408, 409, and 410). There are 5 MTAs total (MTA 4, 5, 6E, 6W, and 7), as illustrated in Picture 3b.

Picture 3b



- b. Type of Aircraft Involved (Exhibit 3): Military helicopters from all branches of the U.S. Armed Forces:

U.S. Army: (Typical) AH-64D/E Apache, HH/UH-60A/K/L/M Black Hawk, MH/CH-47D/F Chinook, OH-58D Kiowa, (Occasional users) UH-72 Lakota, AH/OH-6 Little Bird.

USMC: (Occasional) AH-1W/Z Cobra, UH-1N/Y Twin Huey, CH-53E Super Stallion, CH-46 Sea Knight.

USAF: (Occasional) UH-1N Twin Huey, HH-60 Pave Hawk.

US Navy: (Occasional) SH/MH/HH-60 Seahawk, MH-53 Sea Dragon.

- c. Frequency of Sorties: Fort Carson breaks down the type of training for the purpose of understanding the frequency and duration of aviation training. Events will be either Home Station (Tenant unit) Training or Non-tenant (Rotational unit) Training.

1) Home Station Training: There are three tenant units assigned to Fort Carson and based at Butts Army Airfield. The 4th Combat Aviation Brigade is the largest single aviation element at Fort Carson and consists of approximately 117 Helicopters; 48 AH-64 Apaches in two Attack-Reconnaissance Battalions (ARB), 12 CH-47 Chinooks, 15 HH-60 Blackhawks (MEDEVAC), and 12 UH-60A Blackhawks in the General Support Aviation Battalion (GSAB), and 30 UH-60L Blackhawks in the Assault Helicopter Battalion (AHB). The other two tenant units at Fort Carson are the 1-25 Attack Reconnaissance Battalion (part of the 25th Infantry Division – headquartered in Hawaii) with 24 AH-64D Apaches, and F co. 7-158th, 11th Aviation Regiment (United States Army Reserve) with 15 HH-60 MEDEVAC Blackhawks.

Projected Intensity of use: Operations in mountainous terrain will be a normal function for these home-based units and require continuous sorties throughout the year. Every aviator who arrives to Fort Carson and is assigned to an aviation unit will require initial Mountain Qualification training, and would require a minimum of 2 flights (one daytime and one night). Once the aviator is progressed to Readiness Level 1 (fully mission capable), they will again be required to demonstrate proficiency in Mountain flight and landing as part of their Annual Proficiency And Readiness Test (APART) for every year they are stationed here at Fort Carson. The total number of aviators assigned to Fort Carson would be in the area of 350 (with

approximately 20% in training at any given time). Aviators may require more than 2 landings to demonstrate proficiency, and they may also elect to practice landings in addition to the required proficiency sorties. Therefore, it is not feasible to accurately estimate the maximum usage by Home Station Units, but the minimum intensity of use related to Home Station Units would be defined by the following equation: $2 \text{ landings} \times 350 \text{ aviators} = 700 \text{ landings} / 43 \text{ LZs} = 16.25 \text{ landings per year, per LZ}$.

2) Non-tenant training: Most of the other air-frame types and/or other service aircraft would fall into this category. Units conducting pre-deployment training or other training events may require high altitude helicopter training using one of three U.S. Army approved Training Programs; 1) High Altitude Mountain Environmental Training (HAMET), 2) 160th SOAR Mountain Training Program of Instruction; 3) High Altitude Aviation Training Site (HAATS) from the Colorado National Guard; or a 4ID G3 Air approved program of instruction. These training events are normally of short duration, but are very concentrated. For example: A HAMET event involves a concerted effort within a Combat Aviation Brigade sending a detachment (referred to as a Task Force, or a subordinate Battalion size unit), one after the other (normally 4 in all) to conduct qualification on their aviators and non-rated crewmembers (crew chiefs). Each Task Force, on average, will complete training within 21 days while conducting continuous operations (day, night, weekends and holidays) for a total of approximately 90 days.

Projected Intensity of use: The projected usage among non-tenant units conducting HAMET is two rotations annually, where up to 10 helicopters in each of the 5 mountain training areas (MTA 4, 5, 6E, 6W, and 7), two times each day and/or night, with no more than two aircraft in any one of the approved landing zones (LZs) at a time. There may be up to four landings in each LZ per sortie (with a total of eight landings per day). For each training flight, and based on the proficiency of the aviator, the aircraft would spend approximately one-half hour in the LZ.

Theoretically, the maximum number of landings per year for Non-Tenant units would be defined by the following equation: $8 \text{ landings a day} \times 90 \text{ days} = 720 \text{ landings per LZ} \times 2 \text{ Combat Aviation Brigade rotations} = 1440 \text{ landings per year, per LZ}$.

Data from the last 3 HAMET (Non-tenant) events for which a Casual Use agreement was utilized, is detailed below (an operation is defined as 1 Takeoff and 1 Landing):

101st CAB (28 February – 26 April 2012)

1041 total operations on BLM LZ's in 40 days = 26.0 operations per day.
Most used LZ's: LZ 402 with 116, LZ 409 with 88, and LZ 403 with 73

10th CAB (23 September – 22 October 2012)

396 total operations on BLM LZ's in 30 days = 13.2 operations per day.
Most used LZ's: LZ 510 with 74, LZ 507 with 43, and LZ 505 with 40
604 total operations on PPFS LZ's in 30 days = 20.1 operations per day.

1st CAB – Task Force (27 November – 12 December 2012)

441 total operations on BLM LZ's in 16 days = 27.5 operations per day.
Most used LZ's: LZ 509 with 55, LZ 510 with 53, and LZ 402 with 37
376 total operations on PPFS LZ's in 16 days = 23.5 operations per day.

- d. Hours of Operation: Because the requirement for Mountain qualification is to perform tasks both day and night (utilizing Night Vision Goggles or Forward looking Infrared (FLIR)), and do this within the limitations of crew duty – the majority of flights will occur in the afternoon (2-6 pm) and evening (1 hour after sunset; generally 7-10 pm). On occasions, sorties may be flown at other times throughout the day if weather, maintenance or command decisions cause delays.
- e. Noise Levels: Below are maximum noise levels of aircraft from the Operational Noise Assessment for the Combat Aviation Brigade Stationing Implementation Environmental Assessment. The consultation was conducted by the U.S. Army Institute of Public Health, 6 Oct 2011. (Exhibit 4)

Slant Distance (Feet)	Maximum Level, dBA			
	AH-64	CH-47	OH-58	UH-60
200	92	92	87	88
500	83	84	79	80
1000	77	78	72	73
1500	73	74	68	69
2000	70	71	65	66
2500	67	68	62	63

- f. Flight Paths: HAMET operations within the MTA's will be conducted in Class G airspace and defined in Federal Aviation Regulations and in the Aeronautical Information

Manual. There are no defined air corridors or designated routes from Fort Carson to these areas.

A large portion of the qualification course (HAMET) requires aircrews to conduct Mountain Navigation as a task. Individual aircrews will design and plan a route to a specified LZ. Fort Carson aircrews are required to maintain an altitude of 500' above ground level (AGL) outside of designated training areas (MTAs). Aircrews determine their AGL altitude from the aircraft radar altimeter system, which measures the altitude directly below the aircraft. Flight altitudes within the MTA can be Low Level as defined in paragraph G. Once aircrews are within 1000 meters of a LZ, aircrews may conduct Contour and NOE. (Picture 3c)

Picture 3c



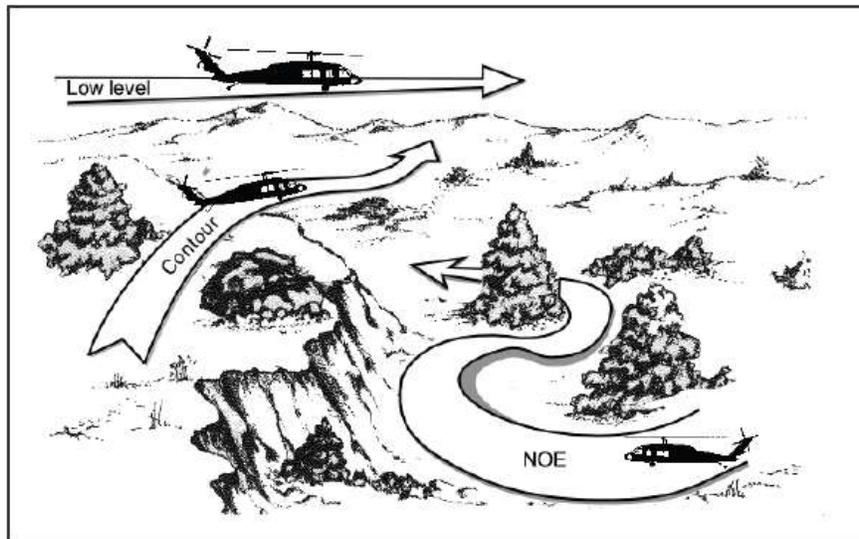
- g. Low Level Flight Categories: Helicopters performing operations within a MTA, unless conducting Terrain Flight training, will maintain 200' AGL and above while transitioning between LZ's within the same MTA. Terrain flight includes appropriate tactical application of Low-level, contour, and Nap-of-the-Earth (NOE) techniques (See Picture 3d), as appropriate, diminishing the enemy's capability to acquire, track, and engage aircraft.

Low-Level: Aviators perform low-level flight at a constant altitude and airspeed, dictated by threat avoidance, generally from 80-200 feet above the highest obstacle. (Performed within the confines of the MTA)

Contour: Contour is conducted at low altitudes conforming to the earth's contours. It is characterized by relatively constant airspeed and varying altitude as dictated by terrain and obstacles from between 25-80 feet above the highest obstacle. (Performed within 1000 meters of an LZ depending on the Topography)

NOE: NOE is conducted at varying airspeeds and varying altitudes as close to the earth's surface as vegetation and obstacles permit from surface to 25 feet above the ground and vegetation in the flight path. (Performed within 1000 meters of an LZ depending on the Topography)

Picture 3d



4. Additional Components

- a. Maintenance Operations, fueling, and administrative activities will not be conducted on any LZ in this Right-Of-Way unless there were mechanical failures or an accident. In these cases, an additional aircraft with a Downed Aircraft Recovery team (or DART, a team of aircraft mechanics, technical inspectors and maintenance officers) would land near-by to assess the situation and conduct any maintenance actions needed to remove the damaged aircraft.
- b. Location of Bases: Below is a list of locations from which aircraft would depart from with the intent of conducting High altitude training in the LZ's.

Fort Carson, CO (Butts Army Airfield (BAAF)) – The majority of aircraft using the BLM LZ's would depart from and return to Fort Carson. Non-Tenant units would also base their operations from Fort Carson. (Due to construction at this time on BAAF, non-tenant units may also base their operations at one of the locations listed below).

Buckley Air National Guard Base, Denver, CO.

Peterson Air Force Base, Colorado Springs, CO.

Pueblo Memorial Airport, Pueblo, CO.

- c. Other Components: No refueling of aircraft will be conducted on BLM managed land. No hazardous material will be used, produced, transported or stored on or within the Right-Of-Way area. In all training periods, surface operations will be limited to landing and takeoff, which will not involve any ground operations.

No armament of any sort will be used, transported or stored on or within the Right-Of-Way area. Some aircraft may be loaded with training and/or simulated weapon systems, but all of these systems are considered safe and contain no explosives. (example: M-36 training missile. This training device looks like an AGM-114 Hellfire missile, but contains no propellant or warhead, so it cannot be launched from the aircraft).

Chaff, flares, and any type of pyrotechnic will not be used over or on BLM lands.

Fort Carson maintains a "Pre-Accident" plan of action for aviation operations at BAAF. Aircrews are required to read and understand this document prior to conducting operations. In the event of a mechanical failure or accident involving aircraft participating in the HAMET program (or tenant unit training) should occur on BLM managed land, Fort Carson will immediately notify the Pueblo Dispatch Center and BLM. Clean-up activities will be coordinated with the BLM and will meet or exceed the BLM standard.

5. Operational Considerations

- a. Avoid Areas of Concern: Fort Carson would prefer to avoid areas of concern where conflicts with resource values or other public land users are identified or foreseeable. These areas of concern include but are not limited to sites that are potentially eligible

for the National Register of Historic Places, sensitive plant and wildlife habitat, high-use recreation areas, and other sensitive or protected resources or uses on BLM managed lands.

- b. Consideration for Fire Risk and Fire Fighting Operations: In accordance with previous Casual-Use agreements; Aircrews will avoid any area where there is fire, smoke, or evidence of fire, or activities associated with fire. If any aircrew recognizes an unattended wildfire they will report it immediately to the Pueblo Interagency Dispatch Center. Fort Carson will immediately cease HAMET operations on and over BLM lands when notified by BLM that Stage III Fire Restrictions are in effect, and will not resume HAMET operations until notified by BLM that such restrictions have been lifted.
- c. Landing Zones will not be used when humans, livestock or wildlife (particularly big game, elk, deer, antelope, and bighorn sheep) are present.

6. Government Agencies Involved

- a. Army Corps of Engineers
- b. Federal Aviation Administration
- c. US Fish and Wildlife Service
- d. Colorado Parks and Wildlife

7. List of Contacts

- a. Army Contacts
 - i. Military:
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 - ii. Civilian:
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- b. BLM Contacts
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