

TECHNICAL REPORT

FINAL

**SAFETY RISK ASSESSMENT
FOR SKYDIVING ACTIVITIES AT THE
VANCE BRAND AIRPORT (LMO)**



prepared for:



City of Longmont, Colorado

May 2019

prepared by:

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Executive Summary

The City of Longmont, Colorado owns and operates the Vance Brand Airport (LMO). The airport is situated on a 261 acre parcel located 3 miles southwest of the City. The airport has one 4,799 foot runway and is home to 284 aircraft including 4 jets and 4 helicopters. FAA estimates that 71,491 aircraft operations (takeoffs and landings) occurred in 2017 and is expected to growth 8.3 percent within the next 4 years.

Since 1995, Mile-Hi Skydiving Center (MHSC) has offered commercial skydiving services at the Airport and operates as a USPA sanctioned training center for skydiving instruction. The MHSC primarily uses a 338,000 square-foot drop zone for all classes of skydivers, including novices, students, intermediate and experts, as well as tandem jumps. There is also a separate swoop pond which is used occasionally by expert skydivers to skim across the surface before landing.

Over the years, skydivers landing outside the drop zone, overflying the runway, and other conflicts which have raised safety concerns among other airport users. In January 2019, the City commissioned a study to evaluate the ability of LMO to safely accommodate skydiving activity and to recommend strategies to mitigate any risks associated with the co-existence of skydiving and other aeronautical activities. The study identified two primary areas where safety could be enhanced. These include the location of the drop zone and the update and distribution of Skydiving Standard Operating Procedures (SOP's).

The current drop zone is slightly undersized for parachute landing area for novice and student skydivers. The shape of the drop zone also precludes the use of all the area set aside for skydive landings. The closest edge of the drop zone is only 350 feet from the centerline of the runway which during certain wind conditions forces skydivers to approach from the east and overfly the runway.

Three alternative sites were evaluated against a set of criteria to determine the practicality of relocating to an area free of obstructions and large enough to accommodate a full-size drop zone as recommended by the US Parachute Association (USPA). A recommended drop zone site was identified among the three alternatives.

The second area of concern was the current skydiving SOPs which were developed in 1995, do not address all of the safety and operational concerns that have been expressed or observed. SOPs are important not only for the skydivers to understand what is expected of them as users of the Airport, but also to help other users to understand about how skydiving activity is supposed to interact with fixed wing and helicopter operations. This is paramount since among all the users of the airport, skydivers are not required to undergo any formal training regarding how to operate in an airport environment. There is no evidence that even the 1995 SOPs are being communicated to all skydivers to ensure that they understand and agree to abide by them. Updating the set of SOPs is recommended.

An open-forum meeting was conducted on May 18, 2019 to discuss the results of the preliminary study and opportunities to enhance safety at the airport. Over 200 tenants and airport users were invited to the meeting and from among them, 15 participated in the meeting include representatives of the skydive operator and the USPA.

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A. BACKGROUND

1. General

The City of Longmont, Colorado is the owner of the Vance Brand Airport (LMO). LMO is classified by the FAA as having “regional”¹ significance. While not officially designated as a reliever airport to the Denver International Airport (DIA) located 29 nautical miles to the southeast, LMO functionally serves as such among other general aviation airports in the region including support as a training airport for flight instruction. LMO can be characterized as a busy general aviation airport supporting a diverse range of general aviation aircraft types that generate an estimated 71,000+ operations annually. The Airport is host to a variety of commercial aeronautical services including a commercial skydiving operation.

In January 2019, the City engaged a professional aviation consulting services firm to evaluate the ability of LMO to safely accommodate the skydiving activity and to recommend strategies to mitigate risks. The following report narrative presents the observations, findings, and recommendations of the assessment. While the facts speak for themselves, the observations, comments, opinions and recommendations expressed in this report are those exclusively of Quadrex Aviation and do not reflect the position of the Federal Aviation Administration or that of any other federal, state, or local agency.

2. Airspace and Airfield

The Airport is located three miles southwest of the city of Longmont. LMO has a single runway oriented along a northwest-southeast alignment. Runway 11/29 is 4,799 feet long and 75 feet wide and constructed of concrete. Both runway directions have standard left-hand traffic patterns. Runway 29 has a Global Positioning System (GPS) based instrument approach with minimums down to 300 feet in 1 mile visibility.

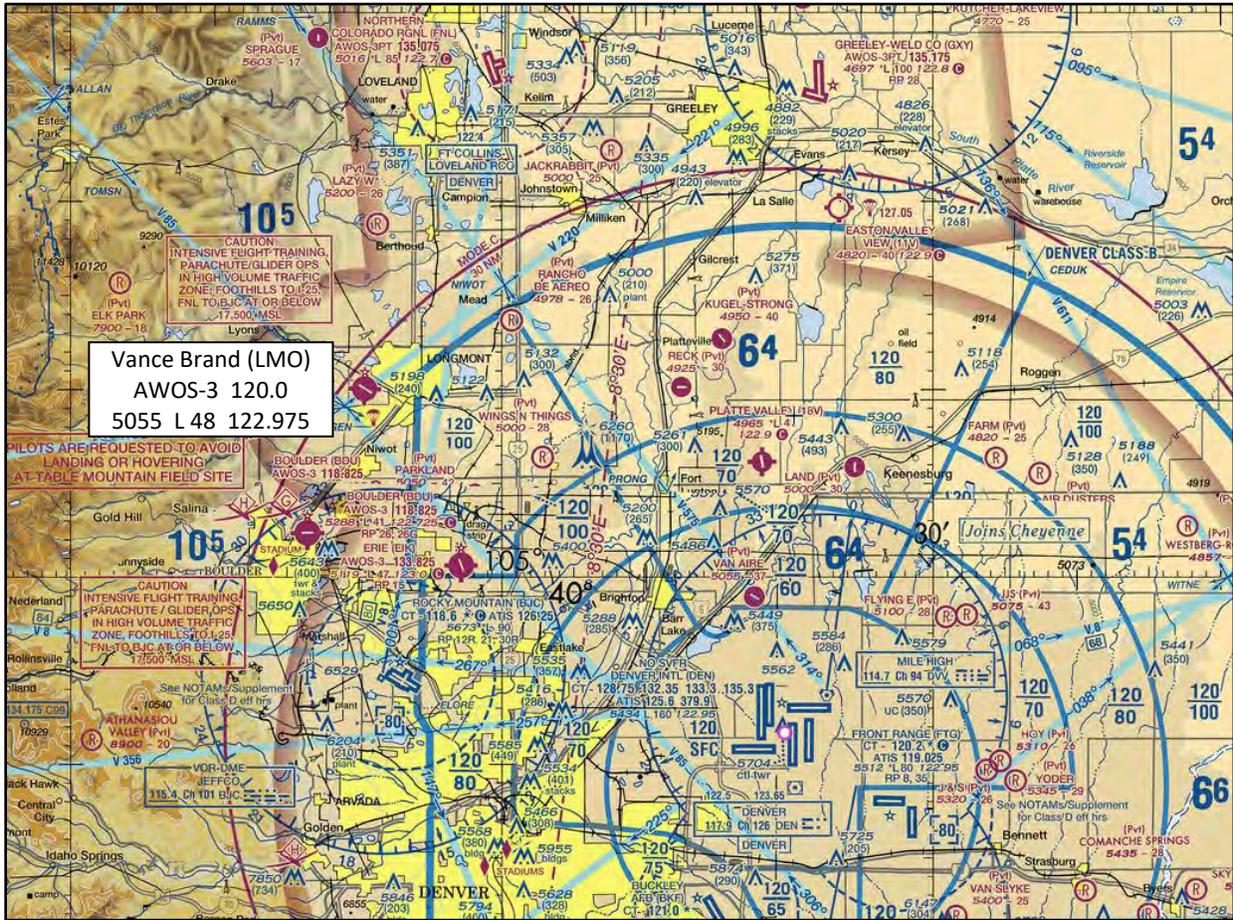
LMO is home to 284 FAA-registered aircraft, the majority of which are small single-engine piston (257 – 90%). There are also 19 multi-engine aircraft, 4 jets, and 4 helicopters based at the airport. **Figure 1** depicts the Airport in relation to the area’s airspace and other nearby airports.

As Figure 1 illustrates, LMO is located in the northwest quadrant of the Denver airspace, just outside the Class B airspace of Denver International Airport. A special information box on the aeronautical chart alerts pilots regarding intensive aircraft operations including skydiving along the foothills of the Rocky Mountains between the Northern Colorado Regional Airport (FNL) 19 miles to the northeast of LMO and the Rocky Mountain Metropolitan Airport (BJC) 15 miles to the south. Immediately southwest of LMO is the airway intersection “HYGEN” where Victor Airways² V85 and V220 intersect. The parachute icon just below the airport symbol indicates that skydiving operations are present at the Airport.

¹ FAA characterizes “regional” general aviation airports as having high levels of activity with some jets and multi-engine propeller aircraft averaging about 90 total based aircraft including 3 jets.

² Victor Airways are standard routes of flight between ground-based navigational aids that have been identified for aircraft flying below 18,000 feet MSL.

Figure 1
Area Airports & Airspace



Legend

Airport name (ID)	Vance Brand (LMO)	Runway Information	4,800' (lighted)
Weather information (Freq)	AWOS-3 120.0 (VHF)	Communications	122.975 (CTAF)
Airport Elevation (MSL)	5,055'		

Source: SkyVector.com

Figure 2 is an aerial photograph which illustrates the Airport's facilities. Most of the airport has been developed along the northeast side of the runway. However, to handle the growing demand for T-hangars, the southwest side of the airport has been opened up for development, including the recent addition of a taxilane to accommodate additional hangars. The Airport's approved master plan calls for Runway 11/29 to ultimately be extended 1,000 feet to the northwest; however no timetable has been set for the project. A copy of the Airport Layout Plan is included in Attachment A.

3. Skydiving Activity

Mile-Hi Skydiving Center (MHSC), a commercial skydiving operator began offering commercial skydiving services at Vance Brand Airport in 1995. Today, Mile-Hi provides a number of services including lifts to altitude for sport skydiving as well as training for novice and intermediate skydivers. Tandem skydiving is also available as well as sales and services for skydiving equipment and accessories. Mile-Hi operates two aircraft used for skydiving – a Beech King Air A90 and a de Havilland DHC-6 Twin Otter. Both aircraft have had the passenger seats removed and FAA-approved

restraints installed to accommodate more skydivers than for normal certificated operations more skydivers. The King Air can hold up to 15 skydivers while the Twin Otter can hold up to 22 skydivers each depending on weight, loading, and aircraft performance variables.

Figure 2
Airport Layout



Source: Google Earth Pro

Mile-Hi operates out of an office and hangar located on near the north end of the Airport's terminal area. They also hold a lease for a small parcel located on the southwest side of the airport that includes a Quonset hut structure used for parachute packing and storage. Near the hut leasehold is an area generally used for loading skydivers into the jump plane and after completing their jumps, transporting skydivers back to the main property for repacking parachutes. Transportation to and from the southwest side area is generally via a truck-towed trailer that traverses the northern service road.

A parachute drop zone (DZ) is located immediately northwest of Mile-Hi's hut lease and consists of a 338,000 square-foot irregular area as shown in Figure 2. The use of the drop zone is governed through a separate non-exclusive use agreement with the City. (See Attachment B)

A separate "swoop pond" roughly 380 feet long, 180 feet wide and approximately 4 feet deep is located west of the drop zone. The swoop pond is used for primarily for competitive events that involve the skydiver rapidly descending to pick up speed and then skim along the pond's surface and to land softly on the other side. Because of the inherent risks, only very experienced skydivers are allowed to compete in swooping events. The use and maintenance of the swoop pond is also governed by a separate letter of agreement. (See Attachment B)

A Letter of Agreement (LOA) was established in April 2007 between Mile-Hi and the FAA's Denver TRACON (Approach Control) regarding airspace procedures for using LMO for skydiving (see Attachment C). The Agreement outlined the geographic boundaries of the "climb box" located southwest of the Airport. The climb box was established to ensure the jump plane remains clear of

Denver's Class B airspace and other potential conflicts during the climb to altitude. The actual skydiving drop operation generally will occur at altitudes up to 17,900 feet above sea level (approximately 13,000 feet above ground level) with the aircraft to remain within a radius of 2 nautical miles of the Airport.

4. On-Site Observations

On-site observations were conducted February 1-2, 2019 to witness skydiving activity at the Airport. Even though it was during winter, the weather was conducive to skydiving and several jumps were made during those days. Data from the observations are presented in **Attachment C**.

B. POLICY GUIDING DOCUMENTS REVIEW

1. Rules and Regulations (Longmont Municipal Code 13.39)

The City's Code includes specific regulations regarding the skydiving operations at the Airport.

Section 13.39.040(J.) Skydiving operations.

1. *All skydive operations will comply with applicable state and federal statutes, regulations, advisory circulars, the United States Parachute Association (or other nationally recognized skydiving organization's) Basic Safety Requirements (BSRs), and Parachute Licensing Procedures.*
2. *The skydive Aircraft will announce on the Vance Brand Airport CTAF frequency, as frequency congestion allows, Skydivers jumping two minutes before the jump and when jumpers exit the Aircraft.*
3. *Skydive Operators must provide the Airport Manager with a copy of their Standard Operating Procedures (SOPs) which set forth the procedures they will utilize to minimize and prevent Unauthorized Landings. These SOPs will be used by the City Manager or designee, including the Airport Manager, to evaluate Unauthorized Landings and determine if there has been a violation of these Regulations.*
4. *The Airport Manager shall designate the authorized parachute landing area. All parachute landings outside of this area are unauthorized unless specifically authorized by the Airport Manager.*
5. *Skydive Operators and Skydivers shall take every reasonable measure to prevent and refrain from Unauthorized Landings. It is an affirmative defense to a charge of violating this subsection that the Unauthorized Landing resulted from an emergency that neither the Skydive Operator nor the Skydiver could avoid.*
6. *Unauthorized offsite landings by Skydivers shall be reported to the Airport Manager by the responsible Skydive Operator within 24 hours after learning of the event.*
7. *Each Skydiver must acknowledge, in a form approved by the Airport Manager, Risk Manager, and City Attorney that the City bears no liability for any loss, injury, death, or damage to persons or property arising from the Skydiver's activities and operations whether such loss, injury, or death occurs at the time of the incident or follows as a result of such incident.*
8. *Each Skydiver must agree, in a form approved by the Airport Manager, Risk Manager, and City Attorney, to indemnify and hold harmless the City and each of its Council members, officers,*

officials, representatives, agents, employees, successors and assigns against all claims, demands, liabilities, damages, suits, actions, judgments, fines, penalties, losses, and expenses, including attorney fees by the Skydiver or others, arising from the Skydiver's activities and operations.

9. *Each Skydive Operator shall comply with administrative procedures, which the Airport Manager may issue, and shall keep and produce for inspection and copy such records and reports as the Airport Manager may require.*

Some of these provisions appear in the current (1995) Standard Operating Procedures which will be discussed separately as well as recommendations for amending the code.

2. Minimum Standards for Commercial Aeronautical Activities

Like Rules and Regulations, Minimum Standards are designed to articulate the City's policies governing the use of the airport for commercial aeronautical purposes. It provides a framework for promoting fair business practices and avoiding allegations of economic discrimination among existing and prospective service providers. Prior to receiving permission to conduct an aeronautical activity on the airport, the entity proposing to perform the activity must meet the applicable minimum requirements for the type and size of facilities along with the quality and level of services they are proposing to offer to the public.

The City adopted its most recent set of Minimum Standards in May 2016 and include commercial skydiving activity.

Section 10 – Commercial Skydiving

Statement of Concept

A skydiving SASO or FBO approved for this operation or activity engages in the transportation of persons for skydiving, instruction in skydiving, and rental and sales of skydiving equipment.

Minimum Standard

1. *The company shall have available for skydiving, either owned or under written lease to the company, at least one properly certificated and airworthy aircraft.*
2. *The jump plane pilot must hold an appropriate pilot certificate and be appropriately rated for the aircraft being operated.*

Recommendations for amending the Skydiving Operator's minimum standards as currently stated will be addressed in a subsequent section.

3. Aircraft Operations

The Vance Brand Airport does not have an air traffic control tower (ATCT) that would otherwise provide an accurate aircraft activity count. FAA maintains an estimate of aircraft operations at LMO as shown in **Table 1**. The FAA also forecasts aviation activity based on regional and national trends. Their current outlook for the Airport indicates, using 2017 as the base year, that they anticipate aircraft operation to increase 8.3 percent within the four years.

C. DROP ZONE SITE ANALYSIS

1. Dimensional Criteria

In 2012, the FAA's Airport Technology Branch of their Aviation Research Division published Technical Report DOT/FAA/AR-11/30, *Development of Criteria for Parachute Landing Areas on Airports* which included research regarding the appropriate size and location of PLAs³ on airports and provide guidance material. Their findings concluded that the experience of the parachutist and the type of parachute used should be considered in establishing the area encompassing the boundaries of the PLA. It was also determined that the edge of the PLA should be located no closer than 40 feet from any obstructions (trees, building, etc.) that could create a potential hazard for parachutists from approaching the PLA from any direction. In addition, the report included recommendations for establishing operational procedures and practices for the PLA. Draft standards for parachute landing areas were prepared for inclusion as Appendix 18 of AC 150-5300-13, *Airport Design* but were not been adopted.

Table 1
Base and Forecast Aircraft Operations [1]
Vance Brand Airport

Year	Itinerant [2]				Local [3]		Total
	Air Carrier	Air Taxi	General Aviation	Military	General Aviation	Military	
2017	-	-	21,028	420	50,043	-	71,491
2018	-	-	21,548	420	50,971	-	72,939
2019	-	-	22,081	420	51,916	-	74,417
2020	-	-	22,627	420	52,879	-	75,926
2021	-	-	23,176	420	53,865	-	77,461
2022	-	-	23,740	420	54,869	-	79,029

Notes:

[1] Operation = one aircraft takeoff or landing

[2] Itinerant operation - aircraft arriving from or departing to another airport

[3] local operation - aircraft staying within the traffic pattern or within 20-miles

Source: FAA 2018 Terminal Area Forecast for LMO

FAA originally published Advisory Circular 105-2 *Sport Parachuting* in 1968 to provide guidance regarding parachute operations and throughout the years, the AC has been updated up to the latest version 105-2E which was published in December, 2013. In the current version, the only mention of PLAs is found in Section 5(f):

Parachute Landing Areas. The FAA recommends that areas used as parachute landing areas remain unobstructed, with sufficient minimum radial distances to the nearest hazard. The guidelines in the USPA's BSRs can be used in determining if the landing area is adequate.

While not officially approved as a design standard, the USPA's Basic Safety Requirements (BSRs) are considered by the FAA as industry best practices and widely accepted for use by individuals and parachute centers.

Closely following the FAA's earlier research, the USPA adopted recommended standards for parachute drop zone (DZ) dimensions based on levels of the skydiver's proficiency. The current USPA

³ The term "parachute landing areas (PLAs) and "drop zone" are used interchangeably throughout

recommended unobstructed drop zone dimensions (radii) are presented in **Table 2** and graphically in relative scale in **Figure 3**.

Table 2
USPA Parachute Drop Zone Guidelines

<u>Class</u> ^[1]	<u>Proficiency or Activity</u>	<u>DZ Radius (Radius)</u>	<u>Area</u>
I	Solo students & A-license holders	330 ft	7.85 ac
II	B- and C-license holders and tandem skydives ^[2]	165 ft	1.96 ac
III	D-license holders	40 ft	0.12 ac

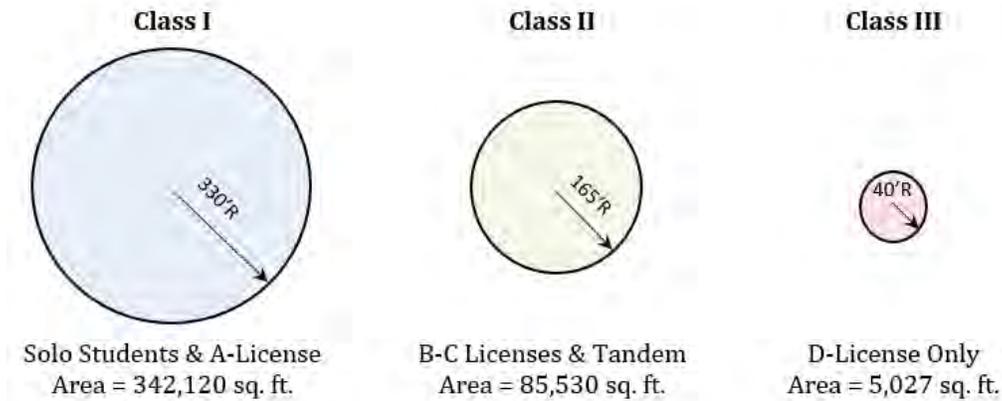
[1] Classes added to differentiate between various DZ activity & dimensions

[2] Tandem jumps involve two skydivers using one parachute

Source: USPA 2019–2020 Skydiver’s Information Manual (Section 2-1[1])

As Table 2 demonstrates, a Class I drop zone requires a minimum of almost 8 acres of unobstructed property to support a full range of skydiving activity including initial training and accelerated free-fall jumps. This is substantially more space (400 percent) to provide an adequate landing area and a margin from obstacles than a Class II drop zone which is suited for skydivers with a B-license or greater plus tandem skydiving. The area needed for a Class 3 drop zone is negligible but would be restricted for use by only skydivers holding a D-license.

Figure 3
Recommended Parachute Drop Zone Dimensions



2. Airport Considerations

In addition to siting a DZ to avoid obstacles, considerations for the placement of a drop zone include the proximity of active runways and taxiways. While the FAA’s proposed guidance was not implemented, it was recommended that the drop zone be located outside protected areas such as runway protection zones and object free areas of runways and taxiways. The runway protection zones are trapezoid shaped areas located beyond the ends of each runway. Runway/taxiway object free areas extend the length of each pavement and outward laterally along their respective centerlines.

At Vance Brand Airport, the RPZs for both the Runway 11 and 29 ends have an inner width of 500 feet and extends outward 1,000 feet to an outer width of 700 feet. The runway object free area extends outward along the centerline of Runway 11/29 at a distance of 500 feet. The taxiway object free areas for both Taxiway A and B extend outward 65.5 feet from the taxiway centerlines. While not expressly prohibited, FAA discourages designating these areas for a primary parachute landing

area. These criteria establish the general boundaries for considering remaining airport property suitable for siting a drop zone.

LMO has standard traffic patterns for the use of Runway 11/29 which involve left-hand turns for crosswind, downwind, and base legs of a complete takeoff and landing circuit. LMO's traffic pattern altitude is 1,000 feet above ground level (6,050 feet mean sea level or MSL) for smaller aircraft while high-performance jets will generally use 1,500 feet (6,550 feet MSL) as their pattern altitude. **Figure 4** illustrates the current traffic patterns for the Airport.

Because of the relatively high elevation of the airport (5,050 feet MSL), aircraft aerodynamic and engine performance is diminished compared to the same aircraft operating at sea level. In effect, aircraft on the ground behaves as if it were approaching its maximum cruise altitude. In addition, aircraft performance is affected by air temperature and to a lesser degree humidity, which both can be further diminish performance especially during the summer months. Known as density altitude, warmer air is less dense than cooler air which affect both engine and aerodynamic performance. At times, density altitude on the surface at LMO can reach 8,000 to 9,000 feet MSL which can adversely affect the ability for aircraft to takeoff, climb, and maneuver. By extension, density altitude can also affect parachute performance and should be considered as well, especially to avoid skydiving activity near aircraft using the runway and traffic patterns.

3. Drop Zone Evaluation Criteria

There are areas of undeveloped airport property west of Runway 11/29 that is currently being used to support skydiving activity. However, there are certain factors that should be considered for evaluating the suitability for an optimum drop zone site.

As previously discussed, the USPA's recommended drop zone size and shape needed for supporting all types of skydiving is a circular with a 330 foot radius (342,120 square feet). The circular shape is primarily to provide a unidirectional opportunity to approach the drop zone. The drop zone location should be as far away as practicable from Runway 11/29 to allow enough airspace to allow unidirectional approach patterns with an emphasis on prevailing winds so as to avoid overflights and potentially interfering with aircraft using the runway. The extensive area requirements for the drop zone should not encumber otherwise developable property in order to avoid having to relocate the drop zone in the future if the property becomes marketable. Other more criteria specific to LMO include (1) proximity to the swoop pond and (2) walking distance to the loading zone. These criteria were used to evaluate the current drop zone as well as for alternative sites.

4. Current Drop Zone

In November 2018, the City identified the current boundaries of the designated drop zone. As depicted on **Figure 2**, the drop zone has a total area of 338,000 square feet with squared corners and a small cut-out to avoid a non-standard wind direction indicator. The drop zone area also includes a 175-foot square extension (30,625 square feet) immediately south of the swoop pond.

As currently laid out, there are several concerns with the existing drop zone. The drop zone area does not meet the USPA BSR standard for a Class I drop zone. In addition, the extension of the DZ that abuts the south end of the swoop pond is generally unusable for novice skydivers and further constrains the amount of area available for all skydivers. The squared off area of the DZ also leaves portions of the drop zone unusable in a practical sense. Skydivers are generally not going to aim for the corners to land in the DZ. Attempting to place a Class I drop zone centered within the current DZ does not fit.

Figure 4
Airport Traffic Pattern/Drop Zone

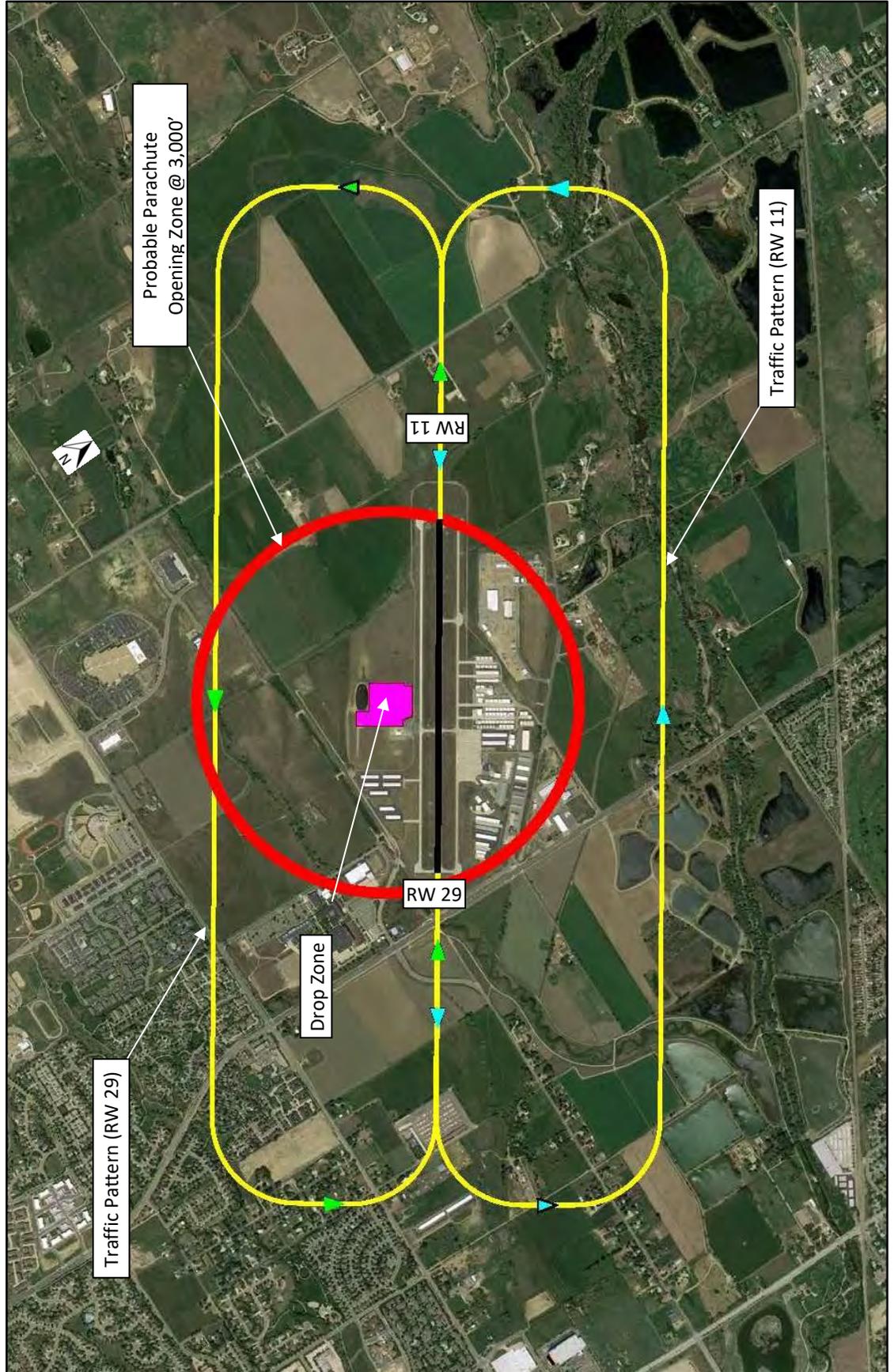
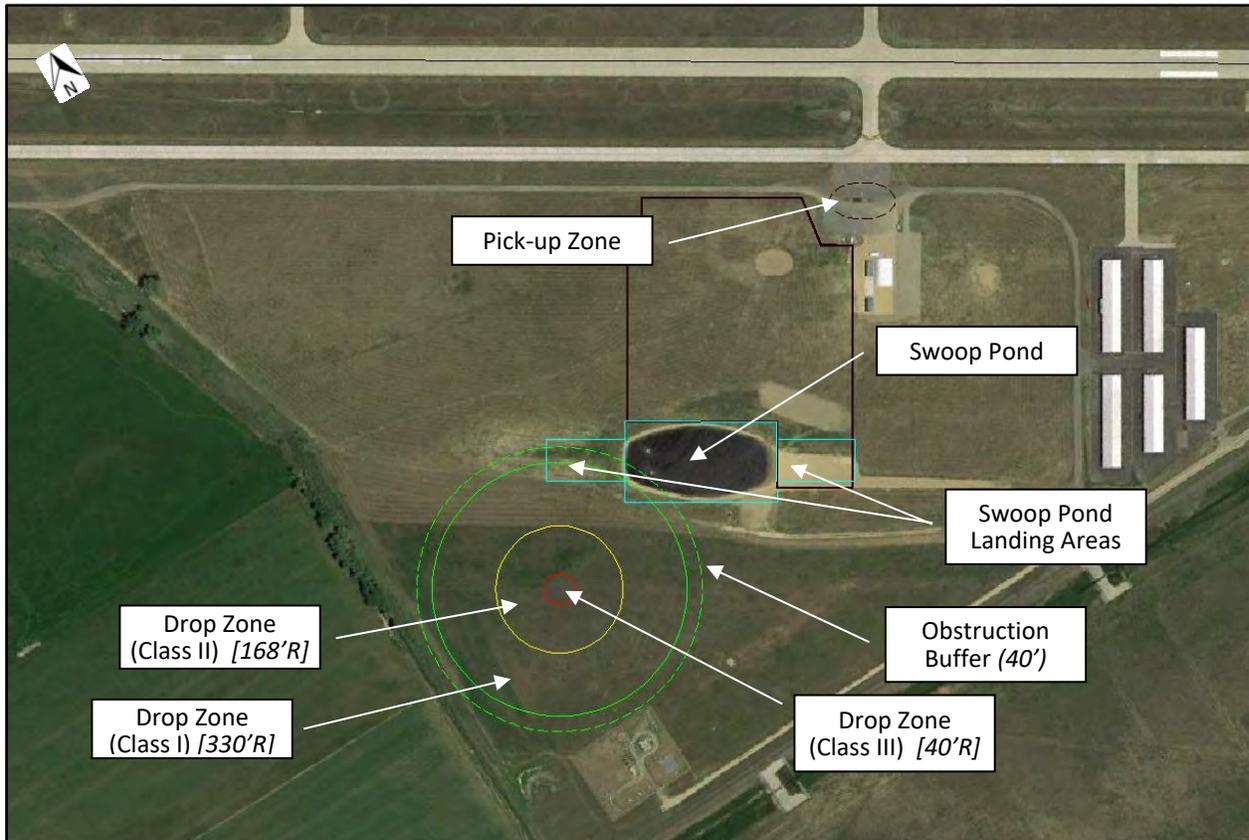


Figure 5
Alternate Drop Zone 1



The northeastern edge of the drop zone is located only 350 feet from the centerline of Runway 11/29. As a result, overflights of the runway sometimes occur presumably by skydivers attempting to approach the drop zone from the northeast due to wind conditions. The location of the drop zone occupies prime frontage property that could accommodate future aeronautical development (T-hangars, etc.). The swoop pond is located adjacent to the drop zone and the walking distance from the farthest edge of the drop zone to the loading area is approximately 840 feet.

5. Alternate Drop Zones

Based on the limitations of the current drop zone to meet the preferred criteria, a number of alternative locations and layouts were evaluated for consideration as a suitable drop zone site.

Alternate Drop Zone No. 1

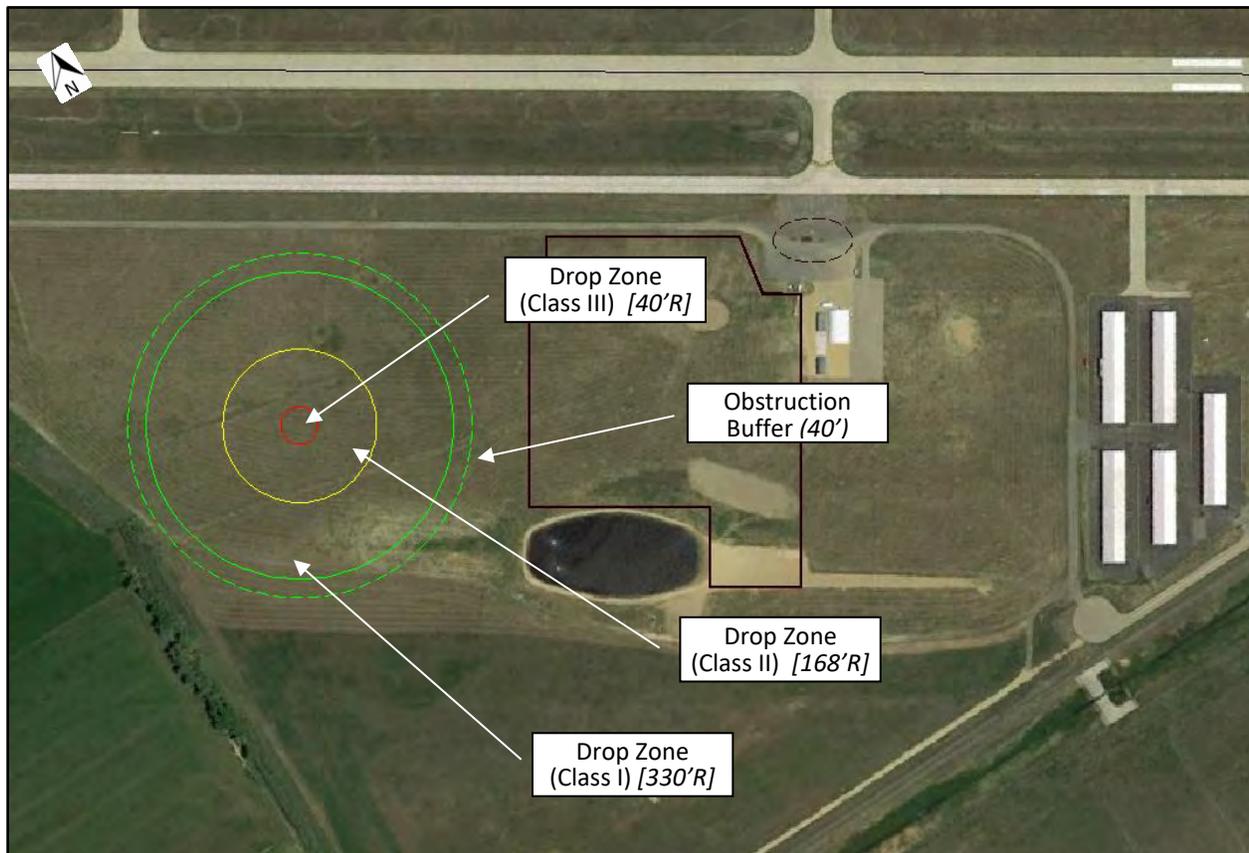
Alternate Drop Zone 1 (DZ 1) is located along the western boundary of airport property, immediately north of an antenna array used by a research laboratory as depicted in **Figure 5**. The drop zone in this area includes a standard Class 1 330-foot radius circle (348,120 sq. ft.) plus a 40-foot buffer to avoid physical obstructions. Also shown on Figure 5 and subsequent alternatives are two concentric inner circles representing Class II and III drop zones which can serve as landing targets and encourage the improvement of skydiver proficiencies. The closest edge of the drop zone would be approximately 1,050 feet from the centerline of Runway 11/29 which allows unidirectional approaches.

The drop zone is adjacent co-located with the swoop pond and the walking distance from the farthest edge of the drop zone boundary to the loading zone is about 1,600 feet. The general area of DZ 1 is not currently planned for future development.

Alternate Drop Zone No. 2

Alternate Drop Zone 2 (DZ 2) is located northwest of the existing drop zone as shown in **Figure 6**. Similar to Alternate DZ 1, the drop zone meets the Class I USPA recommendation and also includes the 40-foot buffer. The closest edge of DZ 2 is 430 feet from the Runway 11/29 centerline. While development is not immediately planned in the area, adjacent access to Taxiway B represents prime frontage property on the airfield for future consideration. DZ 2 is also co-located with the swoop pond and the farthest walking distance to the loading zone is 1,500 feet.

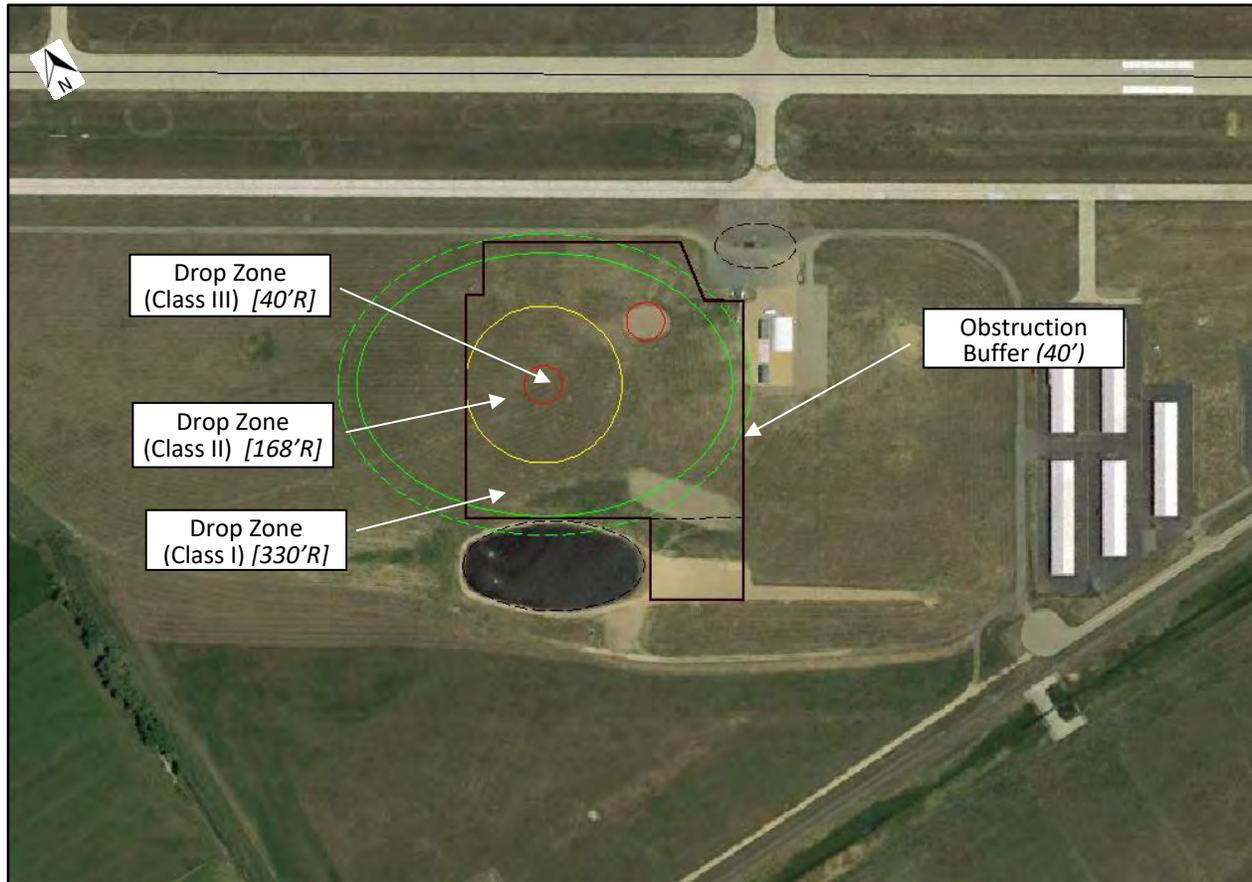
Figure 6
Alternate Drop Zone 2



Alternate Drop Zone No. 3

Alternate DZ 3 is an adaptation of the existing drop zone and is illustrated in **Figure 7**. Designed to provide an adequate landing area (342,120 sq. ft.) for all types of skydiving activity, it is elliptical in shape, approximately 790 long and 550 feet wide aligned parallel to Runway 11/29. DZ 3's closest boundary is 375 feet from the runway centerline. As with the current drop zone, the encumbered property is not currently planned for future aeronautical development. DZ 3 is also co-located with the swoop pond and the farthest walking distance to the loading zone is 900 feet.

Figure 7
Alternate Drop Zone 3



6. Drop Zone Recommendations

It is apparent the current drop zone area is insufficient to support the full range of skydiving activities, especially those regarding skydivers with limited experience. In order to provide an adequate area for skydivers to safely operate at LMO, it is recommended that Alternate Drop Zone 1 be strongly considered as the preferred area set aside as the primary drop zone. DZ 1 provides several advantages, the key being the distance from the Runway 11/29 to allow maximum separation from normal air traffic.

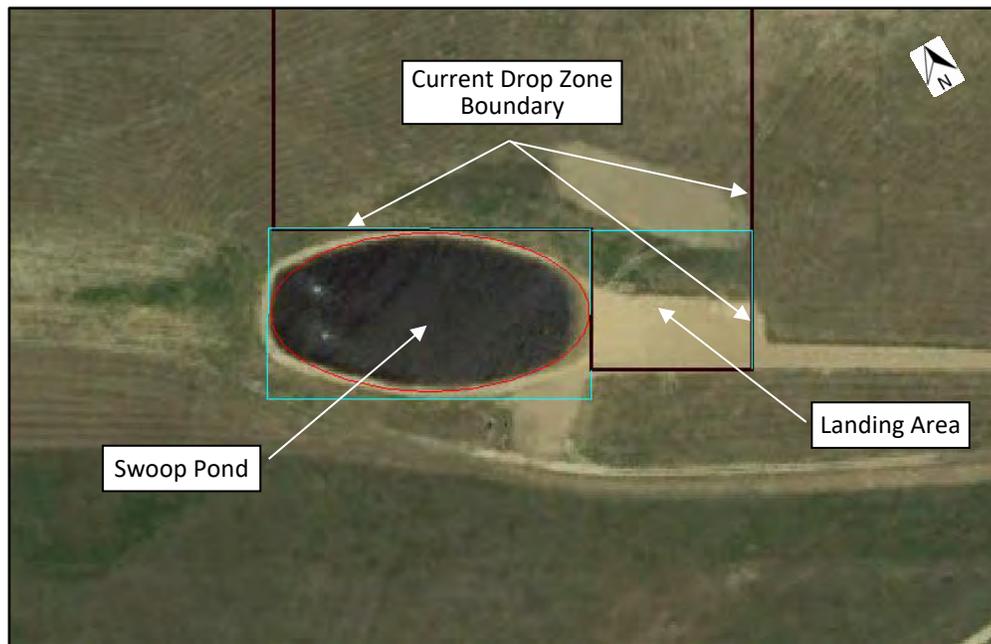
DZ 1 can be sized to support the entire range of skydiving, is not encumbered by obstacles, adjacent to the swoop pond and retains relatively close proximity to the loading area. The site takes advantage of an area that can be approached from all directions without encroaching on activity using Runway 11/29 and the area is not slated for any proposed future aeronautical or non-aeronautical development.

The outline of the concentric drop zones should be prominently marked for easy identification from the air. Wind indicators (direction and speed) should be located adjacent to the DZ so that skydivers can assess the need to adjust their approach (e.g., closer-in for higher winds). Other markings may be helpful to mark geographic reference points so that skydivers can gauge their approach to the DZ.

7. Swoop Pond

The USPA defines a swoop pond as a “water obstacle used as a high-performance landing area”. At LMO, the swoop pond is separate from the drop zone and consists of a 380 feet by 180 feet water feature approximately 4 feet deep with a parachute landing areas at each end of the pond as depicted in **Figure 8**. The August 10, 2010 Letter of Agreement (Attachment B) between the City and the Operator established the responsibilities and conditions for the operation and maintenance of the swoop pond. It also set the financial compensation the Operator must pay for the use of airport property. The annual fee was originally set at \$1,550 per year and adjusted each year based on a regional Consumer Price Index (CPI).

Figure 8
Swoop Pond



The pond is open for 5 months of the year, from May 1st through September 30th. Each year, the pond is filled with raw water to a depth of 3-4 feet under contract with the City’s Water Department. Maintenance of the pond is the responsibility of the Operator. Aside from mowing the area adjacent to the pond, the Operator must aerate the water and treat the pond water every 30 days with chemical agents to inhibit algae and plant growth to prevent the pond becoming a wildlife attractant. The swoop pond is to be completely drained within 15 days of the season end (October 15th).

Skydivers using the pond with generally approach the pond simultaneously with regular skydiving activity using drop zone. Occasionally, the Operator will sponsor a special event involving the swoop pond and is responsible for the security of the airfield and the safety of spectators. Entry to the area is either by using the perimeter road or via Rogers Road.

The use of the swoop pond is unique to special form of skydiving. There does not appear to be any specific guidelines for the layout and design of a swoop pond. Other than providing a definition, the USPA is silent on the topic. General discussion on-line regarding swoop pond development indicates that a linear distance of 300 feet or more and a depth of 3 feet is a common recommendation. As such, it is assumed that the swoop pond at LMO is adequate for its intended use. However, unlike the regular drop zone which does not require significant development, the location of the pond is fixed by its physical features. It’s adjacency to the current drop zone has not conflicted with regular

skydiving activity and it is presumed that the pond would not interfere with the use of a relocated drop zone, physically or operationally.

The provisions contained in the existing Letter of Agreement (LOA) for the swoop pond cover the requirements for the Operator to maintain the pond to avoid creating a habitat that could attract wildlife. It also sets the timelines for when the pond opens (May 1st) and closes (September 30th) as well as a deadline for when the pond must be drained. The LOA covers the Operator's financial responsibilities for costs incurred in filling and draining the pond, maintenance and monthly treatment of the pond water, and an annual use fee.

The LOA is silent on the Operator's requirement for maintaining adequate liability insurance for the operation of the swoop pond with the City as an additional named insured. It may be covered in the Operator's general liability policy however, because of the specific nature of swoop pond activity, the Operator should confirm with their insurance provider if it comes under the terms of their existing policy and should provide the City with a statement attesting to such from the policy underwriter.

D. COMPARATIVE AIRPORTS

1. Overview

A review of other airports that host skydiving activities was conducted to compare and contrast against the relative nature of skydiving activities with LMO. The general characteristics of the comparable airports selected for comparison included:

- Unlimited skydiving (i.e., initial training, sport and tandem skydiving)
- USPA Group Member designated as a Training Center
- Estimated aircraft operations (40,000 or greater)
- Based aircraft (30 or more)
- Non-towered

"USPA Group Member" pledge to comply with USPA's Basic Safety Requirements and to use current USPA sanctioned instructors, provide USPA-required equipment, and use USPA-developed instruction methods. USPA Group Members designated as "Training Centers" provide instruction, equipment, and training to become a licensed skydiver.

A review of the U.S. Parachute Association's (USPA) Drop Zone Locator⁴ identified several skydiving operators that fit the general characteristics for comparison. **Table 4** presents a list of airports that met the selection criteria.

From among these, three airports were selected as representative examples for examining their policies, practices, and procedures for accommodating commercial skydiving operations. In each case, the airport manager was interviewed to discuss skydiving activities at their airport.

2. Yolo County Airport (DWA)

Yolo County Airport (DWA) is owned and operated by Yolo County, California and is classified by the FAA as a general aviation airport of "local" significance.⁵ The Airport is located seven miles northwest

⁴ <https://uspa.org/DZlocator>

⁵ FAA characterizes "local" general aviation airports as supporting local businesses and personal air transportation need. They generally have 15 or more based aircraft with no jets and modest levels of activity..

of the City of Davis, California and 22 miles west of the Sacramento. The Airport has one runway, Runway 16/34 which is 6,000 feet long and 100 feet wide.

Table 4
AIRPORTS WITH SKYDIVING TRAINING CENTERS

LOCID	Airport	ST	Estimated Ops	Based A/C	Based Jets	Remarks
DWA	Yolo County	CA	60,360	79	0	
CVH	Hollister Municipal	CA	57,489	158	9	Gliders (45)
OAR	Marina Municipal	CA	42,000	53	4	
ZPH	Zephyrhills Municipal	FL	49,425	165	2	Gliders (20)
X26	Sebastian Municipal	FL	37,240	37	0	
DED	Deland Municipal	FL	117,460	79	2	
X51	Homestead General Aviation	FL	76,617	30	0	Gliders (8)
LHZ	Triangle North Executive	NC	62,800	133	1	
MWO	Middleton Municipal	OH	40,050	62	2	

Source: USPA Drop Zone locator, FAA Form 5010, & interviews

DWA has one full-time Fixed Base Operator (FBO) and an aircraft/avionics maintenance service. SkyDance Skydiving is the skydiving operator based at the airport, providing a full range of parachuting activities (i.e., novice to advanced training, tandem, high altitude, etc.). SkyDance operates as a USPA recognized Training Center. The skydiving operator uses a Cessna 208 Caravan capable of carrying 12-16 skydivers and operates from a set of buildings located in the northwest area of the Airport. The drop zone consists of a nearly 500,000 square-foot parcel located across the road from the SkyDance offices. An adjacent parcel to the south is open and available for novice skydivers. **Figure 9** illustrates the location and layout of the Airport and the location of the drop zone.

Lease/Operational Agreement

There is a lease between the County and SkyDance for the land and facilities, however there is no agreement in place for the use of the drop zone area.

Rules & Regulations

The County's Airport Rules and Regulations are posted online, however there is no mention of skydiving activity.

Minimum Standards for Commercial Aeronautical Activities

It does not appear that Yolo County has established any minimum standards for commercial aeronautical operators (not that they are required to).

Other Remarks

The Airport has hosted skydiving activity for over 20 years without incident or major complaints by the users or neighbors. The County operates a non-certified Automated Weather Observation Station (AWOS) which, when skydiving activity is prevalent, announces "avoid overflying the east side of the Airport" as the end of the weather information.

Figure 9
Yolo County Airport



3. Middletown Regional Airport (MWO)

General

Middletown Regional Airport/Hook Field (MWO) is owned and operated by the City of Middletown, Ohio and like LMO, is classified by the FAA as a regional general aviation airport. The Airport is located two miles north of the city and 23 miles northeast of Cincinnati. The Airport has two runways, Runway 5/23 which serves as the primary runway and is 6,100 feet long; Runway 8/26 is a turf runway used seasonally as the secondary, crosswind runway and is 3,040 feet long.

MWO has one full-time Fixed Base Operator (FBO), an aircraft maintenance service, and a flight training provider. Start Skydiving, LLC is the skydiving operator based at the airport, providing a full range of parachuting activities and operates as a USPA recognized Training Center. They operate all year long weather permitting but their normal season is between April 1st and October 31st. The skydiving operator normally operates two Cessna 208 Caravans capable of carrying 12-16 skydivers each in addition to a Cessna 206 (6-8 skydivers). Larger aircraft are brought in during the busier summer months to accommodate demand. There are several drop zones located on the airport and are designated for use based on the proficiency level of the specific skydiver. **Figure 10** illustrate the location and layout of the Airport and the location of the drop zone.

Lease/Operational Agreement

There is a lease between the City and Start Aviation (and owner of Start Skydiving) for the property used for offices and other space used for skydiving activity. There is currently no operating agreement for the use of the drop zones.

Rules & Regulations

The City is currently working on preparing a set of Airport Rules and Regulations as part of its Master Plan Update which will include skydiving activity.

Minimum Standards for Commercial Aeronautical Activities

The City is also working on preparing a set of Minimum Standards as part of its Master Plan Update which will include commercial skydiving operators.

Figure 10
Middletown Regional Airport



Other Remarks

Start Skydiving advertises itself as the Number 1 ranked Drop Zone in the world however, the basis for that assertion is unknown.

Until July of 2018, Start Aviation Services, the Airport's FBO (and owner of Start Skydiving) was also contracted by the City to serve as the Airport Manager, which created inherent conflicts of interest.

The City operates an Automated Weather Observation Station (AWOS) which announces skydiving activities in progress as part of the weather information message.

4. Triangle North Executive Airport (LHZ)

General

Triangle North Executive Airport (LHZ) is owned and operated by Franklin County, North Carolina. LHZ is classified by the FAA as a general aviation airport of regional significance. The Airport is located five miles north of the city of Louisburg and 17 miles northeast of Raleigh, North Carolina. The Airport has one runway, Runway 5/23 which is 5,498 feet long and 100 feet wide.

The management activities of the Airport also include providing typical Fixed Base Operator (FBO) services including Jet A and AvGas fuel sales, aircraft parking, hangar leasing, flight training and aircraft rentals. Triangle Skydiving Center, Inc. is the based skydiving operator, providing a full range of parachuting activities and operates as a USPA recognized Training Center. They generally operate all year long weather permitting but busiest during the summer months. The skydiving operator normally operates a turbine-powered Cessna 208 Caravan capable of carrying 12-16 skydivers at a time to altitude.

There are two drop zones located adjacent to TSC's office and hangar. The first drop zone is approximately 72,000 square feet which only D-licensed skydiver are authorized to use. A larger estimated 364,000 square-foot (8.3 acre ±) irregular shaped parcel is located immediately to southeast of the first drop zone which is available to all skydivers. **Figure 10** illustrates the location and layout of the Airport and the location of the drop zones.

Lease/Operational Agreement

There is a 3-year lease between the County and Triangle Skydiving Center for the rental of the office and hangar space and other space used for skydiving activity (e.g., parachute packing, rigging, etc.). There is currently no operating agreement for the use of the drop zones.

Rules & Regulations

The County recently updated its Airport Rules and Regulations and the only references to skydiving activity in the regulations include:

REGULATIONS GOVERNING REQUIREMENTS FOR COMMERCIAL OPERATIONS

F. The minimum liability insurance which a commercial operator shall carry will be determined by the nature of the commercial operation. Airport bodily injury and property damage liability insurance limits:

f. Parachute/Skydiving Operations: \$1,000,000

SPECIAL AIRPORT USES

D. No commercial operations involving non-powered aircraft, including gliders, balloons, parachuting, and other unusual and special classes of aeronautical activities, will be permitted on the airport without the prior written approval of the Airport Manager.

Minimum Standards for Commercial Aeronautical Activities

The County addresses the Airport's Minimum Standards through the aforementioned rules and regulations which other than a minimum level of liability insurance, impose no other requirements.

Other Remarks

The County operates an Automated Weather Observation Station (AWOS) but the broadcast message does not include advisory regarding on-going skydiving activities.

Figure 10
Triangle North Executive Airport



5. Summary

These examples are provided for comparison for existing skydiving operations at LMO. While each of the comparable airports has unique characteristics, there are similarities that can enable the City to consider the how to address its own concerns regarding the review of appropriate rules and regulations, standard operating practices, and the current minimum standards for commercial skydiving services.

Each of the comparable airports have skydive operators that are designated as training centers which offer initial and advanced skydiving lessons. They also share larger than standard drop zones which provides adequate area for skydivers to land within the boundaries. Two of the comparable airports (MWO and LHQ) have a separate drop zone set aside for expert skydivers. Only one airport (MWO) had publically available SOPs for airport operations which specifically included skydiving activity. Additional information on these airports is included in **Attachment D**.

E. SAFETY RISK ANALYSIS

As part of this analysis, a multi-level safety risk analysis was conducted to identify and assess potential risks associated with supporting commercial skydiving activity at the Airport. It included various elements relevant to the existing policies, procedures and practices proposed skydiving operation as well as characteristics of existing activity at LMO.

1. FAA-Based Safety Risk Analysis

The basic risk assessment followed the outline from Figure 8-3-5B, “Risk Assessment for Parachute Operations at an Airport” found in FAA Order 8900.1, *Flight Standards Information Management System (FSIMS) Change 502*. The assessment also used on-site observations and other information for considering the potential hazards that could occur at the Airport.

The initial assessment identified several areas where the unmitigated risk could be considered “low”, “medium” or “high” based on the potential frequency and severity of mishaps aligned with the FAA’s threshold for safety. **Table 5** highlights the FAA’s factors that could directly affect the safety of skydiving and other users at LMO.

Table 5
FAA-Based Safety Risk Assessment

<u>Hazard Factor</u>	<u>Potential Mitigation</u>
1. Drop Zone not sized for the appropriate skydiver experience level	Establish appropriately sized and marked drop zone in an area that minimizes conflicts with other airport users
2. Drop Zone located inside traffic pattern for Runway 29	Relocate drop zone to avoid runway proximity
3. Congested traffic pattern with diverse mix of aircraft and pilots with varying proficiencies.	Publish updated SOPs and post on-line. Proactive awareness campaign.
4. Current skydiving SOPs date from 1995 and are not available or referenced in other airport publications	Update SOPs and post on-line. Proactive awareness campaign. Conduct safety meetings
5. No Procedure in place for notifying airport users of changes to the airport procedures	Publish notices and post on-line, email blasts and bulletins.
6. “No Radio” operations (e.g., light sport, ultralight, glider, or agricultural aircraft) being conducted through the airspace being used by skydiving operations	Recommend use of handheld radio to monitor UNICOM/CTAF communications

These and other issues are generally discussed in a Safety Risk Management charrette where stakeholders including airport management and the skydive operator, along with active skydivers, tenants, and user representatives convene to validate safety concerns and to develop a consensus regarding potential mitigation measures. **Attachment E** contains the full safety risk analysis using the FAA’s methodology and form.

2. Other Safety Risk Factors

The analysis of safety concerns at LMO included other issues and concerns specifically identified by airport management and users. Observations of skydiving activity at the Airport also identified current practices that should be considered. **Table 6** summarizes factors that can potentially compromise safety and strategies recommended for mitigating risks.

**Table 6
Other Safety Risk Factors**

<u>Hazard Factor</u>	<u>Proposed Mitigation</u>
1. Jump plane pilot does not consistently make routine radio announcements	Enforcement of [Section 13.39.040(j)(2)] and SOP's
2. Jump plane boarding skydivers at loading zone encroaching OFA Taxiway B	Expand / realign skydiver loading zone area
3. Jump Plane refueling on paved taxiway stub encroaching OFA Taxiway A	Relocate fuel tank and aircraft fueling area
4. Tandem skydivers observed performing 'diving spiral' maneuver close to ground	Prohibited [BSR 2-1(c)(8)]
5. Skydivers apparently not adequately briefed on SOPs/Drop Zone	Include SOP/DZ sheet with signed waiver
6. Off-DZ landings not reported	Develop reporting form with detailed information (who/when/where/why/instructor)
7. Skydivers overflying runway approaching from east	Relocate DZ / update SOPs / approach markers

F. CONCLUSIONS & RECOMMENDATIONS

There is no evidence to conclude that current skydiving operations at LMO are critically unsafe and warrant immediate termination. However, on-site observations provided evidence that skydivers using LMO do not appear to be operate in a consistently disciplined manner that provides any level of comfort to other airport users. (See **Attachment C**)

Several areas of concern have been identified and must be addressed to offer opportunities to enhance the safe use of the Airport by both pilots and skydivers. Most of these are addressed in Tables 5 and 6 as mitigation measures.

The location of the drop zone and the development of updated Standard Operating Procedures lead the list of measures that should be considered immediately. Relocating the drop zone to an area that provides an optimum separation distance from the runway can be accomplished with the advice and recommendations of the Operator and FAA. The update of the SOPs requires the cooperation of the Operator and should include input from airport users. Once these elements are in place, educating all users is vitally important to ensure that everyone understands what to expect at LMO and what is expected of them. This can be accomplished through the publication of the SOPs with distribution to all aeronautical tenants, users and posted online on the Airport's website. A safety meeting should be conducted to provide opportunities for user outreach and input.

As previously stated, skydiving is recognized by the FAA as an aeronautical activity. However, it should be recognized that many skydivers, especially novices and students, have very limited aeronautical knowledge regarding the rules, policies, and guidelines that govern operating in the airport environment. All other airport users require some level of formal training and experience to operate safely at an airport. Requiring skydivers to acknowledge reading and understanding the Airport's SOPs is a major step to assuring that they will be able to safely and consistently operate in harmony alongside other users.

As with all aviation activity, there is always little margin for error and a single misstep can have catastrophic results. By confronting the deficiencies that can diminish safety ahead of time, a safer environment can be developed and maintained to allow all users to enjoy the Airport's facilities.

#

Attachment A

Airport Background Information



> 1 ASSOC CITY: LONGMONT 4 STATE: CO LOC ID: LMO FAA SITE NR: 02669.*A
 > 2 AIRPORT NAME: VANCE BRAND 5 COUNTY: BOULDER CO
 3 CBD TO AIRPORT (NM): 03 SW 6 REGION/ADO: ANM/DEN 7 SECT AERO CHT: CHEYENNE

GENERAL

10 OWNERSHIP: PUBLIC
 > 11 OWNER: CITY OF LONGMONT
 > 12 ADDRESS: 350 KIMBARK ST
 LONGMONT, CO 80501
 > 13 PHONE NR: 303-651-8431
 > 14 MANAGER: DAVID SLAYTER
 > 15 ADDRESS: 229 AIRPORT ROAD
 LONGMONT, CO 80503
 > 16 PHONE NR: 303-651-8431
 > 17 ATTENDANCE SCHEDULE:

ALL ALL DALGT

18 AIRPORT USE: PUBLIC
 19 ARPT LAT: 40-09-51.8000N ESTIMATED
 20 ARPT LONG: 105-09-49.1000W
 21 ARPT ELEV: 5055.3 SURVEYED
 22 ACREAGE: 261
 > 23 RIGHT TRAFFIC: NO
 > 24 NON-COMM LANDING: NO

25 NPIAS/FED AGREEMENTS: NGY
 > 26 FAR 139 INDEX:

RUNWAY DATA

> 30 RUNWAY INDENT:
 > 31 LENGTH:
 > 32 WIDTH:
 > 33 SURF TYPE-COND:
 > 34 SURF TREATMENT:
 35 GROSS WT: S
 36 (IN THSDS) D
 37 2D
 38 2D/2D2
 > 39 PCN:

LIGHTING/APCH AIDS

> 40 EDGE INTENSITY:
 > 42 RWY MARK TYPE-COND:
 > 43 VGSI:
 44 THR CROSSING HGT
 45 VISUAL GLIDE ANGLE:
 > 46 CNTRLN-TDZ:
 > 47 RVR-RVV:
 > 48 REIL:
 > 49 APCH LIGHTS:

OBSTRUCTION DATA

50 FAR 77 CATEGORY
 > 51 DISPLACED THR:
 > 52 CTLG OBSTN:
 > 53 OBSTN MARKED/LGTD:
 > 54 HGT ABOVE RWY END:
 > 55 DIST FROM RWY END:
 > 56 CNTRLN OFFSET:
 57 OBSTN CLNC SLOPE:
 58 CLOSE-IN OBSTN:

DECLARED DISTANCES

> 60 TAKE OFF RUN AVBL (TORA):
 > 61 TAKE OFF DIST AVBL (TODA):
 > 62 ACLT STOP DIST AVBL (ASDA):
 > 63 LNDG DIST AVBL (LDA):

SERVICES

> 70 FUEL: 100LL A MOGAS
 > 71 AIRFRAME RPRS: MAJOR
 > 72 PWR PLANT RPRS: MAJOR
 > 73 BOTTLE OXYGEN: NONE
 > 74 BULK OXYGEN: NONE
 75 TSNT STORAGE: TIE
 76 OTHER SERVICES:
 CHTR, INSTR, PAJA, RNTL, SALES

FACILITIES

> 80 ARPT BCN: CG
 > 81 ARPT LGT SKED: SEE RMK
 BCN LGT SKED: SS-SR
 > 82 UNICOM: 122.975
 > 83 WIND INDICATOR: YES-L
 84 SEGMENTED CIRCLE: YES
 85 CONTROL TWR: NO
 86 FSS: DENVER
 87 FSS ON ARPT: NO
 88 FSS PHONE NR:
 89 TOLL FREE NR: 1-800-WX-BRIEF

BASED AIRCRAFT

90 SINGLE ENG: 257
 91 MULTI ENG: 19
 92 JET: 4
 TOTAL: 280
 93 HELICOPTERS: 4
 94 GLIDERS: 0
 95 MILITARY: 0
 96 ULTRA-LIGHT: 16

OPERATIONS

100 AIR CARRIER: 0
 102 AIR TAXI: 0
 103 G A LOCAL: 50,043
 104 G A ITNRNT: 21,028
 105 MILITARY: 420
 TOTAL: 71,491
 OPERATIONS FOR
 12 MONTHS
 ENDING: 12/31/2015

	11/29			
	4,799			
	75			
	CONC-G			
	30.0			
	MED			
BSC - F / NPI - F	- / -	- / -	- / -	- / -
V2L / V2L	/	/	/	/
24 / 35	/	/	/	/
3.00 / 3.00	/	/	/	/
- / -	- / -	- / -	- / -	- / -
- / -	- / -	- / -	- / -	- / -
/	/	/	/	/
/	/	/	/	/
B(V) / C	/	/	/	/
/	/	/	/	/
TREE / ROAD	/	/	/	/
/	/	/	/	/
30 / 11	/	/	/	/
815 / 430	/	/	/	/
110R / 0B	/	/	/	/
20:1 / 20:1	/	/	/	/
N / N	/	/	/	/
/	/	/	/	/
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(-) ARPT MGR PLEASE ADVISE FSS IN ITEM 86 WHEN CHANGES OCCUR TO ITEMS PRECEDED BY >

> 110 REMARKS

A 043 RWY 11 VASI UNUSLB BYD 3.9 NM. VASI DOES NOT PRVD OBST CLNC BYD 3.9 NM FROM THLD.
 A 081 ACTVT MIRL RY 11/29 AND VASI RY 11/29 - CTAF.
 A 110-003 ULTRALIGHT & HELICOPTER ACTIVITY ON & INVOLF ARPT.
 A 110-004 RY 11 HAS -7 FT DITCH 420 FT AND 900 FT FM THLD ON EXTDD THLD.
 A 110-005 RY 29 HAS +15 FT HWY 702 FT FM THLD; +25 TO 35 FT BLDGS/TANKS APROXLY 1300 FT L OF THLD.
 A 110-008 NOISE ABATEMENT PROCEDURES IN EFFECT CTC ARPT MANAGER 303-651-8431.
 A 110-009 PARAJUMPING ON AND IN VICINITY OF ARPT PRIMARILY S OF RY, AVOID OVERFLIGHTS MID FIELD.

111 INSPECTOR: (S) 112 LAST INSP: 08/17/2016 113 LAST INFO REQ:



Federal Aviation Administration

(http://www.faa.gov/)

APO Terminal Area Forecast 2017

Aviation Data and Statistics Home (http://w

- Home
- Facility View
- Scenario Activities
- Query Reports

Log out

Go to LOCID:

Current Scenario: National Forecast 2017

Facility: LMO - VANCE BRAND

- Facility View LMO
- Notes
- Graph Data
- Print

- Enplanements
- Airport Operations
- Based Aircraft
- Tracon Operations

Airport Operations

View Previous Years

Year	F	Itn Air Carrier	Itn Air Taxi	Itn GA	Itn Mil	Local Civil	Local Mil	Total Airport Ops	Total Overflights
2014		0	0	29,980	10	70,000	0	99,990	0
2015		0	0	29,980	10	70,000	0	99,990	0
2016		0	0	21,028	420	50,043	0	71,491	0
2017	*	0	0	21,549	420	50,972	0	72,941	0
2018	*	0	0	22,082	420	51,917	0	74,419	0
2019	*	0	0	22,628	420	52,880	0	75,928	0
2020	*	0	0	23,188	420	53,861	0	77,469	0
2021	*	0	0	23,751	420	54,865	0	79,036	0
2022	*	0	0	24,329	420	55,888	0	80,637	0
2023	*	0	0	24,920	420	56,930	0	82,270	0
2024	*	0	0	25,525	420	57,991	0	83,936	0
2025	*	0	0	26,146	420	59,071	0	85,637	0
2026	*	0	0	26,767	420	60,177	0	87,364	0

Year	F	Itn Air Carrier	Itn Air Taxi	Itn GA	Itn Mil	Local Civil	Local Mil	Total Airport Ops	Total Overflights
2027	*	0	0	27,403	420	61,303	0	89,126	0
2028	*	0	0	28,054	420	62,451	0	90,925	0
2029	*	0	0	28,721	420	63,619	0	92,760	0
2030	*	0	0	29,403	420	64,810	0	94,633	0
2031	*	0	0	30,102	420	66,023	0	96,545	0
2032	*	0	0	30,816	420	67,259	0	98,495	0
2033	*	0	0	31,548	420	68,517	0	100,485	0
2034	*	0	0	32,297	420	69,799	0	102,516	0
2035	*	0	0	33,065	420	71,107	0	104,592	0
2036	*	0	0	33,849	420	72,437	0	106,706	0
2037	*	0	0	34,653	420	73,792	0	108,865	0
2038	*	0	0	35,476	420	75,173	0	111,069	0
2039	*	0	0	36,319	420	76,580	0	113,319	0
2040	*	0	0	37,181	420	78,013	0	115,614	0
2041	*	0	0	38,064	420	79,473	0	117,957	0
2042	*	0	0	38,968	420	80,960	0	120,348	0
2043	*	0	0	39,893	420	82,475	0	122,788	0
2044	*	0	0	40,840	420	84,019	0	125,279	0
2045	*	0	0	41,810	420	85,591	0	127,821	0

Attachment B

Skydive Operations Information

Vance Brand Municipal Airport

Standard Operations Procedure for Skydiving Activity

effective: 09/01/95

revised :10/30/95

The purpose of this document is to establish procedures, regulations, safety standards within the guidelines of the FAR's and FAA AC's, prescribed unicom communication and coordination with the non-emergency sports parachute jumping operations within the class E airspace at the Longmont Vance Brand Municipal Airport.

I. Procedures

A. The Skydiving Operation shall:

1. Comply with FAR Part 105, 91, and FAA Advisory Circular 90-66A (current editions) along with the United States Parachute Association (USPA), Basic Safety Regulations.

2. Normally operate from official sunrise to official sunset. However, it is recommended that skydiving activities start at 09:00L, to foster "good neighbor relations". It is also recommended that the first jump of the day should be done by experienced skydivers, to avoid the possibility of an off site landing by a student. Night skydiving operations must comply with FAR 105.33. It is requested, but not mandatory for a night jump operation notice to be posted at the FBO's 24 hours in advance. The purpose of this notice is to advise based pilots and students of this activity.

3. In the event a landing is not possible in the designated drop zone, due to wind, emergencies, spotting, etc., no skydiver will be allowed to cross the Airport's main runway 11-29 at or below 1,000 feet agl.

4. Request all skydivers to deploy parachutes at a reasonable altitude of 2,000 feet agl to facilitate greater visibility for aircraft operations as per USPA regulations.

5. Any skydiver landing off the designated Drop Zone (D.Z.) will be grounded until a landing accuracy class has been taken through the skydiving operator.

6. At their sole expense maintain liability insurance at current City of Longmont standards.

7. For any skydiving special events, as defined by "boogies", shall be reviewed by the Airport Management for their comment. Events

shall be reviewed a minimum of four weeks in advance with Airport Management. Information on the skydiving event shall be posted at the FBO's within a 20 nm radius of the Vance Brand Airport.

8. Not allow jump plane intersection takeoffs any time there are more than 3 aircraft in the traffic pattern or aircraft at the runway hold short lines.
9. Brief all jump plane pilots to fly a normal pattern with appropriate pattern advisory calls and fly a final on the extended center line of the runway. Carrier turns and step descents into the traffic pattern will not be allowed.
10. Brief all jump plane pilots on the volunteer noise abatement plan, as established by the Longmont Airport Users Group.
11. Not allow spectators within fifty (50) feet of the skydiving D.Z.
12. Allow only skydive operations during times of Visual Meteorological Conditions (VMC); no operations shall be allowed during Marginal or Instrument Meteorological Conditions (IMC).
13. Suspend skydiving operations any time the surface winds exceeds 22 mph for experienced skydivers and 14 mph for student operations.
14. Prior to skydiving operations it is recommended that a FAA/FSS weather briefing be received for the Longmont area, this briefing should include but not limited to current and forecasted winds aloft at Flight Level 90, 120, 180.
15. Issue the skydiving advisory NOTAM no less than one hour in advance of scheduled operations. However, to allow better flight planning for transit aircraft it is preferable that the NOTAM be issued a minimum of 12 hours in advance.
16. Notify the Airport Management of any change of operational procedures.
17. In addition to FAR Part 105.35, any skydiver found with alcohol, during skydiving activities, will be asked to leave the airport. After hours parties at the D.Z. will not be allowed without prior notification from the Airport Manager.
18. Have an ongoing clean up program that includes any trash, mud, or debris caused by the skydiving operations and will assure Airport Management that on going clean up will be enforced.
19. Advise parents at the D.Z. that children are not to wander on or near the ramp, aircraft or near the Airport Operations Area. Strict

supervision by the parents is required, or at Airport Managements discretion, they will be asked to leave the Airport.

20. Keep skydivers to the sides the ramp or taxiways and in the designated waiting area to load the jump aircraft. Aircraft have the right-of-way, this should be observed at all times.

II. Unicom and Jump Plane Communications

A. The Skydiving Operator shall:

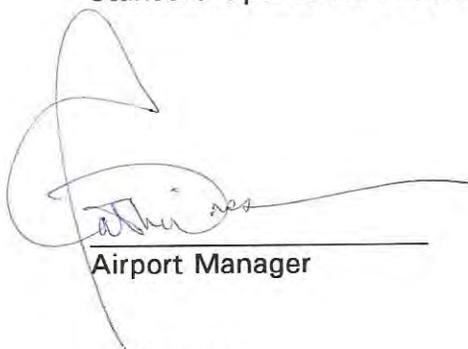
1. Maintain skydiving advisory agreement with the Unicom operator. Unicom operator is requested to advise transit aircraft of skydiving operations in effect and the location of the D.Z.
2. Monitor the unicom and reply to any aircraft call-up with the fullest information about ongoing and planned landing site use. The skydiving operator may at their discretion use a hand held com radio with the call sign "Skydive Ground" to answer any request a transit pilot may have.
3. Periodically review with the Airport Manager, Unicom procedures and comply with any revision.
4. When the jump plane pilot advises via the unicom "jumpers away", the pilot will also advise the number of skydivers in that load.
5. Assure Airport Management that the jump plane pilot has two-way radio communications on the Common Traffic Advisory Frequency (CTAF).

III. Emergencies

A. The Skydiving Operator shall:

1. Any time the Longmont Fire Department, the Longmont Police Department or the Boulder County Sheriffs Department is called to or responds to the Airport for a skydiving incident, the Airport Manager shall be paged at 546-3622. Additionally, report any injuries that require medical response to the Airport Manager in a timely manner.
2. Maintain an Emergency Procedures Manual, which will be periodically reviewed by the Airport Manager.
3. Report any aircraft accidents or incidents immediately to the Airport Manager.

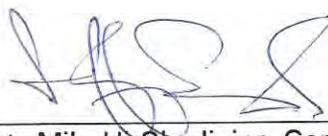
The skydiving operations will be requested to correct any discrepancies within a reasonable time period and show proof of compliancy. Any appeal to the above regulations must be made in writing to the Airport Manager for further review and comment. Additionally, these Standard Operations Procedures may be revised from time to time.



A handwritten signature in blue ink, appearing to read 'John', is written over a horizontal line. The signature is stylized and includes a large loop on the left side.

Airport Manager

skydive.ops



A handwritten signature in blue ink, appearing to read 'John', is written over a horizontal line. The signature is stylized and includes a large loop on the left side.

President, Mile-Hi Skydiving Center

Public Works & Natural Resources

Vance Brand Municipal Airport

375 Airport Road

Longmont, CO 80503

(303) 651-8431 · <http://www.ci.longmont.co.us>



August 17, 2010

Mile-Hi Skydiving Center

Mr. Frank Casares, President

229 Airport Road – Hangar 34G

Longmont, CO 80503

RE: Letter of Agreement for Swoop Pond

Dear Mr. Casares:

The purpose of this letter is provide Mile-Hi Skydiving Center, Inc and the City of Longmont-Airport a Letter of Agreement for the use and operation of the Skydive Swoop Pond located on the south side of the airport for skydive use.

Per our discussion with the FAA-ADO and the U.S. Department of Agriculture, this letter will outline the parameters for continued use of the Swoop Pond. By signing this letter you agree to the provision below for continued use of the Swoop Pond.

1. The Swoop Pond is approved for use from May 1st through September 30th each calendar year.
2. At the end of the use period each calendar year, the Swoop Pond will be drained no later than October 15th.
3. The immediate area around the Swoop Pond will be mowed and kept weed free 25' (twenty five feet) from the pond edges outward.
4. An appropriate sized spectator area will also be maintained as outlined in #3 when special events are held as agreed upon with the Airport Manager prior to each event.
5. For each public event, Mile-Hi Skydiving will provide portable public restroom facilities at their own cost.
6. The Swoop Pond liner must be maintained in good working order to prevent leakage, tears, cracks, holes, etc.
7. Mile-Hi Skydiving will, in a separate agreement, with the City Water Department, contractually purchase the raw water for filling the Swoop Pond on an annual basis.
8. Mile-Hi Skydiving will treat the pond each 30 (thirty) days with 2.5 gallons of Qutrine to prevent filamous algae growth, bacteria growth and deter the pond as a wildlife attractant.
9. Mile-Hi Skydiving will treat the pond each 30 (thirty) days with 4.0 gallons of Aqua Shade for control of aquatic plant growth and to shade portions of the sunlight spectrum required by underwater plant and algae growth.
10. Mile-Hi Skydiving will keep the pond aerated when not in use by running 2 (two) aerators to stimulate water movement and oxygen flow.

18/08 2010 15:15 FAX

11. Mile-Hi Skydiving agrees to notify the Airport Manager immediately if any of these conditions cannot be met during the operational time period and will provide the Airport Manager with a written course of alternative actions to meet these requirements.
12. Mile-Hi Skydiving and Airport Manager will receive training in wildlife hazard dispersal techniques and supplies will be kept in an accessible location to immediately alleviate hazards if/when wildlife is observed. If wildlife continues to utilize the area, USDA will be notified immediately.
13. Access to the Swoop Pond by Mile-Hi staff, spectators, patrons, guest, etc., will be obtained by the use of the Vehicle Service Road on airport property or Airport Road via Rogers Road for off airport access. At no time is access allowed by vehicles or pedestrians by runway crossings.
14. The City of Longmont allows the use of the Swoop Pond as a Permitted Use on a yearly basis until such time the City requires the use of the property. The City may reclaim the property at any time for aeronautical development consistent with the Airport Master Plan. Mile-Hi Skydiving agrees to pay the City of Longmont-Airport \$1,550 with annual adjustments for the Denver/Boulder Consumer Price Index annually for use of the Swoop Pond.

In order to continue to use the Swoop Pond, please sign the agreement below where indicated. Please retain a copy of this agreement on file should the FAA or State Division of Aeronautics need to view it during their annual inspections.

Thank you for your attention to this matter. If you should have any questions, please feel free to contact me at 303-651-8431.

Sincerely,



Tim Barth
Airport Manager

CC: Marc Miller, FAA Compliance Manager
Kendra Cross, U.S. Department of Agriculture, Wildlife Biologist

I agree to the terms of this Letter of Agreement for the Swoop Pond



Frank Casares, President, Mile-Hi Skydiving Center, Inc.

LETTER OF AGREEMENT

EFFECTIVE: April 2, 2007

SUBJECT: Parachute Jumping at Longmont/Vance Brand Airport (LMO) Colorado.

1. **PURPOSE:** This agreement establishes procedures for conducting parachute jumping operations conducted at LMO.
2. **CANCELLATION:** D01 and Mile Hi Skydiving Center Letter of Agreement, dated October 26, 1998, is canceled.
3. **SCOPE:** This agreement applies to parachute jumping activities conducted within the LMO Parachute Operations Area described in Attachment 1.
4. **AUTHORIZATION:** This agreement authorizes Mile-Hi Skydiving Center, Inc., to schedule parachute jumping in the LMO Parachute Operations Area (Attachment 1). This agreement does not waive any provisions of Federal Aviation Regulations (FAR) Part 91 or 105 and may be revoked at any time for failure of Mile-Hi Skydiving Center, Inc. to comply with the provisions set forth.
5. **EXCLUSION:** The owner/operator of Mile-Hi Skydiving Center Inc. covenants and expressly agrees, with regard to any liability which may arise from the operation within the LMO Parachute Operations Area, that party shall be solely and exclusively liable for the negligence of its agents, servants, and/or employees, in accordance with applicable law; and that neither party looks to the other to save or hold harmless for the consequences of any negligence on the part of one of its own agents, servants, and/or employees.

6. RESPONSIBILITIES:

- a. Each jump aircraft will be equipped with operational transponder in accordance with FAR Part 91.24.
- b. Each jump aircraft is assigned a call-sign as listed on Attachment 2. The assigned call-signs are only for communications with D01 during parachute jump operations within the LMO Parachute Operations Area (Attachment 1). The call-signs and associated beacon codes are not to be used for filing flight plans or for use outside the LMO Parachute Operations Area. Pilots shall comply with FCC Regulations (87.115) while using the authorized call-sign.

7. PROCEDURES:

- a. Pilots of jump aircraft shall remain within the confines of the LMO Parachute Operations Area (Attachment 1) and clear of Denver Class B airspace during all phases of flight. In the event of adverse climb conditions, pilots may request flight following outside of the operations area and clear of Class B airspace. Aircraft shall return to the depicted operations area when the requested altitude is obtained.

Denver Terminal Radar Approach Control (D01) and Mile-Hi Skydiving Center, Inc.

b. Parachute jumping operations will be confined to a 2 nautical mile radius.

c. D01 will:

(1) To the extent practical, issue advisories to all known aircraft transiting the LMO Parachute Operations Area.

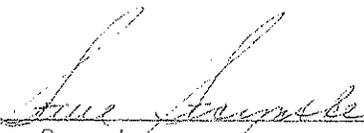
(2) To the extent possible and when requested, assist pilots in avoiding the LMO Parachute Operations Area.

(3) To the extent practical, issue traffic information on known aircraft transiting the LMO Parachute Operations Area.

8. ATTACHMENTS:

a. Attachment 1 - LMO Parachute Operations Area.

b. Attachment 2 - Aircraft call-sign and associated beacon codes.



Steven Steynske
District Manager,
Denver TRACON/Hub



Frank Casares
President,
Mile-Hi Skydiving Center

Attachment C

On-Site Observations

Date: March 4, 2019
To: David Slayter
Airport Manager, LMO
From: Dave Byers, Quadrex
RE: Skydiving Operations
Vance Brand Airport

Based on my initial on-site visit (Feb 1-2, 2019), I offer the following observations and opinions regarding current skydiving operations at the Airport:

Friday, February 1

I spent the better part of day with the Airport Manager discussing the historical background and current operations at the Airport. We toured the airport grounds including the parachute drop zone. While we were on the field, we observed three (3) flights with Mile-Hi, the skydive operator, using their Beech King Air E-90 (N157MH) aircraft with 10-12 skydivers on each jump. The weather was clear, 55°F, and with light winds. Traffic on Runway 11/29 was light. During one of the jumps, we witnessed two skydivers appear to cross over the centerline of the runway on their approach to the drop zone from the east.

Saturday, February 2

From 11:00 am to 1:00 pm, I conducted continuous on-site observations of skydiving and aircraft flight operations from my vehicle parked near the airport access gate at the cul-de-sac that terminates Rogers Rd. I had a VHF radio to listen to communication on the Airport's Common Traffic Advisory Frequency (CTAF) on 122.975 Mhz. The jump plane in use was their de Havilland DHC-6, Twin Otter (N125PM). Weather at the beginning of my observations was clear, with high scattered cirrus clouds, temperature 50°F and very light winds from 130° at 3 knots. The general sequence of the skydiving operations I witnessed included:

1. Skydivers were transported from Mile-Hi's hangar on the east side of the airport to their Quonset Hut on the west side via a shuttle traversing the north perimeter road.
2. Skydivers were loaded onto the jump plane (with both engines turning) at the paved area adjoining Taxiway B. An escort appeared to be present positioning themselves between the skydivers and the aircraft's left engine.
3. The jump plane taxied to the active runway (mostly Runway 29) and departed immediately to the west for the climb to altitude.

4. High overhead, the pilot of the jump plane would announce something to the effect, "Longmont traffic, 2 minutes to jump, all aircraft avoid midfield operations, Longmont."
5. Most parachutes were observed opening approximately 3-4,000 feet above the airport (some higher but none lower). Skydivers were generally observed approaching the drop zone from the north (downwind) with mostly right turns to final approach before landing.
6. Skydivers appeared to remain at the spot they landed for 2-3 minutes (after gathering their parachute canopies before walking toward the pick-up point near the Quonset hut.
7. The jump plane landed and taxied back to loading ramp. I only heard the pilot a few times announce their entering the traffic pattern and calls for base and final approach turns.
8. During the jump plane's operation, a fresh load of skydivers were transported to the loading area via the shuttle and those who had completed their jump were taken back the east hangar.

During the period I was observing airport activity, there were at times several aircraft arriving and departing LMO. Many were training flights consisting of "touch and go's (practice landings, then taking off again) by homebuilt and standard aircraft. These were mostly single-engine aircraft however several twin-engine operations were observed as well during the first hour.

Communications on the CTAF was very active with pilots calling out their positions and intent. During the latter part of the second hour, the wind began to pick up speed with occasional gusts and the direction shifted toward the west-southwest. At one point, pilots began using Runway 11. As the wind grew stronger, pilots shifted back to using Runway 29, however aircraft activity diminished significantly.

Observation Notes:

- I recall only one or two times where the pilot of the jump plane announced their departure on the active runway and intended route of flight.
- I do not recall hearing the jump plane pilot announce that jumpers have left the aircraft e.g., "jumpers away" during any jump sequence.
- It was rare to see skydivers approaching the drop zone from the west or executing a left turn for landing.
- Several skydivers were observed executing tight spiraling maneuvers until just before landing. These included a few tandem skydivers.
- Some skydivers who had landed north of the central drop zone area (presumably within the drop zone) had to walk a considerable distance to get back to the pick-up point.
- During the last jump sequence I observed, several skydivers landed significantly outside the boundaries of the drop zone. Three skydivers landed south of the west-side T-hangar area

near the AWOS system. Another skydiver landed behind me in the field west of airport property and had to climb the fence to get back to the pick-up area.

- I left the airport around 1:00 pm to get lunch and returned at 2:00 pm to witness more skydiving operations. The wind appeared to have abated and I saw the jump plane being loaded. I watched the aircraft take off on Runway 29 and climb out toward the northwest. Several minutes later, I heard the jump plane announce they were on final approach. In the interim, the wind had picked up again with strong gusts. The aircraft landed and taxied directly back to the east side. No skydivers were observed landing in the drop zone.

Table 1 is a compilation of my observations and wind data during the period I was at the Airport.

Table 1
AIRPORT ACTIVITY OBSERVATIONS (2/2/19)
Vance Brand Airport

Date: Saturday, February 2, 2019
Time: 11:00 AM
Location: Rogers Rd.

Weather: Clear (High Cirrus)
Temp: 50 F
Winds: 130 @ 3 kts
Source: AWOS - (303) 684-7545

Time	Observation
11:03	A/C departs loading ramp
11:06	A/C departs RW 29
11:19	A/C announces 2 min warning
11:21	Jumpers away (no call)
11:29	A/C arrives RW 29 (no calls) (Counted 21 jumpers)
11:32	A/C departs loading ramp
11:35	A/C departs RW 29 (no call)
11:47	A/C announces 2 min warning
11:49	Jumpers away (no call)
11:55	Last Jumper down
11:56	A/C arrives RW 29 (no calls) (Counted 19 jumpers)
12:01	A/C departs loading ramp
12:03	A/C departs RW 29 (no call)
12:14	A/C announces 2 min warning
12:17	Jumpers away (no call)
12:21	A/C arrives RW 29 (no calls) (Counted 14 jumpers)*
<i>Note: Wind shifted and picked up speed</i>	
12:30	A/C departs loading ramp
12:33	A/C departs RW 11 (no call)
12:44	A/C announces 2 min warning
12:48	Jumpers away (no call)
12:55	A/C arrives RW 29 (no calls) (Counted 20 jumpers)
<i>* 4 jumpers landed south of T-hangars and 1 in field west of DZ</i>	
2:19	A/C departed ramp
2:22	A/C departs RW 29
2:35	A/C arrives RW 29 (RTB)

Aircraft Operations Activity (11 am - 1 pm)							
Time	SEL		MEL		Other		Total
	T/O	LDG	T/O	LDG	T/O	LDG	
11:00 AM							
1st	3	2	1	1			7
2nd	3	4	3	4			14
3rd	4	6	2	1			13
4th	1	1	1	2	1		6
Total	11	13	7	8	1	0	40
12:00 PM							
1st	2	1	1		1		5
2nd	2	2		1			5
3rd	4	1	1				6
4th	3			2			5
Total	11	4	2	3	1	0	21

Note: 1st = 00-15 / 2nd = 16-20 / 3rd = 31-45 / 4th = 46-59 after the hour

Wind Observations				
2/2/2019	Time	Dir	Speed	Gusts
LMO	11:15 AM	170	6	M
LMO	11:35 AM	190	3	M
LMO	11:55 AM	120	5	M
LMO	12:15 PM	130	6	M
LMO	12:35 PM	180	9	17
LMO	12:55 PM	230	15	21
LMO	1:15 PM	250	20	29
LMO	1:35 PM	250	16	26
LMO	1:55 PM	240	13	22
LMO	2:15 PM	230	10	M
LMO	2:35 PM	250	15	26
LMO	2:55 PM	240	20	26

Source: LMO AWOS

Attachment D

Comparative Airport Information

> 1 ASSOC CITY: DAVIS/WOODLAND/WINTE 4 STATE: CA LOC ID: DWA FAA SITE NR: 01488.*A
 > 2 AIRPORT NAME: YOLO COUNTY 5 COUNTY: YOLO CA
 3 CBD TO AIRPORT (NM): 06 NE 6 REGION/ADO: AWP/SFO 7 SECT AERO CHT: SAN FRANCISCO

GENERAL		SERVICES		BASED AIRCRAFT	
10 OWNERSHIP: PUBLIC		> 70 FUEL: 100LL A A+		90 SINGLE ENG: 69	
> 11 OWNER: YOLO COUNTY		> 71 AIRFRAME RPRS: MAJOR		91 MULTI ENG: 6	
> 12 ADDRESS: 625 COURT ST RM 202		> 72 PWR PLANT RPRS: MAJOR		92 JET: 0	
WOODLAND, CA 95695		> 73 BOTTLE OXYGEN: HIGH/LOW		TOTAL: 75	
> 13 PHONE NR: 530-666-8114		> 74 BULK OXYGEN: HIGH/LOW		93 HELICOPTERS: 4	
> 14 MANAGER: MINDI NUNES		75 TSNT STORAGE: TIE		94 GLIDERS: 0	
> 15 ADDRESS: 625 COURT ST RM 202, RM 202		76 OTHER SERVICES: AGRI, AVNCS, CHTR, INSTR, PAJA, SALES		95 MILITARY: 0	
WOODLAND, CA 95695-2598				96 ULTRA-LIGHT: 0	
> 16 PHONE NR: 530-666-8066					
> 17 ATTENDANCE SCHEDULE: ALL ALL 0600-1800					

		FACILITIES		OPERATIONS	
18 AIRPORT USE: PUBLIC		> 80 ARPT BCN: CG		100 AIR CARRIER: 0	
19 ARPT LAT: 38-34-45.8000N ESTIMATED		> 81 ARPT LGT SKED: SEE RMK		102 AIR TAXI: 360	
20 ARPT LONG: 121-51-25.0000W		BCN LGT SKED: SS-SR		103 G A LOCAL: 30,000	
21 ARPT ELEV: 100.0 SURVEYED		> 82 UNICOM: 123.000		104 G A ITNRNT: 30,000	
22 ACREAGE: 498		> 83 WIND INDICATOR: YES-L		105 MILITARY: 0	
> 23 RIGHT TRAFFIC: 16		84 SEGMENTED CIRCLE: YES		TOTAL: 60,360	
> 24 NON-COMM LANDING: NO		85 CONTROL TWR: NO		OPERATIONS FOR 12 MONTHS ENDING: 12/31/2017	
25 NPIAS/FED AGREEMENTS: NGPY		86 FSS: RANCHO MURIETA			
> 26 FAR 139 INDEX: ALL		87 FSS ON ARPT: NO			
		88 FSS PHONE NR:			
		89 TOLL FREE NR: 1-800-WX-BRIEF			

RUNWAY DATA

> 30 RUNWAY INDENT: 16/34
 > 31 LENGTH: 6,000
 > 32 WIDTH: 100
 > 33 SURF TYPE-COND: ASPH-G
 > 34 SURF TREATMENT:
 35 GROSS WT: S 45.0
 36 (IN THSDS) D 60.0
 37 2D
 38 2D/2D2
 > 39 PCN:

LIGHTING/APCH AIDS

> 40 EDGE INTENSITY: MED
 > 42 RWY MARK TYPE-COND: NPI - G / NPI - G - / - - / -
 > 43 VGSI: P2L / P2L / /
 44 THR CROSSING HGT 40 / 40 / /
 45 VISUAL GLIDE ANGLE: 3.00 / 3.00 / /
 > 46 CNTRLN-TDZ: N - N / N - N - / - - / -
 > 47 RVR-RVV: - N / - N - / - - / -
 > 48 REIL: N / N / /
 > 49 APCH LIGHTS: / / /

OBSTRUCTION DATA

50 FAR 77 CATEGORY C / C / /
 > 51 DISPLACED THR: / / /
 > 52 CTLG OBSTN: / TREES / / /
 > 53 OBSTN MARKED/LGTD: / / / /
 > 54 HGT ABOVE RWY END: / 110 / / /
 > 55 DIST FROM RWY END: / 3,500 / / /
 > 56 CNTRLN OFFSET: / 0B / / /
 57 OBSTN CLNC SLOPE: 50:1 / 30:1 / / /
 58 CLOSE-IN OBSTN: N / N / / /

DECLARED DISTANCES

> 60 TAKE OFF RUN AVBL (TORA): / / / /
 > 61 TAKE OFF DIST AVBL (TODA): / / / /
 > 62 ACLT STOP DIST AVBL (ASDA): / / / /
 > 63 LNDG DIST AVBL (LDA): / / / /

(-) ARPT MGR PLEASE ADVISE FSS IN ITEM 86 WHEN CHANGES OCCUR TO ITEMS PRECEDED BY >

> 110 REMARKS

A 003 DSTC TO WINTERS.
 A 070 FUEL AVBL 24 HRS.
 A 081 MIRL RY 16/34 PRESET LOW INTST; TO INCR INTST AND ACTVT PAPI RYS 16 & 34 - CTAF.
 A 110-002 NO TGL 2200L TO 0600L.
 A 110-003 RY 34 CALM WIND RY.
 A 110-004 NOISE ABATEMENT: NO TURNS TO CROSSWIND PRIOR TO ARPT BOUNDARY. STRAIGHT OUT DEP NO EAST TURNS ON COURSE PRIOR TO 2 MIS. AVOID OVERFLIGHT OF OFF-ARPT STRUCTURES.
 A 110-006 UNLIT 40 FT POWER LINE & 120 FT TREES 500 FT WEST OF RY CNTRLN.
 A 110-007 BIRDS ON AND INVOF ARPT.
 A 110-008 PARACHUTE ACTIVITY EAST OF RY.
 A 110-009 CROP DUSTER OPNS ON AND INVOF ARPT.
 A 110-010 NON-RADIO AIRCRAFT BASED AT KDWA.
 A 110-011 95 FT AGL UNLIT WIND TURBINE 1000 FT WEST OF RY CNTRLN.
 A 110-012 APT OPS: (530) 759-8766

111 INSPECTOR: (S) 112 LAST INSP: 02/09/2018 113 LAST INFO REQ:

> 1 ASSOC CITY: ***CONTINUED*** 4 STATE: CA LOC ID: DWA FAA SITE NR: 01488.*A
 > 2 AIRPORT NAME: 5 COUNTY:
 3 CBD TO AIRPORT (NM): 6 REGION/ADO: AWP/SFO 7 SECT AERO CHT:

GENERAL

10 OWNERSHIP:
 > 11 OWNER:
 > 12 ADDRESS:
 > 13 PHONE NR:
 > 14 MANAGER:
 > 15 ADDRESS:
 > 16 PHONE NR:
 > 17 ATTENDANCE SCHEDULE:

SERVICES

> 70 FUEL:
 > 71 AIRFRAME RPRS:
 > 72 PWR PLANT RPRS:
 > 73 BOTTLE OXYGEN:
 > 74 BULK OXYGEN:
 75 TSNT STORAGE:
 76 OTHER SERVICES:

BASED AIRCRAFT

90 SINGLE ENG:
 91 MULTI ENG:
 92 JET:
 TOTAL:
 93 HELICOPTERS:
 94 GLIDERS:
 95 MILITARY:
 96 ULTRA-LIGHT:

FACILITIES

> 80 ARPT BCN:
 > 81 ARPT LGT SKED :
 BCN LGT SKED:
 > 82 UNICOM:
 > 83 WIND INDICATOR:
 84 SEGMENTED CIRCLE:
 85 CONTROL TWR:
 86 FSS:
 87 FSS ON ARPT:
 88 FSS PHONE NR:
 89 TOLL FREE NR:

OPERATIONS

100 AIR CARRIER:
 102 AIR TAXI:
 103 G A LOCAL:
 104 G A ITNRNT:
 105 MILITARY:
 TOTAL:
 OPERATIONS FOR
 12 MONTHS
 ENDING:

18 AIRPORT USE:
 19 ARPT LAT:
 20 ARPT LONG:
 21 ARPT ELEV:
 22 ACREAGE:
 > 23 RIGHT TRAFFIC:
 > 24 NON-COMM LANDING:
 25 NPIAS/FED AGREEMENTS:
 > 26 FAR 139 INDEX:

RUNWAY DATA

> 30 RUNWAY INDENT:
 > 31 LENGTH:
 > 32 WIDTH:
 > 33 SURF TYPE-COND:
 > 34 SURF TREATMENT:
 35 GROSS WT: S
 36 (IN THSDS) D
 37 2D
 38 2D/2D2
 > 39 PCN:

LIGHTING/APCH AIDS

> 40 EDGE INTENSITY:	- / -	- / -	- / -	- / -
> 42 RWY MARK TYPE-COND:	/	/	/	/
> 43 VGSI:	/	/	/	/
44 THR CROSSING HGT	/	/	/	/
45 VISUAL GLIDE ANGLE:	/	/	/	/
> 46 CNTRLN-TDZ:	- / -	- / -	- / -	- / -
> 47 RVR-RVV:	- / -	- / -	- / -	- / -
> 48 REIL:	/	/	/	/
> 49 APCH LIGHTS:	/	/	/	/

OBSTRUCTION DATA

50 FAR 77 CATEGORY	/	/	/	/
> 51 DISPLACED THR:	/	/	/	/
> 52 CTLG OBSTN:	/	/	/	/
> 53 OBSTN MARKED/LGTD:	/	/	/	/
> 54 HGT ABOVE RWY END:	/	/	/	/
> 55 DIST FROM RWY END:	/	/	/	/
> 56 CNTRLN OFFSET:	/	/	/	/
57 OBSTN CLNC SLOPE:	/	/	/	/
58 CLOSE-IN OBSTN:	/	/	/	/

DECLARED DISTANCES

> 60 TAKE OFF RUN AVBL (TORA):	/	/	/	/
> 61 TAKE OFF DIST AVBL (TODA):	/	/	/	/
> 62 ACLT STOP DIST AVBL (ASDA):	/	/	/	/
> 63 LNDG DIST AVBL (LDA):	/	/	/	/

(>) ARPT MGR PLEASE ADVISE FSS IN ITEM 86 WHEN CHANGES OCCUR TO ITEMS PRECEDED BY >

> 110 REMARKS

111 INSPECTOR: (S)

112 LAST INSP: 02/09/2018

113 LAST INFO REQ:



> 1 ASSOC CITY: MIDDLETOWN 4 STATE: OH LOC ID: MWO FAA SITE NR: 18199.*A
 > 2 AIRPORT NAME: MIDDLETOWN REGIONAL/HOOK FIELD 5 COUNTY: BUTLER OH
 3 CBD TO AIRPORT (NM): 02 N 6 REGION/ADO: AGL/DET 7 SECT AERO CHT: CINCINNATI

GENERAL

10 OWNERSHIP: PUBLIC
 > 11 OWNER: CITY OF MIDDLETOWN
 > 12 ADDRESS: 1 DONHAM PLAZA
 MIDDLETOWN, OH 45042
 > 13 PHONE NR: 513-425-7845
 > 14 MANAGER: DAN DICKTEN, AAE
 > 15 ADDRESS: 1707 RUN WAY
 MIDDLETOWN, OH 45042
 > 16 PHONE NR: 513-614-4395
 > 17 ATTENDANCE SCHEDULE:

ALL ALL 0800-1700

18 AIRPORT USE: PUBLIC
 19 ARPT LAT: 39-31-54.5000N ESTIMATED
 20 ARPT LONG: 084-23-47.2000W
 21 ARPT ELEV: 650.4 SURVEYED
 22 ACREAGE: 550
 > 23 RIGHT TRAFFIC: 23, 26
 > 24 NON-COMM LANDING: NO

25 NPIAS/FED AGREEMENTS: NGY
 > 26 FAR 139 INDEX:

RUNWAY DATA

> 30 RUNWAY INDENT:
 > 31 LENGTH:
 > 32 WIDTH:
 > 33 SURF TYPE-COND:
 > 34 SURF TREATMENT:
 35 GROSS WT: S
 36 (IN THSDS) D
 37 2D
 38 2D/2D2
 > 39 PCN:

LIGHTING/APCH AIDS

> 40 EDGE INTENSITY:
 > 42 RWY MARK TYPE-COND:
 > 43 VGSI:
 44 THR CROSSING HGT
 45 VISUAL GLIDE ANGLE:
 > 46 CNTRLN-TDZ:
 > 47 RVR-RVV:
 > 48 REIL:
 > 49 APCH LIGHTS:

OBSTRUCTION DATA

50 FAR 77 CATEGORY
 > 51 DISPLACED THR:
 > 52 CTLG OBSTN:
 > 53 OBSTN MARKED/LGTD:
 > 54 HGT ABOVE RWY END:
 > 55 DIST FROM RWY END:
 > 56 CNTRLN OFFSET:
 57 OBSTN CLNC SLOPE:
 58 CLOSE-IN OBSTN:

DECLARED DISTANCES

> 60 TAKE OFF RUN AVBL (TORA):
 > 61 TAKE OFF DIST AVBL (TODA):
 > 62 ACLT STOP DIST AVBL (ASDA):
 > 63 LNDG DIST AVBL (LDA):

SERVICES

> 70 FUEL: 100LL A A+
 > 71 AIRFRAME RPRS: MAJOR
 > 72 PWR PLANT RPRS: MAJOR
 > 73 BOTTLE OXYGEN: NONE
 > 74 BULK OXYGEN:
 75 TSNT STORAGE: HGR, TIE
 76 OTHER SERVICES:
 CARGO, INSTR, PAJA, RNTL

FACILITIES

> 80 ARPT BCN: CG
 > 81 ARPT LGT SKED: SEE RMK
 BCN LGT SKED: SS-SR
 > 82 UNICOM: 123.000
 > 83 WIND INDICATOR: YES-L
 84 SEGMENTED CIRCLE: NONE
 85 CONTROL TWR: NO
 86 FSS: DAYTON
 87 FSS ON ARPT: NO
 88 FSS PHONE NR:
 89 TOLL FREE NR: 1-800-WX-BRIEF

BASED AIRCRAFT

90 SINGLE ENG: 54
 91 MULTI ENG: 4
 92 JET: 2
 TOTAL: 60
 93 HELICOPTERS: 2
 94 GLIDERS: 0
 95 MILITARY: 0
 96 ULTRA-LIGHT: 0

OPERATIONS

100 AIR CARRIER: 0
 102 AIR TAXI: 3,600
 103 G A LOCAL: 17,800
 104 G A ITNRNT: 18,600
 105 MILITARY: 50
 TOTAL: 40,050
 OPERATIONS FOR
 12 MONTHS
 ENDING: 09/02/2016

	05/23	08/26		
	6,100	3,040		
	100	297		
	ASPH-G	TURF-G		
	66.0			
	78.0			
	140.0			
	MED			
	NPI - F / NPI - F	- F / - F	- / -	- / -
	P4L / P4L	/	/	/
	/	/	/	/
	/	/	/	/
	N - N / N - N	N - N / N - N	- / -	- / -
	- N / - N	- N / - N	- / -	- / -
	Y / Y	N / N	/	/
	/	/	/	/
	C / C	A(V) / A(V)	/	/
	/ 299	951 /	/	/
	TREES / TREE	TREES /	/	/
	/	/	/	/
	21 / 41	175 /	/	/
	320 / 864	2,865 /	/	/
	250R / 260L	0B /	/	/
	5:1 / 16:1	16:1 / 20:1	/	/
	N / N	N / N	/	/
	/	/	/	/
	/	/	/	/
	/	/	/	/
	/	/	/	/

(-) ARPT MGR PLEASE ADVISE FSS IN ITEM 86 WHEN CHANGES OCCUR TO ITEMS PRECEDED BY >

> 110 REMARKS

- A 016 MANAGER CELL 513-484-3680
- A 042 RWY 08 08/26 MKD WITH WHITE CONES.
- A 057 RWY 05 APCH RATIO 24:1 AT DSPLCD THLD.
- A 057 RWY 08 APCH RATIO 20:1 AT DSPLCD THR.
- A 057 RWY 23 APCH RATIO 24:1 OVR 84 FT TREES; 2040 FT FM THLD 512 FT R.
- A 081 ACTVT REIL RY 05, MIRL RY 05/23 - CTAF.
- A 096 ULTRALIGHTS ENTER/EXIT PAT AT RY 08 TO NORTH - LOWER THAN REGULAR TFC PAT. ULTRALIGHTS DO NOT FLY SOUTH OF RY 26.
- A 110-001 COLUMBUS CD (614) 338-8537.
- A 110-002 COLUMBUS CD (614) 338-8537.
- A 110-003 EXTENSIVE SKYDIVING ACTVTY.

111 INSPECTOR: (C) 112 LAST INSP: 09/02/2016 113 LAST INFO REQ: 12/01/1979

**Attachment D-1
Drop Zone Rules
Middletown Regional Airport (MWO)**

What are the jumping requirements?

Start Skydiving is a group member of the USPA. As such, please be prepared to show: your current USPA membership and license, your signed logbook to prove your jump currency, and, if you have your own rig, its reserve packing data card and seal will be required to be checked when you first check-in.

How does manifest work?

You can place funds on your account at manifest or online. We do not carry credit at Start Skydiving. Manifest for loads only when you are ready to jump. Missed loads will not be refunded! Please be ready at the loading area by your five-minute call.

What are the requirements for takeoff?

YOUR RIG MUST BE ON - leg straps and chest straps correctly threaded prior to boarding. Helmets and seatbelts must be worn while in the aircraft until 1,000 feet AGL. If you choose not to wear your helmet, you must have it secured to your chest strap or seat belt. The aircraft door must be closed during takeoff and landing while below 1,000 feet.

What about spotting?

Normally, the pilot spots the plane accurately and no corrections are needed. However, you must open the door on the red light and verify that the spot is correct before jumping. You must have the pilot's approval to open our aircraft door without a red light. If the spot is not correct, or if there are clouds or air-traffic on jump-run, then you are responsible for informing the pilot and you must remain inside the aircraft until you are certain that you are clear. When the green light comes on, the pilot has configured the aircraft to be safely exited. It does not mean you are clear below or that you are over the correct spot. Every jumper is responsible for his or her own safety. This includes checking your spot! We are not legally permitted to perform skydives through clouds. Do not exit the aircraft unless you know for certain that you will not fall through a cloud. We will do a go-around and fly another jump run if you cannot exit over the correct spot due to clouds, aircraft, or jumpers. All groups should remain forward in the aircraft until it is their turn to exit. If the green light turns off, everyone must stay in the aircraft and wait for another jump run.

What are the exit orders?

1. Low altitude clear-and-pull passes (If there are multiple jumpers on the same low pass, exit in order of heaviest to lightest wing-loading.)
2. Bellyflyer formation groups, including students on coach jumps (Sort from largest to smallest. Groups of the same size are then sorted from lowest to highest planned deployment altitude. If groups of the same size and deployment altitude, then sort by exit weight and canopy size from least to greatest.)
3. "Traditional" belly trackers (not angle flyers or tracking suit jumpers)
4. Skysurfers will exit second or third out on the first pass to ensure that they are directly over the DZ.
5. Freeflyer groups (Sort from largest to smallest. Groups of the same size are then sorted from lowest to highest planned deployment altitude. If groups of the same size and deployment altitude, then sort by exit weight and canopy size from least to greatest.)

6. Angle flyers (or freeflying trackers)
7. AFFs (in the following order: Cat A, B, C-1, C-2, D, E. If multiple AFFs in the same category, then sort by student exit weight and canopy size from least to greatest.)
8. Tandems (Tandems with videographers first, then tandems without. These are then sorted by exit weight and canopy size from least to greatest.)
9. Tracking suit jumpers
10. Wingsuiters
11. CRW

Only one single group of either trackers, angle flyers, or wingsuiters is permitted per load. This single group must fly a pattern with the first leg perpendicular to jump run. The leader of this group must be an experienced jumper who is familiar with the dropzone and the airspace. This leader must fly with belly facing to earth. If the lead flyer will be back-flying, another experienced jumper must pair with the leader and fly belly to earth over the leader to help maintain directional control.

Exit Separation:

With reported upper winds of 0-10 knots, please allow between 5-7 seconds between exits (take into account the time it takes to climb out of the aircraft). For winds of 20 knots or higher, please use the following formula: Take the upper headwind speed and divide it by half (round up for odd numbers), this will give you the recommended amount of time between exits!

Upper headwind speed:

0-10 knots - 5-7 seconds between group exits

15-20 knots - 8-10 seconds between group exits

21-30 knots - 11-15 seconds between group exits

31-40 knots - 16-20 seconds between group exits

41-50 knots - 21-25 seconds between group exits

Can I bring my own camera on my skydive?

Start Skydiving requires a minimum of a USPA C-license in order to jump with a camera of any type. No exceptions!

What are the landing rules?

Check out the aerial map of the landing areas below or at manifest. There are three primary landing areas and a dozen large outs. Avoid crossing the runway below 1,000 feet and avoid approaching the ends of the runway below 2,000 feet. Also, avoid landing on the grass strip runway.

What is the landing pattern?

The landing pattern for the B, C, and D license landing areas on the southeast side of the runway is based on the current landing direction. If the set landing direction is to the southwest with the hangars on the left-hand side, then a left-handed landing pattern is to be performed. If the set landing direction is to the northeast with the hangars on the right-hand side, then a right-handed landing pattern is to be performed. In the large landing area on the northwest side of the runway, there is no set landing pattern or direction. However, all jumpers must land into the wind and the first jumper down sets the pattern. If there is no wind, then all landing areas default to a southwest landing direction with the hangars on the left-hand side. Only 90-degree turns are permitted to be performed in all landing areas. Any turns greater than 90 degrees must be cleared by the S&TA first before being permitted to be performed.

TANDEM & D LICENSE LANDING AREA - is located directly in front and to the right of our hanger. You must have a D-license to land in this area. First person down sets the pattern so follow the windsock if you are first to land. Only 90-degree turns are permitted in this area. Any turns greater than 90 degrees must be cleared by the S&TA first before being permitted to be performed. Tandems have the right of way, so please continuously watch out for other canopy traffic. If there is no wind, then default to a southwest landing direction with the hangars on the left-hand side while flying a left-handed landing pattern.

B & C LICENSE LANDING AREA - is located in between the runway and the taxiway northeast of the tandem & D-license landing area. Only 90-degree turns are permitted in this area. Any turns greater than 90 degrees must be cleared by the S&TA first before being permitted to be performed. Tandems have the right of way, so please continuously watch out for other canopy traffic. If there is no wind, then default to a southwest landing direction with the hangars on the left-hand side while flying a left-handed landing pattern.

AFF STUDENT, A, B, C, & D-LICENSE LANDING AREA - is located in the massive field on the northwest side of the runway. Use the windsock located in the middle of the landing area to determine landing direction. The first person down sets the pattern. AFF students have the right of way, so please continuously watch out for other canopy traffic. If there is no wind, then default to a southwest landing direction with the hangars on the left-hand side.





> 1 ASSOC CITY: LOUISBURG 4 STATE: NC LOC ID: LHZ FAA SITE NR: 16875.*A
 > 2 AIRPORT NAME: TRIANGLE NORTH EXECUTIVE 5 COUNTY: FRANKLIN NC
 3 CBD TO AIRPORT (NM): 05 SW 6 REGION/ADO: ASO/MEM 7 SECT AERO CHT: CHARLOTTE

GENERAL

10 OWNERSHIP: PUBLIC
 > 11 OWNER: FRANKLIN COUNTY
 > 12 ADDRESS: 113 MARKET STREET
 LOUISBURG, NC 27549
 > 13 PHONE NR: 919-554-1863
 > 14 MANAGER: STEVE MERRITT
 > 15 ADDRESS: 440 AIRPORT DRIVE
 LOUISBURG, NC 27549
 > 16 PHONE NR: 919-496-1234
 > 17 ATTENDANCE SCHEDULE:

ALL ALL 0800-1800

SERVICES

> 70 FUEL: 100LL A1+
 > 71 AIRFRAME RPRS: MAJOR
 > 72 PWR PLANT RPRS: MAJOR
 > 73 BOTTLE OXYGEN: HIGH/LOW
 > 74 BULK OXYGEN:
 75 TSNT STORAGE: TIE
 76 OTHER SERVICES:
 GLD, INSTR, PAJA, RNTL, SALES, TOW

BASED AIRCRAFT

90 SINGLE ENG: 109
 91 MULTI ENG: 16
 92 JET: 1
 TOTAL: 126
 93 HELICOPTERS: 6
 94 GLIDERS: 1
 95 MILITARY: 0
 96 ULTRA-LIGHT: 0

FACILITIES

> 80 ARPT BCN: CG
 > 81 ARPT LGT SKED: SEE RMK
 BCN LGT SKED: SS-SR
 > 82 UNICOM: 123.000
 > 83 WIND INDICATOR: YES-L
 84 SEGMENTED CIRCLE: YES
 85 CONTROL TWR: NO
 86 FSS: RALEIGH
 87 FSS ON ARPT: NO
 88 FSS PHONE NR:
 89 TOLL FREE NR: 1-800-WX-BRIEF

OPERATIONS

100 AIR CARRIER: 0
 102 AIR TAXI: 0
 103 G A LOCAL: 42,300
 104 G A ITNRNT: 18,000
 105 MILITARY: 2,500
 TOTAL: 62,800
 OPERATIONS FOR
 12 MONTHS
 ENDING: 07/04/2017

RUNWAY DATA

> 30 RUNWAY INDENT:
 > 31 LENGTH:
 > 32 WIDTH:
 > 33 SURF TYPE-COND:
 > 34 SURF TREATMENT:
 35 GROSS WT: S
 36 (IN THSDS) D
 37 2D
 38 2D/2D2
 > 39 PCN:

05/23
 5,498
 100
 ASPH-G

LIGHTING/APCH AIDS

> 40 EDGE INTENSITY:
 > 42 RWY MARK TYPE-COND:
 > 43 VGSI:
 44 THR CROSSING HGT
 45 VISUAL GLIDE ANGLE:
 > 46 CNTRLN-TDZ:
 > 47 RVR-RVV:
 > 48 REIL:
 > 49 APCH LIGHTS:

MED
 PIR - G / NPI - G - / - - / -
 P2L / P2L / /
 41 / 46 / /
 3.00 / 3.00 / /
 - / - - / - - / -
 - / - - / - - / -
 N / Y / /
 MALSR / / /

OBSTRUCTION DATA

50 FAR 77 CATEGORY
 > 51 DISPLACED THR:
 > 52 CTLG OBSTN:
 > 53 OBSTN MARKED/LGTD:
 > 54 HGT ABOVE RWY END:
 > 55 DIST FROM RWY END:
 > 56 CNTRLN OFFSET:
 57 OBSTN CLNC SLOPE:
 58 CLOSE-IN OBSTN:

PIR / C / /
 / / /
 TREES / TREES / /
 / / /
 34 / 34 / /
 1,602 / 1,500 / /
 417L / 16L / /
 41:1 / 38:1 / /
 N / Y / /

DECLARED DISTANCES

> 60 TAKE OFF RUN AVBL (TORA):
 > 61 TAKE OFF DIST AVBL (TODA):
 > 62 ACLT STOP DIST AVBL (ASDA):
 > 63 LNDG DIST AVBL (LDA):

/ / /
 / / /
 / / /
 / / /

(-) ARPT MGR PLEASE ADVISE FSS IN ITEM 86 WHEN CHANGES OCCUR TO ITEMS PRECEDED BY >

> 110 REMARKS

- A 017 ARPT UNATNDD THANKSGIVING & CHRISTMAS.
- A 058 RWY 23 2 FT RISING GROUND 157 FT FROM THLD BOTH SIDES OF CNTRLN.
- A 081 ACTVT MALSR RY 05; REIL RY 23; MIRL RY 05/23. - CTAF; PAPI RY 05/23 OPER CONTINUOUS.
- A 110-001 ARPT PHONE 919-496-1234; MAKE PRIOR ARRANGMENTS DURING FBO HOURS FOR SERVICES AFTER HOURS.
- A 110-002 BIRDS ON & INVOF ARPT.
- A 110-005 HELICOPTER FLIGHT TRAINING DAILY PRIMARLY ON WESTERN SIDE OF ARPT AND TWY.
- A 110-006 DAILY SKYDIVING OPERATIONS.
- A 110-007 GLIDER ACTVTY DALGT HRS WEEKENDS.

111 INSPECTOR: (S) 112 LAST INSP: 07/04/2017 113 LAST INFO REQ:

TRIANGLE NORTH EXECUTIVE AIRPORT SAFETY GUIDELINES

It is the intention of Triangle North Executive Airport (KLHZ), to provide this **advisory** guideline to ensure Triangle Skydiving Center, Inc. (TSC), Total Flight Solutions, members of the LHZ Pilot's Association and any other existing or future tenants or customers have a mutual understanding of our unique operating environment and to ensure a safe operation for all participating members.

These advisory guidelines are provided in addition to all Federal Aviation Requirements (FAR) documented by the Federal Aviation Administration (FAA) and United States Parachute Association (USPA) as an additional layer of safety at and around KLHZ.

This is a public document and it can be accessed via the airport website at <http://www.franklincountync.us/services/airport>. Anyone can go to any internet terminal to read and/or print this document. To enable access to transient pilots, there is a link to the airport website at <http://www.aopa.org/airports/KLHZ> and at <http://www.airnav.com/airport/KLHZ> (the link on the airnav page is near the very bottom of the page).

Each pilot based at this airport is responsible to understand and abide by these guidelines. A copy of this document will be printed and supplied to all current and future tenants of the airport as well as a printed copy displayed prominently in the terminal lobby including visual reference to all procedures and traffic pattern utilization. Each operator/PIC shall be expected to review KLHZ operation procedures quarterly.

It is the responsibility of Total Flight Solutions, Triangle Skydiving Center, and any other resident organization to ensure that their customers understand and abide by these guidelines.

Independent instructors are responsible for obtaining a copy of this document and ensuring all students understand and abide by these guidelines.

There is a link in the "About" tab at the top of the Triangle North Pilots Association website at <http://lhzpa.org>.

This airport does not have a control tower and only a single runway with a grass landing area alongside. However, we have the following activities, often occurring simultaneously:

- Fixed wing operations, including single- and multi-engine piston and turboprop airplanes, one twin jet, two self launching gliders, and a towed glider with the Civil Air Patrol. A few airplanes do not have radios.
- Helicopter operations; there are several based at this airport.
- Fixed wing and helicopter flight instruction at Total Flight Solutions.
- Skydiving at Triangle Skydiving Center. It can be busy on the weekends and most runs include at least a few students.
- There are two hot air balloons that operate in the neighborhood.

Noise Abatement Procedures

KLHZ has two noise sensitive areas on the western side of the airport.

- The first is approximately 1 mile south and .1 mile west of centerline departing runway 23.
- The second is approximately 1 mile north and .4 west of centerline departing runway 05.

Both areas are over homes with RED roofs. Please fly neighborly.

In order to ensure that both of these noise areas are avoided please expedite climb out and maintain runway heading until 2 miles from KLHZ, then turn on course.

Runway and Taxiway Right-of-Way

Taxiways and runways at KLHZ experience unique usage due to the complex environment here. FAR 91.113 specifies right of way rules. The following clarifies right-of-way procedures to ensure a safe runway and taxiway environment in our environment.

- Rotorcraft generally use the the parallel taxiway instead of the runway for takeoff and landing.
- Rotorcraft shall not directly over-fly any aircraft on the taxiway at an altitude of less than 300AGL/700MSL.
- Taxiing Rotorcraft shall give way to any aircraft on the taxiway. Separation shall be 100 feet between rotorcraft and taxiing aircraft.
- Fixed wing aircraft on final have the right-of-way over any aircraft not yet on the runway.
- Rotorcraft on final to the parallel taxiway will sidestep if a fixed wing aircraft is on the taxiway.
- All pilots should be aware that rotorcraft fly slower and steeper approach angles than airplanes including power off procedures that involve a descent rate of 1500-2000 FPM.

There is a lot going on here. Keep your head on a swivel and your eyes outside.

Periodic review of this document.

We intend to meet approximately twice a year to review this document and update as necessary. The next scheduled review will be in December, 2014.



The photo above shows the airport and labels various areas for various activities. The remainder of this document describes additional details about our operation here.

Powered Fixed-Wing Operations

Fixed-wing traffic will utilize a left-hand pattern to runway 23, right-hand pattern to runway 5. Pattern altitude will remain fixed at 1000AGL/1400MSL on the downwind leg.

Fixed-wing traffic will operate at pattern altitude (1000 AGL/1400 MSL) anytime within 2 miles of KLHZ.

Fixed-wing traffic departing from KLHZ shall maintain runway heading until 2 miles from KLHZ then turn on course. This procedure will ensure appropriate separation and noise abatement.

KLHZ reminds you to remain diligent in your "see and avoid" responsibilities at all times.

Flight training procedures (to include altitudes and locations of operation while operating in the vicinity of KLHZ) will be available upon request at the Total Flight Solutions office.

Pilots executing an instrument approach, practice or actual, should call position reports as a distance from the airport rather than crossing a waypoint or fix. All Air Transport Pilots have instrument ratings and about 90 percent of Commercial Pilots have instrument ratings. But only about 20 percent of Private Pilots have instrument ratings. "2 mile final runway 5" means something to a Private Pilot about to turn base. "Crossing JEBIX ILS runway 5" has no meaning to a pilot that is not instrument rated.

Glider Operations

Self Launching Gliders

When the engine of a self launching glider is running, the pilot observes the same rules of safe conduct as powered airplanes.

There are two self launching gliders that operate routinely at KLHZ. They normally take off under power, and land as a glider. Each of the gliders will announce on arrival that they are landing as a glider. When they are landing as a glider, they assume the right of way of a glider.

Aero Tow Gliders

The Civil Air Patrol (CAP) normally operates aero tow gliders on Wednesday afternoon and on Saturdays.

A CAP Air Boss will maintain continuous radio contact with LHZ traffic advising of operations of the glider on CTAF frequency. The Air Boss will speak freely with other aircraft to advise the status of the glider operation.

A goal of the Air Boss is to occupy the runway in preparation for take off no longer than 3 minutes. It is understood that the goal is to occupy the runway for the shortest period of time possible.

The tow plane will normally fly straight out until 500 AGL, then turn crosswind in accordance with the local traffic pattern, east of the runway. Typically the tow plane will turn 270 degrees and tow the glider over the center of the airport. The goal is to keep the glider upwind of the airport whenever possible. Since the wind is nearly always from the west, this means that the towplane and glider will usually turn and fly over the airport headed west.

The glider will normally release from the towplane at 2000 AGL. The towplane will break left, and the glider will break right. The towplane will enter the traffic pattern and the glider will continue with its operations.

The towplane normally makes its traffic pattern with the rope attached. Here at LHZ, the towplane makes a low pass at about 200 feet, drops the rope in the grass and lands long on the remaining runway.

Glider Approach and Landing

Gliders observe the same traffic pattern as powered aircraft, and may circle to lose altitude in the traffic pattern area. The glider pilot will communicate with powered aircraft to minimize any possible delay and to maximize safety.

In light traffic conditions, the CAP glider will land on the runway, in order to quickly swap cadets for the next flight. In heavy traffic conditions, the glider will land in the grass.

The self launching gliders typically land on the runway as a glider and then start the engine after landing to taxi off the runway.

Nearby glider operations

There are multiple gliders based Crooked Creek, seven miles Southeast of KLHZ, and at Ball, eight miles North-Northeast of KLHZ. These folks use 123.3 for communications. They do not have transponders and are mostly composite so they are not visible to ATC. They generally maneuver up to 6000 feet and sometimes come within a few miles of KLHZ. These aircraft also have a small cross-section and they are difficult to see.

Rotorcraft Operations

Flight training procedures (to include altitudes and locations of operation while operating in the vicinity of KLHZ) will be available upon request at the Total Flight Solutions office.

Rotorcraft will utilize a right-hand pattern to taxiway Alpha parallel runway 23, left-hand pattern to taxiway Alpha parallel runway 5. Pattern altitude will remain fixed at 500 AGL/900 MSL on the downwind leg.

If PIC of rotorcraft feels that any operation to the west is unsafe he/she may choose to operate from the runway making left traffic for runway 23 and right traffic for runway 5 provided that he/she can avoid the flow of fixed wing traffic and makes all appropriate radio calls. (takeoff, crosswind, downwind, final).

Rotorcraft shall operate at pattern altitude (500AGL/900MSL) anytime within 2 miles of KLHZ.

Rotorcraft making a runway departure from KLHZ shall maintain runway heading until 2 miles from KLHZ then turn on course. This procedure will ensure appropriate separation AND noise abatement.

When parachutists are in the air over KLHZ:

Rotorcraft shall not operate north of taxiway Alpha 3 at an altitude higher than 8AGL.

Rotorcraft shall not proceed any further north nor operate any longer than necessary North of taxiway Alpha 3 to ensure either safe shutdown or departure from the ramp.

Rotorcraft departing to the northwest from taxiway Alpha must remain south of extended Alpha 2 centerline until 2 miles from KLHZ then turn on course.

KLHZ reminds you to remain diligent in your "see and avoid" responsibilities at all times.

Skydiver Operations

Daily skydiver jump run information (to include exit altitude, direction, and position in reference to KLHZ) will be available upon request at the Triangle Skydiving Center office. Note that this is dynamic situation. Winds do change and customers often arrive at random times during the day.

Jump operations will be conducted in accordance with US Parachute Association Basic Safety Requirements as well as 14 CFR FAR's parts 61, 65, 91, and 105.

Parachutists will be notified of all KLHZ policies regarding separation requirements and shall be notified that the ILS antenna is in close proximity to that landing area. Avoidance is critical to avoid injury to jumpers and damage to expensive safety equipment and would jeopardize instrument operations to the airport.

Jump operation communications will be broadcast over the Common Traffic Advisory Frequency (currently 123.00). They will be provided by the pilot of the jump plane from TSC before, during, and after every load and include:

- Normal Takeoff: "Triangle one taking off runway 5/23 with skydivers"
- 5 Minutes before exit: "5 minutes until jumpers in the air over Triangle North"
- 2 Minutes before exit: "2 minutes until jumpers in the air over Triangle North"
- Exit Call: "Jumpers in the air over Triangle North"

Once jumpers have exited the jump plane, a status report will be broadcast on CTAF from the ground every two minutes: "We do have canopies over the field at Triangle North." When all jumpers have landed, a status message will be broadcast: "All Jumpers on the Ground."

The jump plane can carry 16 jumpers and, usually, jumpers are all released at about 13,500 feet MSL. Occasionally, a few will be released at a lower altitude, and the jump plane will then resume climbing. The jump plane maneuvers so that it is flying into the wind when jumpers are released. The first jumper is released directly over the landing area and it takes a few seconds for the remaining jumpers to exit the aircraft. The wind will tend to blow jumpers back over the landing area.

After the jumpers are released, the jump plane descends aggressively to 4000 MSL, and then descends somewhat less aggressively to enter the normal pattern, lands, and parks ready to take another load. On a busy weekend, the jump plane will often keep the engine running and "hot load" the next group of jumpers.

After exiting the aircraft, jumpers freefall until they deploy their parachutes. All parachutes must be deployed by 3000 AGL/3400 MSL, but less experienced jumpers will deploy at a higher altitude. It takes about one minute for a skydiver to freefall from 13,500 MSL to 3400 MSL. It generally takes about two minutes for a wingsuit user to descend the same distance. Once under canopy, the jumpers descend, steer the canopies around, and finally enter a small pattern and land into the wind.

All jumpers are directed to land in the landing area near the TSC hangar as depicted in the photo on page three.

Historically, about four times a year on average, a skydiver's parachute does not deploy properly. In this event, the malfunctioning parachute is jettisoned or "cut away" and the reserve chute is deployed. The "cut away" canopy will drift with the wind and will land somewhere eventually. Whenever this happens, TSC ground will issue a warning over the CTAF: "Cutaway, Triangle North traffic be aware there is a cutaway over the field."

Generally, we have winds from the West, and when the winds are from the East, it is generally stormy. Jumpers are directed by TSC to remain on the Northwest side of the runway. However, due to winds, about once a year a few skydivers end up Southeast of the airport. In this event, additional CTAF radio calls will be made by TSC. In addition, jumpers are directed by TSC to cross to the Northwest side of the runway as high as possible but absolutely above 1000 AGL. If they cannot cross to the Northwest side of the runway above 1000 AGL, jumpers are directed to land Southeast of the runway and TSC will send a vehicle to pick them up.

Hot Air Balloon Operations

There are two balloons, a yellow one and a red one, that operate in the neighborhood. They are, of course, unpowered and subject to the winds on any given day, and they are about 85 feet tall.

When departing from KLHZ, the launch point is a few hundred feet Northwest of the ILS antenna, which is 1000 feet Northeast of the arrival end of runway 23. The balloon will quickly ascend to 1500 AGL and departure direction could be just about anywhere, but prevailing winds are generally from the West. Winds vary with altitude, sometimes more than 90 degrees with a change in altitude of a few thousand feet.

Sometimes the balloon will be launched elsewhere and will land somewhere on the airport property. The balloon pilot does have a radio and will announce his position and intentions. This is a good place to land a balloon because there are very few obstructions.

They fly about 100 times per year on average and about fifteen of those either take off or land at the airport.

Frequently asked questions

Question: In previous versions of this document, there was a statement about parachutists not descending below 3400 MSL. That has been removed. What is the story?

Answer: This was a misinterpretation of one of the FARs. Far 105.23 states (in blue): **No person may conduct a parachute operation, and no pilot in command of an aircraft may allow a parachute operation to be conducted from that aircraft, over or onto any airport unless—**

(a) **For airports with an operating control tower:** (there are three sub-sections, but this does not apply to KLHZ.)

(b) **For airports without an operating control tower, prior approval has been obtained from the management of the airport to conduct parachute operations over or on that airport.** (Airport management approves so we are covered.)

(c) **A parachutist may drift over that airport with a fully deployed and properly functioning parachute if the parachutist is at least 2,000 feet above that airport's traffic pattern, and avoids creating a hazard to air traffic or to persons and property on the ground.** (After discussing with FSDO, this was intended for military and other operations where parachutists would deploy the parachute at a high altitude and then steer the parachute for a relatively long horizontal distance. Sometimes this would be over an airport enroute to the intended destination. In this case, the parachutist must remain more than 2000 feet above pattern altitude. Note that this situation does not require approval from local airport management. Also note that if parachutists must remain 2000 feet above the traffic pattern, there is no way to land in the approved area. It does not apply in our case, so the item was removed.)

Question: In previous versions of this document, there was an item stating that airplanes on taxiways should stop when they heard the radio call for "Jumpers away." This has been removed. What is the story here?

Answer: After a lot of discussion, no one could remember where it came from and, besides, it was not useful from several perspectives.

Attachment E

Safety Risk Analysis

**SAFETY CONSIDERATIONS AND RISK ASSESSMENT
COMMERCIAL SKYDIVING OPERATIONS
VANCE BRAND AIRPORT
LONGMONT, COLORADO**

The City of Longmont, Colorado, owner and operator of the Vance Brand (LMO) and is classified by the FAA as having “regional” significance. With over 280 based aircraft including 4 jets, LMO can be characterized as a busy general aviation airport with an estimated 71,500 operations annually by all types of general aviation aircraft. The Airport has one runway, Runway 11/29 which is 4,799 feet long and 100 feet wide. LMO does not have an air traffic control tower.

Since 1995, the airport has accommodated a commercial skydiving operation using a parachute drop zone located on the west side of Runway 11/29. Over the past few years, complaints about skydiving activity has increased including jumpers approaching the drop zone from the east overflying the runway at low altitudes, pedestrians crossing the runway, and off-drop zone landings. As a result, the City has initiated an independent safety risk assessment of various elements relevant to the skydiving operation at LMO. This assessment was designed to determine whether skydiving operations can be continue to be accommodated safely at LMO, and if so, what risk mitigation measures should be implemented to maximize safety for all airport users.

The FAA has implemented a Safety Management System (SMS) philosophy that provides a systematic approach for identifying and assessing hazards to safety and potential strategies to mitigate risk. The basic process is to (1) identify the hazard and its inherent causes (operational conditions, etc.); (2) to identify the likelihood and severity of the worst possible outcome and; (3) evaluate potential means and methods to reduce the risks.

In this context, the hazard likelihood is a function of the frequency an event could occur. FAA has defined the following quantitative and qualitative criteria for assessing likelihood of a hazardous occurrence per operation:

**Table 1
Frequency of Occurrence Criteria**

<u>Code</u>	<u>Definition</u>	<u>Criteria</u>
A	Frequent	Less than 1:1,000 (\geq once/week)
B	Probable	Greater than 1:1,000 but less than 1:100,000 ($<$ once/week but \geq once per three months)
C	Remote	Greater than 1: 00,000 but less than 1:10,000,000 ($<$ once/3 months but \geq once/3 years)
D	Extremely Remote	Greater than 1:10,000,000 but less than 1:10,000,000,000 ($<$ once/3 years but \geq once/30 years)
E	Extremely Improbable	Greater than 1 : 1,000,000,000,000 ($<$ once/30 years)

Source: FAA ATO SMS Manual (2017), Table 3-5

There is no established metric for identifying with precision the likelihood of an event but the operational characteristics of the specific airport, including peak activity levels, can support the categorization of this risk factor.

The potential hazard severity is the worst possible outcome that would result from of an event. FAA has established the following criteria for assessing severity:

**Table 2
Severity of Occurrence Criteria**

<u>Code</u>	<u>Definition</u>	<u>Criteria</u>
1	Minimal	Aborted takeoff/landing
2	Minor	Loss of airborne separation
3	Major	Abrupt evasive action
4	Hazardous	Near mid-air / ground collision
5	Catastrophic	Mid-air / ground collision (with fatalities)

Source: FAA ATO SMS Manual (2017), Table 3-3

In minimal and minor cases, it is expected that at least one party performed the action(s) expected of them however in major/hazardous/catastrophic cases, the risk is based on neither party conducting the appropriate action to avoid the event.

Combining the frequency and severity codes is used as a means to objectively identify hazards by applying the FAA's Risk Assessment Matrix as shown in **Figure 1**.

**Figure 1
FAA Risk Matrix**

Severity Likelihood	Minimal 5	Minor 4	Major 3	Hazardous 2	Catastrophic 1
Frequent A	Low	Medium	High	High	High
Probable B	Low	Medium	High	High	High
Remote C	Low	Medium	Medium	High	High
Extremely Remote D	Low	Low	Medium	Medium	High
Extremely Improbable E	Low	Low	Low	Medium	High* Medium

Source: FAA ATO SMS Manual (2017), Figure 3-7

The color coding is used to help interpret the criteria for identifying the level of each risk. For example, if a specific risk is judged to have the remote chance of occurring (C) but the consequences could be major (3), the risk identification (3C) would be considered "Medium". The treatment for the various identified risks include:

High Risk (Unacceptable) – hazard that should be immediately curtailed unless mitigated so that risk is reduced to medium or low level. Tracking and management are usually required. Catastrophic hazards that are caused by: (1) single-point events or failures, (2) common cause events or failures, or (3) undetectable latent events in combination with single point or common cause events are considered high risk, even if extremely remote. (Note: high risk is unacceptable)

once identified however, for short periods of time, high risk may exist while mitigation plans are put into effect.)

Medium Risk (Acceptable with mitigation) – minimum acceptable safety objective for high risk hazards where there is residual risk after mitigation. Medium risk hazards should be mitigated to fall into the low category.

Low Risk (Target) – acceptable without restriction or limitation. Low risks may be minimal, however they remain a risk to safety at the airport and should be monitored.

The FAA’s SMS approach is not meant to be conducted as an ad hoc exercise but should be a collaborative safety risk management (SRM) review, which can include a panel comprised of subject matter experts (SMEs), representatives of the airport’s management, and stakeholders that are affected by the skydiving activity, including representatives of the FAA, airport management, the commercial aeronautical services providers including the skydiving operator and tenants. This risk assessment is intended to provide the factual data to assist a SRM process in identifying the hazards, quantifying the risks, and recommending appropriate mitigation measures for the continuation of skydiving operations at LMO.

The following risk assessment is an adaptation of Figure 8-3-5B, “Risk Assessment for Parachute Operations at an Airport” found in FAA Order 8900.1, *Flight Standards Information Management System (FSIMS) Change 502*. The assessment also used on-site observations and other supplemental information to identify potential hazards that could occur at the Airport relevant to skydiving activity. The form was significantly reorganized to follow major components of the airport environment and operational characteristics. Elements of this safety risk assessment that extend beyond the FAA’s guidance were also included where appropriate. Additionally, where standard risk mitigation measures refer to revising Standard Operating Procedures (SOPs), the Sponsor has limited authority to deviate from guidance published in the FAA’s Aeronautical Information Manual (AIM) but should consider the establishment and publication of “best practices” for alerting pilots to the presence of skydiving operations in the airport environment.

1. Drop Zone Area

Is there an area suitable on the airport to accommodate skydiving operations? If so, does the center of the drop zone meet the recommended minimum safe distances from hazards and NAVAIDS for the appropriate skydiver experience level or activity?

In 2012, FAA published draft standards for the design of parachute landing areas (PLAs) to be included as Appendix 19 of AC 150-5300-13, *Airport Design*. Subsequently, FAA published AC 150-5300-13A which superseded the earlier document but did not include any guidance regarding PLAs. In the absence of FAA guidance, the City is using the USPA recommended standards for drop zone dimensions based on levels of proficiency. The current USPA recommended unobstructed drop zone dimensions (radii) include:

<u>Class*</u>	<u>Proficiency or Activity</u>	<u>DZ Clearance (Radius)</u>	<u>Area</u>
I	Solo students & A-license holders	330 ft (100m)	7.85 ac
II	B- and C-license holders and all tandem skydivers	165 ft (50m)	1.96 ac
III	D-license holders	40 ft (12m)	0.12 ac

* Classes added to differentiate between various DZ activity & dimensions

As currently laid out, there are several concerns with the existing drop zone. The drop is located adjacent to Taxiway B and the nearest boundary is only 350 feet from the centerline of Runway 11/29. As a result, overflights of the runway sometimes occur by skydivers attempting to approach the drop zone from the east due to wind conditions. The area set aside for the drop

zone does not meet the USPA BSR standard for a Class I drop zone. The extension of the DZ that abuts the south end of the swoop pond is generally unusable for novice skydivers and further constrains the amount of area available for all skydivers. In addition, the squared off corners of the current DZ leaves portions of the drop zone functionally unusable in a practical sense. A preliminary site analysis identified three sites at various locations on the airfield capable of meeting these criteria.

Risk Hazards:

- * Drop Zone operations capable of meeting minimum dimensional standards for safety
- * Drop Zone capable of accommodating activity for most general wind conditions
- * Proximity to active runway and traffic patterns
- * _____

Pre-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard
	Remote	Minor	MEDIUM

Risk mitigation measures that could be implemented:

- ___ Relocate the DZ site to area that can accommodate full-size circular Class I drop zone
- ___ Relocate the DZ site to avoid existing or potential hazards
- ___ Relocate the DZ site away from airfield runway safety/object free areas
- ___ Relocate DZ site to avoid conflicts with airport NAVAIDS and visual aids
- ___ Incorporate the DZ into the ALP
- ___ _____

Post-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard

2. Airport Traffic Patterns

Will the Drop Zone be located on the opposite the runway(s) established traffic pattern?

The primary goal of the DZ location relative to the traffic pattern is the ability to avoid conflicts with aircraft operating in the pattern. This does not take into account skydivers approaching the DZ downwind prior to turning upwind to land. The DZ's proximity to the runway may require skydivers to cross the traffic pattern depending on wind conditions.

LMO has one runway and uses a standard left-hand traffic patterns. Runway 29 is the preferred runway direction (weather permitting) for departures and Runway 11 is the preferred arrival runway. The drop zone is located inside the traffic pattern for Runway 29.

Risk Hazards:

- * Skydiving operations crossing active traffic pattern(s)
- * Skydiving operations crossing over runway at low altitudes
- * Skydiving operations occurring too close to active runway
- * _____

Pre-Mitigation	Frequency	Severity	Risk Hazard

Risk Hazard Assessment	Remote	Major	MEDIUM
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Risk mitigation measures that could be implemented:

- Non-standard traffic pattern (RW 29 – right hand turns)
- Relocate DZ to avoid active runway traffic patterns
- _____

Post-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard

3. Airport Ground Operations

Would skydiving operation ground vehicles and pedestrians (skydivers and visitors) routinely cross a runway, taxiway, or Runway Safety Area (RSA)? Note: Routine runway/taxiway crossings are defined as crossings that would be part of the skydiving operator’s standard operating procedures for their skydiving activities.

The drop zone is located on the opposite of the runway from the skydive operator’s base of operations and requires a shuttle to transport departing and returning skydivers. The shuttle uses an internal perimeter road to traverse between the locations. No vehicles or pedestrians are authorized to cross or loiter near the runways or taxiways at any time.

Risk Hazards:

- * Pedestrian activity (landed skydivers) in vicinity of aircraft movement area (potential runway incursion)
- * Ground vehicles operating on aircraft movement area (potential runway incursion)
- * _____
- * _____

Pre-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard
	Extremely Remote	Minor	LOW

Risk mitigation measures that could be implemented:

- Provide alternate route to avoid crossing runways/taxiways
- Post signs at crossing points with instructions for skydivers and pilots
- Provide training to skydivers regarding runway/taxiway crossing procedures
- Provide vehicle driver training for those assigned to recover skydivers
- _____

Post-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard

4. Aircraft Activity

While not actively counted, the estimated number of aircraft operations is significant. FAA provides the estimates for operations at most all public-owned airports. In late 2017, FAA estimated that LMO in experiencing 71,500 operations (take-offs and landings) with nearly 70% percent from local flights that do not depart the general area of the airport. These are generated by the local aircraft owners based at LMO and from flight schools where students and instructors use the airport for training.

Risk Hazards:

- * Congested traffic pattern
- * Diverse fleet mix of aircraft
- * Student pilots with varying degrees of proficiency and communication/language skills
- * Transient aircraft unaware of skydiving operations
- * Peak hour operations (w/skydiving)
- * Aircraft mix diversity (w/skydiving)
- *

Pre-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard
	Remote	Hazardous	MEDIUM

Risk mitigation measures that could be implemented:

- ___ Establish and disseminate best practices for operations in the vicinity of skydiving
- ___ Skydive operator assist update and disseminate standard operating procedures (SOPs)
- ___ Outreach to tenants, known users, nearby airports, and regional pilot organizations
- ___ Safety briefings with based tenants and known users
- ___ _____
- ___ _____

Post-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard

5. Large Aircraft Operations

Are larger aircraft taxiing or running adjacent to the drop zone, where the engine exhaust, propeller wash or wake turbulence could create a hazard for landing skydivers?

While there are 4 jets and other turbo-prop aircraft (including that of the skydive operator), they make up only a very small portion of total operations. However, it is conceivable that the thrust and wake turbulence generated by these aircraft using the runway and taxiway system may impact the DZ sites during certain wind conditions.

Risk Hazards:

- * Large aircraft operations in vicinity of skydiving activity
- * Transient operations unaware of skydiving operations
- *

Pre-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard
	Extremely Remote	Minor	LOW

Risk mitigation measures that could be implemented:

- ___ Locate the DZ site to avoid existing or potential hazards
- ___ Post signs advising pilots and skydivers of possible hazard by prop wash or jet blast to personnel near the DZ
- ___ Establish and disseminate rules and regulations for ground operations
- ___ Skydiving operator to establish and disseminate ground operating procedures
- ___ Coordinate safety briefings with large aircraft operators known to use LMO
- ___ _____

Post-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard

6. Military Aircraft Operations

Are there military aircraft using the same airspace as skydiving operations?

The FAA estimated that LMO had 420 military operations in 2017. These were for the most part flights just passing through since there are no based military activity at LMO.

Risk Hazards:

- * Military helo operations in vicinity of skydiving activity
- * Transient operations unaware of skydiving operations
- * _____

Pre-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard
	Extremely Remote	Major	LOW

Risk mitigation measures that could be implemented

- ___ Facilitate formal communications between known military unit(s) and skydive operator
- ___ Develop and publish Standard Operating Procedures (SOPs)
- ___ _____

Post-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard

7. Helicopter Operations

Are there any routine helicopter operations (emergency medical services, law enforcement, flight school, etc.) conducted at the airport?

LMO is home for four (4) helicopters used for business and personal use. There is no established heliport or other designated area specified exclusively for helicopter operations however, there is a paved pad located in the southeast part of the Airport commonly used by tenants for helicopter operations.

Risk Hazards:

- * Helo operations in vicinity of skydiving activity
- * Helo traffic patterns established to avoid fixed wing operations
- * Transient helicopter operations unaware of skydiving operations
- * _____

Pre-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard
	Remote	Major	MEDIUM

Risk mitigation measures that could be implemented:

- ___ Establish standard traffic patterns for helo operations
- ___ Safety briefings with based tenants and known users
- ___ Facilitate formal communications between known helo operators and skydive operator
- ___ Develop and publish Standard Operating Procedures (SOPs)
- ___ _____

Post-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard

8. Light Sport and Other Aircraft Operations

Are there light sport, ultralight, glider, or agricultural (Ag) airplane operations being conducted at the airport or through the drop zone airspace?

There are 16 assorted ultralight aircraft based at LMO. These and other aircraft (including, powered parachutes, etc.) frequently use the airfield.

Risk Hazards:

- * Ultralight and powered parachutes operations in vicinity of skydiving activity
- * No radio communications while operating in the traffic pattern or in the vicinity of skydiving activity
- * Non-standard traffic patterns established to avoid regular fixed wing operations
- * _____

Pre-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard
	Remote	Hazardous	MEDIUM

Risk mitigation measures that could be implemented:

- ___ Safety briefings with based tenants and known users
- ___ Outreach to regional airports, FBO's, flying clubs and pilot organizations
- ___ Encourage radio communications (hand-held) while operating in the vicinity of the airport.
- ___ _____

Post-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard

9. Flight Training Operations

Do student pilots routinely use Airport. If so, how many student take-offs and landings occur per day (daylight hours)?

LMO has one based flight school as a tenant. In addition, several regional flight schools use LMO as an approved airport for flight training. Other regional flight schools use LMO as a preferred destination for student cross-country flights.

Risk Hazards:

- * Flight training operations in vicinity of skydiving activity
- * Novice pilots
- * English language communication issues
- * _____

Pre-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard
	Remote	Hazardous	MEDIUM

Risk mitigation measures that could be implemented:

- ___ Facilitate formal communications between known flight schools and skydive operator
- ___ Safety briefings with based flight instructors and flight schools
- ___ Outreach to regional flight schools
- ___ _____

Post-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard

10. Airport Procedures

Does the airport have written airport procedures for skydiving operations? Is there a procedure for notifying airport users of changes to the airport procedures?

The City has traditionally relied on standard FAA publications such as the Aeronautical Information Manual (AIM) to promulgate safe flying practices. LMO has supported skydiving operations for over 20 years and the City's current rules and regulations (Chapter 13.39.040(J) of the Longmont Municipal Code) and other documents include provisions regarding skydiving operations. The regulations do not address recommended best practices and other considerations and the publication venue is limited.

In 1995, the skydive operator had prepared a set of Standard Operating Procedures (SOPs) but they have not been updated since the original publication and have not been publically posted to disseminate the information among airport users.

Risk Hazards:

- * Limited FAA regulations and guidance for users regarding the safe conduct of skydiving activities in a congested and dynamic operating environment
- * Outdated skydive operator SOPs
- * Pilots unaware of skydiving SOPs
- * _____

Pre-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard
	Remote	Major	MEDIUM

Risk mitigation measures that could be implemented:

- ___ Update airport SOPs to include skydiving operations
- ___ Publish skydiving information on airport website
- ___ Outreach to tenants, known users, nearby airports and regional pilot organizations
- ___ Safety briefings with based tenants and known users
- ___ _____
- ___ _____

Post-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard

11. Air Traffic Procedures

Does the airport have an operating airport traffic control tower (ATCT)? If not, can skydiving operations be announced over the airport’s UNICOM or CTAF (Common Traffic Advisory Frequency)?

LMO is a busy general aviation airport but does not have an air traffic control tower. The Airport’s CTAF (122.975) is used for aviators to make position announcements and state intentions. During peak periods, there may be times where pilots have a difficult time making position announcements and are sometimes blocked by simultaneous transmissions.

It should also be noted that aircraft are NOT required to have nor use aviation radios while operating at LMO. Skydiving operations require use of the CTAF to announce activity in progress and will add to the existing frequency congestion.

Risk Hazards:

- * Congested transmissions
- * Blocked transmissions
- * Unannounced traffic
- * Skydive plan missing calls-outs
- * _____

Pre-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard
	Remote	Hazardous	MEDIUM

Risk mitigation measures that could be implemented:

- ___ Encourage CTAF use among all users
- ___ Skydiving operator use CTAF to inform local traffic of skydiving operations in progress
- ___ _____
- ___ _____

Post-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard

12. Air Traffic Control

Would FAA ATC (Air Traffic Control) need to vector aircraft through the airspace being used by skydiving operations?

LMO is located in the northwest quadrant of the Denver airspace, just outside the Class B airspace of Denver International Airport. A special information box on the aeronautical chart alerts pilots regarding intensive aircraft operations including skydiving along the foothills of the Rocky Mountains between the Northern Colorado Regional Airport (FNL) 19 miles to the northeast of LMO and the Rocky Mountain Metropolitan Airport (BJC) 15 miles to the south. Immediately southwest of LMO is the airway intersection "HYGEN" where V85 and V220 intersect. The parachute icon just below the airport symbol indicates that skydiving operations are present at the Airport.

A Letter of Agreement (LOA) was established in April 2007 between Mile-Hi and the FAA's Denver TRACON (Approach Control) regarding airspace procedures for using LMO for skydiving. The Agreement outlined the geographic boundaries of the "climb box" located southwest of the Airport. The climb box was established to ensure the jump plane remains clear of Denver's Class B airspace and other potential conflicts during the climb to altitude. The actual skydiving drop operation generally will occur at altitudes up to 17,900 feet above sea level (approximately 13,000 feet above ground level) with the aircraft to remain within a radius of 2 nautical miles of the Airport.

Risk Hazards:

- * Skydivers transitioning through congested airspace and airway routes
- * Blocked transmissions
- * Unannounced traffic
- * _____

Pre-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard
	Remote	Hazardous	LOW

Risk mitigation measures that could be implemented:

- ___ FAA ATC /Operator: Abide by Letter of Agreement
- ___ FAA ATC: Establish distinct transponder code for skydiving aircraft.
- ___ _____
- ___ _____

Note: These mitigation measures will be the responsibility of the skydive operator and FAA.

Post-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard

13. Skydiving Operations Notifications & Publications

Will NOTAMs, AWOS (Automated Weather Observing System) broadcasts, and the parachute symbol on the appropriate Sectional Chart be used to advise aeronautical users of the skydiving operations at the airport?

All appropriate notifications should be published to notify aeronautical users of skydiving activities at the airport.

Risk Hazards:

- * Transient pilots unaware of skydiving activity at airport
- * Non-radio aircraft using airport
- * Unannounced traffic
- * _____

Pre-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard
	Remote	Major	LOW

Risk mitigation measures that could be implemented:

- ___ Publish skydiving information in the Airport Master Record
- ___ Issue NOTAM for skydiving operations
- ___ Append message regarding skydiving on AWOS
- ___ Encourage communication over UNICOM/CTAF
- ___ Publish skydiving information on airport website
- ___ Use visual indicators (flags, banners, etc.) on the airport to alert pilots of skydiving operations in progress
- ___ Establish and disseminate best practices in the vicinity of skydiving
- ___ Skydive operator to establish and disseminate SOPs to all skydivers
- ___ Outreach to tenants, known users, nearby airports and regional pilot organizations
- ___ Regular safety meetings to discuss SOPs, observations, and issues
- ___ _____

Post-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard

14. Other Considerations

Additional safety observations not covered by questions 1 – 13 that could create a hazard between the skydiver and an operating aircraft needs to be brought to the attention of the review panel for assessment. List any additional concerns/observations below for assessment:

In the course of the safety risk assessment for LMO, there were other issues involving skydiving activity and the skydive operator that were observed and should be reviewed.

a. Skydive Aircraft Fueling

The skydive operator has placed a fuel tanker near a paved run-up pad adjoining Taxiway A and uses it to park and refuel the skydive aircraft as shown in **Figure 2**.

Figure 2



The issue is that while the aircraft is parked on the pad, it imposes an obstruction for other aircraft using the taxiway. The red line illustrates FAA's design standards for Taxiway A's Object Free Area (TOFA) which is situated 65.5 feet from the taxiway centerline. The FAA's states:

The taxiway and taxilane OFA clearing standards prohibit service vehicle roads, parked aircraft, and other objects, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes. Vehicles may operate within the OFA provided they give right of way to oncoming aircraft by either maintaining a safe distance ahead or behind the aircraft or by exiting the OFA to let the aircraft pass.

Source: FAA Advisory Circular 150/5300-13A, Airport Design, Para 404.b(1)

The only recourse for mitigating this issue is to relocate the fuel tank to a place on the airport that will allow aircraft to be refueled without encroaching on any airfield object free area or otherwise create an obstruction to the airspace.

b. Skydive Plane Loading Area

A similar situation occurs when the skydive aircraft is loading skydivers near the drop zone as illustrated on **Figure 3**.

Figure 3



In this case, expanding and realigning the loading area, to allow the aircraft to park outside the taxiway OFA may be a potential solution to the issue.

Summary

A review of NASA’s Aviation Safety Reporting System (ASRS) indicated over 400 reports between 1998 and 2015 throughout the nation that were directly related to skydiving. The following is a tabulation of the reports classified by the general nature of each specific report.

**Table 3
ASRS Skydiving Reports
(1998-2015)**

Description	Reports	Percent
Conflict with <u>skydiver</u> with or without parachute deployed in the vicinity of the airport, including in the traffic pattern, on approach or departure	238	56.3
Conflict with <u>skydiving aircraft</u> in the vicinity of the airport, including in the traffic pattern, on approach or departure	116	27.4
Skydiving aircraft or parachute maintenance issue, incident or accident, including fuel exhaustion	24	5.7
Conflict with skydiver with or without parachute deployed not in the vicinity of the airport between 1,000' - 14,000' AGL	23	5.4
Conflict with skydiving aircraft not in the vicinity of the airport between 1,000' - 14,000' AGL	14	3.3
<u>Other</u>	<u>8</u>	<u>1.9</u>
Total	423	100.0

Source: <http://asrs.arc.nasa.gov/>

As the table indicates, over 56 percent of the safety reports indicated that the conflicts between skydivers and aircraft occurred in the vicinity of the airport. Reported conflicts with the skydiving aircraft approaching and departing the airport were also significant. These data reinforce the need for instituting appropriate safety measures to mitigate the risk of skydiving activity at the airport.

#

Attachment F

Consultation

Attachment F CONSULTATION

Over the course of the Skydiving Activities Analysis study, a number of airport users were interviewed regarding their observations, perceptions, and opinions regarding skydiving operations at the Airport. The following represents a paraphrased compilation of their comments.

- skydivers (some as friends) come across as classic anti-authoritarian thrill-seekers
- LMO generally safe but observed occasional incidents with skydive aircraft (non-standard entry into the traffic pattern in use, radio calls not made)
- pedestrians crossing the taxiway/runway to get to drop zone
- parachutes over the runway “disaster waiting to happen”
- jets using LMO exacerbate situation (or they may avoid LMO altogether)
- suggest making expectations clear for both skydivers and aircraft operators
- suggest explaining not just the “what” to do but the “why” behind it
- suggest getting word out to other airports
- Skydive operator unwilling to cooperate
- skydiving at LMO as is detracts from attractiveness of Airport
- safety issues with locations of drop zone and parked fuel tanker
- concerns for Airport/City leadership to negotiate and follow through with agreements
- clear violations of USPA BSRs
- inadequate training/orientation regarding LMO drop zone
- no internal safety meetings
- questionable experience of swoop pond users
- significant contrast between LMO skydive operator and other airports/drop zones (which have a robust safety culture but much more comfortable)
- no dedicated ground observer present during jumps
- recommend separate drop zone for more experienced skydivers
- skydive operator absentee owner
- skydive operation disorganized and lacks professionalism
- culture of skydive operation can be characterized as “edgy”, lots of tension, cliquish
- skydivers banned from skydive operation for expressing safety concerns to USPA
- skydivers have quit using skydive operation because of safety concerns
- recommend checking out “Out of the Blue Skydiving Center” (Colorado Springs East Airport) and Orange Skies Free Fall Center (Fort Morgan Municipal Airport) for how a drop zone should be operated
- LMO busiest airport in CO without air traffic control tower
- skydiving operators (previous and current) at LMO have never been good
- current skydive operator does not “play well with others”
- poor communications (one-way – no responsiveness)
- not a matter of “if” but “when” something bad will happen
- poor control of skydivers
- perceptive attitude that the skydive operator “owns the airport”
- good skydive aircraft pilots but will occasionally cut you off in the pattern
- need rules for everyone to play by

In addition, two separate attempts were made by email directly addressed to owner of the skydiver operation. No response or acknowledgement were never received until a week before the town-hall meeting when the owner and their legal representative agreed to meet with the City to discuss the report which they had received two weeks prior. This meeting was held on Friday, May 17, 2019 where the results of the preliminary study were discussed as well a dialog of questions and answers to specific issues.

The representative of the FAA Denver Airports District Office (ADO) was also contacted where locations of potential drop zones in relation the Airport Layout Plan and other planning issues were discussed. Several attempts to contract the FAA's Flight Standards District Office (FSDO) were unsuccessful. Unsuccessful attempts were also made to communicate with the regional representative of the USPA.

In addition to the one-on-one interviews, a "town-hall" style meeting was scheduled to discuss the results of the preliminary safety analysis and to receive input regarding skydiving and other safety issues with airport users. Over 200 invitations were sent via email to all LMO tenants and other users. The meeting was held on Saturday morning May 18, 2019 and was attended by 15 people including the owner of the skydive operation, local skydivers, pilots and a representative from headquarters of the USPA.

A facilitator was on-hand at the meeting to moderate the meeting and to take notes which are attached. Attendees were invited speak about the state of skydiving at LMO and their comments regarding the report. Those not wishing to speak were offered a print form with contact information included where they could send comments in writing. The outcome of the meeting was informative for all and several observations and suggestions were noted for follow-up consideration.

Date: 03/01/2019 [03:51:12 PM EST]
From: "Dr. Dave Byers" <DAByers@quadrex.aero>
To: frank@milehiskydiving.com
Subject: LMO Skydiving Safety Analysis

Frank

As you are probably aware, I have been commissioned by the City to look at the interaction of the skydiving activities with fixed and helo traffic at the airport. At your convenience, I would like to discuss your perspective.

Please advise when would be a good time we can talk.

Dave

Dr. David A. Byers, AICP, CM
Quadrex Aviation, LLC
Airport Development Services
P.O. Box 34155
Melbourne, FL 32903-1155
DAByers@Quadrex.aero
www.Quadrex.aero

(321) 574-5633
(321) 541-9154 (fax)
(386) 295-9050 (cell/text)

dabymers@quadrex.aero

From: dabymers@quadrex.aero
Sent: Wednesday, April 3, 2019 5:48 PM
To: 'frank@milehiskydiving.com'
Subject: LMO Skydiving

Frank

I've attempted to reach out to you before but I did not get a response. I understand that there is currently litigation between you and the City but I would really like the opportunity to talk to you about elements of the skydiving study that have nothing to do with the financial issues.

Contrary to your statements regarding my alleged biases, I have never taken a position that unilaterally opposes skydiving activities at public airports other than to provide observations and opinions when there is a situation that could compromise the safety to all users (skydivers and pilots alike). You should talk to the folks at Venice to understand what happened and the ultimate outcome. Bottom line was that they folded within 6 months, partly because they said the DZ was unsafe (which was picked not by us but the FAA who said it was). And this was a tandem-only operation.

FYI, I am recommending to the City that we convene a meeting between you, the airport manager, and some of the tenants and users to discuss the findings in my report, especially regarding the location of the drop zone and work toward updating the 1995 Standard Operating Procedures. Before that happens, I would like to discuss my analysis with you beforehand, no surprises, nothing to hide.

I believe that skydiving can continue to be supported at LMO, but it's going to take a spirit of cooperation among all concerned in order for that happen and you have a fundamental role in that process.

So I ask that you give me a call or let me know when would be a good time for me to call you. Perhaps a face-to-face meeting if you prefer.

I await your reply.

Dave

Dr. David A. Byers, AICP, CM

dabyers@quadrex.aero

From: dabyers@quadrex.aero
Sent: Wednesday, April 3, 2019 4:49 PM
To: 'uspa.mountain.director@gmail.com'
Subject: LMO Skydiving Activity
Attachments: FAA Order 8900.1.8.3.5 - Safety Risk Assessment (Parachute Operations).pdf

Ray

You may be aware that the City of Longmont has commissioned a study to assess the safety of the current skydiving operations at Vance Brand Airport. As their consultant, I am focusing my attention primarily on the drop zone as it is currently laid out and the SOPs using USPA's guidance from the latest version of the BSRs and the FAA's format for conducting safety risk assessments (form attached).

Contrary to public statements made about my alleged bias against skydiving, I can assure you I am approaching this matter objectively with the focus on safety to all users. I really have nothing against skydiving (I do have one tandem jump under my belt) but I would hope that a spirit of cooperation would prevail to ensure that there is a clear understanding of the expectations for everyone using the airport.

I would like the opportunity to discuss your personal observations, perspectives, and opinions on the situation and how USPA typically approaches such matters.

Would you please let me know when would be a good time to talk?

Thanks in advance.

Dave

PS: your voicemail box is full so I could not leave you a message.

Dr. David A. Byers, AICP, CM
Quadrex Aviation, LLC
Airport Development Services
P.O. Box 34155
Melbourne, FL 32903-1155

DAByers@Quadrex.aero

From: David Slayter
Sent: Tuesday, May 07, 2019 10:47 AM
To: Marc.C.Miller@faa.gov; Kristin.Brownson@faa.gov; Brian.D.Richardson@faa.gov; david.conley@faa.gov
Subject: Safety Risk Management (SRM) Analysis - Airport Stakeholder Meeting
Importance: High

Marc, Kristin, Brian and David:

As you may be aware, the City contracted with Quadrex Aviation as an independent safety expert to conduct a Safety Risk Management (SRM) analysis at Vance Brand Airport. Prior to finalizing the report, Dr. David Byers will be conducting a town-hall style meeting specific to the findings in his Preliminary Report. I have attached the Preliminary Report for your review. It can also be accessed by following the link to the [Vance Brand Airport Safety Risk Management \(SRM\) Analysis – Preliminary Report](#).

Dr. Byers will review the Preliminary Report and will offer an opportunity for you to provide input you may have. We believe your input is important in addressing safety issues as it pertains to skydiving activities conducted at the Vance Brand Airport in Longmont, Colorado.

The meeting date, time and location is:

Saturday, May 18, 2019 from 9:30am – 12:00pm
Longmont Public Library – Rooms A/B
409 4th Avenue
Longmont, CO 80503

Coffee and Pastries will be provided.

We look forward to seeing you there.

On a side note, I wanted to make sure you are aware that in the interest of trying to work with Mile-Hi Skydiving, we have scheduled a separate meeting with Mile-Hi Skydiving the evening before (Friday, May 17, 2019).

Please let me know if you have any questions or comments.

Sincerely,

David Slayter, C.M.

Vance Brand Airport Manager
(303) 651-8431 (Office)
Email: david.slayter@longmontcolorado.gov
Web: www.longmontcolorado.gov/airport

From: David Slayter
Sent: Tuesday, May 07, 2019 10:49 AM
To: govrelations@uspa.org; uspa@uspa.org
Subject: Safety Risk Management (SRM) Analysis - Airport Stakeholder Meeting Invitation
Importance: High

Hi Randy,

As you may be aware, the City contracted with Quadrex Aviation as an independent safety expert to conduct a Safety Risk Management (SRM) analysis at Vance Brand Airport. Prior to finalizing the report, Dr. David Byers will be conducting a town-hall style meeting specific to the findings in his Preliminary Report. I have attached the Preliminary Report for your review. It can also be accessed by following the link to the [Vance Brand Airport Safety Risk Management \(SRM\) Analysis – Preliminary Report](#).

Dr. Byers will review the Preliminary Report and will offer an opportunity for you to provide input you may have. We believe your input on behalf of USPA is important in addressing safety issues as it pertains to skydiving activities conducted at the Vance Brand Airport in Longmont, Colorado.

The meeting date, time and location is:

Saturday, May 18, 2019 from 9:30am – 12:00pm
Longmont Public Library – Rooms A/B
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Longmont, CO 80503

Coffee and Pastries will be provided.

We look forward to seeing you there.

Sincerely,

David Slayter, C.M.

Vance Brand Airport Manager
(303) 651-8431 (Office)

Email: david.slayter@longmontcolorado.gov

Web: www.longmontcolorado.gov/airport

From: David Slayter <David.Slayter@longmontcolorado.gov>
Sent: Tuesday, May 07, 2019 10:44 AM
To: David Slayter <David.Slayter@longmontcolorado.gov>
Subject: Safety Risk Management (SRM) Analysis - Airport Stakeholder Meeting Invitation
Importance: High

Dear Airport Investor and Operator:

As you may be aware, the City contracted with Quadrex Aviation as an independent safety expert to conduct a Safety Risk Management (SRM) analysis at Vance Brand Airport. Prior to finalizing the report, Dr. David Byers will be conducting a town-hall style meeting specific to the findings in his Preliminary Report. I have attached the Preliminary Report for your review. It can also be accessed by following the link to the [Vance Brand Airport Safety Risk Management \(SRM\) Analysis – Preliminary Report](#).

Dr. Byers will review the Preliminary Report and will offer an opportunity for you to provide input you may have. The meeting date, time and location is:

Saturday, May 18, 2019 from 9:30am – 12:00pm
Longmont Public Library – Rooms A/B
409 4th Avenue
Longmont, CO 80503

Coffee and Pastries will be provided.

We look forward to seeing you there.

Sincerely,

David Slayter, C.M.

Vance Brand Airport Manager
(303) 651-8431 (Office)

Email: david.slayter@longmontcolorado.gov

Web: www.longmontcolorado.gov/airport




Safety Risk Assessment for Skydiving Activities at the Vance Brand Airport



5/18/2019




Introductions

- City of Longmont (Sponsor)
- Quadrex Aviation
- Facilitator
- Stakeholders of LMO
 - Aircraft Owners & Operators
 - Flight Training (Local & Other Schools)
 - Skydivers

5/18/2019




Agenda

Meeting Orientation	9:30 – 9:50 am
Skydiving at Vance Brand Airport	9:50 – 10:20 am
Drop Zone Analysis	10:20 – 11:00 am
Standard Operating Procedures	11:00 – 11:40 am
Final Questions and Reactions	11:40 – 11:50 am
Summary and Next Steps	11:50 – 12:00 pm

5/18/2019




Safety Risk Assessment for Skydiving Activities at the Vance Brand Airport

Disclaimer: The observations, comments, opinions, and recommendations expressed in this presentation are those exclusively of Quadrex Aviation and do not reflect the position of the City of Longmont, the FAA or that of any other federal, state, or local agency and is solely responsible for the contents

5/18/2019




Airspace



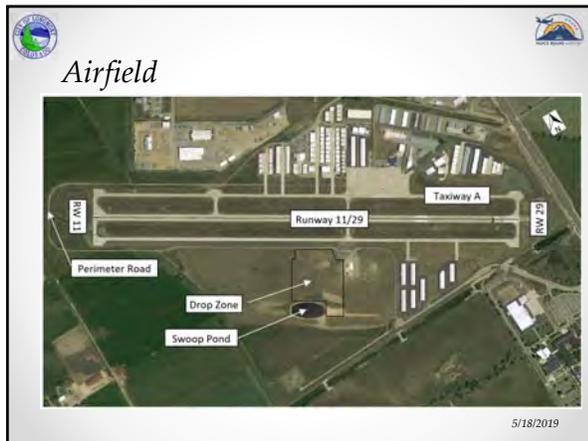
5/18/2019




Airport Character

- Vance Brand Airport
 - Runway 11/29 – 4,800' long / 75' wide
 - 284 Based aircraft
 - * 257 Single-Engine
 - * 19 Multi-Engine
 - * 4 Jets
 - * 4 Helicopters
 - * 16 Ultra-lights (FAA – not registered "aircraft")

5/18/2019



Airport Activity

Primarily Characterized as General Aviation (*non-commercial*)

Annual Aircraft Operations ¹		
Operation Type	2017	2022
Itinerant	21,028	23,740
Local	54,869	50,043
Military	420	420
Total	71,491	79,029

¹ one aircraft takeoff or landing
² aircraft arriving from or departing to another airport
³ aircraft staying within the traffic pattern or within 20-miles
 Source: FAA 2018 Terminal Area Forecast for LMO

5/18/2019

Skydiving Activity

→ Skydive Operator – Mile-Hi Skydiving

- Operating since 1995
(under current ownership)
- Season (May – October)
(year-round weather permitting)
- Operates 2 aircraft
DHC-6 Twin Otter
Beech A-90 King Air
- Each jump can have 20-22 chutes airborne

Note: Once leaving the A/C, each skydiver is an independent operator

5/18/2019

Parachute Landing Area (Drop Zone)

Illustration 4-B.1. Normal flight practices separate aircraft and parachutes at airports. But jumpers need to respect the runways and approaches.

Source: USPA Skydiving Information Manual (2019-2020) 5/18/2019

Parachute Landing Area (Drop Zone)

5/18/2019

Parachute Landing Area (Drop Zone)

→ Current Drop Zone Established Nov 2018

- Total Area = 338,000 sf
- Closest edge of DZ to RW 11/29 = 350'
- Designated for all classes of skydivers (*novice to experts*)
- Boundaries marked with plastic cones
- Wind indicator located at edge of DZ

5/18/2019



Parachute Landing Area (Drop Zone)

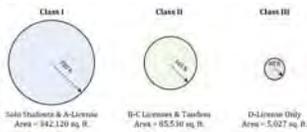
- Concerns regarding Drop Zone
 - Total Area = 338,000 sf
 - * Marginally smaller than USPA recommendations
 - * Carve-outs for swoop pond (30,625 sf)
 - * Squared corners
 - Closest edge of DZ to RW 11/29 = 350'
 - * Prevailing winds sometimes force landing approaches from east (especially for novices)
 - * Setup for landing requires overflight of RW 11/29

5/18/2019



Parachute Landing Area (Drop Zone)

- Criteria for Alternatives to current DZ
 - Based on USPA recommendations
 - * Size – Class I (Solo Students +)
 - * Shape – Round



5/18/2019



Parachute Landing Area (Drop Zone)

- Criteria for Alternatives to current DZ
 - * Location - Maximize distance from RW 11/29
 - * Keep DZ approaches away from downwind legs of traffic patterns
 - * Avoid obstacles to approaches (40' buffer)
 - * Utilize unencumbered airport property
 - * Minimize walking distance to pick up area

5/18/2019



Parachute Landing Area (Drop Zone)

→ Alternative A



5/18/2019



Parachute Landing Area (Drop Zone)

→ Alternative B



5/18/2019



Parachute Landing Area (Drop Zone)

→ Alternative C



5/18/2019

Parachute Landing Area (Drop Zone)

→ Recommended Alternative

- * Size – Class I (342,000 sf)
- * Shape – Circular
- * Location – 1,600 ft from RW 11/29
- * No obstacles to approaches (40' buffer)
- * Unencumbered property
- * Opportunity for secondary DZ for advanced skydivers



5/18/2019

Standard Operating Procedures (SOPs)

→ Federal Pre-emption for Aviation Safety

- * Federal Aviation Regulations (FARs) – *legal basis*
 - 14 CFR Part 105 – Parachute Jumping
 - 14 CFR Part 91 – General Operating & Flight Rules
- * Advisory Circulars – *guidance and best practices*
 - FAA AC 105-2E – Sport Parachute Jumping
 - FAA AC 90-66A – Recommended Standard Traffic Patterns and Practices for Aeronautical Operations at Airports without Operating Control Towers
- * Other Publications
 - Aeronautical Information Manual (AIM)
 - Aeronautical Charts & Airport Directory 5/18/2019

Standard Operating Procedures (SOPs)

→ US Parachute Association (USPA)

Provides Guidance & Best Practices (recognized by FAA)

- * Publishes *The Skydiver's Information Manual* contains Basic Safety Requirements (BSRs)
 - Medical Certification
 - Licenses & Ratings
 - Student Skydiver training requirements
 - Drop Zone Criteria
 - General Operating Procedures

5/18/2019




Standard Operating Procedures (SOPs)

- City's Policy Guiding Documents
 - * Airport Rules & Regulations (*applies to all users*)
 - * Minimum Standards for Commercial Aeronautical Activities (*FBO/Flight Training/Skydiving*)
 - * Standard Operating Procedures (SOPs) – *designed to govern the conduct of all aeronautical activities*

5/18/2019




Standard Operating Procedures (SOPs)

- Skydiving SOPs
 - * FAA's first question regarding skydiving at airports (*do you have them?/what to they say?*)
 - * Articulates how skydiving will be conducted
 - * Informs skydivers what the rules are for using LMO
 - * Pilots understand what skydivers are expected to do

5/18/2019




Standard Operating Procedures (SOPs)

- LMO has Skydiving SOPs but...
 - * Are they up-to-date?
"current" SOPs published in 1995
 - * Are they still relevant?
In some parts – yes / others – no
 - * Are they communicated to skydivers?
No evidence they are (signature/initials?)
 - * Do pilots know what they are?
Not published or otherwise distributed

Bottom Line – time to refresh SOPs!

5/18/2019




Standard Operating Procedures (SOPs)

→ What should be included:

- A. Definitions
- B. Skydiving Ground Operations
 - Safety, Liability, & LMO Skydiving SOP Briefing
 - Access to Loading Area
 - Loading Operation
 - Drop Zone Operations (*including DZ Operator*)
- C. Skydiving Flight Operations
 - Standard Airfield Operations
 - In-Flight Skydiving Operations (Pilot-in-Command)
 - In-Flight Skydiving Operations (Skydivers)

5/18/2019




Standard Operating Procedures (SOPs)

→ What should be included:

- D. In-Flight Skydiving Operations (Skydivers)
 - Approaches to DZ
 - Traffic pattern/overflight avoidance
 - DZ protocols
- E. Safety Meetings & User Coordination
- F. Distribution

5/18/2019




Summation & Recommendations

→ Skydiving at LMO has been an on-going successful practice for decades

→ Nothing is occurring that warrants immediate termination of skydiving however...

- LMO is now a busy airport (and will get busier)
- Current Drop Zone should be relocated ASAP
- SOPs for Skydiving Activities should be updated ASAP
- All skydivers using LMO should be read, understand & agree to comply with SOPs
- SOPs should be published on Airport's website and distributed to tenants

5/18/2019



Safety Risk Analysis

Questions?

For more information, contact:

Dr. David A. Byers
321.574.5633
dabyers@quadrex.aero

5/18/2019

Safety Risk Management Analysis
Vance Brand Airport
Stakeholder Discussion
May 18, 2019 Longmont, Colorado

Group Memory

A stakeholder meeting was held on Saturday, May 18 at the Longmont Public Library, located at 409 4th Avenue, in Longmont, Colorado. This document serves as a record on the meeting. Approximately 12-15 people attended. No sign-in sheet was available.

David Slayter, Manager of the Vance Brand Airport, welcomed everyone in attendance and introduced Dr. David Byers (Quadrex Aviation) – the aviation expert who conducted the Safety Risk Management Analysis - and Wendy Lowe as the meeting facilitator.

Wendy Lowe explained that there were five objectives for the meeting, including:

- Share the results of the Safety Risk Assessment of skydiving activities conducted by Quadrex Aviation at Vance Brand Airport
- Present recommendations for addressing concerns identified in the Safety Risk Assessment
- Answer questions
- Receive comments and reactions
- Share final thoughts and Next Steps.

Wendy Lowe shared a proposed agenda for the session as follows:

9:30 am – 9:50 am	Meeting Orientation
9:50 am – 10:20 am	Skydiving at Vance Brand Airport
10:20 am – 11:00 am	Drop Zone Analysis
11:00 am – 11:40 am	Standard Operating Procedures
11:40 am – 11:50 am	Final Questions and Reactions
11:50 am – 12:00 pm	Summary and Next Steps

She further explained that the drop zone would be discussed first, followed by discussion of the Standard Operating Procedures.

Finally, Wendy Lowe reviewed proposed ground rules for the meeting, including:

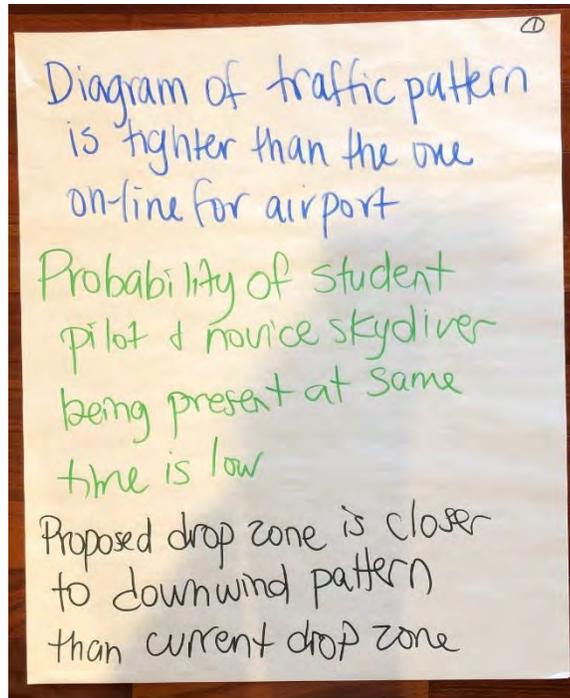
- Participate with intention
- Listen to understand
- Treat others with kindness and respect.

Dr. Byers presented the study he had done, including his findings and his recommendations to

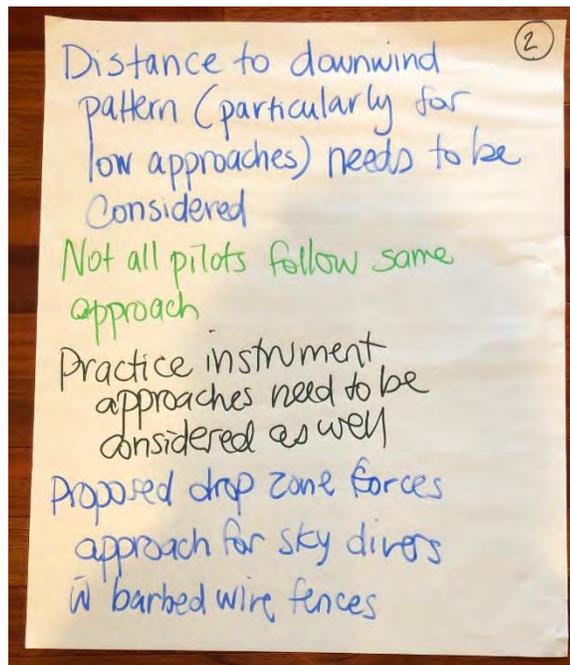
address the findings. A copy of his presentation is attached.

Stakeholders were invited to share their reactions to what they had heard. The following depicts the reactions as recorded on flip chart paper.

- Diagram of traffic pattern is tighter than the one on-line for the airport
- Probability of student pilot and novice skydiver being present at same time is low
- Proposed drop zone is closer to downwind pattern than current drop zone



- Distance to downwind pattern (particularly for low approaches) needs to be considered
- Not all pilots follow the same approach
- Practice instrument approaches need to be considered as well
- Proposed drop zone forces sky divers to approach over barbed wire fencing



- Proposed zone has fewer options for approach due to safety concerns
- City's decision to increase rates is what caused this problem
- The current position is better than the proposed options
- Not talking about long-term plan – need to consider building new hangers, etc.

Proposed zone has fewer options for approach due to safety concerns ③

City's decision to increase rates is what caused this problem

The current position is better than proposed options

Not talking about long term plan - need to consider building new hangers, etc.

- Most provisions for Standard Operating Procedures are already in existence. As a pilot here, I am impressed by the Mile High's operations
- As a pilot, I don't need the SOPs. They are not relevant to pilots
- Flight instructors should introduce the skydiving SOPs to student pilots during instruction

Most provisions for SOP are already in existence ④

As a pilot here, impressed by Mile High's operations

As a pilot, I don't need the SOPs - not relevant to pilots

Flight instructors should introduce the skydiving SOPs to student pilots during instruction

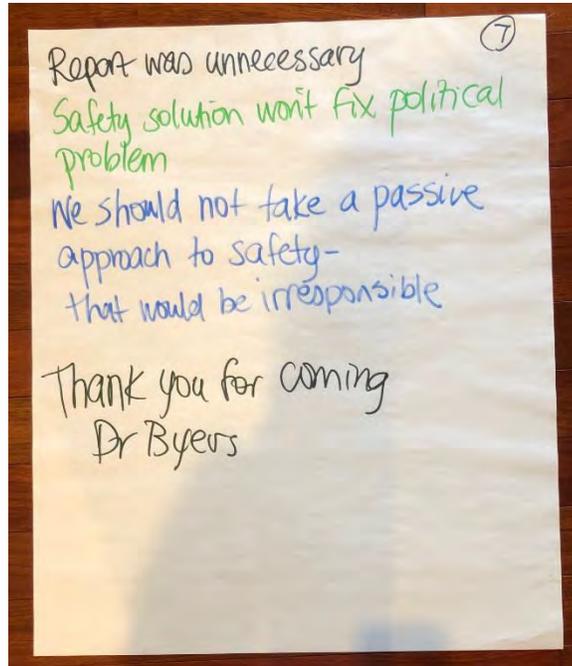
- As a pilot, I am expected to know how to operate safely. I assume skydiving operators similarly have procedures
- Could use NOTAM as a way to communicate the SOPs
- Management Email, post notice at the FBO
- As a pilot, knowing where the Drop Zone is located is important
- Did not talk to Mile High during the assessment process

As a pilot, I am expected to know how to operate safely. I assume skydiving operators similarly have procedures. Could use NOTAM as way to communicate SOPs. Mgmt email, post notice at ~~FBO~~ FBO. As a pilot, knowing where Drop Zone is important. Did not talk to Mile High during assessment.

- Deland might be a good comparable skydiving operation as they have similar tandem operations; Perris and Eloy might be other good comparisons
- I haven't had any conflicts between aircraft and skydiving
- There has been a conflict with one person at Mile High over the past several years, but no issues of safety between the skydiving and flight operations
- Relocating the drop zone is silly

Deland might be a good comparable skydiving operation → have similar tandem operations. Perris and Perris + Eloy. I haven't had any conflicts between aircraft and skydiving. There has been a conflict with one person over ^(+mile High) past several years → no issues of safety between skydiving & ~~flight~~ flight operations. Relocating Drop zone is silly.

- Report was unnecessary
- Safety solution won't fix a political problem
- We should not take a passive approach to safety; that would be irresponsible
- Thank you for coming, Dr. Byers



David Slayter thanked everyone for attending. Wendy Lowe passed out a comment form for use by anyone who has comments they would like to submit after the meeting. A copy of the comment form is attached.



Bryan Biesterfeld
bbiesterfeld@rwolaw.com

May 24, 2019

Via Email:

Mr. David Slayter
Airport Manager
Vance Brand Municipal Airport
Longmont, Colorado
David.Slayter@longmontcolorado.gov

Ms. Jaime Roth
Assistant City Attorney
City of Longmont, Colorado
Jaime.Roth@longmontcolorado.gov

Re: Quadrex Aviation Safety Risk Assessment for Skydiving Activities at the Vance Brand Airport (the "Quadrex Report")

Dear Mr. Slayter and Ms. Roth:

Thank you for meeting with us to provide Mile-Hi with information regarding the Quadrex Report commissioned by the City of Longmont. As you requested, attached are specific comments regarding the report. Taking a step back from the granular and often inaccurate and uninformed minutiae of the report, it is important to understand that Mile-Hi Skydiving has an exemplary record of skydiving safety in the context of an inherently dangerous activity. Mile-Hi's safety regime is in full compliance with the requirements of the FAA and the recommendations of the United States Parachute Association, an FAA-recognized, non-governmental safety association. Mile-Hi's pilots and skydivers participate in extensive training and must meet stringent safety requirements and certifications. No amount of nit-picking should be allowed to obscure these fundamental facts.

We question the City of Longmont's motivations in commissioning the Quadrex Report. Why did the City pay approximately \$27,000.00 in taxpayer funds to Quadrex when the FAA (not Quadrex) --- by law -- is the final arbiter regarding airport safety? If an airport sponsor (the City) is truly concerned about skydiving safety, the established procedure is for the sponsor to contact the FAA and request that the FAA conduct an assessment (free of charge), using personnel properly trained in the FAA 8900.1 Risk Assessment for Parachuting Operations at an Airport (the "Standards"). To our knowledge, the City did not contact the FAA, and Dr. Byers, the chief

Mr. David Slayter
Ms. Jaime Roth
May 24, 2019
Page 2

architect of the Quadrex Report, has not been trained in the Standards. Our belief is that the City engaged a "hired gun" in order to buttress a pre-determined outcome in line with the political motivations of certain key players in Longmont's government.

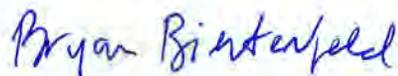
We also question the City's commitment to safety because it has arbitrarily and unilaterally reduced the size of the landing zone from 1.7 million square feet to 338,000 square feet. For over 23 years, skydivers were able to land in a much larger area of unused land at the airport. That land is still unused and is currently available to provide a much higher margin of error for skydiver safety. Yet, the City has reduced the landing zone to a "postage stamp" and threatened Mile-Hi with exorbitant fees for skydivers who land in the unused area - whether as a result of wind variations or other circumstances beyond their control.

The City's secret installation of video cameras to record skydivers without their knowledge and its serial adoption of increasingly restrictive, unwarranted and unlawful regulations is pure harassment. Regulation of safety at airports is solely the purview of the FAA, not the City. Through its actions, the City has forced Mile-Hi to file a Part 16 with the FAA, seeking a binding legal determination that the City has unlawfully attempted to usurp the FAA's jurisdiction.

Most American cities and towns value and support their small businesses. Unfortunately, the voices of the "vocal few" seeking to remove skydiving from the airport continue to be heard more loudly by some of those in City government than the voices of the many Longmont citizens who appreciate the recreational opportunities provided by Mile-Hi and value the positive economic impact of Mile-Hi on the City's economy and the Airport's budget.

For the above reasons, and as set forth in more detail in the attached rebuttal, Mile-Hi rejects the Quadrex Report and demands that this letter and the attached rebuttal of the Quadrex Report be provided to the Longmont City Council in connection with its deliberations.

Very truly yours,



Bryan D. Biesterfeld

Encl.
c (w/encl.): Frank Casares

Mile-Hi Skydiving Center Comments on Dr. Byers' Longmont Airport Safety Review

At the request of Dr. David Byers, Mile-Hi Skydiving Center personnel have reviewed both versions of the Quadrex Aviation Safety Risk Assessment for Skydiving Activities at the Vance Brand Airport—the version we originally received from the City is longer than the version that was presented at the May 18, 2019 town hall meeting. We learned that in the process of preparing his assessment, Dr. Byers did not contact the FAA-recognized, non-governmental skydiving safety organization, the United States Parachute Association. Because the USPA was not used as a resource by Dr. Byers, we reached out to the USPA and provided both copies of the assessment. Our comments below include input we received from the USPA.

We note that, by federal law, the Federal Aviation Administration (FAA) is the final authority regarding safety of airport operations and whether an airport's operational safety would be jeopardized by skydiving. Dr. Byers' assessment recognized the absolute federal preemption regarding aviation safety. The first attachment to our comments is page 14-2 from FAA Order 5190.6B, *FAA Airport Compliance Manual*. We've highlighted the text that states that the FAA is the final arbiter regarding aviation safety.

The next attachment, below, is page 10 from FAA Advisory Circular AC 150/5190-7, *Minimum Standards for Commercial Aeronautical Activities* where we have highlighted the section that points out the standard procedure to be followed by an airport sponsor (airport owner), such as Longmont, should there be a concern about skydiving safety at its airport. The sponsor is to contact the FAA, which will then assess whether safe airport operations would be jeopardized. The FAA then conducts an assessment using personnel properly trained in the FAA 8900.1 Risk Assessment for Parachuting Operations at an Airport—something for which Dr. Byers has not been trained.

An FAA Airport Safety Risk Assessment is Performed at no Cost to Longmont

The FAA conducts an airport safety assessment without charge to the airport sponsor. As we at Mile-Hi are Longmont taxpayers, we ask why taxpayer money was spent on a "safety" study by a person who did not have the background or training to conduct a credible assessment and whose results are irrelevant to the FAA, which is the final arbiter of airport safety? We note that Dr. Byers was paid approximately \$27,000 in Longmont taxpayer money as an aviation safety expert with skydiving operations, however, during a meeting we attended at which Dr. Byers spoke, we were astonished when he asked whether parachutes are affected by density altitude. The answer, yes, is something that a relatively new skydiving student or student pilot should be able to answer. We have seen no proof that Dr. Byers has any expertise in skydiving operations.

The USPA has published its Basic Safety Requirements standards for parachute drop zones (PDZ) since at least 1963. (The USPA told us that its BSR files don't go back beyond 1963.) A copy of the current version of the USPA BSR Drop Zone Requirements is the third document at the end of these comments. Dr. Byers' assessment shows that he does not understand the USPA BSRs. The BSRs require a minimal radial distance to named (identified) hazards for

skydivers based on the level of experience of the skydiver. Contrary to Dr. Byers' assertion, the BSRs do not claim that a calculation of the hazard-free PDZ area or diameter results in a preferred PDZ site on an airport. Also, contrary to Dr. Byers's methodology, the BSRs do not describe an area or a number of square feet for a drop zone, such as 338,000, the number that the airport manager has dictated for the PDZ at Longmont. That number came from a year 2011 draft FAA study that was withdrawn shortly after the draft was circulated for comment within the industry. The PDZ guidance in the USPA BSRs was published some 48 years prior to the draft FAA study in 2011. After the draft study was withdrawn, the FAA acknowledged the USPA BSR PDZ standard in FAA Advisory Circular 105-2E, *Sport Parachuting*, a 31-page document available on the internet.

The Safest PDZs Are Located Adjacent to Runways

Without providing any evidence or data, Dr. Byers said that PDZs should not be located adjacent to airport runways. In fact, the truth is that adjacent to a runway, or between a runway and a taxiway may be the safest area for a PDZ because airplanes are going much slower on a taxiway or runway than they are once in the air so it is easier for pilots and skydivers to see and avoid each other. (See and avoid is the procedure mandated by the FAA for traffic separation at airports without control towers such as Longmont.) In the longer of the two assessments by Dr. Byers (not provided at the town hall) he provided an image of the PDZs at Middletown, Ohio. The Middletown, Ohio Airport aerial photo in Dr. Byers' assessment (and shown in document four below) shows that all of the PDZs are immediately adjacent to a runway—a routine and safe practice. The "all licenses" PDZ is lies against runway 8/26, the "B/C/D licenses" PDZ lies against both runways 8/26 and 5/23, and the "D license" PDZ is between and against runway 5/23 and its parallel taxiway. For further reference, the fifth document below is an aerial photo of a busy skydiving center, the Palatka, Florida Airport and its three runways and three PDZs. Note that all three PDZs are immediately adjacent to runways and two of them are in the space between a runway and its parallel taxiway.

Interestingly, the 2011 draft FAA study that Dr. Byers relied upon in his assessment included provisions for flexible PDZ shaping, acknowledging the commonly used rectangular PDZ areas between runways and taxiways—contradicting Dr. Byers' claim that PDZs should not be near runways. While Dr. Byers relied on an obscure, never published, withdrawn FAA study, he failed to mention a very important, published, FAA document that specifically refers to PDZ locations on a non-towered (no control tower) airport (such as Longmont), Advisory Circular 90-66B, *Non-Towered Airport Flight Operations*. (It's 18 pages long and available on the internet.) In Appendix C, it clearly shows a PDZ relative to an airport and the airplane traffic pattern. It shows how parachutes descend inside the airplane traffic pattern toward an area near the center of the airport. Following Dr. Byers' recommendation for the PDZ location could put the parachute descent area within the airplane traffic pattern, where airplanes are traveling fast, potentially increasing the risk of a collision between skydivers and airplanes in flight.

We were interested to hear comments of two pilots at the town meeting regarding Dr. Byers' preferred PDZ site well away from the runway but closer to the airplane traffic pattern. One

wondered whether it would create a conflict with airplane traffic on downwind for runway 29. The other pilot stated that he felt that the assessment done by Dr. Byers was politically motivated rather than being related to safety. Paying for an “expert” selected by the City for a safety study that could be done without cost by the FAA certainly supports that pilot’s opinion.

Object Free Areas Are Legally and Routinely Used by Skydivers

In his report, Dr. Byers erroneously stated that various operations are prohibited within airport Object Free Areas, and that,

“The runway object free area extends outward along the centerline of Runway 11/29 at a distance of 500 feet. The taxiway object free areas for both Taxiway A and B extend outward 65.5 feet from the taxiway centerlines. These criteria establish the general boundaries for considering remaining airport property suitable for siting a drop zone.”

The last sentence is simply not correct. Dr. Byers misunderstands what an Object Free Area (OFA) represents and how it may be used. As seen in the image of Middletown Airport in Dr. Byers’ own assessment and Palatka Airport, below, PDZs are permitted within airport Object Free Areas. The sixth document below is the FAA’s explanation of Object Free Areas in pages 14-18 of its Director’s Determination ruling in the Part 16 Complaint *Skydive Paris, Inc. v. Henry County, Tennessee*, FAA Docket No. 16-05-06. Specifically, the FAA ruled that in certain cases (such as skydiving), “it is operationally sound and not inherently unsafe for flight operations to take place in the OFAs” (at page 18). In addition to skydiving PDZs being in OFAs, the FAA’s Determination referred to such other suitable operations in OFAs as banner towing and airship ground handling.

Dr. Byers was critical of the location of our refueling truck and spotting our airplanes on a runup pad for refueling. His photo showed that the airplane and the truck are spotted outside of the OFA for the taxiway. The airplane is spotted on a runup pad where airplanes routinely stop in preparation for flight. Refueling at that location, away from hangars, parked aircraft and people is one of the safest location on the airport for refueling and minimizes the distance the airplanes must taxi to get to and from the refueling location—and it keeps turning propellers away from people who are routinely walking on the ramp near the airport terminal. The refueling site was selected after a great deal of consideration for safety of all airport users. Dr. Byers’ lack of airport operational experience is reflected in his criticism of the location.

Airspace—“Jets Move Differently”

During the town hall meeting, Dr. Byers said, “For safety reasons it will be necessary to realign the airspace over the airport, claiming compatibility issues with jets, because they move differently.” Frankly, that’s a strange statement, and makes no sense. The same laws of physics and aerodynamics apply to jet airplanes as to piston-powered airplanes. He provided no data to support his assertion that there are compatibility issues between skydivers and jets. The jets

that use Longmont Airport fly at the same landing approach speed as our King Air jump aircraft. The FAA reserves all rights to regulate the National Airspace System (NAS). There is not, nor ever was, a provision for an airport sponsor to regulate any aspect of the NAS. When an aircraft is not on the ground, it is in the NAS, and anything that the aircraft might do once in the NAS is subject exclusively to federal regulations. The absolute sovereignty of the federal government in airspace regulation is outlined in Title 49 USC §40103. Our jump aircraft operations are subject to a Letter of Agreement with Denver Air Traffic Control and we operate in the airspace above Longmont in accordance with that LOA. Dr. Byers does not understand that the City of Longmont may not “realign” federal airspace or the operations within that airspace.

Skydiver Training

The assessment claims that, “...since among all the users of the airport, skydivers are not required to undergo any formal training regarding how to operate in an airport environment.” That is simply untrue. Dr. Byers did not attend our skydiving instructional classes, so he has no idea what training student skydivers receive before they jump. Our student skydivers are taught more about applicable Federal Aviation Regulation than student pilots (our personnel include pilots, so we know what training student pilots receive). Skydivers at Longmont are also briefed on the PDZ landing area and its traffic pattern. The USPA Skydiver’s Information Manual is an excellent open-source reference that could have been used by Dr. Byers prior to making unsubstantiated claims. The 228-page manual is available at http://uspa.org/Portals/0/files/Man_SIM.pdf.

Dr. Byers asserted that a PDZ near the runway would often require that skydivers fly over the runway, something he claims is prohibited by the FAA. Again, that is untrue. According to the FAA in its AC 105-2E guidance, “Flying a parachute over runways at low altitudes should be avoided where possible.” Here, our procedure is to not fly over the runway below 1,000 feet above the ground—which is an industry practice.

We close with noting that for some reason Dr. Byers was not asked to evaluate the safety of skydiving onto the area that made up the PDZ at Longmont for over 23 years and consisted of over 1,700,000 square feet adjacent the southwest side of the runway and which was arbitrarily reduced in size to 338,000 square feet by the City in the last year. We note that all three of the PDZ sites reviewed by Dr. Byers are within what had been the PDZ that we used safely for over 23 years. As a result, we were pleased to see that by approving the three PDZs that together make up a significant portion of the PDZ that we used for 23 years, Dr. Byers therefore found that the large PDZ we used for so long was safe—so there would be no safety prohibition on using the original PDZ once again.

Mile-Hi Skydiving Center
May 24, 2019

14.3. Restricting Aeronautical Activities. While the airport sponsor must allow use of its airport by all types, kinds, and classes of aeronautical activity, as well as by the general public, Grant Assurance 22, *Economic Nondiscrimination*, also provides for a limited exception: “the airport sponsor may prohibit or limit any given type, kind, or class of aeronautical use of the airport if such action is reasonable and necessary for the safe operation of the airport or necessary to serve the civil aviation needs of the public.” A prohibition or limit may be based on safety or on a conflict between classes or types of operations. This generally occurs as a conflict between fixed-wing operations and another class of operator that results in a loss of airport capacity for fixed-wing aircraft. Any restriction proposed by an airport sponsor based upon safety and efficiency, including those proposed under Grant Assurance 22(i), must be adequately justified and supported.

Prohibitions and limits are within the sponsor’s proprietary power only to the extent that they are consistent with the sponsor’s obligations to provide access to the airport on reasonable and not unjustly discriminatory terms and other applicable federal law.

The Associate Administrator for Airports, working in conjunction with Flight Standards and/or the Air Traffic Organization, will carefully analyze supporting data and documentation and make the final call on whether a particular activity can be conducted safely and efficiently at an airport. In all cases, the FAA is the final arbiter regarding aviation safety and will make the determination regarding the reasonableness of the sponsor’s proposed measures that restrict, limit, or deny access to the airport.

The FAA, not the sponsor, is the authority to approve or disapprove aeronautical restrictions based on safety and/or efficiency at federally obligated airports.

14.4. Minimum Standards and Airport Regulations. An airport proprietor may adopt reasonable minimum standards for aeronautical businesses and adopt routine regulations for use and maintenance of airport property by aeronautical users and the public. These kinds of rules typically do not restrict aeronautical operations, and therefore would generally not require justification under Grant Assurance 22(i). For example, an airport sponsor may require a reasonable amount of insurance as part of their minimum standards.

a. Type, Kind, or Class. Grant Assurance 22(i) refers to the airport sponsor’s limited ability to prohibit or limit aeronautical operations by whole classes or types of operation, not individual operators. If a class or type of operation may cause a problem, all operators of that type or class would be subject to the same restriction. For example, if the sponsor of a busy airport finds that skydiving unacceptably interferes with the use of the airport by fixed-wing aircraft, and the FAA agrees, the sponsor may ban skydiving at the airport. However, the sponsor could not ban some skydiving operators and allow others to operate. If a sponsor believes there is a safety issue with the flight operations of an individual aeronautical operator, rather than a class of operations, the sponsor should report the issue to the Flight Standards Service as well as bringing it to the attention of the operator’s management.

(4) Can the applicant secure sufficient airport space to provide facilities so work being done is protected from weather elements, dust, and heat? The amount of space required will be directly related to the largest item or aircraft to be serviced under the operator's rating.

(5) Will suitable shop space exist to provide a place for machine tools and equipment in sufficient proximity to where the work is performed?

(6) What amount of space will be necessary for the storage of standard parts, spare parts, raw materials, etc.?

(7) What type of lighting and ventilation will the work areas have? Will the ventilation be adequate to protect the health and efficiency of the workers?

(8) If spray painting, cleaning, or machining is performed, has sufficient distance between the operations performed and the testing operations been provided to prevent adverse affects on testing equipment?

f. Skydiving. Skydiving is an aeronautical activity. Any restriction, limitation, or ban on skydiving on the airport must be based on the grant assurance that provides that the airport sponsor may prohibit or limit aeronautical use for the safe operation of the airport (subject to FAA approval). The following questions present reasonable factors the sponsor might contemplate when developing minimum standards that apply to skydiving:

(1) Will this activity present or create a safety hazard to the normal operations of aircraft arriving or departing from the airport? If so, has the local Airports District Office (ADO) or the Regional Airports Office been contacted and have those FAA offices sought the assistance from FAA Flight Standards (FS) and Air Traffic (AT) to assess whether safe airport operations would be jeopardized?

(2) Can skydiving operations be safely accommodated at the airport? Can a drop zone be safely established within the boundaries of the airport? Is guidance in FAA AC-90-66A *Recommended Standards Traffic Patterns and Practices for Aeronautical Operations at Airports Without Operating Control Towers*, 14 CFR Part 105 and United States Parachute Association's (USPA) *Basic Safety Requirements* being followed?

(3) What reasonable time periods can be designated for jumping in a manner consistent with Part 105? What experience requirements are needed for an on-airport drop zone?

(4) What is a reasonable fee that the jumpers and/or their organizations can pay for the privilege of using airport property?

(5) Has the relevant air traffic control facility been advised of the proposed parachute operation? Does the air traffic control facility have concerns about the efficiency and utility of the airport and its related instrument procedures?

(6) Will it be necessary to determine the impact of the proposed activity on the efficiency and utility of the airport, related instrument approaches or nearby Instrument Flight Rules (IFR)? If so, has FAA Air Traffic reviewed the matter and issued a finding?

g. Ultralight Vehicles and Light Sport Aviation. The operation of ultralights and light sport aircraft are aeronautical activities and must, therefore, be generally accommodated on airports that have been

instructional rating holder and pilot-in-command of an aircraft in flight.

9. All student jumps, including tandems, must be completed between official sunrise and sunset.

H. WINDS [S]

Maximum ground winds

1. For all solo students
 - a. 14 mph for ram-air canopies
 - b. 10 mph for round reserves
2. For licensed skydivers are unlimited

I. MINIMUM OPENING ALTITUDES

Minimum container opening altitudes above the ground for skydivers are:

1. Tandem jumps—4,500 feet AGL [E]
2. All students and A-license holders—3,000 feet AGL [E]
3. B-license holders—2,500 feet AGL [E]
4. C- and D-license holders—2,500 feet AGL [S] (waiverable to no lower than 2,000 feet AGL)

J. DROP ZONE REQUIREMENTS

1. Areas used for skydiving should be unobstructed, with the following minimum radial distances to the nearest hazard: [S]
 - a. solo students and A-license holders—330 feet
 - b. B- and C-license holders and all tandem skydives—165 feet
 - c. D-license holders—40 feet
2. Hazards are defined as telephone and power lines, towers, buildings, open bodies of water, highways, vehicles, and clusters of trees covering more than 32,292 square feet.
3. Manned ground-to-air communications (e.g., radios, panels, smoke, lights) are to be present on the drop zone during skydiving operations.

K. PRE-JUMP REQUIREMENTS

The appropriate altitude and surface winds are to be determined prior to conducting any skydive.

L. EXTRAORDINARY SKYDIVES

1. Night, water, and demonstration jumps are to be performed only with the advice of the appropriate USPA S&TA, Instructor Examiner, or Regional Director.
2. Pre-planned breakaway jumps are to be made by only class C- and D-license holders using FAA TSO'ed equipment. [E]

3. Demonstration jumps into Level 2 areas require a D license with a USPA PRO Rating for all jumpers, including both tandem jump participants. [E]
4. Contact canopy formation activity is prohibited on tandem jumps. [E]
5. Tandem jumps into stadiums are prohibited. [E]
6. Any person performing a wingsuit jump must have at least 200 skydives, and hold a current skydiving license. [E]
7. Freefall within 500 feet vertically or horizontally of any student under parachute, including tandem students, is prohibited. (This requirement excludes scenarios where—during a training jump—a student's instructor(s) and videographer may be within this distance.) Freefall within 500 feet vertically or horizontally of any licensed skydiver under canopy requires prior planning and agreement between the canopy pilot and the skydiver in freefall.

M. PARACHUTE EQUIPMENT

1. FAA regulations [FAR 105.19] require that when performing night jumps, each skydiver must display a light that is visible for at least three statute miles from the time the jumper is under an open parachute until landing.
2. All students are to be equipped with the following equipment until they have obtained a USPA A license:
 - a. a rigid helmet (except tandem students)
 - b. a piggyback harness-and-container system that includes a single-point riser release and a reserve static line.
 - c. a visually accessible altimeter (except tandem students)
 - d. a functional automatic activation device that meets the manufacturer's recommended service schedule
 - e. a ram-air main canopy suitable for student use
 - f. a steerable reserve canopy appropriate to the student's weight
 - g. for freefall, a ripcord-activated, spring-loaded, pilot-chute-equipped main parachute or a bottom-of-container (BOC) throw-out pilot chute
3. Students must receive additional ground instruction in emergency procedures and deployment-specific

information before jumping any unfamiliar system.

4. For each harness-hold jump, each AFF rating holder supervising the jump must be equipped with a visually accessible altimeter.
5. All skydivers wearing a round main or reserve canopy and all solo students must wear flotation gear when the intended exit, opening, or landing point is within one mile of an open body of water (an open body of water is defined as one in which a skydiver could drown). [S]

N. SPECIAL ALTITUDE EQUIPMENT AND SUPPLEMENTARY OXYGEN

Supplementary oxygen available on the aircraft is mandatory on skydives made from higher than 15,000 feet (MSL).

PRELIMINARY

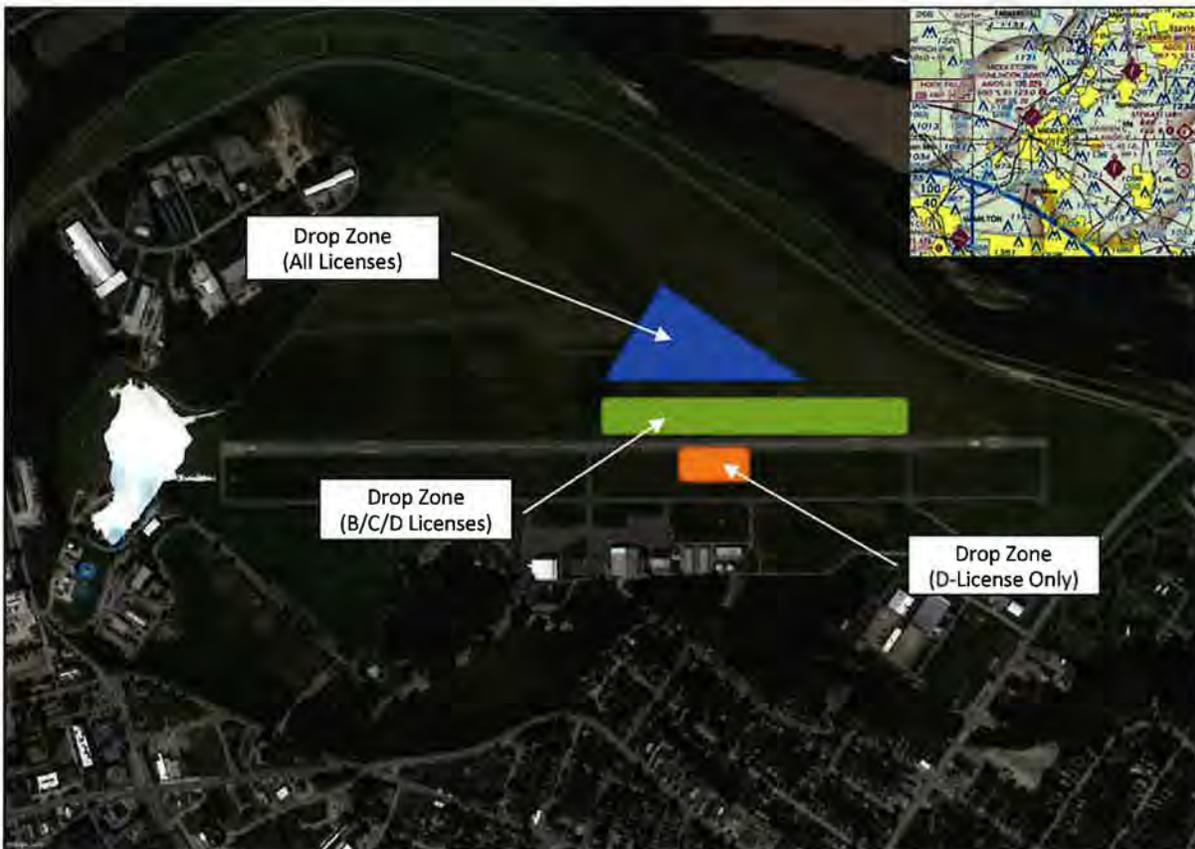
Rules & Regulations

The City is currently working on preparing a set of Airport Rules and Regulations as part of its Master Plan Update which will include skydiving activity.

Minimum Standards for Commercial Aeronautical Activities

The City is also working on preparing a set of Minimum Standards as part of its Master Plan Update which will include commercial skydiving operators.

Figure 10
Middletown Regional Airport



Other Remarks

Start Skydiving advertises itself as the Number 1 ranked Drop Zone in the world however, the basis for that assertion is unknown.

Until July of 2018, Start Aviation Services, the Airport's FBO (and owner of Start Skydiving) was also contracted by the City to serve as the Airport Manager, which created inherent conflicts of interest.

The City operates an Automated Weather Observation Station (AWOS) which announces skydiving activities in progress as part of the weather information message.



“307. OBJECT FREE AREA. The runway object free area (OFA) is centered on the runway centerline. The runway OFA clearing standard requires clearing the OFA of above ground objects protruding above the runway safety area edge elevation. Except where precluded by other clearing standards, it is acceptable to place objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes and to taxi and hold aircraft in the OFA. Objects non-essential for air navigation or aircraft ground maneuvering purposes are not to be placed in the OFA. This includes parked airplanes and agricultural operations...Extension of the OFA beyond the standard length to the maximum extent feasible is encouraged.” [See AC 150/5300-13, *Airport Design*, Change 8 dated 9/30/04.]

For this Airport, which has an existing design reference code of B-II, FAA design standards indicate that the OFA width should be 500ft (150m) and the OFA length beyond the runway end should be 300ft (90m). [See AC 150/5300-13, Change 8 Table 3-1.]

The parties argue throughout the pleadings whether a ‘skydiver’ constitutes an acceptable protrusion to the OFA. Complainant asserts “Parachutists, as aeronautical users of the airport, are part of the ‘aircraft operations’ that are permitted in the object free zone.” [FAA Exhibit 1, Item 1.] Respondent, however, adheres to a strict interpretation of FAA’s OFA definition as stated above in AC 150/5300-13, Section 307. [FAA Exhibit 1, Items 5 & 7.]

Respondent further cites FAA AC 90-66A, *Recommended Standard Traffic Patterns and Practices for Aeronautical Operations at Airports Without Operating Control Towers*, which states,

“9. Other Traffic Patterns.

e. Parachute Operations

(4.) *When a drop zone has been established on an airport, parachutists are expected to land within the drop zones. At airports that have not established drop zones, parachutists should avoid landing on runways, taxiways, aprons, and their associated safety areas. Pilots and parachutists should both be aware of the limited flight performance of parachutes and take steps to avoid any potential conflicts between aircraft and parachute operations.”* (emphasis added)

Complainant rejects Respondent’s safety argument by stating “the parachute drop zones at the airport do not contravene any FAA policy and that parachuting at the airport is safe.” [FAA Exhibit 1, Item 6.] Complainant believes that the current drop zone sitings are consistent with FAA design and operational guidance. [FAA Exhibit 1, Item 6.]

Complainant claims that the County “mistakenly assumes that runways, taxiways, aprons, runway safety areas and object free areas constitute hazards.” [FAA Exhibit 1, Item 6.]

Complainant believes that these are all areas which can safely accommodate parachute jumping, especially at a small airport like Henry County. [FAA Exhibit 1, Item 6.]

Restrictions Under Grant Assurance 22

Under Grant Assurance 22, *Economic Nondiscrimination*, an airport owner must make the airport available for public use on reasonable terms and without unjust discrimination to all types, kinds, and classes of aeronautical activities, including commercial aeronautical activities offering services to the public.

In this case, the first question to be answered is whether parachute jumping is considered an aeronautical activity. FAA Order 5190.6A provides that “parachute jumping is an aeronautical use.” [See Par 4-9(b).] Therefore, parachute jumping activities must normally be accommodated at a federally-obligated airport.

Here, Complainant has not been denied access to locate and operate its business on the Airport; rather it has been denied reasonable access to use established drop zones on airport property.

Safety Based Restrictions

While FAA Order 5190.6A establishes that an airport owner must allow use by all types, kinds, and classes of aeronautical users, the obligations do provide for exceptions, specifically when the use would compromise safety, efficiency, or utility of the airport. [See FAA Order 5190.6A, Par 4-8(a).] Additionally, “requests to airport owners from parachute jumping clubs, organizations, or individuals to establish a drop zone within the boundaries of an airport should be evaluated on the same basis as other aeronautical uses of the airport.” [See FAA Order 5190.6A, Par 4-9(b).]

Specific to this case, “any restriction, limitation, or ban against parachute jumping on the airport must be based on the grant assurance which provides that the sponsor may prohibit or limit an aeronautical use for the safe operation of the airport when necessary to serve the civil aviation needs of the public.” [See FAA Order 5190.6A, Par 4-9(b).]

Respondent, concerned over the safety of continued operations on the established drop zones, withdrew its authorization for Complainant to use the established drop zones on the Airport. This action essentially prohibited use of the drop zones since 14 CFR § 105.23(b) requires skydivers to obtain prior approval of airport management before they use an on-airport drop zone at a non-towered airport. [FAA Exhibit 1, Item 1, Attachment 8.]

FAA Evaluation of Safety Based Restrictions

For the purpose of making a final determination on reasonableness when aviation safety is at issue, FAA safety determinations pursuant to the Federal Aviation Regulations take precedent over any airport sponsor views on safety as well as any local ordinances or local actions taken in regard to safety. [See Florida Aerial Advertising v. St. Petersburg-Clearwater International Airport, FAA Docket No. 16-03-01, Director’s Determination (December 18, 2003).] This is especially true for the purpose of determining compliance

with Federal obligations in cases where restrictions are imposed in the interest of safety. The FAA, on behalf of the United States, preempts flight safety, flight management, and the control of navigable airspace under 49 U.S.C. § 40103.

The reasonableness of the restriction and the unjustly discriminatory aspect of the restriction can only be determined by a final FAA determination, in accordance with 49 U.S.C. §§ 40103 and 47122, and FAA Order 5190.6A, Par 4-8(a), which states:

“In cases where complaints are filed with FAA, Flight Standards and Air Traffic should be consulted to help determine the reasonableness of the airport owner’s restrictions. It may be appropriate to initiate an FAA airspace study to determine the efficiency and utility of the airport when considering the proposed restriction. In all cases the FAA will make the final determination of the reasonableness of the airport owner’s restrictions, which denied or restricted use of the airport.”

Both Complainant and Respondent requested that FAA conduct an airspace study (safety study) regarding use of the established on-airport drop zones. [FAA Exhibit 1, Item 1, Attachments 2, 4, & 5.]

- *June 2004 Safety Study.*

The FAA’s Memphis ADO coordinated initiation of the safety study. In accordance with FAA Order 5190.6A Par 4-8(a), the ADO consulted with the Memphis FSDO and representatives of the Memphis Air Traffic Control Tower.

On June 12, 2004, inspectors from FAA’s Memphis FSDO conducted a site visit as part of its safety review. [FAA Exhibit 3, Items 1 & 2.] Representatives of both the FSDO and Air Traffic were present. Additionally, a representative of USPA attended.¹⁰ They found that the drop zone at the Airport (only one drop zone was in use at the time of inspection) “was run in a safe and professional way.” [FAA Exhibit 3, Item 1 & 2.] In a separate letter dated June 17, 2004, Air Traffic’s representative noted that parachute jumping at this Airport “does not appear to have any negative impact on other aeronautical activities or air traffic services provided.” [FAA Exhibit 3, Item 2.]

In a July 8, 2004 letter, FAA’s Memphis ADO relayed the FSDO and Air Traffic Control Tower findings to the parties (both Complainant and Respondent). [FAA Exhibit 1, Item 1, Attachment 7.] FAA’s official position regarding the safety of the drop zone was stated as follows:

“After carefully reviewing current operations at the airport, the FAA has determined that the parachute drop zone can be operated in a safe and efficient manner on the airport.” [FAA Exhibit 1, Item 1, Attachment 7.]

¹⁰ FAA recognizes USPA as the national organization representing the interests of skydivers in the United States. As previously noted, USPA issues licensing and rating certificates and issues basic safety requirements in addition to those described under FAA regulations.

In its Rebuttal, Respondent correctly recognizes FAA's authority in making determinations regarding aviation safety. [FAA Exhibit 1, Item 7.] However, Respondent, in an August 3, 2004 letter to Complainant, disagrees with FAA's June 2004 safety determination and believes that "the airport is too small" and that "parachutists far too often miss the designated drop zone." [FAA Exhibit 1, Item 1, Attachment 8.] Respondent asserts that the ADO's "decision was based on information received from the Flight Standards District Office which overlooked regulations pertinent to this particular situation while conducting an on site investigation." [FAA Exhibit 1, Item 7.]

However, in its Rebuttal, Respondent reverses its former position and denies that it disputes FAA's determination that a drop zone can be safely accommodated on the airport. Respondent provides,

"A drop zone for 'D' license holders can be managed and accommodated as is recognized by the Complainant in Exhibit 1 of this rebuttal. Drop zones for the less experienced students and A, B, and C license holders can not be accommodated any longer within the Airport perimeters due to the drop zone size requirements established by the USPA Skydiver Information Manual Section 2-1 H (Exhibit 5 of the Answer)." [FAA Exhibit 1, Item 7.]

Again, FAA Order 5190.6A recites FAA's documented policy for reviewing safety based restrictions. In this case, the ADO correctly applied established policy for reviewing Respondent's restriction when it sought assistance from the FSDO. [See FAA Order 5190.6A, Par 4-8(b).]

FAA has statutory authority in making determinations of safety. [See 49 U.S.C. § 40101, *et seq.*, and 40103(b).] While Respondent may or may not agree with FAA's safety determination, FAA is final arbiter of matters regarding aviation safety.

When making 14 CFR Part 16 findings regarding matters of aviation safety, the Director may rely on other offices within the FAA for their safety expertise and experience. In this case, the Director relies on findings made by the Flight Standards Service of the FAA.

Upon reviewing the complaint, the Director recognizes that Respondent partially based its prohibition on guidance produced by the Office of Airport Safety and Standards. As previously discussed, AC 150/5300-13, *Airport Design*, provides FAA design standard guidance regarding, among other things, runway OFAs. Respondent partially based its prohibition on the fact that the drop zones overlap the Airport's runway OFA. Respondent cites AC 150/5300-13, which states "objects non-essential for air navigation or aircraft ground maneuvering purposes are not to be placed in the OFA." Respondent asserts that skydivers are 'objects' which do not meet the criteria established in AC 150/5300-13 since they are not essential for air navigation or related to aircraft ground maneuvering. [FAA Exhibit 1, Item 5.]

Recognizing that this type of interpretation may not be frequently observed and reviewed by other FAA offices, the Director deemed it appropriate to request the Flight Standards Service review the June 2004 safety study. Therefore, the Director requested that the Certification and General Aviation Operations Branch, a national branch within the Flight Standards Service, re-examine the situation at Henry County Airport to determine whether skydiving operations could be safely accommodated taking into consideration the guidance in AC 150/5300-13 regarding runway OFAs. [FAA Exhibit 3, Item 3.]

▪ *November 2005 Review of June 2004 Safety Study.*

By memorandum to the Director dated November 16, 2005, the Manager of the General Aviation and Commercial Division for FAA's Flight Standards Service reaffirmed its June 2004 safety determination and stated that "the Flight Standards Service stands by its initial findings, concluding that the aforementioned drop zones may be safely accommodated at this airport." [FAA Exhibit 3, Item 4.]

Flight Standards Service found that "the coexistence of an OFA with an established drop zone is not inherently unsafe, and that each situation must be judged on its individual merits." [FAA Exhibit 3, Item 4.] Flight Standards Service notes "OFAs are established to limit interference with navigational facilities and to reduce the risk of collision for aircraft operating in proximity to the runway." [FAA Exhibit 3, Item 4.]

Of specific relation to this case, Flight Standards Service provided,

"While we would not presume to call skydivers 'aircraft', there exists a long-standing precedent for affording skydivers the same operational latitude given to an aircraft in flight or while taxiing...It is also worth noting that OFAs speak to stationary objects that will remain in a fixed position (such as a parked aircraft) for some indeterminate period of time. This is not the case with skydivers who will land and quickly vacate the OFA." [FAA Exhibit 3, Item 4.]

Flight Standards Service also noted that in certain cases, it is operationally sound and not inherently unsafe for flight operations to take place in the OFAs. Among other examples, Flight Standards Service referenced that banner towing operations and airship ground handling sometimes take place in areas adjacent to runways and taxiways. They asserted "it seems only logical that if the guidance provided in AC 150/5300-13 permits these types of operations in the OFAs, skydiving operations could also be safely accommodated."

Based on this review, the Director concludes that a drop zone can be reasonably and safely accommodated at the Henry County Airport.

Airport's Proprietary Rights

While the Director concludes that an on-airport drop zone can be reasonably accommodated, the Director recognizes and acknowledges Respondent's right as a proprietor to designate the location of on-airport drop zones.

DEAR: Dr. David Byers

5/24/2019

Thank you for your presentation on Saturday 5/18/19.

There were a few things that seemed to be left unsaid. Thought I would just send you a short note with a few more points.

It was very good that you concluded Mile- Hi should be a part of Vance Brand Airport. There is concern you were not fully aware of the City's motivation for hiring you. In the past and currently, there has never been a concern about the professional capabilities of Mile- Hi's staff and/or pilots. I think the fact that the FAA had no concerns speaks volumes. You are aware that MILE Hi's Pilots talk to center on every jump run and they have continuous communications. David Slayter mentioned that the City had approached the FAA about a safety study. If the FAA had concerns about MILE-Hi's safety or procedures, they would have addressed these on their own.

I hope it became clear to you that your drop zone suggestion was not well received. The point here is that the current drop zone area has generally been the drop zone since sky diving began at the airport. Only when the city decided to charge unrealistic lease rates did the discussion of small landing zones come into play. The current area has proven safe for decades both to jumpers and planes. Having been at the airport since 1996, I do not remember an incident between a skydiver and a plane. The drop zone location should be based on the considerable experience of Mile-Hi's needs and understanding of the environment. Your short visit and admitted lack of skydiving experience simply should allow you to move off your selection suggestion. The diary of your visit really highlighted your understandable lack of working knowledge of a skydiving business.

I think you should also know you may have not been adequately briefed by the City to their work and the real motivation for a safety study. You are presumably aware of the activist Kimberly Gibbs and her group. She unfortunately has had a negative impact on the airport – by her failed legal actions against Mile- Hi and the Airport in general. Mr. Slayter should have given you a strong idea of her negative impact and continuing political activism.

What seemingly caused the safety study was the death of a skydiver – who went unnoticed and was not found till the next morning. The answer to this is it was in no way a safety issue except for the Sky Diver. The NTSB found the cause, jumper error.

Another point you said the city had no development plans in the areas of the proposed drop zones. Here again the city did not give you adequate information. There is an ongoing engineering study in progress to develop the area of your preferred drop zone. It seems odd they would have not taken that selection out of the running.

Your other suggestion was for an SOP document. You mentioned there was one from 1995. The city has apparently not seen a reason for a new one. If you had been given more information About Mile High you would have recognized they have strong pilot and jump procedures and their success with thousands and thousands of repeat customers speaks to quality of their OPERATING PROCEDURES. The fuel truck and loading areas were again nit picking issues I am sure where feed to you by someone. I You indicated that you had not spoken with anyone from MILE HIGH it seems difficult to reach your conclusions without their input and experience.

There is no way to tell if the input from the meeting has given you a new understanding or if it effects the cities reasoning. This has been framed as a Safety Risk Assessment. Certainly the overall results Should be the safety Risks are minimal and can be mutually addressed. The greatest risk are For the JUMPERS A risked they assume. Hopefully this is some friendly input. I have watched this

Unjustified battle between the city and MILE HIGH grow. It seems, as an outsider, all of the battle has been generated by the city and getting more intense recently. This study demonstrates deliberate discrimination toward the Business. As the city and Mile High head to court it would seem you would want to be aware of the entire picture not just your expert for a day input. I would hope with a greater understanding your final suggestion will be framed knowing this report will likely part of the litigation.

RON KRENZEL

Attachment G

Skydiving Regulations & Guidance

**Excerpts from 14 CFR Part 105
PARACHUTE OPERATIONS**

§105.23 Parachute operations over or onto airports.

No person may conduct a parachute operation, and no pilot in command of an aircraft may allow a parachute operation to be conducted from that aircraft, over or onto any airport unless—

(a) For airports with an operating control tower:

(1) Prior approval has been obtained from the management of the airport to conduct parachute operations over or on that airport.

(2) Approval has been obtained from the control tower to conduct parachute operations over or onto that airport.

(3) Two-way radio communications are maintained between the pilot of the aircraft involved in the parachute operation and the control tower of the airport over or onto which the parachute operation is being conducted.

(b) For airports without an operating control tower, prior approval has been obtained from the management of the airport to conduct parachute operations over or on that airport.

(c) A parachutist may drift over that airport with a fully deployed and properly functioning parachute if the parachutist is at least 2,000 feet above that airport's traffic pattern, and avoids creating a hazard to air traffic or to persons and property on the ground.

Excerpts from FAA Advisory Circular 105-2E
SPORT PARACHUTING

4. BACKGROUND.

a. Parachuting as an FAA-Recognized Aeronautical Activity. Sport parachuting (skydiving) continues to increase in popularity and is an FAA-recognized aeronautical activity even though parachutists are not certificated airmen. As an FAA-recognized aeronautical activity, regulations require airports that have received FAA funding to accommodate this activity unless the FAA determines that compatibility issues prohibit parachuting operations at a particular airport. FAA Order 5190.6, FAA Airport Compliance Manual, has more information regarding airport obligations.

5. SKYDIVER SAFETY

f. Parachute Landing Areas. The FAA recommends that areas used as parachute landing areas remain unobstructed, with sufficient minimum radial distances to the nearest hazard. The guidelines in the USPA's BSRs can be used in determining if the landing area is adequate.

6. PARACHUTE OPERATIONS ONTOAIRPORTS.

a. Stipulations for Landing at or Flying Over an Airport. Most parachute operations take place at airports, including having the parachute landing area located on the airport property. Section 105.23 requires approval from airport management prior to skydiving onto any airport. However, § 105.23(c) allows a parachutist to drift over an airport with an open parachute without airport management approval as long as the parachutist remains at least 2,000 feet above that airport's traffic pattern. Airport traffic patterns are generally 1,000 to 1,500 feet above ground level (AGL).

b. Additional Aviation Activities. A large number of airports that accommodate parachute operations also have different kinds of aviation activities taking place simultaneously, including flight training, glider and helicopter operations, emergency medical services, sightseeing operations, and aerobic practice over or in the immediate vicinity of the airport. Many airports accommodate a large volume of transient traffic during skydiving operations.

c. Shared Facility Airports. The FAA recommends that shared facility airports have operating procedures so that each activity can operate safely by knowing the procedures for each of the other activities. Representatives of each type of activity can operate more effectively by knowing the procedures for each of the other activities. Representatives of each type of airport user group should develop procedures specific to their activity and share these procedures with other user groups. Airport management must ensure that airport policies and procedures are kept current, which can be accomplished via regularly scheduled meetings with all airport user groups.

(1) Traffic Patterns. With a minimum parachute opening altitude of 2,000 feet AGL (most parachutists open much higher), parachutes are nearly always open 800 feet or more above the traffic pattern altitude for any airport. Parachutes descend relatively slowly and are easy for pilots to acquire visually. Parachutists and pilots have a shared responsibility to see and avoid each other. Refer to AC 90-66, Recommended Standard Traffic Patterns and Practices for Aeronautical Operations at Airports without Operating Control Towers, for information on traffic patterns and parachute operations.

(2) Parachute Landings on Airports. Airports may designate suitable parachute landing areas. While skydivers attempt to land in such areas, at times there may be inadvertent landings in other grass or

hard-surfaced areas. This could include landings on runways, taxiways, and other hard-surfaced areas. Areas such as runways, taxiways, clearways, and Obstacle Free Zones (OFZ) are not prohibited areas but should not be designated as a primary landing area and should be vacated as soon as practical. Flying a parachute over runways at low altitudes should be avoided where possible. The FAA recommends that airport management work with parachute operators to develop standard operating procedures (SOP) for activities conducted by parachutists. Airports that receive or have received Federal funding or grant assurances may have additional requirements or restrictions to parachute landing areas. For additional information, refer to Order 5190.6; AC 150/5190-7, Minimum Standards for Commercial Aeronautical Activities; and AC 150/5300-13, Airport Design.

**Excerpts from FAA Advisory Circular 90-66B
NON-TOWERED AIRPORT FLIGHT OPERATIONS**

12.5 Parachute Operations.

12.5.1 All activities are normally conducted under a NOTAM noting the location, altitudes, and time or duration of jump operations. The Chart Supplement lists airports where permanent Drop Zones (DZ) are located.

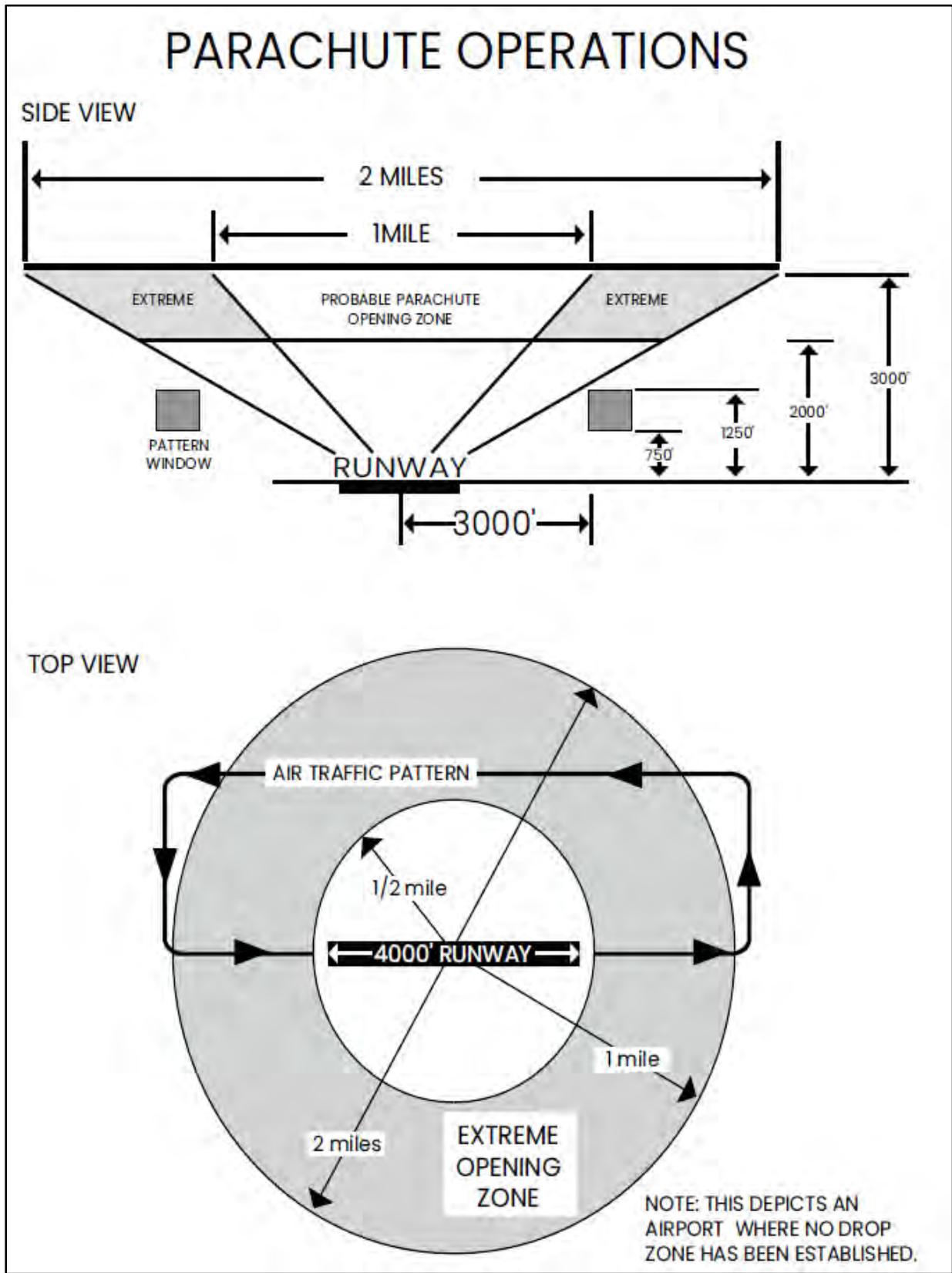
12.5.2 Jumpers normally exit the aircraft either above, or well upwind of, the airport and at altitudes well above traffic pattern altitude. Parachutes are normally deployed between 2,000 feet and 5,000 feet AGL and can be expected to be below 3,000 feet AGL within 2 miles of the airport.

12.5.3 Pilots of jump aircraft are required by part 105 to establish two-way radio communications with the ATC facility that has jurisdiction over the affected airspace prior to jump operations for the purpose of receiving information in the aircraft about known air traffic in the vicinity. In addition, when jump aircraft are operating at or in the vicinity of an airport, pilots are also encouraged to provide advisory information on the CTAF. For example, "Chambersburg traffic, jumpers away over Chambersburg."

12.5.4 When a DZ has been established at an airport, parachutists are expected to land within the DZ. At airports that have not established DZs, parachutists should avoid landing on runways, taxiways, aprons, and their associated safety areas. Pilots and parachutists should both be aware of the limited flight performance of parachutes and take steps to avoid any potential conflicts between aircraft and parachute operations.

12.5.5 Appendix C depicts operations conducted by parachutists.

Appendix C



**Excerpts from
FAA ORDER 5190.6B
AIRPORT COMPLIANCE MANUAL**

8.8. Exclusive Rights Violations.

- a. **Restrictions Based on Safety and Efficiency.** An airport sponsor can deny an individual or prospective aeronautical service provider the right to engage in an on-airport aeronautical activity for reasons of safety and efficiency if the kind of activity (e.g., skydiving, sailplanes, ultralights) would adversely impact the safety and efficiency of another aeronautical activity at the airport, typically fixed-wing operations. An aeronautical operator holding an FAA certificate is presumed to be a safe operator, and the airport sponsor may not deny access to an individual certificated operator on the basis of safety of its aeronautical operations. Any safety concerns with an operator would need to be brought to the attention of the FAA. However, the airport sponsor may find that an aeronautical activity as a whole is inconsistent with the safety and efficiency of the airport and may, therefore, not permit that activity at all, subject to concurrence by the FAA. The airport sponsor may also prohibit access by an individual or individual service provider that has not complied with the airport's minimum standards or operations rules for safe use of airport property.

Any denial based on safety must be based on reasonable evidence demonstrating that airport safety will be compromised if the applicant or individual is allowed to engage in the proposed aeronautical activity. Airport sponsors should carefully consider the safety reasons for denying an aeronautical service provider or individual the opportunity to engage in an aeronautical activity if the denial has the possible effect of limiting competition or access.

The FAA is the final authority in determining what, in fact, constitutes a compromise of safety. As such, an airport sponsor that is contemplating the denial of a proposed on-airport aeronautical activity or access is encouraged to contact the local ADO or regional airports division. Those offices will then seek assistance from FAA Flight Standards (FS) and Air Traffic (AT) to assess the reasonableness of the proposed action because of safety and efficiency, and to determine whether unjust discrimination or an exclusive rights violation results from the proposed restrictions.

14.3. Restricting Aeronautical Activities.

While the airport sponsor must allow use of its airport by all types, kinds, and classes of aeronautical activity, as well as by the general public, Grant Assurance 22, Economic Nondiscrimination, also provides for a limited exception: "the airport sponsor may prohibit or limit any given type, kind, or class of aeronautical use of the airport if such action is reasonable and necessary for the safe operation of the airport or necessary to serve the civil aviation needs of the public." A prohibition or limit may be based on safety or on a conflict between classes or types of operations. This generally occurs as a conflict between fixed-wing operations and another class of operator that results in a loss of airport capacity for fixed-wing aircraft. Any restriction proposed by an airport sponsor based upon safety and efficiency, including those proposed under Grant Assurance 22(i), must be adequately justified and supported.

Prohibitions and limits are within the sponsor's proprietary power only to the extent that they are consistent with the sponsor's obligations to provide access to the airport on reasonable and not unjustly discriminatory terms and other applicable federal law. The Associate Administrator for Airports, working in conjunction with Flight Standards and/or the Air Traffic Organization, will carefully analyze supporting data and documentation and make the final call on whether a particular activity can be conducted safely and efficiently at an airport. In all cases, the FAA is the final arbiter regarding aviation safety and will make the determination regarding the reasonableness of the sponsor's proposed measures that restrict, limit, or deny access to the airport.

The FAA, not the sponsor, is the authority to approve or disapprove aeronautical restrictions based on safety and/or efficiency at federally obligated airports.

14.4. Minimum Standards and Airport Regulations.

An airport proprietor may adopt reasonable minimum standards for aeronautical businesses and adopt routine regulations for use and maintenance of airport property by aeronautical users and the public. These kinds of rules typically do not restrict aeronautical operations, and therefore would generally not require justification under Grant Assurance 22(i). For example, an airport sponsor may require a reasonable amount of insurance as part of their minimum standards.

- a. Type, Kind, or Class. Grant Assurance 22(i) refers to the airport sponsor's limited ability to prohibit or limit aeronautical operations by whole classes or types of operation, not individual operators. If a class or type of operation may cause a problem, all operators of that type or class would be subject to the same restriction. For example, if the sponsor of a busy airport finds that skydiving unacceptably interferes with the use of the airport by fixed-wing aircraft, and the FAA agrees, the sponsor may ban skydiving at the airport. However, the sponsor could not ban some skydiving operators and allow others to operate. If a sponsor believes there is a safety issue with the flight operations of an individual aeronautical operator, rather than a class of operations, the sponsor should report the issue to the Flight Standards Service as well as bringing it to the attention of the operator's management.
- d. Examples of Grant Assurance 22(i) restrictions.
 - (1). Examples of airport rules approved by the FAA prohibiting, limiting, or regulating operations under Grant Assurance 22(i) have included:
 - (a). Limiting skydiving, soaring, and banner towing operations to certain times of the day and week to avoid the times of highest operation by fixed-wing aircraft.
 - (b). Banning skydiving, soaring, ultralights, or banner towing when the volume of fixed-wing traffic at the airport would not allow those activities without significant delays in fixed-wing operations.
 - (c). Limiting skydiving, soaring, and ultralight operations to certain areas of the airfield and certain traffic patterns to avoid conflict with fixed-wing patterns.

Excerpts from AC 150/5190-7
MINIMUM STANDARDS FOR COMMERCIAL AERONAUTICAL ACTIVITIES

SECTION 2. GUIDANCE ON DEVELOPING MINIMUM STANDARDS

2.1. SAMPLE QUESTIONS.

As a guide for the airport sponsor, the following series of questions are provided to address some of the various types of specific services or activities frequently offered to the public:

- f. Skydiving. Skydiving is an aeronautical activity. Any restriction, limitation, or ban on skydiving on the airport must be based on the grant assurance that provides that the airport sponsor may prohibit or limit aeronautical use for the safe operation of the airport (subject to FAA approval). The following questions present reasonable factors the sponsor might contemplate when developing minimum standards that apply to skydiving:
- (1) Will this activity present or create a safety hazard to the normal operations of aircraft arriving or departing from the airport? If so, has the local airports district office (ADO) or the regional airports division been contacted and have those FAA offices sought the assistance from FAA Flight Standards (FS) and Air Traffic (AT) to assess allegations that safe airport operations would be jeopardized?
 - (2) Can skydiving operations be safely accommodated at the airport? Can a drop zone be safely established within the boundaries of the airport? Is guidance in FAA AC-90-66A Recommended Standards Traffic Patterns and Practices for Aeronautical Operations at Airports Without Operating Control Towers, 14 CFR Part 105 and United States Parachute Association's (USPA) Basic Safety Requirements being followed?
 - (3) What reasonable time periods can be designated for jumping in a manner consistent with Part 105? What experience requirements are needed for an on-airport drop zone?
 - (4) What is a reasonable fee that the jumpers and/or their organizations can pay for the privilege of using airport property?
 - (5) Has the relevant air traffic control facility been advised of the proposed parachute operation? Does air traffic have concerns about the efficiency and utility of the airport and its related instrument procedures?
 - (6) Will an FAA airspace study be necessary to determine the impact of the proposed activity on the efficiency and utility of the airport, related instrument approaches or nearby Instrument Flight Rules (IFR)? If so, has FAA Air Traffic reviewed the matter and issued a finding?

**Excerpts from
FAA AERONAUTICAL INFORMATION MANUAL (AIM)**

3-5-4. Parachute Jump Aircraft Operations

a. Procedures relating to parachute jump areas are contained in 14 CFR Part 105. Tabulations of parachute jump areas in the U.S. are contained in the Chart Supplement U.S.

b. Pilots of aircraft engaged in parachute jump operations are reminded that all reported altitudes must be with reference to mean sea level, or flight level, as appropriate, to enable ATC to provide meaningful traffic information.

c. Parachute operations in the vicinity of an airport without an operating control tower – there is no substitute for alertness while in the vicinity of an airport. It is essential that pilots conducting parachute operations be alert, look for other traffic, and exchange traffic information as recommended in Paragraph 4-1-9, Traffic Advisory Practices at Airports Without Operating Control Towers. In addition, pilots should avoid releasing parachutes while in an airport traffic pattern when there are other aircraft in that pattern. Pilots should make appropriate broadcasts on the designated Common Traffic Advisory Frequency (CTAF), and monitor that CTAF until all parachute activity has terminated or the aircraft has left the area. Prior to commencing a jump operation, the pilot should broadcast the aircraft's altitude and position in relation to the airport, the approximate relative time when the jump will commence and terminate, and listen to the position reports of other aircraft in the area.

**Excerpts from
U.S. PARACHUTE ASSOCIATION SKYDIVER'S INFORMATION MANUAL (SIM)**

PREFACE

WARNING

SPORT PARACHUTING OR SKYDIVING IS A POTENTIALLY DANGEROUS ACTIVITY THAT CAN RESULT IN INJURY OR DEATH. EACH INDIVIDUAL PARTICIPANT, REGARDLESS OF EXPERIENCE, HAS FINAL RESPONSIBILITY FOR HIS OR HER OWN SAFETY.

THE FOLLOWING INFORMATION IS PRESENTED AS A MEMBERSHIP SERVICE BY THE UNITED STATES PARACHUTE ASSOCIATION (USPA). USPA MAKES NO WARRANTIES OR REPRESENTATIONS AND ASSUMES NO LIABILITY CONCERNING THE VALIDITY OF ANY ADVICE, OPINION OR RECOMMENDATION EXPRESSED IN THIS MATERIAL. ALL INDIVIDUALS RELYING ON THIS MATERIAL DO SO AT THEIR OWN RISK.

An individual's safety can be enhanced by exercising proper precautions and procedures. This manual contains some of the knowledge and practices that, in the opinion of USPA, will promote the safe enjoyment of skydiving. The UNITED STATES PARACHUTE ASSOCIATION is a nonprofit, voluntary membership organization of the participants and supporters of the sport of parachuting. The sport is also referred to as skydiving. USPA has no involvement in the conduct or operations of any skydiving center, parachute center, or drop zone. **USPA, AS A PRIVATE, NON-REGULATORY ORGANIZATION WHICH HAS NO LEGAL AUTHORITY TO REGULATE OR CONTROL INDIVIDUALS OR CORPORATIONS, CANNOT BE HELD LIABLE FOR ANY JUMP OR TRAINING OPERATIONS THAT RESULT IN INJURY OR DEATH TO ANY PARTY.** Regardless of any statements made in any USPA publications, USPA has neither been given nor has it assumed any duty to anyone. USPA has no obligation to anyone concerning his or her skydiving activities. All references by USPA to self-regulation refer to each individual person regulating or being responsible for him or herself. USPA issues various licenses, ratings, awards, and appointments and provides various types of information, advice, and training but does not authorize anyone in any capacity to act for USPA as an agent or representative in connection with the regulation or control of skydiving operations.

It is the responsibility of each student to ask whatever questions are necessary for him or her to have a thorough understanding of the actions and procedures that he or she must perform in order to make a safe jump. Each skydiver has the responsibility to exercise certain practices and perform certain actions to maintain safety for himself or herself and for other people.

USPA MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, AS TO THE INFORMATION SET FORTH IN THIS MANUAL. PEOPLE RELYING THEREON DO SO AT THEIR OWN RISK.

2-1: BASIC SAFETY REQUIREMENTS

J. DROP ZONE REQUIREMENTS

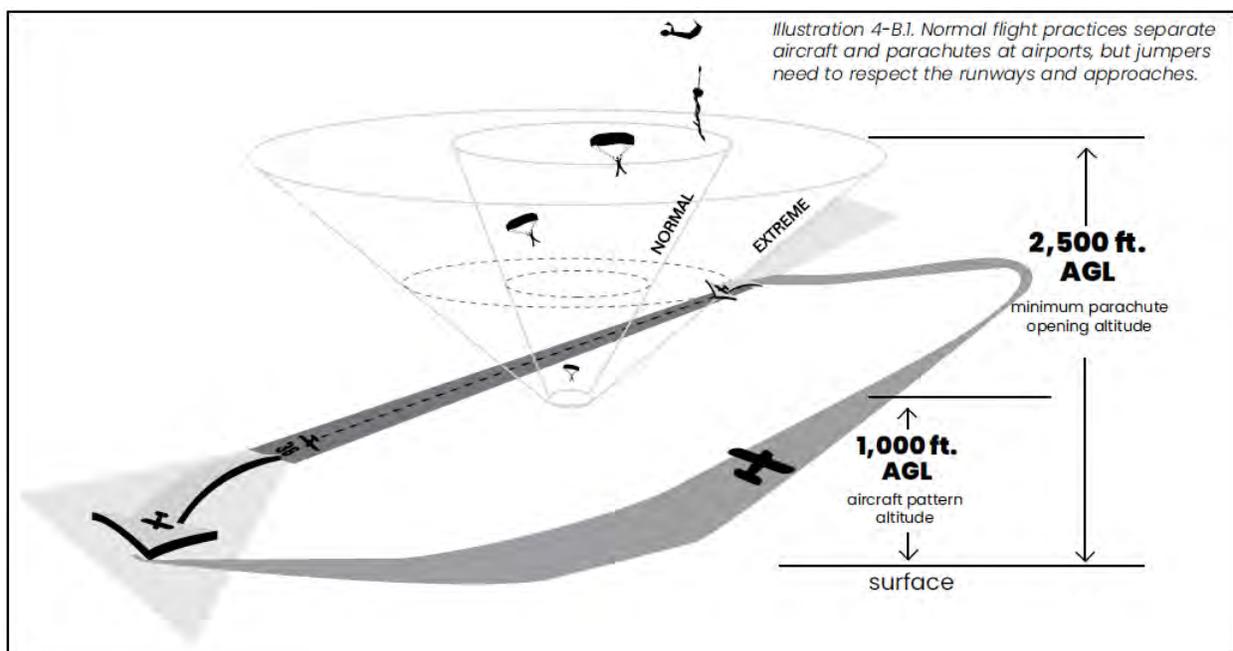
1. Areas used for skydiving should be unobstructed, with the following minimum radial distances to the nearest hazard: [S]
 - a. solo students and A-license holders—330 feet
 - b. B- and C-license holders and all tandem skydives—165 feet
 - c. D-license holders—40 feet

2. Hazards are defined as telephone and power lines, towers, buildings, open bodies of water, highways, vehicles, and clusters of trees covering more than 32,292 square feet.
3. Manned ground-to-air communications (e.g., radios, panels, smoke, lights) are to be present on the drop zone during skydiving operations.

CATEGORY B: LEARNING AND PERFORMANCE OBJECTIVES

F. SPOTTING AND AIRCRAFT

1. Minimum, careful movement in the aircraft helps prevent premature activation.
2. Runway lengths and headings (use of a compass)
 - a. The runway heading provides a reference for direction (north, south, east, and west).
 - b. The runway length provides a reference for judging distance from the air (in tenths of a mile for GPS and Loran).
3. Winds are described by their direction of origin, said as a compass heading (for example, "The winds are two seventy," means the winds are blowing from the west).
4. Avoid runways and approaches, including getting clear of a runway after landing on or near one.
5. Discuss local aircraft traffic approach altitudes and landing patterns and their relationship to canopy approach and landing patterns. (See the illustration below, and also refer to the illustration in FAA Advisory Circular 90-66, Appendix 3, in SIM Section 9-2.)
6. Crossing the runway
 - a. Know the airport and drop zone rules about crossing a runway.
 - b. If allowed, look both ways and minimize the time spent on the runway.



Section 4 - USPA INTEGRATED STUDENT PROGRAM

4-1: STUDENT SKILL AND KNOWLEDGE SETS

Jump Numbers and Supervision	Exit and Freefall	Canopy Flight	Equipment	In-Depth Emergency Review*	Rules and Recommendations	Spotting and Aircraft
A AFF: 1 (Two AFFs) SL/IAD: 1-2 (SL/IAD) Tan: 1 (TI)	Adaptation to skydiving environment; principles of deployment	Steering; intro pattern; wind line; landing procedures	Altimeter and operation handle orientation; instructor gear checks	Passive aircraft emergencies (instructor leads)	FAR 91.107 (seat belts); SIM 2-1 (first-jump course topics)	Propeller avoidance; movement in aircraft
B AFF: 2 (Two AFFs) SL/IAD: 3-5 (SL/IAD) Tan: 2-3 (TI)	Relaxed body position; leg awareness; unassisted stable deployment (simulated for SL/IAD)	Assisted pattern; assisted flare; written flight plan; review PLF	Handle operation and protection	Training harness; deployment problems; partial and total malfunctions; stability recovery; and altitude awareness	SIM 2-1 (students), 5-1 (malfunctions); FAA AC-90-66A (illustration of aircraft traffic patterns)	Airport orientation and recognition; runway and approach incursions; aircraft patterns
C AFF: 3-4 (Two AFFs, then one) SL/IAD: 6-8 (SL/IAD) Former Tan: 4-5 (AI)	Solo controlled and relaxed fall; heading maintenance; wave-off	Solo pattern and flare; wing loading; turbulence; downwind landings	Complete orientation (main closed); observe pre-flight	Open parachute in aircraft; off-airport landings; obstacle recognition and avoidance; turbulence; collapsing the canopy on landing	SIM 2-1 (student equipment); FAR 105.43.b.1 (equipment); local laws; canopy owner's manual	Pattern selection
D AFF: 5-6 (AFF) SL/IAD: 9-12 (SL/IAD), Coach Former Tan: 6-7 (AFF)	Solo exit (AFF); heading control; freefall speeds and times	Back-riser control with and without brakes; stand-up; 165 feet assisted	Assisted pre-flight; AAD operation; AAD owner's manual	Training harness; routine opening problems; instant recognition and response; building landings	SIM 5-1 (buildings), 5-3 (AADs); FAR 105.17 (clouds)	Jump run observation; looking below for aircraft
E AFF: 7-9 (AFF) until cleared from AFF, then Coach SL/IAD: 13-15 (SL/IAD), Coach (Merge tandem)	Door exit; aerobatics; unsupervised freefall	Stalls; traffic avoidance; 165 feet unassisted; the "sweet spot;" rectangular v. elliptical	Complete orientation (open canopy); component identification; unassisted pre-flight; comprehensive RSL	Training harness; two canopies out; high-wind landings; independent aircraft emergencies	SIM 2-1 (winds), 2-1M (oxygen), 5-1 (dual deployments), 5-3 (RSLs); 5-3 (altimeters); FAR 91 (pilot responsibilities); FAR 105.43.a and b (packing authorization and interval)	Aircraft orientation; airspeed; weight and balance; winds aloft; intro spot selection; assist with jump run
F AFF: 10-13 SL/IAD: 16-17 Coach	Tracking; two clear and pulls for former AFF students	Braked turns; approach, and landing; maximum glide; 82 feet on two jumps	Assisted packing; pin check (others); parachute system and canopy owner's manuals	Power line landings	SIM 2-1 (all), 3-1 (all), 5-1 (power lines), 5-2 (recurrency recommendations), 5-7 (group separation); parachute system and reserve owner's manuals	Group separation; assisted jump run; calculating exit point from winds aloft
G AFF: 14-17 SL/IAD: 18-21 Coach	Group exits; forward motion; rate of descent; docking; break-off and separation	Collision avoidance review; reverse turns; 65 feet on two jumps	Solo packing; rigger's responsibilities; maintenance orientation; AAD review	Canopy collision response; tree landings	SIM 5-1 (trees), 5-1 (collisions), 5-5 (weather), 6-1 (group freefall); FAR 105.43.c (AAD maintenance)	Unassisted jump run; weather
H AFF: 18-21 SL/IAD: 22-25 Coach	Diver exit; swooping; traffic awareness during swooping, tracking and deployment	Front riser control; 65 feet on three jumps	Owner maintenance (three-ring, closing loop)	Water landings; low-turn recovery	SIM 5-1. (water), 5-1 (low turns), 6-2 (breakoff); FAR 105.13 (aircraft radio); 105.15 (notification); AC 105-2C App. (aircraft)	Notification to FAA of jump activity; review STC, 337, etc.

*After training recommended in the USPA Integrated Student Program for solo students coming from tandem.

Figure 4-C.4 Drop Zone Traffic Patterns

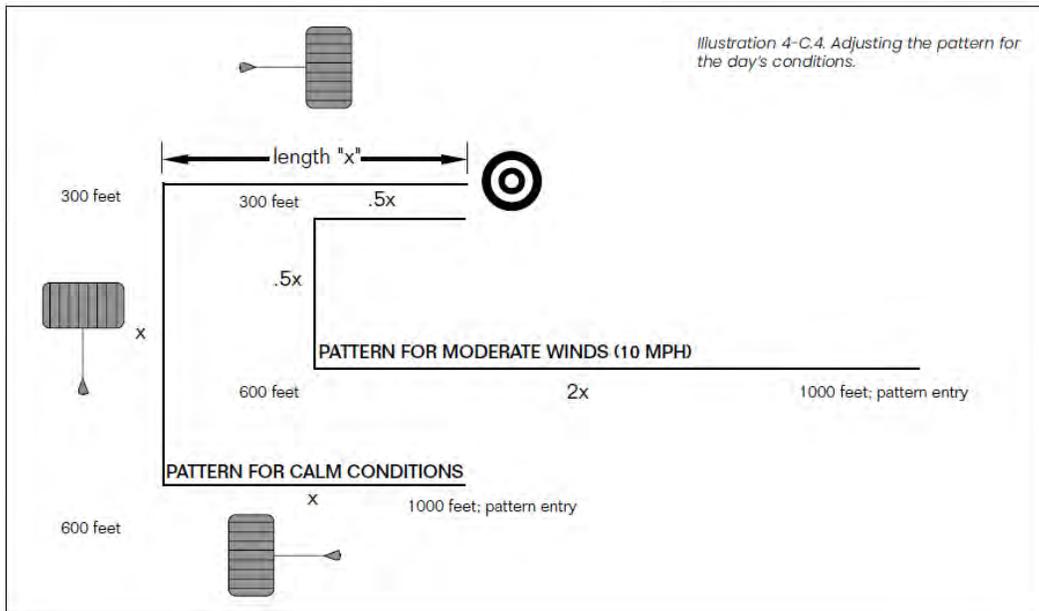
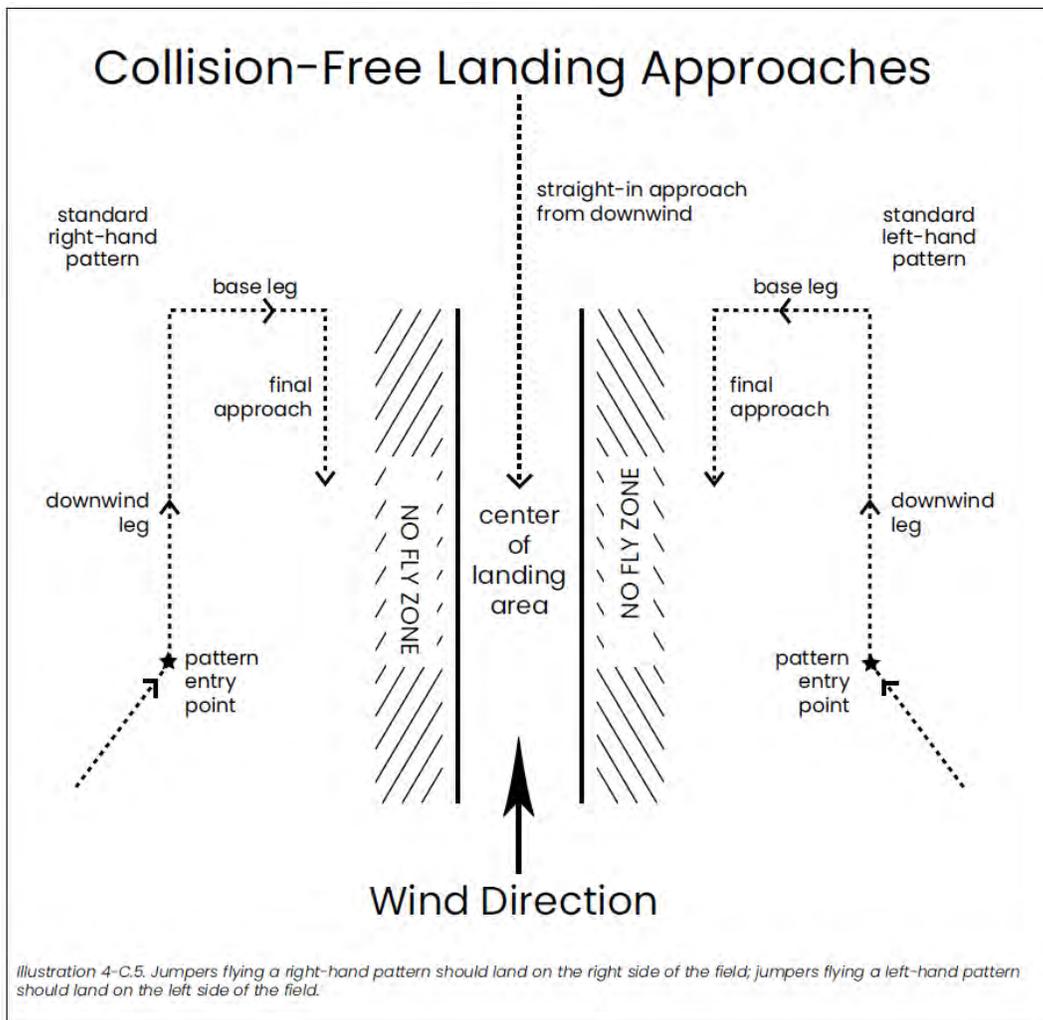


Figure 4-C.5 Drop Zone Traffic Patterns



Source: [U.S. Parachute Association 2019-2020 Skydiver's Information Manual \(SIM\)](#)