Nellis Air Force Base
Creech Air Force Base
Nevada Test and Training Range

MID-AIR COLLISION AVOIDANCE (MACA)

SAFETY PAMPHLET

57TH WING SAFETY
NELLIS AIR FORCE BASE, NV 89191
1 FEBRUARY 2019

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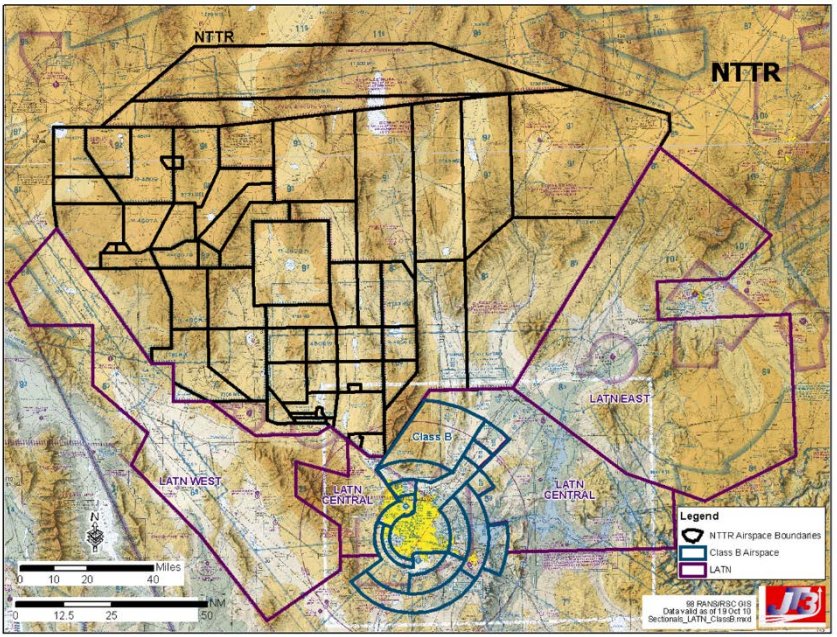


NOTICE TO FELLOW PILOTS

01 February 2019

Fellow Pilots:

1. The airspace surrounding Nellis AFB, Creech AFB, McCarran International Airport, North Las Vegas Regional Airport, and the Nevada Test and Training Range (NTTR) is extremely busy. Every aircraft in the Department of Defense (DoD) inventory can be seen operating into/out of Nellis AFB, Creech AFB, and the NTTR. Performance varies greatly with each type of aircraft as well as the types of approaches and departures flown.

2. The number of aircraft flying within the available airspace, coupled with the performance variations, creates an enormous mid-air collision potential. Recognizing this, all aviators must strive to make our airspace as safe as possible by practicing sound traffic separation techniques and procedures. This is done by maximizing the use of airspace control agencies, practicing proven see-and-avoid techniques, and knowing what others are doing.

4. This pamphlet describes how aircraft transit to/from Nellis & Creech AFB's & the NTTR. It was prepared to provide you with insight that can help prevent a midair collision. The information in this pamphlet should not replace information used for navigation purposes outlined in Sectional, VFR Terminal, Area, and Low Altitude Enroute Charts. Additional information on mid-air collision avoidance is outlined on the Federal Aviation Agency Safety Team (FAASTeam) website, `https://www.faasafety.gov.`

5. If you desire further information, please contact any of our flight safety representatives at the following offices/phone numbers:

57th Wing Safety
Chief of Flight Safety
(702) 652-7465

Nellis AFB, Creech AFB, & NTTR
Airspace Management Office
(702) 652-3309/7891

NELLIS & CREECH AFB INFORMATION

Nellis AFB, "Home of the Warfighter," is the main operating base of the United States Air Force Warfare Center (USAFWC), which includes the 57th Wing, the most diverse Wing in Air Combat Command (ACC).

The missions of the USAFWC & 57 WG are to operate the USAF Weapons School; develop tactics, techniques, and procedures for the operational test and evaluation program in support of the USAFWC; provide combat search and rescue; operate the Air-to-Ground Operations School; train and operate with UAS intelligence, surveillance, and reconnaissance systems; develop and support realistic combat training in Exercise RED and GREEN FLAG; provide host intelligence support and training functions for the USAFWC; and develop manuals, instructions, and training materials pertaining to the employment of Air Force weapon systems.

To support the number of aircraft flying from Nellis AFB, the Federal Aviation Administration has delegated airspace to the USAF which includes the Nevada Test & Training Range (NTTR), which is managed from Nellis AFB. The NTTR consists of a total area of approximately 12,000 square miles that is used for realistic air warfare training by US Air Force, Army, Navy, and Marine Corps units, and units of allied nations. The NTTR is divided into three parts: 1) Restricted Areas; 2) Desert Military Operations Area (MOA); and 3) Reveille MOAs. Aircraft may be encountered as low as **100** feet above ground level (AGL) within the NTTR.

RED/GREEN FLAG exercises may increase activity by an additional 90 aircraft in confined areas. When transiting the Desert or Reveille N&S MOAs, be alert for aircraft closing from any direction or altitude, since many of the aircraft are capable of accelerating vertically. In addition to being cautious for encounters with high performance aircraft, the mix of MOAs and restricted areas make accurate navigation imperative to avoid hazardous conditions or violating 14 CFR Part 91 Aviation Regulations.

COMMON NELLIS/CREECH BASED AIRCRAFT

F-15

Rate of Climb:	10,000+ FPM
Approach Speeds:	VFR 160 KIAS
Pattern:	300 KIAS

F-16

Rate of Climb:	10,000+ FPM
Approach Speeds:	VFR 160 KIAS
Pattern:	300 KIAS

F-18

Rate of Climb:	10,000+ FPM
Approach Speeds:	VFR 120-150 KIAS
Pattern:	300 KIAS

F-22

Rate of Climb:	10,000+ FPM
Approach Speeds:	VFR 160 KIAS
Pattern:	300 KIAS

F-35

Rate of Climb:	10.000+ FPM
Approach Speeds:	VFR 160 KIAS
Pattern:	300 KIAS

A-10

Rate of Climb:	1,500 FPM
Approach Speeds:	VFR 135 KIAS
Pattern:	150-250 KIAS

F-5/T-38

Rate of Climb:	1,500-2,500 FPM
Approach Speeds:	VFR 150 KIAS
Pattern:	250-300 KIAS

A-4

Rate of Climb:	1,500-2,500 FPM
Approach Speeds:	VFR 150 KIAS
Pattern Speed:	250-300 KIAS

L-159

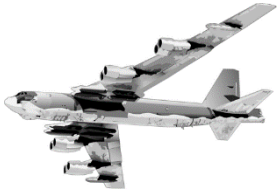
Rate of Climb:	1,500-2,500 FPM
Approach Speeds:	VFR 150 KIAS
Pattern Speed:	250-300 KIAS

B-1

Rate of Climb:	1,500-5,000 FPM
Approach Speeds:	VFR 150-170 KIAS
Pattern:	250-300 KIAS

B-2

Rate of Climb:	3000 FPM
Approach Speeds:	140 KIAS
Pattern:	250 KIAS



B-52

Rate of Climb:	1,500-2,000 FPM
Approach Speeds:	VFR 145 KIAS
Pattern:	250 KIAS

C-5

Rate of Climb:	1,000-3,000 FPM
Approach Speeds:	VFR 115-200 KIAS
Pattern Speed:	180-250 KIAS

C-17

Rate of Climb:	1,000-3,000 FPM
Approach Speeds:	VFR 135-180 KIAS
Pattern Speed:	180-250 KIAS

C-130

Rate of Climb:	1,500 FPM
Approach Speeds:	VFR 140 KIAS
Pattern:	150-200 KIAS

E-3 AWACS

Rate of Climb:	1,000 FPM
Approach Speeds:	VFR 140 KIAS
Pattern Speed:	250 KIAS

E-8 JSTARS

Rate of Climb:	1000-3000 FPM
Approach Speeds:	VFR 135-180 KIAS
Pattern Speed:	250 KIAS

KC-10

Rate of Climb:	500-1,500 FPM
Approach Speeds:	VFR 130-150 KIAS
Pattern Speed:	160-250 KIAS

KC-135

Rate of Climb:	1,000-3,000 FPM
Approach Speeds:	VFR 135-180 KIAS
Pattern Speed:	180-250 KIAS

RC-135

Rate of Climb:	1000-3000 FPM
Approach Speeds:	VFR 135-180 KIAS
Pattern Speed:	250 KIAS

CV-22

Rate of Climb:	4000 FPM
Approach Speeds:	VFR 145 KIAS
Pattern:	220 KIAS

HH-60G

Rate of Climb:	2,500 FPM
Approach Speeds:	VFR 100 KIAS
Pattern:	50-100 KIAS

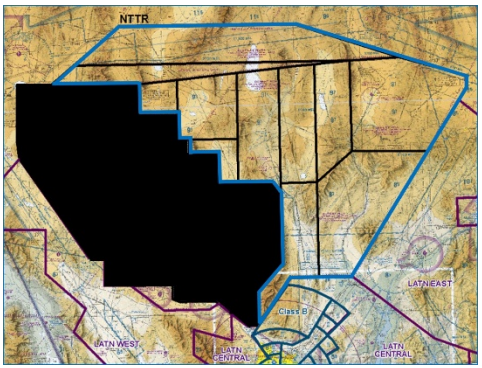
MQ-9

Rate of Climb:	350 FPM
Approach Speeds:	VFR 65 KIAS
Pattern Speed:	80-100 KIAS

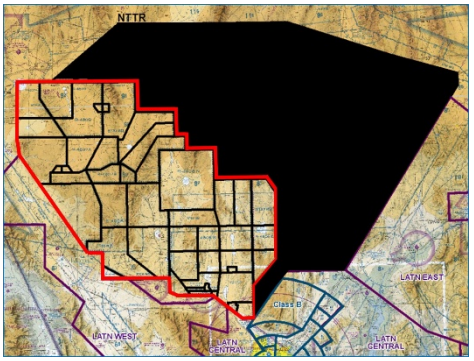
Normal climbout is accomplished at 65-350 knots. The approach speeds listed above are general speeds from the final approach fix inbound. All aircraft excluding helicopters and UAS's fly the initial portion of the approach at 300 knots.

SPECIAL USE AIRSPACE

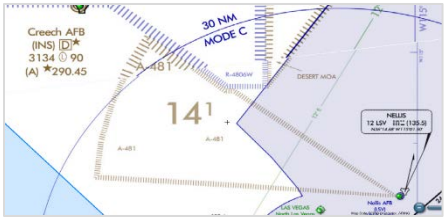
Desert & Reveille Military Operations Areas (MOAs)/ Air Traffic Control Assigned Airspace (ATCAA): The Desert & Reveille MOAs/ATCAA's are located north of Nellis AFB and are available for transit by civil VFR aircraft. Although no VFR restrictions exist for transiting these areas, military aircraft are exempted from the provisions of 14 CFR, Part 91.303 concerning aerobatic flight within federal airways and control zones. The training conducted within the Desert and Reveille MOAs consists of high-speed operations, including supersonic flight at or above 5,000 feet AGL, and abrupt aircraft maneuvers.



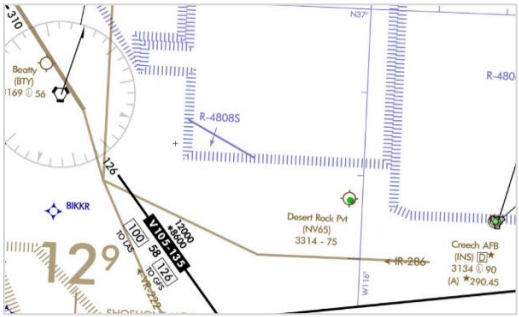
Restricted Areas: Within or adjacent to the NTTR, there are seven restricted areas, R-4806E&W, R-4807A&B, R-4808N&S & R-4809. All of these areas contain operations that are hazardous to nonparticipating aircraft. During certain time periods, civil aircraft may transit through R-4806 E&W, R-4807A&B, & R-4809 with certain restrictions. Contact NATCF for transit through these areas.



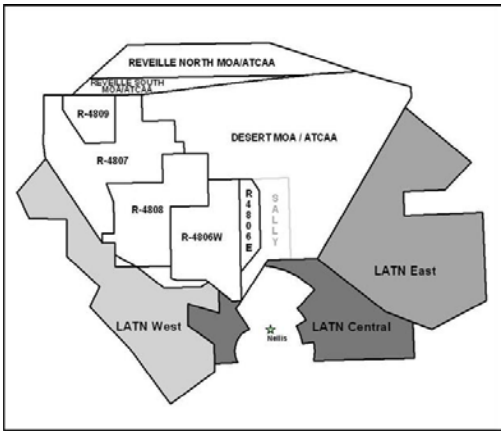
Alert Area 481 (A-481): A-481 extends from Nellis AFB westward for approximately 25 miles to include altitudes from 7,000 to 17,000 feet MSL. Military arrival/departure traffic frequently transit this area Monday-Friday, 0700-2000L using 7,000 feet to Flight Level (FL) 230. Although, the alert area begins at 7,000 feet, military VFR departures may still transit through the VFR training area that lies beneath the alert area.



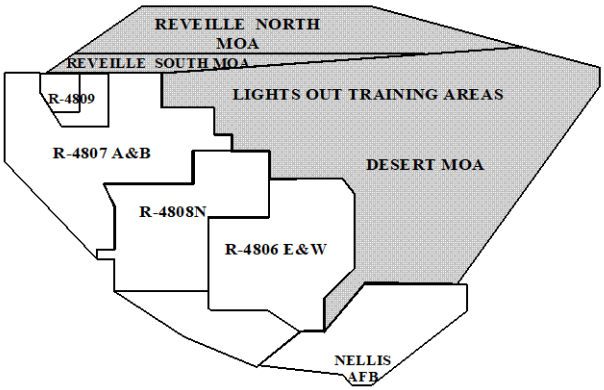
Military Training Routes (MTR): Several MTRs are located in the Nellis and Las Vegas area. MTR operations are usually below 10,000 feet MSL at speeds in excess of 250 knots. Typically, aircraft operate on these routes between 100 to 1,000 feet AGL at speeds averaging 450- 480 knots by US Air Force, Navy, and Marine Corps aircraft. Some segments may extend to higher altitudes due to terrain or climb/descent requirements. Two types of routes are Instrument Flight Rules MTRs (IR) and Visual Flight Rules MTRs (VR). All MTRs are depicted on VFR Sectional and Low Altitude Enroute Charts. Normal MTR widths from the centerline is five NM for IR routes and 5-10 NM for VR routes. Contact the Flight Service Station (FSS) within 100 nautical miles for current information on routes in your vicinity. Provide FSS with your position, route of flight, and destination when requesting information about MTRs in your vicinity. On the route, expect at least two aircraft in formation, one-mile line abreast, or additional aircraft may follow at approximately one to three mile intervals. Near exit points, expect aircraft climbing rapidly (e.g. 8,000-12,000 feet per minute) to 10,000 feet MSL or above at speeds of 350-450 knots. Flying above 2,000 feet AGL should deconflict you from 90 percent of the MTR traffic, except at entry or exit points. Two of the MTRs serviced by Nellis AFB include IR-286 and VR-222.



Low Altitude Tactical Navigation (LATN) Area: Although LATN areas are not charted, it should be included in your flight planning process. LATN areas allow A-10, C-130, and helicopter aircraft to practice random tactical navigation and formation flying between 50 and 1,500 feet AGL. Typical employed airspeeds are at or below 250 knots. Nellis AFB LATN areas reside to the west/southwest of NTTR restricted areas, east of the Desert MOA, and east of Nellis AFB.

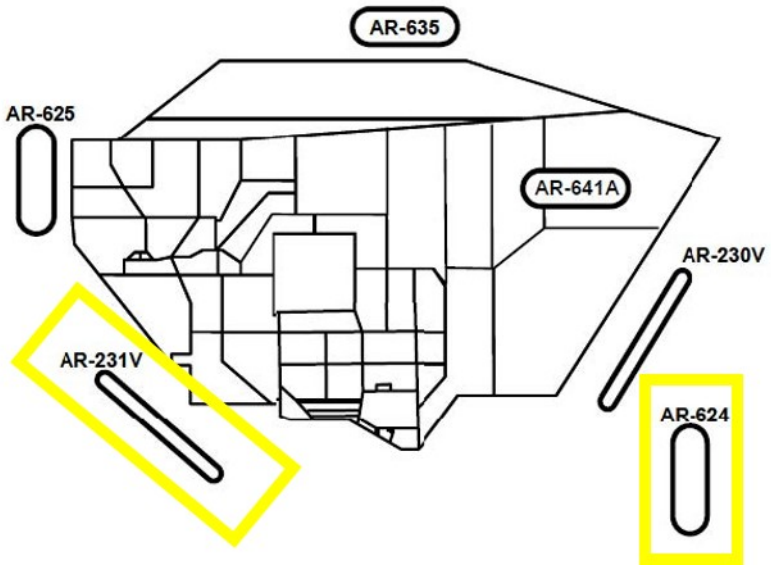


Lights Out Operations in Reveille & Desert Military Operations Areas (MOAs). As of 24 Jan 2003, military aircraft are approved to operate with no external lighting in the Desert and Reveille North & South MOAs. These operations will be announced by NOTAM 48 hours in advance and coordinated with the appropriate FAA ATC facility. If a nonparticipating aircraft enters the lights out training area, participating aircraft will return to normal lighting in order to ensure safety. All operations will be continuously monitored by military personnel utilizing radar capable of detecting all nonparticipating aircraft. The following diagram depicts the lights out training airspace:

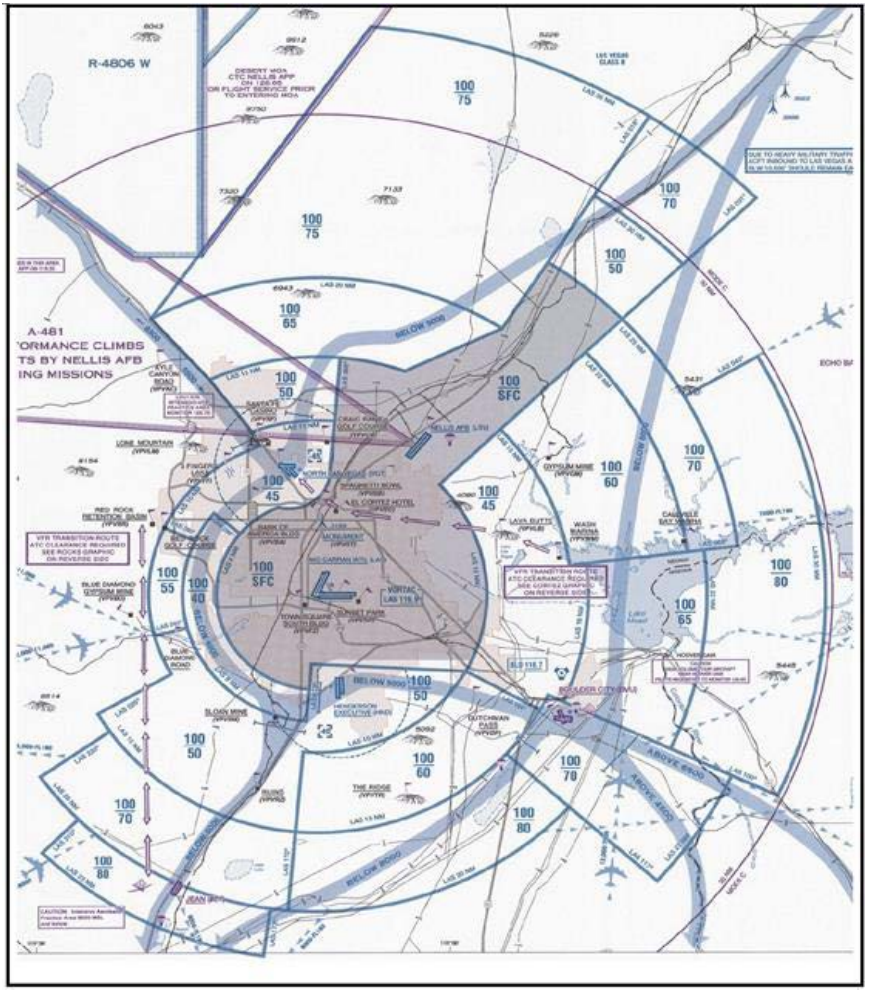


Helicopter Training & Air Refueling Routes: Nellis' 66th Rescue Squadron routinely conducts helicopter training operations in the Lake Mead area and refueling operations to the northeast and southwest of Las Vegas. Helicopter missions in that area are flown between 50 feet AGL up to including 8000 feet MSL. In addition to day flights, night missions are flown wearing night vision goggles. The primary training areas are located within a 20-mile radius of Echo Bay. All pilots are encouraged to monitor frequency 120.65 when flying over the Lake Mead area.

There are two low altitude VFR helicopter air refueling routes adjacent to the NTTR. AR-230V is west of Mesquite, NV and extends from the LAS R-025 @046 DME and the LAS R-025 @081 DME. Refueling altitudes are between 6,000 to 8,000 feet MSL. AR-231V is southeast of Beatty, NV and extends from the BTY R-124 @ 005 DME to the BTY R-124 @ 042 DME. Refueling altitudes are between 6,000 to 8,000 feet MSL. Several types of helicopters and HC-130 refueling aircraft use AR-230 & AR-231V and all aircraft must remain VFR.

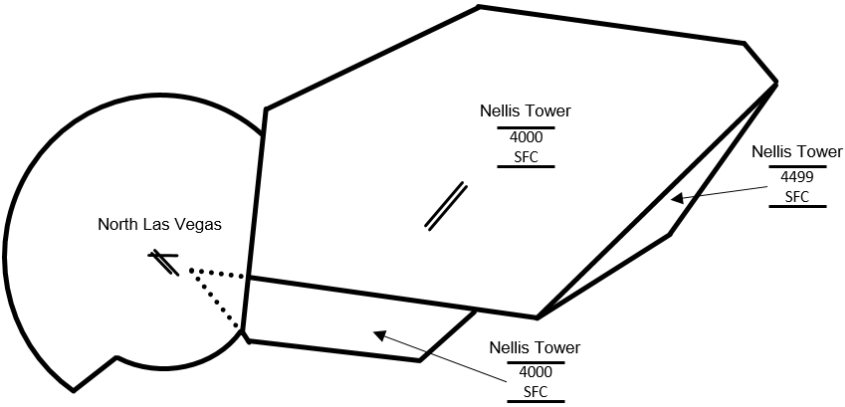


Las Vegas Class Bravo Airspace. Nellis AFB and McCarran International Airport lie within the Las Vegas Class Bravo airspace. Pilots must be vigilant for traffic while navigating in the vicinity of the Class B airspace. NATCF provides ATC services in the northern portion of Las Vegas Class B airspace. The southern portion of Las Vegas Bravo airspace is controlled by Las Vegas Terminal Radar Approach Control (TRACON).



LOCAL MILITARY BASES, ATC FACILITIES & PROCEDURES

Nellis Air Force Base (KLSV): Extensive flight operations are present within a five-mile radius of Nellis AFB. All pilots should be extremely vigilant when flying in this area. The Nellis AFB Tower airspace falls within the Las Vegas Class Bravo surface area. As such, a specific clearance is required to enter the Class Bravo airspace and full ATC services will be provided as required by CFR. Contact NATCF (135.1–West; 124.95—East/North) or Nellis Tower (132.55) for clearance into Class Bravo or Tower airspace.



Nellis Air Traffic Control Facility (NATCF): NATCF is an FAA certified Radar Air Traffic Control facility that provides air traffic services to aircraft operating within the NTTR and NATCF delegated airspace. This is in accordance with appropriate Letters of Agreement (LOA) with surrounding FAA facilities and Certificates of Authorization (COA). Two distinct NATCF functions include providing Terminal and Enroute ATC services. Nellis Approach Control provides Terminal services within approximately 40 miles of Nellis AFB. Nellis Approach is the primary radar approach control facility for Nellis AFB and North Las Vegas airports. Nellis Control provides enroute and range control services within and surrounding the NTTR. Pilots can contact Nellis Control for current status on range activities and radar traffic advisories to VFR aircraft transiting the Desert and Reveille MOAs. Nellis Control also provides approach control services for Creech AFB, Beatty, Tonopah Municipal, Lincoln County, and Alamo airports.

Nellis AFB Departures:

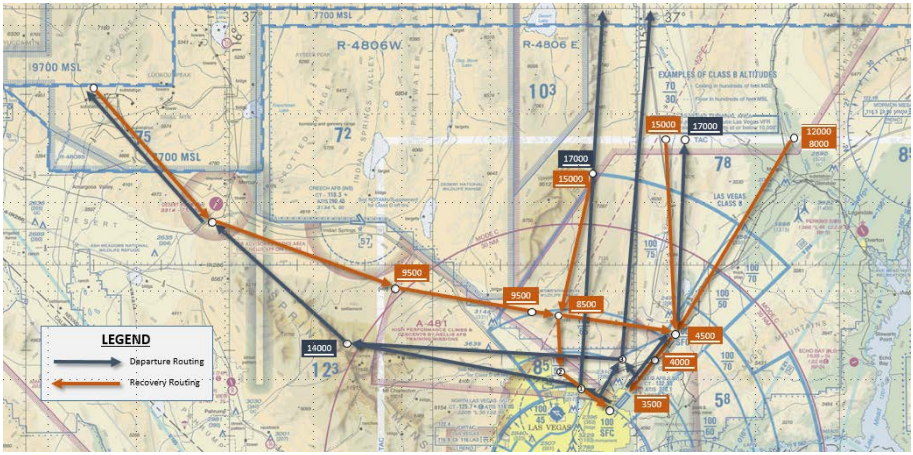
- **Runway 21:** Departures normally cross I-15 between 3,000 and 5,000 MSL, climbing to a final altitude of 8,500 MSL to FL 200. Westbound traffic crosses North Las Vegas Airport between 4,500 and 6,500 MSL.

- **Runway 03:** Departures normally cross I-15 northbound between 6,500 and 9,500 MSL with a final altitude of 8,500 MSL to FL 200. West bound traffic normally crosses I-15 between 3,000 and 4,500 MSL and abeam North Las Vegas airport between 4,500 and 6,500 MSL.

Nellis AFB Arrivals:

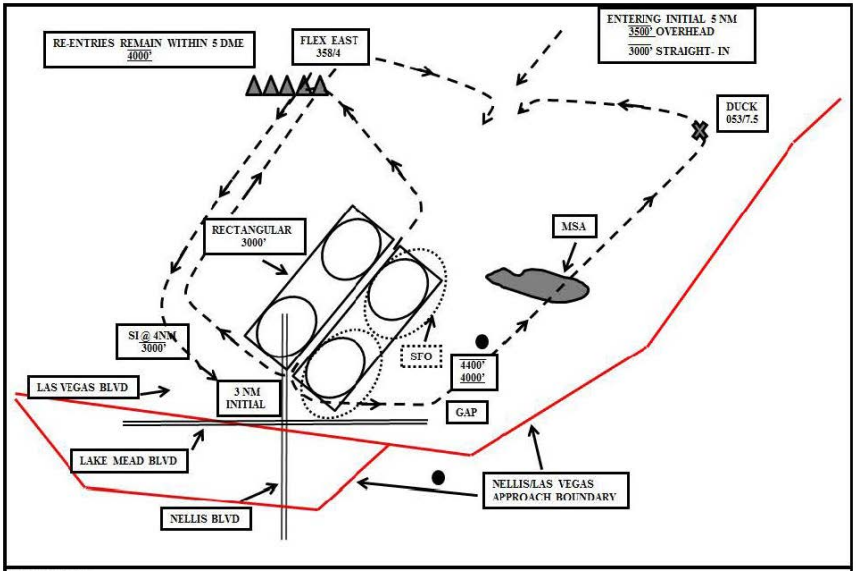
- **Runway 21:** Arrivals from the north normally cross I-15 between 4,000 and 5,500 MSL. Runway 21 arrivals from the west normally cross North Las Vegas airport between 5,000 and 7,500 MSL.

- **Runway 03:** Arrivals from both the north and west normally cross the North Las Vegas airport between 5,000 and 7,500 MSL, then descend to between 3,000 and 3,500 by the time they cross Las Vegas Blvd.



Nellis AFB Tower Traffic Patterns:

- **Helicopter –** 2500’ MSL
- **Rectangular –** 3000’ MSL
- **Overhead –** 3500’ MSL
- **Simulated Flameout (SFO) –** 9500’ – 10,500’ MSL

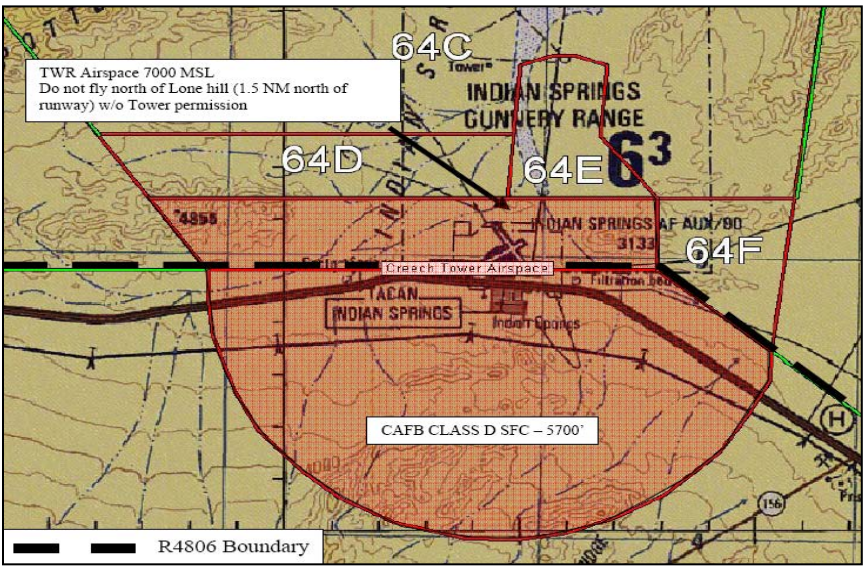


Simulated Flameout Approach (SFO) Patterns: Nellis AFB SFO pattern is practiced extensively by F-16 and F-35 aircraft to simulate loss of engine thrust. SFO approaches begin above the airfield at 9,500 to 10,500 feet MSL (High Key). When the SFO approach is started, the aircraft is in a steep left-hand turn for Runway 21 and right-hand turn for Runway 03. This pattern's higher speed and steeper dive angle reduce the time available for the pilot to clear for traffic. The entire SFO approach will occur within 3 NM of the airfield (east of the runway) and for all practical purposes will mirror the overhead traffic pattern with the exception of altitude. During this procedure, pilots are extremely occupied with cockpit duties (i.e. looking for a landing point on the runway) which reduces the amount of time to see and avoid other aircraft.

Creech AFB (KINS): Located northwest of Las Vegas (LAS 309/39) along Highway 95 on the southern edge of Restricted Area R4806W. Creech is home base for the MQ-9 Reaper Remotely Piloted Aircraft (RPA) that operate in the MOAs and restricted areas that make up the NTTR. Creech Tower Airspace is divided into two different areas: 1) Class D airspace outside R4806W which extends from surface up to and including 5,700 ft MSL within a 5 NM radius of Creech's runway center point; 2) Controlled airspace within R-4806W extending from the surface up to and including 7,000 ft. MSL. Pilots should call the Tower prior to 5NM from the airport, at or below 5,700 feet MSL and comply with standard Class D airspace rules. Traffic advisories and weather information are available from Creech tower. Some RPAs are relatively small making them difficult to see. Also, RPAs do not have see and avoid capability, therefore the pilot may not be aware of an imminent collision or take avoidance actions. Extensive RPA formal training takes place in and around Creech AFB. Both IFR and VFR traffic should use extreme caution to remain south of Hwy 95 and airspace associated with the NTTR.

Creech AFB Tower Traffic Patterns:

- **Helicopter --** 4000' MSL
- **Rectangular –** 4600' MSL
- **Overhead –** 5100' MSL



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SERVICES AVAILABLE TO PILOTS

Several facilities are available to provide you with flight information and air traffic control services while operating in the Las Vegas area.

1. **Las Vegas Approach Control**. Provides air traffic services in the southern portion of the Las Vegas Class B airspace. Las Vegas Approach frequencies:

East :	119.4
South:	125.9
West:	133.95

2. **Nellis Approach Control**. Provides services in the northern portion of the Las Vegas Class B airspace. Nellis approach frequencies:

West:	135.1
East/North:	124.95

3. **Nellis Control**. Provides enroute air traffic control services in the NTTR and is available to provide VFR traffic advisories through the Desert and Reveille MOAs, and in the vicinity of restricted airspace. Nellis Control frequencies:

South or West of restricted areas:	119.35
Southern portion of the Desert MOA:	126.65
Northern portion of the Desert MOA:	124.45

4. **Local Las Vegas Area Control Towers**. Provide airport traffic control services within 5 NM radius around the airports they're located.

Nellis AFB Tower:	132.55
Creech AFB Tower:	118.3
North Las Vegas Tower:	125.7
ATIS:	118.05
McCarran Tower:	119.9 (Rwy 08L/26L)
	118.75 (Rwy 01R-19L)
ATIS:	132.4
Henderson Tower:	125.1
ATIS:	120.775
Flight Service Station	122.4