

# KEIK Obstacle Departure Procedure



AIR ECHO ALPHA 51, LLC.

## KEIK Obstacle Departure Procedure (ODP)

**AIM 5-2-9 (c).** Pilots operating under FAR 91 are strongly encouraged to file and fly a DP at night, during marginal Visual Meteorological Conditions (VMC) and Instrument Meteorological Conditions (IMC), when one is available.

ODPs are listed in the Takeoff Minimums and Obstacle Departure Procedures section of the Terminal Procedures Publication (TPP). *(If using ForeFlight, information can be found under AIRPORT -> INFO -> PROCEDURES -> DEPARTURE -> TAKEOFF MINIMUMS)* The "T" on KEIK's instrument approach plate indicates that KEIK has take-off minimums or a departure procedure.

### ERIE, CO

#### ERIE MUNI (EIK)

#### TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES AMDT 2A 10294 (FAA)

TAKEOFF MINIMUMS: **Rwy 15**, 500-2 or std. with a min. climb gradient of 270' per NM to 5700.

DEPARTURE PROCEDURE: **Rwy 15**, turn right;

**Rwy 33**, turn left; climb direct BJC VOR/DME.

Departures on BJC R-340 CW R-150 climb on course. All others climb in BJC holding pattern (NE, left turns 203° inbound) to cross BJC VOR/DME at or above 13300, or comply with RADAR vectors.

\*The standard minimum climb gradient for departure is **200 feet per nautical mile (FPNM)**, climbing to 400 feet above the departure end of runway elevation before making the initial turn.

For departures out of KEIK from Runway 33, use the standard minimum climb gradient of 200 FPNM. However, if departing from **Runway 15**, per the ODP, the climb gradient must be increased to **270 FPNM to 5700 ft**.

To convert from FPNM to FPM you can reference the Climb/Descent Table found in the TPP or you can use the following formula:

$$\frac{\text{FT}}{\text{NM}} \times \frac{\text{NM}}{\text{Min}} = \frac{\text{FT}}{\text{Min}} \quad \frac{270 \text{ FT}}{1 \text{ NM}} \times \frac{1.5 \text{ NM}}{1 \text{ Min}} = \frac{405 \text{ FT}}{1 \text{ Min}}$$

\* Assuming a ground speed of 90kts per hour = 1.5 n.m. per min

## CLIMB/DESCENT TABLE 10042

INSTRUMENT TAKEOFF OR APPROACH PROCEDURE CHARTS RATE OF CLIMB/DESCENT TABLE (ft. per min)													
A rate of climb/descent table is provided for use in planning and executing climbs or descents under known or approximate ground speed conditions. It will be especially useful for approaches when the localizer only is used for course guidance. A best speed, power, altitude combination can be programmed which will result in a stable glide rate and altitude favorable for executing a landing if minimums exist upon breakout. Care should always be exercised so that minimum descent altitude and missed approach point are not exceeded.													
CLIMB/DESCENT ANGLE (degrees and tenths)	ft/NM	GROUND SPEED (knots)											
		60	90	120	150	180	210	240	270	300	330	360	
2.0	210	210	320	425	530	635	743	850	955	1060	1165	1275	
2.5	265	265	400	530	665	795	930	1060	1195	1325	1460	1590	
V E R T I C A L  P A T H  A N G L E	2.7	287	287	430	574	717	860	1003	1147	1290	1433	1576	1720
	2.8	297	297	446	595	743	892	1041	1189	1338	1486	1635	1783
	2.9	308	308	462	616	770	924	1078	1232	1386	1539	1693	1847
	3.0	318	318	478	637	797	956	1115	1274	1433	1593	1752	1911
	3.1	329	329	494	659	823	988	1152	1317	1481	1646	1810	1975
	3.2	340	340	510	680	850	1020	1189	1359	1529	1699	1869	2039
	3.3	350	350	526	701	876	1052	1227	1402	1577	1752	1927	2103
3.4	361	361	542	722	903	1083	1264	1444	1625	1805	1986	2166	

ODPs do **NOT** take into consideration the performance of the aircraft. Reference the POH to determine the rate of climb for a given altitude corrected for pressure and temperature variations (density altitude).

MAXIMUM RATE-OF-CLIMB DATA												
GROSS WEIGHT POUNDS	AT SEA LEVEL & 59°F			AT 5000 FT. & 41°F			AT 10,000 FT. & 23°F			AT 15,000 FT. & 5°F		
	IAS MPH	RATE OF CLIMB FT/MIN	GAL. OF FUEL USED	IAS MPH	RATE OF CLIMB FT/MIN	FROM S.L. FUEL USED	IAS MPH	RATE OF CLIMB FT/MIN	FROM S.L. FUEL USED	IAS MPH	RATE OF CLIMB FT/MIN	FROM S.L. FUEL USED
2800	95	925	1.5	93	885	3.1	91	440	5.1	89	200	7.7
2400	93	1170	1.5	91	895	2.8	89	620	4.2	87	350	5.9
2000	90	1480	1.5	89	1175	2.5	87	850	3.6	85	540	4.7

NOTES: 1. Full throttle, 2700 RPM, flaps and gear up, and mixture at recommended leaning schedule.  
2. Fuel used includes warm-up and take-off allowance.  
3. For hot weather, decrease rate of climb 30 ft./min. for each 10°F above standard day temperature for particular altitude.

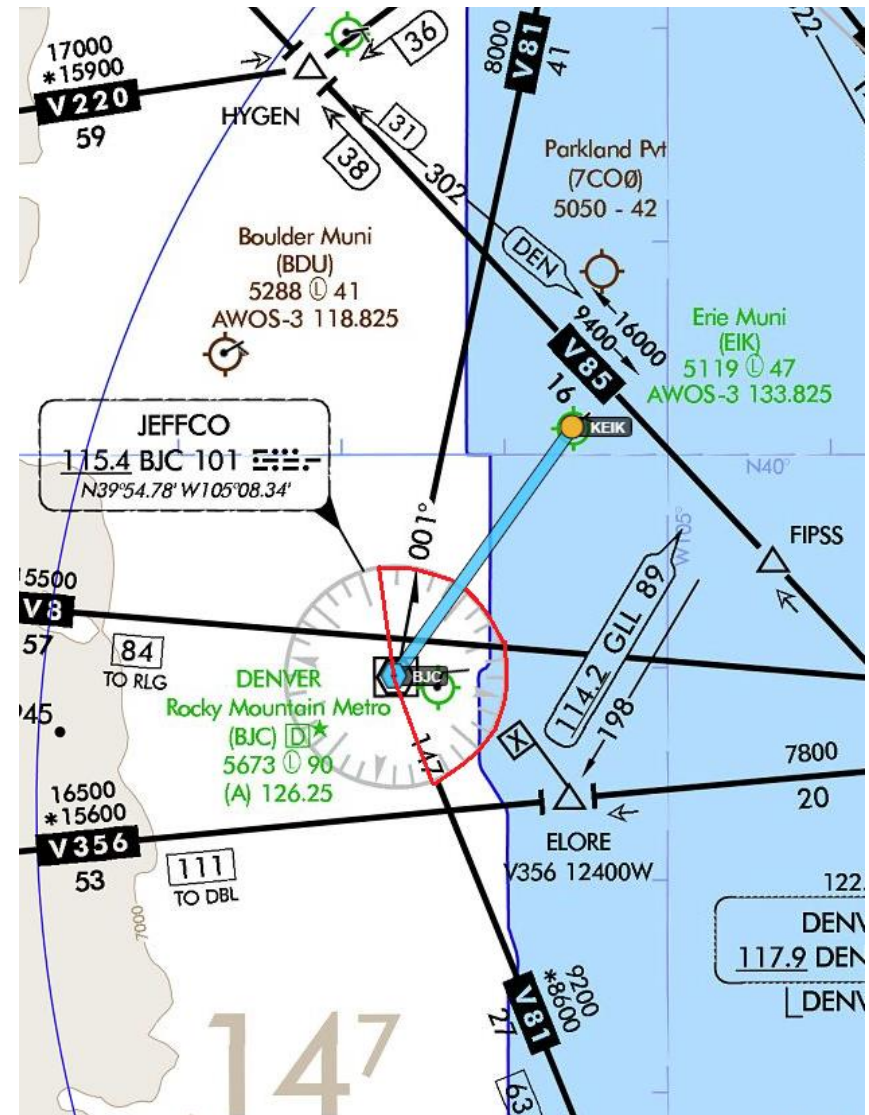
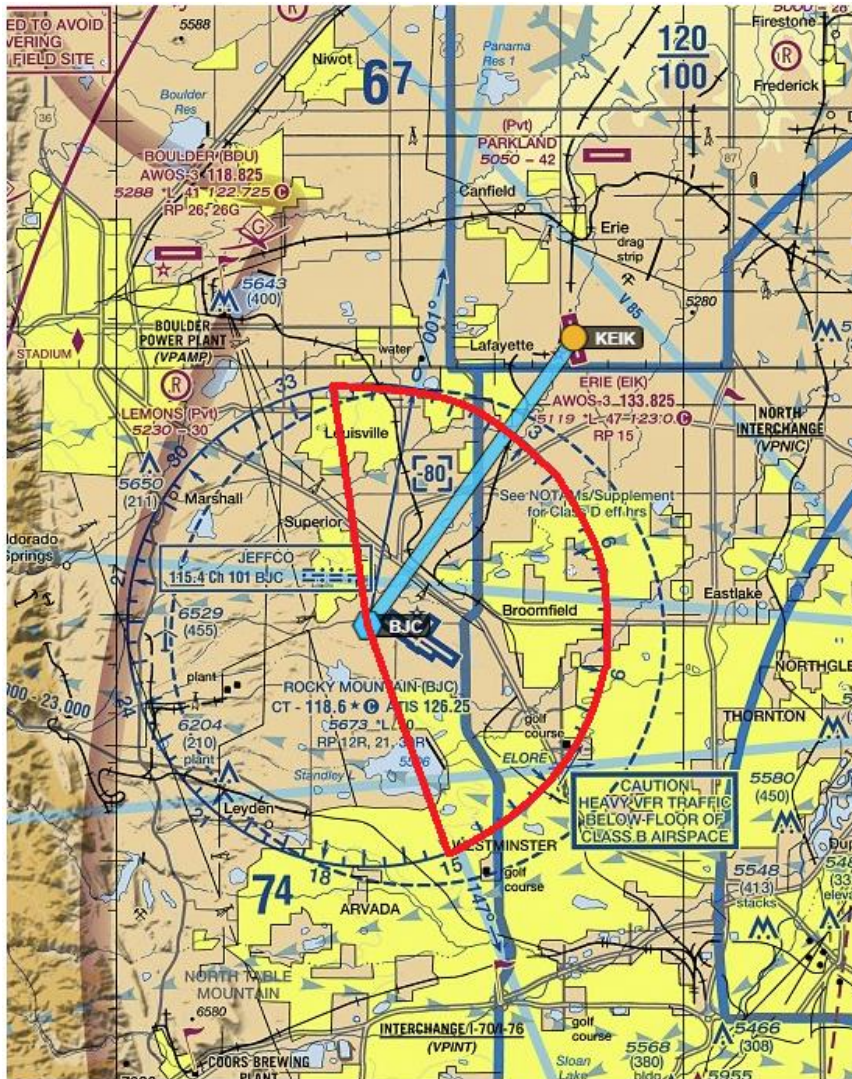
Cardinal 1974 (IAS 91mph ~80kts) (80 IAS @ 5000ft ~90 TAS & 90 GS no wind)  
Notes: Decease R.O.C. - 30fpm for each 10° F above standard temp for a given altitude

# KEIK Obstacle Departure Procedure



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After departing KEIK fly direct to the BJC VOR. If your desired course thereafter is within the area defined in red (R-340 CW R-150) proceed on course while climbing to the altitude assigned in the clearance.



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# KEIK Obstacle Departure Procedure



AIR ECHO ALPHA 51, LLC.

If your desired course thereafter is **NOT** with the area defined in red (R-340 CW R-150) then the ODP instructs the pilot to climb in a holding pattern.

## ERIE, CO

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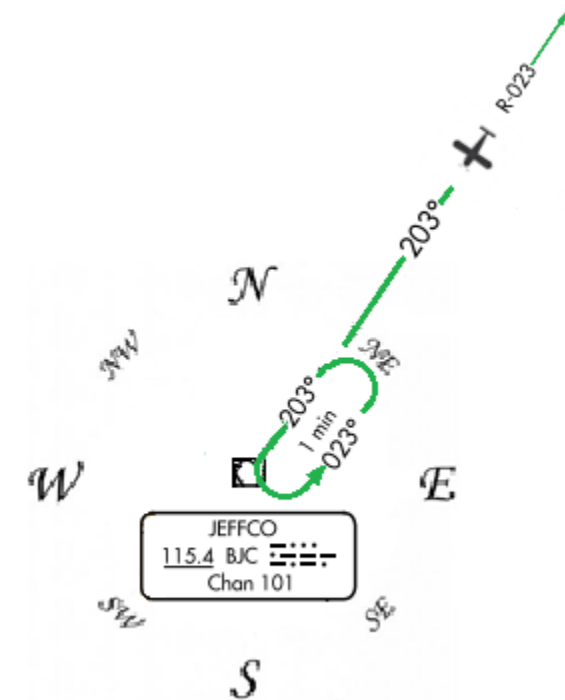
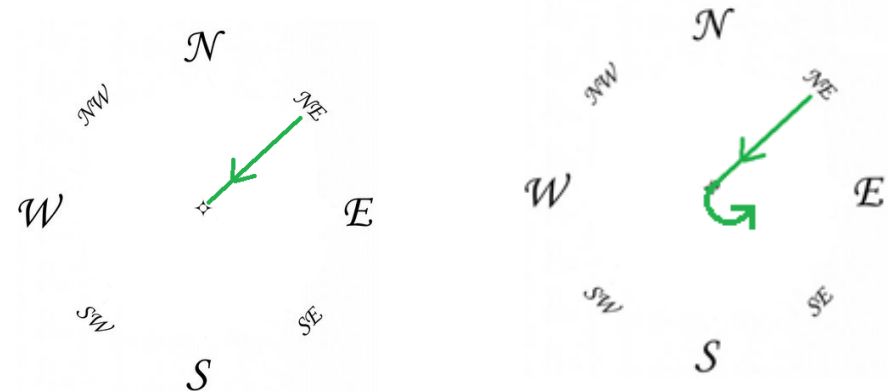
Departures on BJC R-340 CW R-150 climb on course. All others climb in BJC holding pattern (NE, left turns 203° inbound) to cross BJC VOR/DME at or above 13300, or comply with RADAR vectors.

☐ A holding pattern is a predetermined maneuver designed to keep an aircraft within a specified airspace. Basic elements of a holding pattern include:

- The holding fix ( **VOR**, NDB, OM, Intersection, DME)
- Line of position ( radial or bearing) **203° inbound**
- Direction from the fix ( N, **NE**, E, SE, S, SW, W, NW)
- Direction of turns (Standard - right, **Non-standard - left**)
- The inbound leg in min or NM (At or below 14,000ft – **1 min**)
- Holding Alt & AS (**Climbing to 13,300ft** )
- Expect-Further-Clearance time (EFC) if applicable

KEIK's ODP includes a **non-standard** holding pattern not depicted on the chart. To illustrate the hold:

- Draw the four cardinal directions with North at the top.
- Then sketch the fix in the center.
- Draw a line from the fix to the cardinal direction described in the holding clearance.
- Then place an arrow on it that points towards the fix.
- Draw the direction of turns at the fix.
- Note any other details (Leg length or Time, Alt, AS, EFC, Airway or Radial, current position relative to fix).
- Anticipate the entry procedure.



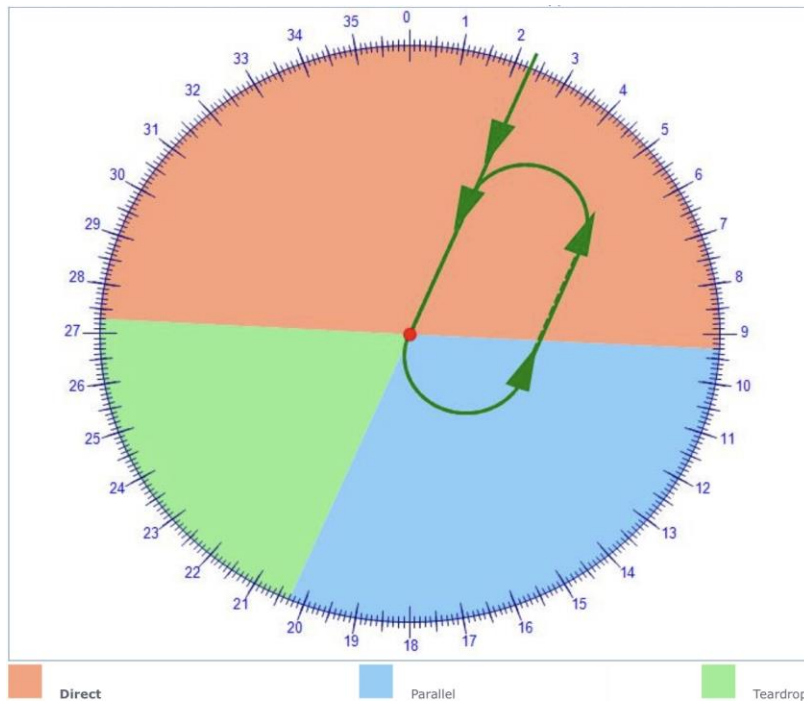
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Holding Pattern Entry (non-standard left turns)

- Parallel Procedure. When approaching from sector (blue), turn to a heading to parallel the holding course outbound on the nonholding side for one minute, turn in the direction of the holding pattern through more than 180 degrees, and return to the holding fix or intercept the holding course inbound.
- Teardrop Procedure. When approaching from sector (green), fly to the fix, turn outbound to a heading for a 30° teardrop entry within the pattern (on the holding side) for a period of one minute, then turn in the direction of the holding pattern to intercept the inbound holding course.
- Direct Entry Procedure. When approaching from sector (orange), fly directly to the fix and turn to follow the holding pattern.



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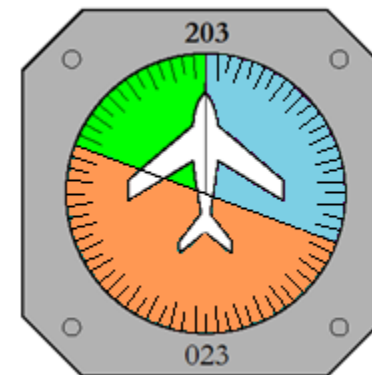
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After departing KEIK fly direct to the BJC VOR. This will require a SW heading of approximately 203° + or - 10°. The holding instructions within the ODP direct the aircraft to hold NE of BJC using non-standard left hand turns, on 203° inbound to BJC (023° radial from the station)

\*Rule of thumb for non-standard pattern: While referencing the DG, determine what quadrant the outbound course is within. Although the inbound course to BJC is 203°, the outbound course or radial from the station is 023°. 023° is within the orange section which dictates a direct entry to the holding pattern.



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Blind flight (IFR) was predicated on the advent of navigational aids, and communication networks to help guide the blind from Take-off to Landing.

An invisible structure was build on top of these navigation aids to ensure guidance to the destination, as well as obstical and terrain clearance. Departure procedures were established to guide an aircraft from the ground to the enroute structure avoiding obsticals and terrain. There are two main types of Departure Procedures (DPs):

- Obstacle Departure Procedures(ODPs)
- Standard Instrument Departures (SIDs)

Standard terminal arrival route or standard terminal arrival (STAR) were developed to facilitate transition between the enroute structer and an instrument approach procedure. An instrument approach procedure (IAP) transfers an aircraft from the beginning of the initial approach to a landing or to a point from which a landing may be made visually

