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**Experimental Flight Test Areas  
for  
N770AL**

**SANDEL PROPRIETARY**

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**PROPRIETARY DATA**

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**Revision Sheet**

REV	Section(s)	Description of Change(s)
K	2 3 4	<p>Updated description for certified instrumentation.</p> <p>Section 3.1: Updated for Day/Night, VFR/IFR, VMC/IMC.</p> <p>Table 3-1: Update to include the following airports that were removed in revision J: KBIH, KBLH, KDAG, KEED, KEUG, KHII, KMHV, KMIT, KMRY, KNYL, KOTH, KPRC, KPTV, KRDM, KSEZ, KSMF, KHND.</p> <p>Table 3-1: Updated to add KLGB, KGYR, KIWA, KFAT</p> <p>Section 3 Updated to include figures for the following airports that were removed in revision J: KBIH, KBLH, KDAG, KEED, KEUG, KHII, KMHV, KMIT, KMRY, KNYL, KOTH, KPRC, KPTV, KRDM, KSEZ, KSMF, KHND.</p> <p>Section 3: Updated to add figures for KLGB, KGYR, KIWA, KFAT</p> <p>Section 4: Market Survey added.</p>
J	- 3	<p>Revision I not used.</p> <p>Section 3.2: Removed reference to Table 3-2. Removed reference to Figure 3-4. Removed reference to flights for TAWS evaluations.</p> <p>Table 3-1 - Removed the following airports: KBIH, KBLH, KDAG, KEED, KEUG, KHII, KMHV, KMIT, KMRY, KNYL, KOTH, KPRC, KPTV, KRDM, KSEZ, KSMF, KHND. Added a column to show FSDO regions for listed airports.</p> <p>Removed Table 3-2 Mt. McDill</p> <p>Removed figures for the above listed airports.</p> <p>Airports in this revision are only in the San Diego and Riverside FSDO regions.</p>
H	Rev. Sheet 3	<p>Revision Sheet formatting corrected.</p> <p>Typo corrected for PSP in Table 3-1.</p> <p>KMFR Rogue Valley Medford Airport removed.</p>
G	3	<p>Section 3.1 Updated to provide for transit to/from the designated flight test areas. Updated to clarify permissible operations over densely populated areas.</p> <p>Section 3.2 – Updated to clarify permissible operations over densely populated areas. Table 3-1 updated to include all procedures that were previously included in Revision E which was approved by the San Diego FSDO - except for KCRQ and newly added KPSP which are exempt from the restriction of flight over densely populated areas. KWJF and E25 deleted.</p> <p>Re-added figures for typical transit route, all airports, and Mt. McDill that were previously included in Revision E which was approved by the San Diego FSDO with the following changes: KCRQ note changed to permit flight over densely populated areas, KPSP added, KWJF and E25 deleted</p>

REV	Section(s)	Description of Change(s)
	4 5	Market Survey Flights – Removed Market Survey Flight Limitations - Removed
F	All 3  4 5	Flight test area descriptions updated and areas added as a Sandel meets the requirements of Part 21. Title updated. Section 3.1 updated to remove references and figures referring to flight over densely populated areas on the basis of special operating limitations as per 91.319. Section 3.2 Updated to remove references and figures referring to flight over densely populated areas on the basis of special operating limitations as per 91.319. Table 3-1 updated to include all instrument procedures at listed airports. KPSP added. Section 3.3 Added for Flight Test Area 3. New section. New section.
E	3	Added Airport: KHND – Henderson, Nevada
D	3	Added provision for alternate airport (KRNM) in Flight Test Area 1.
C	3	Added Airport: E25 – Wickenburg, Arizona
B	1 2 3	Formatting updated. Changed Special Flight Authorization to Special Airworthiness Certificate. Updated figure 2-1. Revised description of progression of flight test program. Cover page updated. Section renamed to Limitations. Flight Test Area 1 Limitations updated. Flight Test Area 2 Limitations updated. Updated description of Flight Test Area 2 to show specific airports of intended operation and smaller geographic area. Updated description of Flight Test Area 3. Market Survey Flights removed. New content added. Operation areas updated.
A	All	Initial Release

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## 1. FLIGHT TEST PROGRAM OVERVIEW

Sandel Avionics is in development of a fully integrated flight deck comprised of a comprehensive avionics suite of flight, communication, and engine instrumentation. This flight deck is designed to meet NextGen requirements.

**The basic aircraft handling, flight controls, and performance are not affected by this modification. Certified communications transceiver, navigation equipment, and transponder will be available as a back-up to the experimental equipment.**

While operating the aircraft in the United States under a Special Airworthiness Certificate, Sandel Avionics will maintain the aircraft under FAA registry and airworthiness regulations. The flight test program may expand to additional airports to further evaluate various aspects of the system for example Human Factors.

## 2. RESEARCH AND DEVELOPMENT FLIGHTS

R&D flight testing will be performed with an installation generally as shown below. Certified engine instrumentation, NAV/COM equipment, and flight instrumentation will be installed and will be removed after TIA. The overall plan is to perform initial flight testing in Flight Test Area 1 until acceptable performance of the basic instruments and functions has been demonstrated and until no less than 5 hours of flight time has accumulated. After that time, the flight test area will be expanded into Flight Test Area 2 to perform additional system evaluation that cannot be done in Flight Test Area 1. Flight Test Area 2 may also be utilized to relocate the aircraft for aircraft maintenance and/or modifications.



Figure 2-1 Representative Avilon Configuration

### 2.1 Flight Test Area 1 Description

The Research and Development flights will initially be limited to Southern California in order to validate the system performance. A portion of these flights may be conducted west of the San Diego shoreline. These flights will be conducted within two areas (offshore and over land) in coordination with the controlling agencies. Flight Test Area 1 Limitations are detailed in Section 3.1.

The offshore area is within the boundaries of 33° 0'N 117° 17'W, 33° 0'N 117° 47'W, 33° 14'N 118° 0'W, 33° 18'N 118° 30'W, 33° 42'N 118° 30'W, 33° 42'N 118° 0'W, 33° 0'N 117° 17'W plus Warning Area 291. Flights made inside of Warning Area 291 will remain inside of the Contiguous U.S. ADIZ.

The over land area over sparsely populated area is within the boundaries of 33° 0'N 117° 0'W, 33° 40'N 117° 0'W, 33° 40'N 116° 10'W, 33° 0'N 116° 10'W, 33° 0'N 117° 0'W.

## 2.2 Flight Test Area 2 Description

After the system performance has been validated in Flight Test Area 1, the flight test area will be expanded to include additional airspace that will be utilized to conduct flights to/from specific airports with published instrument procedures to validate the performance of the system enroute and in terminal areas (Flight Test Area 2). Flight test Area 2 may also be used to relocate the aircraft to locations where maintenance and/or additional modifications are to be performed on the aircraft. Flights may also continue to be conducted in Flight Test Area 1. Flight Test Area 2 Limitations are detailed in Section 3.2.

## 3. RESEARCH AND DEVELOPMENT FLIGHT LIMITATIONS

### 3.1 Flight Test Area 1 Limitations 91.319

- All flights will be conducted in accordance with ATC instructions and published procedures (where applicable).
- All initial communications with ATC will indicate that the flight is Experimental.
- Flight test operations will be DAY/NIGHT and may be conducted under VFR or IFR in VMC or IMC when equipped in accordance with FAR 91.205.
- Appropriate certified avionics will be on board and will be monitored for navigation until system performance has been validated.
- Except for the purpose of takeoff, departure, approach, and landing, flights will remain above 2000' AGL.
- Flights will be limited to the Flight Test Areas shown in Figure 3-1 through Figure 3-3.
- Except for transit to/from the area, offshore flight test activities will remain inside of the airspace shown in Figure 3-1 outlined by the magenta lines and may also be conducted in Warning Area W-291.
- Flights conducted in Warning Area W-291 will remain inside of the Contiguous US ADIZ See Figure 3-2.
- Except for transit to/from the area, when operating in the over land flight test area, flight test activities will remain inside of the airspace outlined by the magenta box. See Figure 3-3.



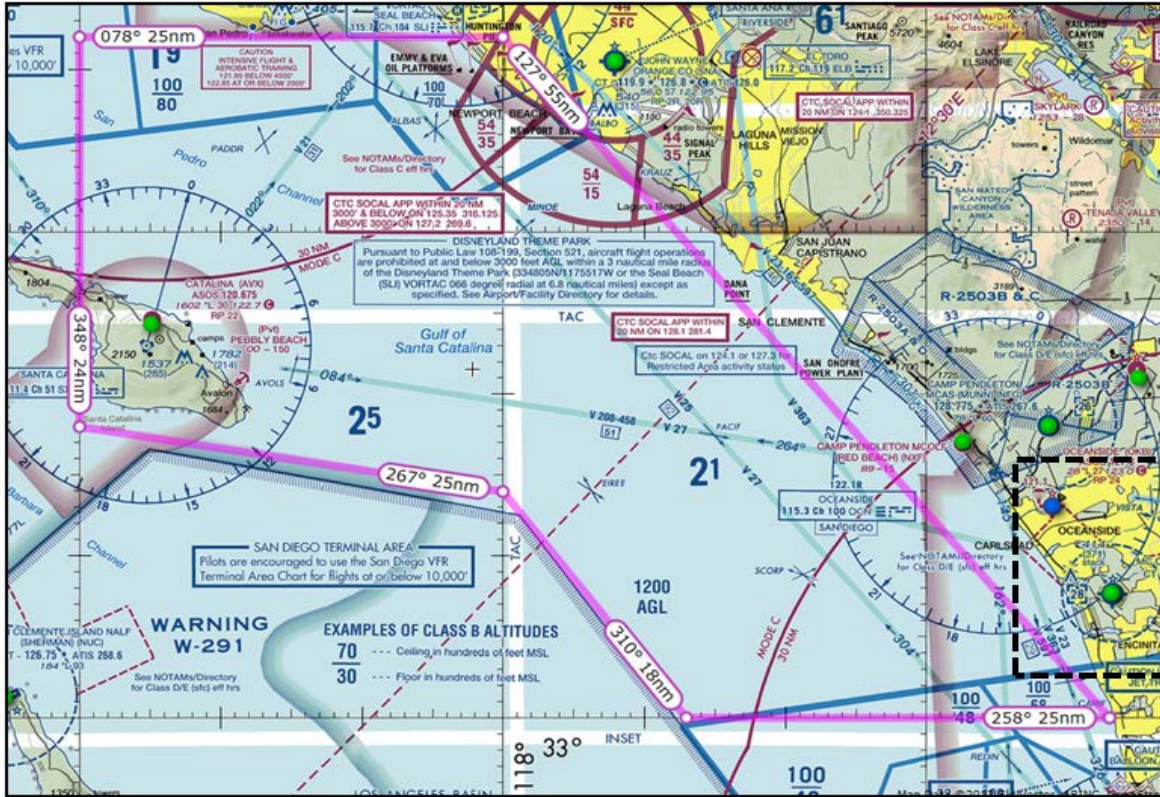


Figure 3-1 Offshore Flight Test Area

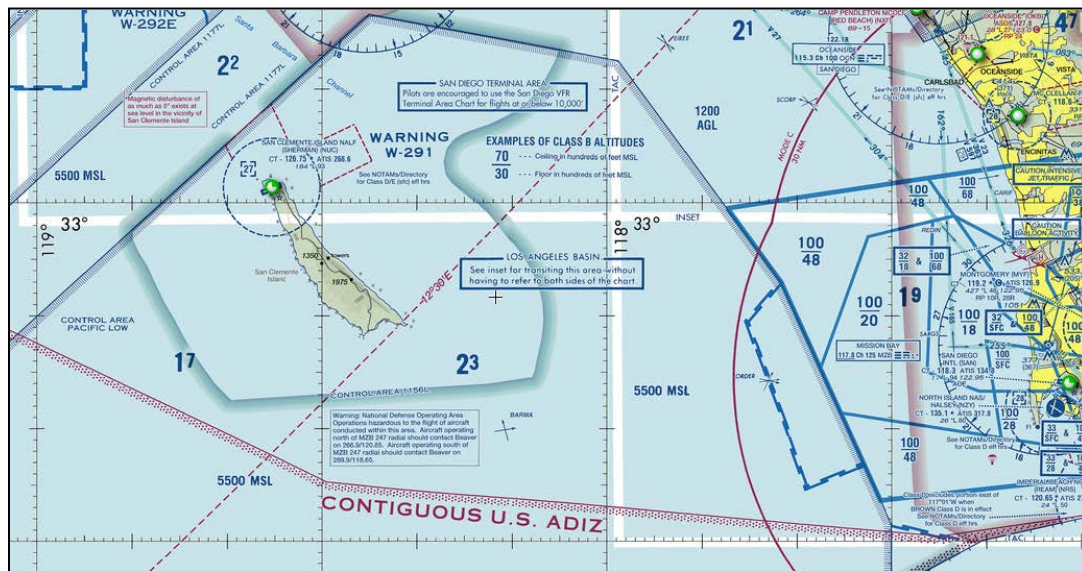


Figure 3-2 Offshore Flight Test Area (Warning Area W-291)

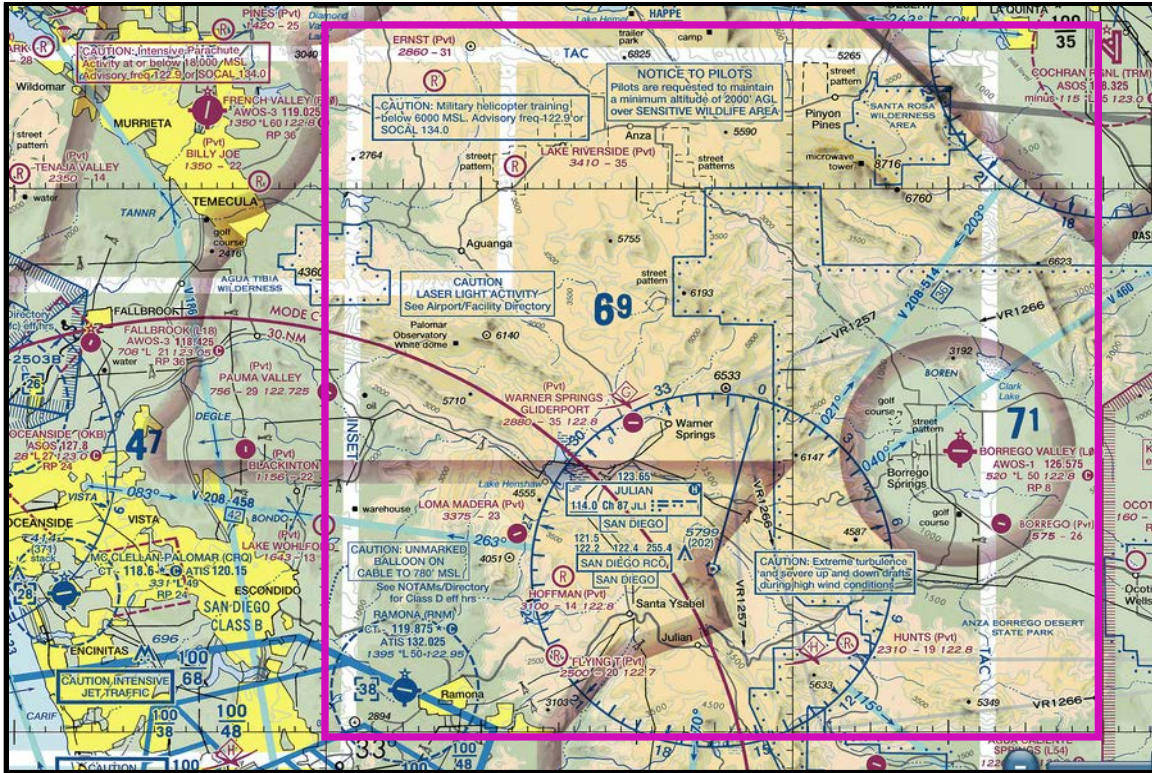


Figure 3-3 Over Land Flight Test Area

### 3.2 Flight Test Area 2 Limitations

Flight test area 2 locations are listed in Table 3-1. Flights will be conducted to validate enroute navigational performance between airports and navigational performance in terminal areas. Landings may be made at the airports. Flights may continue to be conducted in Flight Test Area 1. All VFR and IFR arrival and departure procedures may be flown to/from the airports listed (as approved by the respective FSDOs) to allow for approaches to be conducted in a variety of conditions including varying surrounding geographic features, environmental conditions, high traffic density conditions, pilot workload, and to further evaluate system performance.

This flight test area will be utilized for system evaluation.

- All initial communications with ATC will indicate that the flight is Experimental.
- All flights will be conducted in accordance with ATC instructions and published procedures (where applicable).
- When flying under Instrument Flight Rules, deviations from assigned and/or published procedures will be coordinated with ATC.
- Appropriate certified avionics will on board and monitored for navigation at all times.
- Flight test operations will be DAY/NIGHT and may be conducted under VFR or IFR in VMC or IMC when equipped in accordance with FAR 91.205.
- Except for TAWS evaluation flights conducted in the vicinity of Mt. McDill (See Figure 3-29), flights will remain above 2000' AGL except for the purpose of takeoff, departure, approach, and landing.
- Any published approaches with the designation of AUTHORIZATION REQUIRED will be flown as practice approaches under Visual Flight Rules.
- If a procedure is updated, the updated procedure will be used.

Airport ID	Airport Name *Indicates airport is also on R&D list	Figure	FSDO Region
KPTV	Porterville Municipal	Figure 3-4	Fresno
KMIT	Shafter Airport – Minter Field	Figure 3-5	Fresno
KFAT*	Fresno Yosemite International Airport	Figure 3-6	Fresno
KHND	Henderson Executive Airport	Figure 3-7	Las Vegas
KLGB	Long Beach Airport (Daugherty Field)	Figure 3-8	Long Beach
KRDM	Roberts Field	Figure 3-9	Portland
KEUG	Mahlon Sweet Field Airport	Figure 3-10	Portland
KOTH	Southwest Oregon Regional	Figure 3-11	Portland
KBIH	Eastern Sierra Regional Airport	Figure 3-12	Reno
KBLH	Blythe Airport	Figure 3-13	Riverside
KEED	Needles Airport	Figure 3-14	Riverside
KPSP*	Palm Spring International	Figure 3-15	Riverside
KSMF	Sacramento	Figure 3-16	Sacramento
KCRQ*	McClellan-Palomar Airport	Figure 3-17	San Diego
KRNM	Ramona	Figure 3-18	San Diego
L08	Borrego Valley	Figure 3-19	San Diego
KMRY	Monterey Regional	Figure 3-20	San Jose
KSEZ	Sedona	Figure 3-21	Scottsdale
KGYR*	Phoenix Goodyear Airport	Figure 3-22	Scottsdale
KIWA*	Phoenix-Mesa Gateway Airport	Figure 3-23	Scottsdale
KPRC	Ernest A Love Field	Figure 3-24	Scottsdale
KNYL	Yuma MCAS / Yuma International	Figure 3-25	Scottsdale
KHII	Lake Havasu City Airport	Figure 3-26	Scottsdale
KDAG	Barstow-Daggett Airport	Figure 3-27	Van Nuys
KMHV	Mojave Airport	Figure 3-28	Van Nuys

\* Indicates airport is also on Market Survey list.

**Table 3-1 Flight Test Area 2 Airports**

Location	Figure	Procedure	FSDO Region
Mt. Mc Dill: 11nm from the Palmdale VORTAC (PMD) on the 235° radial. Lat. N 34o 33.98' Lon. W 118o 16.45', Elevation 5200 feet	Figure 3-29	TAWS Testing	Van Nuys

**Table 3-2 Flight Test Area 2 TAWS Evaluation Site**

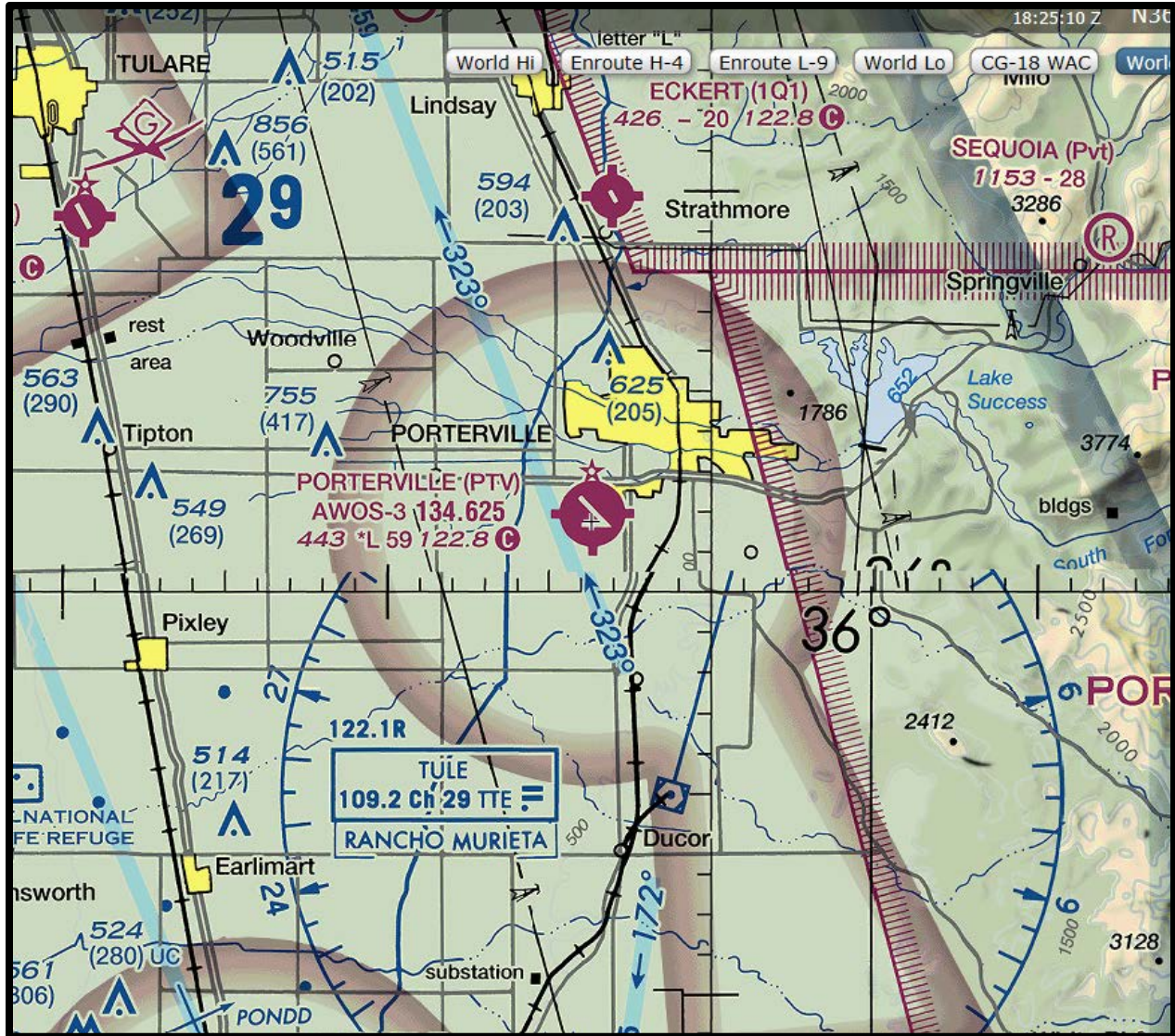


Figure 3-4 KPTV

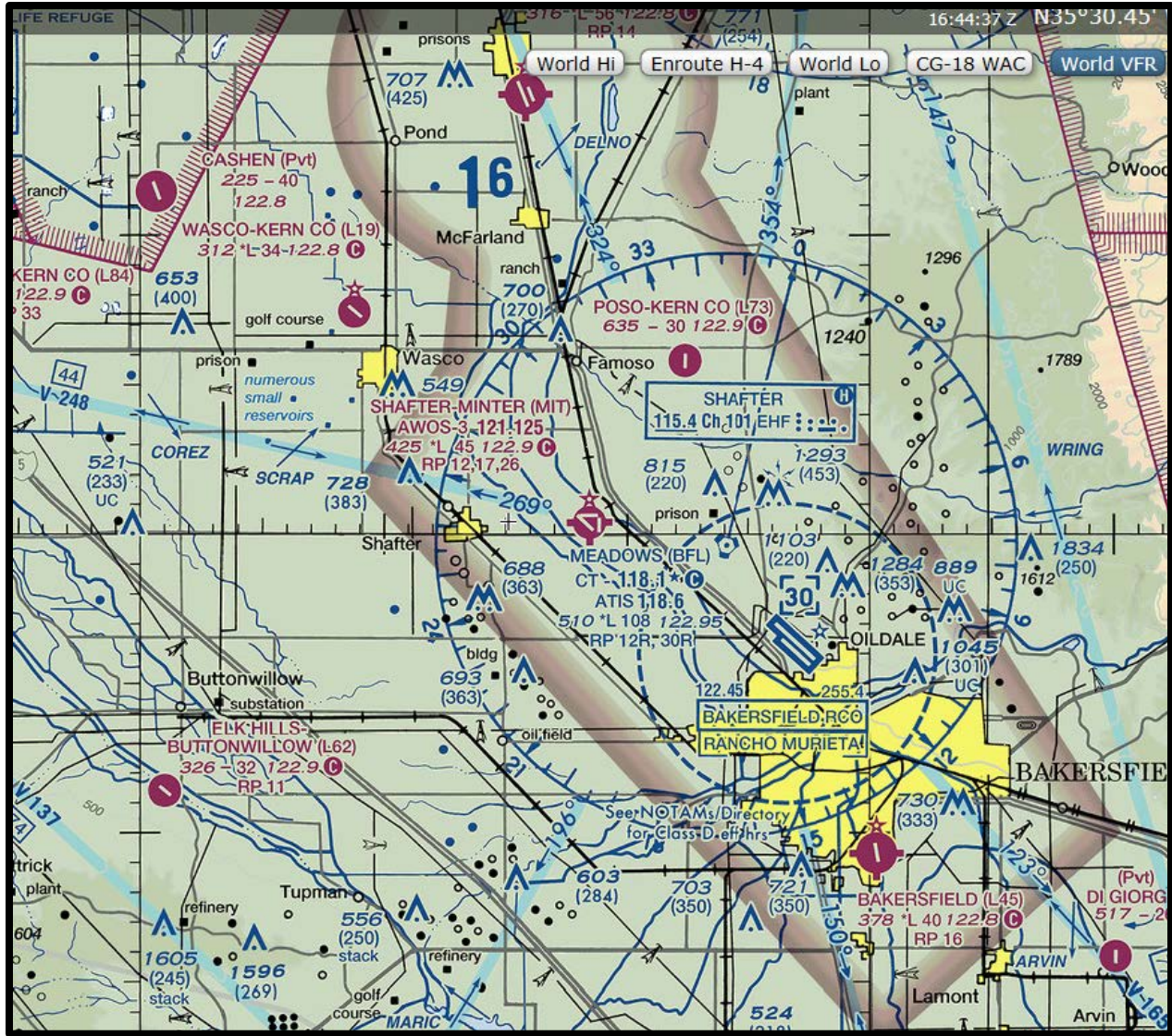


Figure 3-5 KMIT

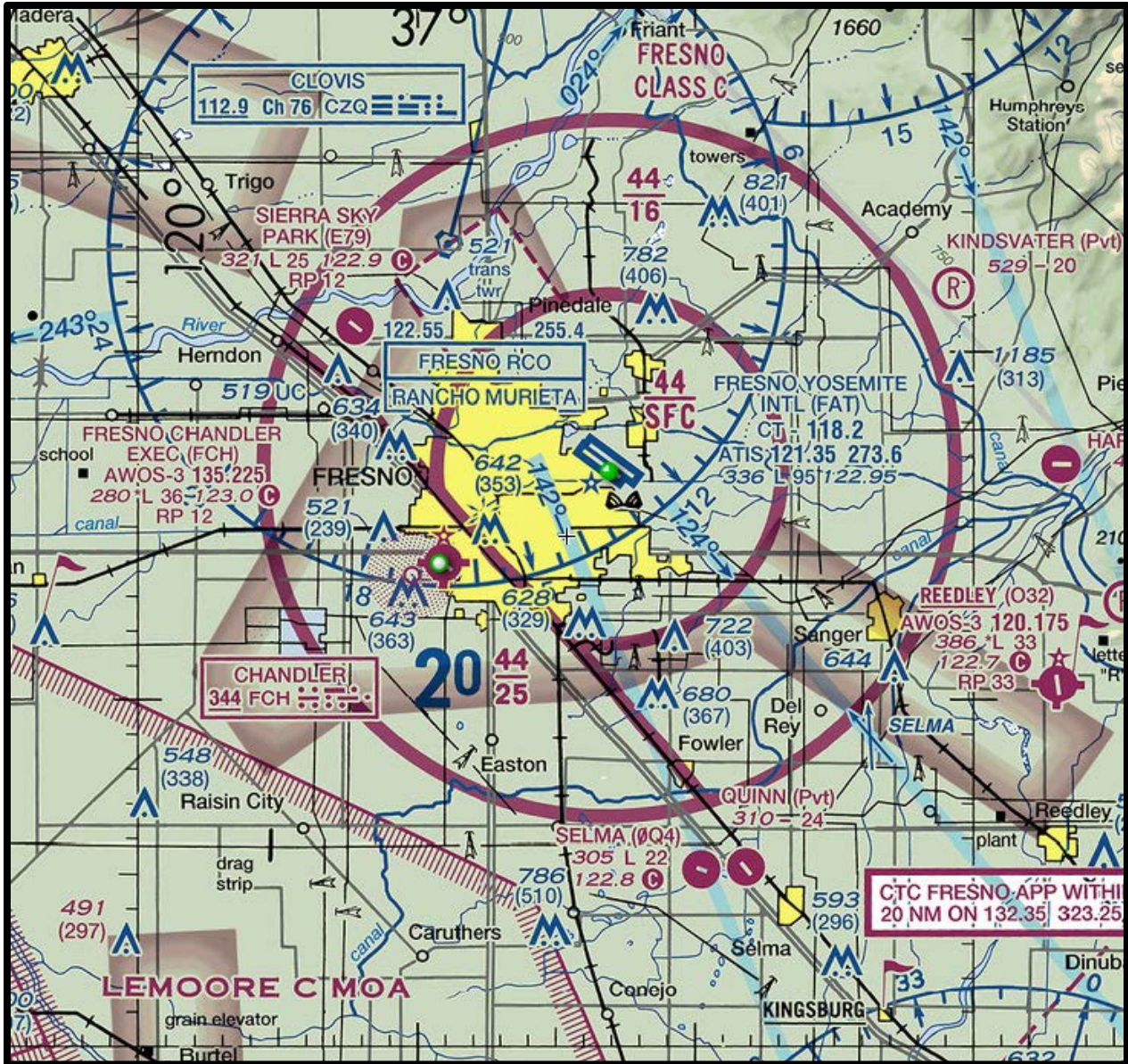


Figure 3-6 KFAT



Figure 3-7 KHND



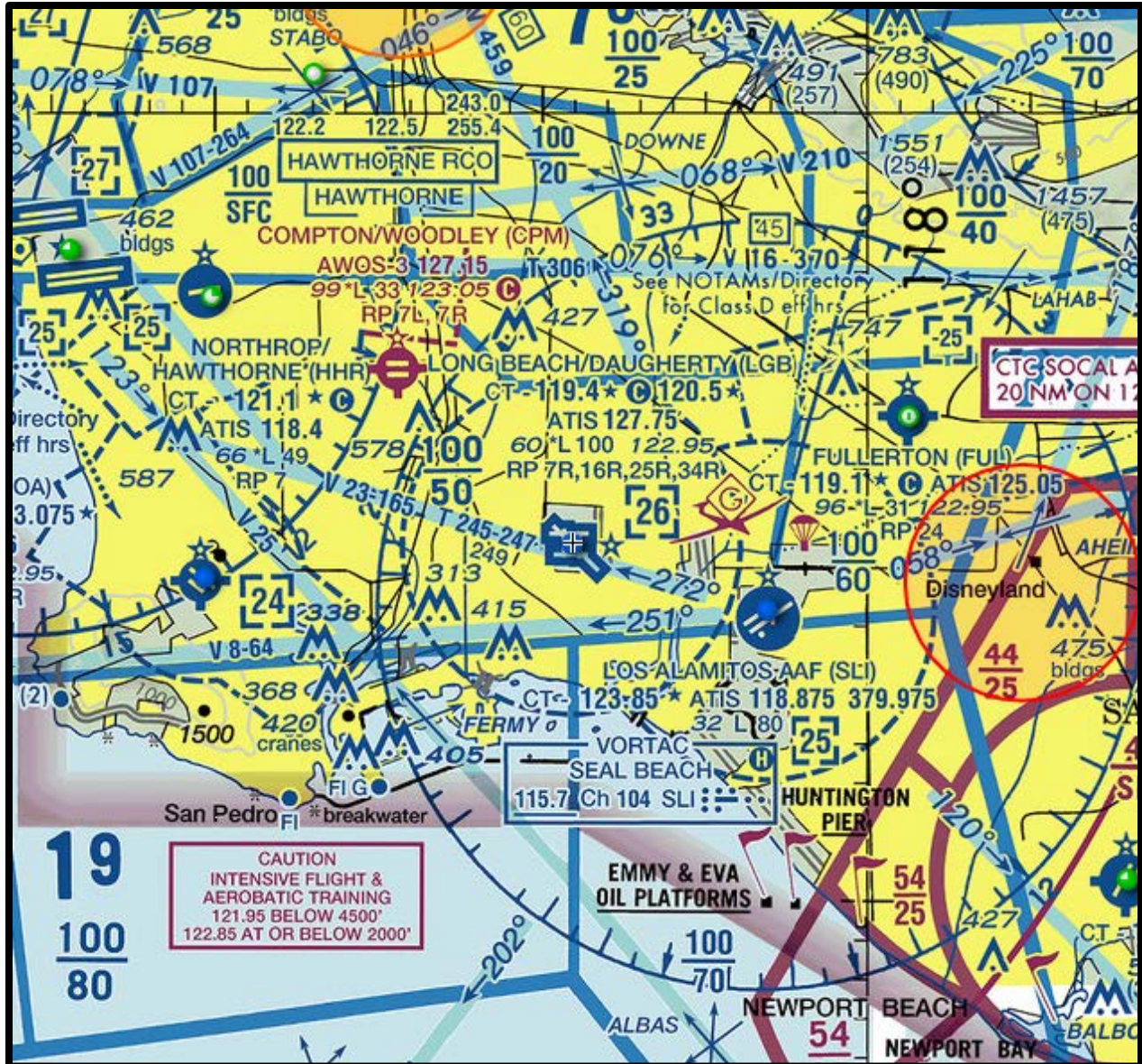


Figure 3-8 KLGB



Figure 3-9 KRDM

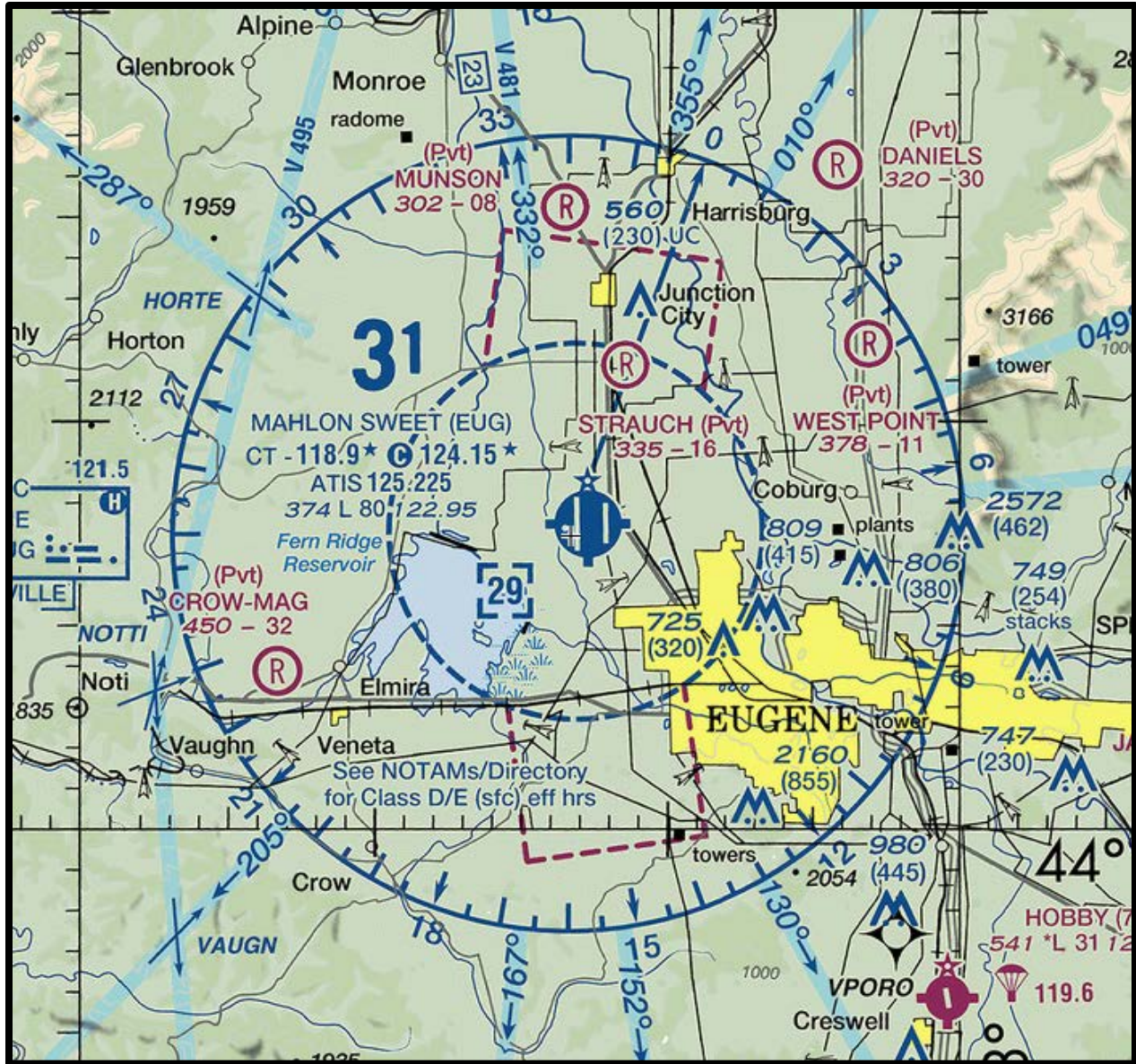


Figure 3-10 KEUG



Figure 3-11 KOTH



Figure 3-12 KBIH



Figure 3-13 KBLH



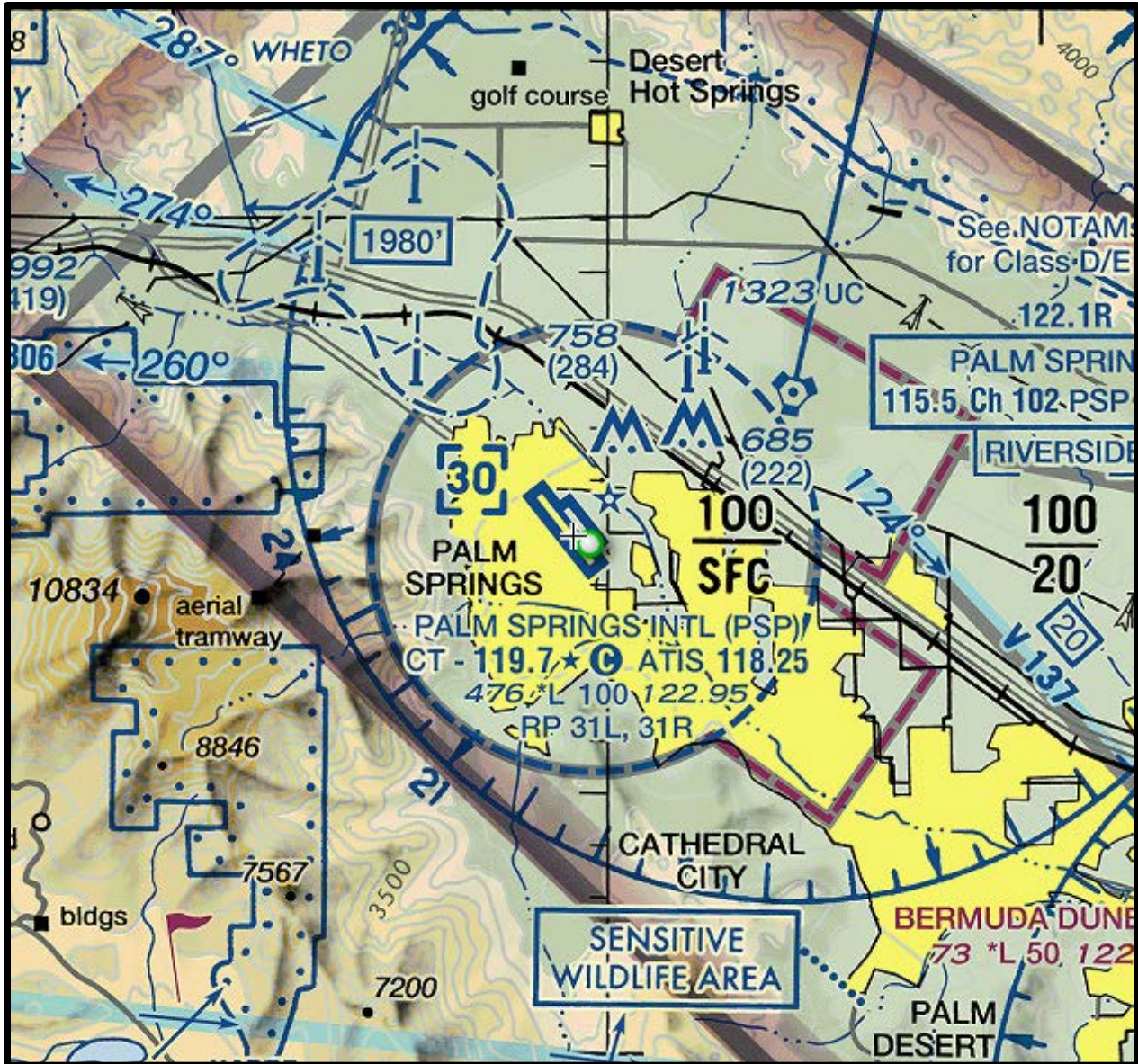


Figure 3-15 KPSP





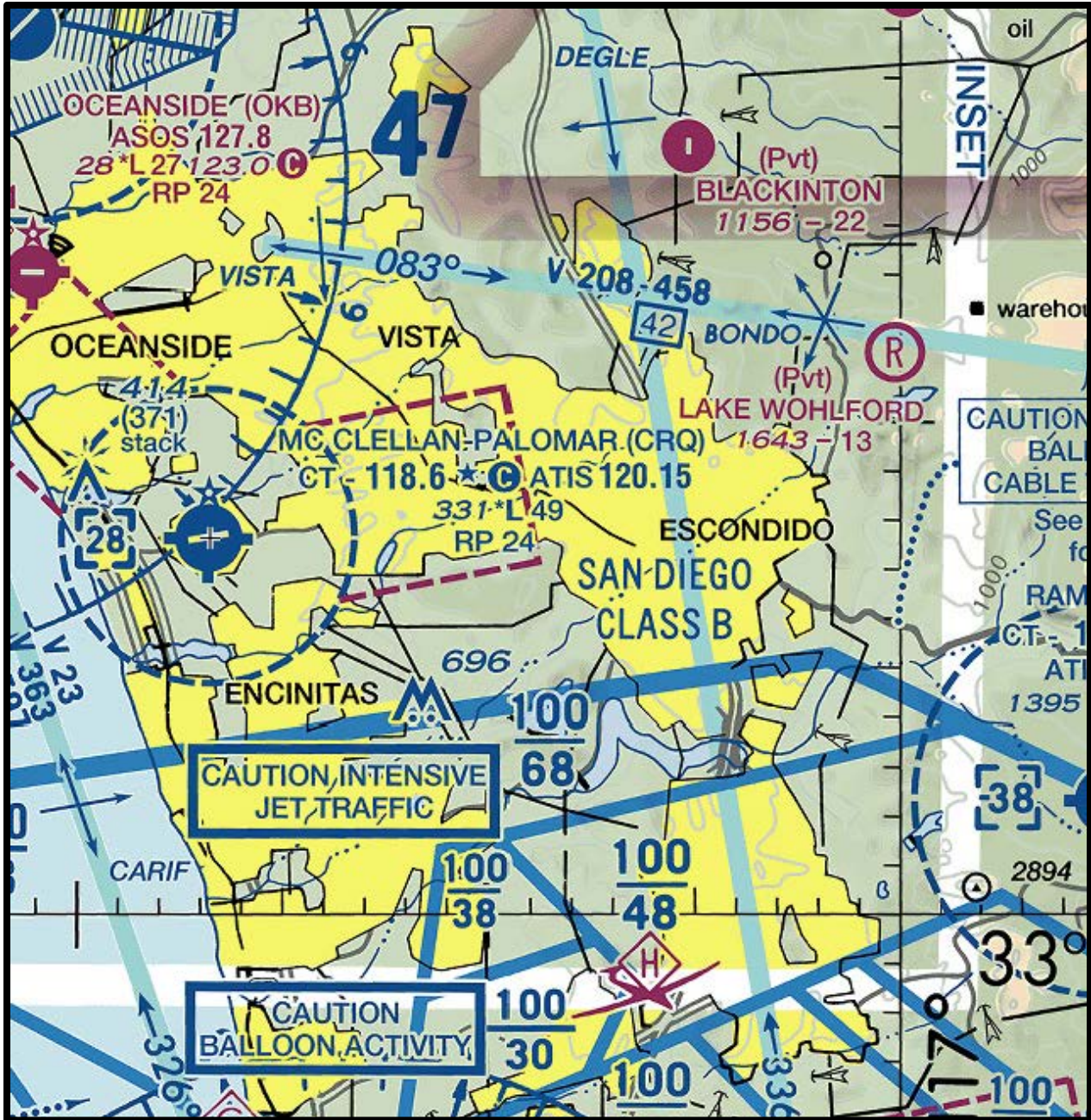


Figure 3-17 KCRQ

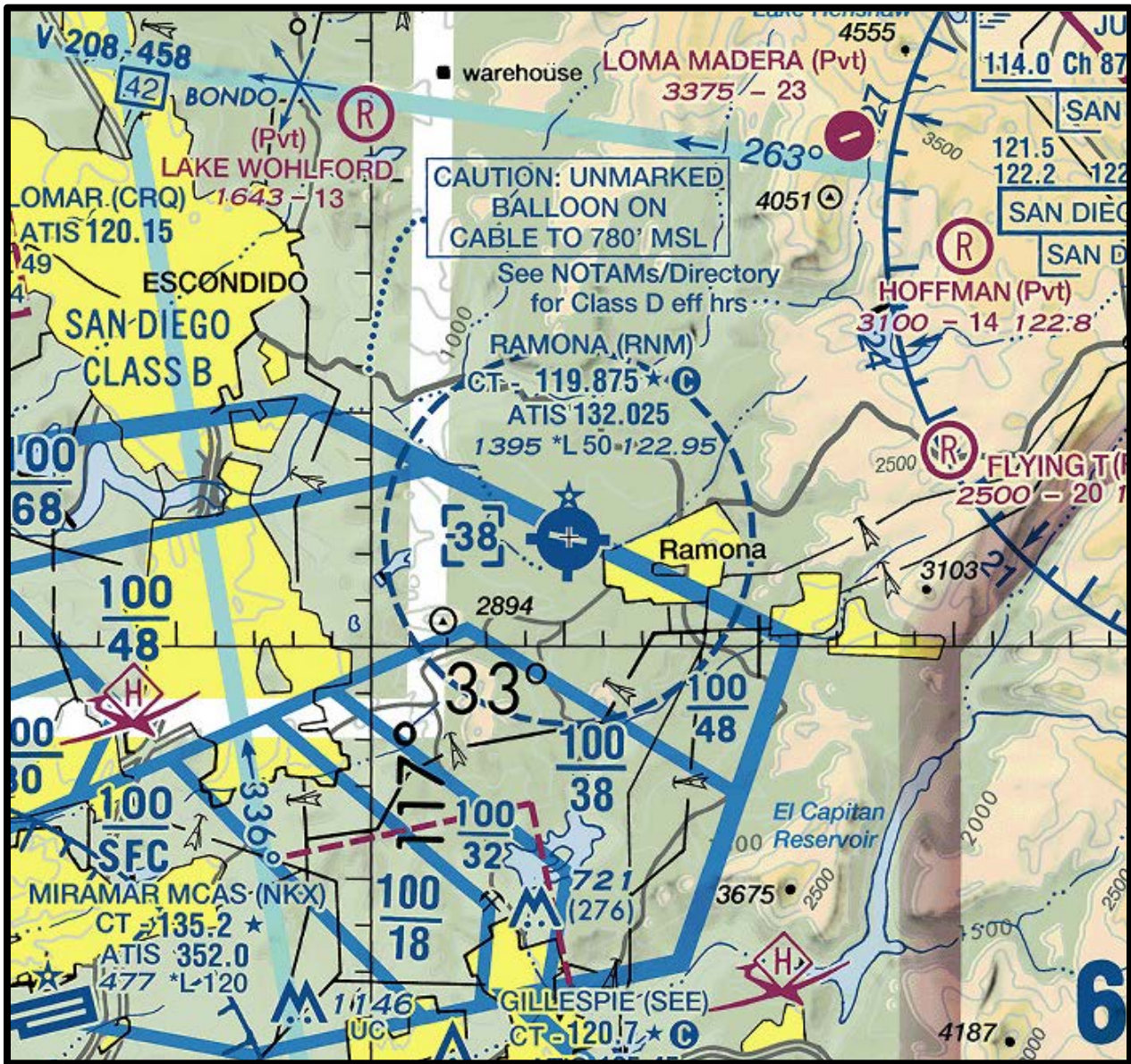


Figure 3-18 KRNM

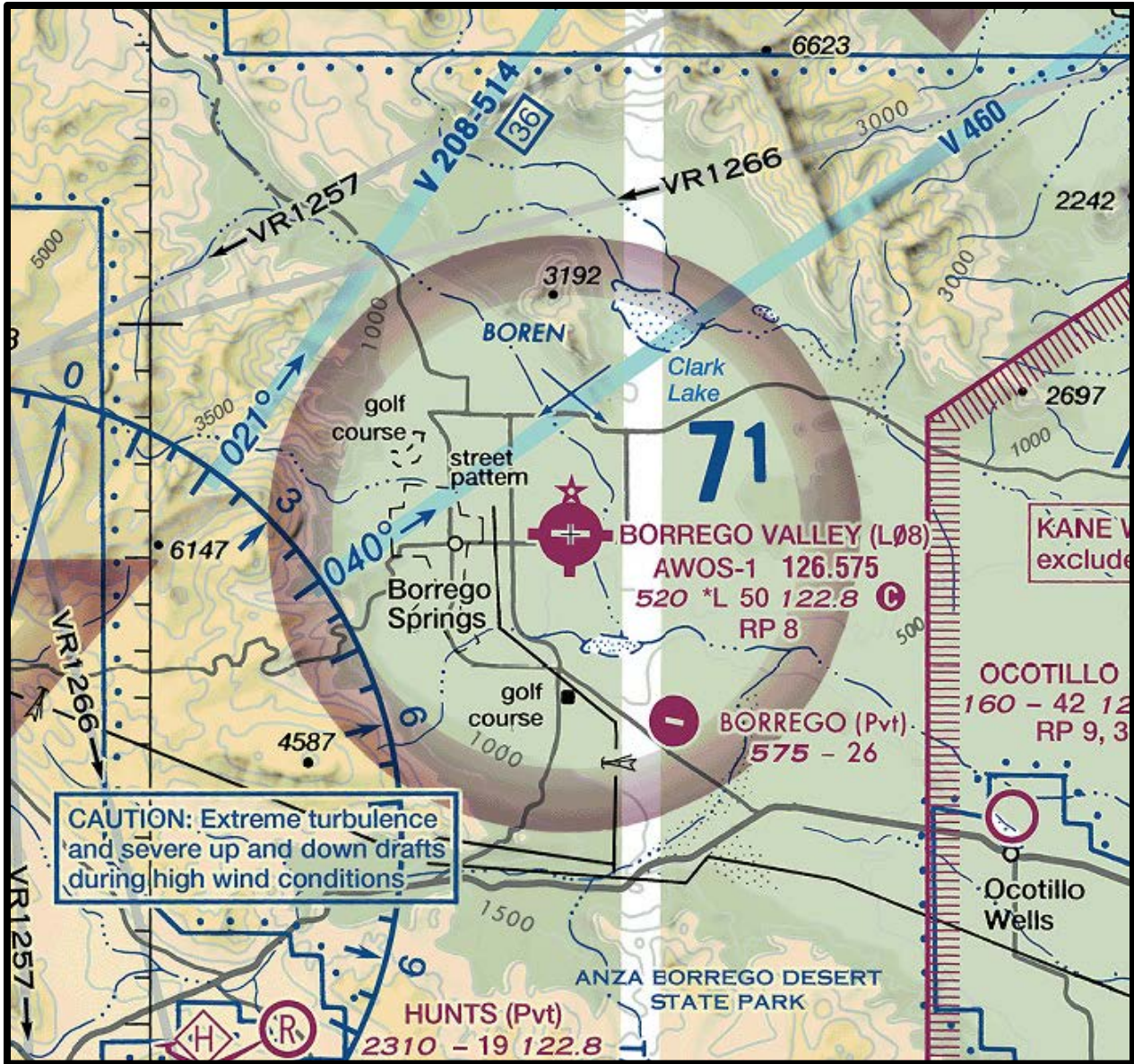


Figure 3-19 L08

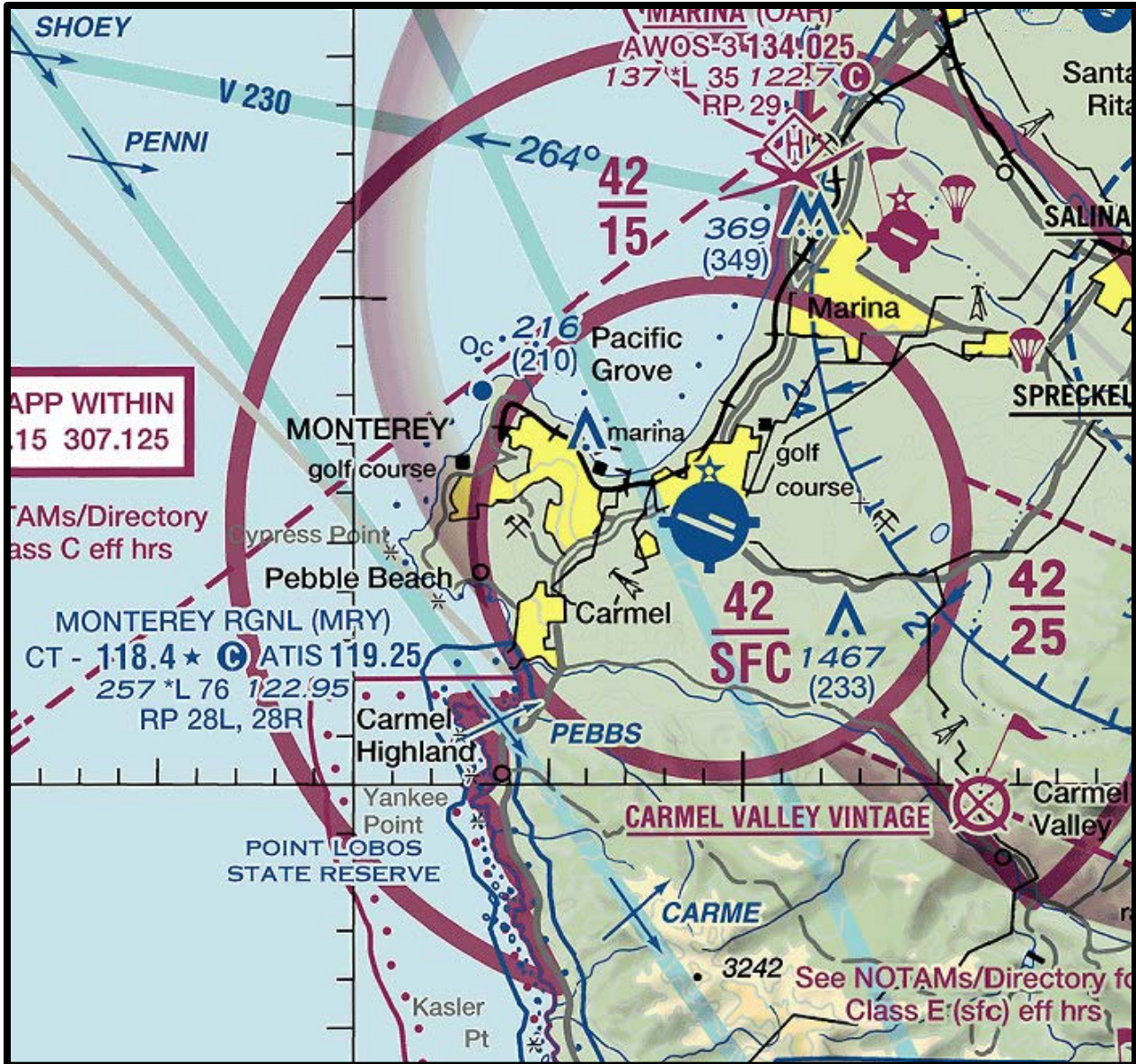


Figure 3-20 KMRY



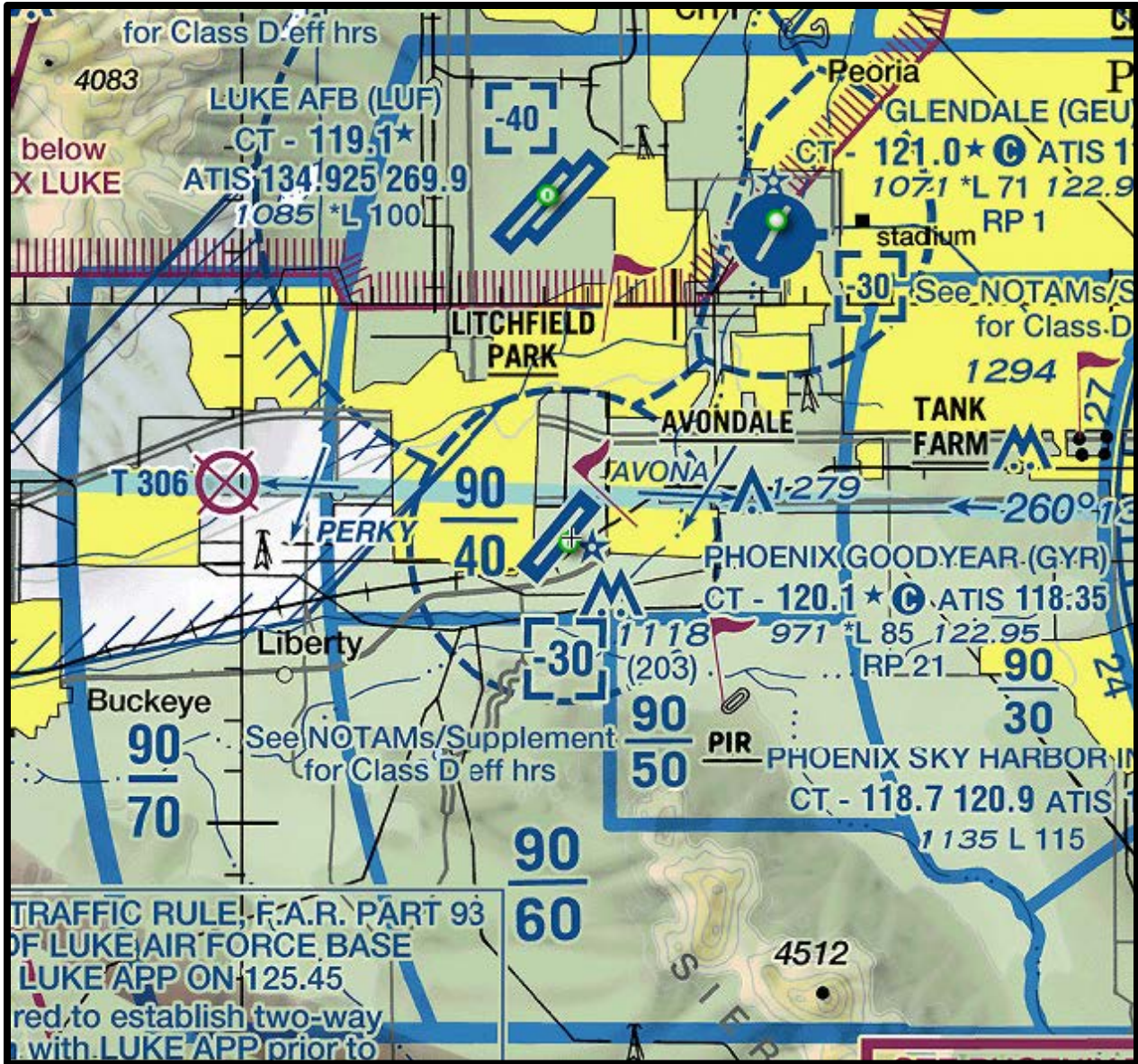


Figure 3-22 KGYR

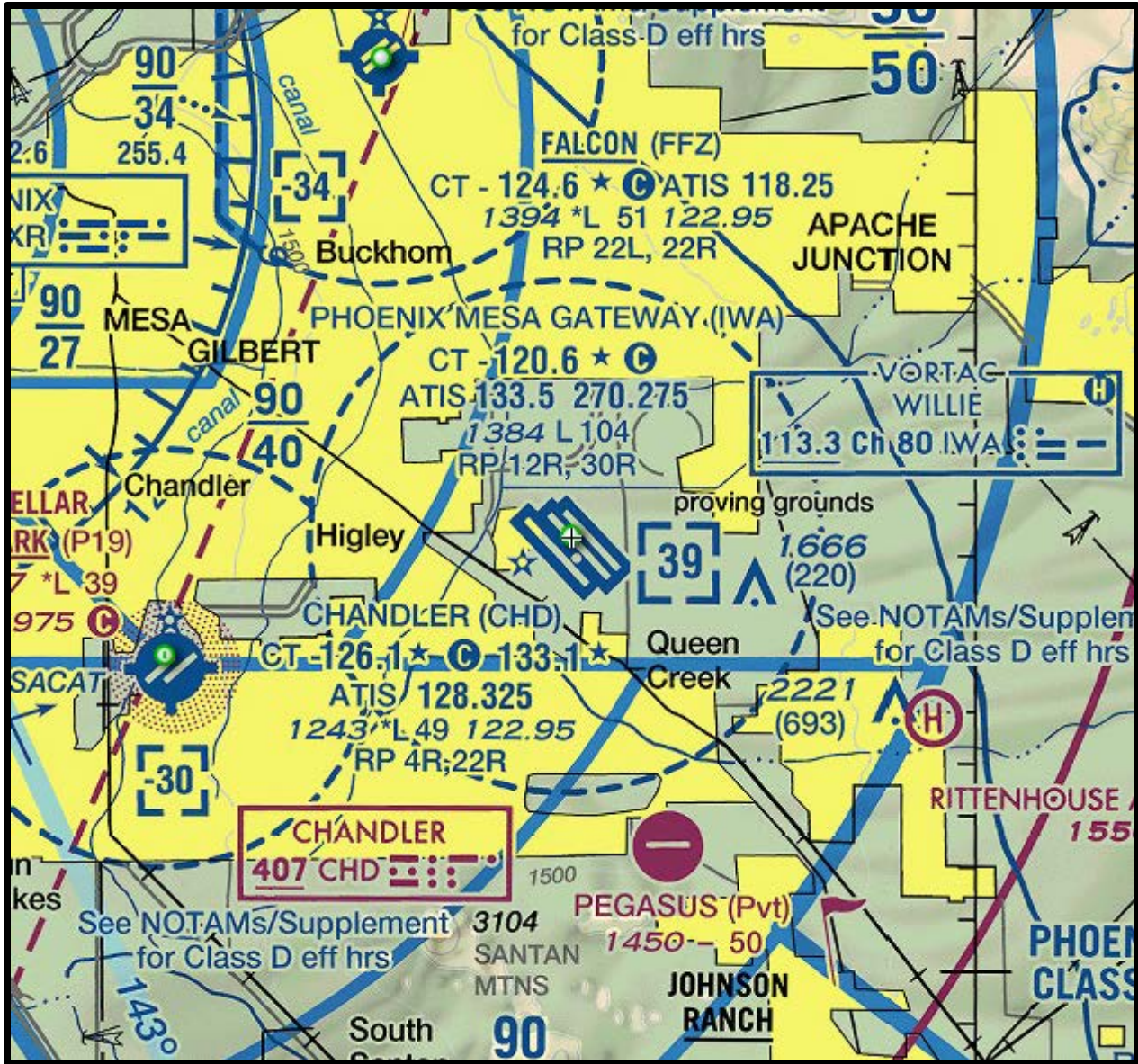


Figure 3-23 KIWA



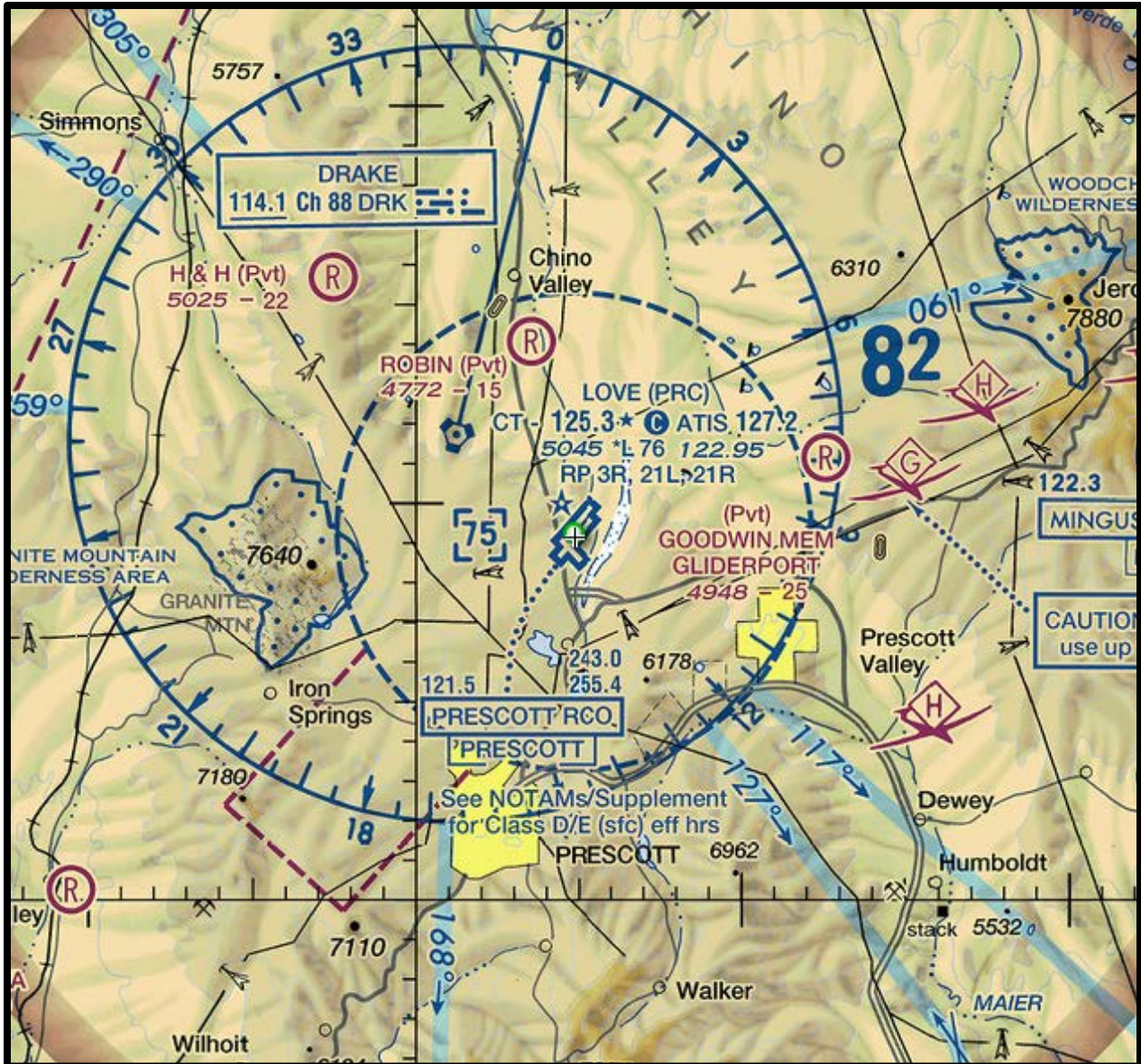


Figure 3-24 KPRC

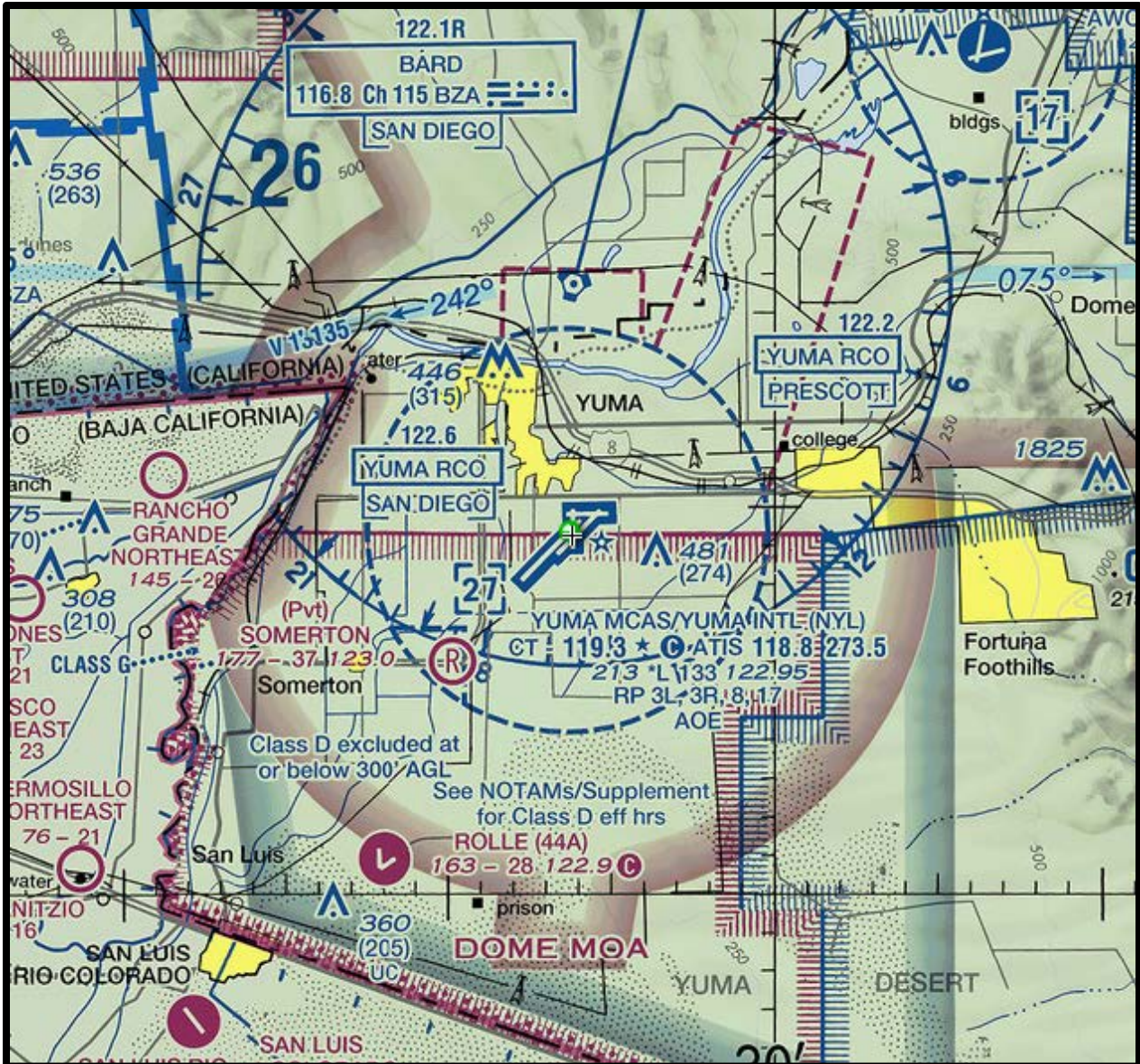


Figure 3-25 KNYL

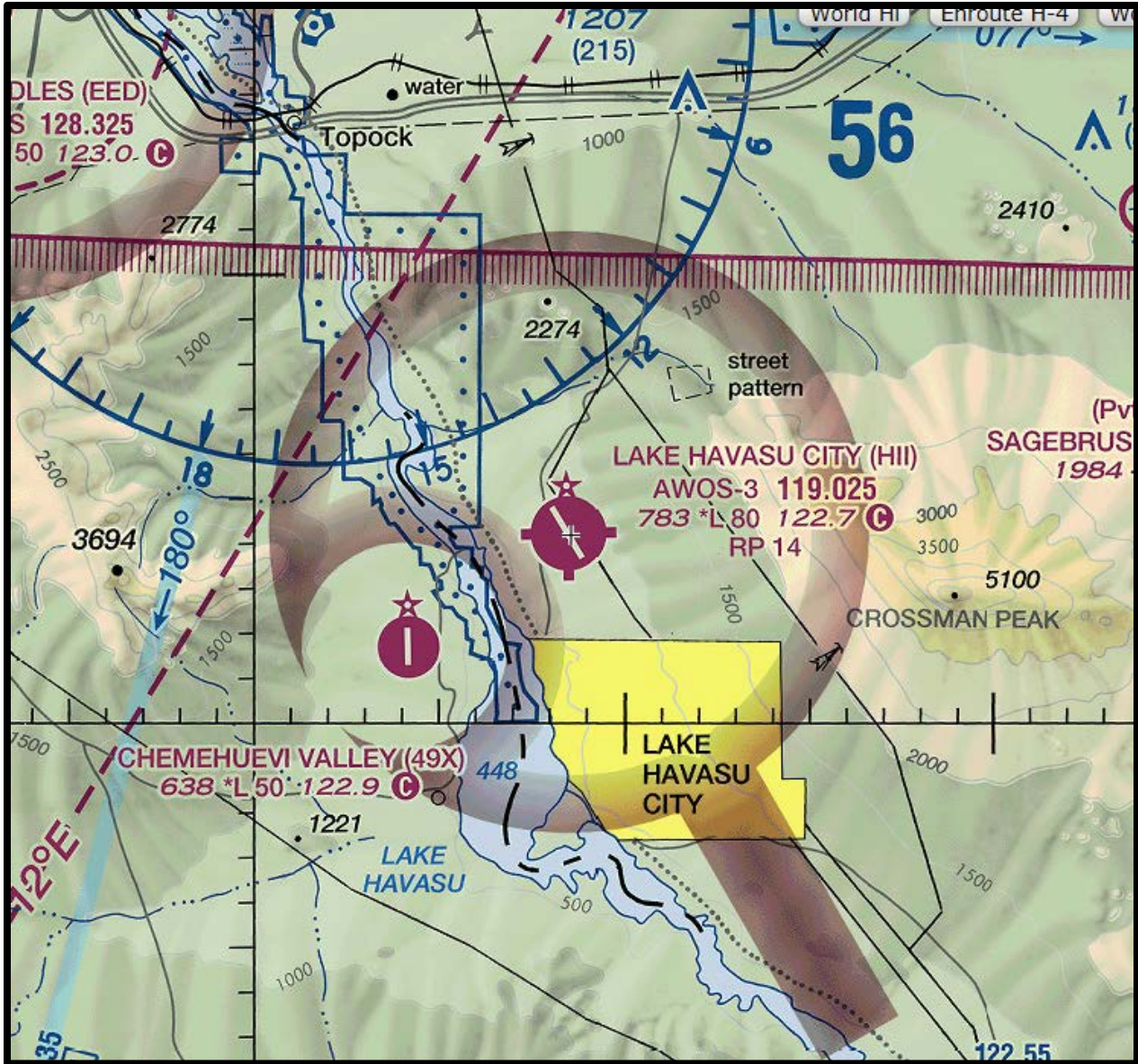


Figure 3-26 KHII

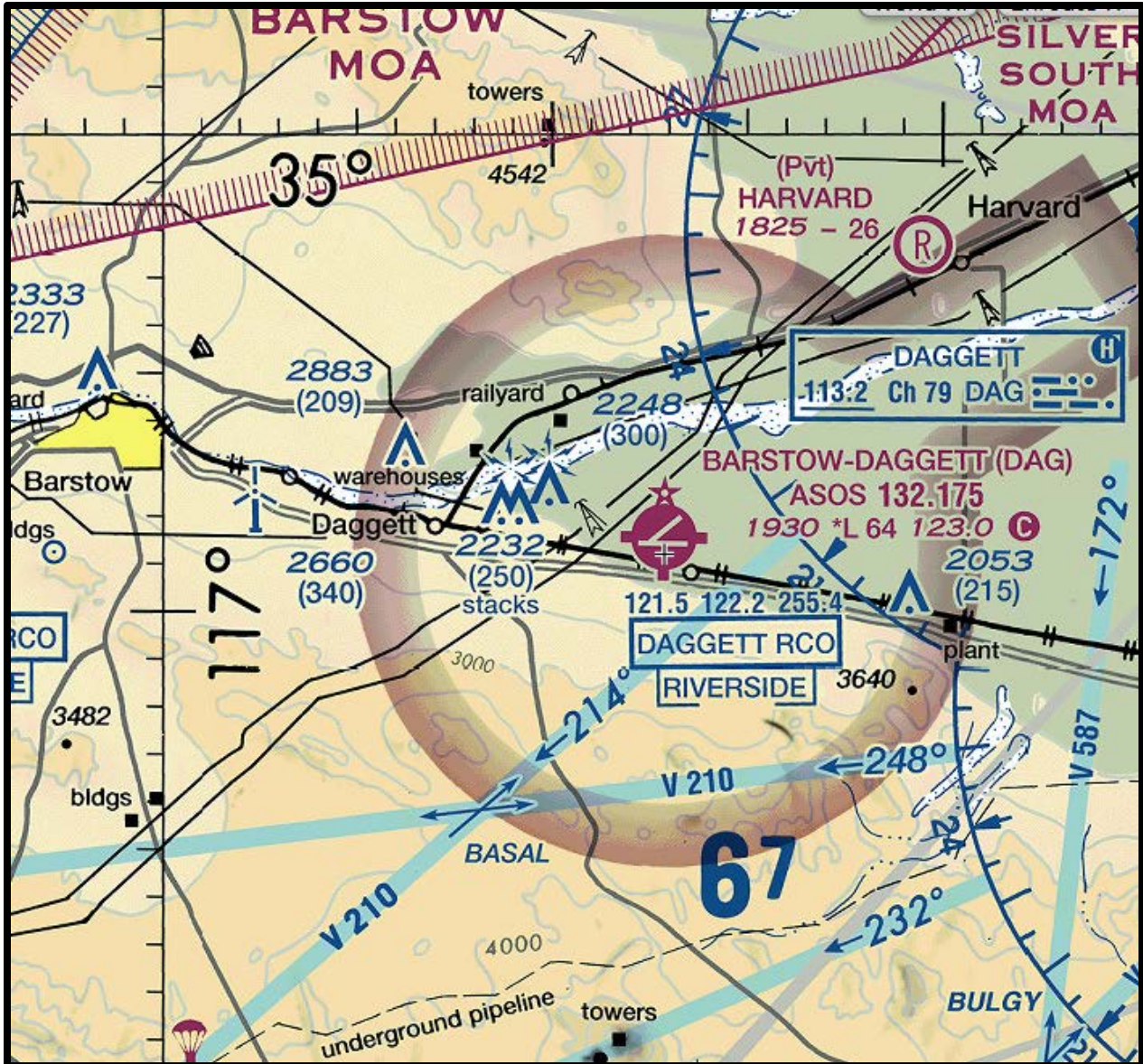


Figure 3-27 KDAG

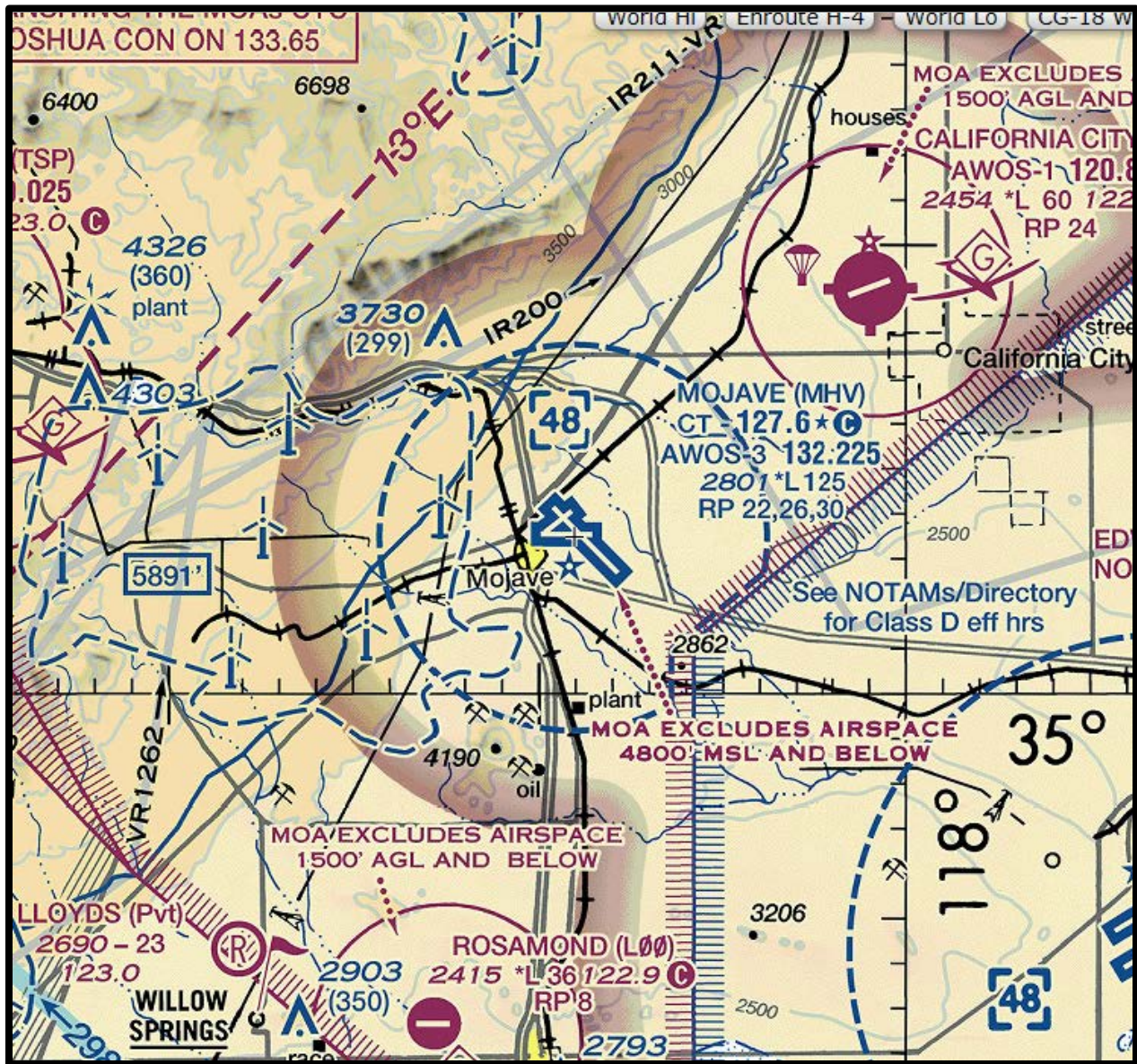


Figure 3-28 KMHV

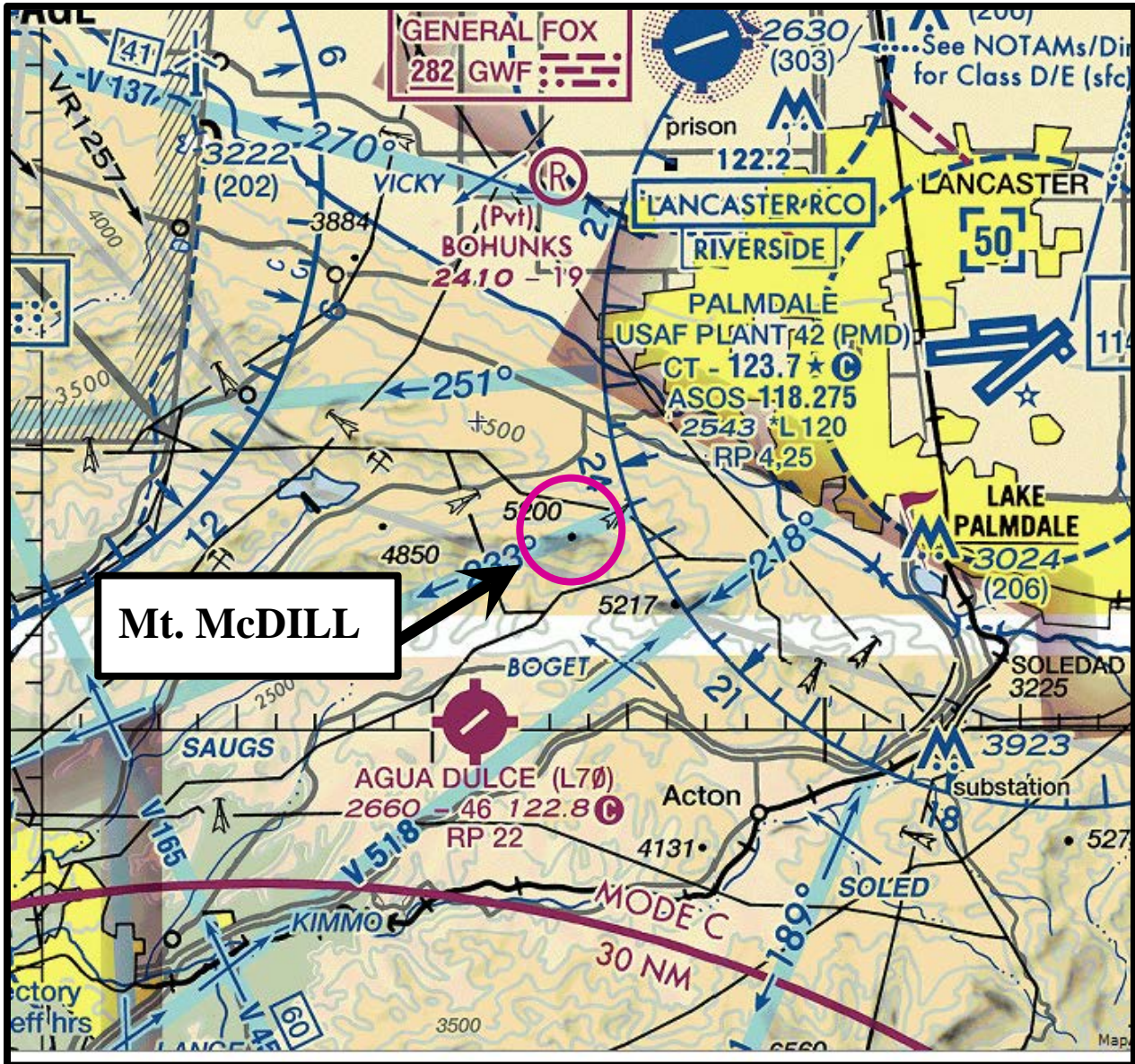


Figure 3-29 Mt. McDill

## 4. MARKET SURVEY

After basic system performance and safety has been validated, the aircraft will be flown to and from select Sandel dealer locations throughout the United States.

### 4.1 Market Survey Limitations

Market Survey flights will be limited to the locations (as approved by the respective FSDOs) shown in Table 4-1. In order to comply with FAR 91.169(2), IFR alternate airports are also contained in this table.

**Table 4-1 Market Survey Locations**

<b>Airport</b> * Indicates airport is also on R&D list	<b>Identifier</b>	<b>FSDO Region</b>	<b>Dealer Name</b>
Albuquerque International Sunport Airport	ABQ	Albuquerque	Cutter
Double Eagle II Airport	AEG	Albuquerque	IFR Alternate for ABQ
Boise Air Terminal/Gowen Field	BOI	Boise	Western Aircraft
Nampa Municipal Airport	MAN	Boise	IFR Alternate for BOI
James M Cox Dayton International Airport	DAY	Cincinnati	Stevens
Springfield-Beckley Municipal Airport	SGH	Cincinnati	IFR Alternate for DAY
Fresno Air Terminal	FAT*	Fresno	Signature/TechnicAir
Madera Municipal Airport	MAE	Fresno	IFR Alternate for FAT
Meadows Field Airport	BFL	Fresno	Cutter
Porterville Municipal Airport	PTV	Fresno	IFR Alternate for BFL
Smith Reynolds Airport	INT	Greensboro	Signature/TechnicAir
Piedmont Triad International Airport	GSO	Greensboro	IFR Alternate for INT
William P Hobby Airport	HOU	Houston	Cutter
Ellington Airport	EFD	Houston	IFR Alternate for HOU
John Wayne-Orange County Airport	SNA	Long Beach	Cutter
Midland International Airport	MAF	Lubbock	Cutter
Odessa Airport-Schlemeyer Field	ODO	Lubbock	IFR Alternate for MAF
Fort Lauderdale/Hollywood International Airport	FLL	Miami	TechnicAir, IFR Alternate for MIA, FXE
Fort Lauderdale Executive Airport	FXE	Miami	TechnicAir
Miami International	MIA	Miami	TechnicAir, IFR Alternate for FLL
Nashville International Airport	BNA	Nashville	Stevens
Smyrna Airport	MQY	Nashville	IFR Alternate for BNA
Addison Airport	ADS	North Texas	Cutter
Dallas Love Field Airport	DAL	North Texas	IFR Alternate for ADS
Palm Springs International Airport	PSP*	Riverside	IFR Alternate for CRQ

<b>Airport</b> * Indicates airport is also on R&D list	<b>Identifier</b>	<b>FSDO Region</b>	<b>Dealer Name</b>
Syracuse Hancock International Airport	SYR	Rochester	TechnicAir
Ithaca Tompkins Regional Airport	RITH	Rochester	IFR Alternate for SYR
Austin-Bergstrom International Airport	AUS	San Antonio	Cutter
Austin Executive Airport	EDC	San Antonio	IFR Alternate for AUS
San Antonio International Airport	SAT	San Antonio	Cutter
Kelly Field Airport	SKF	San Antonio	IFR Alternate for SAT
Corpus Christi International Airport	CRP	San Antonio	Cutter
McCampbell-Porter Airport	TFP	San Antonio	IFR Alternate for CRP
Mc Clellan-Palomar Airport	CRQ*	San Diego	Cutter, IFR Alternate for SNA
Phoenix Goodyear	GYR*	Scottsdale	Cutter, Technic Air
Phoenix-Mesa Gateway Airport	IWA*	Scottsdale	Cutter, Technic Air
Scottsdale Airport	SDL	Scottsdale	TechnicAir
Phoenix Sky Harbor International Airport	PHX	Scottsdale	Cutter
Boeing Field	BFI	Seattle	TechnicAir
Renton Municipal Airport	RNT	Seattle	IFR Alternate for BFI
Greenville-Spartanburg	GSP	South Carolina	Stevens
Donaldson Field Airport	GYH	South Carolina	IFR Alternate for GSP
Spokane	GEG	Spokane	TechnicAir
Felts Field Airport	SFF	Spokane	IFR Alternate for GEG
Tampa International	TPA	Tampa	TechnicAir
Tampa Executive Airport	VDF	Tampa	IFR Alternate for TPA
Stewart International Airport	SWF	Teterboro	TechnicAir
Orange County Airport	MGJ	Teterboro	IFR Alternate for SWF
Teterboro Airport	TEB	Teterboro	TechnicAir
Morristown Municipal Airport	MMU	Teterboro	IFR Alternate for TEB
Will Rogers World Airport	OKC	Will Rogers	Cutter
Wiley Post Airport	PWA	Will Rogers	IFR Alternate for OKC