Creating Scenarios for Scenario-Based Training

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REDBIRD FLIGHT SIMULATIONS

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How would your students describe your simulator training sessions? Exciting, innovative, and fun? Or repetitive and boring? Scenario-based training (SBT) is crucial in pushing students beyond their comfort zones and training them more effectively. However, in order to do that, we as instructors must be prepared.

The key to effective SBT is to create a scenario that is as realistic as possible. In real-world training, we are limited to using the same plane, range of weight and balance, airports, and practice areas. It takes a lot of creativity to get the students out of their ruts. However, in the simulators, a whole world is available to us, and we can incorporate training exercises with a myriad of variables. This allows our students to apply rote knowledge to real situations. Most students and instructors realize the simulators' significance in reducing costs, but—by incorporating a script with SBT—instructors can utilize simulators to their full potential.

Creating a scenario can be a daunting process, and — I won't lie — a great scenario takes quite a bit of prep work. Nonetheless, the final result is worth it. Creating an engaging, applicable, and even humorous scenario can keep students' attention and make learning more effective and fun! In the actual plane, students should use all current weather, charts, and performance numbers to avoid confusion. Because of this, scripted scenarios are not very applicable to flights, but are very helpful for training in the simulator.

So, where should you start when making your amazing, humorous, thought-provoking scenario?

1) Look at the course objectives

What needs to be accomplished? Plan a route and determine which airports to use, then make up the weather and details for the students. Skyvector METAR reports are a great resource to easily find needed weather, copy and paste the report, and change winds and ceilings as needed. This part can be tricky because the winds, ceilings, and everything else need to cooperate with your objectives. (Why would a student choose an NDB approach when there is an ILS to the same runway, or choose a hold, etc.) This is where you can use ATC, traffic flows, disabled aircraft on the runway, and other issues to help nudge your students in the direction you need them to go.

Also, for simulator scenarios, different doors can determine the course of the scenario depending on what the student decides. Once the basic route and weather are planned, make copies of any information you want the student to use, such as navigation charts, weather charts, NOTAMS, SIDS, STARS, or Approach Plates. All of this should be in one document to eliminate the possibility that students bring their own updated or changed information, thus ruining the scenario.

2) Add the rest of the flight details

A reason for the flight, the pilot's log to determine currency, aircraft inspection dates and maintenance issues, and weight and balance. When students come with the flight planned, they should

have a go or no-go decision made, determine if they are current for the flight or how they could get current, and determine any risks that need to be mitigated.

3) Create a script

Including any ATIS/ AWOS reports the students will tune up and what you as ATC would say to them each step of the way. Include the frequency students should be on next to the script — whether it's one they got from a chart or one you give them — so you can easily tell if they are on the correct frequency (and if not, give them the silent treatment or correction till they do). Some superstar instructors will even pull up live ATC so they can have the actual chatter going on! Just to be obnoxious and entertaining, or even aid in the scenario, I would occasionally make up my own.

For Private Pilot Training

Simple cross-country scenarios are great to practice dead reckoning, radio calls, avionics familiarization, scans, flows, and checklists.

For Instrument Training

When students reach instrument, the simulator can really improve students' techniques while reducing their total costs. Every lesson can include a different starting and ending point, the use of SIDs, STARs, towered or non-towered airports; and multiple types of approaches and holds. Simulators are extremely useful to teach students scan technique, as well as hold entries and corrections. By the time they get into the plane, students are far more equipped to handle the variables of real-world IFR flying.

For Multi-Engine Training

So they are prepared for the faster-paced twin-engine, students in the multi-engine syllabus can use the simulator first to memorize flows, checklists, and approach profiles. The scenarios take planning to the next level: students must decide what type of take-off they should do, consider accelerate-stop distance, what their climb and single engine climb rates are, and what altitudes are safe for troubleshooting should an engine fail. They will practice how to think through the aircraft performance and how to plan accordingly.

Narrative: (*The flight will take place on Tuesday, December 18, 2018)*

You and your friend Willie volunteer for the Long Beach Aquarium in your spare time and are in charge of its Instagram account. There is a pod of orcas swimming up the coast and Willie wants to get some aerial photos for the feed. You are currently in Carlsbad (KCRQ) and plan to pick him up at KFUL at 1500L before flying up the coast to KSBA.

Aircraft N105WB:

Annual Inspection: March 10, 2018
Altimeter Inspected: June 20, 2017
Transponder Inspected: June 20, 2017
ELT Inspected: March 10, 2018

Pilot Log:

Date	SEL	Landings	Approaches	Remarks
10/28/2018	1.4	2	3 (1 RNAV, 2 ILS)	Practice Approaches
11/1/2018	1.2	2	4 (2 ILS, 2 VOR)	Practice Approaches
11/5/2018	1.5	1	3 (ILS, VOR, RNAV)	Instrument check ride complete!

Weather:

KCRQ 182053Z 04005KT 3SM BR OVC015 21/21 A2987 RMK AO2

KFUL 182035Z VRB03KT 5SM BR OVC013 19/17

KFUL 181720Z 1818/1918 VRB03KT 2SM BR OVC012
FM182000 VRB03KT 4SM BR OVC019
FM190600 27003KT 2SM BR OVC006
FM191400 24002KT 1SM BR OVC003

VALID 180000Z FOR USE 2000-0300Z. TEMPS NEG ABV 24000

FT 3000 6000 9000 12000 18000 24000

SLI 0210+15 0612+10 0418+02 0322-03 3638-20 3542-33

Simulator Portion (Instructor Use):

Configure the ATD as follows:

Airport: KCRQ Western Flight FBO
Weather:
Ceilings: 800 AGL -10,000 MSL
Temperature: 17
Altimeter: 29.87
Winds
3000: 040 at 5
9000: 090 at 15

1. Student should configure the PFD and MFD

2. Student should perform an appropriate VOR accuracy check and complete simulated log for date of flight

3. Student should perform the before start and start checklists flow and verification

4. Student should use G1000 to discover and load departure airport frequencies

   The following Palomar ATIS (120.15) read to student when loaded:

   Palomar Airport information Charlie. One-seven-five-six Zulu. Wind zero four zero at five knots. Visibility two statute miles. Overcast eight hundred. Temperature one-seven. Dew point one-six. Altimeter two-niner-eight-seven. RNAV Y Rwy 06 in use. Landing and Departing Runway 6. Advise on initial contact you have Charlie.

5. Student should load, save, and retrieve a flight plan in the G1000 for route of flight including the planned ODP (if applicable)

6. With no guidance, student should request, obtain, and read back filed clearance on Socal Clearance Delivery 134.85, and comply with IFR release instructions

   [After student calls] *Skyhawk 105WB, Cleared to the Foxtrot Uniform Lima Airport via Pacif, V25, Albas, SLI. Climb and maintain 4000, Contact Socal Departure 127.3, Squawk 5347.*

[After student read back] *Skyhawk 105WB read back correct, advise ground when ready to taxi.*

7. With no guidance, student should contact Palomar Ground (121.8) and use the airport diagram to taxi to appropriate runway while performing the instrument taxi check and verifying operation of nearby navigational aids

   [After student reports ready] *N105WB taxi to runway 6 via Alpha, Alpha 6*

   Ensure they correctly read back the taxi clearance while using appropriate wind correction and use of the Airport Diagram

8. With no guidance, student should flow and verify Before Take Off check to the line and perform instrument TO Briefing using performance numbers and ODP chart and contact tower (118.6)

   [After student contacts tower] *N105WB, Palomar Tower, Turn left heading 245, cleared for takeoff runway 06*

   [When student enters clouds] *N105WB contact Departure 121.3*

   [After student makes contact] *N105WB Radar Contact, Oceanside altimeter is 29.95*

9. With no guidance, student should use the G1000 to discover and load appropriate frequencies and get ATIS (125.05)

   Fullerton ATIS 125.05: *Fullerton Airport information*

Sierra. One niner five six Zulu. Wind zero niner zero at ten. Visibility two statute miles. Overcast eight hundred. Temperature one five. Dew point one four. Altimeter two niner niner three. VOR A approach in use. Landing and departing Runway 06.

(…)

NOTAM Search:

!FUL 12/010 FUL SVC PCL RWY 24 ALS OUT OF SERVICE 1712281631-1812292359EST

!FDC 9/8121 FUL SID FULLERTON MUNI, Fullerton, CA. ANAHEIM ONE DEPARTURE... VENTURA TRANSITION NA EXCEPT FOR AIRCRAFT EQUIPPED WITH SUITABLE RNAV SYSTEM WITH GPS, VTU VOR OUT OF SERVICE. 1804070132-1905060132EST

!FUL 03/011 FUL NAV ILS RWY 24 LOC NOT MNT DLY 0400-1400 1803280400-1904191400EST !FUL 04/005 FUL RWY 24 ALS OUT OF SERVICE 1804051753-1904142359EST

!FUL 03/016 FUL OBST POWER LINE LGT (ASN 2011-AWP-5708-OE) 335820N1175559W (6.4NM NNE FUL) 1141FT (202FT AGL) OUT OF SERVICE 1803302017-1904142017

!FUL 03/015 FUL OBST POWER LINE LGT (ASN 2011-AWP-5709-OE) 335808N1175508W (6.5NM NNE FUL) 1050FT (244FT AGL) OUT OF SERVICE 1803302014-1904142014

!FUL 03/014 FUL OBST POWER LINE LGT (ASN 2011-AWP-5710-OE) 335805N1175451W (6.6NM NNE FUL) 865FT (252FT AGL) OUT OF SERVICE 1803301944-1904141944

HOT SPOTS

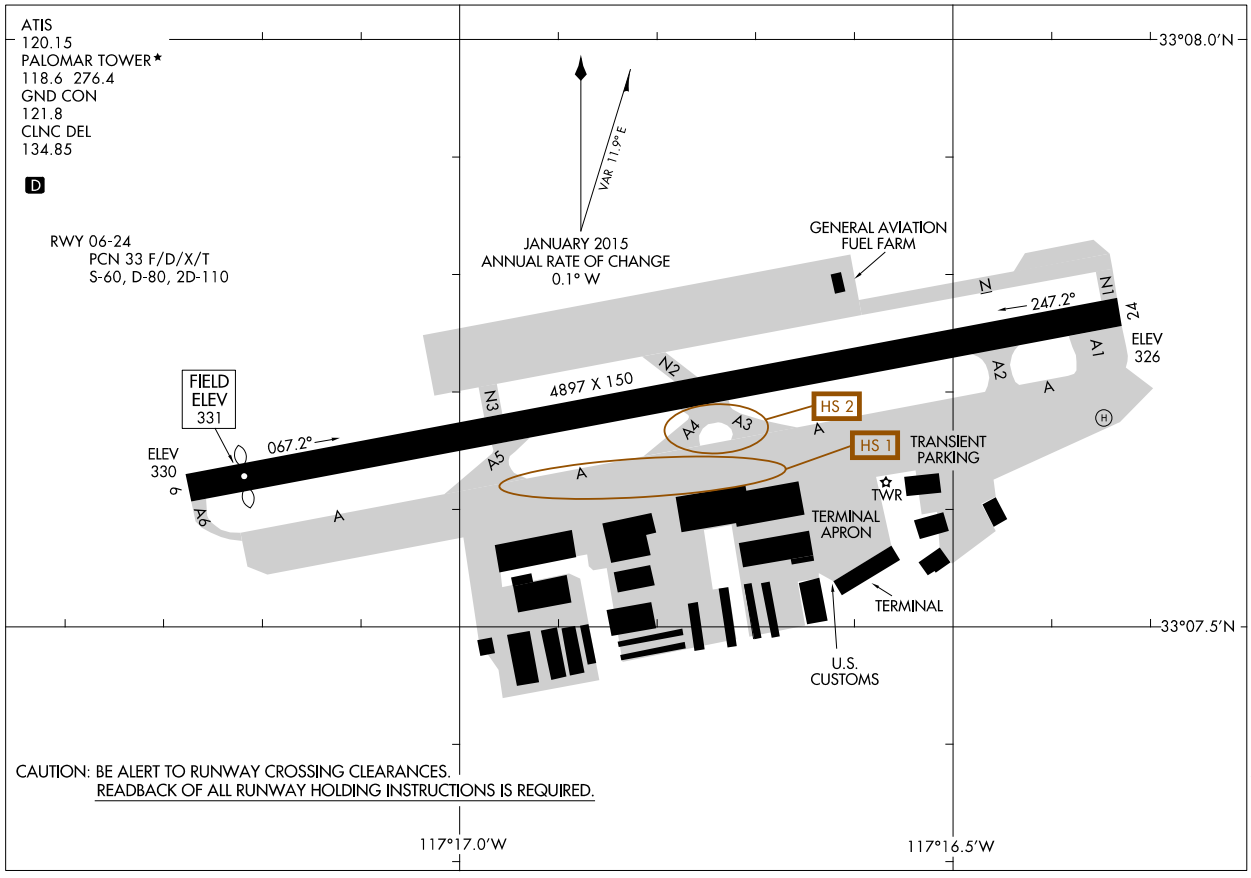
An "airport surface hot spot" is a location on an aerodrome movement area with a history or potential risk of collision or runway incursion, and where heightened attention by pilots/drivers is necessary.

A "hot spot" is a runway safety related problem area on an airport that presents increased risk during surface operations. Typically it is a complex or confusing taxiway/taxiway or taxiway/runway intersection. The area of increased risk has either a history of or potential for runway incursions or surface incidents, due to a variety of causes, such as but not limited to: airport layout, traffic flow, airport marking, signage and lighting, situational awareness, and training. Hot spots are depicted on airport diagrams as open circles or polygons designated as "HS 1", "HS 2", etc. and tabulated in the list below with a brief description of each hot spot. Hot spots will remain charted on airport diagrams until such time the increased risk has been reduced or eliminated.

CITY/AIRPORT	HOT SPOT	DESCRIPTION*
BURBANK,CA		
BOB HOPE (BUR)	HS 1	NW corner of terminal ramp close proximity to Rwy 33-15 rwy holding position markings
CARLSBAD, CA		
MC CLELLAN-PALOMAR (CRQ)	HS 1	Large Jets may obscure twr visibility of small aircraft.
	HS 2	Exiting Rwy 24 at Twy A4
CHINO, CA		
CHINO (CNO)	HS 1	Twy D close proximity to Rwy 08L-26R.
	HS 2	Twy L close proximity to Rwy 03-21.
	HS 3	Twy K close proximity to Rwy 08L-26R.
	HS 4	Twy L, Twy D, and Twy K complex int.
EL MONTE, CA		
SAN GABRIEL VALLEY (EMT)	HS 1	Twy A at Twy C.
	HS 2	Twy A at Twy D.
HAWTHORNE, CA		
JACK NORTHROP FIELD/ HAWTHORNE MUNI (HHR)	HS 1	Rwy 25 run-up area.
LANCASTER, CA		
GENERAL WM J FOX AIRFIELD (WJF)	HS 1	Pilots mistake Rwy 06-24 for Twy A.
LA VERNE, CA		
BRACKETT FIELD (POC)	HS 1	Twy A between the apch ends of Rwy 26R and Rwy 26L.
LONG BEACH, CA		
LONG BEACH (DAUGHERTY FLD) (LGB)	HS 1	Rwy 12-30 and Rwy 08L-26R, Twy B and Twy K.
	HS 2	Rwy 08R-26L, Twy B.
	HS 3	Rwy 08R-26L and Rwy 12-30, Twy J and Twy D.
	HS 4	Rwy 12-30 crosses every other rwy.
LOS ANGELES, CA		
LOS ANGELES INTL (LAX)	HS 1	Rwy 24L and Twy AA.
	HS 2	Rwy 24L and Twy Z.
	HS 3	Rwy 25 L, Rwy 25 R and Twy F.
	HS 4	Twy H and Twy M.
	HS 5	Twy H, Twy M, and Twy H6.
ONTARIO, CA		
ONTARIO-INTL (ONT)	HS 1	Twy F at Rwy 08R/26L frequent centerline confusion crossing rwy southbound.
	HS 2	Twy P and Twy Q confusing split between rwys southbound
PALM SPRINGS, CA		
PALM SPRINGS INTL (PSP)	HS 1	Twy C mistaken for Rwy 13R-31L or Rwy 13L-31R.
	HS 2	Int of Twy B and Twy C.
	HS 3	Twy B and Rwy 31R.
	HS 4	Twy C and Twy J.

(SEE CONTINUATION PAGE FOR MORE LISTINGS)

28 MAR 2019 to 25 APR 2019



18032
AIRPORT DIAGRAM
MC CLELLAN-PALOMAR (CRQ)
CARLSBAD, CALIFORNIA

AL-5310 (FAA)

ATIS
120.15
PALOMAR TOWER★
118.6 276.4
SOCAL DEP CON
119.6 363.1

TOP ALTITUDE: 15000

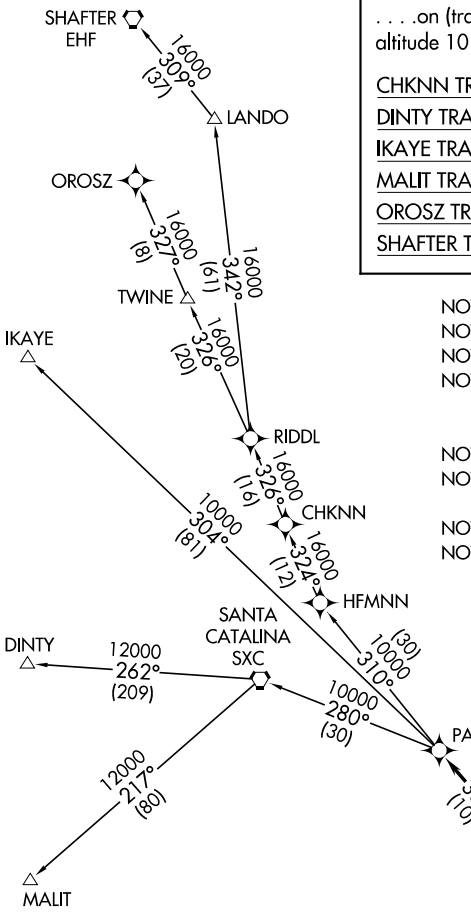
DEPARTURE ROUTE DESCRIPTION

TAKEOFF RUNWAY 6: Climbing left turn heading 245° to 2300, do not exceed 210K until established on heading 245°, expect vectors to cross GYWNN at or above 8000, then on track 308° to PADRZ, thence. . . .

TAKEOFF RUNWAY 24: Climb heading 245° to 2300, expect vectors to cross GYWNN at or above 8000, then on track 308° to PADRZ, thence. . . .

. . . .on (transition). Maintain 15000. Expect higher altitude 10 minutes after departure.

CHKNN TRANSITION (PADRZ2.CHKNN)
DINTY TRANSITION (PADRZ2.DINTY)
IKAYE TRANSITION (PADRZ2.IKAYE)
MALIT TRANSITION (PADRZ2.MALIT)
OROSZ TRANSITION (PADRZ2.OROSZ)
SHAFTER TRANSITION (PADRZ2.EHF)



NOTE: RNAV 1.
NOTE: RADAR required.
NOTE: Turbojets and turboprops only.
NOTE: CHKNN, SHAFTER, IKAYE, OROSZ TRANSITIONS: DME/DME/IRU or GPS required.
NOTE: DINTY, MALIT TRANSITIONS: GPS only.
NOTE: For non-GPS equipped aircraft, Oceanside (OCN) must be operational.
NOTE: DINTY TRANSITION ATC assigned only.
NOTE: DINTY and MALIT TRANSITIONS NA from SEE, SDM and RNM airports.

TAKEOFF MINIMUMS
Rwy 6: Standard with minimum climb of 255' per NM to 1700.
Rwy 24: Standard.

NOTE: Chart not to scale.

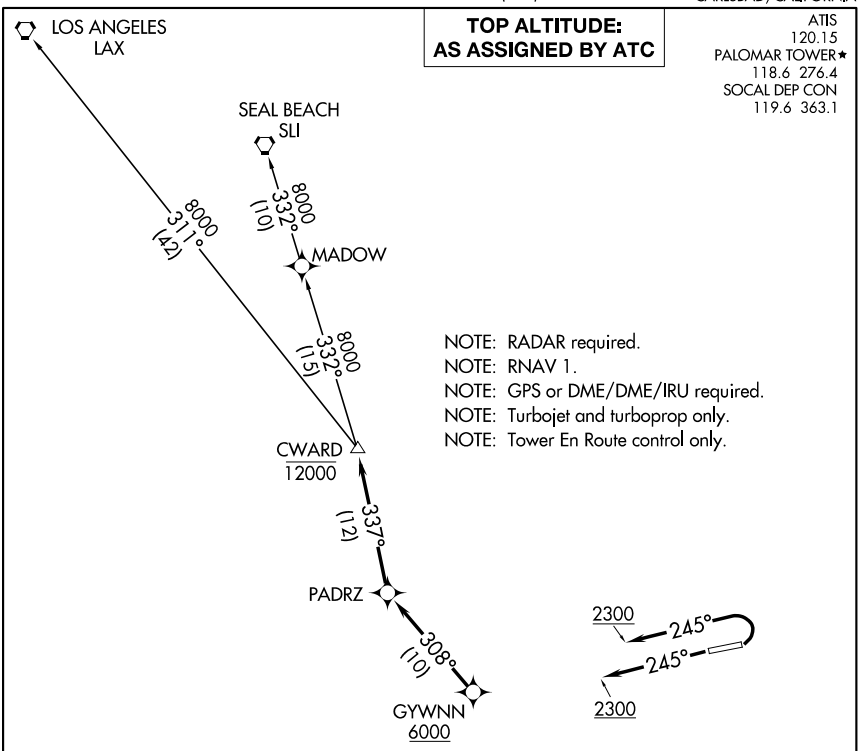
SW-3, 28 MAR 2019 to 25 APR 2019
SW-3, 28 MAR 2019 to 25 APR 2019

(CWARD2.CWARD) 17341

CWARD TWO DEPARTURE (RNAV)

AL-5310 (FAA)

MC CLELLAN-PALOMAR (CRQ)
CARLSBAD, CALIFORNIA



TAKEOFF MINIMUMS
Rwy 6: Standard with minimum climb of 255′ per NM to 1700.
Rwy 24: Standard.

NOTE: Chart not to scale.

SW-3, 28 MAR 2019 to 25 APR 2019

SW-3, 28 MAR 2019 to 25 APR 2019

DEPARTURE ROUTE DESCRIPTION

TAKEOFF RUNWAY 6: Climbing left turn heading 245° to 2300, do not exceed 210K until established on heading 245°, expect vectors to cross GYWNN at or above 6000, then on track 308° to PADRZ, then on track 337° to cross CWARD at or below 12000, thence. . . .
TAKEOFF RUNWAY 24: Climb heading 245° to 2300, expect vectors to cross GYWNN at or above 6000, then on track 308° to PADRZ, then on track 337° to cross CWARD at or below 12000, thence. . . .

. . . .on transition. Maintain ATC assigned altitude. Expect filed altitude 10 minutes after departure.

LOS ANGELES TRANSITION (CWARD2.LAX)
SEAL BEACH TRANSITION (CWARD2.SLI)

CWARD TWO DEPARTURE (RNAV)
(CWARD2.CWARD) 07DEC17

CARLSBAD, CALIFORNIA
MC CLELLAN-PALOMAR (CRQ)

CARLSBAD, CALIFORNIA | AL-5310 (FAA) | 18032

RNAV (GPS) Y RWY 6

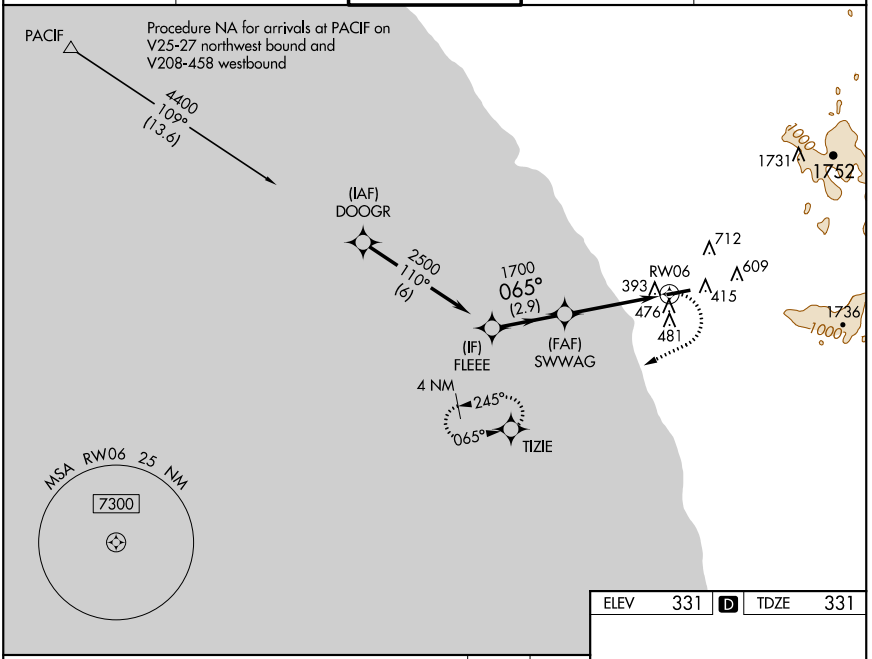
MC CLELLAN-PALOMAR (CRQ)

WAAS	APP CRS	Rwy Idg	4600
CH 40239	065°	TDZE	331
W06A		Apt Elev	331

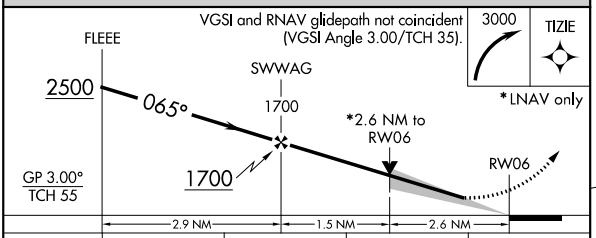
For uncompensated Baro-VNAV systems, procedure NA below 4°C (40°F) or above 54°C (130°F).
DME/DME RNP-0.3 NA.

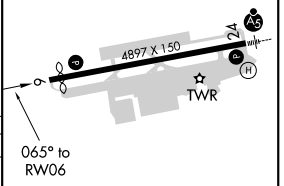
MISSED APPROACH: Climbing right turn to 3000 direct TIZIE and hold, continue climb-in-hold to 3000.

ATIS	SOCAL APP CON	PALOMAR TOWER ★	GND CON	CLNC DEL
120.15	127.3 323.0	118.6 (CTAF) L 276.4	121.8	134.85



ELEV 331 D TDZE 331





CATEGORY	A	B	C	D
LPV DA	796-1½ 465 (500-1½)			
LNAV/VNAV DA	837-1¾ 506 (600-1¾)			
LNAV MDA	1200-1 869 (900-1)	1200-1¼ 869 (900-1¼)	1200-2½ 869 (900-2½)	
C CIRCLING	1200-1¼ 869 (900-1¼)		1260-2¾ 929 (1000-2¾)	1820-3 1489 (1500-3)

REIL Rwy 24 L
HIRL Rwy 6-24 L

CARLSBAD, CALIFORNIA
Orig 10NOV16

33°08'N-117°17'W

MC CLELLAN-PALOMAR (CRQ)

RNAV (GPS) Y RWY 6

SW-3, 28 MAR 2019 to 25 APR 2019

SW-3, 28 MAR 2019 to 25 APR 2019

ABOUT REDBIRD

Redbird Flight Simulations of Austin, TX was established in 2006 with the specific purpose of making aviation more accessible by using modern technology and careful engineering.

Since its inception, Redbird has delivered innovative, reliable, and high-quality training devices to flight schools, colleges, universities, and individual pilots around the world. With more than 2,000 devices in service worldwide, Redbird has quickly become the fastest growing and most innovative simulator provider in the industry.

For more information on Redbird, please visit redbirdflight.com.

ABOUT STEPHANIE

Stephanie is a CFI, CFII, and MEI with a degree in Aeronautical Science, and mom to a future pilot.