University of Wyoming
PREAMBLE 2012

Precision Atmospheric Marine Boundary Layer Experiment

May 17, 2012 - June 17, 2012

UWKA Update (20 July, Friday):	**Status:** King Air data were re-processed and posted to project website. To verify you have the most current revision, check for tagname "preamble12_qc2" in netCDF header.

DATA

- Link to King Air Processed Data
- PCASP plots

Flight Planning

- Aeronautical Charts in Google Earth
- Convert Google Earth path to way points

Contacts and General Information

- Contacts List
- Hotel Information
- Rental Car Information
- General Base Information
- Base Access Information
- **Tracking**
  - SPOT (pw:n2uw)
  - Flight Aware
- Plot of flight fours

Waivers and Permits Information

- FAA Low-Level Waiver
- NOAA Monterey Bay Marine Sanctuary Permit
- MBNMS zone (if we fly in hatched area (1000 ft) need 24 hour notice)

Blank Engineering Forms

- Calibrations
- Daily Ops
- Install/Removal
- Maintenance/Troubleshooting

Link to Calendar & Engineering Reports

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
13	14 **Ferry to Field**	15 **Setup and Preparation** LI6262 Calibration LI7500 Calibration	16 RF01 Daily Ops	17 **No Flight Day** Li6262 Calibration	18 RF02 Daily Ops	19 RF03 Daily Ops
20 RF04 Daily Ops	21 **Service AC in Long Beach**	22 *Wechsler/Pierce leave* **DOWN DAY**	23 **Move hangars** Torque Maintenance	24 RF05 RF06 Daily Ops	25 RF07 Daily Ops	26 maintenance
27 **DOWN DAY**	28 **DOWN DAY**	29 **No Flight Day**	30 **No Flight Day** *Oolman/Heesen arrive*	31 RF08 Daily Ops	1 **No Flight Day** *Wadsworth arrives*	2 **No Flight Day** *French leaves*
3 RF09 Daily Ops RF10 Daily Ops	4 **No Flight Day** *Bandani/Glover leave*	5 **Service fuel check valve in Long Beach**	6 RF11 Daily Ops	7 **DOWN DAY**	8 **No Flight Day**	9 RF12 Daily Ops RF13 Daily Ops
10 **DOWN DAY**	11 **No Flight Day**	12 **No Flight Day**	13 RF14 Daily Ops	14 **DOWN DAY**	15 **No Flight Day**	16 RF15 Daily Ops
17 **Last day of research operations**	18	19	20	21	22	23

Date	Flight # (*.kmz)	Status	Times (UTC)	Hours	Crew/Notes
Flights					
16 June	RF15	Spoke pattern looking at what was hopefully the early statges of a CTWR.	1705-2029	3.5	B Wadsworth D Rahn L Oolman
		Flight off Pt. Buchon. Did a box pattern through the eddy that was north of the Channel Islands and then proceed around			B Wadsworth

13 June	RF14	Pt. Conception to work an area off the coast of Pt. Buchon. The eddy collapsed during the time we were flying. The props were set to 1900 rpm on takeoff. The Applanix still lost the GPS.	2123-0043	3.4	T Parish L Oolman C Kruse
9b June	RF13	Channel Islands pattern. The Licor 7500 appeared contaminated after 2054. The upward lidar overheated several times. Torque didn't work the second half of the flight.	1959-2311	3.3	B Wadsworth C Kruse L Oolman T Parish
9a June	RF12	Catalina eddy pattern. Upward lidar overheated several times. Torque didn't work most of the flight.	1406-1730	3.5	B Wadsworth T Parish L Oolman D Rahn
6 June	RF11	Catalina diamond pattern. The winds were weak around the island. WAAS was disabled on the Applanix, it still quit accepting GPS positions on take off.	1700-1851	2.0	B Wadsworth T Parish L Oolman D Rahn
3b June	RF10	Spoke pattern. Fasinating cascading cloud wall at the clear/cloudy interface. The PCASP had zero counts. Applanix IMU quit accepting GPS positions on take off.	2332-0007	3.7	B Wadsworth T Parish L Oolman D Rahn
3a June	RF09	Applanix IMU quit accepting GPS positions on take off.	1416-1728	3.3	B Wadsworth D Rahn L Oolman A Bandani
31 May	RF08	First flight to investigate Catalina eddy, in airspace SW of Mugu, between mainland LA/San Diego and Santa Catalina Island. Due to ATC restrictions, required to do entire flight VFR, above cloud deck, spent most of flight time at 1700' AGL. First flight with loaner Applanix IMU...no issues. No problems with salt buildup on lidar windows or LI-7500. Torque worked entire flight. No instrument issues.	1411-1613	2.1	A Bandani T Parish D Rahn J French
25 May	RF07	Same spoke pattern as second flight yesterday. Winds were less around Pt. Conception and air was much less hazy. The 7500 and WCL's lasted longer before becoming hazed over. Torque worked entire flight. Wind was strong in channel late in flight so stayed low all the way into Pt Mugu. Washed engines following the flight.	1900-2208	3.2	A Bandani T Parish J French
24b May	RF06	Second flight of day--flying spoke pattern focused around Pt. Conception. Strong winds (40+ kts at flight level). Spoke Pattern completed almost entirely at 400 ft AGL (isobaric). Torque died early in flight and never recovered. LI-7500 and WCL windows heavily encrusted with salt--data quality intermittent.	2014-2304	3.0	A Bandani T Parish D Rahn J French
24a May	RF05	Flight along coast doing soundings continually between ~300 and 2000 ft. STRONG WINDS. Applanix lost solution at takeoff and was reset in air. CIP computer rebooted shortly after takeoff. Torque died midway through flight. Lidar windows and LI-7500 got crusted over with salt-data quality from them is somewhat intermittent.	1417-1727	3.3	A Bandani T Parish D Rahn J French

20 May	RF04	Good flight, conducted 'survey mapping' just off the coast around Pt. Conception. Winds were signficantly less less strong than in earlier flights and BL was generally much shallower. WCL-up shutdown about 3/4 into the flight due to high water temperature. Torque quit working about halfway through flight. Air conditioner not working--plan to get serviced prior to next flight.	2041-0017	3.7	A Bandani T Parish D Rahn J French
19 May	RF03	Good flight, this flight pattern focused more around Pt. Conception; conducted lots of sawtooths between 500' and 2500' AGL. Very few clouds throughout entire flight, lighter winds than previous flights. Interesting structure to BL, particularly within channel---both lidars show aerosol layers with significant changes to BL hgts and structures from the point to within the channel. No Major instrument issues; filming of of glass for up lidar and LI7500 continues to be problem after about ~1 hour in BL.	1804-2058	3.0	A Bandani D Rahn P Wehsler J French
18 May	RF02	Good flight, same pattern as RF01, no major instrument issues. After long period (~1 hr) in BL Licor7500 lens started to get film-covered (conjecture) and dewpoint began drifting lower. It would recover after passing through cloud or in drier air above BL. Both lidars showed interesting aerosol layers, particularly near end of flight.	1445-1801	3.4	A Bandani T Parish D Rahn J French
16 May	RF01	First flight...a bit of the 'exercising the system' flight. Operationally we were delayed about 30 minutes because of issues with the IFR clearance/flight plan. Should be worked out for next flight. Instruments--Applanix out to lunch at takeoff-unit was 'reset' in flight. Up lidar continually overheated--only have data from about 1/3 of flight. Licor6262 dewpoint low by about 2 degrees.	1510-1845	3.7	A Bandani T Parish P Wechsler J French
Test Flights					
11 May	TF04	Removed Friehe probe for good. No 7500 (for ferry to field). Down lidar was removed and adjusted in lab, aligned, and reinstalled prior to flight. Applanix was changed out (use loaner box--it appears our box has serious issues); loaner box set to omnistar--lost solution shortly into flight, did not "reset".	1827-1859	0.6	A Bandani P Wechsler J French
08 May	TF03	New element for the Friehe, zero/spanned 7500 prior to flight, first flight with Up Lidar, plan to align down lidar. Right generator failed to come online on startup. Still seeing issues with applanix. Ground testing looks like it may be our box. Bo tried to align down lidar, looks like output power is way down. New Friehe elements look worse than old ones, removed probe after flight. Wind calibration maneuvers were done.	1728-1923	2.0	A Bandani B Liu P Wechsler J French
03 May	TF02	First flight with down lidar turned on. Data from down lidar looks suspect, No CIP--for some reason the computer could not see hardware key. Applanix failed--we rebooted in air, but collected no data. Conducted several flux runs.	2032-2200	1.6	B Wadsworth P Wechsler L Oolman J French
26 Apr	TF01	First flight with LICOR7500 & Friehe. Down LIDAR turned off, no up LIDAR. Conducted flux runs, apporaches for Pilots, made short run through clouds. Data system/header issues casued us to collect data only for first half of flight. Licor6262 ref. gas was turned off; Heimann port/nadir door was open on takeoff and landing and closed once during flux legs.	1652-????	2.3	A Bandani T Pierce P Wechsler J French
Flight Hours		As of Jun 17, 48.1 out of 48 research hours were flown, -0.1 remain.		Test: 6.5	

UWKA Project Contacts for PREAMBLE 2012

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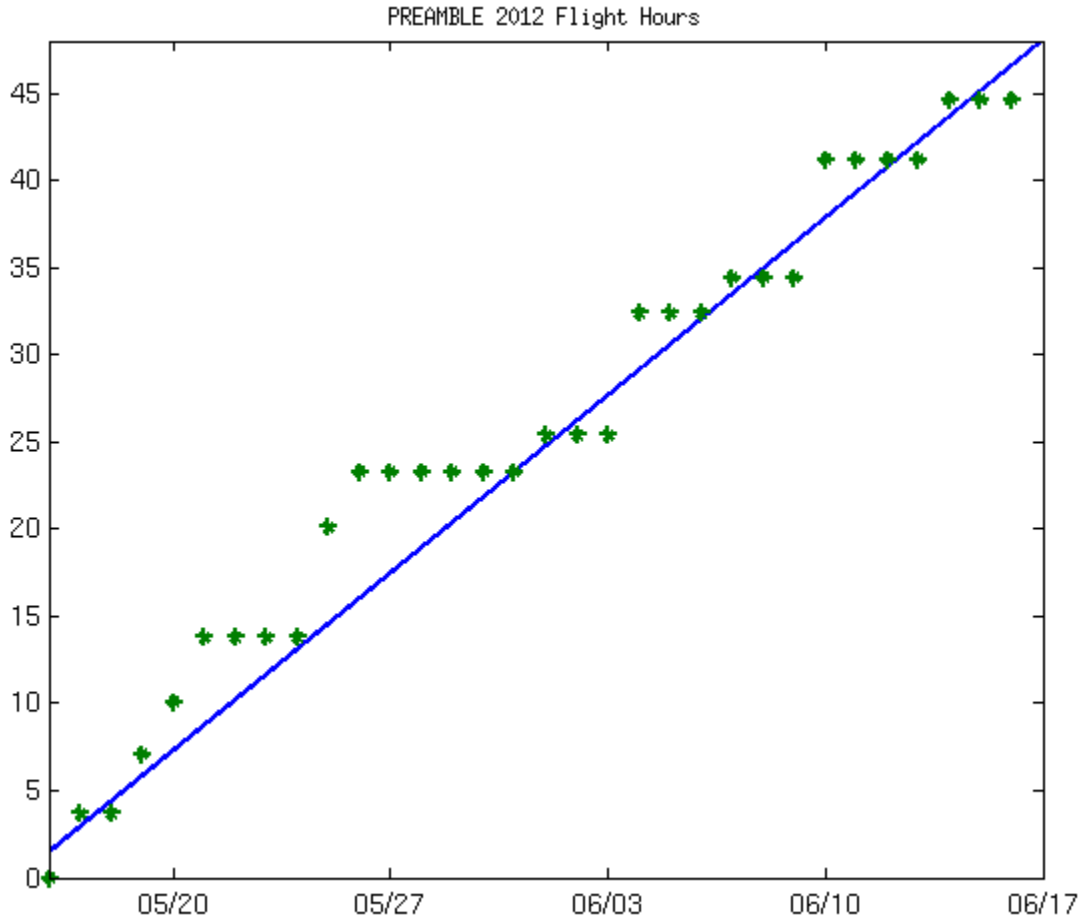
PREAMBLE 2012 Flight Hours
45
40
35
30
25
20
15
10
5
0
05/20
05/27
06/03
06/10
06/17

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PREAMBLE 2012 (RF15) Post Mission Report

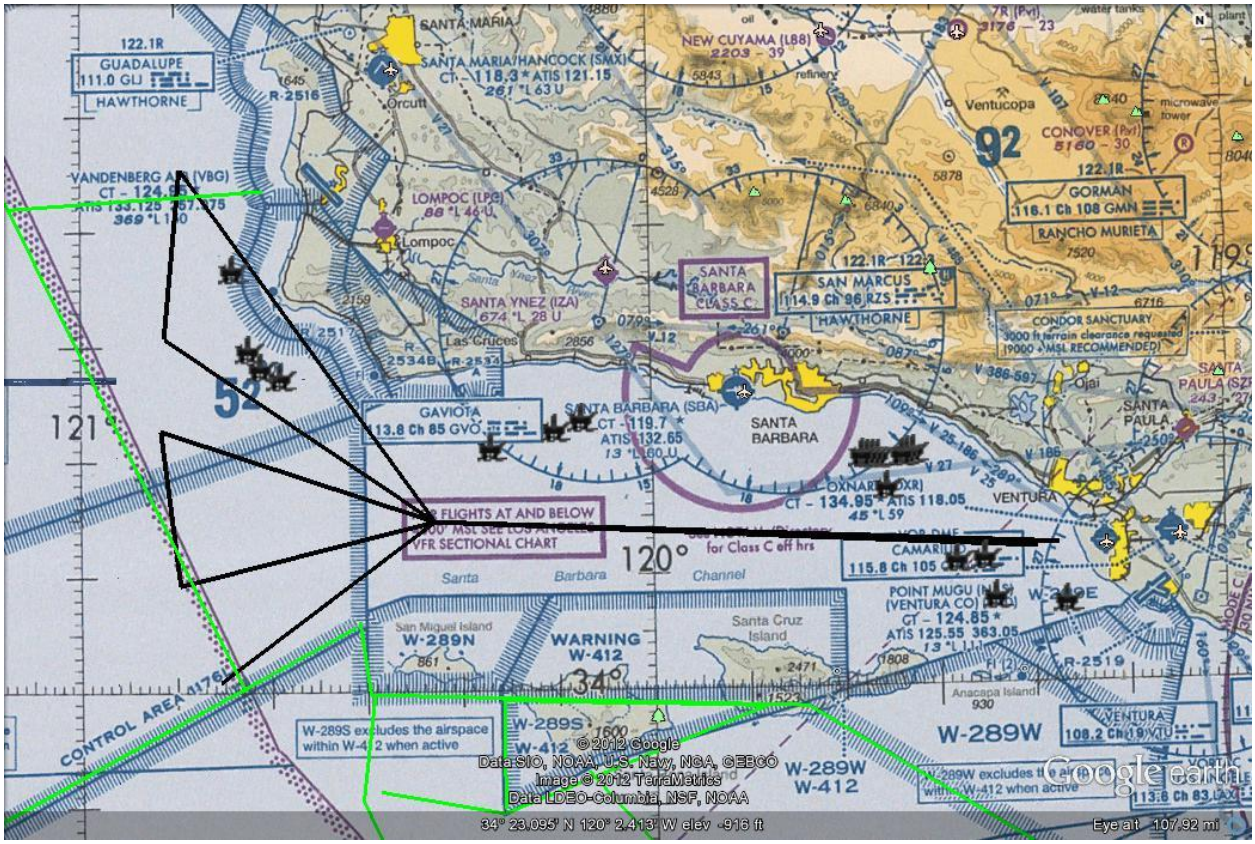
June 16, 2012

1. Crew: Wadsworth, Rahn, Oolman
2. Pre-Flight Brief: 0830
3. Planned T/O time: 1000
4. Flight Time: 3.5 Hrs

A. Weather: 70% VMC.

B. Brief:

Research flight for a planned profile up the coastline, departing from Ventura Navy Base Pt Mugu to west. Filed an IFR flight plan. Track shown below.



C. Planned:

This pattern was the backup to a hope-for CTWD event. The CTWD didn't happen, so we went with the above.

D. Execution:

Went pretty smoothly. Flew all the legs with a combination of isobaric and soundings. We remained with Santa Barbara Approach for the entire time after being passed to them from Pt. Mugu Approach. There was a C-130 in the Restricted Area at Vandenberg, but after a 180-out pass, they were a none-issue.

Discussion:

Pretty easy day. Decent weather. PI was fairly pleased.

PREAMBLE Flight (RF15) 2012-06-16

Crew: Brett Wadsworth, Dave Rahn, Larry Oolman

Mission: Spoke pattern in a, hopefully, developing CTWR

Startup: PCASP took three tries to start: 1) zero counts 2) no data 3) working. Desiccant was changed prior to this flight.

1705 Take off, Applanix ok.

1714 Start 400, heading west , north of Channel Islands

1718 Winds calm

1720 At cloud edge

1726 Reverse course to east. Winds 210/05 knots

1734 Back under the cloud

1743 Reverse to west, start saw tooth, winds 180/07

1748 Cloud top 2200 ft. Moist layer extends 300 ft above cloud top.

1752 Cloud top 1800 ft on descent.

1754 At cloud edge.

1800 At 3400 ft, winds 080/15

1805 Done with saw tooth leg, turning to east to pick up pt B.

1809 Pt B, 400 ft. heading NW. Winds 200/04

1823 Pt C, sounding to 3000 ft, inversion at 1800 ft. Dew point stayed moist through the entire sounding.

1831 Back to 400 ft, heading south. A small inversion with a wind max at 800 ft. Winds 220/08.

1835 Sunny day – lidar overheated.

1839 Heading SE. Winds 200/07.

1847 A few thin clouds above us, restarted lidar

1849 Pt B. Winds 190/07

1852 Pt B. Heading WNW

1858 Licor 7500 possibly getting dirty.

1901 Sounding. 800 ft inversion and speed max still there. Main inversion is still at 1800 ft. Highest winds at 2200 ft 030/14.

1907 Lidar shut down.

1910 400 ft, reverse course.

1915 Thin clouds, lidar restarted only ran a few minutes.

1921 Back to Pt B. Winds 210/08. On the NW leg.

1935 Heading north, start lidar

1940 Sounding. 1000 ft, winds maximum 170/15, small temperature inversion . 1600 winds minimum at 1 kt. 1800 ft, main temperature inversion. 2000 ft, another wind max to 13 knots, also direction shear. Humidity remains moist.

1948 400 ft, heading SE.

1955 Higher pressure south of the point at Vandenburg.

2003 Pt B, heading back to Pt Mugu with saw tooth. Wind maximum 1200 ft 100/10. Minimum at 1700 ft. Temperature inversion and speed maximum at 2100 ft. Another speed minimum at 2700 ft.

2029 Land

PREAMBLE 2012 (RF14) Post Mission Report

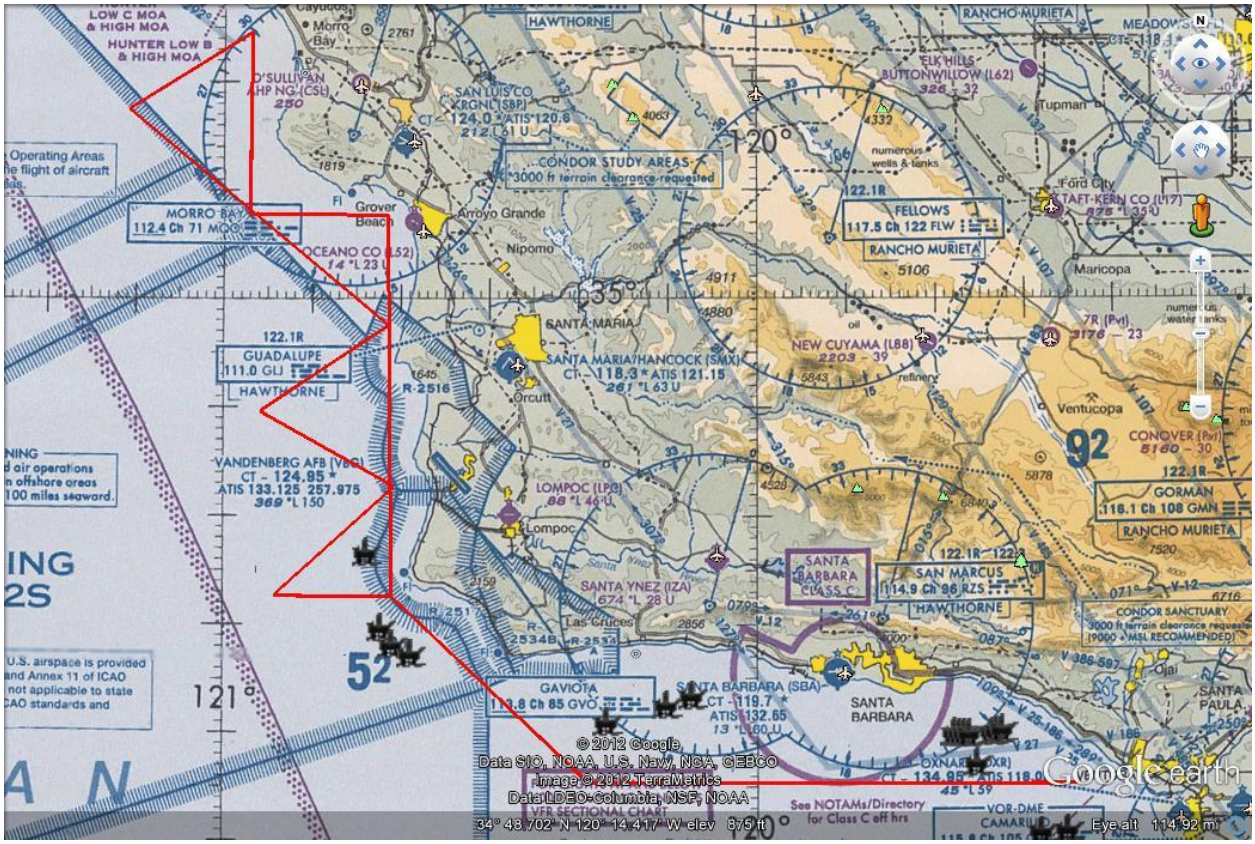
June 13, 2012

1. Crew: Wadsworth, Parish, Kruse, Oolman
2. Pre-Flight Brief: 1230
3. Planned T/O time: 1400
4. Flight Time: 3.4 Hrs

A. Weather: 30% VMC.

B. Brief:

Research flight for a planned profile up the coastline, departing from Ventura Navy Base Pt Mugu to west. Filed an IFR flight plan. Track shown below.

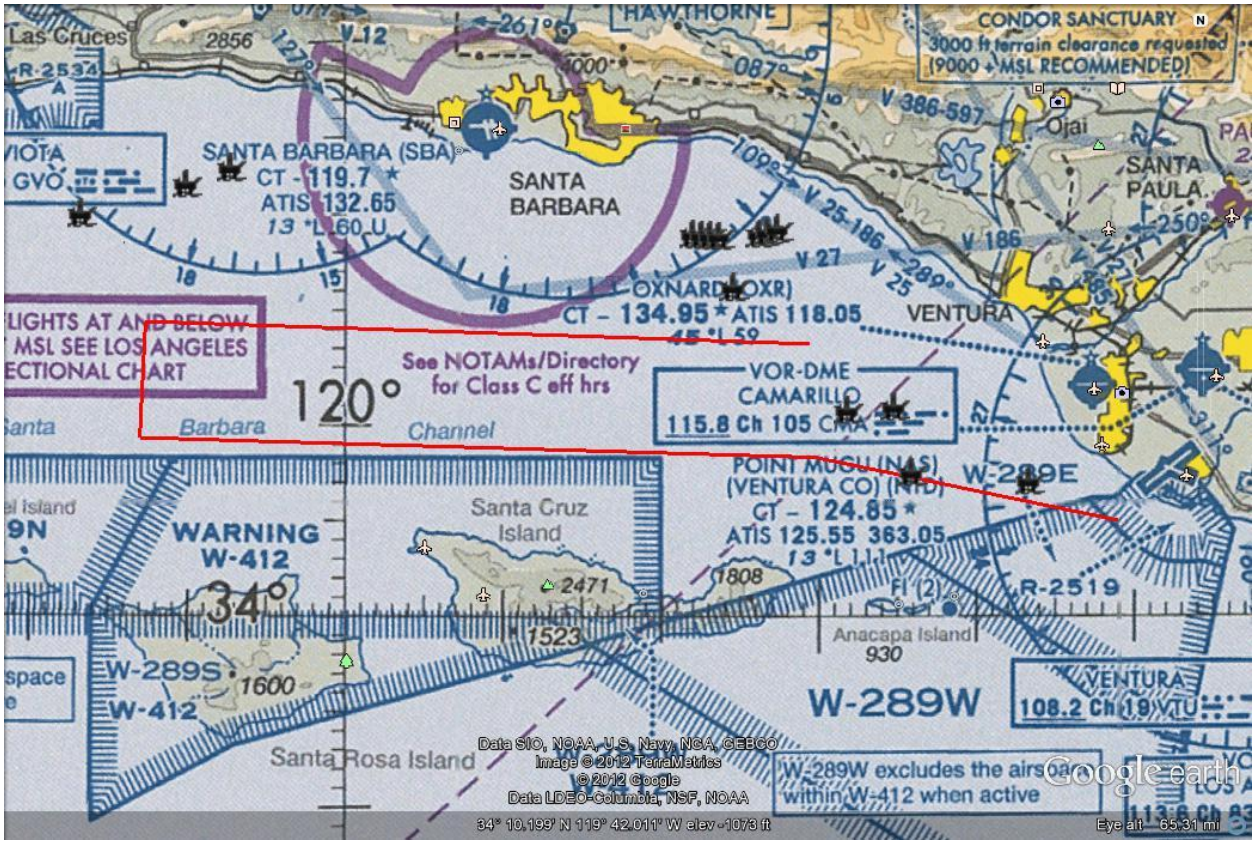


C. Planned:

The email the day prior had focused on the above pattern. Late in the morning I received a phone call from NOAA from Karen Reyna. I had added her to the email notifications as required by the National Marine Sanctuary waiver (MBNWS). She was appreciative of the notification but was focused exclusively on the Farallones Islands. She thought we were going to be flying around them which was not the case today. The MBNWS waiver does

not apply to either the Farallones Islands or the California Sea Otter Game Range. But as long as we remain outside 1 mile from any shoreline (mainland or island) we will not be in either of those.

After the brief was complete, and about 50 minutes prior to takeoff, the PI added the below to the above flight pattern.



There was a bit of an eddy that had developed between the Channel Islands and the mainland. I called Santa Barbara Approach and emailed them the image.

D. Execution:

Went pretty smoothly. Flew all the legs with a combination of isobaric and soundings. There was some helo activity near the drilling platforms off of Vandenburg. From Vandenburg and north up the coastline, the weather was a solid layer from about 700' up to around 2000'. Only exception was the leg into the bay at San Luis Obisbo where it was clear.

We remained with Santa Barbara Approach for the entire time after being passed to them from Pt. Mugu Approach, although we had no communication with them north of San Luis Osbisbo. On the plus side, there was absolutely zero traffic after the oil platforms.

Discussion:

The late change to the flight patterns complicated the preparation and communication with the controllers. It set us back a bit so that we weren't airborne exactly on time. Santa Barbara remains very helpful and flexible.

PREAMBLE Flight (RF14) 2012-06-13

Crew: Brett Wadsworth, Tom Parish, Larry Oolman, Chris Kruse

Mission: Fly a box in an eddy that is north of the Channel Islands and then proceed around Pt. Conception towards Pt. Buchon.

2123 Take off. Props set to 1900 rpm, Applanix failed on take off.

2131 At 500 ft, NE of the Channel Islands, heading west. Winds 260/13 knots. No nitrogen in lidar tanks.

2149 Heading north at 500 ft. Winds 300/30 knots

2152 Head back towards east about 7 miles north of the outbound track.

2155 At cloud edge. Winds 270/20

2200 Heading east out from clouds. Wind switched from 270 to north

2202 Winds calm (from north?)

2206 End of line. Winds 260/08

2208 Start saw tooth to the west. Top of boundary layer at 1650 ft.

2217 Inversion at 1900 ft going up, about 2000 ft coming back down. Strongest winds (30 knots) at the lowest level (500 ft).

2223 Turn to NW. Inversion at 2400 ft.

2231 Inversion at 2200 ft.

2239 Start isobaric leg at 500 ft.

2248 Turn to west off coast of San Luis Obispo. Winds 290/25.

2254 Turn to north. Winds 300/20

2300 Turn to southwest. Winds 290/15.

2307 Start sounding. Winds 310/28 at start. Top of boundary layer 1900 ft.

2310 Top of soundings 2500 ft. Winds 330/20.

2315 500 ft, heading towards east.

2324 Turn to SW. Winds 300/19

2330 Turn to SE.

2335 Turn to SW.

2340 Soundings, top of inversion 2400 ft.

2348 Turn east and start descent

2353 At 500 ft.

2355 Turn to north.

0001 Turn to SW

0008 Back to the east

0012 SE, start saw tooth. Cloud tops 2200 ft. Winds uniform below this 320/18

0015 Start descent. Very different profile than the ascent. Inversion height 1400 ft?

0019 Inversion at 800 ft.

0021 Winds light from east.

0024 500 ft, winds increase all the way down. Inversion not as obvious. Some sort of circulation evident.

0043 Land

PREAMBLE 2012 (RF13) Post Mission Report

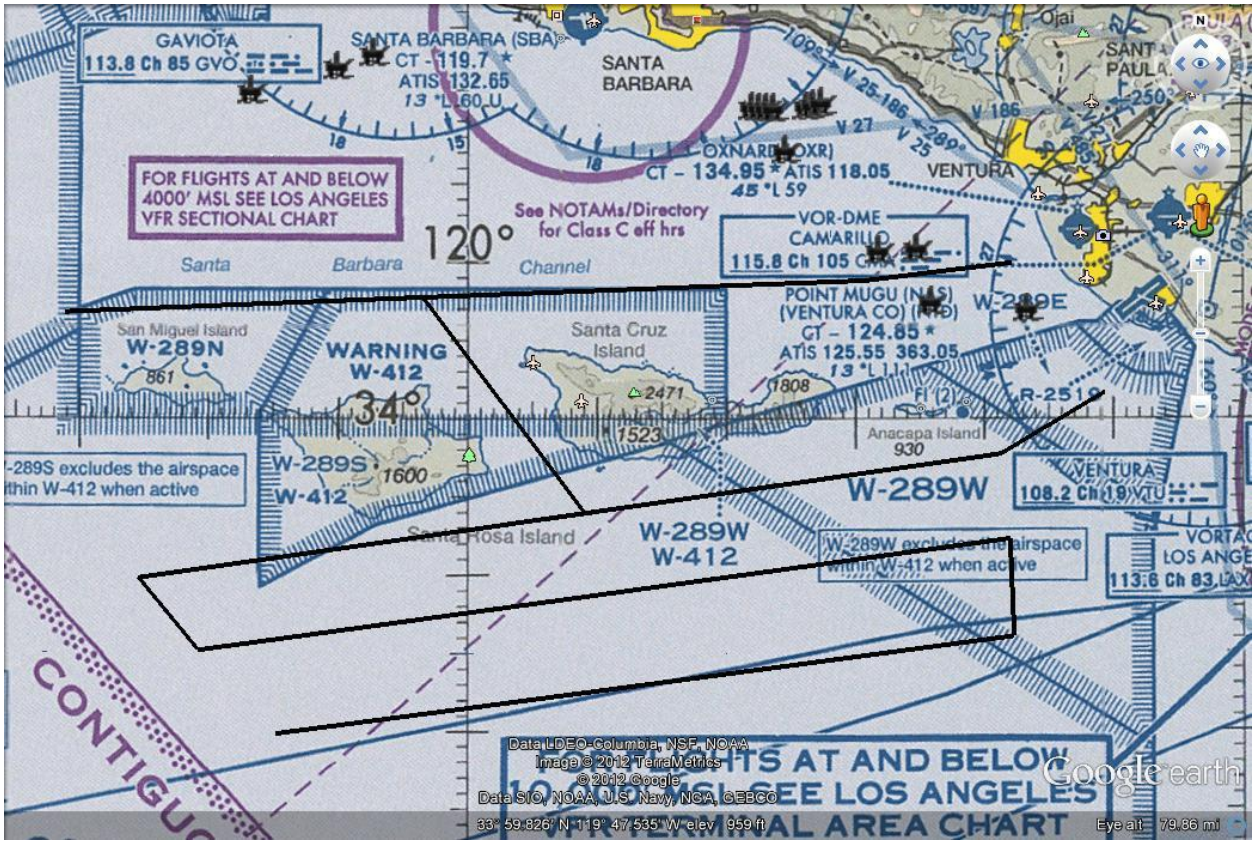
June 9, 2012

1. Crew: Wadsworth, Parish, Kruse, Oolman
2. Pre-Flight Brief: 1230
3. Planned T/O time: 1200
4. Flight Time: 3.3 Hrs

A. Weather: 100% VMC.

B. Brief:

Research flight for a planned profile around the channel islands, departing from Ventura Navy Base Pt Mugu to west. Filed an IFR flight plan. Track shown below.



C. Planned:

The email the day prior and phone calls had focused on the earlier flight in the day. No questions or problems anticipated about this flight.

D. Execution:

Went pretty smoothly. We started with the northern-most leg south of the islands and worked through the three legs there before transiting north of the islands. Pt Mugu

Approach kept us initially, but lost us by radio before they handed us off. As we transited north of the islands I talked to Santa Barbara Approach, but they couldn't see us either.

Discussion:

No traffic out there. No issues.

The PI was marginally pleased with the flight. Winds were not nearly as strong as he expected or wanted.

PREAMBLE Flight (RF13) 2012-06-09(B)

Crew: Brett Wadsworth, Chris Kruse, Larry Oolman, Tom Parish

Mission: Channel Islands

Pre-flight: CIP rebooted

1959 Take off. Applanix good

2006 Start of first leg at 500 ft. South of the Channel Islands

2027 End of line to south of Channel Islands. Sounding to 2500 ft

2029 Low water warning on upward wcl. Restarted. Caused by climb?

2031 Start 500 ft leg about 7 miles to the south.

2051 Pt E, winds 240/08 knots. Top of boundary layer is 2500 ft from lidar

2054 Pt F, 7 miles further south, Licor 7500 starting to drop relative to other dew points

2113 Pt G on west end. Winds 330/17. Sounding. Top of boundary layer at 2800 ft.

2122 Pt G, 500 ft. Back track 3 rung latter.

2140 Pt H on east end. Winds 280/05 knots.

2143 Pt I on east end. Winds 270/09 knots.

2149 CIP rebooted. Lidar overheated.

2203 Pt J on west end. Winds 320/21 knots. Restart lidar.

2207 Pt K on west end. Winds 330/22.

2217 Pt M, break off latter to head north between islands.

2224 Pt N, heading west, north of Channel Islands. Winds 260/08 knots

2227 Torque is 690, should be 1180. Overtemp on lidar.

2232 Sounding on west end, lidar restarted. Maximum wind – 31 knots, 1000 ft.

2239 Heading south at 500 ft.

2242 Turning east. Lidar shut down.

2245 Head north

2250 Start lidar

2303 Pt P. Heading home.

2311 Land

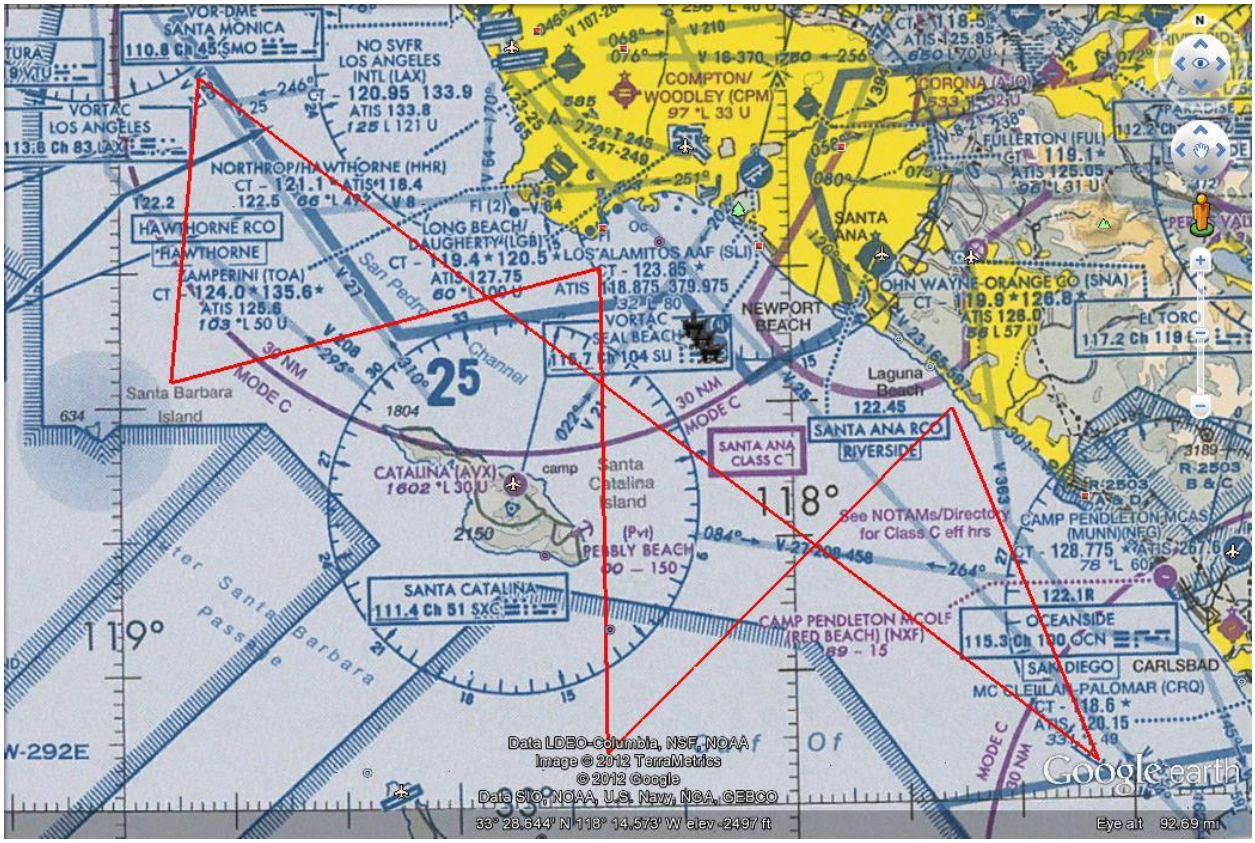
PREAMBLE 2012 (RF12) Post Mission Report

June 9, 2012

1. Crew: Wadsworth, Parish, Rahn, Oolman
2. Pre-Flight Brief: 0530
3. Planned T/O time: 0700
4. Flight Time: 3.5 Hrs
5. Weather: 75% VMC. Overcast layer (marine layer) with bases around 1800' and tops around 2200'.

A. Brief:

Research flight for a planned profile ("Catalina Eddy") off the central and southern California coast departing from Ventura Navy Base Pt Mugu to south. Filed an IFR flight plan. Track shown below.



B. Planned:

Day prior I had specifically included in the notification email that we expected to remain in VMC but would preserve the option of executing within the limits of the Class G airspace waiver. Talked to SOCAL Approach and Beaver Control.

C. Execution:

Flew the legs depicted. Started at the NW point and followed the straight line down to just below the class B airspace at San Diego. SOCAL was pretty helpful although communication within their organization isn't perfect. I talked to their shift supervisor yesterday about the flight after sending her the graphics and waypoints. In spite of that, Mugu Approach told me that SOCAL had no idea about my mission before I was handed to them. I passed the name of the supervisor (Sonya) and they pretty quickly pulled off the handoff and it went pretty well after that. Each of the controllers sounded like they had the above graphics in front of them. Only one frequency change with SOCAL after Mugu Approach.

Flew the long leg at 500' MSL. Turned and headed NNE toward the coastline, near Dana Point (vicinity of Laguna Beach). level at 500' MSL. Then turned SW toward the W-291. I had talked with FACSFAC about the 291 previously and the scheduler had told me that it was 5000' MSL and above, so I expected no issues. I started talking with Beaver Control prior to the boundary and found out that it is truly surface & up. But, no problems with joint use in that area.

Much of the time SOCAL Approach reported that "radar contact lost" but it was no issue. We flew that first leg between Dana Point and W-291 five total times. Two level at 500'. Two vertical sawtooth legs between 500' and 2800'. Last leg was level, above the clouds at 2800.

Next leg was straight up to Long Beach at 500'. Then flew the leg between Long Beach and Santa Barbara Island three times: level at 500' and sawtooth.

Last leg was from Santa Barbara up to the starting point at 500' MSL.

Discussion:

Little to no traffic involved in the leg between the W-291 and Dana Point. The controller was pretty lightly tasked. The next controller to the north when I was working from Long Beach to Santa Barbara Island was much busier, and it was reflected in the TCAS traffic showing up.

The leg from the W291 to Long Beach, a TCAS return showed up in the vicinity of Catalina Island. Beaver Control was seeing a contact there and called it for me. It remained below the overcast for quite a while before slowly departing to the east. Never saw it.

The PI was quite pleased with the flight.

PREAMBLE Flight (RF12) 2012-06-09(A)

Crew: Brett Wadsworth, Tom Parish, Larry Oolman, Dave Rahn

Mission: Catalina Eddy

Pre-flight: CIP rebooted

1407 Take off. Applanix good

1415 Start 500 ft leg to SE, cloud top 2400 ft, cloud base 1800 ft

1448 Heading NNW at 500 ft

1457 Heading SW at 500 ft, CIP rebooted. This track is SE of Catalina Island

1511 Heading NE at 500 ft along the same track

1528 Heading SW along the same track, saw tooth 500 to 2500 ft. Cloud base 1600 ft, tops 2400 ft

1533 Cloud base 1200 ft (GPS) coming down

1540 On second saw tooth, clouds 1100 to 2100 ft.

1541 Spiral sounding to 2800 ft

1543 Saw tooth to NE, cloud base changed from 1100 to 1700 ft, tops were 2000 to 2600 ft.

1558 Heading SW at 3000 ft to look at cloud tops with downward lidar

1614 Descend to 500 ft, heading to N. Upward lidar overheated in clear, sunny air at 3000 ft.

1622 Restarted upward lidar again

1628 Heading WSW at 500 ft

1640 Reverse course at 500 ft. Lidar started again.

1655 Heading back west with saw tooth. Upward lidar over heated at end of last track. Cloud base 1400 ft. Cloud top 2500 ft.

1700 Clouds on descent between 1200 and 2500 ft.

1705 Clouds on ascent between 1400 and 2500 ft. Lidar overheated.

1707 Clouds on descent between 1600 and 2200 ft.

1709 Heading north at 500 ft, lidar restarted.

1716 Heading home

1723 Quick climb to cloud tops – 2900 ft. Cloud base at 1900 ft

1731 Land

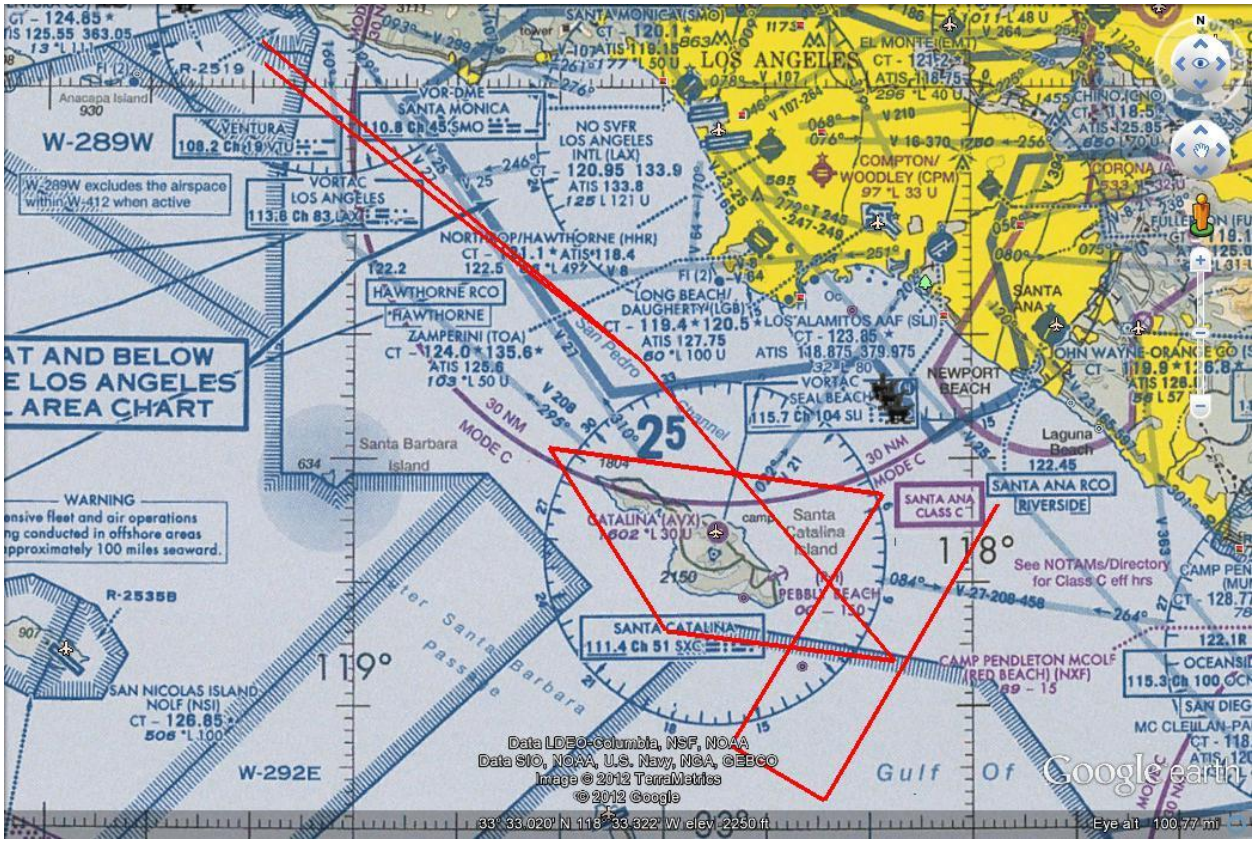
PREAMBLE 2012 (RF11) Post Mission Report

June 6, 2012

1. Crew: Wadsworth, Parish, Rahn, Oolman
2. Pre-Flight Brief: 0830
3. Planned T/O time: 1000
4. Flight Time: 2.0 Hrs
5. Weather: 100% VMC

A. Brief:

Research flight for a planned profile ("Catalina Eddy") off the central and southern California coast departing from Ventura Navy Base Pt Mugu to south. Filed IFR flight plan the evening prior. Track shown below.



B. Execution:

Flew the legs depicted level at 500' MSL. SOCAL Approach quickly dropped us ("squawk 1200 and talk to us on RTB"). Almost zero traffic out there. One aircraft talked with Catalina Unicom as he was coming in from the north. We abbreviated the pattern a bit as the winds were low and not particularly helpful for what the PI was after. On RTB, did a

sounding from 200’ up to 2000’, checked in with SOCAL and they immediately handed me off to Pt Mugu Approach who immediately had me contact Pt Mugu Tower.

Discussion:

A single TCAS track was showing up over the south end of Santa Catalina. I suspect it was an antenna of some kind. Lots of traffic was obvious on TCAS closer to the coastline, but we were well away from it. Unable to contact Beaver Control for the W-291 at all when we were under the NE corner of it.

Again, a fairly uneventful flight but enjoyable simply due to the “island tour” which it was.

PREAMBLE Flight (RF11) 2012-06-06

Crew: Brett Wadsworth, Tom Parish, Larry Oolman, Dave Rahn

Summary: Catalina diamond pattern.

Preflight: Turned off WAAS on the Applanix

1701 Take off, Applanix GPS position rejected.

1718 At point B, 500 ft. Winds 170 at 3 knots, passing by the NE side of Catalina Island

1730 Point C, passing on the south side of Catalina Island

1736 Point D, SW of Catalina Island, winds 300 at 6 knots

1743 Point E, winds 280 at 4 knots, north of Catalina Island

1752 Point F, winds 190 at 5, SE of Catalina Island

1804 Start line 10 km further out

1814 Point I, winds calm

1822 Point C, winds 270/4, south of island

1827 Upward lidar overtemped.

1828 Point D, winds 320/9, SW of island

1835 Point E, winds 290/8, drop to 200 ft

1837 Upward lidar restarted, top of boundary layer at 1000 ft.

1839 2000 ft, winds 305/15. Descend to 500 ft.

1852 Land

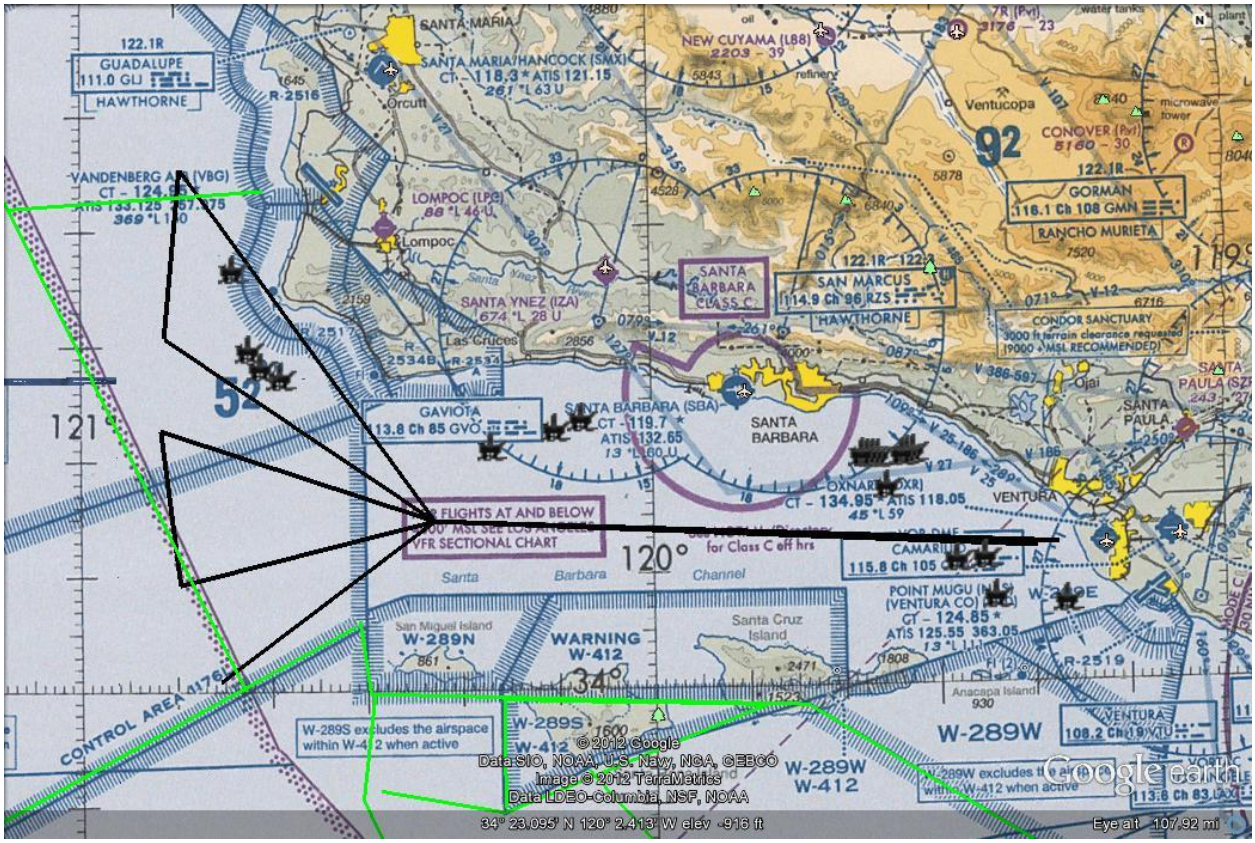
PREAMBLE 2012 (RF09) Post Mission Report

June 3, 2012

1. Crew: Wadsworth, Parish, Rahn, Oolman
2. Pre-Flight Brief: 1200
3. Planned T/O time: 1330
4. Flight Time: 3.7Hrs
5. Weather: 80% VMC

A. Brief:

Research flight for a planned profile ("Catalina Eddy") off the central and southern California coast departing from Ventura Navy Base Pt Mugu to west. Filed IFR flight plan the evening prior. Track shown below. PI was very clear that he wished for no adjustment of the altimeter to ensure isobaric legs were flown.



B. Execution:

Flew the legs depicted in a combination of vertical sawtooth pattern and level legs at 700' MSL. Santa Barbara Approach very flexible and helpful. On RTB to Pt. Mugu received an ASR approach to 03. Picked up the field much earlier than in the morning as the overcast layer was finally burning off.

Discussion:

Some interesting cloud features found on the most western end of the spoke pattern shown above. The most western end of the patterns are about four miles outside of Santa Barbara controlled airspace.

Again, a fairly uneventful flight. One helo (Aspen) was going in to one of the platforms off of Vandenburg. No problems overall. PI seemed fairly pleased with the results of the flight.

PREAMBLE Flight (RF10) 2012-06-03(B)

Crew: Brett Wadsworth, Tom Parish, Larry Oolman, Dave Rahn

Summary: Spoke pattern

2018 Reset Applanix during engine start

2032 Take off.

2033 Lost Applanix solution, reset.

2036 Down lidar seemed slow to start, laser seem weak initially

2046 PVM turned on

2049 PCASP reading zero counts, flow is 1.79 cm3/min

2101 Start 700 ft legs

2109 Beautiful wave at edge of cloud interface

2120 Second spoke

2132 Third spoke

2157 Fifth spoke

2206 Sounding to 2200 ft, dramatic cloud edge

2215 Back to 700 ft on spoke 5.

2226 Spoke 4.

2240 Spoke 3

2252 Spoke 1

2312 Spoke 2

2318 Reverse to NW and climb to 2500 ft to look at cloud edge with downward lidar

2330 Heading to Pt Mugu

0007 Land

Postflight:

PCASP counts were zero during the mission.

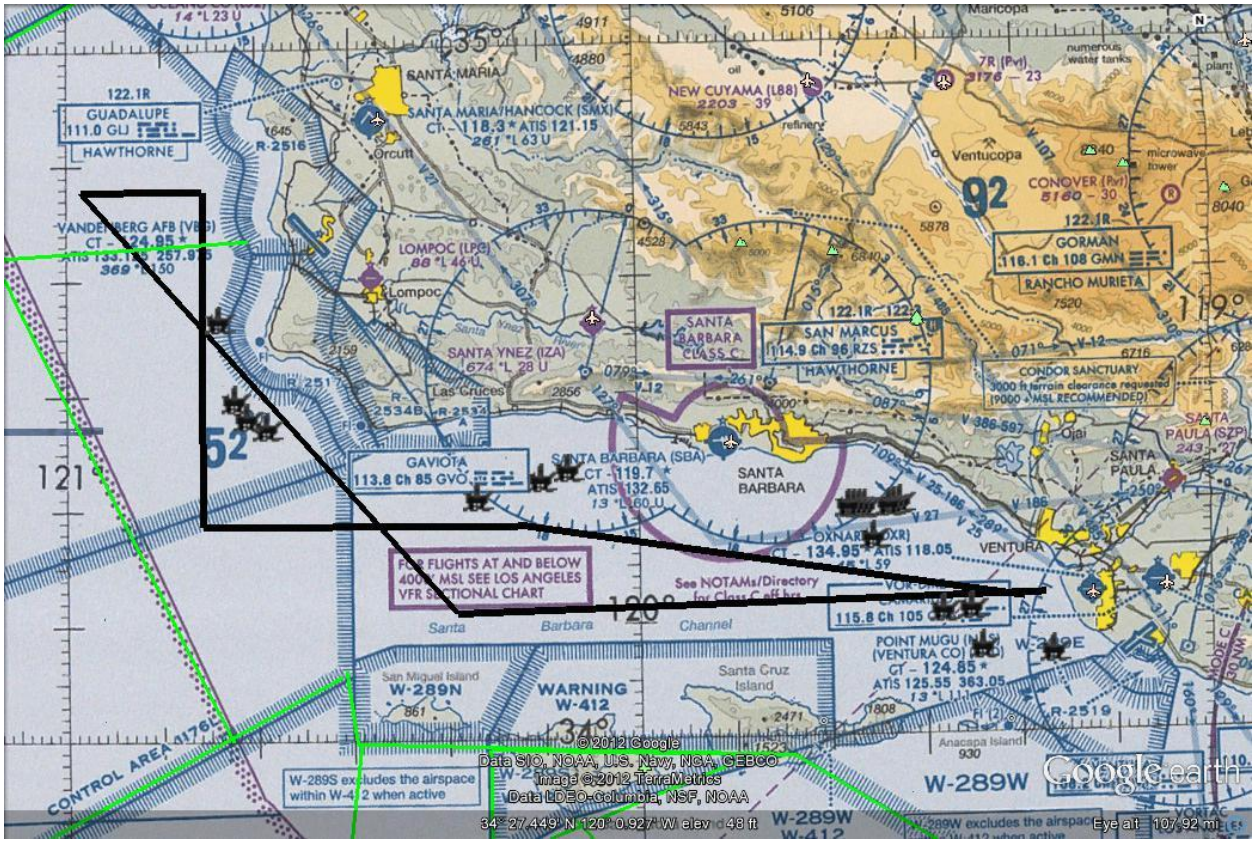
PREAMBLE 2012 (RF09) Post Mission Report

June 3, 2012

1. Crew: Wadsworth, Bandani, Rahn, Oolman
2. Pre-Flight Brief: 0530
3. Planned T/O time: 0700
4. Flight Time: 3.3 Hrs
5. Weather: 80% IMC

A. Brief:

Research flight for a planned profile off the central and southern California coast departing from Ventura Navy Base Pt Mugu to the west. Filed an IFR flight plan the evening prior. Track shown below.



B. Execution:

Flew the legs depicted in a combination of vertical sawtooth pattern and level legs at 700' MSL. Santa Barbara Approach very flexible and helpful. On RTB to Pt. Mugu received an ASR approach to RWY03.

Discussion:

Fairly uneventful flight. Little to no traffic in the area. No problems.

PREAMBLE Flight (RF09) 2012-06-03(A)

Crew: Brett Wadsworth, Dave Rahn, Larry Oolman, Ahmad Bandani

Start up: Not enough space on data drive, was at 41GB available

1417 Take off. Applanix lost its solution

1425 Start saw tooth pattern

1445 CIP crashed

1447 700 ft

1450 Heading towards east at 700 ft

1505 Going west

1517 Turn north

1531 Turn south

1545 Saw tooth, heading north

1558 Turning west

1603 Heading SE at 700 ft

1622 Heading NW

1631 Upward lidar water level low warning, probably from turbulence.

1636 Lidar restarted

1646 Start saw tooth to SE, cloud top is at 700 ft

1703 Saw tooth toward east and Pt. Mugu.

1717 Done with saw tooth

1728 Land

PREAMBLE 2012 (RF08) Post Mission Report

May 31, 2012

1. Crew: Bandani, Parish, Rahn, French
2. Pre-Flight Brief: 0530
3. Planned T/O time: 0700
4. Flight Time: 2.1 Hrs
5. Weather: IMC for T/O, VMC for Landing

A. Brief:

Research flight for a planned profile ("Catalina Eddy") off the central and southern California coast departing from Ventura Navy Base Pt Mugu to south east and west. Filed VFR flight plan the evening prior.

B. Execution:

Check point Lat/Longs on the flight track were used as the route of flight for a VFR flight plan. Departed KNTD via a VFR on Top clearance at 0705 local. Canceled IFR passing 1400' and leveled off in VFR condition at 2500'. Once handed off to SoCal was granted block altitude 1500'-2000'. Commenced the track at 1500'. Then climbed to 1700' and flew the remainder of the track at 1700'. Repeated the third leg per PI's request. Once complete returned to KNTD for a VFR recovery.

Discussion:

SoCal Op area is a complex and busy air space and to avoid undue concern it will require a very close and detailed coordination for a successful mission accomplishment.

Still managed to collect some good data and that made for a happy PI!

PREAMBLE-12
RF08 Flight Notes (French)
31 May, 2012

Crew
A Bandani
T Parish
D Rahn
J French

Preflight
Plan to conduct first "Catalina Eddy" flight to the SE of Pt Mugu, between mainland and Catalina Island.
Will conduct entire mission VFR due to ATC issues with getting IFR clearance at low altitude.
No issues at startup.

Flight
1411 Wheels Up

1613 Wheels down

Debrief
Torque worked entire flight
7500 and up-lidar window were fine entire flight, but never got into BL
First flight with new Applanix IMU (loaner)—no issues.

PREAMBLE 2012 (RF07) Post Mission Report

May 25, 2012

1. Crew: Bandani, Parish, French
2. Pre-Flight Brief: 1030
3. Planned T/O time: 1200
4. Flight Time: 3.2 Hrs
5. Weather: VMC/ Windy

A. Brief:

Briefed research flight for a planned profile off the central California coast departing from Ventura Navy Base Pt Mugu to north and west abeam Vandenberg Air Force Base. Filed the IFR flight plan following the brief at Pt Mugu Base Ops.

B. Execution:

Check point Lat/Longs on the flight track were used as the route of flight. Departed KNTD IFR at 1205 local. Climbed to 3000', once handed off to Santa Barbra App asked for a descend to 400' and commenced the profile. Flew the flight track at 400' followed by numerous sounding profiles between 400' and 1500'/2000'. Once complete flew the track at 400' to 10 miles NW of KNTD, once complete returned to KNTD for a VFR recovery to 27 for a full stop.

Discussion:

We had Wyoming winds for the last hour and half of the flight.

Santa Barbra approach rocks.

Great day and PI a happy customer!

PREAMBLE-12
RF07 Flight Notes (French)
25 May, 2012

Crew
A Bandani
T Parish
J French

Preflight
Spoke pattern focused around Pt. Conception. Plan to conduct all legs at roughly 400 ft AGL
No issues at startup.

Flight
1900 Wheels Up

Applanix lost solution on takeoff. Recovered after going standby then nav.

LI7500 and WCL-up suffered from dirty window trhough about second half of flight.

2208 Wheels down

Debrief
Torque worked entire flight
7500 and up-lidar window filmed over for latter half of flight.

PREAMBLE 2012 (RF05&06) Post Mission Report

May 24, 2012

1. Crew: Bandani, Parish, Rahn, French
2. Pre-Flight Brief: 0530 and 1200
3. Planned T/O time: 0700 and 1300
4. Flight Time: 3.3 Hrs + 3.0 Hrs
5. Weather: VMC

A. Brief:

Two research flights for a planned profile off the central California coast departing from Ventura Navy Base Pt Mugu to north and west abeam Big Sur VOR for the first flight and abeam Vandenberg Air Force Base for the second flight. Filed the first flight IFR flight plan (evening prior) and the second flight about one and half hour prior to T/O time at Pt Mugu Base Ops.

B. Execution:

Check point Lat/Longs on the flight track were used as the route of flight. Departed KNTD IFR at 0710 local. Climbed to 3000', once handed off to Santa Barbra App asked for a descend to 400' and commenced the new track. Flew the flight track at 400' followed by numerous sounding profiles between 400' and 2000'. Once complete flew the track at 400' to abeam KSBA. Once complete returned to KNTD for an ILS to full stop. Departed for the second flight at 1300 and performed the profile at 400' followed by soundings between 400' and 2000' during the flight. Once complete returned to KNTD for an ILS to full stop.

Discussion:

Two hops good conditions made for a Happy PI!

Need to discuss handoffs to Oakland Center north of Morro Bay VOR from Santa Barbara approach. More to follow.

PREAMBLE-12
RF06 Flight Notes (French)
24b May, 2012 [second flight]

Crew
A Bandani
T Parish
D Rahn
J French

Preflight
Spoke pattern focused around Pt. Conception. Plan to conduct all legs at roughly 400 ft AGL
Second flight of day
No issues at startup.

Flight
2014 Wheels Up

Torque dead entire flight

LI7500 suffered from dirty window through much of flight—likely combination of very windy and almost entire flight within BL

2304 Wheels down

Debrief
Torque dead entire flight
7500 and up-lidar window filmed over early—maybe result of much windier in BL??

PREAMBLE 2012 (RF05&06) Post Mission Report

May 24, 2012

1. Crew: Bandani, Parish, Rahn, French
2. Pre-Flight Brief: 0530 and 1200
3. Planned T/O time: 0700 and 1300
4. Flight Time: 3.3 Hrs + 3.0 Hrs
5. Weather: VMC

A. Brief:

Two research flights for a planned profile off the central California coast departing from Ventura Navy Base Pt Mugu to north and west abeam Big Sur VOR for the first flight and abeam Vandenberg Air Force Base for the second flight. Filed the first flight IFR flight plan (evening prior) and the second flight about one and half hour prior to T/O time at Pt Mugu Base Ops.

B. Execution:

Check point Lat/Longs on the flight track were used as the route of flight. Departed KNTD IFR at 0710 local. Climbed to 3000', once handed off to Santa Barbra App asked for a descend to 400' and commenced the new track. Flew the flight track at 400' followed by numerous sounding profiles between 400' and 2000'. Once complete flew the track at 400' to abeam KSBA. Once complete returned to KNTD for an ILS to full stop. Departed for the second flight at 1300 and performed the profile at 400' followed by soundings between 400' and 2000' during the flight. Once complete returned to KNTD for an ILS to full stop.

Discussion:

Two hops good conditions made for a Happy PI!

Need to discuss handoffs to Oakland Center north of Morro Bay VOR from Santa Barbara approach. More to follow.

PREAMBLE-12
RF05 Flight Notes (French)
24 May, 2012

Crew
A Bandani
T Parish
D Rahn
J French

Preflight
Plan on flight up the coast to near Monterey—zigzag pattern towards coast, then away conducting soundings between ~400 ft and 2000 ft the entire way. On return , fly straight, isobaric leg at 700 ft back to Mugu.
First day/startup in new hangar.
A/C fixed after last flight (RF04)
No issues at startup.

Flight
1417 Wheels Up

1422 Applanix lost solution shortly after takeoff (or at takeoff)—went to standby and back to nav—solution came back
1424 CIP computer rebooted
1430 CIP computer back

1605 noticed torque died at some point (was working early in flight)—cool in cabin today so likely not due to overheating

1727 Wheels down

Debrief
A/C was working fine
Applanix lost solution on takeoff
CIP computer rebooted shortly after takeoff
Torque died sometime in flight
7500 and up-lidar window filmed over earlier in flight today than in earlier flights (I think)—did windows get cleaned prior to flight??

PREAMBLE 2012 (RF04) Post Mission Report

May 20, 2012

1. Crew: Bandani, Parish, Rahn, French
2. Pre-Flight Brief: 1230
3. Planned T/O time: 1400
4. Flight Time: 3.7 Hrs
5. Weather: IMC for T/O, VMC for Landing

A. Brief:

Research flight for a planned profile off the central California coast departing from Ventura Navy Base Pt Mugu to north and west abeam Vandenberg Air Force Base and returning to Mugu for landing. Filed the IFR flight plan (evening prior) at Pt Mugu Base Ops.

B. Execution:

Check point Lat/Longs on the flight track were used as the route of flight. Departed KNTD IFR at 1345 local. Climbed to 3000', once handed off to Santa Barbra App asked for a descend to 700' and commenced the new track. Flew the flight track at 700' to the first check point. Then descended to 500' and flew the track at 500'. Performed numerous sounding profiles between 500'-2000' (800fpm) followed by flying the track at 500'. Once complete returned to KNTD for a PAR to full stop.

Discussion:

Happy PI!

PREAMBLE-12
RF04 Flight Notes (French)
20 May, 2012

Crew

A Bandani
T Parish
D Rahn
J French

Preflight

Plan on 'survey' pattern focused around Pt. Conception, with multiple, repeated legs on NW/SE orientation. Expect to conduct all legs at same altitude (500 ft AGL)
No issues at startup.

Flight

2041 Wheels Up

Much drier (and shallower) BL today—the LI7500 and WCL-up window do not seem to suffer from the filming problem as in earlier flights.

2340 Noticed torque was reading incorrect & not changing at all. Looked ok earlier in flight (I think).
2345 WCL-up shut itself down due to high water temperature

0017 Wheels down

Debrief

Check Torque, looked wrong in latter part of flight and possibly flat-lined.
Go hot in cabin, WCL-up had to shutdown early

PREAMBLE 2012 (RF03) Post Mission Report

May 19, 2012

1. Crew: Bandani, Rahn, French, Wechsler
2. Pre-Flight Brief: 0930
3. Planned T/O time: 1100
4. Flight Time: 3.0 Hrs
5. Weather: VMC

A. Brief:

Research flight for a planned profile off the central California coast departing from Ventura Navy Base Pt Mugu to north and west abeam Vandenberg Air Force Base and returning to Mugu for landing. Filed the IFR flight plan (evening prior) at Pt Mugu Base Ops.

B. Execution:

Check point Lat/Longs on the flight track were used as the route of flight. Departed KNTD IFR at 1105 local. Climbed to 3000", once handed off to Santa Barbra App asked for a descend to 700' and commenced the new track. Flew the flight track at 700' for first three check points. Performed numerous sounding profiles between 500'-2500' (800fpm) followed by few flights at 700". Once complete returned to KNTD for a PAR to full stop.

Discussion:

Happy PI and a Great day to fly!

PREAMBLE-12
RF03 Flight Notes (French)
19 May, 2012

Crew
A Bandani
D Rahn
J French
P Wechsler

Preflight
IFR flight plan. Begin with sawtooths through channel, followed by a set of isobaric legs focused around Pt Conception. The return back through the channel should also be isobaric. Constant alt legs are planned at 700 ft AGL.
Issue with data system startup—system disk was filling up, Perry & Glover deleted some old log files.
No issues at startup.

Flight
1804 Wheels Up

Dewpts appear to agree to within about 1C—7500 is highest, 6262 is lowest, chilled mirror is in middle

1907 7500 becomes suspect due to filming of lenses

1920 as we climb out of BL note that the 7500 recovers and we can see that there is a significant increase in the return signal from the upward lidar—(in BL window must get filmy then dries just above top of BL).

2058 Wheels down

Debrief

PREAMBLE 2012 (RF02) Post Mission Report

May 18, 2012

1. Crew: Bandani, Parish, Rahn, French
2. Pre-Flight Brief: 0600
3. Planned T/O time: 0730
4. Flight Time: 3.4 Hrs
5. Weather: VMC for T/O, Marine layer at 1000' 20 miles off shore, VMC for Landing.

A. Brief:

Research flight for a planned profile off the central California coast departing from Ventura Navy Base Pt Mugu to north and west abeam Vandenberg Air Force Base and returning to Mugu for landing. Filed the IFR flight plan (evening prior) at Pt Mugu Base Ops.

B. Execution:

Check point Lat/Longs on the flight track were used as the route of flight. Departed KNTD IFR at 0740. Climbed to 3000", once handed off to Santa Barbra App asked for a descend to 700' and commenced the track at point D. Flew the flight track at 700'. Performed sounding profile between 500'-2800' (500fpm) at point "I", between point "J" and "K" and between point "L" and "N". Once complete returned to KNTD for a PAR to full stop.

Discussion:

All around good job by ATC.

Santa Barbra App extremely courteous and helpful.

PI Happy!

PREAMBLE-12
RF02 Flight Notes (French)
16 May, 2012

Crew

A Bandani
T Parish
D Rahn
J French

Preflight

Plan on flying flight IFR, although don't expect as many clouds as on RF01.
No issues at startup.

Flight

1445 Wheels Up

Dewpts appear to agree to within about 1C—7500 is highest, 6262 is lowest, chilled mirror is in middle

1530 7500 dewpt starts to drift lower—ends up about 1-2 deg lower than 6262 optics getting dirty???
1550 go through cloud on sounding, after exiting cloud, 7500 looks same as just after takeoff (bit higher than chilled mirror)
1610 7500 'steps down' about 1.5 C
1636 as we climb above top of BL, 7500 apparently 'recovers'—I think we are getting some condensation/haze on optics
1640 as we descend back into BL 7500 starts to read low again, also note that outside windows grow a film when we are in the BL, down lidar looks like the return is weakening—maybe its optical window is suffering as well?

1801 Wheels down

Debrief

We are going to need to clean all optics after flight—(lidar windows, 7500 glass, chilled mirror??)

PREAMBLE 2012 (RF01) Post Mission Report

May 16, 2012

1. Crew: Bandani, Parish, Wechsler, French
2. Pre-Flight Brief: 0600
3. Planned T/O time: 0730
4. Flight Time: 3.7 Hrs
5. Weather: VMC for T/O, Marine layer at 900' 20 miles off shore, VMC for Landing.

A. Brief:

First Research flight for a planned profile off the central California coast departing from Ventura Navy Base Pt Mugu to north and west abeam Vandenberg Air Force Base and returning to Mugu for landing. Filed the IFR flight plan (evening prior) at Pt Mugu Base Ops. Checked w/Clearance delivery before engine start/man up and confirmed the existence of flight plan. Once ready to Taxi called to receive the clearance and wouldn't you know it…it was not the field flight plan! To expedite; accepted a VFR flight following w/an assigned beacon code.

B. Execution:

Filed a DD-175 flight plan. Check point Lat/Longs on the flight track were used as the route of flight. Once resolved clearance delivery confusion departed KNTD at 0810. Flew the flight track VFR at 1000'. Performed sounding profile between 200'-1500' (@500fpm). Once complete returned to KNTD for a VFR recovery.

Discussion:

Not a bad start for the first flight.

Santa Barbra App extremely courteous and helpful.

After landing discussed the clearance issues with Mugu Approach and Base Ops. Assurance was given the confusion is resolved.

Did the best too keep PI happy!

From now on not only confirm the existence of the clearance but ask for a read back of the clearance prior to man/start up!

PREAMBLE-12
RF01 Flight Notes (French)
16 May, 2012

Crew

A Bandani
T Parish
P Wechsler
J French

Preflight

First flight for PREAMBLE. Flight to test pattern, expect fog north of Pt Conception.
Sat on ramp after engine start for ~30 minutes awaiting clearance.
No issues at startup.

Flight

1510 Wheels Up
1515 at 1000 ft AGL—will work sawtooth pattern at 1000 ft today
1518 Applanix went out to lunch, went to standby then back to nav to reset
1520 Applanix is back
1540 wind picking up as we work our way west
1555 over edge of solid cloud deck (was clear/PC up to this point)
1557 looks like we will be above clouds for rest of pattern—generally skimming tops the whole time
1619 extended leg to conduct sounding—down to 500 ft AGL then up to 1600 ft, return to 1000 ft for next leg
1625 needed to deviate and climb from clouds due to traffic
1628 decided to conduct next couple of legs at 1300 ft to stay above clouds in VMC
1707 descending to 1000 ft for some more legs
1818 porpoising on return to Mugu

1848 Wheels down

Debrief

DPLicor appears to be offset by about 2 deg (low)
Applanix out to lunch shortly after takeoff, needed to reset (due to sitting for long time without moving???)
Lost WCL-up midway through flight due to high water temp