## ASRS Database Report Set

# **Global Positioning System (GPS) Reports**

Report Set Description	A variety of reports referencing use of Global Positioning System (GPS) devices.
Update Number	.26.0
Date of Update	.February 26, 2016
Number of Records in Report Set	.50
Number of New Records in Report Set	.24
Type of Records in Report Set	For each update, new records received at ASRS will displace a like number of the oldest records in the Report Set, with the objective of providing the fifty most recent relevant ASRS Database records. Records within this Report Set have been screened to assure their relevance to the topic.

National Aeronautics and Space Administration

Ames Research Center Moffett Field, CA 94035-1000



TH: 262-7

## **MEMORANDUM FOR: Recipients of Aviation Safety Reporting System Data**

#### **SUBJECT: Data Derived from ASRS Reports**

The attached material is furnished pursuant to a request for data from the NASA Aviation Safety Reporting System (ASRS). Recipients of this material are reminded when evaluating these data of the following points.

ASRS reports are submitted voluntarily. The existence in the ASRS database of reports concerning a specific topic cannot, therefore, be used to infer the prevalence of that problem within the National Airspace System.

Information contained in reports submitted to ASRS may be amplified by further contact with the individual who submitted them, but the information provided by the reporter is not investigated further. Such information represents the perspective of the specific individual who is describing their experience and perception of a safety related event.

After preliminary processing, all ASRS reports are de-identified and the identity of the individual who submitted the report is permanently eliminated. All ASRS report processing systems are designed to protect identifying information submitted by reporters; including names, company affiliations, and specific times of incident occurrence. After a report has been de-identified, any verification of information submitted to ASRS would be limited.

The National Aeronautics and Space Administration and its ASRS current contractor, Booz Allen Hamilton, specifically disclaim any responsibility for any interpretation which may be made by others of any material or data furnished by NASA in response to queries of the ASRS database and related materials.

Lenda J Connell

Linda J. Connell, Director NASA Aviation Safety Reporting System

#### CAVEAT REGARDING USE OF ASRS DATA

Certain caveats apply to the use of ASRS data. All ASRS reports are voluntarily submitted, and thus cannot be considered a measured random sample of the full population of like events. For example, we receive several thousand altitude deviation reports each year. This number may comprise over half of all the altitude deviations that occur, or it may be just a small fraction of total occurrences.

Moreover, not all pilots, controllers, mechanics, flight attendants, dispatchers or other participants in the aviation system are equally aware of the ASRS or may be equally willing to report. Thus, the data can reflect **reporting biases**. These biases, which are not fully known or measurable, may influence ASRS information. A safety problem such as near midair collisions (NMACs) may appear to be more highly concentrated in area "A" than area "B" simply because the airmen who operate in area "A" are more aware of the ASRS program and more inclined to report should an NMAC occur. Any type of subjective, voluntary reporting will have these limitations related to quantitative statistical analysis.

One thing that can be known from ASRS data is that the number of reports received concerning specific event types represents the **lower measure** of the true number of such events that are occurring. For example, if ASRS receives 881 reports of track deviations in 2010 (this number is purely hypothetical), then it can be known with some certainty that *at least* 881 such events have occurred in 2010. With these statistical limitations in mind, we believe that the **real power** of ASRS data is the **qualitative information** contained in **report narratives**. The pilots, controllers, and others who report tell us about aviation safety incidents and situations in detail – explaining what happened, and more importantly, **why** it happened. Using report narratives effectively requires an extra measure of study, but the knowledge derived is well worth the added effort.

**Report Synopses** 

## ACN: 1311252 (1 of 50)

#### Synopsis

Pilot reported a NMAC during an instrument approach to UAO Airport while in contact with the Local Tower Controller.

## ACN: 1309561 (2 of 50)

#### Synopsis

The pilot of a general aviation aircraft reported a NMAC with a warbird while on approach to OXR. The pilot received no prior warning from Approach and had not yet established contact with the Tower. The on-board collision avoidance system also did not provide advanced notice, but was likely due to the mode being disabled in approach mode.

#### ACN: 1308749 (3 of 50)

#### Synopsis

C340A pilot reported a restricted airspace incursion following loss of primary navigational systems.

#### ACN: 1308394 (4 of 50)

#### Synopsis

A small aircraft pilot operating on the Hudson River Exclusion route inadvertently violated LGA's Class B airspace when the GPS in use was set to a range that did not display the airspace boundaries.

#### ACN: 1307577 (5 of 50)

#### Synopsis

Pilot became disoriented during an instrument approach in IMC conditions. Pilot discovered the track error by noticing his previous error while programming his iPad for the approach. Pilot reprogrammed the approach and landed safely in VMC.

## ACN: 1306787 (6 of 50)

#### Synopsis

BE-36 pilot reports difficulty learning to operate a new Garmin 750 and contacting the company to ask questions.

#### ACN: 1299936 (7 of 50)

#### Synopsis

BE19 pilot reported losing a number of electrical components when he plugged his iPad into the cigarette lighter.

## ACN: 1298421 (8 of 50)

#### Synopsis

A CL300 pilot experienced a track deviation after departure when cleared direct to LWOOD. It was noticed too late that the FMS was in DR mode due to the GPS not operating correctly. ATC issued a vector and the crew navigated to RDU in Green Needles. Maintenance reset the FMS, and re-initialized the position after several attempts.

## ACN: 1295631 (9 of 50)

#### Synopsis

C172 Pilot In Command (PIC) flying a practice ILS approach to the left parallel runway missed the fact the Second In Command (SIC) misunderstood an ATC call as clearance to switch to the ILS for the right runway. SIC switched NAV to the right runway ILS without PIC being aware of the change until ATC advised of the course deviation from the left runway. Lack of crew coordination and electronic charts were cited as contributing to the incident.

## ACN: 1295062 (10 of 50)

#### Synopsis

An ERJ175 flight crew reported Maintenance MEL'ed both FMS's found inoperative during preflight. Following the day's flight the crew questioned the MEL and believed 1 FMS was required for flight even though the database was out of data.

## ACN: 1293865 (11 of 50)

#### Synopsis

PA-22 pilot reported landing on the wrong runway after being distracted by engine issues related to improper fuel management.

## ACN: 1293864 (12 of 50)

#### Synopsis

C172 pilot reported an airspace incursion when his polarized sunglass lenses interfered with his G1000 display.

## ACN: 1292515 (13 of 50)

#### Synopsis

A non-GPS RNAV equipped aircraft departed on the ATL SUMMT9 RNAV flying with VNAV engaged and indicating a 0.2 NM lateral deviation. ATL asked if they were direct RONII, the FMS indicated they were but a vector was given.

## ACN: 1291871 (14 of 50)

Synopsis

SR22T pilot reported heading and altitude deviations associated with loss of control during troubleshooting of a GPS problem.

## ACN: 1291862 (15 of 50)

#### Synopsis

A pilot flying through Canadian airspace VFR, was asked by a Controller to verify his altitude at 10,500 feet, but in fact he had reported descending to 7,500 feet. Post flight maintenance found an intermittent Garmin systems data bus "altitude loop" allowed the transponder to intermittently lock up and report an erroneous altitude.

## ACN: 1291516 (16 of 50)

#### Synopsis

A GLF5 First Officer (FO) reported the Captain experienced several altitude deviations on approach that the FO felt were caused at least in part by the use of a synthetic vision system.

## ACN: 1289994 (17 of 50)

#### Synopsis

B767 flight crew experienced a track deviation in Chinese airspace approach DONVO, possibly due to GPS jamming. ATC detects the error while it is still minor and the anomaly does not reoccur during the remainder of the flight.

## ACN: 1289866 (18 of 50)

#### Synopsis

C172 pilot reported his iPad failed to load the needed approach charts during a practice approach.

## ACN: 1288954 (19 of 50)

#### Synopsis

A pilot of a light aircraft, performing pipeline patrol duty, reported inadvertently penetrating a wildfire TFR due to the rapidly changing restricted airspace environment.

## ACN: 1288609 (20 of 50)

#### Synopsis

A pilot with sophisticated navigational equipment was surprised to be advised of a Temporary Flight Restriction (TFR) by ATC. For unknown reasons, it was not depicted on his primary GPS/Multifunction display.

## ACN: 1286956 (21 of 50)

## Synopsis

A MD-80 crew discovered after takeoff a large GPS position error, which caused a track deviation but were given ATC vectors on course where VOR airway tracking continued. Later in the flight GPS accuracy was attained and therefore used to the destination.

## ACN: 1285954 (22 of 50)

#### Synopsis

B747 Captain reported lining up at night for a closed runway at MIA because the runway lights were brighter on that runway than on the parallel open runway.

#### ACN: 1283563 (23 of 50)

#### Synopsis

EMB-505 First Officer reported a track deviation on arrival into SFO when he became task saturated following multiple runway changes.

## ACN: 1281797 (24 of 50)

#### Synopsis

Small transport pilot inadvertently loaded FRA instead of FRAME into their GPS for the FAT FRESNO.8 Departure and turned the wrong way when cleared direct.

## ACN: 1278705 (25 of 50)

#### Synopsis

Air carrier First Officer reports entering IRU coordinates from the gate sign at WSSS which has a decimal point error. The east coordinate is entered as a 10.4 instead of 104 causing GPS error messages and a call for maintenance. The GPS is deferred and the actual cause of the anomaly is discovered during push back and corrected.

## ACN: 1274200 (26 of 50)

#### Synopsis

An iPad's internal magnets reportedly caused an IFR M201J 15 degree compass error, which ATC detected because of a track deviation. The compass error cause was not determined until after landing.

## ACN: 1274088 (27 of 50)

#### Synopsis

Light twin pilot reports being dispatched on an air attack mission for the Forest Service without precise coordinates or a proper preflight of the route. The route passes through restricted airspace and results in a conflict with a military drone.

## ACN: 1272304 (28 of 50)

#### Synopsis

BE36 pilot reports incorrectly programming his GPS after receiving a clearance while taxiing single pilot. Waypoint WOOLY is incorrectly entered as WOLLY, resulting in a track deviation. ATC detects and corrects the error.

## ACN: 1271748 (29 of 50)

#### Synopsis

B737 Captain experienced a GPWS terrain warning during a night visual approach to TTPP Runway 10 from the north. The aircraft was in Level Change with 3,000 feet set in the MCP altitude window and 3,000 feet was reached prior to OMEGO. Evasive action was taken, with only a small climb required to cancel the warning, then the approach was continued.

## ACN: 1265538 (30 of 50)

#### Synopsis

Upon breaking out at the completion of an instrument approach, crew of PC-12 noticed that the runway was closed with a large yellow X on the runway threshold. The entire airport had been closed for construction, but no NOTAM was issued. Crew diverted to an alternate airport.

## ACN: 1264474 (31 of 50)

#### Synopsis

PA32 pilot reports encountering severe rain and turbulence during an RNAV 20 approach to MKL. Control of the aircraft is momentarily lost along with 1800 feet of altitude. At 1200 feet the reporter is able to regain control, climb to 2000 feet and complete the approach. Communication with ATC is lost when the mic cord becomes unplugged during the turbulence.

## ACN: 1263859 (32 of 50)

#### Synopsis

A reporter states that a VFR aircraft, after being terminated for flight following, enters a restricted area. A call in the blind is answered by the VFR pilot and is told that they entered the restricted area. The pilot disagrees and says the altitude that is not is higher than they are. The Controller disagrees and advises the pilot. The pilot finds out that the depiction on his GPS system is incorrect.

## ACN: 1261310 (33 of 50)

#### Synopsis

King Air 200 pilot experienced loss of GPS signal after departing ELP and passing through FL250. The failure was due to NOTAM'd GPS jamming in the area and ATC assigned a heading to destination. With the loss of NAV capability the autopilot also lost altitude capture, resulting in an 800 foot overshoot of FL270.

## ACN: 1260880 (34 of 50)

## Synopsis

A Citation Excel Captain stated he feels RNAV approach charts should be simplified to reduce errors, citing the BNA SWFFT2 STAR as an example.

## ACN: 1259797 (35 of 50)

#### Synopsis

Air Carrier pilot reports of incorrect data on the LIDO chart that they were using to fly to the destination airport. The frequency of the ILS was in error on one chart, but correct on another chart. The change had taken place two years ago.

#### ACN: 1259778 (36 of 50)

#### Synopsis

A Captain cleared for a night visual to BWI Runway 33L erroneously visually locked on the Runway 33R lights and prematurely descended causing the "GLIDESLOPE" aural alert and a brief PFD GROUND PROXIMITY alert. The First Officer correctly pointed out 33L.

## ACN: 1259699 (37 of 50)

#### Synopsis

B737-700 First Officer reports being cleared to LAS via BCE and the GRNPA1 arrival. Due to weather deviations the route is changed to direct to MLF and the GRNPA1. The crew does not notice that MLF is a transition on the GRNPA1 and turns to BCE after MLF. ATC intervenes.

## ACN: 1259341 (38 of 50)

#### Synopsis

A PA-34 pilot reported his aircraft's sixteen year old autopilot is interfaced with a new technology FMS. As center handed him off to approach, he was reprogramming for a practice GPS approach but his autopilot failed to capture an altitude resulting an overshoot and very high workload. Single pilot operations with mixed new and old technology creates special demands.

## ACN: 1256107 (39 of 50)

#### Synopsis

A Regional Jet Captain reports being advised by ATC during a non-precision approach to MKE that he is low. The altimeter setting was actually 29.44 instead of the 30.26 setting obtained from the digital ATIS received over ACARS.

## ACN: 1254520 (40 of 50)

## Synopsis

A BE350 Captain reports that his G1000 with a current chart subscription does not indicate that there is more than one page to the BOWIE3 arrival to DFW. Only on the third page is it noted that the procedure is slightly different for turboprops, requiring a different heading from a different fix. The BOWIE3 for turboprops cannot be line selected in the GPS and a track deviation occurs when the aircraft passes the turn point.

## ACN: 1254263 (41 of 50)

## Synopsis

C172 pilot reports picking up his IFR clearance airborne and receiving a different route than filed. Attempting to program the GPS while climbing, both track and altitude deviations occur and are noted by ATC.

## ACN: 1253680 (42 of 50)

#### Synopsis

B777 flight crew arriving ZSPD is informed they are off course by ATC, but no deviation can be detected in the cockpit. An EICAS message "NAV unable RNP" is then displayed and the crew requests vectors to the ILS, which are eventually provided. Once on the ground the left GPS returns to normal operation.

## ACN: 1252292 (43 of 50)

## Synopsis

BE35 pilot reports descending early on the ILS RWY 23 into ORF due to improper setup of Nav panel. ATC issues a low altitude alert and the reporter eventually climbs back to 1,600 feet from 800 feet.

## ACN: 1251941 (44 of 50)

#### Synopsis

Regional Jet First Officer describes a night visual approach to Runway 28R at BOI, during which the Tower issues a low altitude alert then the aircraft GPWS annunciates terrain warning. The aircraft is climbed 2-300 feet and the warning stops and the visual approach is continued to landing.

## ACN: 1249874 (45 of 50)

#### Synopsis

B767 flight crew experiences a track deviation while attempting to navigate direct to 48N50W. While the FMC showed 48N50W, the actual position reported to CZQX was N4812.3 W5006.3. CZQX will not allow the flight to continue and the flight turns back while troubleshooting and discussing with Maintenance Control. Eventually, with no navigational anomaly detected the flight is allowed to continue on NAT X with a fuel stop.

## ACN: 1249278 (46 of 50)

### Synopsis

A320 flight crew reports being cleared for the RNAV Visual to Runway 19R at LAS but can't locate the procedure on their iPads. The RNAV (GPS) 19R is loaded believing this is what the controller meant. It is not, and vectors are issued for a standard visual approach.

## ACN: 1248903 (47 of 50)

#### Synopsis

B737 flight crew reports being confused by the AMRST4 departure from CLE, with the top altitude on initial departure listed as 3,000 feet and 5,000 feet in different places. A NOTAM apparently cleared up this confusion but the crew did not notice it. ATC made the crew aware when they checked in climbing to 3,000 feet that 5,000 feet was the correct altitude.

#### ACN: 1248750 (48 of 50)

#### Synopsis

A pilot reported departing ACK with an incorrect altimeter setting and leveling at 800 feet over the bay when he thought he was at 1,800 feet. Poor weather planning and two GPS signals reporting different than actual location were mentioned as contributing factors.

## ACN: 1246917 (49 of 50)

#### Synopsis

The pilot of a Cirrus SR-22 received an altitude alert for an unknown reason, which led to a missed approach. On the subsequent approach, ATC issued a second altitude alert due to the pilot's inadvertent premature descent.

## ACN: 1246878 (50 of 50)

#### Synopsis

CE-525 pilot reported making an error programming a hold in his FMS, highlighting several "gotcha" areas that can trip up the unwary or undertrained.

**Report Narratives** 

## ACN: 1311252 (1 of 50)

## Time / Day

Date : 201511 Local Time Of Day : 1201-1800

#### Place

Locale Reference.Airport : UAO.Airport State Reference : OR Relative Position.Distance.Nautical Miles : 2 Altitude.MSL.Single Value : 1400

#### Environment

Flight Conditions : VMC Weather Elements / Visibility.Visibility : 10 Light : Daylight

#### Aircraft: 1

Reference : X ATC / Advisory.Tower : UAO Aircraft Operator : Personal Make Model Name : Small Aircraft, High Wing, 1 Eng, Fixed Gear Crew Size.Number Of Crew : 1 Operating Under FAR Part : Part 91 Flight Plan : IFR Mission : Training Flight Phase : Initial Approach Route In Use.Other Airspace.Class D : UAO

#### Aircraft: 2

ATC / Advisory.Tower : UAO Make Model Name : Small Aircraft, High Wing, 1 Eng, Fixed Gear Crew Size.Number Of Crew : 1 Operating Under FAR Part : Part 91 Flight Phase : Initial Approach Airspace.Class D : UAO

#### Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Personal Function.Flight Crew : Single Pilot Qualification.Flight Crew : Instrument Qualification.Flight Crew : Commercial Qualification.Flight Crew : Flight Instructor Experience.Flight Crew.Total : 1870 Experience.Flight Crew.Last 90 Days : 15 Experience.Flight Crew.Type : 560 ASRS Report Number.Accession Number : 1311252 Human Factors : Situational Awareness

#### Events

Anomaly.ATC Issue : All Types Anomaly.Conflict : NMAC Detector.Person : Flight Crew Miss Distance.Horizontal : 200 Miss Distance.Vertical : 200 When Detected : In-flight Result.Flight Crew : Took Evasive Action

#### Assessments

Contributing Factors / Situations : Procedure Contributing Factors / Situations : Human Factors Primary Problem : Human Factors

#### Narrative: 1

I was involved in a Near Mid-Air Collision (NMAC) in the Aurora State Airport, Oregon (UAO) airport traffic pattern. I immediately reported the incident to the UAO air traffic control tower (ATCT), advising them of a near miss. At the time of the incident, UAO Runway 17 was active.

Prior to the incident, I was on an instrument flight plan and flying the VOR/DME-A approach into UAO. The instrument approach procedure (IAP) starts at Newburg VORTAC (UBG) and proceeds outbound along the UBG 105 radial and crosses midfield and nearly perpendicular to the UAO Runway 17/35 at 10.7 DME. At approximately 6 DME from UBG (EMILL) on the IAP, I received a handoff from Portland Approach to the ATCT, which included an advisory of traffic near the UAO airport.

During the IAP, I was in and out of few to scattered clouds. Weather at UAO was VFR, to include VFR aircraft operating in the traffic pattern.

Following the handoff, initially, I had an incorrect ATCT frequency set in my radio. I believe I had set 120.15, instead of the correct frequency of 120.35. It took about 15 seconds to recognize and correct my error. Once I had the correct frequency set, I had to wait for a break in communications before I could make my initial contact with tower. I estimate my initial contact with tower occurred at about 8 DME from UBG (REYTO), which is only about 2.7 NM prior to the airport and about 1.7 NM prior to the right downwind leg to the UAO traffic pattern. I can't remember the exact words, but I was cleared by Tower for right traffic to runway 17.

The incident occurred near the intersection of the UBG 105 radial and the right downwind traffic pattern for UAO Runway 17, at near traffic pattern altitude. I passed slightly above [a small aircraft]. The aircraft passed from my right to left, consistent with a normal traffic pattern. I estimate closest point of approach to be 200 ft vertically and 200 ft horizontally. Following the incident, evasive action was taken to include a slight climb and maneuvering to increase separation and prevent a subsequent incident. I was next sequenced by tower to follow the other aircraft for landing. I'm unsure if the other aircraft noticed the near miss; I did not see any maneuvering or hear any radio calls that would indicate their

awareness of the incident.

The near miss could have been avoided by better situational awareness and better scanning (see and avoid) from the other aircraft, the tower controller, and myself.

An earlier hand-off from Portland Approach Control to Aurora tower could have also helped prevent this near miss. Perhaps the reason for the relatively late handoff, is due to the IAP design and high terrain. Approach control may want to monitor aircraft along the IAP until they clear an area of high terrain at 6 DME from UBG (EMILL). For example, while flying at 2,200 ft between 3 and 6 DME, Approach controller advised me of a terrain alert. I could hear their alarms going off in the background of the transmission. However, 2,200 ft is the published minimum altitude for that sector of the IAP. Perhaps the IAP should be redesigned to include 2,400 ft (or higher) as the minimum altitude until reaching 6 DME. It seems to me, that IAP minimums should not be set so low as to set off ATC terrain alarms. Any change to the UAO VOR/DME-A IAP altitudes should require a change to the similar UAO RNAV (GPS)-B IAP altitudes.

As a side note, the Hillsboro (HIO) VOR/DME-C IAP has some similarities with the UAO VOR/DME-A IAP. Both fly a radial from the UBG VORTAC to the near midpoint of the runway and both cover about the same distance. HIO is 10.9 NM and UAO is 10.7 NM. However, I traditionally receive the handoff from Approach Control to Tower much earlier on the HIO approach. This HIO handoff often occurs immediately after passing inbound over the UBG VORTAC. This allows for a much smoother transition with Tower.

Also, UAO tower just became operational in [the last few months]. Coordination between UAO tower and Portland Approach is all brand new. I highly recommend they review their hand off procedures regarding both the VOR/DME-A and RNAV (GPS)-B IAPs, to ensure the handoff is complete well prior to reaching the airport.

#### Synopsis

Pilot reported a NMAC during an instrument approach to UAO Airport while in contact with the Local Tower Controller.

#### ACN: 1309561 (2 of 50)

#### Time / Day

Date : 201511 Local Time Of Day : 0601-1200

#### Place

Locale Reference.Airport : OXR.Airport State Reference : CA Altitude.MSL.Single Value : 1680

#### Environment

Flight Conditions : VMC Weather Elements / Visibility.Visibility : 30 Light : Daylight

### Aircraft: 1

Reference : X ATC / Advisory.Tower : OXR Aircraft Operator : Personal Make Model Name : Small Aircraft, Low Wing, 1 Eng, Fixed Gear Crew Size.Number Of Crew : 1 Operating Under FAR Part : Part 91 Flight Plan : IFR Mission : Personal Flight Phase : Final Approach Route In Use.Other Airspace.Class D : OXR

#### Aircraft: 2

Aircraft Operator : Personal Make Model Name : Military Crew Size.Number Of Crew : 1 Operating Under FAR Part : Part 91 Flight Phase : Initial Approach

#### Person

Reference : 1 Location In Aircraft : Flight Deck Reporter Organization : Personal Function.Flight Crew : Pilot Flying Function.Flight Crew : Single Pilot Qualification.Flight Crew : Private Qualification.Flight Crew : Instrument Experience.Flight Crew.Total : 671 Experience.Flight Crew.Last 90 Days : 31 Experience.Flight Crew.Type : 671 ASRS Report Number.Accession Number : 1309561 Human Factors : Situational Awareness Human Factors : Communication Breakdown Communication Breakdown.Party1 : Flight Crew Communication Breakdown.Party2 : ATC

#### Events

Anomaly.Conflict : NMAC Anomaly.Deviation - Procedural : Published Material / Policy Detector.Person : Flight Crew Miss Distance.Horizontal : 400 Miss Distance.Vertical : 100 Were Passengers Involved In Event : N When Detected : In-flight Result.Flight Crew : Took Evasive Action

#### Assessments

Contributing Factors / Situations : Human Factors Contributing Factors / Situations : Airport Primary Problem : Human Factors

#### Narrative: 1

I departed on an IFR flight to Oxnard (OXR). My plane is equipped with GPS (/g) and ADS-B. I was cleared by Mugu approach to fly the ILS runway 25 approach into OXR and I was told to contact the OXR tower at the marker (PARDS). At PARDS, I was established on the glideslope and localizer. Upon reaching PARDS, I switched to the OXR tower frequency. Just as I switched to the OXR tower frequency but before I had transmitted to the tower, I suddenly saw a single-engine WWII fighter plane at my 1 o'clock position about 500 feet away. The plane was in a banked left turn crossing perpendicular to my path from my right to my left. It appeared to be at or slightly above my altitude. I immediately reduced power and shoved the control wheel forward to dive below the plane. The plane passed above me, but it happened so quickly that I really am not sure how close we came to colliding. I then transmitted to the OXR tower to report that I was with them on the ILS, and I told the tower controller that I had just almost had a mid-air collision with a WWII fighter. I do not remember the OXR tower controller's exact words, but he responded with something to the effect of, "yeah, I was just about to call you to warn you that he was turning into you." He then cleared me to land, and I landed at OXR without incident. I had no further conversation with the controller about the near-miss. Even though my plane is equipped with ADS-B, I did not receive an aural or visual traffic alert because the [avionic] unit's "pop-up traffic alerts" are disabled when an approach is active on the GPS. My plane has dual glideslopes and both were tuned to the OXR ILS 25, so I am certain that I was on the glideslope during the approach. My hypothesis is that the fighter was making a left overhead break over the Camarillo (CMA) airport to turn a left downwind for runway 26 at Camarillo. However, if my hypothesis is correct, the fighter was about 800 feet above the CMA pattern altitude of 877 MSL.

#### Synopsis

The pilot of a general aviation aircraft reported a NMAC with a warbird while on approach to OXR. The pilot received no prior warning from Approach and had not yet established contact with the Tower. The on-board collision avoidance system also did not provide advanced notice, but was likely due to the mode being disabled in approach mode.

#### Time / Day

Date : 201511 Local Time Of Day : 1201-1800

#### Place

Locale Reference.Airport : VGT.Airport State Reference : NV Altitude.MSL.Single Value : 14500

#### Environment

Flight Conditions : VMC Weather Elements / Visibility.Other Light : Daylight

## Aircraft

Reference : X ATC / Advisory.TRACON : LSV Aircraft Operator : Personal Make Model Name : Cessna 340/340A Crew Size.Number Of Crew : 1 Operating Under FAR Part : Part 91 Flight Plan : VFR Mission : Personal Nav In Use : GPS Flight Phase : Cruise Route In Use : Direct Airspace.Special Use : R-6404A

#### Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Personal Function.Flight Crew : Single Pilot Qualification.Flight Crew : Air Transport Pilot (ATP) Qualification.Flight Crew : Air Transport Pilot (ATP) Qualification.Flight Crew : Flight Instructor Qualification.Flight Crew : Multiengine Qualification.Flight Crew : Instrument Experience.Flight Crew.Total : 9000 Experience.Flight Crew.Last 90 Days : 60 Experience.Flight Crew.Type : 3000 ASRS Report Number.Accession Number : 1308749 Human Factors : Situational Awareness

#### Events

Anomaly.Aircraft Equipment Problem : Less Severe Anomaly.Airspace Violation : All Types Anomaly.Flight Deck / Cabin / Aircraft Event : Smoke / Fire / Fumes / Odor Detector.Person : Flight Crew When Detected : In-flight Result.Flight Crew : Became Reoriented Result.Air Traffic Control : Issued Advisory / Alert

#### Assessments

Contributing Factors / Situations : Human Factors Contributing Factors / Situations : Aircraft Primary Problem : Human Factors

#### Narrative: 1

I was flying a FAR Part 91 VFR flight in a Cessna 340A at 14,500 feet MSL. My means of navigation was a panel mount moving map GPS and VFR WAC chart. The flight was to North Las Vegas, Nevada (VGT). I was relying on my GPS for special use airspace situational awareness with my current VFR WAC chart as backup.

While flying over Nevada, I leaned on a water bottle causing the bottle to break and spray water over my circuit panel and a 12 volt plug for my iPad. Within a few minutes, multiple electrical breakers were popping. I attempted to reset the breakers for my avionics, but left the rest of the circuit breakers popped. I then started to experience the faint smell of electrical smoke in the cabin. I immediately disengaged the breakers I had initially reset. This, in turn, disabled my communication radios and my color moving map GPS among a few other electrical systems. At this point the meteorological conditions were: clear visibility except for a cloud layer far below which completely covered the ground and all ground reference aids. The tops of this cloud layer were significantly below me by an estimated 10,000 feet. As a result, I began to navigate using deduced reckoning by means of my VFR WAC chart.

After some time, the electrical smoke smell dissipated. I plugged in my iPad which contains the navigation program "ForeFlight". My iPad had a low battery and was unable to immediately power on. Within a few minutes, I again detected the odor of electrical smoke. I observed it was a result of plugging my iPad's power cord into the outlet mounted in the aircraft's panel. I unplugged it only to discover the plug and cord had heated up significantly. I was aware I had been approaching Restricted Use airspace (R-6404 A, R-6404 B&D and R-6406 A). I began to make a turn away from the airspace based on my last known position and my relative position to the airspace. I did not have any means of radio communications to verify my position with ATC or query them to determine if the Restricted areas for military operations were active. My iPad had charged enough to power on at this point. Once its map had determined my location, I discovered that my position was on the outer edge of the Restricted airspace and that I had not turned away from it soon enough.

I carry a hand held communications radio which I was able to retrieve from my flight bag in the rear of the airplane. I used this to contact the nearest ATC center, I believe Nellis Control. They informed me of a possible pilot deviation and I was directed to call [them]. I [called] and explained my situation. He took notes and informed me he would discuss it with management and someone would get back to me if it was necessary to do so. As of today, I have not heard from anyone in ATC.

After I safely landed at North Las Vegas, I opened up the circuit panel and found a small amount of water caught in a portion of the electrical panel against a bank of circuit breakers. I removed the standing water in the panel and allowed the rest of the moisture to air dry in Las Vegas for the next 3 days. I physically inspected and operationally checked the circuit breakers again on the third day and found no more moisture present and all circuits and electrical systems to be working properly.

#### Synopsis

C340A pilot reported a restricted airspace incursion following loss of primary navigational systems.

### ACN: 1308394 (4 of 50)

#### Time / Day

Date : 201511 Local Time Of Day : 0601-1200

#### Place

Locale Reference.Airport : LGA.Airport State Reference : NY Altitude.MSL.Single Value : 3500

#### Environment

Flight Conditions : VMC Weather Elements / Visibility.Visibility : 10 Light : Daylight Ceiling.Single Value : 25000

#### Aircraft

Reference : X ATC / Advisory.Tower : N90 Aircraft Operator : Personal Make Model Name : Small Aircraft, Low Wing, 1 Eng, Fixed Gear Crew Size.Number Of Crew : 1 Operating Under FAR Part : Part 91 Flight Plan : VFR Mission : Personal Flight Phase : Cruise Route In Use : Direct Airspace.Class B : LGA

#### Component

Aircraft Component : GPS & Other Satellite Navigation Aircraft Reference : X Problem : Improperly Operated

#### Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Personal Function.Flight Crew : Pilot Flying Function.Flight Crew : Single Pilot Qualification.Flight Crew : Private Experience.Flight Crew.Total : 880 Experience.Flight Crew.Last 90 Days : 40 Experience.Flight Crew.Type : 424 ASRS Report Number.Accession Number : 1308394 Human Factors : Situational Awareness Human Factors : Distraction

#### Events

Anomaly.Airspace Violation : All Types Anomaly.Deviation - Procedural : FAR Detector.Person : Flight Crew Miss Distance.Vertical : 1000 When Detected : In-flight Result.General : None Reported / Taken

#### Assessments

Contributing Factors / Situations : Procedure Contributing Factors / Situations : Human Factors Primary Problem : Ambiguous

#### Narrative: 1

I flew the Hudson River Exclusion route northbound at 1,100 feet past the Alpine Towers. I had my GPS map zoomed in to provide fine detail boundaries of the Hudson River and surrounding airspace. I turned east just south of the Tappan Zee bridge. I kept my GPS map zoomed in to ensure that I would not violate KHPN airspace. Once east of the HPN airspace I applied power to climb to my cruising altitude of 3,500 feet and then 5,500 feet. Since my GPS was zoomed for detail, it did not show the Class Bravo rings. This oversight resulted in my believing I was outside of Class B. It was not until another plane trailing me announced that they inadvertently flew up through the Class B floor did I realize that I climbed through the edge of outer ring of LGAs Class B airspace.

Lesson learned. EFB's are a fantastic tool. However, as demonstrated above, they allow you to focus on such minute detail to the point where they can impact your situational awareness. Very much like the concept of target fixation. Since I have a panel mounted moving map and an EFB my practice will now be to keep one zoomed out if the other is zoomed in. This will provide the perspective needed to avoid a similar occurrence.

#### Synopsis

A small aircraft pilot operating on the Hudson River Exclusion route inadvertently violated LGA's Class B airspace when the GPS in use was set to a range that did not display the airspace boundaries.

#### Time / Day

Date : 201511 Local Time Of Day : 1201-1800

#### Place

Locale Reference.Airport : BVS.Airport State Reference : WA Relative Position.Distance.Nautical Miles : 15 Altitude.MSL.Single Value : 5000

#### Environment

Flight Conditions : Mixed Weather Elements / Visibility : Turbulence Weather Elements / Visibility : Icing Weather Elements / Visibility : Rain Weather Elements / Visibility.Visibility : 1 Light : Night Ceiling.Single Value : 3000

#### Aircraft

Reference : X ATC / Advisory.TRACON : NUW Aircraft Operator : Corporate Make Model Name : Small Transport, Low Wing, 2 Turboprop Eng Crew Size.Number Of Crew : 1 Operating Under FAR Part : Part 91 Flight Plan : IFR Mission : Passenger Nav In Use : GPS Flight Phase : Initial Approach Route In Use : Direct Airspace.Class E : ZSE

#### Component

Aircraft Component : GPS & Other Satellite Navigation Problem : Improperly Operated

#### Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Corporate Function.Flight Crew : Pilot Flying Function.Flight Crew : Single Pilot Qualification.Flight Crew : Flight Instructor Qualification.Flight Crew : Air Transport Pilot (ATP) Qualification.Flight Crew : Multiengine Qualification.Flight Crew : Instrument Experience.Flight Crew.Total : 3800 Experience.Flight Crew.Last 90 Days : 100 Experience.Flight Crew.Type : 15 ASRS Report Number.Accession Number : 1307577 Human Factors : Situational Awareness Human Factors : Fatigue Human Factors : Confusion

#### Events

Anomaly.Deviation - Track / Heading : All Types Anomaly.Deviation - Procedural : Published Material / Policy Anomaly.Deviation - Procedural : Clearance Anomaly.Inflight Event / Encounter : Weather / Turbulence Detector.Person : Flight Crew When Detected : In-flight Result.Flight Crew : Became Reoriented

#### Assessments

Contributing Factors / Situations : Human Factors Primary Problem : Human Factors

#### Narrative: 1

Part 91 corporate flight back to western Washington over the Cascade Mountains. Daylight departure, night arrival into MVFR/IFR conditions after a VMC descent into the terminal/approach area. Cleared direct to the IAF for an RNAV approach at destination, a transition and approach I have flown a couple dozen times in training and operationally. Entered IMC conditions with light icing and light turbulence just prior to the IAF. Was given a crossing restriction at the IAF and cleared for the approach; after passing the fix, noticed my position on my iPad depicted me well north of the desired transition course and deviating. As I started the turn to the right (east) to correct, noticed that I had misprogrammed the GPS (GNS 480) where the approach wasn't 'executed'. The GPS steering had me going to the airport rather than the next IF on the approach. As I attempted to reload and activate the approach while correcting back on course, broke out into night, visual conditions, announced as much to approach while requesting the visual and cancelled IFR. Landed uneventfully. (Approach never mentioned deviation and there was never any threat to terrain or other aircraft.)

Lessons: don't take a milk run back to home base for granted. Light icing, rain and turbulence surprised me, as METAR and local TAFs showed only BKN layers and good vis. I had a good plan for the approach, but executed it very poorly, specifically with regards to GPS programming and confirmation of "what is it doing next?" I have been flying several different type aircraft lately with different avionics and have to believe this contributed to my complacency and error. One of the dirty secrets of aviation is fatigue. I had brought these passengers out early that morning and sat all day at destination waiting for them. Of course they were well past the proposed departure time. Lesson: even though the schedule isn't known, you MUST grab some rest if you need it, especially with a return to IMC conditions and/or if you are fatigued. I definitely was tired looking back on the flight on the drive home. I had a supremely capable airplane, flying a well-known route and approach to my home airport, and I made a couple errors that could have compounded into something more serious like an official deviation or worse. Great lesson and won't happen again anytime soon.

## Synopsis

Pilot became disoriented during an instrument approach in IMC conditions. Pilot discovered the track error by noticing his previous error while programming his iPad for the approach. Pilot reprogrammed the approach and landed safely in VMC.

#### Time / Day

Date : 201510 Local Time Of Day : 1201-1800

#### Place

Locale Reference.Airport : ZZZ.Airport State Reference : US Altitude.MSL.Single Value : 2000

#### Environment

Flight Conditions : VMC Weather Elements / Visibility.Visibility : 10 Light : Daylight Ceiling.Single Value : 21000

#### Aircraft

Reference : X Aircraft Operator : Personal Make Model Name : Bonanza 36 Operating Under FAR Part : Part 91 Flight Plan : None Mission : Personal Flight Phase : Initial Climb Route In Use : Direct Route In Use : Visual Approach

#### Component

Aircraft Component : GPS & Other Satellite Navigation Aircraft Reference : X Problem : Design

#### Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Personal Function.Flight Crew : Single Pilot Qualification.Flight Crew : Instrument Qualification.Flight Crew : Multiengine Experience.Flight Crew.Total : 2800 Experience.Flight Crew.Last 90 Days : 20 Experience.Flight Crew.Type : 700 ASRS Report Number.Accession Number : 1306787 Human Factors : Training / Qualification Human Factors : Troubleshooting Human Factors : Confusion

#### Events

Anomaly.Aircraft Equipment Problem : Less Severe Anomaly.Deviation - Track / Heading : All Types Anomaly.Deviation - Procedural : Clearance Detector.Person : Air Traffic Control When Detected : In-flight Result.Flight Crew : Became Reoriented Result.Air Traffic Control : Issued Advisory / Alert

#### Assessments

Contributing Factors / Situations : Human Factors Contributing Factors / Situations : Aircraft Primary Problem : Human Factors

#### Narrative: 1

The relatively new Garmin GPS 750 was set up by the pilot and his owner pilot partner. We loaded and activated the unit direct to ZZZ. We were careful to push the button to eliminate the previous flight plan. The unit told us to fly 354 degrees. The heading on our IPAD was correct around 270 degrees. We then went to a direct function and flew to ZZZ. The tower controller queried our heading initially 354 degrees. The GPS 750 is a very difficult unit to learn. My partner and I have watched all internet training, read manuals etc. While we were departing, the unit identified ZZZ1 as ZZZ. We have notified the avionics technician where the equipment was installed months ago. It is very difficult to download new data on the computer. Often when the avionics personnel [do the] download we still get incomplete data renewal. Garmin is very hard to talk to or reach. There needs to be better training availability in an airplane.

#### Synopsis

BE-36 pilot reports difficulty learning to operate a new Garmin 750 and contacting the company to ask questions.

### ACN: 1299936 (7 of 50)

#### Time / Day

Date : 201510 Local Time Of Day : 0601-1200

#### Place

Altitude.MSL.Single Value : 6000

#### Environment

Flight Conditions : IMC Weather Elements / Visibility : Rain Weather Elements / Visibility.Visibility : 6 Light : Daylight Ceiling.Single Value : 800

#### Aircraft

Reference : X Make Model Name : Sport 19 Crew Size.Number Of Crew : 1 Operating Under FAR Part : Part 91 Flight Plan : IFR Mission : Personal Nav In Use : GPS Flight Phase : Cruise Route In Use.Airway : V144

#### Component

Aircraft Component : Electrical Power Aircraft Reference : X Problem : Malfunctioning

#### Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Personal Function.Flight Crew : Pilot Flying Function.Flight Crew : Single Pilot Qualification.Flight Crew : Instrument Qualification.Flight Crew : Instrument Experience.Flight Crew.Total : 748 Experience.Flight Crew.Last 90 Days : 50 Experience.Flight Crew.Type : 400 ASRS Report Number.Accession Number : 1299936

#### Events

Anomaly.Aircraft Equipment Problem : Less Severe Anomaly.Inflight Event / Encounter : Weather / Turbulence Detector.Person : Flight Crew When Detected : In-flight Result.Flight Crew : Overcame Equipment Problem

#### Assessments

Contributing Factors / Situations : Human Factors Contributing Factors / Situations : Aircraft Primary Problem : Ambiguous

#### Narrative: 1

At 6000 feet MSL in cruise, I attempted to plug an adapter into my cigarette lighter to aid in charging an iPad using my Garmin pilot app in flight for weather. As I placed the adapter into the socket and turned it slightly to better align the wires to keep it from conflicting with any other aircraft systems, (i.e. flap handle and my knees), there was an immediate short which took my EDM 830 engine monitoring system off line and my Garmin 430w began to display an info box which stated dead reckoning only. I immediately [advised ATC], unsure what might fail next and wanted to make ATC aware of any issues I might have as well as preparing for any eventual help I may need. Then I noticed that my autopilot GNSS steering was displaying a fault by a blinking light, knowing that this was from the GPS system fault, I immediately switched this from GPS to heading, which kept the autopilot working and following my heading bug and not the GPS track from the 430w. This kept the autopilot flying the airplane wings level in IMC and allowed me to begin to deal with the [situation]. The 430w quickly reoriented itself and within a minute began to display normal function, I again switched the GNSS button back to GPS which then allowed the autopilot to follow the flight plan loaded into the equipment. This to me was a huge factor in allowing me to assess the situation and determine my course of action. ATC asked me to say intention, I relayed my panel information at the time and elected to continue the flight toward VFR conditions which I knew was well ahead of my current position. This to me was much safer than trying to do an approach into an airport that almost certainly in my current position, in the mountain area of West Virginia, was low IFR. The engine continued to run strong and showed no signs of any issues, based on basic engine sound and remaining engine instruments on the panel. I continued to my destination airport and researched the cause of the [issue] and found a blown 30amp in line fuse as part of the cigarette lighter, replacing the fuse all systems were back to normal, which at this time was only the EDM 830. The actual [situation] was handled extremely well by my controller at the time, he was calm, kept everybody else quiet while he clarified my situation, once he understood my issues and my intentions he let the next controller in line know my situation, it's a true blessing to have these folks there when you need them, their training and professionalism really pays off to those in the clouds.

#### Synopsis

BE19 pilot reported losing a number of electrical components when he plugged his iPad into the cigarette lighter.

#### Time / Day

Date : 201509 Local Time Of Day : 1201-1800

#### Place

Locale Reference.Airport : RDU.Airport State Reference : NC

#### Aircraft

Reference : X ATC / Advisory.TRACON : ZZZ Aircraft Operator : Fractional Make Model Name : Challenger 300 Crew Size.Number Of Crew : 2 Operating Under FAR Part : Part 91 Flight Plan : IFR Mission : Ferry Nav In Use : FMS Or FMC Flight Phase : Cruise Flight Phase : Climb Airspace.Class C : RDU

#### Component

Aircraft Component : FMS/FMC Aircraft Reference : X Problem : Improperly Operated Problem : Malfunctioning

#### Person: 1

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Fractional Function.Flight Crew : Pilot Not Flying Qualification.Flight Crew : Air Transport Pilot (ATP) ASRS Report Number.Accession Number : 1298421 Human Factors : Human-Machine Interface Human Factors : Situational Awareness Human Factors : Confusion

#### Person: 2

Reference : 2 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Fractional Function.Flight Crew : Pilot Flying Qualification.Flight Crew : Air Transport Pilot (ATP) ASRS Report Number.Accession Number : 1298695 Human Factors : Troubleshooting Human Factors : Confusion Human Factors : Human-Machine Interface

#### Events

Anomaly.Aircraft Equipment Problem : Less Severe Anomaly.Deviation - Track / Heading : All Types Anomaly.Deviation - Procedural : Clearance Detector.Person : Air Traffic Control When Detected : In-flight Result.General : Maintenance Action Result.Flight Crew : Became Reoriented Result.Flight Crew : Overcame Equipment Problem Result.Flight Crew : Returned To Clearance Result.Air Traffic Control : Issued New Clearance Result.Air Traffic Control : Issued Advisory / Alert

#### Assessments

Contributing Factors / Situations : Human Factors Contributing Factors / Situations : Aircraft Primary Problem : Aircraft

#### Narrative: 1

Quick repo flight to RDU. We picked up the aircraft from Maintenance. Our departure clearance was "radar vectors to LWOOD then as filed." We plugged it in the FMS and verified the route. In flight, after departure, a few minutes into the flight, the controller assigns us "direct to LWOOD". As I am trying to hit DIRECT, the FMS doesn't pull up LWOOD anymore. We assume it dropped out so we manually plugged it back in and hit DIRECT and NAV and the aircraft turned to LWOOD. A few moments later the controller, fairly alarmed asked us where we were navigating towards and that we needed to make an immediate 180 degree turn to LWOOD. At this moment we realized our MFDs were showing a DR icon. We confirmed the spelling of LWOOD and that that's where we were navigating to, but asked him for vectors to RDU. He assigned us to intercept the 082 from [departure airport] which we did in green needles. The FMS needles were showing opposite directions and nowhere near [our location]. So we stayed in green needles until we landed in Raleigh. On the ground we called Maintenance and reset the FMS, and re initialized our position. Eventually it all went back to normal. We flew two more legs without further issues.

We relied too much on the box to be correct that we didn't realize our GPS was not working correctly. Keeping situational awareness at all times will avoid situations like that. I am glad the controller noticed right at the same time we did, so we could correct that error.

#### Narrative: 2

We were assigned runway heading with expectation of vectors to first fix. At approximately 3,000 MSL in IMC we were given clearance direct LWOOD intersection. LWOOD seemed to have sequenced out of the box so we reentered and executed the fix. We turned to the heading indicated by the box. Almost simultaneously the FMS posted a GPS dead reckoning for more than five minutes and ATC indicated that we were not proceeding direct to LWOOD. I asked ATC for a heading and stated that our FMS did not appear to have an accurate GPS fix and that we needed a vector and or a clearance with a ground based navigation fix. On green needles we established our position and track and

proceeded to RDU. The status pages indicated that we were not in dead reckoning mode but that the GPS receivers both had a good and identical fix. The FMS position did not reflect the GPS position, nor did it switch to DME/DME or VOR position sensing.

Once on the ground at RDU it took a hard reboot and several tries to get the FMS position to agree with the GPS position. Following flights were uneventful.

I was surprised that we did not get any flags or other indications on the ground prior to departure. Our departure procedure was a vector so I did not notice the position error on the MFD as I was not expecting to see a procedure or track displayed. The airport itself should have displayed but I did not catch this. I could or should have compared the FMS lat long to the GPS LAT LONG displayed on POS INIT page two in the FMS more carefully. It is not unusual to see small differences in those indications while sitting at the ramp with the GPS receivers settling on an accurate fix. In this case the LAT LONG numbers seemed close but were not identical. Ultimately our FMS position ended up being about 135 miles off of true in spite of having entered the GPS fix. When we landed at RDU the MFD screen showed us in the vicinity of Norfolk VA. Working with maintenance the box continued to fail to accept pos init using GPS, airport, runway end or gate updates. We rebooted the airplane and it took two or three more attempts before the box finally accepted the correct position data.

I have not seen this before. My takeaway is to be certain the box accepts the GPS position exactly, including the numbers to the far right of the decimal. Further, while I did anticipate the right turn after takeoff, it should have been a 30 or 40 degree turn, not a 90 to 120 degree turn. It was humbling to experience just how much confusion on the MFD track displays affects situational and positional awareness. I was initially concerned that both track AND heading information could be suspect, but a quick check of the mag compass and a confirmation with ATC showed it was FMS position error only. Naturally this happened in the only IMC departure we have done in the last six months.

#### Synopsis

A CL300 pilot experienced a track deviation after departure when cleared direct to LWOOD. It was noticed too late that the FMS was in DR mode due to the GPS not operating correctly. ATC issued a vector and the crew navigated to RDU in Green Needles. Maintenance reset the FMS, and re-initialized the position after several attempts.

#### Time / Day

Date : 201509 Local Time Of Day : 1801-2400

#### Place

Locale Reference.Airport : ZZZ.Airport State Reference : US Altitude.MSL.Single Value : 3000

#### Environment

Flight Conditions : VMC Weather Elements / Visibility.Visibility : 10 Light : Night Ceiling.Single Value : 12000

#### Aircraft

Reference : X ATC / Advisory.Tower : ZZZ ATC / Advisory.TRACON : ZZZ Aircraft Operator : Personal Make Model Name : Skyhawk 172/Cutlass 172 Crew Size.Number Of Crew : 1 Operating Under FAR Part : Part 91 Flight Plan : None Mission : Training Flight Phase : Initial Approach Route In Use : Vectors

#### Person

Reference: 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Personal Function Flight Crew : Pilot Flying Qualification.Flight Crew : Multiengine Qualification Flight Crew : Flight Instructor Qualification.Flight Crew : Commercial Qualification.Flight Crew : Instrument Experience.Flight Crew.Total: 1676 Experience.Flight Crew.Last 90 Days: 37 Experience.Flight Crew.Type: 600 ASRS Report Number. Accession Number: 1295631 Human Factors : Human-Machine Interface Human Factors : Situational Awareness Human Factors : Communication Breakdown Communication Breakdown Party1 : Flight Crew Communication Breakdown.Party2 : Flight Crew

#### Events

Anomaly.Deviation - Track / Heading : All Types Anomaly.Deviation - Procedural : Clearance Anomaly.Deviation - Procedural : Published Material / Policy Detector.Person : Air Traffic Control Were Passengers Involved In Event : N When Detected : In-flight Result.Flight Crew : Executed Go Around / Missed Approach Result.Flight Crew : Became Reoriented Result.Air Traffic Control : Issued Advisory / Alert Result.Air Traffic Control : Issued New Clearance

#### Assessments

Contributing Factors / Situations : Human Factors Contributing Factors / Situations : Chart Or Publication Primary Problem : Human Factors

#### Narrative: 1

After completing training at another airfield, myself and another instrument rated pilot proceeded towards ZZZ, having coordinated with Approach to conduct a couple of practice instrument approaches.

Although I (pilot flying) had current paper approach plates in the aircraft, I opted not to use them as my safety pilot/SIC maintains a subscription to one of the electronic flight publications, and had all the approach plates available on his iPad. Additionally, he also subscribes to a service that provides increased situational awareness functionality including depiction of the aircraft (GPS position) superimposed on the approach plate.

Since I am relatively unfamiliar with the newer electronic format (iPad in lieu of classic paper charts), the safety pilot offered to navigate the software and set navigational frequencies on the aircraft radios while I focused on the flying the approach, maintaining my instrument scan, and handling all voice communications and related setup. I accepted this offer and we agreed to distribute the workload in this manner.

Our first practice approach was an ILS to Runway 18L. We both heard and confirmed Approach's acknowledgement that this would be radar vectors to ILS 18L, and I began flying the approach as directed (vectors), by now wearing a view limiting device. My safety pilot had earlier brought up the correct plate and entered/verified the navigational frequencies. We both confirmed the frequencies, and that the correct plate was displayed. We also conducted an approach briefing and completed appropriate checklist actions.

As expected, I was given a series of vectors aligning us for intercept of the final approach course. During this time, my safety pilot misunderstood one of the ATC radio calls, and believed we had been switched over to 18R. He remembers verbalizing "sounds like 18R now" or simply "18R" at least once, and proceeded to switch to the 18R plate on his iPad. I missed his statement(s) and he failed to question why I therefore did not acknowledge. He also switched localizer frequencies on the nav/com radio, and although I did notice him adjusting the radio, I assumed that the adjustment was justified and correct, and did not question his actions.

Once we were in range and could receive the Morse code identifier for the localizer, I took the action to verify we were on the right frequency by comparing the Morse code identifier to that depicted on the displayed approach plate (not realizing the iPad was now showing 18R, and my safety pilot not realizing that I was unaware he had updated the display). We both confirmed that the Morse code ID matched, again, each failing to realize that we were not on the same page (literally).

As we continued on our final vector, I began intercepting the localizer for 18R (believing it was 18L) and everything cross checked and looked as it should from my perspective (sole reference to instruments). At the same time, everything appeared to be correct from my safety pilot's visual perspective since he believed we had been switched to 18R. Approach asked us to confirm we were established inbound, I acknowledged, and they handed us off to Tower.

Immediately following check in, the Tower Controller asked me to confirm I was established inbound ILS 18L. This time I removed the hood, immediately realized we were intercepting the localizer for 18R in error, and replied "Negative! Looks like we were tracking the wrong localizer" or something to that effect. Tower instructed us to turn left heading 090, climb and maintain 3,000, which I acknowledged and began to execute.

We went on to conduct additional approaches with no further issues. Upon completion of our flight my safety pilot and I conducted a thorough after-action review and critical assessment of our errant first approach. I believe the primary cause of this incident was inadequate crew coordination:

Regarding the electronic media, it took merely a tap of the screen to switch approach plates, which went completely unnoticed by me. I'm sure I would have noticed the SIC switching from one paper approach plate to another. Additionally, once on the final intercept heading, the safety pilot "zoomed in" on the intercept point to show the intercept with increased precision. This effectively omitted all other information on the chart and the "big picture" view which may have helped me to recognize earlier that we were not in the correct position during intercept.

#### Synopsis

C172 Pilot In Command (PIC) flying a practice ILS approach to the left parallel runway missed the fact the Second In Command (SIC) misunderstood an ATC call as clearance to switch to the ILS for the right runway. SIC switched NAV to the right runway ILS without PIC being aware of the change until ATC advised of the course deviation from the left runway. Lack of crew coordination and electronic charts were cited as contributing to the incident.
# ACN: 1295062 (10 of 50)

### Time / Day

Date : 201509 Local Time Of Day : 0601-1200

## Place

Locale Reference.Airport : ZZZ.Airport State Reference : US Altitude.AGL.Single Value : 0

## Environment

Flight Conditions : VMC Light : Daylight Ceiling : CLR

## Aircraft

Reference : X Aircraft Operator : Air Carrier Make Model Name : EMB ERJ 170/175 ER/LR Crew Size.Number Of Crew : 2 Operating Under FAR Part : Part 121 Flight Plan : IFR Mission : Passenger Nav In Use : FMS Or FMC Flight Phase : Parked

## Component

Aircraft Component : FMS/FMC Aircraft Reference : X Problem : Failed

Person: 1

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function.Flight Crew : Captain Qualification.Flight Crew : Air Transport Pilot (ATP) ASRS Report Number.Accession Number : 1295062

# Person: 2

Reference : 2 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function.Flight Crew : Pilot Flying Function.Flight Crew : First Officer Qualification.Flight Crew : Air Transport Pilot (ATP) ASRS Report Number.Accession Number : 1295281 Human Factors : Confusion Human Factors : Human-Machine Interface Human Factors : Communication Breakdown Human Factors : Situational Awareness Human Factors : Workload Human Factors : Troubleshooting Communication Breakdown.Party1 : Flight Crew Communication Breakdown.Party2 : Maintenance

# Events

Anomaly.Aircraft Equipment Problem : Less Severe Anomaly.Deviation - Procedural : FAR Anomaly.Deviation - Procedural : MEL Anomaly.Deviation - Procedural : Published Material / Policy Detector.Person : Flight Crew When Detected : Pre-flight When Detected : In-flight Result.General : Work Refused Result.General : Maintenance Action Result.Flight Crew : Took Evasive Action Result.Flight Crew : Became Reoriented

# Assessments

Contributing Factors / Situations : Procedure Contributing Factors / Situations : Manuals Contributing Factors / Situations : Company Policy Contributing Factors / Situations : Aircraft Primary Problem : Procedure

# Narrative: 1

On the first leg of the day, on power up, the airplane gave us an "invalid Nav database" message in the scratch pad of the MCDU. We decided to shut down and re power up the airplane to see if the problem would clear but it did not. So we contacted MOC and they sent a mechanic to meet us. We explained to the mechanic the issue. We also explained to him that we realized that we were not able to input anything into the MCDU except for radios. We could not put a flight plan, Zero Fuel Weight (ZFW), speeds or anything. The mechanic then thought it was 'Frozen' and to restart the plane again on APU power. So we shut down the plane for 3' and powered up on APU. Same issue. The mechanic then called MOC from the cockpit. He explained that we could not input anything into the MCDU. He then told us that MOC was telling him to just defer the database but we insisted that we thought they might be more wrong with the system. He said he was told to just defer both FMSs then. He left, and returned a few minutes later with MEL info, can filled out and we got our amendment for our release. Initially we thought that deferring was ok, the MEL looked correct. So we departed. We had no V speed indicated on the PFD, no flight plan programmed, no ZFW input but we had everything written down, briefed each other at length on everything we were going to do to replace automation. So we flew to our first destination, raw data, green needle and Heading. After a rushed guick turn due to arriving late and the amount of work required to substitute automation (amending clearance for no GPS, amending flight plan for no direct, calling dispatcher for takeoff numbers, ZFW...) we departed. About 20 minutes into the flight, I realized that the Landing Field Elevation (LFE) for the pressurization was not populated (associated to the lack of database) but I started questioning why the MEL wouldn't direct us to fill it in. So I pulled up the MEL book and

started flipping around. On the previous page, I started reading 34-61-00-1 for just FMS deferral instead of the database and in the notes were all the related items that we had to do (writing down speeds, setting LFE...) and from that point on I truly believed that we all made a mistake and that it wasn't just an FMS database problem but both FMS were not working due to the lack of database. Also, under 34-61-00-1 at least one FMS had to be working.

Upon landing, we contacted MOC and questioned all of our decision from earlier and MOC still insisted we were legal to which we did not agree. I subsequently advised them that I would contact the chief pilot. We talked at length about what was going on and that it was not just a database issue. [Another person] was also involved in the discussion for a short time and nobody seemed to come to a consensus on what was really going on with the plane. Whether we were legal or not, whether it was a database issue or FMS ISSUE.

I believe that particular MEL is poorly worded and confusing since ALL involved still could come to an agreement on what was going on. I believe that 34-61-00-2 that we were dispatched under is for expired databases as in this case the FMSs still work. In our case, where the complete lack or invalid database prevented the FMS from working properly, should not be dispatched under 34-61-00-2 but it is not stated. If it was intended for us to be able to use in these circumstances, the notes should be adjusted to mirror -1 regarding writing down V speeds, imputing LFE before takeoff. As we had that.

# Narrative: 2

[Report narrative contained no additional information.]

# Synopsis

An ERJ175 flight crew reported Maintenance MEL'ed both FMS's found inoperative during preflight. Following the day's flight the crew questioned the MEL and believed 1 FMS was required for flight even though the database was out of data.

# ACN: 1293865 (11 of 50)

### Time / Day

Date : 201509 Local Time Of Day : 0601-1200

## Place

Locale Reference.Airport : ISM.Airport State Reference : FL Altitude.AGL.Single Value : 1000

# Environment

Flight Conditions : VMC Light : Daylight

### Aircraft

Reference : X ATC / Advisory.Tower : ISM Aircraft Operator : Personal Make Model Name : PA-20 Pacer/PA-22 Tri-Pacer Crew Size.Number Of Crew : 1 Operating Under FAR Part : Part 91 Flight Plan : None Mission : Personal Flight Phase : Landing Airspace.Class D : ISM

#### Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Personal Function.Flight Crew : Pilot Flying Function.Flight Crew : Single Pilot Qualification.Flight Crew : Private Experience.Flight Crew.Total : 1200 Experience.Flight Crew.Last 90 Days : 15 Experience.Flight Crew.Type : 50 ASRS Report Number.Accession Number : 1293865 Human Factors : Situational Awareness Human Factors : Distraction

#### Events

Anomaly.Aircraft Equipment Problem : Less Severe Anomaly.Deviation - Procedural : Published Material / Policy Anomaly.Deviation - Procedural : Landing Without Clearance Anomaly.Ground Incursion : Runway Anomaly.Inflight Event / Encounter : Fuel Issue Detector.Person : Air Traffic Control Detector.Person : Flight Crew When Detected : In-flight Result.Flight Crew : Became Reoriented

## Assessments

Contributing Factors / Situations : Human Factors Primary Problem : Human Factors

### Narrative: 1

I was returning from a [long cross country flight]. I had stopped for gas [a third of the way back] and filled both tanks, 18 gallons each. As there was approaching weather from the west that ran from the southern tip of Florida to many miles north of the Orlando region I elected to use more engine power than I usually do. Although I was in VMC the entire fight, weather was encroaching upon me as I monitored it with my "ForeFlight" GPS/ weather program. Approximately 10 south of the Kissimmee airport and just after receiving the ATIS the engine stumbled and momentarily guit. Certainly startling me I quickly changed tanks applied and carburetor heat. The engine "caught" momentarily and again lost power. I cycled the fuel select valve several times and again the engine "caught" and seemed to run normally. At about that time I received clearance from the Tower to make right traffic to Runway 15. As I was approaching the south end of the airport now at 1,000 feet and having been rattled and still not 100% positive I had the situation in hand, I became distracted and made a right hand dogleg Runway 33 approach and landing. After landing I contacted the tower and indicated where I would be parking. He pointed out to me I had landed on the wrong runway and I had been instructed to land on Runway 15. He asked me if I remembered getting permission to land. I radioed back that "no I don't remember getting clearance" and he responded with "you have to be more alert" or something along those lines. He was very courteous and helpful. I was most certainly in the wrong.

After contemplation I realize that I usually burn approximately 8 gallons an hour and 2 hours fuel at my usual power setting, but due to trying to beat the weather I used full power resulting in a fuel burn of 10.25 GPH. Having run the right tank dry, I took longer than normal for the fuel to reach the engine and reestablish power.

LESSONS LEARNED, Most importantly, I should have monitored my fuel closer. I should have notified the tower immediately of having had engine issue, and if not request immediate landing. I should remember to aviate, navigate and communicate in order.

#### Synopsis

PA-22 pilot reported landing on the wrong runway after being distracted by engine issues related to improper fuel management.

# ACN: 1293864 (12 of 50)

### Time / Day

Date : 201509

## Place

Locale Reference.Airport : DFW.Airport State Reference : TX Altitude.MSL.Single Value : 5500

#### Environment

Flight Conditions : VMC Weather Elements / Visibility.Visibility : 7 Light : Daylight Ceiling.Single Value : 25000

### Aircraft

Reference : X ATC / Advisory.TRACON : D10 Aircraft Operator : Personal Make Model Name : Skyhawk 172/Cutlass 172 Crew Size.Number Of Crew : 1 Operating Under FAR Part : Part 91 Flight Plan : None Mission : Personal Flight Phase : Climb Airspace.Class B : DFW

#### Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Personal Function.Flight Crew : Pilot Flying Function.Flight Crew : Single Pilot Qualification.Flight Crew : Instrument Qualification.Flight Crew : Private Experience.Flight Crew.Total : 165 Experience.Flight Crew.Last 90 Days : 20 Experience.Flight Crew.Type : 164 ASRS Report Number.Accession Number : 1293864 Human Factors : Human-Machine Interface Human Factors : Situational Awareness

## Events

Anomaly.Airspace Violation : All Types Anomaly.Deviation - Procedural : Published Material / Policy Anomaly.Deviation - Procedural : FAR Detector.Person : Flight Crew Miss Distance.Horizontal : 10000 Miss Distance.Vertical : 1000 When Detected : In-flight Result.Flight Crew : Became Reoriented

# Assessments

Contributing Factors / Situations : Human Factors Primary Problem : Human Factors

## Narrative: 1

I was flying over Decatur (LUD) and practicing approaches in VMC into the non-towered airport. I decided to climb up to 5,500 to practice changing speed during a climb and descent as I had just read in the Instrument Flying Handbook that this is a good exercise to develop skills. I believed that I was well clear to the west of Class B airspace as I spiraled into my climb. I was wearing a new pair of polarized popup tinted lenses over my prescription eyeglasses. I was focused on the G-1000 glass flight instruments displayed in the PFD and was practicing "see and avoid". I did not immediately realize that the MFD was substantially obscured by the polarized lenses. Interestingly, the first thing to be obscured on the MFD seemed to be the blue lines - the magenta and green were still visible. During my turn I spotted the jet approaching and glanced at the MFD for traffic and saw that it was almost black. At first I thought it was malfunctioning, but a slight tilt of my head at that moment showed me that the polarized lenses were the problem and had partially obscured the view of the MFD and that I had strayed into KDFW Class B airspace. I immediately began a left turning rapid descent. I was monitoring Regional Approach (118.1) and I heard the conversation about a possible incursion and realized that it was me. While the PFD display was clear, the MFD, (because of the angle of my polarized lenses?) was dim and almost black. I immediately removed the polarized lenses. I was horrified that I had breached Class B airspace. I have never been told that polarized lenses would black out the glass cockpit view. I take full responsibility for my actions, but I am surprised that I had not experienced this before. I have worn other sunglasses and have not experienced this problem. After the flight, I tried the popup shades on my car's GPS screen and did not experience this darkening of the screen. I wonder if there should be some type of advisory for pilots as to the effect of polarized lenses on glass instrument panels. Again, I take full responsibility for my actions and there is no excuse, but I would like to warn other pilots to be careful when flying a glass cockpit and wearing polarized sunshades.

# Synopsis

C172 pilot reported an airspace incursion when his polarized sunglass lenses interfered with his G1000 display.

# Time / Day

Date : 201508 Local Time Of Day : 1201-1800

## Place

Locale Reference.Airport : ATL.Airport State Reference : GA Altitude.MSL.Single Value : 3000

## Environment

Flight Conditions : VMC Weather Elements / Visibility.Visibility : 20 Light : Daylight

# Aircraft

Reference : X ATC / Advisory.Tower : ATL Aircraft Operator : Air Carrier Make Model Name : Large Transport, Low Wing, 2 Turbojet Eng Crew Size.Number Of Crew : 2 Operating Under FAR Part : Part 121 Flight Plan : IFR Mission : Passenger Nav In Use : FMS Or FMC Flight Phase : Initial Climb Route In Use.SID : SUMMT9 RNAV Airspace.Class B : ATL

## Person: 1

Reference: 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function Flight Crew : Pilot Flying Function.Flight Crew : First Officer Qualification Flight Crew : Flight Instructor Qualification.Flight Crew : Instrument Qualification Flight Crew : Multiengine Qualification.Flight Crew : Air Transport Pilot (ATP) Experience.Flight Crew.Total: 6500 Experience.Flight Crew.Last 90 Days: 207 Experience.Flight Crew.Type: 530 ASRS Report Number. Accession Number: 1292515 Human Factors : Human-Machine Interface Human Factors : Distraction Human Factors : Troubleshooting Human Factors : Confusion

Person: 2

Reference : 2 Location Of Person Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function Flight Crew : Pilot Flying Function.Flight Crew : Captain Qualification.Flight Crew : Multiengine Qualification.Flight Crew : Flight Engineer Qualification.Flight Crew : Instrument Qualification.Flight Crew : Flight Instructor Qualification.Flight Crew : Air Transport Pilot (ATP) Experience. Flight Crew. Total: 12000 Experience. Flight Crew. Last 90 Days: 195 Experience.Flight Crew.Type: 2639 ASRS Report Number. Accession Number: 1292780 Human Factors : Human-Machine Interface Human Factors : Distraction Human Factors : Troubleshooting Human Factors : Confusion

## Events

Anomaly.Deviation - Track / Heading : All Types Anomaly.Deviation - Procedural : Published Material / Policy Anomaly.Deviation - Procedural : Clearance Detector.Person : Air Traffic Control When Detected : In-flight Result.Flight Crew : Became Reoriented Result.Air Traffic Control : Issued New Clearance Result.Air Traffic Control : Issued Advisory / Alert

## Assessments

Contributing Factors / Situations : Procedure Contributing Factors / Situations : Aircraft Primary Problem : Aircraft

## Narrative: 1

After a normal take off from Runway 8R at KATL, I instructed the Captain who was PM to select "NAV" mode at 400 feet AGL, as per our procedures. I verified NAV TRK mode engaged. Shortly after, Tower asked if we were direct to the first RNAV waypoint on the departure, "RONII". I had the RNAV progress page up which displays the aircrafts lateral deviation from the course. It showed .2 NM right, not uncommon. The Captain indicated we were direct to the point. Tower then gave us heading to the northeast, and switched us to departure control. Just before initiating the turn, the lateral deviation moved to .3 NM right. Departure asked us if we were RNAV capable, and Captain replied we were. We stayed on the heading for a couple minutes, and eventually we were cleared to a waypoint further down the departure. No mention was ever made of possible deviation or that we were off course. Honestly, from our standpoint, it appeared to be a normal departure. ATC is indicating we were off course. Perhaps the RNAV was in error.

Our aircraft do not have GPS, and use only IRU's and ground based NAVAIDs. Maybe GPS would enhance the capability of the RNAV and provide more precise information. Also, pilots should strive to maintain 0 cross track error.

# Narrative: 2

On departure from Runway 8R in ATL, we were given "RNAV to RONII, cleared for takeoff" (SUMMT9 RNAV departure). We performed the normal "NAV (navigation) select" at 400 feet AGL, and then "climb power, flaps up, VNAV" at 1,000 feet AGL.

At that point, the Tower Controller asked if we were direct to RONII. I responded that we were direct to RONII and looked down at the FMS, PROGRESS PAGE 2 which was displayed on both my side and my first officer's side. It showed that the lateral deviation was 0.2 NM right of course. That is normal operation in this aircraft to fly the command bars and actually be off 0.2NM. The Tower Controller then instructed us to turn left to a 060 degree heading and then switched us to Atlanta Departure. During the turn to 060 degrees, the FMS, PROGRESS PAGE 2 showed only 0.3 NM right of course, then counted down to 0.0 NM when we crossed the original course, and then counted up to left of course as we crossed the course that was direct to RONII. When I checked in with Atlanta Departure, I informed the controller that we were given a heading. He asked if we were RNAV capable, and I responded that we were capable and earlier were showing direct to RONII. We were perplexed and only assumed that the tower controller gave us a preventative vector.

# Synopsis

A non-GPS RNAV equipped aircraft departed on the ATL SUMMT9 RNAV flying with VNAV engaged and indicating a 0.2 NM lateral deviation. ATL asked if they were direct RONII, the FMS indicated they were but a vector was given.

# Time / Day

Date : 201508 Local Time Of Day : 1801-2400

## Place

Locale Reference.ATC Facility : GRB.TRACON State Reference : WI Altitude.MSL.Single Value : 10000

## Environment

Weather Elements / Visibility : Haze / Smoke Weather Elements / Visibility : Fog Weather Elements / Visibility.Visibility : 0 Ceiling.Single Value : 2600

## Aircraft

Reference : X ATC / Advisory.TRACON : GRB Aircraft Operator : Personal Make Model Name : SR22 Crew Size.Number Of Crew : 1 Operating Under FAR Part : Part 91 Flight Plan : IFR Mission : Personal Flight Phase : Cruise Route In Use : Direct Airspace.Class E : GRB

## Component

Aircraft Component : GPS & Other Satellite Navigation Aircraft Reference : X Problem : Malfunctioning

## Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Personal Function.Flight Crew : Pilot Flying Function.Flight Crew : Single Pilot Qualification.Flight Crew : Single Pilot Qualification.Flight Crew : Flight Instructor Qualification.Flight Crew : Multiengine Qualification.Flight Crew : Instrument Experience.Flight Crew.Total : 1700 Experience.Flight Crew.Last 90 Days : 12 Experience.Flight Crew.Type : 300 ASRS Report Number.Accession Number : 1291871 Human Factors : Troubleshooting Human Factors : Situational Awareness Human Factors : Distraction

## Events

Anomaly.Aircraft Equipment Problem : Less Severe Anomaly.Deviation - Altitude : Excursion From Assigned Altitude Anomaly.Deviation - Track / Heading : All Types Anomaly.Deviation - Procedural : Published Material / Policy Anomaly.Deviation - Procedural : Clearance Anomaly.Inflight Event / Encounter : Loss Of Aircraft Control Detector.Person : Flight Crew When Detected : In-flight Result.Flight Crew : Regained Aircraft Control Result.Flight Crew : Overcame Equipment Problem Result.Flight Crew : Became Reoriented Result.Flight Crew : Returned To Clearance

## Assessments

Contributing Factors / Situations : Weather Contributing Factors / Situations : Human Factors Contributing Factors / Situations : Aircraft Primary Problem : Human Factors

#### Narrative: 1

Error message indicating loss of Number 1 GPS connection. Auto select back-up GPS Number 2 (loss degrades approach capability). While trouble shooting the error inadvertently pulled the AHRS (Air Heading Reference System) breaker and lost Primary Flight Display (PFD) altitude, heading and attitude indicator.

Distracted by the loss of information and still trying to trouble shoot the GPS failure and in solid IFR conditions there was a brief loss of control. The aircraft lost over 1,000 feet and 90 degrees of heading before I recognized the problem and using back-up instruments began correcting. The entire episode lasted about 2 minutes.

I contacted ATC as soon as I recognized the loss of control but the controller misunderstood and thought I was asking for a new routing? Eventually we reinstated our fight plan clearance.

## Synopsis

SR22T pilot reported heading and altitude deviations associated with loss of control during troubleshooting of a GPS problem.

# ACN: 1291862 (15 of 50)

## Time / Day

Date : 201507 Local Time Of Day : 0601-1200

## Place

Locale Reference.ATC Facility : CZVR.ARTCC State Reference : BC Altitude.MSL.Single Value : 7500

## Environment

Flight Conditions : VMC Weather Elements / Visibility : Haze / Smoke Weather Elements / Visibility.Visibility : 10 Light : Daylight Ceiling.Single Value : 30000

#### Aircraft

Reference : X ATC / Advisory.Center : CZVR Aircraft Operator : Personal Make Model Name : Small Aircraft, Low Wing, 2 Eng, Retractable Gear Crew Size.Number Of Crew : 1 Operating Under FAR Part : Part 91 Flight Plan : VFR Mission : Personal Flight Phase : Cruise Route In Use : Vectors

#### Component

Aircraft Component : Transponder Aircraft Reference : X Problem : Malfunctioning

#### Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Personal Function.Flight Crew : Pilot Flying Function.Flight Crew : Single Pilot Qualification.Flight Crew : Single Pilot Qualification.Flight Crew : Flight Instructor Qualification.Flight Crew : Multiengine Qualification.Flight Crew : Instrument Experience.Flight Crew.Total : 3675 Experience.Flight Crew.Last 90 Days : 48 Experience.Flight Crew.Type : 1600 ASRS Report Number.Accession Number : 1291862 Human Factors : Confusion Human Factors : Human-Machine Interface Human Factors : Troubleshooting Human Factors : Communication Breakdown Communication Breakdown.Party1 : Flight Crew Communication Breakdown.Party2 : ATC

## Events

Anomaly.Aircraft Equipment Problem : Less Severe Anomaly.Deviation - Procedural : Published Material / Policy Detector.Person : Flight Crew Detector.Person : Air Traffic Control When Detected : In-flight Result.General : Maintenance Action Result.Flight Crew : Became Reoriented Result.Air Traffic Control : Issued Advisory / Alert

## Assessments

Contributing Factors / Situations : Aircraft Primary Problem : Aircraft

#### Narrative: 1

On an ICAO VFR flight plan from Alaska to Washington. With Canada overflight, initially filed altitude was 11,500. We had notified controllers that we were descending to 7,500 feet. We had been at 7,500 feet for some period of time (probably 20-30 minutes) and had been handed off to Terminal and were receiving vectors. Visibility and ceiling was VFR but somewhat limited due to smoke/haze from many forest fires. Near Victory Terminal ATC contacted us to confirm that we were at "10,500 feet". I reported "Negative, we are at 7,500 feet". At that point I checked the altitude being squawked on the transponder and noted that it displayed 10,200 feet. I notified the controller that I was switching to my #2transponder/encoder due to an apparent encoder error and confirmed that I was at 7,500 feet and had been at that altitude since our prior descent. I heard Terminal issue vectors to a jet for traffic avoidance. There was no further communication from Terminal relative to the matter as we continued to receive vectors. We did not see the jet, nor did they report seeing us. I have no idea how close, either vertically or laterally we were from the jet, but assumed it was not a big deal as the ATC controller didn't seem to express any urgency to the vector given to the jet. We completed our flight without incident. Upon returning to base, we sought evaluation of the encoders and found them to operate normally, but found that an intermittent "altitude loop" in the installed Garmin systems data bus allowed the transponder reported altitude to episodically lock up and report an erroneous altitude. Consultation with at least two different Garmin technical support personnel lead to an eventual reconfiguration of the encoders altitude data bus lines to the installed suite of Garmin avionics to prevent the loop and has solved the problem.

I believe that when we were handed off between Canadian controllers that an altitude was verified to the controller as being at 7,500 feet, although from memory I cannot absolutely verify that. I know that we only made one descent and that we notified Comox of that descent in advance.

All transponder/encoder/and pitot static certifications for the aircraft were current. The current suite of avionics had been in the aircraft for about one year.

Going forward, I will be more diligent in scanning the displayed encoded altitude shown on the transponder displays. In the previously installed avionics suite there was no easy way

to know the altitude being squawked without burrowing down thru several menus on the GPS etc, so it wasn't my routine to confirm the altitude, nor had it ever been found to be reported in error.

I believe the ATC controller should have noticed the erroneous altitude and queried me sooner as it was a wrong VFR altitude for direction of flight and also was not what I had reported.

Bottom line, greater diligence is needed to monitor reported encoded altitude by the pilot will be required as new avionics come on line.

#### Synopsis

A pilot flying through Canadian airspace VFR, was asked by a Controller to verify his altitude at 10,500 feet, but in fact he had reported descending to 7,500 feet. Post flight maintenance found an intermittent Garmin systems data bus "altitude loop" allowed the transponder to intermittently lock up and report an erroneous altitude.

# Time / Day

Date : 201508 Local Time Of Day : 1201-1800

# Place

Locale Reference.Airport : GPI.Airport State Reference : MT Relative Position.Angle.Radial : 200 Relative Position.Distance.Nautical Miles : 5 Altitude.MSL.Single Value : 10000

# Environment

Flight Conditions : Mixed Weather Elements / Visibility : Haze / Smoke Weather Elements / Visibility.Visibility : 4 Ceiling.Single Value : 12000

# Aircraft

Reference : X ATC / Advisory.Center : ZLC Aircraft Operator : Corporate Make Model Name : Gulfstream V / G500 / G550 Crew Size.Number Of Crew : 2 Operating Under FAR Part : Part 91 Flight Plan : IFR Mission : Passenger Flight Phase : Initial Approach Route In Use : Direct Airspace.Class E : ZLC

# Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Corporate Function.Flight Crew : First Officer Function Flight Crew : Pilot Not Flying Qualification Flight Crew : Flight Instructor Qualification Flight Crew : Air Transport Pilot (ATP) Qualification.Flight Crew : Instrument Experience Flight Crew Total: 10000 Experience.Flight Crew.Last 90 Days: 80 Experience.Flight Crew.Type: 2900 ASRS Report Number. Accession Number: 1291516 Human Factors : Training / Qualification Human Factors : Situational Awareness Human Factors : Confusion

# Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude Anomaly.Deviation - Procedural : Published Material / Policy Anomaly.Deviation - Procedural : Clearance Detector.Person : Flight Crew When Detected : In-flight Result.Flight Crew : Returned To Clearance

### Assessments

Contributing Factors / Situations : Human Factors Primary Problem : Human Factors

## Narrative: 1

After being cleared direct to AVDIH the RNAV (GPS) Z Runway 2 IF at GPI by Salt Lake Center we were cleared from 10,000 MSL to maintain 9,000 MSL until AVDIH, report established, cleared RNAV (GPS) Z Runway 2 approach. We opted to use the IF vs making a 180 degree course reversal over the IAF KILLY due to higher terrain over KILLY and the complexity of the course reversal. We did not anticipate the 9,000 MSL altitude assignment over AVDIH (published at 7,000 MSL); however, we had ample time/distance to safely get to the LPV Glide Path altitude of 5,200 MSL over BINGQ the FAF.

The pilot flying (PF) acknowledged 9,000 was set in the altitude pre-selector. I, as pilot monitoring (PM), went heads down to insure the FMS was properly programed for the straight in approach both laterally and vertically. We were in heading mode with LNAV armed, altitude captured at 10,000 with the autopilot on.

PF disconnected the autopilot while I was heads down and unintentionally ballooned to 10,400. I called out the altitude deviation and commanded him to descend to 9,000 while nudging the yoke forward to prevent further altitude gain. We had to slow down and make configuration changes (flap/landing gear) during the descent to 9,000. While still hand flying, the PF failed to maintain 9,000 until AVDIH but descended to 8,800 initially. Again, I called out the deviation and commanded him to maintain 9,000. We intercepted the final approach course outside of AVDIH and LNAV later guidance was captured/used.

After crossing AVDIH, we then descended to intercept the VGP and crossed the FAF at the appropriate altitude. The rest of the approach continued normally.

There were no terrain or traffic conflicts.

Contributing factors: PF was using the synthetic vision system display. Although he had completed simulator training with the equipment within the previous 6 months, he did not have a lot of actual experience using the equipment in the plane. We did not anticipate being 2,000 feet above the IF altitude when we were cleared for the approach. The arrival direction would have made the IAF to IF course reversal difficult; but would have given us more time to descend to the IF altitude. PF did not have the correct vertical situational awareness for the ATC clearance issued. PF admitted to being confused/distracted by the conformal nature of the SVS display leading to further loss of situational awareness. PM went heads down before insuring the descent from 10,000 to 9,000 was properly initiated by the PF.

Human performance factors: The crew was well rested and flying during normal daylight wakeful hours. Both pilots have been with the company less than 1 year. PF has little flying experience outside of USAF operations and is still adjusting to civilian

operations/procedures. Task saturation diminished situational awareness for both PF and PM.

The event is being reviewed within our [company safety department]. Procedures will be reviewed and corrective actions will be taken to increase situational awareness and decrease workload during approaches.

# Synopsis

A GLF5 First Officer (FO) reported the Captain experienced several altitude deviations on approach that the FO felt were caused at least in part by the use of a synthetic vision system.

# ACN: 1289994 (17 of 50)

## Time / Day

Date : 201508 Local Time Of Day : 1801-2400

## Place

Locale Reference.ATC Facility : ZSHA.ARTCC State Reference : FO Altitude.MSL.Single Value : 32100

# Environment

Flight Conditions : Mixed Light : Night

### Aircraft

Reference : X Make Model Name : B767-300 and 300 ER Crew Size.Number Of Crew : 3 Flight Plan : IFR Mission : Cargo / Freight Route In Use.Other

## Person: 1

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function.Flight Crew : Pilot Not Flying Function.Flight Crew : First Officer Qualification.Flight Crew : Air Transport Pilot (ATP) Experience.Flight Crew.Total : 12700 Experience.Flight Crew.Last 90 Days : 133 Experience.Flight Crew.Type : 701 ASRS Report Number.Accession Number : 1289994

## Person: 2

Reference : 2 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function.Flight Crew : Pilot Flying Function.Flight Crew : Captain Qualification.Flight Crew : Air Transport Pilot (ATP) Experience.Flight Crew.Total : 16698 Experience.Flight Crew.Last 90 Days : 103 Experience.Flight Crew.Type : 9273 ASRS Report Number.Accession Number : 1289995 Human Factors : Human-Machine Interface

#### Events

Anomaly.Aircraft Equipment Problem : Less Severe Anomaly.Deviation - Track / Heading : All Types Anomaly.Deviation - Procedural : Clearance Detector.Person : Air Traffic Control When Detected : In-flight Result.Flight Crew : Returned To Clearance Result.Flight Crew : Became Reoriented Result.Air Traffic Control : Issued New Clearance Result.Air Traffic Control : Issued Advisory / Alert

## Assessments

Contributing Factors / Situations : Environment - Non Weather Related Contributing Factors / Situations : Aircraft Primary Problem : Ambiguous

## Narrative: 1

We were given a 6 NM right of track offset, which we performed. The aircraft was right where it was supposed to be. We subsequently were changing our speed, when [ATC] asked if we were maintaining the offset. The captain and I were both surprised and a quick check showed that we were indeed slowly straying off the offset. I recall seeing about a 1 NM deviation at the time. The Captain corrected back to the offset, and we notified ATC that we were on the offset. We were really puzzled by what happened in this event. The only two things I can think of:

1. The aircraft was in a turn while the FMC was still trying to compute the correction to the adjusted airspeed, therefore, the turn was not applied correctly.

2. The possibility of GPS jamming. There were increased threats being made from North Korea to South Korea. We were aware of numerous accounts of GPS jamming according to the NOTAMS. The aircraft continued to operate well after the event. I do not believe we were more than a mile off the offset. I could be wrong, but that is what I remember seeing. [ATC] caught the deviation early, and it was a bit difficult initially to see that we were deviating since we were in a turn already. I believe we were both very alert and attentive to what the aircraft was doing, even though at the time we were engaged in changing and checking the airspeed of the aircraft via the FMC.

## Narrative: 2

We were given an offset of 6 NM right [(6R)] by [Air Traffic] Control and we executed it. The aircraft was tracking 6R in LNAV as programmed. As we approached DONVO, the aircraft properly made the turn but instead of maintaining 6R in LNAV, It began to slowly navigate towards the next active waypoint, SANKO. We did not catch it. The controller asked us if we were maintaining 6R and we responded "yes". We looked at the map and crosstrack error and noticed we were, in fact, very slowly tracking towards SANKO (not the usual aggressive turn when you delete a large offset, such as 6R). The MAP display still showed the 6R magenta line. I immediately went to heading select and attempted to reestablish the 6R offset. The controller then gave us direct ANRAT and all seemed well for the remainder of the flight, including subsequent offsets. My First Officer and I were very puzzled as I have never seen this in my years on the B-767. We, of course, then began a discussion as to what may have happened. We concluded one of two things. We had just increased the Mach from .77 to .80 around DONVO and possibly (never have seen this before), the FMC was unable to calculate the rate of turn and was trying to compensate for the turn radius. Secondly, possible GPS jamming out of Seoul (28 minutes into flight and it was in the NOTAMS). We had no EICAS messages or other warnings. I did not write it up

because I did not believe it to be an airplane discrepancy. It worked as advertised the rest of this flight and the subsequent flight. Incidently, tensions were extremely high this day between North and South Korea. In the future, I would monitor the crosscheck and MAP display more closely, especially in areas of heightened awareness.

## Synopsis

B767 flight crew experienced a track deviation in Chinese airspace approach DONVO, possibly due to GPS jamming. ATC detects the error while it is still minor and the anomaly does not reoccur during the remainder of the flight.

# Time / Day

Date : 201508 Local Time Of Day : 1801-2400

## Place

Locale Reference.Airport : WVI.Airport State Reference : CA Altitude.MSL.Single Value : 4000

## Environment

Flight Conditions : IMC Weather Elements / Visibility.Visibility : 10 Light : Night Ceiling.Single Value : 2300

## Aircraft

Reference : X ATC / Advisory.TRACON : NCT Aircraft Operator : Personal Make Model Name : Skyhawk 172/Cutlass 172 Crew Size.Number Of Crew : 1 Operating Under FAR Part : Part 91 Flight Plan : None Mission : Training Flight Phase : Cruise Route In Use : Vectors Airspace.Class E : NCT

## Component

Aircraft Component : Tablet Aircraft Reference : X Problem : Malfunctioning

## Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Personal Function.Flight Crew : Pilot Flying Function.Flight Crew : Single Pilot Qualification.Flight Crew : Private Experience.Flight Crew.Total : 191 Experience.Flight Crew.Last 90 Days : 51 Experience.Flight Crew.Type : 45 ASRS Report Number.Accession Number : 1289866 Human Factors : Fatigue Human Factors : Human-Machine Interface Human Factors : Training / Qualification Human Factors : Workload Human Factors : Distraction

#### Events

Anomaly.Aircraft Equipment Problem : Less Severe Detector.Person : Flight Crew When Detected : In-flight Result.Flight Crew : Overcame Equipment Problem

### Assessments

Contributing Factors / Situations : Aircraft Contributing Factors / Situations : Chart Or Publication Primary Problem : Aircraft

#### Narrative: 1

During a routine IFR training flight, I was unable to access my approach plates on my ForeFlight application in my iPad.

Before departure, I did my typical run-up procedures, instrument checks, etc. and got set up with my Garmin 650 GPS for the LOC Runway 2 approach into WVI. I did this on the ground to reduce my workload in the air for this lesson. After completing all my tasks, I then took off and departed downwind and began my set up for the approach. I have an XGPS 160 that links with my iPad (wifi only) so that I can see my position inflight and record my progress. As I was starting my approach briefing and setup, demonstrating to my CFII, my iPad was not allowing me to activate my approach plates. This was discovered midflight upon reaching my cruising altitude of 4,500 feet. We were going to be getting Pop-Up IFR clearance since we were approaching MVFR to IMC conditions due to the marine layer coming in

From my interpretation, I had believed all maps and charts would not be up to date since they changed the day before. It appeared that the maps that I thought had been updated overnight had actually not been downloaded on my iPad and my maps, approaches, and terminal procedures were all inaccessible. I should add this in my preflight check.

After this was discovered, I didn't say anything to my CFII and instead decided to remove the iPad from my yoke mount and throw it in the back, it was no longer useful to me.

Since I am getting ready for my check ride soon, I decided to treat myself as if it were me solo in an IFR flight and grabbed a spare set of instrument charts in a Terminal Procedure book I had in hand in case of this very situation. I also had a paper enroute chart and all the charts downloaded on my iPhone as a worst case scenario.

To give myself more time with the paper charts and to still maintain my flight I just powered back to 55% power to not rush and handle the situation.

After I had the paper charts, I was able to successfully shoot 3 instrument approaches at night and luckily get some good practice basically simulation being alone in IFR condition. ATC was not notified since the issue was resolved with the paper charts.

This isn't the first situation where this sort of event happened, another time happened when the temperature was 100+ and my iPad shutdown midflight during an ILS approach. Again, paper charts are always a good resort.

Human Factors -less critical issue -human error -workload increase -fatigue -had a CFII as back up, didn't need to use

# Synopsis

C172 pilot reported his iPad failed to load the needed approach charts during a practice approach.

# Time / Day

Date : 201508 Local Time Of Day : 1201-1800

## Place

Locale Reference.Airport : ZZZ.Airport State Reference : US Altitude.AGL.Single Value : 1000

# Environment

Flight Conditions : VMC Weather Elements / Visibility : Haze / Smoke Weather Elements / Visibility.Visibility : 7 Light : Daylight Ceiling.Single Value : 10000

## Aircraft

Reference : X ATC / Advisory.Tower : ZZZ Aircraft Operator : Corporate Make Model Name : Skylane 182/RG Turbo Skylane/RG Crew Size.Number Of Crew : 2 Operating Under FAR Part : Part 91 Flight Plan : None Mission.Other Flight Phase : Cruise Route In Use : None Airspace.Class D : ZZZ

## Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Corporate Function.Flight Crew : Pilot Flying Function.Flight Crew : Single Pilot Qualification.Flight Crew : Commercial Qualification.Flight Crew : Multiengine Qualification.Flight Crew : Instrument Experience.Flight Crew.Total : 5799 Experience.Flight Crew.Last 90 Days : 184 Experience.Flight Crew.Type : 4056 ASRS Report Number.Accession Number : 1288954 Human Factors : Situational Awareness Human Factors : Workload

## Events

Anomaly.Airspace Violation : All Types Anomaly.Deviation - Procedural : Published Material / Policy Detector.Person : Flight Crew When Detected : In-flight Result.Flight Crew : Exited Penetrated Airspace

## Assessments

Contributing Factors / Situations : Environment - Non Weather Related Contributing Factors / Situations : Chart Or Publication Contributing Factors / Situations : Airspace Structure Primary Problem : Airspace Structure

## Narrative: 1

The days mission would be pipeline patrol of a route that would bring me back home in 3.0 hours flight time which was opposite my normal week schedule due to aircraft maintenance [the next day]. I started my morning checking weather, NOTAMs, and TFRs as usual. The weather indicated reduced visibility over the entire area due to smoke from the 30+ fires burning in our area. I checked the FAA website for TFRs and noted that there were more on the screen than I had ever seen before. I immediately noticed a TFR on my southern route that would need planning to get around [2 days later]. I checked my route for the day and thought the fires were burning in the same places. I had been watching these TFRs over the weekend to get glimpses of how my week would go. The fire indicated SE of ZZZ had been in the same spot as days before. (what I failed to realize is that the fire I had been tracking had disappeared and a new fire had taken its place further North).

The flight was routine until I entered my first airspace of the day. My route goes from a class C right into a class D. Due to intense fire tanker operations at ZZZ they had set up a temporary tower on the field a week prior. I contacted the tower about a minute from leaving my last class D airspace. This airspace hadn't been defined very well (I queried the tower the previous week and they said they were treating it like a class D, but they were mainly concerned with airport operations) and I could hear other pilots figuring out the quirks of this new airspace.

As I transition a busy area, I try to visualize each aircraft's intention and future path and determine if I should change my flight profile in any way to accommodate or change spacing in the VFR environment. The traffic here was very heavy with fire tankers landing refueling and departing. Local traffic was doing its best to blend in with all the changes. From the moment I entered the second class C, I spotted numerous reportable issues with the pipeline. When we see an issue, we circle, take photos and take down all relevant information to the sighting such as description, milepost information, GPS, road names, and landmarks. There were six such occurrences through the four airspace areas.

With the constant radio communications, traffic spotting, pipeline observation, and information gathering the workload was very high. I headed east and conferred with my observer on completion of our work related tasks. We have XM Satellite service on our hand held Garmin, and these depict TFRs. This GPS was being used as a work tool to catch up on pipeline sighting locations and flight navigation was visual and off the panel mounted GPS. There was no visible smoke off the ground ahead and we proceeded with our patrol.

Upon landing, I checked on the fires for the next day. I looked at a website that gives data on burning fires and their containment status. When I looked at the photos of the fire I thought I had passed North of, I saw that it was closer to the highway than I had thought and realized that this had to be a new fire and I had possibly penetrated the North side of

the TFR.

As a professional pilot I try to stay humble and learn from every flight. I have a desire to get better and realize that I can always take more steps to become a safer and more capable pilot. When analyzing this flight, I recognize a chain of events that are atypical to a normal flight.

- 1. Off normal schedule due to maintenance.
- 2. 30+ fires burning in area with reduced visibility
- 3. Complex airspace
- 4. High traffic volume
- 5. High pilot workload

Recognizing these events piling up earlier in the flight would have prevented this incident from happening. On top of acquiring more thorough TFR briefings, I will increase airspace awareness by initiating TFR route checks when I encounter any of the events above. I can utilize my observer to take more workload in these situations and check and balance my new procedures adopted since this event.

### Synopsis

A pilot of a light aircraft, performing pipeline patrol duty, reported inadvertently penetrating a wildfire TFR due to the rapidly changing restricted airspace environment.

# Time / Day

Date : 201508 Local Time Of Day : 0601-1200

## Place

Locale Reference.ATC Facility : ZSE.ARTCC State Reference : WA Altitude.MSL.Single Value : 8000

## Environment

Flight Conditions : VMC Weather Elements / Visibility : Haze / Smoke Weather Elements / Visibility.Visibility : 50 Light : Daylight

## Aircraft

Reference : X ATC / Advisory.Center : ZSE Aircraft Operator : Personal Make Model Name : Small Aircraft Crew Size.Number Of Crew : 1 Operating Under FAR Part : Part 91 Flight Plan : None Mission : Personal Nav In Use : GPS Flight Phase : Cruise Route In Use : Direct Airspace.Class E : ZSE

## Component

Aircraft Component : Navigation Database Aircraft Reference : X Problem : Malfunctioning

#### Person

Reference : 1 Location In Aircraft : Flight Deck Reporter Organization : Personal Function.Flight Crew : Single Pilot Qualification.Flight Crew : Private Qualification.Flight Crew : Instrument Experience.Flight Crew.Total : 900 Experience.Flight Crew.Last 90 Days : 40 Experience.Flight Crew.Type : 460 ASRS Report Number.Accession Number : 1288609 Human Factors : Situational Awareness Human Factors : Human-Machine Interface

## Events

Anomaly.Aircraft Equipment Problem : Less Severe Detector.Automation : Air Traffic Control Detector.Person : Flight Crew When Detected : In-flight Result.Flight Crew : Took Evasive Action Result.Air Traffic Control : Provided Assistance

#### Assessments

Contributing Factors / Situations : Human Factors Contributing Factors / Situations : Equipment / Tooling Contributing Factors / Situations : Airspace Structure Primary Problem : Ambiguous

## Narrative: 1

Equipped with Garmin GTN750/GDL-88 with full ADS-B in/out capability. The Traffic Information Service (TIS)/ Flight Information Service (FIS) status flags both showed the system functioning with full capability. The weather page of the 750 showed TAFs/METARs/Winds etc and the Last Update status field said "less than 5m". I was using Seattle Avionics' FlyQ software on my iPad. It was updating via cellular modem but did not have a connection to a non-certificated ADS-B capability.

VFR northbound on V25 [at] 8,500 feet enroute LTJ VOR then west through the Columbia George then north home to BFI. Clear flight conditions with lots of smoke at lower altitudes due to many forest fires. In contact with Seattle Center for flight following.

"[Aircraft X], Seattle Center, will you be going around or above the TFR North of Madras." "Center, what TFR, there's no TFR on my FIS-B."

"[Aircraft X], Center, yes there is a TFR. Please advise..."

I opened my iPad and the TFR was on my FlyQ. Imagine my surprise. I went to the GTN750 map page and scanned around and other current TFRs were visible but not this one. I checked the FIS status and it was still "less than 5 min." Using the FlyQ moving map, I navigated around the TFR.

Continuing northbound near LTJ the same thing happened with another TFR. It was present on my iPad but NOT on the Garmin, yet other TFRs were present on the Garmin. The FIS Last Update still said "< 5min".

I spoke with the local FSDO this morning and they couldn't explain it.

## Synopsis

A pilot with sophisticated navigational equipment was surprised to be advised of a Temporary Flight Restriction (TFR) by ATC. For unknown reasons, it was not depicted on his primary GPS/Multifunction display.

# ACN: 1286956 (21 of 50)

### Time / Day

Date : 201508 Local Time Of Day : 1201-1800

## Place

Locale Reference.Airport : ZZZ.Airport State Reference : US Altitude.MSL.Single Value : 6000

## Environment

Flight Conditions : VMC Light : Daylight

### Aircraft

Reference : X ATC / Advisory.Center : ZZZ ATC / Advisory.TRACON : ZZZ Aircraft Operator : Air Carrier Make Model Name : MD-80 Series (DC-9-80) Undifferentiated or Other Model Crew Size.Number Of Crew : 2 Operating Under FAR Part : Part 121 Flight Plan : IFR Mission : Passenger Nav In Use : FMS Or FMC Flight Phase : Cruise Flight Phase : Climb Flight Phase : Takeoff Airspace.Class A : ZZZ Airspace.Class E : ZZZ

#### Component

Aircraft Component : GPS & Other Satellite Navigation Aircraft Reference : X Problem : Malfunctioning

## Person: 1

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function.Flight Crew : Pilot Flying Function.Flight Crew : First Officer Qualification.Flight Crew : Air Transport Pilot (ATP) ASRS Report Number.Accession Number : 1286956 Human Factors : Communication Breakdown Human Factors : Confusion Human Factors : Human-Machine Interface Human Factors : Troubleshooting Human Factors : Workload Communication Breakdown.Party1 : Flight Crew Communication Breakdown.Party2 : Dispatch

Person: 2

Reference : 2 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function.Flight Crew : Pilot Not Flying Function.Flight Crew : Captain Qualification.Flight Crew : Air Transport Pilot (ATP) ASRS Report Number.Accession Number : 1286968 Human Factors : Workload Human Factors : Communication Breakdown Human Factors : Confusion Human Factors : Human-Machine Interface Human Factors : Troubleshooting

# Events

Anomaly.Aircraft Equipment Problem : Less Severe Anomaly.Deviation - Track / Heading : All Types Anomaly.Deviation - Procedural : Clearance Detector.Person : Flight Crew When Detected : In-flight Result.General : Maintenance Action Result.Flight Crew : FLC complied w / Automation / Advisory Result.Flight Crew : Overcame Equipment Problem Result.Flight Crew : Took Evasive Action Result.Flight Crew : Returned To Clearance

## Assessments

Contributing Factors / Situations : Aircraft Primary Problem : Aircraft

## Narrative: 1

I was operating flight as the First Officer and Pilot Flying. Prior to departure, CA and I verified the FMS and completed the prescribed checklists. We pushed back and proceeded directly to the runway. All checklists were completed prior to takeoff. We were number one for departure, cleared to FL280, and cleared for takeoff.

MD-80 is not an INS equipped aircraft, and no anomalies were noted prior to initiating the takeoff. Once in the air, we were flying runway heading, climbing to FL280. The departure controller cleared us on course. It was at this time CA noted the RNP displayed on the Primary Flight Display/ADI. The course to our first fix was displayed as approximately 275 degrees. I initiated a turn to approximately 240 degrees to intercept. I noted the course line was continuously moving away, maintaining a 10 NM intercept, with increasing map shifting, and the displayed distance to the fix was increasing. The controller asked if we were deviating north, and we stated yes, as I had altered my intercept to maintain VFR in the mountainous terrain by about 3 degrees right as we sorted out the increasingly apparent malfunction and a Moderate CU (Cumulus) was at my 12 o'clock position. I then chose to remain at a lower airspeed to continue climbing at a higher rate.

We were then handed off to the next ARTCC. I then took the radios, and CA began searching for an appropriate checklist. Ultimately, none were available in the QRH for a FMS failure as it pertained to our current situation. I advised the controller we were experiencing a navigational malfunction, immediately requesting a heading. We were issued a heading of 180 degrees. We were flying approximately 260 degrees at the time, as verified by ATC as I turned past 230 degrees. As we were issued the new heading, the wet compass was checked and agreed with the heading shown on the display. I then manually selected the next VOR frequency and proceeded directly to it via NAV 2 off of the assigned vector, initially navigating WITH use of the RMI. I noted the DME was continually increasing, starting at approximately 90 NM, and ultimately reaching a 310 NM easterly error. We were then cleared to FL340. CA reminded me to ask for FL280 after being cleared due to RVSM requirements. FL280 was assigned and flown for the remainder of the flight. The aircraft equipment code was then amended as well. I switched to the ROSE mode which eliminated the erroneous GPS/DME reading, and was verified accurate by the next controller, at various cross radials/airway intersections.

On course, communicating well with ATC, and the most appropriate and functional navigation system verified accurate, CA and I discussed continuing the flight or returning to the departure airport. We agreed to continue, as I now had the route plotted on the Jeppesen charts, and the operational service volumes of the VORs along our course were verified adequate. Only one exception was noted, and this was remedied by an amended clearance onto the arrival Class B destination airport. I requested the controller contact our destination TRACON to verify they would accept us into the terminal airspace. The arrival didn't require GPS, but I wanted to make sure there wouldn't be any complications as we entered Class B airspace. Our destination had no issue with our NAV status. We continued the flight with no other issues until my seat failed in the forward position. This was not a concern as it was the position used by me in takeoff and landing.

All breaker panels were checked by CA, and no anomalies were found. CA made multiple attempts to communicate with Dispatch via SELCAL, but was unable to secure a clear and readable connection. I heard to poor clarity of the frequency first hand. CA was able to verify our fuel was sufficient at 80 before the connection was terminated.

As the flight progressed, the GPS began to slowly correct its position. Its latitude was never off by more than a mile, but longitude was, at its worst, 310 NM east of our actual position. I noted at one point in flight the coordinate disparity. The disparity continually lessened as we reached a point approximately 400 NM into our flight. Near the ZZZ VOR the LAT/LONGS were compared against the Jeppesen charts and found to be accurate, and further verified at ZZZ1 VOR. The GPS was then used to supplement the VOR navigation for the remainder of the flight.

Upon arrival in our destination, CA recorded to discrepancies in the Aircraft Maintenance Log. Maintenance personnel were standing by at block-in and were thoroughly briefed. Maintenance stated this was not the first report of this type of failure recently.

I will certainly take more care to verify the approximate heading to my first fix, prior to departure.

#### Narrative: 2

We looked in the QRH for a procedure for a FMS failure as it pertained to our current situation, but there wasn't one. We checked the circuit breaker panels and noted all were in appropriate positions. We plotted the route on the Jeppesen enroute charts, and checked that the operational service volumes of the VORs along our course were

adequate. One exception was noted, and this was remedied by an amended clearance onto the arrival in our destination. We requested the controller contact our destination approach control to verify they would accept us into the terminal airspace.

At this point, we contacted Dispatch and Maintenance Control through a commercial radio service. The connection was extremely poor, but we were able to relay our situation, and get confirmation that at FL280, the remaining distance, time, burn, extra and fuel remaining was more than sufficient to continue to our destination. (Landing fuel 8.0).

# Synopsis

A MD-80 crew discovered after takeoff a large GPS position error, which caused a track deviation but were given ATC vectors on course where VOR airway tracking continued. Later in the flight GPS accuracy was attained and therefore used to the destination.

# Time / Day

Date : 201508 Local Time Of Day : 0001-0600

## Place

Locale Reference.Airport : MIA.Airport State Reference : FL Altitude.MSL.Single Value : 150

## Environment

Flight Conditions : VMC Weather Elements / Visibility.Visibility : 10 Light : Night

# Aircraft

Reference : X ATC / Advisory.Tower : MIA Aircraft Operator : Air Carrier Make Model Name : B747 Undifferentiated or Other Model Crew Size.Number Of Crew : 2 Operating Under FAR Part : Part 121 Flight Plan : IFR Flight Phase : Final Approach Route In Use : Visual Approach Airspace.Class B : MIA

## Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function.Flight Crew : Captain Function.Flight Crew : Captain Function.Flight Crew : Pilot Flying Qualification.Flight Crew : Multiengine Qualification.Flight Crew : Instrument Qualification.Flight Crew : Air Transport Pilot (ATP) Qualification.Flight Crew : Flight Instructor Experience.Flight Crew.Total : 20000 Experience.Flight Crew.Last 90 Days : 150 Experience.Flight Crew.Type : 5000 ASRS Report Number.Accession Number : 1285954 Human Factors : Situational Awareness

## Events

Anomaly.ATC Issue : All Types Anomaly.Deviation - Track / Heading : All Types Anomaly.Deviation - Procedural : Clearance Detector.Person : Air Traffic Control When Detected : In-flight Result.Flight Crew : Executed Go Around / Missed Approach Result.Flight Crew : Became Reoriented

### Assessments

Contributing Factors / Situations : Procedure Contributing Factors / Situations : Human Factors Primary Problem : Procedure

#### Narrative: 1

Misidentified Runway on Approach MIA 26L.

MIA ATIS advised that RNAV APP 26L was in use. RWY 26L ILS and Localizer were out of service. RWY 26R was advised closed on ATIS NOTAM. On contacting MIA Approach MIA ATC was giving visual approaches.

On right base RWY26L ATC asked us to report RWY in sight. FO (First Officer) advised, "Runway NOT yet in sight." Approach ATC said, "Roger that let me know when you have it in sight." FO replied, "Wilco." Just after that Captain and FO sighted bright RWY lights and bright PAPI lights and reported the runway in sight, as we were turning final Runway 26L. It seems like the lights came on seconds after we advised the approach controller that we did not have the runway in sight. It was as if the controller was helping us to get a clear visual sighting of the runway.

ATC cleared [us] for the visual approach 26L and we followed the bright PAPI and were visual with the bright runway lights. Given that 26R was advised by ATIS as being closed, and we had just advised ATC of not having the runway in sight, it was not unreasonable to assume the one visible runway and PAPI was 26L. The FAA rules state that runway edge lights and PAPI shall not be used when the runway is closed. As it turns out the Runway 26L runway edge lights and PAPI were on a dim setting. 26R runway lights and PAPI were on a bright setting. With 2 operating runways one would expect to see 2 runways at equal lighting intensity. With one runway closed one would expect to see one runway, i.e. the open one, or 2 runways at equal lighting intensity. One would not expect to see PAPI on a runway not in use.

FAA Order Air Traffic Control JO7110.65V Section 4 Airport Lighting States

#### PRECISION APPROACH PATH INDICATORS (PAPI)

PAPI systems with remote on/off switching shall be operated when they serve the runway in use and where intensities are controlled.

The basic FAA standard for PAPI systems permits independent operation by means of photoelectric device. This system has no on/off control feature and is intended for continuous operation. Other PAPI systems in use include those that are operated remotely from the control tower. These systems may consist of either a photoelectric intensity control with only an on/off switch, or a five-step intensity system.

REFERENCE FAAO 6850.2, Visual Guidance Lighting Systems

3-4-10. RUNWAY EDGE LIGHTS

e. Do not turn on the runway edge lights when a NOTAM closing the runway is in effect. REFERENCE

FAAO JO 7110.65, Para 3-4-15, Simultaneous Approach and Runway Edge Light

Operation.

FAAO JO 7210.3, Para 10-6-3, Incompatible Light System Operation. FAAO JO 7210.3, Para 10-6-9, Runway Edge Lights Associated With Medium Approach Light System/Runway Alignment Indicator Lights.

To the north of the brightly lit runway was black which is consistent with 26R being closed and having the lights off. Lights on 26L were on dim and barely visible, certainly not standing out like the lights on 26R. (We had just advised that we did not have the runway in sight.) Neither pilot recalls seeing Approach lights, and if they were on, they would have been on dim. LNAV showed the acft on LNAV track for RNAV GPS APP 26L.

[The Company] Operating Manual 747 states that the tolerance for RNP is 0.3 for GNSS or GPS. (This equals  $0.3 \times 6080$  which is 1824 feet). The distance between Runway 26L and 26R as measured from the KMIA/MIA Jeppesen Airport Chart is approximately 600 ft. This is well within the NAV tolerance of 0.3)

Captain then selected LNAV and followed the LNAV track for a brief time, showing the aircraft on track, and also visually we were aligned with the runway. At ten miles on a visual approach, the visible lights on 26R are well within the NAV tolerance of 0.3 as above, and the runway appeared directly on track. Then we continued visually following the lights of 26R. Given the high intensity of the 26R lights, this made the 26L lights appear to be general airport lighting, taxiway lighting etc. Over 95% of the time in such a situation one would have the 26L Localizer or ILS available but this was out of service.

On short final ATC advised [us] to go around. At no time did ATC advise us that the runway lights and PAPIS were on for Rwy 26R, and furthermore were on a brighter setting than that active runway 26L. [We] went around and landed on 26L without incident. After landing I telephoned TRACON Supervisor of Miami Tower and on early Monday morning telephoned the ATC Quality Assurance manager in Miami Tower and they advised that the runway lights were on maintenance test settings at the request of Dade County, the owner of the airport.

In summary, the Runway edge lights on 26R an adjacent closed runway 600 feet distant were on a brighter setting than the runway in use Twy26L. This is contrary to FAAO JO 7110.65, Para 3-4-10. The PAPIs on 26R an adjacent closed runway 600 feet distant were on a brighter setting than the runway in use Twy26L. This is contrary to FAAO JO 7110.65, Para 3-4-4. Neither crew member remembers seeing any approach lights, and if they were, they were on dim. The dimmer runway lights of 26L when visible made it look like they were part of the airport environs. At no time did the approach controller or control tower advise [us] that the 26R runway edge lights or 26R PAPIs were on, or that they were on maintenance, or on a brighter setting than the runway in use. ATIS advised that the Runway 26R was closed. [We] tracked 10 miles on approach to 26R and the Tower controller did not notice this until short final despite the airport being equipped with Airport Surface Detection Equipment ASDE-X (Airport Surface Detection Equipment Model X), and our aircraft being fitted with ADS-B and transponder. On short final the Tower Controller mistakenly advised [another aircraft] to go around, before correcting himself to call [us] to go around. Had the ILS or Localizer been available there would have been a good back up track to align with on final, and these NAVAIDs are normally available. No Brasher Warning Notification was issued.

To prevent this ATC should at all times advise pilots when Runway lights, PAPIs and other are going to be on test on closed runways, and any time runway lighting on a non-active runway is put on a higher setting than the active runway. This incident has many of the
similarities that occurred in the accident of [an air carrier] at Taipei where the runway lights were on, on a closed runway. Always have Localizer or ILS available for an active runway. Controllers should monitor the progress of ADS-B (Automatic Dependent Surveillance Broadcast) aircraft on their screens which must give accurate position updates, or get such equipment installed so that the controller can quickly pick up an aircraft lined up for the wrong runway. Even for visual approaches. Program radar software to identify an aircraft that is not aligned with the correct runway that detects an aircraft aligned with a closed runway, or one being used only for takeoffs. Program ground lighting equipment switching to issue an alert or warning on ASDE-X or ATIS whenever there is a difference in lighting intensities on close adjacent runways. Advise that runway lighting testing is in progress whenever this is the case, leading to non-standard lighting settings.

## Synopsis

B747 Captain reported lining up at night for a closed runway at MIA because the runway lights were brighter on that runway than on the parallel open runway.

Date : 201507 Local Time Of Day : 1801-2400

### Place

Locale Reference.Airport : SFO.Airport State Reference : CA Altitude.MSL.Single Value : 13000

### Environment

Flight Conditions : VMC Light : Daylight

### Aircraft

Reference : X ATC / Advisory.TRACON : NCT Aircraft Operator : Air Taxi Make Model Name : Embraer Phenom 300 Crew Size.Number Of Crew : 2 Operating Under FAR Part : Part 135 Flight Plan : IFR Nav In Use : GPS Nav In Use.Localizer/Glideslope/ILS : Runway 28L Flight Phase : Initial Approach Route In Use.STAR : BDEGA ONE Airspace.Class E : NCT

### Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Taxi Function.Flight Crew : Pilot Not Flying Function.Flight Crew : First Officer Qualification.Flight Crew : Air Transport Pilot (ATP) ASRS Report Number.Accession Number : 1283563 Human Factors : Situational Awareness Human Factors : Workload

### Events

Anomaly.ATC Issue : All Types Anomaly.Deviation - Track / Heading : All Types Anomaly.Deviation - Procedural : Clearance Anomaly.Deviation - Procedural : Published Material / Policy Detector.Person : Air Traffic Control When Detected : In-flight Result.Flight Crew : Became Reoriented Result.Air Traffic Control : Issued New Clearance

### Assessments

Contributing Factors / Situations : Procedure Contributing Factors / Situations : Human Factors Primary Problem : Procedure

### Narrative: 1

Initial clearance [into SFO] was for the Golden Gate 6 arrival, initial fix RBG. Before crossing RBG, we were issued a new arrival, the BDEGA 1, landing West. We were expecting the 28R transition and briefed as such. The intersection CORKK separates the arrival for the left and right runways. Just before CORKK, ATC issued us to the 28L transition. I, as the Pilot Monitoring (PM), was very task saturated and started setting us up for the 28L ILS, reviewing charts and loading the approach into the GPS. As we sequenced over CORKK the A/P turned for the 28R fix, not 28L as assigned. Not long after the sequence, approach gave us a vector of 140 to sequence us behind traffic from the south. After the navigation correction, and set up for 28L, in the (downwind) vector, we were told to expect 28R again. Once again, we had to change the flight plan in the GPS, look at approach plates and re-brief whilst looking for traffic to follow and receiving further vectors and descents. We eventually landed 28R and taxied in without further incidence.

I would say close to 100% of our flight plan arrivals change whilst enroute to RNAV STARS when we are able to fly them (NAV database current). So, briefing the filed arrival on the ground before departure is almost counterproductive as we are almost always issued a new one. We always try to brief early before transition altitude and we did. In this case I failed to sequence the GPS to the arrival runway when they changed the runway on us last minute. I was heads down, task saturated, loading the different ILS approach and reviewing approach plates. It wasn't long after the sequence that the controller corrected our navigation deviation and gave us a heading. I don't think ATC ever intended us to land on 28L but just gave us that transition just for flow and get us south. It would have been nice just to get a vector so we could have kept our approaches loaded and pilot tasks less saturated, rather than changing the flight plan and approaches twice in congested airspace.

## Synopsis

EMB-505 First Officer reported a track deviation on arrival into SFO when he became task saturated following multiple runway changes.

Date : 201507 Local Time Of Day : 1201-1800

## Place

Locale Reference.Airport : FAT.Airport State Reference : CA

### Environment

Flight Conditions : VMC Light : Daylight

## Aircraft

Reference : X ATC / Advisory.TRACON : FAT Aircraft Operator : Air Taxi Make Model Name : Small Transport Crew Size.Number Of Crew : 1 Operating Under FAR Part : Part 91 Flight Plan : IFR Mission : Ferry Nav In Use : GPS Flight Phase : Initial Climb Route In Use.SID : FRESNO EIGHT Airspace.Class C : FAT

## Component

Aircraft Component : GPS & Other Satellite Navigation Manufacturer : Garmin Aircraft Reference : X Problem : Improperly Operated

### Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Taxi Function.Flight Crew : Captain Function.Flight Crew : Pilot Flying ASRS Report Number.Accession Number : 1281797 Human Factors : Distraction Human Factors : Fatigue Human Factors : Situational Awareness Human Factors : Time Pressure Human Factors : Workload Human Factors : Confusion

## Events

Anomaly.Deviation - Track / Heading : All Types Anomaly.Deviation - Procedural : Published Material / Policy Anomaly.Deviation - Procedural : Clearance Detector.Person : Air Traffic Control When Detected : In-flight Result.Flight Crew : Returned To Clearance Result.Air Traffic Control : Issued New Clearance Result.Air Traffic Control : Issued Advisory / Alert

## Assessments

Contributing Factors / Situations : Human Factors Primary Problem : Human Factors

### Narrative: 1

I departed runway 29L from FAT to reposition equipment under an IFR flight plan using the FRESNO EIGHT DEPARTURE, FRES8.FRA. On handoff to departure control, I was told to proceed direct to the first fix on my clearance, FRAME intersection. During pre-flight I had inadvertently set up FRIANT VOR (FRA) instead of FRAME as my first fix. I had forgotten the location of FRAME to the west and had not taken the time to verify its location. The controller, to the best of my memory, did not assign a direction of turn toward FRAME nor did he give a radar vector (heading) to follow to establish a firm direction, but simply said to proceed "direct to FRAME". Using the "direct to" function of my Garmin 530 navigation radio, I saw what I thought was FRAME to my right and turned right toward it. This put me in potential conflict with aircraft departing from 29R, but I assumed departure control [would notify me] of any traffic. Fortunately there were no traffic departing from 29R at that time. After 30 seconds or so the controller queried my right turn. Still thinking FRA was FRAME, I told him I was going "direct FRAME". He told me that FRAME was to my left and gave me a left vector toward the northwest, but then changed his mind back to a right turn to the southeast. After that he cleared me present position direct to SHAFTER VOR (EHF).

A few minutes after that, a second controller came on and asked if I had time to answer a question. He asked me how I had gone the wrong direction, and if I had put the wrong information in my navigation device. I told him I mistook FRIANT VOR for FRAME INTERSECTION on initial setup of my nav equipment. I then asked him if there was going to be a problem and he replied to "just be more careful next time". That was all that was said regarding the incident. I was aware I had done something wrong when the controller asked me why I had turned right instead of left. Then he told me the location of FRAME was to my left. I finally realized that FRA was not FRAME.

My day started typically early at XA:00 AM. My showtime was at XB:05 AM. I took off on my scheduled flight at XB:53, arriving XC:49. I called in my times at XC:52. I had been having problems with the fuel gauges on my plane and been in contact about the issue with maintenance. I called maintenance at XC:57 AM to report some numbers we were using to find what the fuel problem could be. I was told they would let me know what to do next, so I went to the hotel thinking it would be a normal day.

During my breakfast I received a call from maintenance that I would be needed to fuel the airplane to a known quantity by watching the fueler and using a measuring stick to verify exact quantity. I finished breakfast and went back out to the airport to order fuel and watch the fueling closely, which I did. The decision after calling back was to move the plane up to Fresno for them to work on it and to swap into another plane. I did this

arriving in Fresno at exactly XI:00, a 2.3 hour trip. I then used the bathroom, filed an IFR fight plan using my phone's flight planning app, swapped airplanes, and did the pre-flight on the new plane. In the aircraft, I received my clearance to use the FRESNO8 departure, FRAME, EHF VOR (SHAFTER), then as filed. I then set up my nav radio to use the pre-loaded FRESNO8 departure. From runway 29L it had the FRA fix and I loaded it, thinking it was the VOR and not the FRAME intersection in spite of knowing quite well the difference. I was under a time constraint and had sweat running down my face from the heat in the cockpit. At this time, I should have either just put FRAME in as a fix, or at least verified its location on the IFR enroute chart. This was the main mistake that set up the others. I started up and taxied out at XJ:05. At this time, I had been up for 9 hours and at work for 8. My scheduled show time back at the original airport was XL:22 and it was over 2 hours away so I had a time constraint. I arrived and blocked in at XL:18, only 4 minutes prior to my showtime for the evening leg.

### Synopsis

Small transport pilot inadvertently loaded FRA instead of FRAME into their GPS for the FAT FRESNO.8 Departure and turned the wrong way when cleared direct.

Date : 201507 Local Time Of Day : 1801-2400

## Place

Locale Reference.Airport : WSSS.Airport State Reference : FO Altitude.AGL.Single Value : 0

## Aircraft

Reference : X Aircraft Operator : Air Carrier Make Model Name : Widebody Transport Crew Size.Number Of Crew : 2 Operating Under FAR Part : Part 121 Flight Plan : IFR Mission : Cargo / Freight Flight Phase : Parked

### Component

Aircraft Component : INS / IRS / IRU Aircraft Reference : X Problem : Improperly Operated

### Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function.Flight Crew : Pilot Flying Function.Flight Crew : Captain ASRS Report Number.Accession Number : 1278705

## Events

Anomaly.Ground Event / Encounter : Other / Unknown Detector.Person : Flight Crew When Detected : Taxi Result.General : Maintenance Action Result.Flight Crew : Became Reoriented Result.Flight Crew : Overcame Equipment Problem

### Assessments

Contributing Factors / Situations : Human Factors Contributing Factors / Situations : Airport Primary Problem : Human Factors

Narrative: 1

Inverted the parking spot coordinates in the initial position to initialize the IRUs. The sign at gates XX and XY have the wrong coordinates. Signs read N122.4 E1040.04. The correct coordinates are N 1 22.4 E 104 00.4. This needs to be fixed. The Jeppesen 10-9C1 pages that list parking spot coordinates is correct, the sign at the gate is wrong. The decimal place on the longitude is in the wrong place. Our aircraft had been towed to the gate. When I initialized the FMS, the numbers were off so I used the coordinates off the gate sign to initialize. That position put the IRUs on the west coast of Africa. The GNS (Global Navigation System) RNP (Required Navigational Performance) began to climb after alignment and after some time, we received an unable RNP alert. Maintenance deferred the GNS and we proceeded without GNS and ADS-B.

I realized what had happened on pushback from the gate and informed maintenance of the discrepancy in the gate sign. Wrong coordinates on the gate sign for gate XX and XY at WSSS. Fix the sign and always take the coordinates off the flight plan for FMS initial coordinates.

## Synopsis

Air carrier First Officer reports entering IRU coordinates from the gate sign at WSSS which has a decimal point error. The east coordinate is entered as a 10.4 instead of 104 causing GPS error messages and a call for maintenance. The GPS is deferred and the actual cause of the anomaly is discovered during push back and corrected.

Date : 201506 Local Time Of Day : 1201-1800

### Place

Locale Reference.Airport : ZZZ.Airport State Reference : US Altitude.MSL.Single Value : 5000

## Environment

Flight Conditions : VMC Weather Elements / Visibility.Visibility : 10 Light : Daylight Ceiling.Single Value : 12000

### Aircraft

Reference : X ATC / Advisory.Center : ZZZ Aircraft Operator : Personal Make Model Name : M-20 J (201) / Allegro Crew Size.Number Of Crew : 1 Operating Under FAR Part : Part 91 Flight Plan : IFR Mission : Personal Flight Phase : Cruise Route In Use : Vectors Route In Use.Airway : V186 Airspace.Class E : ZZZ

### Component : 1

Aircraft Component : Tablet Aircraft Reference : X Problem : Design

#### Component: 2

Aircraft Component : Compass (HSI/ETC) Aircraft Reference : X Problem : Improperly Operated

#### Person: 1

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Personal Function.Flight Crew : Pilot Flying Qualification.Flight Crew : Commercial Qualification.Flight Crew : Instrument Experience.Flight Crew.Total : 450 Experience.Flight Crew.Last 90 Days : 9 Experience.Flight Crew.Type : 24 ASRS Report Number.Accession Number : 1274200 Human Factors : Troubleshooting Human Factors : Confusion Human Factors : Human-Machine Interface Human Factors : Situational Awareness Analyst Callback : Completed

### Person: 2

Reference : 2 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Personal Function.Flight Crew : Instructor Function.Flight Crew : Pilot Not Flying Qualification.Flight Crew : Commercial Qualification.Flight Crew : Flight Instructor Experience.Flight Crew.Total : 6000 Experience.Flight Crew.Last 90 Days : 60 Experience.Flight Crew.Type : 60 ASRS Report Number.Accession Number : 1277069

### Events

Anomaly.Aircraft Equipment Problem : Less Severe Anomaly.Deviation - Track / Heading : All Types Anomaly.Deviation - Procedural : Clearance Detector.Person : Air Traffic Control Were Passengers Involved In Event : N When Detected : In-flight Result.Flight Crew : FLC complied w / Automation / Advisory Result.Flight Crew : Took Evasive Action Result.Air Traffic Control : Issued Advisory / Alert

### Assessments

Contributing Factors / Situations : Environment - Non Weather Related Contributing Factors / Situations : Aircraft Primary Problem : Aircraft

#### Narrative: 1

While on IFR Tower enroute [clearance], route was listed as initial vectors. While being vectored around traffic, PIC was informed that aircraft heading was 15 degrees off ATC's requested heading. PIC verified heading indicator and compass using the runway heading prior to roll-out, and both instruments were accurate. After being informed of the PIC revised the heading indicator to reflect the 15 degree deviation, and didn't use the compass as a secondary check due to the reported error. ATC then told us to intercept V186 and resume navigation. LOC was verified via ident, and heading set for V186 return via V186. PIC was able to track using the LOC without issue. No further heading issue was encountered regarding the heading using the HI with the 15 degree corrective setting. PIC was effectively able to track the destination ILS LOC to a landing without incident.

On investigation, after flight completion, PIC discovered that there was interference

between an IPAD2 in close proximity to the compass due to magnets within the tablet itself, which was unknown to the PIC or the instructor on board, as well as other professional, and private pilots. The magnets in the IPAD2 caused the compass to deviate from an accurate heading by as much as 30 degrees, when in proximity to the IPAD.

## Callback: 1

The reporter stated that he was in IMC conditions with his instructor in the right seat when ATC notified him about the track deviation. The instructor was placing the iPad on the glareshield then in his lap while using the GPS for navigation. Neither pilot realized the iPad had magnets but he later discovered they are powerful enough to affect a compass. After landing when he placed the iPad on the glareshield and detected the compass deflection. ATC made no comments about his track deviation except to say he apparently had a navigation problem but did not pursue the deviation further.

## Narrative: 2

[Report narrative contained no additional information.]

### Synopsis

An iPad's internal magnets reportedly caused an IFR M201J 15 degree compass error, which ATC detected because of a track deviation. The compass error cause was not determined until after landing.

### ACN: 1274088 (27 of 50)

#### Time / Day

Date : 201506 Local Time Of Day : 1201-1800

### Place

Locale Reference.ATC Facility : ZZZ.TRACON State Reference : US Altitude.MSL.Single Value : 4500

## Environment

Flight Conditions : VMC Weather Elements / Visibility : Haze / Smoke Weather Elements / Visibility.Visibility : 10 Light : Daylight

### Aircraft: 1

Reference : X ATC / Advisory.TRACON : ZZZ Aircraft Operator : Government Make Model Name : Light Transport, High Wing, 2 Turboprop Eng Crew Size.Number Of Crew : 1 Operating Under FAR Part : Part 91 Flight Plan : None Mission : Tactical Nav In Use : GPS Flight Phase : Cruise Route In Use : Direct Airspace.Special Use : ZZZ

### Aircraft: 2

Reference : Y Aircraft Operator : Military Make Model Name : UAV - Unpiloted Aerial Vehicle Mission : Tactical Flight Phase : Cruise Airspace.Special Use : ZZZ

#### Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Government Function.Flight Crew : Pilot Flying Function.Flight Crew : Single Pilot Qualification.Flight Crew : Instrument Qualification.Flight Crew : Multiengine Qualification.Flight Crew : Air Transport Pilot (ATP) Qualification.Flight Crew : Flight Instructor Experience.Flight Crew.Total : 6000 Experience.Flight Crew.Last 90 Days : 150 Experience.Flight Crew.Type : 90 ASRS Report Number.Accession Number : 1274088 Human Factors : Time Pressure Human Factors : Situational Awareness

## Events

Anomaly.Airspace Violation : All Types Anomaly.Conflict : Airborne Conflict Anomaly.Deviation - Procedural : FAR Detector.Automation : Aircraft TA Miss Distance.Horizontal : 500 Miss Distance.Vertical : 500 When Detected : In-flight Result.Flight Crew : Exited Penetrated Airspace Result.Flight Crew : Became Reoriented Result.Air Traffic Control : Issued New Clearance Result.Air Traffic Control : Issued Advisory / Alert

### Assessments

Contributing Factors / Situations : Procedure Contributing Factors / Situations : Human Factors Contributing Factors / Situations : Airspace Structure Primary Problem : Human Factors

## Narrative: 1

I was dispatched to a fire with two BLM (Bureau of Land Management) personnel onboard on an Air Attack mission for firefighting. We did not have coordinates for the fire until airborne and therefore did not have time to properly check the sectional for airspace before I left, which was my mistake. I got airborne and received the fire coordinates from State Forestry and input them into my GPS and started heading to it. I knew I was close to Class C airspace so I contacted approach and they gave me a squawk code. Shortly after they told me to climb from 4500 to 5500 for traffic, which I did immediately. We had also seen traffic ahead on our onboard TCAS display, which was not an immediate threat. We later saw the traffic (UAS) pass below us. We proceeded to the fire and when Approach gave me the clearance for frequency change out of their airspace they told me to call a number for a possible Restricted Area intrusion. I still had no idea what they were talking about until I later reviewed the sectional closer. I then called them from the Satellite phone and later from my cell phone to talk with TRACON and discuss my mistake. They said I just barely clipped the Restricted Area by the Air Force Base, which was active at the time and the traffic I climbed to avoid was a drone.

I realize my mistake was not reviewing airspace properly before being dispatched for a fire, but also believe the nature of fire dispatches along with my unfamiliarity with the area caused this to happen. From now on I demand to know the fire coordinates before getting airborne so I can review the airspace.

## Synopsis

Light twin pilot reports being dispatched on an air attack mission for the Forest Service without precise coordinates or a proper preflight of the route. The route passes through restricted airspace and results in a conflict with a military drone.

## ACN: 1272304 (28 of 50)

### Time / Day

Date : 201506 Local Time Of Day : 0601-1200

### Place

Locale Reference.ATC Facility : PCT.TRACON State Reference : VA Altitude.MSL.Single Value : 6000

### Environment

Flight Conditions : VMC Weather Elements / Visibility.Visibility : 10 Light : Daylight Ceiling.Single Value : 10000

### Aircraft

Reference : X ATC / Advisory.TRACON : PCT Aircraft Operator : Personal Make Model Name : Bonanza 36 Crew Size.Number Of Crew : 1 Operating Under FAR Part : Part 91 Flight Plan : IFR Mission : Training Nav In Use : GPS Flight Phase : Initial Climb Route In Use : Direct Airspace.Class E : PCT

### Component

Aircraft Component : GPS & Other Satellite Navigation Aircraft Reference : X Problem : Improperly Operated

#### Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Personal Function.Flight Crew : Single Pilot Qualification.Flight Crew : Instrument Qualification.Flight Crew : Instrument Qualification.Flight Crew. Total : 1750 Experience.Flight Crew.Total : 1750 Experience.Flight Crew.Last 90 Days : 10 Experience.Flight Crew.Type : 350 ASRS Report Number.Accession Number : 1272304 Human Factors : Situational Awareness Human Factors : Human-Machine Interface Analyst Callback : Attempted

## Events

Anomaly.Deviation - Track / Heading : All Types Anomaly.Deviation - Procedural : Published Material / Policy Anomaly.Deviation - Procedural : Clearance Detector.Person : Air Traffic Control When Detected : In-flight Result.Flight Crew : Returned To Clearance Result.Flight Crew : Became Reoriented Result.Air Traffic Control : Issued New Clearance

### Assessments

Contributing Factors / Situations : Human Factors Contributing Factors / Situations : ATC Equipment / Nav Facility / Buildings Primary Problem : Human Factors

### Narrative: 1

I had mistyped an intersection (WOOLY) into my GPS route of flight cleared by ATC returning to HEF. The intersection I typed in (WOLLY) was northwest of my intended and cleared route of flight after BAL VOR instead of southwest. I was practicing hand flying this particular leg of my flight that morning and after departing and following runway heading directions while climbing successively to 3,000 and then 6,000 feet, had been cleared to WOOLY. I was queried once by ATC as to whether I was flying direct to WOOLY, which I incorrectly confirmed after viewing the GPS. Approximately one minute later, I was queried again by ATC and it was at that time that I noticed the discrepancy when comparing the GPS indications to the indications on my iPAD using foreflight and an IFR sectional. The controller identified the direction I should have been heading which I turned to while entering WOOLY in the GPS and heading directly to WOOLY. I then complied with additional vectors to facilitate my return to HEF.

My mistake began with my landing and requesting an immediate taxi back and my clearance back to HEF where I began my flight that morning. I was taxiing and reprogramming the GPS after receiving and reading back my IFR clearance from the tower controller. I should have waited until stopping at the hold short line or the run up area to program the next segment of the flight as I was flying single pilot that day. In that case I could have taken greater care in entering the flight plan in the GPS and checking it as well. Taxiing the airplane and programming the GPS compromises safety and better management of my responsibilities would have kept the navigation error from happening.

## Synopsis

BE36 pilot reports incorrectly programming his GPS after receiving a clearance while taxiing single pilot. Waypoint WOOLY is incorrectly entered as WOLLY, resulting in a track deviation. ATC detects and corrects the error.

## ACN: 1271748 (29 of 50)

### Time / Day

Date : 201506 Local Time Of Day : 1801-2400

### Place

Locale Reference.Airport : TTPP.Airport State Reference : FO Altitude.MSL.Single Value : 3000

### Environment

Flight Conditions : VMC

### Aircraft

Reference : X ATC / Advisory.Center : TTZP Aircraft Operator : Air Carrier Make Model Name : B737 Undifferentiated or Other Model Crew Size.Number Of Crew : 2 Flight Plan : IFR Nav In Use : GPS Nav In Use.Localizer/Glideslope/ILS : Runway 10 Flight Phase : Initial Approach Flight Phase : Descent

#### Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function.Flight Crew : Captain Function.Flight Crew : Pilot Not Flying Qualification.Flight Crew : Air Transport Pilot (ATP) Experience.Flight Crew.Total : 7956 Experience.Flight Crew.Last 90 Days : 111 Experience.Flight Crew.Type : 4662 ASRS Report Number.Accession Number : 1271748 Human Factors : Situational Awareness

### Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude Anomaly.Deviation - Procedural : Published Material / Policy Anomaly.Deviation - Procedural : FAR Anomaly.Deviation - Procedural : Clearance Anomaly.Inflight Event / Encounter : CFTT / CFIT Detector.Automation : Aircraft Terrain Warning Detector.Person : Flight Crew When Detected : In-flight Result.Flight Crew : Took Evasive Action Result.Flight Crew : Became Reoriented

## Assessments

Contributing Factors / Situations : Human Factors Primary Problem : Human Factors

### Narrative: 1

This event occurred during descent into Port of Spain, Trinidad, First Officer (FO) briefed a RNAV (GPS) approach to runway 10 in visual conditions at night. We planned the approach in VNAV and LNAV. He briefed a possible late descent by approach control and the high terrain to the north of the airport, as well as the MEAs and MSA on the arrival. I went to terrain display while he initially stayed on weather since we were still above clouds at altitude, Approaching top of descent we requested descent clearance. We were cleared to descend, and the FO began the descent in Level change since we were a little high after the clearance. Initial clearance was FL170 then FL110. We were then cleared to descend to 4,100 feet and cleared for the RNAV approach to runway 10. Between ITRAK and OMEGO we decided to set 2,500 feet for the altitude at the IAF LEXOR in case we got the procedure hold at LEXOR. We decided to ask approach whether we could expect to enter the hold, and were told to expect no delays. FO then removed the hold from the FMC. That caused path indicator to disappear while it recalculated. We were in visual conditions with the terrain in sight and visually clear of terrain. I think that lulled us into focusing more on flying visually rather than cross checking the instruments and automation. We were not in VNAV (at what point that occurred I don't know), and while distracted we continued to descent below the MEA (4,100) to 3,000 before we caught our error. We immediately leveled at 3,000 and quickly decided to stay there rather than climb because we were near OMEGO where the altitude changed to 3,000 and we were VMC and clear of terrain. We then got a GPWS terrain pull up warning. The FO immediately disconnected the autopilot and executed the escape maneuver. Right after beginning the maneuver the warnings ceased. We then resumed the arrival and approach without incident executed a stable approach and landing.

We debriefed after gate arrival, and concurred that we had made obvious errors during the arrival. We discussed how we could have let it get to the point where we were well below the route altitude. We had both been shocked and surprised by the GPWS when it appeared that we were clear of terrain. However, we realize that we would never have gotten the warning if we had flown the approach as depicted. It was a very hard lesson to learn and very humbling.

### Synopsis

B737 Captain experienced a GPWS terrain warning during a night visual approach to TTPP Runway 10 from the north. The aircraft was in Level Change with 3,000 feet set in the MCP altitude window and 3,000 feet was reached prior to OMEGO. Evasive action was taken, with only a small climb required to cancel the warning, then the approach was continued.

# ACN: 1265538 (30 of 50)

### Time / Day

Date : 201505 Local Time Of Day : 0601-1200

### Place

Locale Reference.ATC Facility : ZTL.ARTCC State Reference : GA

#### Environment

Flight Conditions : IMC Weather Elements / Visibility : Cloudy Weather Elements / Visibility.Visibility : 5 Light : Daylight Ceiling.Single Value : 600

### Aircraft

Reference : X ATC / Advisory.Center : ZTL Aircraft Operator : Air Taxi Make Model Name : PC-12 Crew Size.Number Of Crew : 2 Operating Under FAR Part : Part 91 Flight Plan : IFR Flight Phase : Initial Approach Airspace.Class E : ZTL

#### Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Taxi Function.Flight Crew : Pilot Flying Function.Flight Crew : Captain ASRS Report Number.Accession Number : 1265538

#### Events

Anomaly.Deviation - Procedural : Published Material / Policy Detector.Person : Flight Crew When Detected : In-flight Result.Flight Crew : Executed Go Around / Missed Approach Result.Air Traffic Control : Issued New Clearance

#### Assessments

Contributing Factors / Situations : Weather Contributing Factors / Situations : Procedure Primary Problem : Procedure

Narrative: 1

Scheduled to operate an owner flight to A08. Preflight planning revealed no NOTAMs at A08 that would impact our arrival. Upon arrival in the Marion Alabama area Atlanta Center asked if we had weather and NOTAMs for A08. We asked the controller to review any new NOTAMs they had, the only NOTAMs reported were tower light outages, these were the NOTAMs we had reviewed prior to departure. The weather was 600 overcast with about 5 miles visibility. We were cleared to an initial fix and cleared for the GPS 16 approach. The approach went normally until breaking out around 500 feet. All of the runway markings were gone, a large yellow x was covering the threshold of the runway, and several construction vehicles were just adjacent to the runway at the midfield point. Also to note, position reports were made throughout the approach on CTAF. We executed a go around and held at the missed approach point. We informed ATC of the situation and they were unaware of any airport closures. After about 10 minutes ATC reached the airport manager who told them the airport was closed and that he had forgotten to produce a NOTAM to that effect. I explained the situation to our owners and they requested we divert to [another airport]. The diversion and GPS approach [to diversion airport] was uneventful. Following this event we informed Operations and Dispatch so that any of our other flights heading to Marion would be aware of the closure.

### Synopsis

Upon breaking out at the completion of an instrument approach, crew of PC-12 noticed that the runway was closed with a large yellow X on the runway threshold. The entire airport had been closed for construction, but no NOTAM was issued. Crew diverted to an alternate airport.

Date : 201505 Local Time Of Day : 0001-0600

### Place

Locale Reference.ATC Facility : ZME.ARTCC State Reference : TN Altitude.MSL.Single Value : 3000

### Environment

Flight Conditions : IMC Weather Elements / Visibility : Windshear Weather Elements / Visibility : Rain Weather Elements / Visibility : Turbulence Weather Elements / Visibility.Visibility : 0 Light : Daylight Ceiling.Single Value : 800

## Aircraft

Reference : X ATC / Advisory.Center : ZME Aircraft Operator : Personal Make Model Name : PA-32 Cherokee Six/Lance/Saratoga/6X Crew Size.Number Of Crew : 1 Operating Under FAR Part : Part 91 Flight Plan : IFR Mission : Personal Flight Phase : Initial Approach Route In Use.Other Airspace.Class E : ZME

### Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Personal Function.Flight Crew : Pilot Flying Function.Flight Crew : Single Pilot Qualification.Flight Crew : Instrument Qualification.Flight Crew : Private Experience.Flight Crew.Total : 796 Experience.Flight Crew.Last 90 Days : 15 Experience.Flight Crew.Type : 547 ASRS Report Number.Accession Number : 1264474 Human Factors : Other / Unknown

## Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude Anomaly.Inflight Event / Encounter : Weather / Turbulence Anomaly.Inflight Event / Encounter : Loss Of Aircraft Control Detector.Person : Flight Crew When Detected : In-flight Result.Flight Crew : Returned To Clearance Result.Flight Crew : Regained Aircraft Control Result.Flight Crew : Became Reoriented Result.Air Traffic Control : Issued Advisory / Alert

#### Assessments

Contributing Factors / Situations : Weather Contributing Factors / Situations : Human Factors Primary Problem : Ambiguous

### Narrative: 1

At the conclusion of my IFR flight and while cruising at 6000 feet I diverted to my planned alternate, MKL, due to rain at my primary. I was given a descent to 2500 feet and was approximately 15-20 minutes out. This put me in IMC so I lost the ability to see weather in front of me.

ASOS at MKL reported a ceiling of 1900 overcast and I think wind of 3 knots at 190. I discussed this with Memphis Center and decided on the visual approach to Runway 20 at MKL. I rechecked the weather some minutes later and the new ASOS had a ceiling of 900 feet with light rain and calm wind. I called Memphis, and asked for the GPS 20 approach with GARTZ as an IAF. They responded with a climb to 3000, direct GARTZ, and cleared for the approach.

About 2 min from GARTZ, Memphis called to tell me about moderate to severe rain ahead and I placed it at 2 miles past GARTZ. And then it began to rain with mild turbulence. At GARTZ, as I turned outbound the rain and turbulence became moderate to heavy. Continuing to track around to inbound the rain became very heavy and turbulence, with gusts and swirling, increased severely. As I was finishing the turn I hit an area of very heavy rain and severe turbulence with a very strong downdraft which led to a severe bank angle, nose down attitude and significant loss of altitude. I reduced power and leveled the wings, then increased to full power and full up but was continuing to descend. After coming out the bottom of the clouds the turbulence significantly decreased. The lowest altitude I saw was 1200 feet.

Memphis had called several times and each time I answered back with no response. Troubleshooting, now that the airplane was stable, revealed my knee had pulled out the mic plug. After pushing it back in, I called Memphis to report our situation and they asked if I wanted to continue the approach. Because I was able to see in front of me now that I was below the clouds and saw no significant rain I answered affirmative. I climbed back to the appropriate altitude which I attained just prior to ZEALS and then followed the approach breaking out of the clouds at about 800 feet lined up with the runway.

In summary, during a GPS approach I encountered severe turbulence, rain and downdrafts that were unknown to me. This resulted in an unusual attitude and loss of altitude resulting in busting altitude restrictions before I, thankfully, recovered. Additionally, an unplugged mic cord prevented me from contacting Memphis to answer their calls.

In reviewing the radar plots, I would have never purposely flown into these conditions, especially at such a vulnerable time as during an approach. I have already scheduled time

with my instrument instructor to discuss where I could/should have made different decisions and for further practice in unusual attitude recovery.

### Synopsis

PA32 pilot reports encountering severe rain and turbulence during an RNAV 20 approach to MKL. Control of the aircraft is momentarily lost along with 1800 feet of altitude. At 1200 feet the reporter is able to regain control, climb to 2000 feet and complete the approach. Communication with ATC is lost when the mic cord becomes unplugged during the turbulence.

Date : 201505 Local Time Of Day : 1201-1800

### Place

Locale Reference.ATC Facility : NKT.TRACON State Reference : NC Altitude.MSL.Single Value : 3500

### Environment

Flight Conditions : VMC Weather Elements / Visibility.Visibility : 10 Light : Daylight Ceiling : CLR

### Aircraft: 1

Reference : X ATC / Advisory.TRACON : NKT Aircraft Operator : Personal Make Model Name : Small Aircraft Crew Size.Number Of Crew : 1 Operating Under FAR Part : Part 91 Flight Plan : VFR Mission : Personal Flight Phase : Cruise Route In Use : None Airspace.Special Use : R5314

### Aircraft: 2

Reference : Y Aircraft Operator : Military Make Model Name : Fighter Crew Size.Number Of Crew : 1 Operating Under FAR Part : Part 91 Flight Plan : VFR Mission : Training Flight Phase : Cruise Route In Use : Direct Airspace.Special Use : R5314

### Person

Reference : 1 Location Of Person.Facility : NKT.TRACON Reporter Organization : Government Function.Air Traffic Control : Departure Function.Air Traffic Control : Approach Function.Air Traffic Control : Enroute Function.Air Traffic Control : Trainee Qualification.Air Traffic Control : Developmental Experience.Air Traffic Control.Military : 12 Experience.Air Traffic Control.Supervisory : 8 ASRS Report Number.Accession Number : 1263859 Human Factors : Confusion Human Factors : Situational Awareness Human Factors : Communication Breakdown Communication Breakdown.Party1 : ATC Communication Breakdown.Party2 : Flight Crew

## Events

Anomaly.Aircraft Equipment Problem : Less Severe Anomaly.Airspace Violation : All Types Anomaly.Conflict : Airborne Conflict Anomaly.Deviation - Procedural : Published Material / Policy Anomaly.Deviation - Procedural : Clearance Detector.Person : Air Traffic Control Miss Distance.Horizontal : 6000 Miss Distance.Vertical : 0 When Detected : In-flight Result.Flight Crew : Took Evasive Action Result.Air Traffic Control : Separated Traffic

### Assessments

Contributing Factors / Situations : Procedure Contributing Factors / Situations : Human Factors Contributing Factors / Situations : Equipment / Tooling Primary Problem : Equipment / Tooling

### Narrative: 1

Aircraft X was receiving VFR flight following from to GGE at 4,000 feet. Due to active R5314/Phelps MOA airspace, Aircraft X was placed on a heading of 283 to remain clear on R5314. Two fighters checked-in 5 miles west of R5314J VFR at 3,500 and were cleared to enter. Aircraft Y proceeds inbound from the southwest corner of R-5314J. Concurrently Aircraft X cancelled flight following and requested to proceed VFR, after the controller advised "radar services terminated, frequency changed approved", Aircraft X turned southwest bound into the northwest corner of R5341J descending to 3,500 feet.

The Aircraft Y flight and Aircraft X were nose to nose at about 2 miles closing to about 1 mile. A blind broadcast was made to Aircraft X to remain clear of R5314J and to turn heading 250. The pilot of Aircraft X then proceeded to inform Cherry Point ATC that [they were] clear of the airspace. NKT ATC informed [them] that [they] was in R5314J and the pilot responded that her [GPS display] showed the airspace from 6,000 feet to FL180. NKT ATC then informed her that R5314J was from 1,000 feet to 6,000 feet as depicted on the Charlotte sectional. It appears that the [GPS display] was only depicting the Phelps A MOA which is from 6,000 feet to FL180 but not R5314J. The pilot of Aircraft X was convinced the only airspace there was Phelps A MOA.

### Synopsis

A reporter states that a VFR aircraft, after being terminated for flight following, enters a restricted area. A call in the blind is answered by the VFR pilot and is told that they entered the restricted area. The pilot disagrees and says the altitude that is not is higher

than they are. The Controller disagrees and advises the pilot. The pilot finds out that the depiction on his GPS system is incorrect.

Date : 201505 Local Time Of Day : 0001-0600

### Place

Locale Reference.Airport : ELP.Airport State Reference : TX Relative Position.Distance.Nautical Miles : 36 Altitude.MSL.Single Value : 27000

### Environment

Flight Conditions : VMC Weather Elements / Visibility.Visibility : 50 Light : Night

### Aircraft

Reference : X ATC / Advisory.Center : ZAB Aircraft Operator : Corporate Make Model Name : Super King Air 200 Operating Under FAR Part : Part 91 Flight Plan : IFR Mission : Passenger Nav In Use : GPS Nav In Use.VOR / VORTAC : INK Flight Phase : Climb Route In Use : Vectors Route In Use : Direct Airspace.Class A : ZAB

### Component

Aircraft Component : GPS & Other Satellite Navigation Aircraft Reference :  $\ensuremath{\mathsf{X}}$ 

### Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Corporate Function.Flight Crew : Pilot Flying Function.Flight Crew : Single Pilot Qualification.Flight Crew : Single Pilot Qualification.Flight Crew : Flight Instructor Qualification.Flight Crew : Air Transport Pilot (ATP) Qualification.Flight Crew : Multiengine Qualification.Flight Crew : Instrument Experience.Flight Crew.Total : 4000 Experience.Flight Crew.Last 90 Days : 80 Experience.Flight Crew.Type : 80 ASRS Report Number.Accession Number : 1261310 Human Factors : Fatigue Human Factors : Distraction

### Events

Anomaly.Deviation - Altitude : Overshoot Anomaly.Deviation - Procedural : Clearance Detector.Person : Flight Crew When Detected : In-flight Result.Flight Crew : Became Reoriented Result.Flight Crew : Overcame Equipment Problem Result.Flight Crew : Returned To Clearance

### Assessments

Contributing Factors / Situations : Human Factors Contributing Factors / Situations : Environment - Non Weather Related Contributing Factors / Situations : Aircraft Primary Problem : Environment - Non Weather Related

#### Narrative: 1

Climbing out of ELP and passing through around 25,000 feet, My GPS unit flagged an integrity message. At the time of the GPS losing signal, I was direct to INK vor. I reported the failure to ATC (with the understanding that there was a NOTAM for GPS jamming being conducted). The controller gave me a vector direct when able to my destination. As a result of my GPS losing signal the autopilot went into "roll hold" a basic level that the autopilot defaults to. I placed the autopilot into heading mode and rolled to the assigned heading. What I failed to notice was that the autopilot had also dropped "altitude select". This mode is responsible for capturing the assigned altitude. In this case, that altitude was 27,000 feet. I recall acknowledging the altitude alerter at the 1000 feet prior annunciation. However, instead of focusing on the level off I left my attention to resetting the GPS and tuning in frequencies to ground based navigation facilities.

As I was looking up a frequency to tune, I noticed the amber light from the altitude alerter was still illuminated. Through all of my previous flying experience I instantly knew that we should have already leveled off. I looked at the altimeter and we were 800 feet higher than our assigned altitude of 27,000 feet. I immediately disengaged the autopilot and corrected to the assigned altitude.

Contributing factors include distraction from losing GPS. Fixation while attempting to find other means of navigation, even though the controller gave me an initial vector and I had plenty of time to wait until level off to determine frequencies. In addition, I was approaching the end of my duty day so fatigue may have contributed to my error.

#### Synopsis

King Air 200 pilot experienced loss of GPS signal after departing ELP and passing through FL250. The failure was due to NOTAM'd GPS jamming in the area and ATC assigned a heading to destination. With the loss of NAV capability the autopilot also lost altitude capture, resulting in an 800 foot overshoot of FL270.

Date : 201501

## Aircraft

Reference : X Make Model Name : Citation Excel (C560XL) Crew Size.Number Of Crew : 1 Flight Plan : IFR

### Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function.Flight Crew : Captain Qualification.Flight Crew : Instrument Qualification.Flight Crew : Flight Instructor Qualification.Flight Crew : Multiengine Experience.Flight Crew.Total : 14700 ASRS Report Number.Accession Number : 1260880 Human Factors : Situational Awareness Analyst Callback : Completed

### Events

Anomaly.No Specific Anomaly Occurred : All Types Detector.Person : Flight Crew When Detected : In-flight Result.General : None Reported / Taken

### Assessments

Contributing Factors / Situations : Procedure Contributing Factors / Situations : Human Factors Contributing Factors / Situations : Chart Or Publication Contributing Factors / Situations : Aircraft Primary Problem : Chart Or Publication

### Narrative: 1

Descend Via arrivals are fast becoming the standard, however the charting has not caught up to the new procedures. We have multiple legs and transitions to different runways that have different speed/crossing restrictions all on one graphic page. This is very confusing to say the least.

Note, please, and example in the SWFFT2 STAR into BNA.

Here we have 2 transitions to different runways that are 1 deg. (yep, one degree different), with overlapping intersection identification tags. (NOS charts)

The intersection ONUGE id, wedged between BRETH and CORRA, can, and ultimately will, cause mass confusion and a pilot violation.

I have personally flown more than a few of these into East Coast airports and, in watching the GPS navigate, have not looked out the window for over 100 miles. 2 pilot crew, not a big deal. What's a single pilot to do? See and avoid is still viable?

There have been times I feel I have to program an arrival from the middle, working towards both ends. Our current navigation radios are not programmed that way and could drop position/altitude calculations if transitions are changed in mid arrival.

ATC seems to be content as well to just watch, to the point of a pilot deviation, with no input. Us against Them????? Not the industry I want to be a part of!

We need to improve charting even to the point of 1 chart for 1 transition. Remove all ambiguity. Briefing strips on the top of the page including entry altitude (as appropriate), minimum altitudes, and no not bury critical information in a pile of notes in small type. Critical information, like the default runway transition, is buried in the notes section on arrivals as the IVANE5 into CLT (3 pages long, by the way). One must read the previous 5 notes, then note 6 to find the default runway is 23. Then the note says to "program the ILS-23," nowhere noting the "Transition" to RWY-23. Splitting hairs, but this is the industry that does that. Bottom line: error prone.

This current methodology, I do feel and in my opinion, is going to get someone killed.

#### Callback: 1

The reporter stated the aircraft was a Citation Excel.

#### Synopsis

A Citation Excel Captain stated he feels RNAV approach charts should be simplified to reduce errors, citing the BNA SWFFT2 STAR as an example.

# ACN: 1259797 (35 of 50)

### Time / Day

Date : 201505 Local Time Of Day : 1201-1800

#### Place

Locale Reference.Airport : CMH.Airport State Reference : OH

#### Environment

Flight Conditions : VMC

#### Aircraft

Reference : X Aircraft Operator : Air Carrier Make Model Name : Medium Large Transport Crew Size.Number Of Crew : 2 Operating Under FAR Part : Part 121 Flight Plan : IFR Mission : Passenger Nav In Use : FMS Or FMC Nav In Use.Localizer/Glideslope/ILS : Runway 28L Flight Phase : Initial Approach

#### Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function.Flight Crew : First Officer Function.Flight Crew : Pilot Not Flying Qualification.Flight Crew : Air Transport Pilot (ATP) ASRS Report Number.Accession Number : 1259797 Human Factors : Troubleshooting Human Factors : Confusion Human Factors : Distraction Human Factors : Situational Awareness Human Factors : Time Pressure

### Events

Anomaly.Deviation - Procedural : Published Material / Policy Detector.Person : Flight Crew When Detected : In-flight Result.Flight Crew : Returned To Clearance Result.Flight Crew : Requested ATC Assistance / Clarification Result.Air Traffic Control : Provided Assistance

#### Assessments

Contributing Factors / Situations : Chart Or Publication Primary Problem : Chart Or Publication

### Narrative: 1

The frequency for ILS 28L (ICMH) at CMH is incorrect on Lido charts 7-30 and the AFC for CMH. The Lido charts depict frequency 108.7 (ICMH). This is incorrect and according to CMH ground control, it was changed to 111.75 almost two years ago. The frequency should read 111.75 (ICMH). Please notify Lido that this needs to be changed.

Jepp charts where correct except that the old frequency of 108.7 still shows up on Jeppesen chart 12-3, the RNAV (GPS) Y to 28L in the plan view.

This was discovered on final approach to 28L in VMC on a visual approach. I had 108.7 hard tuned in Nav 1 and the First Officer (FO) who was the pilot flying had Nav 2 in auto tune and therefore had the correct frequency of 111.75 tuned up when it switched to green needles. There was no disruption to the flight.

### Synopsis

Air Carrier pilot reports of incorrect data on the LIDO chart that they were using to fly to the destination airport. The frequency of the ILS was in error on one chart, but correct on another chart. The change had taken place two years ago.

# ACN: 1259778 (36 of 50)

### Time / Day

Date : 201505 Local Time Of Day : 1801-2400

### Place

Locale Reference.Airport : BWI.Airport State Reference : MD Altitude.MSL.Single Value : 1500

### Environment

Flight Conditions : VMC Light : Night

#### Aircraft

Reference : X ATC / Advisory.Tower : BWI Aircraft Operator : Air Carrier Make Model Name : Medium Large Transport, Low Wing, 2 Turbojet Eng Crew Size.Number Of Crew : 2 Operating Under FAR Part : Part 121 Flight Plan : IFR Mission : Passenger Flight Phase : Initial Approach Route In Use : Visual Approach Airspace.Class B : BWI

### Person: 1

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function.Flight Crew : Captain Function.Flight Crew : Pilot Flying Qualification.Flight Crew : Air Transport Pilot (ATP) ASRS Report Number.Accession Number : 1259778 Human Factors : Situational Awareness Human Factors : Confusion Human Factors : Distraction Human Factors : Workload

#### Person: 2

Reference : 2 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function.Flight Crew : First Officer ASRS Report Number.Accession Number : 1260228 Human Factors : Communication Breakdown Human Factors : Workload Human Factors : Confusion Human Factors : Distraction Human Factors : Situational Awareness Communication Breakdown.Party1 : Flight Crew Communication Breakdown.Party2 : Flight Crew

### Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude Anomaly.Deviation - Track / Heading : All Types Anomaly.Deviation - Procedural : Published Material / Policy Anomaly.Deviation - Procedural : Clearance Anomaly.Inflight Event / Encounter : Unstabilized Approach Detector.Person : Flight Crew When Detected : In-flight Result.Flight Crew : Returned To Clearance Result.Flight Crew : Became Reoriented

### Assessments

Contributing Factors / Situations : Procedure Contributing Factors / Situations : Human Factors Contributing Factors / Situations : Environment - Non Weather Related Primary Problem : Human Factors

### Narrative: 1

On arrival into BWI. Was cleared for the visual to 33L and to follow a B737. I turned right to intercept the final course on the localizer. Set altitude 1,500 and aimed to join at FAF. I descended to the FAF and lost [the traffic] however my first officer maintained [traffic] in sight. I searched for the runway visually and being unfamiliar with BWI I thought I had the runway in sight. I began to trust my visual and cut in tighter than required and continued descent. I began to realize I was looking at 33R. Upon recognizing my misplaced position of the runway I turned back to the localizer to gain course. I approached below the glide slope and got a "glide slope" aural once. I finally acquired the runway and began to correct visually. I briefly noticed a "ground proximity" icon that went away. There was no aural warning. I was fixated outside. Continued and landed.

I should have never gone fully visual. I knew I was unfamiliar and should have shot the ILS. A go around was probably the best option.

### Narrative: 2

We were on the ANTHM One RNAV Arrival into BWI for runway 33L. We had briefed the visual to runway 33L backed up with the ILS to 33L. At approx ROAPS intersection we were told that there was a 737 on final for 33L. We told Approach that we had the traffic in sight and were cleared to follow the traffic for a visual approach to runway 33L.

When turning base to final the captain saw the lights to runway 33R, thinking he was closer then he actually was he started to descend. I pointed out 33L and we continued for the runway. At this time we were low and the captain leveled off the aircraft. As we got closer we received the "glide slope" aural warning, and the message ground proximity on the PFD. The captain corrected and we landed on 33L.

As the pilot monitoring I should have called for a go around when the criteria for a stabilized approach was not meet.

Additional factors were that the ALS to 33L was out of service.

I would suggest better communication between crew members to help verify that they see the correct runway.

Using another source, like an ILS or GPS, as a backup for the visual approach.

Paying extra attention at night when conducting a visual approach especially when some visual cues like the ALS are not available.

### Synopsis

A Captain cleared for a night visual to BWI Runway 33L erroneously visually locked on the Runway 33R lights and prematurely descended causing the "GLIDESLOPE" aural alert and a brief PFD GROUND PROXIMITY alert. The First Officer correctly pointed out 33L.

Date : 201505 Local Time Of Day : 0601-1200

## Place

Locale Reference.Airport : LAS.Airport State Reference : NV

### Environment

Flight Conditions : Mixed Light : Daylight

## Aircraft

Reference : X ATC / Advisory.Center : ZLA Aircraft Operator : Air Carrier Make Model Name : B737-700 Crew Size.Number Of Crew : 2 Operating Under FAR Part : Part 121 Flight Plan : IFR Mission : Passenger Nav In Use : FMS Or FMC Flight Phase : Descent Route In Use.STAR : GRNPA ONE

## Component

Aircraft Component : FMS/FMC Aircraft Reference : X Problem : Improperly Operated

### Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function.Flight Crew : First Officer Qualification.Flight Crew. Air Transport Pilot (ATP) Experience.Flight Crew.Last 90 Days : 142 ASRS Report Number.Accession Number : 1259699 Human Factors : Situational Awareness Human Factors : Communication Breakdown Communication Breakdown.Party1 : ATC Communication Breakdown.Party2 : Flight Crew

### Events

Anomaly.Deviation - Track / Heading : All Types Anomaly.Deviation - Procedural : Published Material / Policy Anomaly.Deviation - Procedural : Clearance Anomaly.Inflight Event / Encounter : Weather / Turbulence Detector.Person : Air Traffic Control When Detected : In-flight Result.Flight Crew : Returned To Clearance Result.Flight Crew : Became Reoriented Result.Air Traffic Control : Issued New Clearance Result.Air Traffic Control : Issued Advisory / Alert

### Assessments

Contributing Factors / Situations : Weather Contributing Factors / Situations : Procedure Contributing Factors / Situations : Human Factors Primary Problem : Human Factors

### Narrative: 1

Due to GPS jamming in ZLC airspace and to the fact the airport was using a north flow instead of the south flow, Dispatch had planned and filed us for, and we received a predeparture clearance that was amended to use a non-RNAV departure that worked with a north flow. Our clearance read: ... BCE GRNPA1 KLAS.

After departure, we needed to deviate around some thunderstorms in the area, and Center cleared us to do so direct MLF when able. After checking in with Los Angeles Center, we were told, "Cleared direct Milford, GRNPA 1 Arrival." Since our PDC included the GRNPA 1 already and it was already programmed into the FMC, we didn't realize MLF had its own transition on the GRNPA1. After passing MLF and proceeding toward BCE, Center asked if we were on the arrival. That's when we first realized the clearance had been different from what we had programmed and made the turn to KSINO to re-join the arrival. There were no observed traffic conflicts due to our deviation.

I should have referenced the STAR and queried ATC to clarify the clearance. Also had ATC used the phrase "cleared direct MILFORD, GRNPA 1, MILFORD transition" it would have alerted us to that the fact that the transition we were cleared to use had been changed.

#### Synopsis

B737-700 First Officer reports being cleared to LAS via BCE and the GRNPA1 arrival. Due to weather deviations the route is changed to direct to MLF and the GRNPA1. The crew does not notice that MLF is a transition on the GRNPA1 and turns to BCE after MLF. ATC intervenes.
#### Time / Day

Date : 201505 Local Time Of Day : 1201-1800

#### Place

Locale Reference.ATC Facility : ZZZ.ARTCC State Reference : US Altitude.MSL.Single Value : 4000

# Environment

Flight Conditions : VMC Weather Elements / Visibility.Visibility : 12 Light : Daylight

# Aircraft

Reference : X ATC / Advisory.Center : ZZZ Aircraft Operator : Personal Make Model Name : PA-34-200 Seneca I Crew Size.Number Of Crew : 1 Operating Under FAR Part : Part 91 Flight Plan : IFR Mission : Training Flight Phase : Initial Approach Route In Use.Other Airspace.Class C : ZZZ

#### Component

Aircraft Component : Autopilot Aircraft Reference : X Problem : Design

#### Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Personal Function.Flight Crew : Pilot Flying Qualification.Flight Crew : Private Qualification.Flight Crew : Instrument Qualification.Flight Crew : Multiengine Experience.Flight Crew.Total : 350 Experience.Flight Crew.Last 90 Days : 5 Experience.Flight Crew.Type : 35 ASRS Report Number.Accession Number : 1259341 Human Factors : Distraction Human Factors : Human-Machine Interface Human Factors : Time Pressure Human Factors : Workload Human Factors : Confusion

# Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude Anomaly.Deviation - Procedural : Clearance Anomaly.Deviation - Procedural : Published Material / Policy Result.Flight Crew : Executed Go Around / Missed Approach

# Narrative: 1

Altitude deviation of approximately 350-400 feet during autopilot-flown published MAP GPS Runway 05. Deviation took place "between" ATC handoff from center to approach - neither controller raised/mentioned any concern about the altitude and no vertical separation was reported as lost. Reprogramming FMS (deleting current MAP, adding new destination) also was required during this hand-off. Altitude of 4,000 set and armed in KFC-150 AP (AP altitude functions had been somewhat erratic on earlier approach). Altitude capture function did not hold 4,000 MSL - continued climb noted and I immediately disengaged AP and hand-flew the aircraft to assigned altitude.

CAVEATS and recommendations: 1) The installed AP is 16+ years old and is interfacing with new technology navigators and 3-screen PFD/MFDs. The FMS/interfacing displays have developed faster than many "older" autopilots common in GA today. This might be considered as part of testing/development (and perhaps a FAA WINGS computer training session related to these interfaces!) - how new panel technology will interface with older APs. That info is certainly not in the older AP manuals! 2) The ATC hand-off from center to approach took place during the busy MAP procedure (prior to reaching published MAP holding waypoint). Granted, this is no big deal for a crewed airplane as the Pilot Not Flying (PNF) normally handles the COM/NAV/FMS, etc....hand-offs at this time for single-pilot GA are very difficult. Waiting an extra minute or two for the pilot to enter the hold/level off/reduce workload and then discuss next approach or other options may help prevent task saturation in single-pilot IFR operations. Perhaps this is information that might be helpful to controllers when dealing with smaller GA aircraft (single pilot) on a MAP procedure. Thank you for allowing me to share my thoughts and kudos to this excellent reporting program.

# Synopsis

A PA-34 pilot reported his aircraft's sixteen year old autopilot is interfaced with a new technology FMS. As center handed him off to approach, he was reprogramming for a practice GPS approach but his autopilot failed to capture an altitude resulting an overshoot and very high workload. Single pilot operations with mixed new and old technology creates special demands.

# Time / Day

Date : 201504 Local Time Of Day : 1201-1800

# Place

Locale Reference.Airport : MKE.Airport State Reference : WI Altitude.MSL.Single Value : 2500

# Environment

Flight Conditions : VMC Light : Daylight

#### Aircraft

Reference : X ATC / Advisory.TRACON : MKE Aircraft Operator : Air Carrier Make Model Name : Commercial Fixed Wing Crew Size.Number Of Crew : 2 Operating Under FAR Part : Part 121 Mission : Passenger Flight Phase : Initial Approach Airspace.Class C : MKE

# Component

Aircraft Component : Altimeter Problem : Improperly Operated

#### Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function.Flight Crew : Pilot Flying Function.Flight Crew : Captain Qualification.Flight Crew : Air Transport Pilot (ATP) ASRS Report Number.Accession Number : 1256107 Human Factors : Workload Human Factors : Other / Unknown Human Factors : Confusion Human Factors : Situational Awareness

# Events

Anomaly.Deviation - Altitude : Overshoot Anomaly.Deviation - Procedural : Published Material / Policy Anomaly.Deviation - Procedural : Clearance Anomaly.Inflight Event / Encounter : CFTT / CFIT Detector.Person : Air Traffic Control When Detected : In-flight Result.Flight Crew : Returned To Clearance Result.Flight Crew : Became Reoriented Result.Air Traffic Control : Issued Advisory / Alert

#### Assessments

Contributing Factors / Situations : Human Factors Contributing Factors / Situations : ATC Equipment / Nav Facility / Buildings Primary Problem : Human Factors

#### Narrative: 1

During climb out, I put the ACARS digital ATIS function on auto-updates as soon as we climbed above 10,000 feet. I knew the weather situation was going to be changing rapidly in MKE, because a frontal system was moving through the upper Midwest. The Terminal Area Forecast (TAF) was calling for rain to give way to an improving trend throughout the forecast period. It was also forecasting gusty winds from the west.

The initial digital ATIS we received from MKE indicated that they were using the Localizer approach to Runway 25L, and that the winds were gusty, but the visibility was good under a medium-to-low overcast. About an hour later, we received a new digital ATIS that indicated the winds had died down considerably and that MKE was now landing on Runway 1L. We loaded and briefed the ILS to 1L. During descent, we ran the descent checklist (including checking the altimeter setting) during the descent.

The altimeter setting that we had written down on the TOLD card for MKE was 29.44 inches. That seemed unusually low to me, so I asked my first officer to double-check it. He pulled up the newest digital ATIS report from MKE, which we had just received, and this report said the altimeter was approximately 30.26 inches (I don't recall exactly, but I believe it was 30.26 inches....whatever it was, it was significantly higher than 29.44 inches). It's important to note that I don't recall checking the time stamp on this newest ATIS report. It had arrived automatically, so I believed it was the most up to date ATIS report available.

Chicago Center had us on pretty much a continuous, flight idle descent toward MKE, as we had been kept somewhat high during our arrival (I'm presuming this is because ORD arrivals under us prevented lower altitudes sooner. From the time we left FL180 until we were cleared for the approach, we never leveled off a single time.

We were cleared to cross LYSTR at 11,000 feet and to intercept the Localizer for 25L at LYSTR. The first officer queried the Chicago Center controller about this, because our digital ATIS was reporting that MKE was landing on 1L. The controller called MKE on the landline, and came back and reported to us that they were still landing on Runway 25L, that our previous clearance was in effect, and to contact MKE Approach. I also don't recall whether we checked in with the ATIS code, or whether the controller acknowledged it. I was caught off-guard by the runway switch and was pulling out my chart for the new approach, so I wasn't closely monitoring the radio at that exact moment.

We were now somewhat behind the power curve, mentally speaking. We had briefed for a precision approach to one runway, and were now being told to plan for a straight-in nonprecision approach at the last minute. We were now about 30 miles from the airport, continuing our descent, and we had to now plan for a completely different approach (including a switch to a non-precision approach), and a different taxi route. We got the

briefing completed, but I was feeling a little bit rushed.

We were eventually cleared for the Localizer Approach and we began descending on profile at the stepdown fixes. Upon reaching 2500 feet MSL prior to the FAF, we broke out of the clouds and we could see we were over Lake Michigan. It looked like we were lower than normal for being so far away from the airport, but nonprecision approaches can be deceptive, so I didn't think much else about it. My first officer mentioned something about the radar altimeter indicating that we were only 1300 feet above the surface, but his comment didn't completely register with me at the time. I don't recall him expressing any serious concern over this fact, and I took it to mean he was just giving it to me as a means of situational awareness.

We crossed the FAF and began descending toward 1200 feet MSL, which was the MDA. At about this time, the controller asked us to verify our altimeter setting was 29.44 inches. We replied we had 30.26. He told us he thought we were a little low, and that the altimeter at the field was showing 29.44. When I dialed in the new altimeter setting, our altimeter readout jumped from approximately 2,000 feet MSL to about 1300 feet MSL. The autopilot immediately captured the preset altitude of 1200 feet. We did not descend out of MDA until the runway and Precision Approach Path Indicator (PAPI) was in sight, and when we were about two miles from the runway, in a position to land.

On the way back, I discovered that the digital ATIS reports I was receiving were erroneous. I received multiple ATIS reports within minutes of each other, with each one time stamped from a different part of the day. Some of the reports looked like reports I had seen the day prior when a storm front passed through. When comparing the time stamps with the actual current time, some of the reports appeared to be at least 12 hours old (if not older).

As crazy as this sounds, I think something went wrong with either [airborne data communications], the FAA computers, or with our company computer network, and the digital ATIS reports that were being sent to air crews for a while were archived ATIS reports from a day or more prior. I confirmed this by talking with a couple of other crews who had experienced weird ATIS problems. My dispatcher said he had received at least one other report indicating there was a problem there as well.

Having a current altimeter setting is absolutely crucial, especially on a nonprecision approach. There are so many red flags that could have caught this issue before the controller queried us:

(1) The fact that the ATIS was reporting Runway 1L was in use when the controllers told us to expect 25L

(2) The fact that we just looked low when I leveled out over Lake Michigan prior to the FAF.

(3) The radar altimeter could have alerted us to the fact that as we crossed the FAF, we were about 500 - 700 feet lower than expected. However, I've seen the radar altimeter on this airplane act a little weird over water-based surfaces, so it would have been easy to discount the radar altimeter readout since our approach was over Lake Michigan.

(4) That feeling of being rushed should have alerted me to the fact that I was going to be too preoccupied to monitor the radio when the pilot monitoring checked in with the controller. Any time I'm feeling rushed in an airplane, that should be a signal to me that

something's going to get missed.

(5) Perhaps it's wise to ask for the RNAV/GPS approach in nonprecision approach situations, if one is available. The virtual "snowflake" glidepath guidance would have provided better situational awareness about where we were in relationship to the vertical profile.

(6) ALWAYS, ALWAYS, ALWAYS check the time stamp on the digital ATIS!

# Synopsis

A Regional Jet Captain reports being advised by ATC during a non-precision approach to MKE that he is low. The altimeter setting was actually 29.44 instead of the 30.26 setting obtained from the digital ATIS received over ACARS.

# Time / Day

Date : 201504 Local Time Of Day : 1201-1800

# Place

Locale Reference.Airport : DFW.Airport State Reference : TX

#### Environment

Flight Conditions : IMC Light : Daylight Ceiling.Single Value : 1000

# Aircraft

Reference : X ATC / Advisory.TRACON : D10 Aircraft Operator : Corporate Make Model Name : Super King Air 350 Crew Size.Number Of Crew : 2 Operating Under FAR Part : Part 91 Flight Plan : IFR Mission : Passenger Nav In Use : GPS Flight Phase : Descent Route In Use : Vectors Route In Use.STAR : BOWIE THREE Airspace.Class B : DFW

# Person

Reference: 1 Location Of Person.Aircraft: X Location In Aircraft : Flight Deck Reporter Organization : Corporate Function Flight Crew : Captain Function.Flight Crew : Pilot Flying Qualification Flight Crew : Flight Instructor Qualification.Flight Crew : Air Transport Pilot (ATP) Qualification Flight Crew : Multiengine Qualification.Flight Crew : Instrument Experience.Flight Crew.Total: 3907 Experience Flight Crew Last 90 Days : 61 Experience Flight Crew.Type: 1001 ASRS Report Number. Accession Number: 1254520 Human Factors : Situational Awareness Human Factors : Human-Machine Interface

# Events

Anomaly.Deviation - Track / Heading : All Types Anomaly.Deviation - Procedural : Clearance Anomaly.Deviation - Procedural : Published Material / Policy Detector.Person : Air Traffic Control When Detected : In-flight Result.Flight Crew : Became Reoriented Result.Flight Crew : Returned To Clearance Result.Air Traffic Control : Issued Advisory / Alert Result.Air Traffic Control : Issued New Clearance

#### Assessments

Contributing Factors / Situations : Procedure Contributing Factors / Situations : Human Factors Contributing Factors / Situations : Aircraft Primary Problem : Human Factors

#### Narrative: 1

Our aircraft is a King Air 350 with the G1000 retrofit avionics package. We were cleared to DFW via Bowie Three Arrival PHN transition. I loaded PHN.UKW3 into the G1000 when we got the clearance on the ground. At that time we did not know if it was north or south flow into DFW so I selected south flow 17B transition when loading the Arrival. We briefed the route before takeoff but didn't brief the Arrival until we were airborne. Our G1000 is equipped with a current chart subscription. In addition we have a Garmin 696 and an iPad with current charts as well. Sometime before arriving at SPS we brief the Arrival on the G1000 charts. I noticed that the G1000 only had the first page of the Arrival Chart in the G1000 so we looked at the iPad and notice it had more than 1 page for the Bowie Three Arrival. In fact it has 3 separate pages for the Bowie Three Arrival loaded into the G1000 was UKW BEWTS NCONA when it should have been UKW DEBBB JOVEM HIKAY so I manually entered in the waypoints. Once we were advised that we should expect 36R I reloaded the Arrival and selected 36B for the transition. This added SILER to the Arrival.

We read the Notes on page 3 of the Bowie Three and saw on the bottom of the page:

"...PROPS LANDING NORTH: UKW to DEBBB INT, to JOVEM INT, to HIKAY INT depart heading 160, expect Radar vectors to final approach course."

Out of 3 pages worth of Arrival information this is the only place that mentioned PROPS. Not easy to find or readily displayed information.

We briefed that we needed to turn to a 160 heading after HIKAY even though the G1000 had the TURBOJET route as the only one available in the database for that Arrival showing HIKAY to SILER then Heading 175 after SILER. We tried to find a way to change the G1000 from thinking we were a TURBOJET to a PROP but couldn't find any options for changing this or how to load the Arrival with the PROP route and not the TURBOJET route. Once we had briefed the Arrival and were given an expect runway 36R we loaded the ILS to 36R. It was IMC with 1000 overcast and expect ILS was on ATIS. As we were on the Arrival we loaded the ILS 36R into the G1000 and brief the approach. Next thing I remember we were given a 160 heading and we both thought this was before reaching HIKAY which would save us from having the manually go to 160 heading after HIKAY. A few minutes later we were given a 170 heading then more vectors for the ILS 36R approach.

We were asked to call TRACON for a possible pilot deviation after we were on the 170

heading. After landing we called and talked with the TRACON center manager. He said that they think we overflew HIKAY and continued on the 129 heading to SILER and was then given the 160 heading after HIKAY not before it - instead of turning to 160 heading at HIKAY. We both said that we thought we were given the 160 heading before reaching SILER.

I learned several lessons from this experience, as follows:

The G1000 FMS Navigation Database in the King Air 350 is configured to think it is in the TURBOJET category and not the PROP category and there is no apparent way to change this.

The G1000 Chart View does not always show All the available Charts for an Arrival - it showed the 1st page only and had no indications of additional pages. So additional sources should be reviewed.

I should have deleted SILER from the Arrival to prevent any confusion since this waypoint was for TURBOJETS not PROPS. I think leaving SILER on the route hurt our Situational Awareness.

I could have monitored the automation better and not been so Automation Dependent. So often I program the FMS and turn the autopilot on and trust that the right thing will be done while I work on something else (checklist, briefing an approach, etc.) but something as simple as accidentally leaving a fix in the flight plan allows the aircraft to auto sequence without requiring awareness or involvement by me - the pilot.

In addition, it is very disheartening how complicated the Arrival system has become. It should not take 3 pages worth of information to thoroughly review to find 1 note on the bottom of the last page that applies to PROP operations - it would be very helpful if there was a note on the pictorial to indicate more information is required. Or better yet have separate TURBOJET and PROP arrivals. Also, it is confusing to have so many different routes and fixes on the same Arrival so close together. I realize that the heart of this incident was probably due to over automation dependency and loss of situational awareness but it is hard not to use automation when you're task saturated (ie looking for other traffic, briefing approaches, looking for frequencies etc.) I am not sure how but it seems the system needs to be simplified to be safer. I hope this information can be of some help to the ASRS program.

# Synopsis

A BE350 Captain reports that his G1000 with a current chart subscription does not indicate that there is more than one page to the BOWIE3 arrival to DFW. Only on the third page is it noted that the procedure is slightly different for turboprops, requiring a different heading from a different fix. The BOWIE3 for turboprops cannot be line selected in the GPS and a track deviation occurs when the aircraft passes the turn point.

# Time / Day

Date : 201504 Local Time Of Day : 0001-0600

# Place

Locale Reference.ATC Facility : WRI.TRACON State Reference : NJ Altitude.MSL.Single Value : 5500

# Environment

Flight Conditions : VMC Weather Elements / Visibility : Haze / Smoke Weather Elements / Visibility.Visibility : 4 Light : Daylight

# Aircraft

Reference : X ATC / Advisory.TRACON : WRI Aircraft Operator : Personal Make Model Name : Skyhawk 172/Cutlass 172 Crew Size.Number Of Crew : 1 Operating Under FAR Part : Part 91 Flight Plan : IFR Mission : Personal Nav In Use : GPS Flight Phase : Climb Route In Use : Vectors Airspace.Class E : WRI

# Component

Aircraft Component : Altitude Hold/Capture Aircraft Reference : X Problem : Malfunctioning

# Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Personal Function.Flight Crew : Pilot Flying Function.Flight Crew : Single Pilot Qualification.Flight Crew : Flight Instructor Qualification.Flight Crew : Commercial Qualification.Flight Crew : Multiengine Qualification.Flight Crew : Instrument Experience.Flight Crew.Total : 1600 Experience.Flight Crew.Last 90 Days : 12 Experience.Flight Crew.Type : 300 ASRS Report Number.Accession Number : 1254263 Human Factors : Situational Awareness Human Factors : Human-Machine Interface Human Factors : Distraction

#### Events

Anomaly.Aircraft Equipment Problem : Less Severe Anomaly.Deviation - Altitude : Excursion From Assigned Altitude Anomaly.Deviation - Track / Heading : All Types Anomaly.Deviation - Procedural : Clearance Detector.Person : Air Traffic Control When Detected : In-flight Result.Flight Crew : Returned To Clearance Result.Flight Crew : Became Reoriented Result.Air Traffic Control : Issued Advisory / Alert Result.Air Traffic Control : Issued New Clearance

#### Assessments

Contributing Factors / Situations : Procedure Contributing Factors / Situations : Human Factors Contributing Factors / Situations : ATC Equipment / Nav Facility / Buildings Contributing Factors / Situations : Aircraft Primary Problem : Human Factors

#### Narrative: 1

I was unable to obtain clearance on the ground at Robbinsville (N87) from Mc Guire approach and so took off from Robbinsville and proceeded to Robbinsville VOR my first NAVAID. I received clearance for the flight which included a different route from what was filed. The route filed included a route to LGA and then on to BDR and then MAD then ZZZ VOR. The clearance however, had me fly to DIXIE and then V16 to JFK then BDR to MAD and to ZZZ VOR, via airways.

After reaching RBV, Mc Guire directed me to climb to 5,000, and direct to DIXIE. The aircraft had a STEC 55 autopilot with altitude hold. I engaged the heading bug and proceeded to DIXIE, referencing the Garmin 430 data. During the climb, I began programming the route issued in clearance. Once 5000 feet was reached, I engaged the altitude hold and continued to enter the route into the Garmin 430. At this time, the heading selected using the heading bug was inadequate to fly direct to DIXIE, and McGuire approach issued a warning and a heading of 090 to reach DIXIE.

I adjusted the heading to 090 and continued the climb and the Garmin 430 programing. After reaching 5000, I engaged the altitude hold and continued programing the last few waypoints, however, during this time, the altitude hold failed, and Mc Guire approach again issued an alert, as my altitude had reached 5500. McGuire Approach asked me to state my intentions, and I reiterated my plan to fly to DIXIE and thence to JFK. Mc Guire Approach then asked the Flight conditions, and I noted to him the Haze. I apologized for the deviation while he explained that there were other aircraft at 4000 and 6000 he was working with. I returned to 5000 feet and arrived at DIXIE and proceeded to V16 and onward with no other issues.

Things I should have done: Fly the first few waypoints and complete initial climb before programing the GPS. This would have prevented distracting effect of programing the GPS in flight. It is very important to note that Programing a GPS is a flight management task

and does not constitute navigation. It is crucial to recognize that the initial climb and navigation is the most crucial part of a flight, as it takes place near airports and therefore has a high traffic density and corresponding demand for peak airmanship. Programming the GPS can occur during cruise when the aircraft is straight and level, and the pilot's attention can be afforded to less critical tasks such as programming the GPS.

Programming the GPS is best done on the ground, however, it cannot be done without a clearance. Airports such as Robbinsville should have a better way of communicating with a clearance delivery agency, typically, this is the approach control of a nearby large airport. I tried to find a frequency I could reach Mc Guire with, in the AFD and sectional. It was not until I reached the end of the runway that I spotted a fading sign with a frequency that would reach Mc Guire. This information should be as easy to find as CTAFs and AWOS/ATIS, which are included on sectionals. With the advent of Cellphones, Phone numbers can also be published on sectionals, in tabular form indicating the airports covered by each approach facility responsible for issuing clearances to aircraft located at them.

It should not be forgotten that it is understood that the PIC is responsible for following clearances, and This was not done, but will be noted for future flights of this nature.

# Synopsis

C172 pilot reports picking up his IFR clearance airborne and receiving a different route than filed. Attempting to program the GPS while climbing, both track and altitude deviations occur and are noted by ATC.

# ACN: 1253680 (42 of 50)

#### Time / Day

Date : 201504 Local Time Of Day : 1201-1800

#### Place

Locale Reference.Airport : ZSPD.Airport State Reference : FO

#### Environment

Flight Conditions : VMC

#### Aircraft

Reference : X ATC / Advisory.TRACON : ZSPD Aircraft Operator : Air Carrier Make Model Name : B777 Undifferentiated or Other Model Crew Size.Number Of Crew : 4 Operating Under FAR Part : Part 121 Flight Plan : IFR Mission : Passenger Nav In Use : INS Nav In Use : GPS Nav In Use : FMS Or FMC Flight Phase : Descent Route In Use.STAR : SAS 11E

#### Component

Aircraft Component : GPS & Other Satellite Navigation Aircraft Reference : X Problem : Malfunctioning

#### Person: 1

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function.Flight Crew : Pilot Not Flying Function.Flight Crew : Relief Pilot ASRS Report Number.Accession Number : 1253680 Human Factors : Confusion

# Person: 2

Reference : 2 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function.Flight Crew : Pilot Not Flying Function.Flight Crew : Relief Pilot ASRS Report Number. Accession Number : 1253683 Human Factors : Confusion

#### Person: 3

Reference : 3 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function.Flight Crew : Pilot Not Flying ASRS Report Number.Accession Number : 1253684 Human Factors : Confusion

#### Person: 4

Reference : 4 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier ASRS Report Number.Accession Number : 1253688 Human Factors : Confusion

# Events

Anomaly.Aircraft Equipment Problem : Less Severe Anomaly.ATC Issue : All Types Anomaly.Deviation - Track / Heading : All Types Anomaly.Deviation - Procedural : Clearance Detector.Automation : Aircraft Other Automation Detector.Person : Air Traffic Control Detector.Person : Flight Crew When Detected : In-flight Result.Flight Crew : Became Reoriented Result.Flight Crew : Requested ATC Assistance / Clarification Result.Air Traffic Control : Issued Advisory / Alert Result.Air Traffic Control : Issued New Clearance Result.Aircraft : Equipment Problem Dissipated

# Assessments

Contributing Factors / Situations : Environment - Non Weather Related Contributing Factors / Situations : Aircraft Primary Problem : Ambiguous

#### Narrative: 1

Descending on SAS 11E STAR past SASAN with all four pilots in cockpit. Shanghai app control called us and stated that we were 2 miles right of course and requested that we correct back to course. Navigational Display (ND) showed us on course for the selected STAR. Captain (CA) Pilot not Flying (PNF) confirmed with approach the assigned STAR and was again told that we were off course. We had no initial indications that we were off course. CA requested radar vectors and app control did not understand. CA stated that we apparently [were] having navigation problems and requested a heading. App assigned a heading to fly and cleared us direct to EKIMU. As CA again was explaining that we could not determine if we were flying direct to EKIMU if we were having navigation issues. I noticed that ND was now NOT showing GPS but was showing INERTIAL. We had still NOT received any EICAS message (that I could see from the 2nd observers seat). While CA was verifying position we received a UNABLE RNP EICAS message. CA then found that FMC was showing up to a 20 mile difference between GPS and INERTIAL navigation positions and found that on the GPS page the L GPS data was now blank. We were given vectors to join the ILS 34R approach and landing was uneventful. Sometime after landing rollout I noticed that GPS was again showing on the ND.

# Narrative: 2

Upon approach into ZSPD leaving approximately 13,000 feet the approach controller asked us to get back on course. LNAV was engaged showing us correctly on the course with no cross track error. Correct STAR was also selected and active. Approach informed us that we were 2 miles off course and asked us to rejoin the arrival. We showed exactly on the magenta line.

Several seconds later UNABLE RNP EICAS message displayed. We informed approach controller that we were having navigation problems and ran UNABLE RNP checklist. Approach controller advised us to turn immediately for traffic avoidance. No TCAS events notes.

Controller apparently did not understand our situation due to language barrier. Though we continued to ask for radar vectoring he gave us fixes. At some point he then began to give us vectors. L GPS showed 20 miles off. No map shift was observed at any time. After landing GPS appeared to rectify itself.

We informed maintenance and the outbound crew of the situation.

This event is very disconcerting. What if this had happened in IMC and mountainous terrain? The aircraft literally showed itself on the course while being at least 2 miles off of the airway. Our only alert was UNABLE RNP shortly after ATC had advised us of the issue. There was no way to correct because the airplane believed itself to be on course. The aircraft should automatically disregard the information given by a malfunctioning GPS. It did not.

# Narrative: 3

While on the SAS 11E RNAV STAR into ZSPD we just passed SASAN when the controller told us we were 2 miles off course and to correct. We were on centerline of the STAR selected and asked the controller to confirm which STAR we should be on. He confirmed the STAR we were on and all 4 pilots were on the flight deck and thought we were on course. A short time after the controller called we got a checklist message "NAV unable RNP". I was Pilot Monitoring and tried to tell the controller we had a NAV problem and asked for a vector to get back on course. Language understanding was a problem and the controller finally gave us a vector but tried to get us to go direct to a fix while we were trying to tell him we weren't confident we could. I ran the checklist and my Relief pilot took some screenshots showing the L GPS was not showing any data. We finally got the checklist done and got vectors on the approach and shot the ILS with no more errors. When we got on the ground the L GPS was back with data and was aligned with the other 2.

# Narrative: 4

On RNAV arrival into ZSPD, ATC informed us we were two miles left of course. There were no indications on the flight deck as to this situation. We asked ATC for a heading as we were showing ourselves to be on the proper track. After getting a corrective heading, the check list appeared addressing "unable RNP". After getting headings from ATC, the flight was continued to an uneventful approach and landing without further incident.

No way to avoid a recurrence as it was an aircraft navigation problem that took place.

#### Synopsis

B777 flight crew arriving ZSPD is informed they are off course by ATC, but no deviation can be detected in the cockpit. An EICAS message "NAV unable RNP" is then displayed and the crew requests vectors to the ILS, which are eventually provided. Once on the ground the left GPS returns to normal operation.

# Time / Day

Date : 201503 Local Time Of Day : 1201-1800

#### Place

Locale Reference.Airport : ORF.Airport State Reference : VA Altitude.MSL.Single Value : 800

# Environment

Flight Conditions : VMC Weather Elements / Visibility.Visibility : 5 Light : Daylight Ceiling.Single Value : 2500

# Aircraft

Reference : X ATC / Advisory.TRACON : ORF Aircraft Operator : Personal Make Model Name : Bonanza 35 Crew Size.Number Of Crew : 1 Operating Under FAR Part : Part 91 Flight Plan : IFR Mission : Personal Nav In Use : GPS Nav In Use.Localizer/Glideslope/ILS : Runway 23 Flight Phase : Final Approach Airspace.Class C : ORF

# Component

Aircraft Component : ILS/VOR Aircraft Reference : X Problem : Improperly Operated

#### Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Personal Function.Flight Crew : Pilot Flying Function.Flight Crew : Single Pilot Qualification.Flight Crew : Instrument Qualification.Flight Crew : Private Experience.Flight Crew.Total : 2600 Experience.Flight Crew.Total : 2600 Experience.Flight Crew.Type : 800 ASRS Report Number.Accession Number : 1252292 Human Factors : Human-Machine Interface Human Factors : Situational Awareness

# Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude Anomaly.Deviation - Procedural : Clearance Anomaly.Inflight Event / Encounter : CFTT / CFIT Detector.Person : Air Traffic Control When Detected : In-flight Result.Flight Crew : Returned To Clearance Result.Flight Crew : Became Reoriented Result.Air Traffic Control : Issued Advisory / Alert

# Assessments

Contributing Factors / Situations : Human Factors Contributing Factors / Situations : Aircraft Primary Problem : Human Factors

#### Narrative: 1

While I was flying an ILS approach to Runway 23 at ORF, the approach controller reported to me that he had received a low altitude alert. I informed him that I was in good VMC, and I elected to continue at my altitude (800 feet MSL, over open water) rather than climb. He informed me a second time, at which point I climbed to the altitude for the approach, continued, and landed without incident.

The situation developed as follows: In my airplane I have a GNS 430W (NAV 1) and an SL30 NAV/COMM (NAV 2). My standard procedure is to use NAV2 for an ILS, reacquired. Since my experience is that once an ILS signal comes in, it stays in (especially since I was not at a sever angle to the approach course) I was not sure I could trust NAV 2, so I set up the ILS frequency in NAV 1, with the intention of switching the CDI from GPS to VLOC (VOR/LOC). I was given direct KLINK and then fly the approach (no Procedure Turn) so I (re)programmed the GPS KLINK-KORF. Upon reaching KLINK I turned in on the approach, but I neglected to switch the CDI. However, I thought that I had done so, and so followed the indications on NAV 1, which had me on course laterally (which was correct) and also vertically (which, of course, was not). I also overlooked the fact that the GS (not received) flag was showing on NAV 1.

Basically, I just saw what I expected to see. I will have to be more diligent in the future. Upon my return home later that afternoon, when I had to fly an ILS (ceiling 800 overcast), I selected the ILS on both NAV 1 and NAV 2, and got identical needle movement, so there had been nothing wrong with NAV 2 and the ILS signal for the approach at ORF must just have been weak. By the time of the flight home, I had figured out what had happened, and was trying not only to be extra careful on the approach, but also deliberately comparing the two ILS signals to see whether I had a problem with my instruments.

# Synopsis

BE35 pilot reports descending early on the ILS RWY 23 into ORF due to improper setup of Nav panel. ATC issues a low altitude alert and the reporter eventually climbs back to 1,600 feet from 800 feet.

# ACN: 1251941 (44 of 50)

#### Time / Day

Date : 201504 Local Time Of Day : 0001-0600

#### Place

Locale Reference.ATC Facility : BOI.TRACON State Reference : ID

#### Environment

Flight Conditions : VMC Light : Night

# Aircraft

Reference : X Aircraft Operator : Air Carrier Make Model Name : Medium Transport, Low Wing, 2 Turbojet Eng Crew Size.Number Of Crew : 2 Operating Under FAR Part : Part 121 Flight Plan : IFR Mission : Passenger Nav In Use : FMS Or FMC Flight Phase : Initial Approach Route In Use : Visual Approach Airspace.Class E : BOI

#### Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function.Flight Crew : First Officer Function.Flight Crew : Pilot Flying Qualification.Flight Crew : Air Transport Pilot (ATP) ASRS Report Number.Accession Number : 1251941 Human Factors : Confusion Human Factors : Situational Awareness Human Factors : Training / Qualification

# Events

Anomaly.Inflight Event / Encounter : CFTT / CFIT Detector.Automation : Aircraft Terrain Warning Detector.Person : Flight Crew When Detected : In-flight Result.Flight Crew : Took Evasive Action Result.Flight Crew : Became Reoriented Result.Air Traffic Control : Issued Advisory / Alert

#### Assessments

Contributing Factors / Situations : Human Factors Contributing Factors / Situations : Airport Primary Problem : Human Factors

#### Narrative: 1

Captain was right off IOE after transitioning to airplane but, had a great deal of experience as a CRJ Captain. First Officer (FO) has 300 hours in type with no other jet experience. After a late start due to Captain scheduling issues, departing at XA00 body clock time, flight departed to BOI. The flight was conducted normally and as planned all the way through the arrival. VMC conditions prevailed at destination with calm winds. BOI landing west on 28R/28L. We were the only aircraft in the area (the same Controller was operating Approach, Tower and Ground - little to no guidance received during the arrival/approach) and were cleared for the visual about 20 nm west of the field at 10,000 feet MSL. We requested runway 28R to shorten taxi time. The only approach to 28R is the RNAV GPS Y and this was the approach briefed to back up a visual. Being new to the airline industry, the PF/FO asked the captain for advice on shooting a visual to an airport without guidance from ATC on to the approach course. Captain. suggested setting altitude preselect to 4,000 feet and turn inside the FAF, even though we briefed flying outside of the FAF and using VNAV path for vertical guidance beginning at 6000. PF set 4000 in the altitude preselect and FLCH was selected for the descent. From the arrival, the turn to final would be approx. 115 degrees. Using the heading bug, PF started turning to final. Passing through approx. 4,400 feet, we received a communication from ATC stating, "Just to give you a heads up, I just got a terrain prox. warning." We acknowledged, and continued. Approximately 10 seconds later we received an aural warning for terrain that occurred once and then went away. Both the pilots were confused at first and were certain no real threat was present. PF added power, disengaged the autopilot, and climbed 200-300 feet while turning to the runway which was in sight. PF called for configuration changes and the aircraft was configured and on glide slope according to the VASI for 28R by 1200 AGL. Landing and rollout occurred normally and the flight concluded.

There were several contributing factors that lead to the unplanned terrain event.

1. FO with little experience in non-controlled environments and Capt. new to aircraft. The Capt. had not flown into BOI recently and the FO had never landed west on 28L/28R. Airport familiarity was a key factor in this situation.

2. Fatigue after a long day with a long sit for the FO and Capt. rescheduled to increase his flying by 3 hours.

- 3. Inadequate brief when shooting a visual in nearly uncontrolled conditions.
- 4. Deviations from the briefed plan.

5. As the PF, I should have stuck to what I had planned for the approach and entered a downwind at 6,000 feet and turned base just outside the FAF and used VNAV PATH as vertical guidance to the runway. Especially at an airport that the crew was not 100% familiar with, at night, and with terrain surrounding.

6. Inadequate experience in uncontrolled environment.

7. Inadequate training/experience when being "cut loose" on a visual.

Flight crews should thoroughly brief all possible approaches and options before entering the terminal environment. Terrain awareness at unfamiliar airports should be thoroughly briefed. Flight crews should not deviate from briefed plans, unless flight safety is at risk or operational concerns require action. There needs to be more training for new hires regarding visual approaches and uncontrolled airport operations.

# Synopsis

Regional Jet First Officer describes a night visual approach to Runway 28R at BOI, during which the Tower issues a low altitude alert then the aircraft GPWS annunciates terrain warning. The aircraft is climbed 2-300 feet and the warning stops and the visual approach is continued to landing.

# ACN: 1249874 (45 of 50)

#### Time / Day

Date : 201503 Local Time Of Day : 1801-2400

#### Place

Locale Reference.ATC Facility : CZQX.ARTCC State Reference : NF Altitude.MSL.Single Value : 35000

# Environment

Flight Conditions : VMC Light : Night

#### Aircraft

Reference : X ATC / Advisory.Center : CZQX Aircraft Operator : Air Carrier Make Model Name : B767 Undifferentiated or Other Model Crew Size.Number Of Crew : 3 Operating Under FAR Part : Part 121 Flight Plan : IFR Mission : Passenger Nav In Use : FMS Or FMC Flight Phase : Cruise Route In Use : Oceanic

#### Component

Aircraft Component : FMS/FMC Aircraft Reference : X Problem : Design

Person: 1

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function.Flight Crew : Pilot Not Flying Function.Flight Crew : First Officer Qualification.Flight Crew. Total : 20000 Experience.Flight Crew.Total : 20000 Experience.Flight Crew.Last 90 Days : 250 Experience.Flight Crew.Type : 15000 ASRS Report Number.Accession Number : 1249874 Human Factors : Human-Machine Interface Human Factors : Confusion

Person : 2

Reference : 2 Location Of Person.Aircraft : X Location In Aircraft : Crew Rest Area Reporter Organization : Air Carrier Function.Flight Crew : Captain Function.Flight Crew : Pilot Not Flying Qualification.Flight Crew : Air Transport Pilot (ATP) ASRS Report Number.Accession Number : 1250132

# Person: 3

Reference : 3 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function.Flight Crew : First Officer Function.Flight Crew : Relief Pilot Function.Flight Crew : Pilot Not Flying Qualification.Flight Crew : Air Transport Pilot (ATP) Experience.Flight Crew.Total : 14000 Experience.Flight Crew.Last 90 Days : 240 Experience.Flight Crew.Type : 10000 ASRS Report Number.Accession Number : 1250138

# Events

Anomaly.Aircraft Equipment Problem : Less Severe Anomaly.ATC Issue : All Types Anomaly.Deviation - Track / Heading : All Types Anomaly.Deviation - Procedural : Clearance Detector.Person : Air Traffic Control When Detected : In-flight Result.Flight Crew : Became Reoriented Result.Flight Crew : Returned To Clearance Result.Flight Crew : Diverted Result.Air Traffic Control : Issued New Clearance Result.Air Traffic Control : Issued Advisory / Alert

# Assessments

Contributing Factors / Situations : Human Factors Contributing Factors / Situations : Company Policy Contributing Factors / Situations : Aircraft Primary Problem : Ambiguous

# Narrative: 1

Flight plan loaded [prior to departure]. All class II procedures followed, route and waypoints all checked by SOPs. One NAT X waypoint was N48 W050. On check in with Gander Domestic, cleared direct 48 N 50 W. PF [Pilot Flying] selected, and made NICSO, the only intermediate waypoint, an abeam. Confirmed 50W time and next waypoint with Gander. Passing abeam NICSO, did a class II waypoint check. Next waypoint, N48W050, estimated XA11, howgozit time was XA09. Course was close, not expected to match because we were abeam NICSO, not overhead. Distance matched within a few miles. Followed all normal class II SOPs, checked in with Gander Oceanic, etc. Approaching 50W, began waypoint SOPs, got CPDLC to call Gander domestic on VHF.

Controller advised we were 12nm north of 48/50. Checked waypoint, still read N48W050. All GPS on position page dead on. Passed 50W waypoint, and position report page switched. Instead of reporting pos shown as N48 W050, it showed N4812.3 W5006.3. All other oceanic waypoints checked by bringing shorthand (N50 W040) down to scratchpad to expand to lat /long. All were correct.

Gander domestic turned us back to YYT to troubleshoot, but did say that radar showed our course to 50N40W looked accurate. Captain brought back from break, contacted Maintenance control and Dispatch. Examined all possibilities, consensus was that N4812.3 W5006.3 was loaded into FMS by Sabre uplink, but shorthand showed N48W050. None of the class II SOPs will detect this type of error. Captain / Dispatcher made decision to continue, but fuel stop was required, as arrival fuel now projected at 6.0.

# Narrative: 2

The OFP showed our filed oceanic track as X. I independently verified the track waypoints on the OFP with the track message, and the FOs [First Officer] did the same together and circled each waypoint during the flight planning process. One First Officer plotted the route on the Atlantic chart. At the aircraft the route was automatically uploaded into the FMC and verified by all three pilots. I copied the route from the FMC into the Jepp FD-Pro application on my iPad. During flight, the oceanic clearance request was sent approximately 1:15 prior to reaching the oceanic entry point of NICSO. We received the oceanic clearance exactly as requested - Track X, FL350 and M.80. When the oceanic clearance was received, the PM [Pilot Monitoring], read the waypoints from the clearance and I verified each waypoint and put a slash through it on the Master FP as it was read.

En route to NICSO, Gander ATC asked us our estimate for 48degN, 50degW and to verify the following point, which was 50degN, 40degW. This is a routine request from Gander on all oceanic crossings and we complied with the request. Shortly after that, we were cleared directly to 48degN, 50degW which is also routine with Gander ATC at this point. On the FMC LEGS page I selected/executed direct to 48degN, 50degW and selected ABEAM PTS to get a fuel and time reading abeam NICSO. Shortly after this it was time for my break and the IRO came back to the Flight Deck and the switch was made. Not long into my break I was summoned back to the Flight Deck.

When I arrived back on the Flight Deck, we had recently passed both the abeam point for NICSO and the 48degN, 50degW waypoint. However, Gander ATC had called and told us that they showed us 12nm north of the 48degN, 50degW waypoint and would not allow us to proceed any further into oceanic airspace until we could explain the error and assure them that we did not have a navigational issue. At the time, we told them we were unsure why they were showing this course error, so we complied with their request to make a 180 deg turn back towards Canadian airspace. As a safety precaution I turned on all of the aircraft's exterior lights as we made a left turn from our current heading of approximately 095 deg to the assigned heading of 275 deg. We never exceeded the 25nm limit for a Gross Navigational Error and were in radar contact with Gander ATC the whole time. I had the IRO call the Flight Attendants during the turn and assure them that our problem was a navigational issue and not a mechanical, weather or security issue and that we would get back to them with more information when we had time.

The position report for 48degN, 50degW in the FMC showed that we crossed this point at N48deg12.3' and W50deg06.3'. This didn't make sense to us as the oceanic waypoints were verified at least four times prior to our entry into oceanic airspace. Plotting is no longer required, but we plotted our course from the position report coordinates and

confirmed that we were about 12nm north of course. After our turn Gander asked us our intentions, and we requested and were granted a clearance direct to YYT VOR to hold. They descended us to FL320 for traffic, we slowed the aircraft to M.74 and proceeded to the VOR and entered the hold.

While heading to the VOR, we set up communication with our Dispatcher via SATCOM. He added a maintenance technician to the conversation and we discussed the issue with both of them. We had no flags, warnings, EICAS or STATUS messages and all navigation systems seemed to be operating normally. Both of our GPS positions were showing 0.0 and the IRUs were showing from .5 to 2.2 off, but we were navigating via GPS. We verified with Dispatch that the route had been loaded correctly - specifically asking about the oceanic waypoint entries - and discussed options. The maintenance technician suggested that we cycle a circuit breaker for one of the GPS units, but since both of those units were showing 0.0, we chose not to do that. The three of us repeatedly checked all of our navigation equipment, discussed numerous route and landing options/scenarios, and there was good CRM as we talked about mechanical issues, navigation issues, fuel requirements, weather forecasts, FAR 117 limitations and more.

From all of our discussions and troubleshooting, it appeared that the only issue was that somehow the FMC had computed or uploaded the incorrect lat/long for 48degN, 50degW as N48deg12.3' and W50deg06.3'. FO scratch-padded the subsequent oceanic waypoints and they all showed the exact lat/long of each waypoint per the OFP. As we passed over YYT VOR, Gander ATC verified that we were exactly over the VOR. At that point, we determined that there was most likely an upload error/software glitch at the 48degN, 50degW waypoint on our oceanic route. We chose to head back towards Europe and determine a course of action once headed eastbound. We kept Dispatch on the line and discussed landing in either ZZZZ or ZZZZ1. Gander re-cleared us via Track X at M.80, FL360 and we headed back out onto the oceanic track. Before Gander terminated radar service we asked them once more if they showed us on a correct track towards the next waypoint and they said that they did. The time from our turn back to a westerly heading to the point at which we determined that it was most likely an FMC upload/computational error at that waypoint and headed back to 48degN, 50degW, had been approximately 45 minutes.

After we reprogrammed the FMC to continue, it initially showed us landing with fuel of 5.9, then decreased to 5.6 a few moments later as we made some minor adjustments to our speed in the FMC. The TAF for ZZZZ2 (which we had Dispatch verify for us again) was for IFR conditions: TEMPO 2603/2610 4500 -RADZ BKN008. This was not enough landing fuel for these conditions, so we discussed the situation with Dispatch and decided to divert to ZZZ21 to refuel.

I re-programmed the FMC for ZZZZ1 and we explained to the Flight Attendants and then the passengers the details of the problem and the plan to proceed to ZZZZ1 for fuel. Crew legalities were checked and we told Dispatch that we would like to refuel as quickly as possible and proceed to ZZZZ2. He agreed and re-filed us to ZZZZ1. An ZZZZ1 OFP and weather was uploaded to the ACARS. The rest of the flight was uneventful. We landed in ZZZZ1, refueled and continued on to destination. (The actual weather upon our arrival was lower than forecast. The ceiling was 800 feet overcast and the visibility was less than 2 miles.)

# Narrative: 3

I was the relief pilot for this flight. Prior to departure the other FO [First Officer] and I confirmed the routing in the FMC with both the flight plan and the track message. There

was nothing out of the ordinary that we noticed. I had the first break of the flight. When I returned to the cockpit after my break, the Captain gave me a thorough brief on where we were and where we were headed. He briefed me on the Oceanic Clearance and that we were cleared direct to N48W050. I looked at the Oceanic Clearance and looked at the Master Flight Plan (MFP). All the points were circled and one hash was across each point. I also confirmed that we were on the magenta line in LNAV and that N48W050 was the active waypoint both on the FMC but also on the map display. He left on break and I took the left seat. At that point I was the PF [Pilot Flying] and the other First Officer the PNF [Pilot Not Flying].

He checked in with Gander Oceanic shortly after the Captain left. We were assigned our HF freqs and continued to N48W050. About 5 to 10 minutes later, we received a CPDLC message to contact Gander on a VHF freq. This got our attention because it is very atypical. The Gander controller said that we were 12 miles north of course. Immediately looked down at the map and the FMC. Nothing had changed. We were on the magenta line. N48W050 was still the active way point on the FMC and N48W050 was displayed directly in front of us on the map. The First Officer replied to the controller, "No Ma'am. We are showing directly on course to N48W050." We checked the position page on the FMC and the GPS position agreed with the FMC position. We were looking for some kind of discrepancy with the navigation system. While we were looking through the position page we then noticed that we had passed N48W050 but the position now changed and read N4812W05006. We looked at the GPS position again and noted that in fact, that is where we actually were. Neither of us manually entered any position into the FMC. All the points were uploaded on the ground. The captain and First Officer had confirmed all the points after the Oceanic Clearance. The MFP had all the points circled with one hash through each of them. There was quite a bit of confusion in the cockpit at that time as the Captain returned from his break. We both have been FOs on the 767 for over 18 years and had no idea what had just happened. Because we were unsure of our navigation system, we received a vector from Gander and started heading back towards CYYT.

We contacted our dispatcher who linked in Maintenance Control. We also went through the "Navigation-Position Uncertain" checklist. There was nothing wrong with our navigation system. It flew us directly to the point that was programed in the FMC. The 3 of us looked at all the evidence and determined that the point was originally uploaded into the FMC incorrectly during the upload on the ground. None of us manually changed or entered any oceanic waypoints. The actual point that was uploaded appears to be N4812.3W5006.3. This is supported by the fact that there is an actual position report that was generated at this point. Unfortunately that is not what is displayed on the FMC nor the map. This point is displayed as N48W050

After troubleshooting the cause of the problem we no longer had the gas to continue on to destination. We did, however, feel comfortable landing short in ZZZZ. The navigation system of the airplane was working fine. We were confident of our position. All the Oceanic Waypoints were brought down into the scratchpad and we confirmed that they all represented the actual points. We continued to ZZZZ with no further issues.

# Synopsis

B767 flight crew experiences a track deviation while attempting to navigate direct to 48N50W. While the FMC showed 48N50W, the actual position reported to CZQX was N4812.3 W5006.3. CZQX will not allow the flight to continue and the flight turns back while troubleshooting and discussing with Maintenance Control. Eventually, with no navigational anomaly detected the flight is allowed to continue on NAT X with a fuel stop.

# ACN: 1249278 (46 of 50)

#### Time / Day

Date : 201503

# Place

Locale Reference.Airport : LAS.Airport State Reference : NV Altitude.MSL.Single Value : 6500

#### Environment

Flight Conditions : VMC

#### Aircraft

Reference : X ATC / Advisory.TRACON : L30 Aircraft Operator : Air Carrier Make Model Name : A320 Crew Size.Number Of Crew : 2 Flight Plan : IFR Nav In Use : GPS Nav In Use : FMS Or FMC Nav In Use.Localizer/Glideslope/ILS : Runway 19R Flight Phase : Final Approach Route In Use : Visual Approach Route In Use : Direct Route In Use.STAR : GRNPA1 Airspace.Class B : LAS

# Person: 1

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function.Flight Crew : First Officer Function.Flight Crew : Pilot Not Flying Experience.Flight Crew.Total : 14000 Experience.Flight Crew.Last 90 Days : 70 Experience.Flight Crew.Type : 6000 ASRS Report Number.Accession Number : 1249278 Human Factors : Confusion Human Factors : Training / Qualification

#### Person: 2

Reference : 2 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function.Flight Crew : Captain Function.Flight Crew : Pilot Flying Qualification.Flight Crew : Air Transport Pilot (ATP) ASRS Report Number. Accession Number : 1249886 Human Factors : Confusion Human Factors : Training / Qualification

# Events

Anomaly.Deviation - Track / Heading : All Types Anomaly.Deviation - Procedural : Published Material / Policy Anomaly.Deviation - Procedural : Clearance Detector.Person : Air Traffic Control Result.Flight Crew : Returned To Clearance Result.Flight Crew : Became Reoriented Result.Air Traffic Control : Issued New Clearance Result.Air Traffic Control : Issued Advisory / Alert

# Assessments

Contributing Factors / Situations : Procedure Contributing Factors / Situations : Human Factors Primary Problem : Human Factors

# Narrative: 1

ATIS reported visual approaches (not CHARTED VISUALS) to 25L and 19 L/R. Flights ahead of ours were getting 25L and we were on the GRNPA arrival. We briefed a visual to 25L. Upon our change over to Vegas approach we received a change to 19R. We were short on time to make the change. In the rush to change to 19R neither of us found an RNAV visual approach due to the placement in the iPad Jeppsen [FD PRO]. We found an RNAV to 19R but it was GPS. Since we were cleared for the visual we loaded that into the FMC. We were both aware of terrain and selected a safe altitude and made a slight turn to be sure to avoid the terrain and started a decent. ATC noticed our course change and questioned which approach we were flying. Advised we were on the incorrect approach. It was not until we parked that we were able to find the RNAV VISUAL to 19R.

# Narrative: 2

We were on the GRNPA RNAV arrival to LAS and assigned direct TRROP and 250 KTS. Previous aircraft had been sent to RWY 25L and we were briefed and programed for the same. The ATIS reported visual approaches to 25L and 19L/R. Prior to TRROP about 15 nm from LAS we were cleared for RNAV Visual 19R. We opened the APP button in Jeppesen FD PRO and scrolled down to RWY 19R and only found one approach, and that was the RNAV (GPS) 19R. Thinking that was what ATC meant FO replied RNAV GPS 19R and ATC countered with RNAV Visual 19R.

Not seeing any other options we felt that ATC was combining a visual approach and the RNAV. So with terrain and airport reported in sight we inserted that approach and direct to JOGMU and turned right and started descent to 5300 feet. Around 6000 feet ATC complained that we were North of course and to climb to 6500 feet, which we did immediately. We reported the field in sight again and was cleared for a Visual Approach 19R and to slow to final speed. We were high and fast, but a slight purposeful overshoot and level S turn to final got us quickly configured and back on profile for a normal visual approach and landing.

Once at the gate we found the RNAV VISUAL 19 R/L approach under the General category not under RWY 19R. I assume it is placed there because of the 19 R and L designation, but that is not intuitive. It should be listed under each runway it serves and given a distinct

name such as Newark's Turnpike Visual 4L/R, or the River Visual to DCA. Then the ATIS could list the desired Visual approach, which we carefully read at cruise altitude and carefully program with no other distractions. Also, I'm sure ATC could have told us sooner their plan for our runway assignment than to wait until inside of 20 nm out. In hindsight, it's dangerous to make assumptions and I could have refused the last minute assignment and declared we were only set up for the 25L approach or take radar vectors to 19R visual.

# Synopsis

A320 flight crew reports being cleared for the RNAV Visual to Runway 19R at LAS but can't locate the procedure on their iPads. The RNAV (GPS) 19R is loaded believing this is what the controller meant. It is not, and vectors are issued for a standard visual approach.

#### Time / Day

Date : 201503 Local Time Of Day : 0001-0600

#### Place

Locale Reference.Airport : CLE.Airport State Reference : OH Altitude.MSL.Single Value : 3000

# Environment

Flight Conditions : VMC Light : Daylight

#### Aircraft

Reference : X ATC / Advisory.TRACON : CLE Aircraft Operator : Air Carrier Make Model Name : B737-700 Operating Under FAR Part : Part 121 Flight Phase : Climb Route In Use.SID : AMRST4 Airspace.Class B : CLE

Person: 1

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function.Flight Crew : Captain Experience.Flight Crew.Last 90 Days : 140 ASRS Report Number.Accession Number : 1248903 Human Factors : Confusion

Person: 2

Reference : 2 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Air Carrier Function.Flight Crew : First Officer ASRS Report Number.Accession Number : 1248910 Human Factors : Confusion

#### Events

Anomaly.Deviation - Procedural : Published Material / Policy Anomaly.Deviation - Procedural : Clearance Detector.Person : Air Traffic Control Result.Flight Crew : Returned To Clearance Result.Flight Crew : Became Reoriented Result.Air Traffic Control : Issued Advisory / Alert

#### Assessments

Contributing Factors / Situations : Human Factors Contributing Factors / Situations : Chart Or Publication Contributing Factors / Situations : Procedure Primary Problem : Chart Or Publication

#### Narrative: 1

We were cleared from CLE via the AMRST4 Departure SID. During our briefing of the departure procedure, AMRST4, page 10-3A, we noted that the initial climb verbiage for our initial climb referenced 5,000 feet or assigned altitude. We noted that the top altitude referenced 3,000 feet. We set 3,000 feet in the Altitude window and briefed 3,000 feet as the top altitude on the initial climb. We discussed among ourselves how this was confusing, but it seemed that more and more, we are seeing the altitude depictions on SIDS that are presented in a manner that is sometimes difficult to understand.

On the previous flight segment into CLE, we had reviewed the CLE NOTAMs. We saw several, including three NOTAMs for instrument approach procedures and the AMRST4 NOTAM requiring RNAV with GPS. Prior to departure from CLE, we reviewed the NOTAMs again. In both of these reviews, the NOTAM on the AMRST4 that changed the top altitude to 5,000 feet was inadvertently overlooked. Prior to departure, we received our clearance via PDC. The instructions were to "Climb Via the SID," with no other reference to altitude or departure frequency.

After we departed, upon initial check-in with Departure Control, we stated we were climbing to 3,000 feet. We were cleared higher and subsequently the Controller mentioned that there was a NOTAM that changed the top altitude on the SID to 5,000 feet. After reviewing the NOTAMs again, we found that NOTAM.

We overlooked a NOTAM that we should have seen. This was, however, an error of missing the NOTAM while looking rather than not looking at the NOTAMs. As always, a more thorough reading of the NOTAMs would have prevented this. We often place information on the cover sheet of the weather packet that sometimes will include pertinent information, runway length, for example. This NOTAM, on this departure SID is a NOTAM that would be a useful addition to the cover sheet on the weather packet for CLE departures. ATC will sometimes re-state the top altitude in the PDC, either for emphasis or by local policy. It would be very helpful if the top altitude would be stated in the PDC. This could be done in the main body of the PDC or as a remark as is often the case. This would be especially helpful if there is a NOTAM that lists a different altitude than the SID departure plate.

# Narrative: 2

During the departure briefing of the AMRST Four Departure out of Cleveland, we misread the top altitude on the chart. It stated top altitude of 3,000 feet, but the text stated climb to 5,000 feet. We interpreted the top altitude as just that, so we briefed it as 3,000 feet. On departure, the Controller told us in the future we needed to climb to 5000' as it was listed in a NOTAM about the departure. Later on the ground, we re-read the NOTAMs and discovered it.

# Synopsis

B737 flight crew reports being confused by the AMRST4 departure from CLE, with the top altitude on initial departure listed as 3,000 feet and 5,000 feet in different places. A NOTAM apparently cleared up this confusion but the crew did not notice it. ATC made the crew aware when they checked in climbing to 3,000 feet that 5,000 feet was the correct altitude.

# Time / Day

Date : 201503 Local Time Of Day : 0601-1200

#### Place

Locale Reference. Airport : ACK. Airport State Reference : MA Relative Position. Angle. Radial : 6 Relative Position. Distance. Nautical Miles : 340 Altitude. MSL. Single Value : 800

#### Environment

Flight Conditions : Marginal Weather Elements / Visibility.Visibility : 4 Weather Elements / Visibility.Other Light : Daylight Ceiling.Single Value : 4900

# Aircraft

Reference : X ATC / Advisory.Tower : ACK ATC / Advisory.TRACON : A90 Aircraft Operator : Personal Make Model Name : Small Aircraft, High Wing, 1 Eng, Fixed Gear Crew Size.Number Of Crew : 1 Operating Under FAR Part : Part 91 Flight Plan : IFR Mission : Personal Flight Phase : Takeoff Route In Use : Vectors Airspace.Class E : A90

# Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Personal Function.Flight Crew : Single Pilot Qualification.Flight Crew : Instrument Qualification.Flight Crew : Air Transport Pilot (ATP) Qualification.Flight Crew : Flight Instructor Qualification.Flight Crew : Multiengine Experience.Flight Crew.Total : 14000 Experience.Flight Crew.Last 90 Days : 50 Experience.Flight Crew.Type : 2000 ASRS Report Number.Accession Number : 1248750 Human Factors : Workload Human Factors : Confusion Human Factors : Distraction Human Factors : Situational Awareness

#### Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude Anomaly.Deviation - Procedural : Published Material / Policy Anomaly.Deviation - Procedural : Clearance Anomaly.Inflight Event / Encounter : Weather / Turbulence Detector.Person : Flight Crew Detector.Person : Air Traffic Control When Detected : In-flight Result.Flight Crew : Took Evasive Action Result.Flight Crew : Returned To Clearance Result.Flight Crew : Became Reoriented

#### Assessments

Contributing Factors / Situations : Procedure Contributing Factors / Situations : Human Factors Primary Problem : Human Factors

#### Narrative: 1

It was 6,000 overcast in ZZZ1 and 4,900 overcast in ACK when we left the house for the 5 minute drive to the airport and the 15 min VFR flight that we have done literally hundreds of times. 15 minutes, out the Jetties, follow the ferries, 353 degrees on the GPS if you could be bothered to set it (we always set it in both,) and you can see it climbing through 500 feet anyway. Misty with 4 NM visibility, yes, but easy peasy in an area where we often have dense fog. Lower stuff was forecast for later but fine now. And a quick skim of the NOTAMS revealed that the ILS 15 was inoperative, ILS 24 ACK LOM inoperative but otherwise, ILS 24 ACK OK.

We started, ran the checklist, I dialed the altimeter up a hundred or so feet to field elevation. We taxied out to Runway 24, did the run up, and reported ready for takeoff. "We" was me and my Private Pilot wife who has 800 hours of pretty advanced stuff considering the type of flying that we do. Lots of IFR, Class B airports, flying throughout both of the Americas, etc. And I'm an airline Captain. I gave the usual "right turnout for ZZZ1' at the end of it. The Tower controller said "you know it's 300 feet overcast over there?" As I pondered that thought, she offered to stick an IFR flight plan in for us. ACK to coast is an artery for the island. All day, every day, dozens and dozens of planes criss cross. Thinking that it was VFR basically, I confirmed that we should commence the takeoff roll. She said yes, I didn't want to make my wife late for her first client, so off we went. I figured I'd quickly catch up. The little CFI voice, however, was saying that I should taxi clear and think about what we were doing, be more precise with the avionics set up, but then the only "real IFR" bit would be the last few seconds of the ILS at the other end.

The clearance came at about 500 feet "Via radar vectors, climb to 2,000, expect 3,000 in 10, squawk." Then over to Cape Approach and "climb 3,000. Right heading 330, expect RNAV 24." "We'll need an ILS please," I said, thinking of the ILS 15 being out. He replied "ILS 24 glideslope (GS) is out of service, how about a LLZ?" We had discussed having only 20 Gals of fuel. That's 2 hours worth but when I looked up the LLZ minima and saw that the MDA was 460 feet, but we only had a 300 feet overcast, 20 Gallons didn't sound like much. I then noticed that the two GPS's were showing us in different places. The island has a very distinctive shape so it was very obvious. Which if either was right? I weighed

continuing into what was becoming a nice little series of links in the chain (or holes in the swiss cheese) versus returning to ACK for a landing (we were still climbing and were basically still on a wide downwind to the airport.) Just as my wife said "I can take the airline to work," I said "yup, we're going back" and told Cape of this, expecting a right turn onto base and landing within a couple of minutes. He sounded concerned, read back the whole ATIS that we already had, and by the time he had given us a vector for the ACK ILS and a descent to 1,600 feet, it just seemed easier, and would do no harm, to go with the ILS. I pushed over from gentle climb into gentle descent and verified the set up for the return approach, which we always have set up anyway. The GPS's were still baffling me and now we had a legitimate GS flag on NAV 1. While I was fumbling with this stuff, Cape asked what our altitude was. I replied "passing 1,800 feet.' He said "I'm showing you at 800 feet." So I climbed back up and not a lot was said.

Error number one happened during the post ATIS setting of the altimeter and was not picked up during the instrument check done during the before takeoff checklist. The pressure from the plane's previous flight had dropped from 30.60 then to 29.60 on this day. I am meticulous during IFR operations but this day, with a VFR mindset, by dialing the needle up to field elevation, rather than leaning across my wife who sits left seat, to check setting, I opened the door to this whole thing. I was off by one whole inch. We were visual the entire time (with the ground and horizontal visibility > 3sm) and nothing was ever compromised in any way but I have never encountered this situation before. We have had deep lows and unusually high domes of pressure this winter. We never levelled off so we never noticed the error and with all the other distractions and brief duration of the flight, one can see how this could have become a big link in a chain. Notes to self would include:

1) Check the weather at the VERY last minute. Maybe display the "Flight Rules Category" colored dots on ForeFlight. Had the ZZZ1 dot gone from blue to pink, we might have spotted it.

2) Never accept an IFR clearance during critical phases of flight. It sounds obvious but ACK-ZZZ1 is always the same and is burned into our brains.

3) Complacency complacency complacency.....

4) A good point was that we both thought to pull the plug as soon as the issues started piling up, verbalized it, and did it.

5) Always stop and pause during instrument and avionics set up. There is no VFR vs. IFR way of doing it. Question each setting every time and answer "why" each thing is set that way. And refer to the note about complacency above.

6) Having had a career of CRM, my wife did offer to take control during the radio confusion, but the insidious nature of this event was such that it didn't trigger my handover of control and formal problem solving methodology mode of thinking. When something goes bang or a light comes on, it's easy to launch into trained for responses. We had no "BARO DISAGREE" EICAS message on our [airplane].

7) We usually both check the altimeter setting informally but will now do so formally and I'll consider what other "set and crosschecked" items we should extend that discipline to.

The GPS's never made any sense. We could see where we were and it wasn't where either of them showed. Nor did we ever get the GS to work despite verifying with ACK Tower that

it was radiating. As we were in MVFR, it didn't matter. A subsequent recreation of the flight on a CAVU day, of course, saw no problems whatsoever. But the noise from this sequence of issues blew my Situational Awareness out the window in conjunction with all the other non-normal things that transpired on that "VFR" day full of CRM issues. And interesting to note that the biggest link in the chain happened before we had even begun to taxi.

# Synopsis

A pilot reported departing ACK with an incorrect altimeter setting and leveling at 800 feet over the bay when he thought he was at 1,800 feet. Poor weather planning and two GPS signals reporting different than actual location were mentioned as contributing factors.
## Time / Day

Date : 201503 Local Time Of Day : 1201-1800

## Place

Locale Reference.Airport : MQY.Airport State Reference : TN Altitude.MSL.Single Value : 1140

# Environment

Flight Conditions : IMC Weather Elements / Visibility : Rain Weather Elements / Visibility.Visibility : 3 Light : Daylight Ceiling.Single Value : 800

## Aircraft

Reference : X Aircraft Operator : Personal Make Model Name : SR22 Operating Under FAR Part : Part 91 Flight Plan : IFR Mission : Training Nav In Use : GPS Nav In Use.Localizer/Glideslope/ILS : Runway 19 Flight Phase : Initial Approach Route In Use.Other

## Person

Reference : 1 Location In Aircraft : Flight Deck Reporter Organization : Personal Function.Flight Crew : Pilot Flying Function.Flight Crew : Single Pilot Qualification.Flight Crew : Instrument Qualification.Flight Crew : Commercial Qualification.Flight Crew : Multiengine Experience.Flight Crew.Total : 2090 Experience.Flight Crew.Last 90 Days : 23 Experience.Flight Crew.Type : 329 ASRS Report Number.Accession Number : 1246917 Human Factors : Situational Awareness

## Events

Anomaly.ATC Issue : All Types Anomaly.Deviation - Altitude : Excursion From Assigned Altitude Anomaly.Deviation - Procedural : Published Material / Policy Anomaly.Deviation - Procedural : Clearance Anomaly.Inflight Event / Encounter : CFTT / CFIT Detector.Person : Flight Crew When Detected : In-flight Result.Flight Crew : Took Evasive Action Result.Flight Crew : Became Reoriented Result.Air Traffic Control : Issued Advisory / Alert

### Assessments

Contributing Factors / Situations : Human Factors Primary Problem : Human Factors

### Narrative: 1

The tower issued two low altitude alerts during practice instrument approaches. 1. The first alert was in the final phase of the GPS 32 approach. I had already broken out of the bases and was in visual conditions above the MDA with the runway in sight. The VASI indicated I was on the proper glide path. I did not understand why the alert was issued but initiated a climb and missed approach.

2. The second low altitude alert occurred on the next approach, my last of six that day. On the GPS 19 approach the tower issued the alert between as I was descending from 2,200 feet to 1,140 feet. I immediately began a climb and reached 1,500 feet right before I reached an intersection. I landed without incident. Upon landing I reviewed the approach chart and realized I had inadvertently started my altitude step downs one waypoint too soon. As a result I should have been at 2,200 feet and then started my decent to 1,140 feet. I had already started the decent to 1,140. In additional I realized during the final phase of the approach that I had descended below the circling minimums for the approach prior to landing on runway 32. I immediately corrected this error by climbing higher on downwind while circling.

Realizing the critical nature of my mistakes, I am scheduling additional refresher training with my CFII.

# Synopsis

The pilot of a Cirrus SR-22 received an altitude alert for an unknown reason, which led to a missed approach. On the subsequent approach, ATC issued a second altitude alert due to the pilot's inadvertent premature descent.

# ACN: 1246878 (50 of 50)

#### Time / Day

Date : 201503 Local Time Of Day : 0001-0600

#### Place

Locale Reference.Airport : PRX.Airport State Reference : TX Altitude.MSL.Single Value : 8000

## Environment

Flight Conditions : IMC Weather Elements / Visibility : Rain Weather Elements / Visibility.Visibility : 6 Light : Daylight Ceiling.Single Value : 1000

## Aircraft

Reference : X Aircraft Operator : Corporate Make Model Name : Citationjet (C525/C526) - CJ I / II / III / IV Operating Under FAR Part : Part 91 Flight Plan : IFR Mission : Passenger Nav In Use : GPS Flight Phase : Initial Approach Route In Use : Direct

## Person

Reference : 1 Location Of Person.Aircraft : X Location In Aircraft : Flight Deck Reporter Organization : Corporate Function.Flight Crew : Pilot Flying Function.Flight Crew : Single Pilot Qualification.Flight Crew : Air Transport Pilot (ATP) Qualification.Flight Crew : Air Transport Pilot (ATP) Qualification.Flight Crew : Instrument Experience.Flight Crew.Total : 1300 Experience.Flight Crew.Last 90 Days : 100 Experience.Flight Crew.Type : 600 ASRS Report Number.Accession Number : 1246878 Human Factors : Situational Awareness Human Factors : Training / Qualification

#### **Events**

Anomaly.Deviation - Track / Heading : All Types Anomaly.Deviation - Procedural : Published Material / Policy Anomaly.Deviation - Procedural : Clearance Detector.Person : Flight Crew When Detected : In-flight Result.Flight Crew : Returned To Clearance Result.Flight Crew : Became Reoriented

### Assessments

Contributing Factors / Situations : Human Factors Primary Problem : Human Factors

#### Narrative: 1

Was cleared to CUKBO, which is the IAF for the RNAV/GPS 35 Approach (LNAV) into PRX. Since a procedure turn would not be required, when I put the approach into the box I deleted the procedure turn. Then I was told to expect to hold at CUKBO for traffic on the approach. I was subsequently cleared to CUKBO, to hold at CUKBO at 5,000 feet and as published. I initiated the descent from 8,000 feet, and then attempted to use the 'HOLD' page on the FMS (a Honeywell GNS/XLS) to re-establish the holding pattern at CUKBO so that the aircraft would enter the hold when it reached the fix. Unfortunately I messed up, and had to reattempt twice. Once I finally thought I had it correct (maintaining situational awareness in regards to the weather, which was continuous rain and light chop), I executed the change. This initiated an immediate right turn, which was correct for a direct entry to hold right as published. I was surprised that I was so close to CUKBO when I finally got the holding pattern executed, but looking at the pilot's moving map indeed showed CUKBO to be the fix we were about to hold on. CUKBO was clearly displayed on the map, with the holding pattern depicted, and then the remaining fixes on the approach into Paris.

What I failed to realize, however, is that instead of programming the box to enter the hold at the desired fix, I had instead created a present position hold, simultaneously creating a new pilot-created waypoint designated 'CUKBO', since that was what I had entered as the name of the fix to hold on.

I didn't realize this until approximately 25-30 seconds later, when I noted that I was still 25 miles to the south of PRX, while CUKBO the IAF is within 10 miles of the field. A cross reference of the approach chart confirmed this, and I quickly cleared the box, reloaded the approach and entered direct CUKBO. This turned the aircraft quickly back to the fix I'd been cleared to, resulting in a roughly 360 degree turn over the course of just over one minute. I estimate that based on my rate of descent, and the altitudes involved (8,000 feet to 6,200 feet when I turned back to CUKBO).

This is the fault of my unfamiliarity with the GNS/XLS box, as I normally fly the Collins ProLine 21 in the aircraft I regularly operate. This is a deficiency I have rectified this afternoon by re-studying the Honeywell manual and making myself familiar with the correct procedure for establishing and entering a hold.

## Synopsis

CE-525 pilot reported making an error programming a hold in his FMS, highlighting several "gotcha" areas that can trip up the unwary or undertrained.