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.....32

Date of Update.....March 24, 2022

Number of Records in Report Set.....50

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. Such incidents are independently submitted and are not corroborated by NASA, the FAA or NTSB. 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 clarified 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.

B Hooey

Becky L. Hooey, 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: 1824108 *(1 of 50)*

Synopsis

An air carrier Captain reported GPS interference caused a course deviation.

ACN: 1821926 *(2 of 50)*

Synopsis

Air carrier Captain flying over foreign territory reported GPS jamming which ceased as soon as the Captain notified ATC.

ACN: 1821910 *(3 of 50)*

Synopsis

An air carrier Captain reported GPS jamming.

ACN: 1820291 *(4 of 50)*

Synopsis

Pilot reported GPS jamming in southern Moscow airspace skirting Ukraine.

ACN: 1817775 *(5 of 50)*

Synopsis

Air carrier Line Check Airman reported a loss of GPS signal for approximately 300 NM.

ACN: 1815867 *(6 of 50)*

Synopsis

Captain reported experiencing GPS Jamming, which rendered RNP (Required Navigation Performance) unavailable.

ACN: 1813027 *(7 of 50)*

Synopsis

Air carrier Captain reported a system malfunction during pre-flight that may have been caused by GPS interference testing.

ACN: 1812204 *(8 of 50)*

Synopsis

Small aircraft pilot reported GPS outages and issues flying between FCM and SGS airports during multiple flights involving different aircraft types and GPS systems.

ACN: 1812004 *(9 of 50)*

Synopsis

Air carrier Captain reported that VNAV suddenly indicated below glide path during approach to RNO airport. The approach became unstable, and the flight crew executed a go-around. Reporter stated that there was GPS testing in nearby area but the approach airport was not listed on the coverage area document.

ACN: 1810187 *(10 of 50)*

Synopsis

B737-800 Captain reported dispatch and maintenance mishandling of the flight Operations including the aircraft, destination issues and a viable backup plan.

ACN: 1808709 *(11 of 50)*

Synopsis

A Pilot reported GPS jamming.

ACN: 1806685 *(12 of 50)*

Synopsis

Pilot reported GPS problems associated with ADS-B issues and a possible airspace violation.

ACN: 1801333 *(13 of 50)*

Synopsis

A Pilot flying in foreign airspace reported GPS jamming.

ACN: 1800937 *(14 of 50)*

Synopsis

An air carrier pilot reported GPS jamming.

ACN: 1799780 *(15 of 50)*

Synopsis

An Air Carrier pilot reported both GPS units failed.

ACN: 1798849 *(16 of 50)*

Synopsis

A Center Controller reported GPS jamming in their airspace during busy periods created an unsafe sector operation.

ACN: 1798677 *(17 of 50)*

Synopsis

Air carrier Captain reported possible GPS jamming in this area per aircraft instrument errors, ATIS information and ATC advisory.

ACN: 1797324 *(18 of 50)*

Synopsis

Air carrier First Officer reported while flying through an area of poor GPS and radio signals they missed an ATC frequency change.

ACN: 1797026 *(19 of 50)*

Synopsis

Dispatcher reported 13 attempts were required before flight crew could receive or transmit on ACARS.

ACN: 1796402 *(20 of 50)*

Synopsis

ZAB Enroute Controller reported a flight crews navigational capability was affected by White Sands Missile Range GPS jamming.

ACN: 1795503 *(21 of 50)*

Synopsis

A Pilot reported receiving false information from their GPS.

ACN: 1795196 *(22 of 50)*

Synopsis

PA-31 Single Pilot Captain reported a navigation error due to temporary loss of GPS data.

ACN: 1793504 *(23 of 50)*

Synopsis

An air carrier pilot reported GPS jamming.

ACN: 1792587 *(24 of 50)*

Synopsis

Pilot reported experiencing radio and GPS problems when trying to activate the runway lights.

ACN: 1790868 *(25 of 50)*

Synopsis

Pilot and a Tower Controller reported the pilot flew to the wrong airport. The pilot reported the error was likely due to the pilot's GPS giving false indications or being jammed.

ACN: 1790021 *(26 of 50)*

Synopsis

Air taxi Captain reported a track heading deviation after experiencing GPS jamming near SFO VOR in ZOA ARTCC airspace.

ACN: 1789890 *(27 of 50)*

Synopsis

B767-300 Captain reported having a GPS issue resulting in a track heading deviation.

ACN: 1785003 *(28 of 50)*

Synopsis

Air carrier Captain reported possible GPS jamming near SETSI waypoint in Oman airspace.

ACN: 1784398 *(29 of 50)*

Synopsis

A Pilot reported GPS interference.

ACN: 1777039 *(30 of 50)*

Synopsis

An air carrier Captain reported GPS interference.

ACN: 1775414 *(31 of 50)*

Synopsis

GA pilot reported inadvertently entering PHL Class B airspace without a clearance due to distraction from having to troubleshoot the GPS system on the aircraft.

ACN: 1764299 *(32 of 50)*

Synopsis

Air carrier First Officer reported experiencing radar/GPS jamming in the vicinity of ABQ VOR.

ACN: 1757690 *(33 of 50)*

Synopsis

C182 pilot reported temporary loss of GPS Navigation system during IFR flight.

ACN: 1751158 *(34 of 50)*

Synopsis

Pilot described the need to understand all implications resulting from the failure of GPS.

ACN: 1750165 *(35 of 50)*

Synopsis

B737 Pilot reported suspected GPS jamming at this location.

ACN: 1748181 *(36 of 50)*

Synopsis

Air carrier Captain reported possible GPS jamming with both L/R ADS-B malfunctioning or inoperative.

ACN: 1747135 *(37 of 50)*

Synopsis

Pilot reported loss of GPS and a track deviation.

ACN: 1746653 *(38 of 50)*

Synopsis

Lear 45 pilot reported a possible altitude deviation due to GPS failure.

ACN: 1744849 *(39 of 50)*

Synopsis

PA-32 Pilot reported possible airspace violation due to GPS failure.

ACN: 1743436 *(40 of 50)*

Synopsis

Air carrier flight crew reported possible GPS jamming resulted in loss of GPS and ADS-B.

ACN: 1742421 *(41 of 50)*

Synopsis

Instructor Pilot reported an airspace violation related to loss of the Primary Flight Display and GPS data.

ACN: 1742053 *(42 of 50)*

Synopsis

Air carrier Captain reported loss of GPS signal apparently due to jamming from White Sands.

ACN: 1741940 *(43 of 50)*

Synopsis

CE-680 pilots reported not following SOP for testing the GPS.

ACN: 1741925 *(44 of 50)*

Synopsis

Air carrier Captain reported receiving a GPS EICAS alert related to possible jamming from White Sands.

ACN: 1741194 *(45 of 50)*

Synopsis

Mini-LAK Glider pilot reported a malfunction with the electronic flight bag and loss of the GPS signal. Glider pilot reported inadvertent Class B Airspace penetration.

ACN: 1739000 *(46 of 50)*

Synopsis

B737 pilot crew reported the IRU's would not align, resulting in a rejected takeoff.

ACN: 1733501 *(47 of 50)*

Synopsis

B777 Line check Captain reported suspected GPS jamming during cruise.

ACN: 1732979 *(48 of 50)*

Synopsis

A300 Captain reported they failed to document a GPS jamming event in the Aircraft Maintenance Log.

ACN: 1731570 *(49 of 50)*

Synopsis

C402 Captain reported a dual GPS failure during flight.

ACN: 1729913 *(50 of 50)*

Synopsis

SR22 pilot reported receiving incorrect GPS information.

Report Narratives

ACN: 1824108 *(1 of 50)*

Time / Day

Date : 202107
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : HECC.ARTCC
State Reference : FO
Altitude.MSL.Single Value : 35000

Aircraft

Reference : X
ATC / Advisory.Center : HECC
Aircraft Operator : Air Carrier
Make Model Name : Commercial Fixed Wing
Crew Size.Number Of Crew : 3
Operating Under FAR Part : Part 121
Flight Plan : IFR
Flight Phase : Cruise

Component

Aircraft Component : GPS & Other Satellite Navigation
Problem : Failed

Person

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 : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
ASRS Report Number.Accession Number : 1824108
Human Factors : Confusion
Human Factors : Distraction
Human Factors : Human-Machine Interface
Human Factors : Troubleshooting
Human Factors : Workload

Events

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

Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Air Traffic Control : Provided Assistance

Assessments

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

Narrative: 1

While at cruise at 35,000 feet in Cairo control airspace, we began to receive a series of Engine Indicating and Crew Alerting messages- ATC Fault, Unable RNP and Terrain Position. We referenced the Quick Reference Handbook for each message but were unable to clear the faults. We asked ATC if they saw any issue with our transponder and they replied that they saw no problems. Shortly after crossing from Amman control to Jeddah on airway Y415, we received the FMC message "Verify position". We saw that we were off the airway to the left and ATC asked if we were on the airway. The First Officer and I put our range scales to 5 miles and noted that the left side showed us approximately 3 to 5 miles left of course, First Officer side showed the same distance to the right of course. We checked the FMC position reference pages and saw that GPS position was blank and substantial errors on the other positions - FMC, IRS and Radio. We advised ATC of the GPS failure and could not determine which source was accurate. ATC said we were showing right of course. I selected GPS off then on, selected HDG (heading) select to manually steer to course. Reselected LNAV. Nothing seemed to be working. I asked for direct to a fix further down the airway. No VORs were on this airway to use for navigation. I repeated switching heading to LNAV but the aircraft symbol did not move closer to the course line as if it was frozen. We were continually advising ATC and monitoring position reference as GPS was now intermittent and RNP-ANP errors were constantly changing. Eventually GPS began to work and we were able to get back on course. This entire time we never received any EICAS or FMA indications of any faults such as "GPS", "IRS Nav Only", "LNAV". ATC passed the information to subsequent ATC and they offered vectors if needed. After position MOGON, navigation functions all appeared normal for the remainder for the flight.

Synopsis

An air carrier Captain reported GPS interference caused a course deviation.

ACN: 1821926 *(2 of 50)*

Time / Day

Date : 202107
Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZZZZ.ARTCC
State Reference : FO
Altitude.MSL.Single Value : 33000

Aircraft

Reference : X
ATC / Advisory.Center : ZZZZ
Aircraft Operator : Air Carrier
Make Model Name : Widebody, Low Wing, 2 Turbojet Eng
Crew Size.Number Of Crew : 3
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Cargo / Freight / Delivery
Nav In Use : GPS
Flight Phase : Cruise
Airspace.Class A : ZZZZ

Component

Aircraft Component : GPS & Other Satellite Navigation
Problem : Malfunctioning

Person

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)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
ASRS Report Number.Accession Number : 1821926
Human Factors : Workload
Human Factors : Situational Awareness
Human Factors : Human-Machine Interface
Human Factors : Troubleshooting
Human Factors : Confusion
Human Factors : Distraction

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.ATC Issue : All Types
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Became Reoriented

Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Overcame Equipment Problem

Assessments

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

Narrative: 1

GPS jamming encountered between XA21Z and XA52Z at 33,000 feet. Jamming resulted in immediate loss of ADS-B and GPS left and right. Once jamming ceased all system function returned to normal. Informed ATC immediately of the jamming and then again informed ATC when our actual navigation performance was going to require vectors. As soon as I notified ATC that we were at the point of navigation degradation beyond acceptable performance, the jamming ceased immediately. I believe the parties responsible were monitoring ATC frequencies. [Cause was] Some form of GPS Jamming - extremely long period. It usually happens for much shorter periods that is less than 3 minutes. Identify the parties responsible and remove them from the equation.

Synopsis

Air carrier Captain flying over foreign territory reported GPS jamming which ceased as soon as the Captain notified ATC.

ACN: 1821910 *(3 of 50)*

Time / Day

Date : 202107
Local Time Of Day : 1201-1800

Aircraft

Reference : X
ATC / Advisory.Center : URRV
Aircraft Operator : Air Carrier
Make Model Name : B777-200
Crew Size.Number Of Crew : 4
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Cargo / Freight / Delivery
Nav In Use : GPS
Flight Phase : Cruise
Airspace.Class A : ZZZZ

Component

Aircraft Component : GPS & Other Satellite Navigation
Problem : Malfunctioning

Person

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 : Instrument
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
ASRS Report Number.Accession Number : 1821910
Human Factors : Confusion
Human Factors : Distraction
Human Factors : Human-Machine Interface
Human Factors : Situational Awareness
Human Factors : Workload

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation - Track / Heading : All Types
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Overrode Automation
Result.Flight Crew : Became Reoriented
Result.Flight Crew : Overcame Equipment Problem

Assessments

Contributing Factors / Situations : ATC Equipment / Nav Facility / Buildings
Contributing Factors / Situations : Software and Automation

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

Narrative: 1

Suspected GPS jamming between LOGMU and ROKUB on T561 XA:17Z-XB:03Z. EICAS alert for NAV UNABLE RNP. Followed checklist and used radio/IRS updating during the event. Was able to resume normal GPS ops for remainder of flight. Most likely some crazy militants in the area. Perhaps pay the big bucks and fly over Siberia on this route. Most likely less GPS jamming and probably more efficient for flight planning. Although I appreciate the longer rest opportunities on these double crewed flights.

Synopsis

An air carrier Captain reported GPS jamming.

ACN: 1820291 *(4 of 50)*

Time / Day

Date : 202107
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : UUWV.ARTCC
State Reference : FO

Environment

Flight Conditions : IMC

Aircraft

Reference : X
ATC / Advisory.Center : UUWV
Aircraft Operator : Air Carrier
Make Model Name : Commercial Fixed Wing
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Flight Phase : Cruise

Person

Location Of Person.Aircraft : X
Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
ASRS Report Number.Accession Number : 1820291

Events

Anomaly.Deviation - Track / Heading : All Types
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Detector.Person : Flight Crew
When Detected : In-flight
Result.General : None Reported / Taken

Assessments

Contributing Factors / Situations : ATC Equipment / Nav Facility / Buildings
Contributing Factors / Situations : Environment - Non Weather Related
Primary Problem : Environment - Non Weather Related

Narrative: 1

Received GPS jamming, indicated by â€œADS-B OUT L, TERR POS, NAV UNABLE RNPâ€• . Jamming started at XA:25Z N4850 E4304. Ended XA:54Z N5241 E 3919. In southern Moscow airspace skirting Ukraine just south of us. [Caused by] jamming of satellite signals by unknown entity.

Synopsis

Pilot reported GPS jamming in southern Moscow airspace skirting Ukraine.

ACN: 1817775 *(5 of 50)*

Time / Day

Date : 202106
Local Time Of Day : 0001-0600

Place

Locale Reference.ATC Facility : ULMM.ARTCC
State Reference : FO
Altitude.MSL.Single Value : 32000

Aircraft

Reference : X
ATC / Advisory.Center : ULMM
Aircraft Operator : Air Carrier
Make Model Name : Commercial Fixed Wing
Crew Size.Number Of Crew : 3
Operating Under FAR Part : Part 121
Flight Plan : IFR
Nav In Use : GPS
Nav In Use : FMS Or FMC
Flight Phase : Cruise
Route In Use : Direct
Airspace.Class A : ULMM

Component

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

Person

Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Check Pilot
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 17118
Experience.Flight Crew.Last 90 Days : 113
Experience.Flight Crew.Type : 5588
ASRS Report Number.Accession Number : 1817775
Human Factors : Human-Machine Interface
Human Factors : Situational Awareness
Human Factors : Troubleshooting
Human Factors : Workload
Human Factors : Confusion

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation - Track / Heading : All Types
Detector.Automation : Aircraft Other Automation
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : FLC complied w / Automation / Advisory
Result.Aircraft : Equipment Problem Dissipated

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : ATC Equipment / Nav Facility / Buildings
Contributing Factors / Situations : Software and Automation
Contributing Factors / Situations : Environment - Non Weather Related
Primary Problem : Ambiguous

Narrative: 1

While flying in Murmansk airspace, approximately at waypoint "TURUK" on airway P995 we experienced a loss of GPS signal. Initially it was one receiver and shortly after that both receivers were not providing position information. This lasted until our oceanic entry point, "BARUX." Both receivers were back to normal within seconds of each other. GPS signal interference lasted for almost 300 NM. ATC was notified.

Synopsis

Air carrier Line Check Airman reported a loss of GPS signal for approximately 300 NM.

ACN: 1815867 *(6 of 50)*

Time / Day

Date : 202106
Local Time Of Day : 0001-0600

Place

Locale Reference.Airport : HMN.Airport
State Reference : NM
Relative Position.Angle.Radial : 315
Relative Position.Distance.Nautical Miles : 80
Altitude.MSL.Single Value : 36000

Environment

Flight Conditions : VMC

Aircraft

Reference : X
ATC / Advisory.Center : ZAB
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 : Cargo / Freight / Delivery
Nav In Use : FMS Or FMC
Nav In Use : GPS
Flight Phase : Cruise
Route In Use : Direct
Airspace.Class A : ZAB

Component

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

Person

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)
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1815867
Human Factors : Human-Machine Interface
Human Factors : Workload

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Became Reoriented
Result.Flight Crew : Overcame Equipment Problem
Result.Air Traffic Control : Provided Assistance
Result.Aircraft : Equipment Problem Dissipated

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Airspace Structure
Contributing Factors / Situations : Software and Automation
Contributing Factors / Situations : ATC Equipment / Nav Facility / Buildings
Primary Problem : ATC Equipment / Nav Facility / Buildings

Narrative: 1

As we were en-route at cruise altitude FL360 feet 80 miles northwest of HMN VOR when we started to experience degraded navigation performance in the form of ATC fail alerts and an increasing ANP (Actual Navigation Performance) number relative to RNP (Required Navigation Performance). We notified ATC and were informed of GPS jamming somewhere north of El Paso. As we proceeded west, the navigation performance of our aircraft degraded more to the point where we received an UNABLE RNP message along with a GPS amber message. Once we got west of ELP and the TCS area, the navigation performance gradually improved and came back within normal parameters. Route track and actual position of aircraft were unaffected and there were no deviations from the planned and cleared routing. Not really any way to avoid other than don't jam GPS. But considering ATC was aware of it and able to keep aircraft notified of where and when the jamming effects would abate, it is not a huge hazard.

Synopsis

Captain reported experiencing GPS Jamming, which rendered RNP (Required Navigation Performance) unavailable.

ACN: 1813027 *(7 of 50)*

Time / Day

Date : 202106
Local Time Of Day : 1801-2400

Place

Locale Reference.Airport : FAI.Airport
State Reference : AK
Altitude.AGL.Single Value : 0

Aircraft

Reference : X
Aircraft Operator : Air Carrier
Make Model Name : Commercial Fixed Wing
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Parked

Component

Aircraft Component : GPWS
Aircraft Reference : X
Problem : Malfunctioning

Person

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 : Instrument
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
ASRS Report Number.Accession Number : 1813027
Human Factors : Human-Machine Interface

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Detector.Person : Flight Crew
When Detected : Pre-flight
Result.General : Maintenance Action
Result.General : Release Refused / Aircraft Not Accepted

Assessments

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

Narrative: 1

During Preflight flow was unable to select terrain display. Contacted Maintenance Control and was instructed to check reset several circut breakers. No success. Wrote up discrepancy in logbook. Local Maintenance was notified and arrived. Was informed by ground crew chief that this had been a recurring problem on other aircraft type Flights. Was informed of note regarding this situation. The NOTAM FAI 04/431 indicated there was problems due to GPS interference testing from 30April 21 to 15May21. It was now [after those dates]. Maintenance was unable to make repairs. Dispatch requested we push off gate with revenue. I declined. Off loaded passengers. Was asked if I was willing to taxi aircraft without passengers to see if problem would clear. I agreed in accordance with FOM. Asked dispatch what flight number would be. He indicated it would be XXXX. We pushed off gate and taxied south and continued northbound on runway. Maintenance was observing operation. We tried many attempts to engage terrain display without success. Parked airplane on hardstand. Secured Airplane. Was not sure if failure of terrain display was system failure or continued interference testing. If testing was indeed taking place after the NOTAM effective dates, they should be updated.

Synopsis

Air carrier Captain reported a system malfunction during pre-flight that may have been caused by GPS interference testing.

ACN: 1812204 *(8 of 50)*

Time / Day

Date : 202106
Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : FCM.Airport
State Reference : MN
Relative Position.Angle.Radial : 339
Relative Position.Distance.Nautical Miles : 7
Altitude.MSL.Single Value : 2000

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.TRACON : MSP
Aircraft Operator : Personal
Make Model Name : Small Aircraft
Crew Size.Number Of Crew : 1
Operating Under FAR Part : Part 91
Flight Plan : None
Mission : Ferry / Re-Positioning
Flight Phase : Cruise
Airspace.Class E : M98

Component

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

Person

Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Corporate
Function.Flight Crew : Single Pilot
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
Experience.Flight Crew.Total : 25000
Experience.Flight Crew.Last 90 Days : 75
Experience.Flight Crew.Type : 2500
ASRS Report Number.Accession Number : 1812204

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Detector.Person : Flight Crew
When Detected : In-flight
Result.General : None Reported / Taken

Assessments

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

Narrative: 1

I made several ferry flights this morning and experienced a total GPS outage while circumnavigating south of the MSP Class B airspace. Specifically, I was flying the 2,300 feet corridor. While in the vicinity of the MN Zoo and Lake Alimagnet, 7 nm off of FGT, I experienced a total GPS outage on all flights. The aircraft were equipped with Garmin GTN 750 avionics experienced the failure. One aircraft had a Garmin 530 WAAS and did not lose the GPS signal, but did experience a brief MSG annunciation that lasted just a few seconds.

Synopsis

Small aircraft pilot reported GPS outages and issues flying between FCM and SGS airports during multiple flights involving different aircraft types and GPS systems.

ACN: 1812004 *(9 of 50)*

Time / Day

Date : 202106
Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : RNO.Airport
State Reference : NV
Relative Position.Angle.Radial : 360
Relative Position.Distance.Nautical Miles : 4

Environment

Light : Daylight

Aircraft

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

Component

Aircraft Component : Navigational Equipment and Processing
Problem : Malfunctioning

Person

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)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
Experience.Flight Crew.Last 90 Days : 140
Experience.Flight Crew.Type : 10000
ASRS Report Number.Accession Number : 1812004
Human Factors : Human-Machine Interface

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Detector.Automation : Aircraft Other Automation
When Detected : In-flight

Result.Flight Crew : Overrode Automation
Result.Flight Crew : Executed Go Around / Missed Approach

Assessments

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

Narrative: 1

We were cleared the RNAV (RNP) Y 16 L inside of HLDMM (I believe) on the KENNO 2 RNAV. 0.3 was entered into the LEGS Page and 4,500 feet was placed in the MCP (Mode Control Panel) window. Inside of KLOCK, zeros were entered into the MCP. At approximately 1,500 feet AGL, with the aircraft fully configured and a zero vertical NAV deviation, the Vertical NAV suddenly indicated approach 488 feet below the vertical path. The aircraft made a minor attempt with pitch and power to correct the deviation. I then disengaged the autopilot and autothrottles. By the time we sorted this out, we were too high above the glidepath for a normal approach, so I directed / executed a go-around. We subsequently flew a visual approach backed up by (a different RNAV) the RNAV GPS X Runway 16L. We did not engaged the VNAV / LNAV. An ILS is not available to 16L. The weather packet cover page did note GPS interference testing in the PMSR (Pt. Mugu Sea Range) centered on the SXC248/058 and possible impact areas, but RNO was not in the listed area. RAF coverage was 0.3 or better. There was an FDC NOTAM for this approach (to disregard a note for night operations), but was N/A. Company was contacted.

Synopsis

Air carrier Captain reported that VNAV suddenly indicated below glide path during approach to RNO airport. The approach became unstable, and the flight crew executed a go-around. Reporter stated that there was GPS testing in nearby area but the approach airport was not listed on the coverage area document.

ACN: 1810187 *(10 of 50)*

Time / Day

Date : 202105
Local Time Of Day : 1801-2400

Place

Locale Reference.Airport : ZZZ1.Airport
State Reference : US
Altitude.AGL.Single Value : 0

Aircraft

Reference : X
Aircraft Operator : Air Carrier
Make Model Name : B737-800
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Parked

Component

Aircraft Component : Pressurization System
Aircraft Reference : X
Problem : Malfunctioning

Person

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)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
ASRS Report Number.Accession Number : 1810187
Human Factors : Communication Breakdown
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : Dispatch

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : FAR
Anomaly.Deviation / Discrepancy - Procedural : Maintenance
Detector.Person : Flight Crew
When Detected : Aircraft In Service At Gate
When Detected : Routine Inspection
When Detected : Pre-flight
Result.General : Flight Cancelled / Delayed
Result.General : Maintenance Action

Result.Flight Crew : Overcame Equipment Problem
Result.Aircraft : Equipment Problem Dissipated

Assessments

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

Narrative: 1

After diverting to ZZZ we arrived at ZZZ1 a few hours late. Upon arriving at the departure gate for our next leg we discovered the flight had already been boarded an hour or so early. The ground service bus was connected and the battery switch and emergency exit lights were off. We discovered there were two open write ups in the book which were a LAV water heater issue and a pack issue. We called maintenance to let them know about the write ups. A little bit later we were told the aircraft was being taken out of service. A replacement aircraft was eventually found. During preflight I called Dispatch to discuss ZZZ2 operations during late night tower closure procedures. About ten minutes later I received a call from Dispatch that the runway lights were NOTAM'ed out that night and we were not going to be able to go. He was, however, going to call ZZZ2 and ask if they could keep the lights on. The Concourse Manager and the tower came up with a "plan" to depart and if I couldn't get into ZZZ2, due to no runway lights, to divert to ZZZ3 and they would bus the pax to ZZZ2. This was not a plan I was in favor of to say the least. ZZZ2 equipment maintenance agreed to delay the runway light not/closure till after our arrival, which was approximately XA:30PST. About an hour from arrival we received a GPS 1 and 2 message with an accompanying TERR POS message which was the result of a [name] NOTAM regarding jamming. We discussed the situation of a late night RNAV arrival into mountainous terrain with a tower closure and no GPS and terrain warning. Just prior to descent the GPS returned. Reporter stated the cause of the late departure was maintenance deciding to take the aircraft out of service after it had been on the ground for three hours. Boarding a flight an hour before aircrew showing up and the ground service bus as the only power source. The emergency exit lights were not on as well as the battery. The decision by non pilots to fly to a "special airport due to terrain" not knowing if the runway lights would be working only to divert to another airport. [name of area] jamming and the loss of GPS and terrain warnings. Operations management needs to change from reactive to proactive.

Synopsis

B737-800 Captain reported dispatch and maintenance mishandling of the flight Operations including the aircraft, destination issues and a viable backup plan.

ACN: 1808709 *(11 of 50)*

Time / Day

Date : 202105
Local Time Of Day : 0001-0600

Place

Locale Reference.ATC Facility : ZAB.ARTCC
State Reference : NM
Altitude.AGL.Single Value : 1000

Environment

Flight Conditions : VMC
Light : Night

Aircraft

Reference : X
ATC / Advisory.Center : ZAB
Aircraft Operator : Personal
Make Model Name : Skylane 182/RG Turbo Skylane/RG
Crew Size.Number Of Crew : 1
Operating Under FAR Part : Part 91
Flight Plan : IFR
Mission : Personal
Nav In Use : GPS
Flight Phase : Initial Climb
Route In Use : Direct
Airspace.Class E : ZAB

Component

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

Person

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 : Multiengine
Experience.Flight Crew.Total : 1679
Experience.Flight Crew.Last 90 Days : 122
Experience.Flight Crew.Type : 964
ASRS Report Number.Accession Number : 1808709
Human Factors : Human-Machine Interface
Human Factors : Situational Awareness
Human Factors : Confusion

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Air Traffic Control : Issued New Clearance
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : ATC Equipment / Nav Facility / Buildings
Contributing Factors / Situations : Software and Automation
Contributing Factors / Situations : Human Factors
Primary Problem : ATC Equipment / Nav Facility / Buildings

Narrative: 1

On initial climb out at approximately 1,000 ft. my Garmin GTN635 GPS notified me that terrain awareness was unavailable and was in dead reckoning mode. Shortly after this I checked in with Albuquerque Center when they notified me of the GPS jamming in White Sands research area restricted area 5107B. I informed Albuquerque Center that I was unable to maintain my own terrain obstruction clearance and they put me on an IFR flight plan at that time. My portable Garmin 695 had about half the signal it normally does and I was able to use it to marginally navigate. Being unfamiliar with this area and possibly a different avionics configuration I feel my flight could have possibly ended as controlled flight into terrain.

Synopsis

A Pilot reported GPS jamming.

ACN: 1806685 *(12 of 50)*

Time / Day

Date : 202105
Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : MYR.TRACON
State Reference : SC
Relative Position.Angle.Radial : 265
Relative Position.Distance.Nautical Miles : 10
Altitude.MSL.Single Value : 3000

Environment

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

Aircraft

Reference : X
ATC / Advisory.TRACON : MYR
Aircraft Operator : Personal
Make Model Name : Small Aircraft, High Wing, 1 Eng, Fixed Gear
Operating Under FAR Part : Part 91
Flight Plan : None
Mission : Personal
Flight Phase : Cruise
Route In Use : Direct
Airspace.Class C : MYR

Component

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

Person

Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Personal
Function.Flight Crew : Single Pilot
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Private
Experience.Flight Crew.Total : 2490
Experience.Flight Crew.Last 90 Days : 20
Experience.Flight Crew.Type : 100
ASRS Report Number.Accession Number : 1806685
Human Factors : Situational Awareness
Human Factors : Distraction

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Airspace Violation : All Types
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : FAR
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Overcame Equipment Problem
Result.Aircraft : Equipment Problem Dissipated

Assessments

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

Narrative: 1

I was flying VFR cross country to ZZZ from JZI flying direct with a planned northern deviation towards HYW to avoid MYR airspace. Altitude was 3,000 AGL due to moderate turbulence. As I was nearing MYR airspace the GPS encountered interference and the aircraft indicator on the moving map was blocked (later determined to be ADS-B shadow). When the GPS self corrected, I realized that I was near or touching the outer ring below the 4,000 upper limit and above the 1,200 lower limit. I immediately executed a 180 degree turn and then turned north and skirted the outside ring as planned. I did possibly touch the airspace but did so for only the minute it took to turn away. The certified GPS never gave the warning that it usually does when class airspace is entered, I had to range the GPS out near maximum to even see the touching of the outer ring, so I do not know what the ATC radar would have shown. I do not expect a re-occurrence as I better understand how the ADS-B shadow sometimes disguises the aircraft symbol. I have been flying nearly 40 years and have never had a violation or an airspace incursion.

Synopsis

Pilot reported GPS problems associated with ADS-B issues and a possible airspace violation.

ACN: 1801333 *(13 of 50)*

Time / Day

Date : 202104
Local Time Of Day : 0001-0600

Place

Locale Reference.ATC Facility : ZGZU.ARTCC
State Reference : FO

Environment

Flight Conditions : VMC

Aircraft

Reference : X
ATC / Advisory.Center : ZZZZ
Aircraft Operator : Air Carrier
Make Model Name : Commercial Fixed Wing
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Cargo / Freight / Delivery
Flight Phase : Cruise
Airspace.Class A : ZZZZ

Component

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

Person

Location Of Person.Aircraft : X
Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1801333
Human Factors : Distraction
Human Factors : Confusion
Human Factors : Workload
Human Factors : Human-Machine Interface

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 : ATC Equipment / Nav Facility / Buildings
Primary Problem : ATC Equipment / Nav Facility / Buildings

Narrative: 1

GPS jamming received UUWV sector airway T561 between INBAL and UBONA. GPS jamming in Russian airspace.

Synopsis

A Pilot flying in foreign airspace reported GPS jamming.

ACN: 1800937 *(14 of 50)*

Time / Day

Date : 202104

Place

Altitude.MSL.Single Value : 35000

Environment

Flight Conditions : VMC

Aircraft

Reference : X
ATC / Advisory.Center : ZZZZ
Aircraft Operator : Air Carrier
Make Model Name : Commercial Fixed Wing
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Cargo / Freight / Delivery
Flight Phase : Cruise
Airspace.Class A : ZZZZ

Component

Aircraft Component : GPS & Other Satellite Navigation
Problem : Failed

Person

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)
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1800937
Human Factors : Human-Machine Interface
Human Factors : Workload
Human Factors : Distraction

Events

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

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : ATC Equipment / Nav Facility / Buildings

Contributing Factors / Situations : Software and Automation
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Environment - Non Weather Related
Primary Problem : ATC Equipment / Nav Facility / Buildings

Narrative: 1

Initially received ADS-B OUT L alert. Completed checklist by switching to a different transponder after approximately 10 minutes followed with ADS-B OUT R. Subsequently noticed inertial mode. Indicative of GPS jamming. We were in Ukrainian airspace approaching the Crimean area at the time. Jamming indications continued intermittently for roughly 45 minutes until clear of the area. Current Russian military activity in the area suggests intentional GPS interference. Inform other crews that GPS jamming is occurring, if possible route flights further east to avoid activity area.

Synopsis

An air carrier pilot reported GPS jamming.

ACN: 1799780 *(15 of 50)*

Time / Day

Date : 202104
Local Time Of Day : 0601-1200

Aircraft

Reference : X
ATC / Advisory.Center : ZZZ
Aircraft Operator : Air Carrier
Make Model Name : B737-800
Crew Size.Number Of Crew : 1
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Cruise
Airspace.Class A : ZZZ

Component

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

Person

Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
ASRS Report Number.Accession Number : 1799780
Human Factors : Confusion
Human Factors : Distraction
Human Factors : Human-Machine Interface
Human Factors : Troubleshooting
Human Factors : Workload

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Detector.Person : Flight Crew
Result.Flight Crew : Diverted
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Overcame Equipment Problem

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

While enroute 1.5 hours into flight, both GPS units began showing intermittent faults. I began coordinating with Dispatch. Eventually, both GPS units failed completely. Dispatch and I agreed that diverting to ZZZ was the best option. It was accomplished uneventfully. No GPS jamming reported by other aircraft or ATC.

Synopsis

An Air Carrier pilot reported both GPS units failed.

ACN: 1798849 *(16 of 50)*

Time / Day

Date : 202104
Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZAB.ARTCC
State Reference : NM

Environment

Weather Elements / Visibility : Turbulence

Aircraft

Reference : X
ATC / Advisory.Center : ZAB
Make Model Name : Commercial Fixed Wing
Flight Plan : IFR
Flight Phase : Climb
Flight Phase : Descent
Flight Phase : Cruise
Airspace.Class A : ZAB

Person

Location Of Person.Facility : ZAB.ARTCC
Reporter Organization : Government
Function.Air Traffic Control : Enroute
Qualification.Air Traffic Control : Fully Certified
Experience.Air Traffic Control.Time Certified In Pos 1 (yrs) : 13
ASRS Report Number.Accession Number : 1798849

Events

Anomaly.ATC Issue : All Types
Anomaly.Ground Event / Encounter : Ground Equipment Issue
Anomaly.Inflight Event / Encounter : Other / Unknown
Detector.Person : Air Traffic Control
When Detected : In-flight
Result.Air Traffic Control : Issued New Clearance
Result.Air Traffic Control : Provided Assistance

Assessments

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

Narrative: 1

Busy traffic, bad rides, frequency congestion, then GPS jamming. I asked the Supervisor to lower the sector traffic numbers to reflect volume and complexity. Supervisor called Traffic Management Unit and they didn't lower the sector traffic numbers. Aircraft are greatly affected by the GPS jamming and its not taken seriously by management, we've

been told we can't ask to stop jamming and to just put everyone on headings. Limit the length and what time of the day that facilities can GPS jam and have it taken seriously when we call and ask them to stop.

Synopsis

A Center Controller reported GPS jamming in their airspace during busy periods created an unsafe sector operation.

ACN: 1798677 *(17 of 50)*

Time / Day

Date : 202103
Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : ELP.Airport
State Reference : TX

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.Tower : ELP
Aircraft Operator : Air Carrier
Make Model Name : Commercial Fixed Wing
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 : GPS
Flight Phase : Climb
Route In Use.SID : JCOXX2

Component : 1

Aircraft Component : ADS-B (Automatic Dependent Surveillance - Broadcast)
Aircraft Reference : X
Problem : Malfunctioning

Component : 2

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

Component : 3

Aircraft Component : Indicating and Warning - Flight & Navigation Systems
Aircraft Reference : X
Problem : Malfunctioning

Person

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)

Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1798677
Human Factors : Troubleshooting
Human Factors : Workload
Human Factors : Confusion
Human Factors : Situational Awareness

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.ATC Issue : All Types
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Automation : Aircraft Terrain Warning
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : FLC complied w / Automation / Advisory

Assessments

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

Narrative: 1

Our flight ELP to ZZZ. We took off on Runway 4 and were assigned the JCOXX2 Departure. In the turn towards JCOXX above 6,450 ft we got the "terrain message" followed by the "pull up" message. We could clearly see that we would clear the terrain with no problem. As we were continuing the climb we noticed that the terrain system failed light was illuminated. ADS-B failed light was also on for awhile, but it went out after 30 minutes or so. I wrote up the terrain system fail light in ZZZ. The ATIS in ELP was warning of heavy military jamming of GPS signals in the area. When we asked ATC if they were receiving our ADS-B signal, they said they do not use it because of the military activities. The First Officer immediately pulled up and increased the climb rate, but since we both could see that terrain was not going to be a factor we did not exceed engine limits.

Synopsis

Air carrier Captain reported possible GPS jamming in this area per aircraft instrument errors, ATIS information and ATC advisory.

ACN: 1797324 *(18 of 50)*

Time / Day

Date : 202103

Place

Locale Reference.ATC Facility : ZAB.ARTCC
State Reference : NM

Aircraft

Reference : X
ATC / Advisory.Center : ZAB
Aircraft Operator : Air Carrier
Make Model Name : Commercial Fixed Wing
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Cruise
Airspace.Class A : ZAB

Person

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)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
Experience.Flight Crew.Total : 6714
Experience.Flight Crew.Last 90 Days : 133
Experience.Flight Crew.Type : 4415
ASRS Report Number.Accession Number : 1797324
Human Factors : Communication Breakdown
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : ATC

Events

Anomaly.ATC Issue : All Types
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Returned To Clearance

Assessments

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

Narrative: 1

GPS and radio signals very intermittent when approaching and flying through this area. We could hear ATC when we received ACARS requesting frequency 133.45 but obviously missed them handing us off to next sector.

Synopsis

Air carrier First Officer reported while flying through an area of poor GPS and radio signals they missed an ATC frequency change.

ACN: 1797026 *(19 of 50)*

Time / Day

Date : 202103

Place

Locale Reference.ATC Facility : ZZZ.ARTCC
State Reference : US

Aircraft

Reference : X
ATC / Advisory.Center : ZZZ
Aircraft Operator : Air Carrier
Make Model Name : Commercial Fixed Wing
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Cruise
Airspace.Class A : ZZZ

Component : 1

Aircraft Component : ACARS
Aircraft Reference : X
Problem : Malfunctioning

Component : 2

Aircraft Component : GPWS
Aircraft Reference : X
Problem : Malfunctioning

Person

Location Of Person : Hangar / Base
Reporter Organization : Air Carrier
Function.Dispatch : Dispatcher
Qualification.Dispatch : Dispatcher
ASRS Report Number.Accession Number : 1797026
Human Factors : Communication Breakdown
Human Factors : Confusion
Communication Breakdown.Party1 : Dispatch
Communication Breakdown.Party2 : Flight Crew

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Detector.Person : Dispatch
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Overcame Equipment Problem

Result.Air Traffic Control : Provided Assistance
Result.Aircraft : Equipment Problem Dissipated

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

20 minute span out time with no communication from crew to ATC, ATC Coordinator or Dispatch. Took 12 ACARS from myself and the ATC Coordinator to finally get into contact with the crew. However none of the ATC Coordinator messages appeared to go through to the crew. Position reports updated but no response until after the 12th ACARS. Crew said they were experiencing "weird ACARS/GPS/WIFI for while maybe military jamming or something".

Synopsis

Dispatcher reported 13 attempts were required before flight crew could receive or transmit on ACARS.

ACN: 1796402 *(20 of 50)*

Time / Day

Date : 202103
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZAB.ARTCC
State Reference : NM
Altitude.MSL.Single Value : 24000

Aircraft

Reference : X
ATC / Advisory.Center : ZAB
Aircraft Operator : Fractional
Make Model Name : Light Transport, Low Wing, 2 Turbojet Eng
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 135
Flight Plan : IFR
Mission : Passenger
Flight Phase : Descent
Airspace.Class A : ZAB

Person

Location Of Person.Facility : ZAB
Reporter Organization : Government
Function.Air Traffic Control : Enroute
Function.Flight Crew : Flight Engineer / Second Officer
Qualification.Air Traffic Control : Fully Certified
Experience.Air Traffic Control.Time Certified In Pos 1 (yrs) : 13
ASRS Report Number.Accession Number : 1796402
Human Factors : Training / Qualification
Human Factors : Situational Awareness

Events

Anomaly.Airspace Violation : All Types
Anomaly.ATC Issue : All Types
Anomaly.Deviation - Track / Heading : All Types
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Detector.Person : Air Traffic Control
When Detected : In-flight
Result.Air Traffic Control : Issued Advisory / Alert
Result.Air Traffic Control : Issued New Clearance

Assessments

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

Narrative: 1

WSMR (White Sands Missile Range) was GPS jamming. Aircraft X was significantly off course prior to taking position. Leaving controller put Aircraft X on a vector to miss restricted airspace. Aircraft X asked to go back on course direct to DNA, assuming he could navigate direct by his request, I gave him direct his destination again. I move on in my traffic scan and come back to Aircraft X making a 90 degree left hand turn. I had cleared Aircraft X to descend previously because he was no longer in conflict with WSMR after being vectored out, but with his 90 degree left hand turn he went back into WSMR descending and I didn't catch it in time. After realizing it I told Aircraft X to stop his descent but it was too late as he was passing through FL216. I called WSMR and asked them to "stop buzzer", the answered with "O.K.". Facility Manager on Duty later informed me we canâ€™t ask them to "stop buzzer" and to just keep putting aircraft on headings. Give controllers the ability to have WSMR stop GPS jamming during high traffic periods and move their jamming operations to mid shifts.

Synopsis

ZAB Enroute Controller reported a flight crews navigational capability was affected by White Sands Missile Range GPS jamming.

ACN: 1795503 *(21 of 50)*

Time / Day

Date : 202103
Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZZZ.ARTCC
State Reference : US
Altitude.MSL.Single Value : 24000

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.Center : ZZZ
Aircraft Operator : Air Carrier
Make Model Name : Any Unknown or Unlisted Aircraft Manufacturer
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Nav In Use : GPS
Flight Phase : Cruise
Route In Use : Vectors
Airspace.Class A : ZZZ

Component

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

Person

Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Function.Flight Crew : First Officer
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Experience.Flight Crew.Total : 2900
Experience.Flight Crew.Last 90 Days : 120
Experience.Flight Crew.Type : 1000
ASRS Report Number.Accession Number : 1795503
Human Factors : Human-Machine Interface
Human Factors : Situational Awareness
Human Factors : Confusion

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation - Track / Heading : All Types
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Detector.Person : Air Traffic Control
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Became Reoriented
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Returned To Clearance
Result.Air Traffic Control : Provided Assistance
Result.Air Traffic Control : Issued New Clearance

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Software and Automation
Contributing Factors / Situations : ATC Equipment / Nav Facility / Buildings
Primary Problem : Aircraft

Narrative: 1

While navigating to a fix ATC inquired as to where we were navigating. I responded direct to the fix ZZZ1. Our FMS showed us 2 miles south. ATC came back and said we were in fact 12 miles from ZZZ1 so at that point I knew our GPS wasn't working. I asked for vectors to the airport and they were provided. Upon an uneventful landing our GPS still showed us 34 miles from the airport when we were sitting on the ramp.

Synopsis

A Pilot reported receiving false information from their GPS.

ACN: 1795196 *(22 of 50)*

Time / Day

Date : 202103
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.Tower
State Reference : US
Relative Position.Angle.Radial : 350
Relative Position.Distance.Nautical Miles : 15
Altitude.MSL.Single Value : 6500

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.TRACON : ZZZ
Aircraft Operator : Personal
Make Model Name : PA-31P Navajo P
Crew Size.Number Of Crew : 1
Operating Under FAR Part : Part 91
Flight Plan : None
Mission : Personal
Flight Phase : Cruise
Route In Use : Direct
Airspace.Class B : ZZZ
Airspace.Class E : ZZZ1

Component

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

Person

Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Personal
Function.Flight Crew : Single Pilot
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Flight Instructor
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Experience.Flight Crew.Total : 18300
Experience.Flight Crew.Last 90 Days : 146
ASRS Report Number.Accession Number : 1795196
Human Factors : Situational Awareness

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation - Track / Heading : All Types
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
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 : Aircraft
Contributing Factors / Situations : Environment - Non Weather Related
Primary Problem : Environment - Non Weather Related

Narrative: 1

GPS system went into Dead Reckoning mode, but we did not notice right away. After about 5 minutes, it found the aircraft position again and updated, showing the aircraft track about a mile further west than it had displayed before. We were traveling north just outside of the ZZZ Class Bravo. We do not believe we penetrated the edge of the airspace at any time, but once the GPS came back online and updated, we were substantially closer than we had been believed based on the previous, ambiguous, nav data.

Synopsis

PA-31 Single Pilot Captain reported a navigation error due to temporary loss of GPS data.

ACN: 1793504 *(23 of 50)*

Time / Day

Date : 202103
Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZAB.ARTCC
State Reference : NM
Altitude.MSL.Single Value : 38000

Environment

Flight Conditions : VMC

Aircraft

Reference : X
ATC / Advisory.Center : ZAB
Aircraft Operator : Air Carrier
Make Model Name : Commercial Fixed Wing
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Cargo / Freight / Delivery
Flight Phase : Cruise
Airspace.Class A : ZAB

Person

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 : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
ASRS Report Number.Accession Number : 1793504
Human Factors : Confusion
Human Factors : Distraction
Human Factors : Fatigue
Human Factors : Human-Machine Interface
Human Factors : Troubleshooting

Events

Anomaly.Deviation - Track / Heading : All Types
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Ground Event / Encounter : Ground Equipment Issue
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Became Reoriented
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : ATC Equipment / Nav Facility / Buildings
Contributing Factors / Situations : Software and Automation
Contributing Factors / Situations : Company Policy
Primary Problem : ATC Equipment / Nav Facility / Buildings

Narrative: 1

Somewhere after Burns Flat (BFV) at 38,000 ft. and until ZUN VOR, we had encountered first an ATC Fault EICAS message. Oddly then on both transponders. First Officer was the Pilot Flying. So, we discussed and went into the QRH and complied. I had then though to ask ABQ ARTCC if they were able to see us on their radar scope. The controller had replied yes. So when I remarked of our issue, he knew right away that jamming was taking place. Now I didn't clarify if this was any kind of military exercise and if this was normal. He acted as though it was. Shortly after this, we started slowly seeing other EICAS messages. I can't remember the exact order though. I believe the next was EGPWS TERR or so. Then L GPS appeared not too far after this. Maybe R GPS as well, maybe. Eventually we saw UNABLE RNP. So we definitely knew GPS jamming was making sense. The RNP ANP scales on the Pilot Flying Display bottom was like RNP 2.00 ANP 2.93 in amber color. It was clear our GPS was in an inertial mode. I did select radio updating eventually per the QRH's procedural instructions. Center never seem too concerned as nothing else was said. The weather was quite good and while concerned, I had a good idea as we made our way towards ZZZ1, the start of the RNAV star, the GPS navigation would probably return to a normal state and it did. There wasn't any flight safety breaches or traffics conflicts as this event happened entered at cruise. Although, I did forget to make a maintenance log entry required by mandatory reports. I may have been more fatigued than I was aware. Sleep was fragmented in chunks of multiple 2 to 3 or so hrs. on this day. Intentional GPS jamming I suppose. I've never encountered this in my entire career here. Wondering if the military does these exercises, but I would expect we'd be notified via a NOTAM and on our [flight plan] if it was known. I suppose if we knew we could of had a different routing? I don't believe compromised safety as in this case was an issue. It never degraded to a more severe off course deviation and didn't cause traffic conflicts. Don't get me wrong we were concerned and a bit miffed. I will file a security report and read more on the subject of GPS jamming interference's.

Synopsis

An air carrier pilot reported GPS jamming.

ACN: 1792587 *(24 of 50)*

Time / Day

Date : 202103
Local Time Of Day : 0001-0600

Place

Locale Reference.ATC Facility : U90.TRACON
State Reference : AZ
Altitude.MSL.Single Value : 6000

Environment

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

Aircraft

Reference : X
ATC / Advisory.Tower : TUS
ATC / Advisory.TRACON : U90
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 : None
Mission : Personal
Flight Phase : Landing
Route In Use : Direct
Airspace.Class C : TUS

Component : 1

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

Component : 2

Aircraft Component : Air/Ground Communication
Aircraft Reference : X
Problem : Malfunctioning

Person

Location Of Person.Aircraft : X
Reporter Organization : Personal
Function.Flight Crew : Single Pilot
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Private
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 241
Experience.Flight Crew.Last 90 Days : 25

Experience.Flight Crew.Type : 17
ASRS Report Number.Accession Number : 1792587
Human Factors : Communication Breakdown
Human Factors : Distraction
Human Factors : Troubleshooting
Human Factors : Situational Awareness
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : ATC

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Landed As Precaution
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

I was traveling from ZZZ to ZZZ1. I experienced radio and GPS problems when trying to activate the runway lights at ZZZ1 around XA:00 local. After 3 attempts to activate the runway lights, I contacted Tucson Approach to see if there were any other ideas to help get the runway lights on. They called the airport to see if Customs was there. As no one was there, I was reaching my personal fuel reserve of 1 hour. The radio I have installed is GNS 430W. I had also had intermittent GPS signal, which resulted in no ADSB. Tucson Approach offered ZZZ2 as an alternate, but the airport was closed for the night. I felt it was much safer to go to TUS, as it has a host of FBO's and services available 24/7. I estimate that my radio at that time had about a 5 mile range. I lost contact with Approach several times, but I was able to hear the transponder code. As I got closer, Approach advised me that I was to enter a Right Downwind for Runway 11L at 4,000 ft. or above, and that I was cleared to land. They also told me to expect light gun signals from the Tower. I was able to acknowledge that transmission and was handed off to Tower. Tower also had a hard time hearing me, describing it as broken and scratchy. I was receiving Tower just fine, as I was close enough to the airport. I landed on 11L without incident and was given progressive taxi to FBO. Once I arrived and shut down, I asked if they had Maintenance available, which they did not. I parked there overnight until I was able to get an Avionics Tech to look at the airplane the next day. The Technician noticed that the 430W was not seated completely due do the design of the radio stack. He was able to quickly solve the problem. We did radio checks with TUS Ground and listened to the ATIS both over the cabin speaker and headsets. This particular aircraft is new to me, and I had not noticed the issue before as I normally operate out of an uncontrolled field. Now I incorporate a visual inspection of the GNS 430W, the audio panel, and the transponder as part of my preflight inspection, specifically looking to make sure they are seated properly, not loose, and functioning as they should. I took for granted that they had been installed correctly from the previous aircraft owner. I trust Maintenance shops to do work and repairs correctly, but it is now a trust but verify as I am the one responsible for the operation of the aircraft and systems.

Synopsis

Pilot reported experiencing radio and GPS problems when trying to activate the runway lights.

ACN: 1790868 *(25 of 50)*

Time / Day

Date : 202102
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : HIO.Tower
State Reference : OR
Relative Position.Distance.Nautical Miles : 5
Altitude.MSL.Single Value : 2000

Environment

Flight Conditions : VMC
Weather Elements / Visibility.Visibility : 10
Light : Daylight
Ceiling.Single Value : 4000

Aircraft : 1

Reference : X
Aircraft Operator : Personal
Make Model Name : Small Aircraft, High Wing, 1 Eng, Fixed Gear
Operating Under FAR Part : Part 91
Mission : Personal
Flight Phase : Initial Approach
Airspace.Class D : HIO

Aircraft : 2

Reference : Y
ATC / Advisory.Tower : HIO
Aircraft Operator : Personal
Make Model Name : Small Aircraft, High Wing, 1 Eng, Fixed Gear
Operating Under FAR Part : Part 91
Flight Plan : IFR
Mission : Personal
Flight Phase : Initial Climb
Airspace.Class D : HIO

Component

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

Person : 1

Location Of Person.Facility : HIO.Tower
Reporter Organization : Government
Function.Air Traffic Control : Local
Qualification.Air Traffic Control : Fully Certified
ASRS Report Number.Accession Number : 1790868
Human Factors : Communication Breakdown

Human Factors : Confusion
Human Factors : Situational Awareness
Communication Breakdown.Party1 : ATC
Communication Breakdown.Party2 : Flight Crew

Person : 2

Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Function.Flight Crew : Single Pilot
Qualification.Flight Crew : Instrument
Qualification.Other
Experience.Flight Crew.Total : 1040
Experience.Flight Crew.Last 90 Days : 10
Experience.Flight Crew.Type : 800
ASRS Report Number.Accession Number : 1788595
Human Factors : Troubleshooting
Human Factors : Situational Awareness
Human Factors : Confusion
Human Factors : Communication Breakdown
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : ATC

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Airspace Violation : All Types
Anomaly.ATC Issue : All Types
Anomaly.Conflict : NMAC
Detector.Person : Flight Crew
Detector.Person : Air Traffic Control
Miss Distance.Horizontal : 200
Miss Distance.Vertical : 0
When Detected : In-flight
Result.Flight Crew : Executed Go Around / Missed Approach
Result.Flight Crew : Became Reoriented
Result.Flight Crew : Took Evasive Action
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Air Traffic Control : Issued Advisory / Alert
Result.Air Traffic Control : Issued New Clearance

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : ATC Equipment / Nav Facility / Buildings
Contributing Factors / Situations : Software and Automation
Contributing Factors / Situations : Human Factors
Primary Problem : Aircraft

Narrative: 1

Aircraft X entered the airspace for 4 miles south of HIO at 020 heading eastbound. I used the ADS-B function on the radar display to determine the call sign. It appeared as if Aircraft X was going to join the pattern at ZZZ, a nearby airport. Aircraft X exited the airspace and was not in conflict with any aircraft. No attempt at communication was made. Aircraft X turned north and re-entered the airspace at 2100 ft., 4 miles southeast of HIO.

Aircraft X then made a right turn and joined a 5 mile final at 1800 ft. Aircraft X broke off of final and flew north, then suddenly rejoined a 3 mile final. This was the first attempt at communication with Aircraft X. I attempted communications and Ground Control attempted communications on their frequency, 121.5, and the practice area frequency. Aircraft Y was in right traffic for the right side runway and Aircraft X looked like he was joining final for the same runway I changed Aircraft Y to the left runway and issued a full stop landing clearance until Aircraft X was safely on the ground. Aircraft X overflew the right runway and began circling in the north portion of the airspace. Aircraft X was given the green light gun signal multiple times but never landed. In total, 6 different aircraft had their flight paths adjusted to avoid Aircraft X. Aircraft Y called ready for departure, IFR on a SID. I called Approach and requested a 5 minute release to attempt to avoid Aircraft X's erratic flight paths. Aircraft X was on a left downwind heading for the opposite direction runway and had been circling for approximately 15 minutes. I cleared Aircraft Y for takeoff assuming that Aircraft X would continue their right turns and not be a factor for Aircraft Y. Aircraft X suddenly turned a left base and descended just at Aircraft Y was lifting off. I issued a traffic alert for Aircraft Y, who reported the traffic in sight and maneuvered to avoid Aircraft X. It appeared that the closest proximity was 200 ft. lateral and 0 ft. vertical. Aircraft X overflew the runway at 500 ft. and made a left turn northbound. Aircraft Y rejoined the SID and was shipped to Departure Control. Ground Control received a phone call from ZZZ1 Tower, who has been in contact with Aircraft X since he entered HIO airspace. Ground Control advised that Aircraft X is cleared to land on any runway. Aircraft X intercepted a left base for an intersecting runway but flew through final. Aircraft X transitioned outside of the airspace at 1000 ft. Aircraft X was tagged up as "VIOLTR" and Approach advised that Aircraft X landed at ZZZ1. The backup radios in the Tower are difficult to use. Having a newer, digital, handheld version similar to the ones that pilots use might make it easier to establish communications with a lost pilot. A shout line connected to the other nearby towers might also help.

Narrative: 2

As the pilot in command, I departed in my airplane on a VFR cross country flight to ZZZ1. The aircraft has an installed GNS 430W GPS and GTX-330ES transponder providing ADSB capability. The route of flight followed a basically southerly course direction, with route guidance provided by the G430W direct to my destination. Approximately 15 to 20 miles from my destination, I announced my intention to land. The GPS map course indicated that I was closing in on what was indicated to be my destination, and I made preparations to land, with a call to Tower, indicating my intentions. Having received no response, I maneuvered the aircraft west of the airport in an attempt to gain some time for working out the communication problem. Eventually, I received a broken communication that provided clearance to land. I set up my approach and noticed that the runway markings did not match up to what I expected and did not land. I found out later that I was at a nearby airport however, and this did not correspond to my Garmin 430W readout. Given the communications issues I was having, I contacted my son with my cell phone, who was on the ground having traveled there independently. He contacted the Tower, indicating there was a problem with my flight. The Air Traffic Controller on duty, at that time, was able to locate my aircraft almost immediately and provided vectors. Communications between my aircraft [and ATC] improved as I flew closer to the airport. I made a safe, uneventful landing. To summarize, it is apparent that there were significant issues with medium to long range communications and erroneous GPS information that directly caused concerns with this flight. There was nothing obvious indicating that there was equipment failure on board my aircraft, at that time or subsequently. The return trip was perfectly normal, with support from ATC flight following the entire way, later that evening. The real concern comes down to bad GPS tracking data, which placed me in the wrong airport airspace unintentionally, whereas, I had reason to believe, based on erroneous

information, that I was receiving correct information pursuant to an airport arrival at my intended destination There have been published reports of military GPS interruptions for testing and training purposes in the area that are known to have impacted civilian aircraft. Perhaps such jamming activities disrupted my GPS on board, thus would have provided inaccurate location guidance to my Garmin 430W.

Synopsis

Pilot and a Tower Controller reported the pilot flew to the wrong airport. The pilot reported the error was likely due to the pilot's GPS giving false indications or being jammed.

ACN: 1790021 *(26 of 50)*

Time / Day

Date : 202102

Place

Locale Reference.ATC Facility : ZOA.ARTCC
State Reference : CA
Relative Position.Angle.Radial : 120
Relative Position.Distance.Nautical Miles : 1
Altitude.MSL.Single Value : 8000

Environment

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

Aircraft

Reference : X
ATC / Advisory.Center : ZOA
Aircraft Operator : Air Taxi
Make Model Name : Medium Transport
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 135
Flight Plan : IFR
Mission : Passenger
Nav In Use : FMS Or FMC
Nav In Use : GPS
Flight Phase : Descent
Route In Use : Visual Approach
Route In Use : Vectors
Airspace.Class A : ZOA

Component

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

Person

Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Taxi
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Flight Instructor
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Experience.Flight Crew.Total : 20000
Experience.Flight Crew.Last 90 Days : 120

Experience.Flight Crew.Type : 10000
ASRS Report Number.Accession Number : 1790021

Events

Anomaly.ATC Issue : All Types
Anomaly.Deviation - Track / Heading : All Types
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Result.Air Traffic Control : Provided Assistance
Result.Air Traffic Control : Issued Advisory / Alert

Assessments

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

Narrative: 1

Position was CORKR intersection to directly over SFO [VOR] at approximately 8,000 MSL. Had navigation flag on GNSS from GPS jamming Was tracking fine up to SFO, Over SFO GNSS made a turn directly to ZZZ or so was thought, however, it was off course, Controller asked what our previous clearance that had been given, which was HOLLR, GRIJO, CORKR, SFO, ZZZ. Original clearance was GPI DIRECT to ZZZ. On the NW side of Nevada, there was GPS jamming was in progress. We reported it, and checked with controllers to see if our course was accurate. They informed us it was, and that if necessary they would give us a heading. Upon changeover to Oakland Center, we advised the Controller that GPS jamming had been in progress, and that we still had a navigation flag. He then issued a clearance to follow the fixes listed above, and we then asked how much longer the GPS jamming would continue. He said a few more miles. we advised him we still had a navigation flag on our GNSS, but apparently he was distracted, and told us to continue without issuing a heading. We were then turned over to another controller who apparently had not been informed of the ongoing issue. Hence once over SFO VOR, was when the issue listed above was encountered. We were not told if there was a near miss, he just gave us a heading to 180 and vectored us to the airport after that. Once on the ground, we were advised to call approach control for a possible deviation. We attempted to call but could not get through to anyone. We advised the Tower we were not able to reach anyone, so he tried to call and failed, but then he got through with another number. They said to disregard, and we then proceeded to ZZZ1 where the flight terminated.

Synopsis

Air taxi Captain reported a track heading deviation after experiencing GPS jamming near SFO VOR in ZOA ARTCC airspace.

ACN: 1789890 *(27 of 50)*

Time / Day

Date : 202102
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.ARTCC
State Reference : US
Altitude.MSL.Single Value : 39000

Aircraft

Reference : X
ATC / Advisory.Center : ZZZ
Aircraft Operator : Air Carrier
Make Model Name : B767-300 and 300 ER
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Cruise
Airspace.Class A : ZZZ

Component

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

Person

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 : 1789890
Human Factors : Situational Awareness

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation - Track / Heading : All Types
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Detector.Person : Flight Crew
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Returned To Clearance
Result.Air Traffic Control : Provided Assistance
Result.Air Traffic Control : Issued New Clearance

Assessments

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

Narrative: 1

At or near ZZZ VOR, I noticed the aircraft started to turn when on a direct clearance to fix ZZZ1. Followed quickly by an Unable RNP. I quickly went to heading mode and requested and was given a heading from ATC. Aircraft was about a mile left of course. Trouble shooting looked to be a GPS issue. Turned off GPS navigation and used IRS function and aircraft tracked courses normally. We changed flight plan with ATC to no GPS and continued on with a normal flight and approach and landing.

Synopsis

B767-300 Captain reported having a GPS issue resulting in a track heading deviation.

ACN: 1785003 *(28 of 50)*

Time / Day

Date : 202101
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : OOMM.ARTCC
State Reference : FO

Aircraft

Reference : X
ATC / Advisory.Center : OOMM
Aircraft Operator : Air Carrier
Make Model Name : Commercial Fixed Wing
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Nav In Use : GPS
Flight Phase : Cruise
Route In Use.Airway : P307
Airspace.Class A : ZZZZ

Component

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

Person

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 : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
ASRS Report Number.Accession Number : 1785003

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Detector.Person : Flight Crew
When Detected : In-flight
Result.General : None Reported / Taken

Assessments

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

Narrative: 1

GPS jamming in vicinity of Iran and Oman at position about 20 miles west of waypoint SETSI (Airway P307) indicated by ADS-B FAIL and GNS 1, 2 FAIL. All systems returned to normal about 15 minutes later. Cause - External GPS jamming.

Synopsis

Air carrier Captain reported possible GPS jamming near SETSI waypoint in Oman airspace.

ACN: 1784398 *(29 of 50)*

Time / Day

Date : 202101
Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : CHS.TRACON
State Reference : SC
Relative Position.Angle.Radial : 000
Relative Position.Distance.Nautical Miles : 15
Altitude.MSL.Single Value : 2000

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.TRACON : CHS
Aircraft Operator : Personal
Make Model Name : Small Aircraft, Low Wing, 1 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 : Visual Approach
Route In Use : Direct
Airspace.Class E : ZJX

Component

Aircraft Component : GPS & Other Satellite Navigation
Problem : Failed

Person

Location Of Person.Aircraft : X
Reporter Organization : Personal
Function.Flight Crew : Single Pilot
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Flight Instructor
Experience.Flight Crew.Last 90 Days : 30
Experience.Flight Crew.Type : 1600
ASRS Report Number.Accession Number : 1784398
Human Factors : Communication Breakdown
Human Factors : Confusion
Human Factors : Human-Machine Interface
Human Factors : Situational Awareness
Human Factors : Troubleshooting

Human Factors : Workload
Human Factors : Distraction
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : ATC

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Requested ATC Assistance / Clarification

Assessments

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

Narrative: 1

Enroute at 2,000 feet when I received a message on GPS and EFIS saying RNAV signal is lost, ADS-B is lost. iPad does not show correct location. No problem because VMC and not going anywhere. No navigation and no traffic. I called Approach Control to ask if they knew of any GPS outages. They said they hadn't and nobody else was having a problem. After landing, about 20 minutes later the system was back to normal. Another pilot had the same experience. Called Approach Control again on the landline and they advised that they had gotten several reports but they had no prior record of it and they should have been advised that Navy was doing testing offshore. There were no local NOTAMs and when I went back to look, there was a NOTAM for the outage lasting for about a week at various times for Center. Send [a] NOTAM to all Approach Controls that underlie testing area and also to local airports so that flights that never touch overlying airspace are aware of possible outage. They should also be sent to EFB providers so they can include it in their system. Had this occurred in IMC it would have spiked the workload considerably and only VHF navigation would have worked.

Synopsis

A Pilot reported GPS interference.

ACN: 1777039 *(30 of 50)*

Time / Day

Date : 202012
Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZZZ.ARTCC
State Reference : US
Altitude.MSL.Single Value : 8000

Environment

Flight Conditions : VMC

Aircraft

Reference : X
ATC / Advisory.Center : ZZZ
Aircraft Operator : Air Carrier
Make Model Name : B777 Undifferentiated or Other Model
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Nav In Use : GPS
Flight Phase : Climb
Airspace.Class A : ZZZ
Airspace.Class E : ZZZ

Component

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

Person

Location Of Person.Aircraft : X
Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
Experience.Flight Crew.Total : 4521
Experience.Flight Crew.Last 90 Days : 127
Experience.Flight Crew.Type : 1146
ASRS Report Number.Accession Number : 1777039

Events

Anomaly.Aircraft Equipment Problem : Less Severe
When Detected : In-flight
Result.Flight Crew : Overrode Automation

Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Became Reoriented

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

Departing ZZZ cleared to 6,000 ft. right turn [Heading] 240 off Runway XX after takeoff cleared direct to ZZZ1 [VOR] executed that on CDU (Control Display Unit), but it did not show on NAV (navigation) display on either Copilot or Captain side. Then issued direct to ZZZ2 [VOR] executed that in CDU still no magenta line for course guidance on either NAV display. CDU was working properly with course and distance. We then noticed we could not select STA WPT ARPT DATA POS from the NAV display selector panel. So we hard tuned the VOR in the CDU and asked for radar vectors to ZZZ2 [VOR] because it was 300 plus miles away. We noticed the lack of GPS on NAV display so I checked GPS in the CDU, it seemed to be working correctly. We informed ATC we were no longer slant Lima equipped. I called Dispatch for help and to get approval from ATC to operate that way. We received a reroute from ATC and Maintenance Control did not see any malfunctions with NAV system. Also our TCAS had malfunctioned during climbout, so we were no longer RVSM capable. We advised ATC of this also and descended. I went through the NAV unreliable checklist that was no help. After about 60 minutes of flight GPS and NAV display control panel started working normally TCAS was still inoperative.

Synopsis

An air carrier Captain reported GPS interference.

ACN: 1775414 *(31 of 50)*

Time / Day

Date : 202012
Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : PHL.Airport
State Reference : PA
Altitude.MSL.Single Value : 3500

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.TRACON : PHL
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 B : PHL

Component

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

Person

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 : Commercial
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 1700
Experience.Flight Crew.Last 90 Days : 27
Experience.Flight Crew.Type : 1300
ASRS Report Number.Accession Number : 1775414
Human Factors : Human-Machine Interface

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Airspace Violation : All Types
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Exited Penetrated Airspace

Assessments

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

Narrative: 1

While flying a VFR flight to LOM, I may have entered the Philadelphia Bravo airspace without clearance. I was communicating with PHL ATC on 124.35 for flight following. I was told to climb from 3,000 to 3,500 to avoid a TFR but don't remember specifically being cleared into the bravo airspace. Normally I would verify with ATC before entering the bravo if I was unsure. However, on this flight, my GPS equipment lost the GPS signal near Wilmington and I got distracted troubleshooting it. I was a few miles into the Bravo airspace when I realized I had not double checked the clearance. I was still talking with PHL ATC and they did not express any concerns with my location.

Synopsis

GA pilot reported inadvertently entering PHL Class B airspace without a clearance due to distraction from having to troubleshoot the GPS system on the aircraft.

ACN: 1764299 *(32 of 50)*

Time / Day

Date : 202009
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZAB.ARTCC
State Reference : NM

Aircraft

Reference : X
ATC / Advisory.Center : ZAB
Aircraft Operator : Air Carrier
Make Model Name : Commercial Fixed Wing
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Cargo / Freight / Delivery
Nav In Use : GPS
Flight Phase : Cruise
Airspace.Class A : ZAB

Component

Aircraft Component : Weather Radar
Aircraft Reference : X
Problem : Malfunctioning

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 : First Officer
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
ASRS Report Number.Accession Number : 1764299

Events

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

Assessments

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

Narrative: 1

Received radar jamming at approximately 80 NM west to 80 NM east of ABQ VOR. The QRH was run for all abnormal alerts. ATC advised and a logbook entry was made with Maintenance being advised in route. No further interruptions occurred. Ground GPS jamming around the ABQ VOR is regularly occurring.

Synopsis

Air carrier First Officer reported experiencing radar/GPS jamming in the vicinity of ABQ VOR.

ACN: 1757690 *(33 of 50)*

Time / Day

Date : 202008
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.TRACON
State Reference : US
Altitude.MSL.Single Value : 8000

Environment

Weather Elements / Visibility : Rain
Weather Elements / Visibility.Visibility : 4
Ceiling.Single Value : 3000

Aircraft

Reference : X
ATC / Advisory.TRACON : ZZZ
Aircraft Operator : Personal
Make Model Name : Skylane 182/RG Turbo Skylane/RG
Crew Size.Number Of Crew : 1
Operating Under FAR Part : Part 91
Flight Plan : IFR
Mission : Personal
Flight Phase : Climb
Route In Use : Vectors

Component

Aircraft Component : Flight Dynamics Navigation and Safety
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 : Multiengine
Experience.Flight Crew.Total : 26000
Experience.Flight Crew.Last 90 Days : 90
Experience.Flight Crew.Type : 400
ASRS Report Number.Accession Number : 1757690
Human Factors : Troubleshooting

Events

Anomaly.Deviation - Track / Heading : All Types
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Air Traffic Control : Provided Assistance
Result.Aircraft : Equipment Problem Dissipated

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

Climbing out in IFR conditions I lost GPS signal to my KNS 750 which skewed my G5 heading. I was given a heading and had to check my magnetic compass to comply. My GPS signal came back after about 5 min. I don't believe their was any separation issues. I landed and called my mechanic and told him what happened. He thinks with the RAIM (Receiver Autonomous Integrity Monitoring) that we have to ground the control surfaces. He has only heard of this one time before. I told him that I will not take that plane up again in IFR conditions without fully going through the panel.

Synopsis

C182 pilot reported temporary loss of GPS Navigation system during IFR flight.

ACN: 1751158 *(34 of 50)*

Time / Day

Date : 202007
Local Time Of Day : 0001-0600

Aircraft

Reference : X
Make Model Name : Any Unknown or Unlisted Aircraft Manufacturer
Operating Under FAR Part.Other
Mission.Other
Flight Phase.Other

Component

Aircraft Component : GPS & Other Satellite Navigation
Manufacturer : Honeywell iMMR
Aircraft Reference : X
Problem : Design
Problem : Malfunctioning

Person

Reference : 1
Location Of Person.Facility : unknown
Reporter Organization.Other
ASRS Report Number.Accession Number : 1751158
Human Factors : Other / Unknown

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Detector.Person : Flight Crew
Result.General : None Reported / Taken

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Equipment / Tooling
Primary Problem : Ambiguous

Narrative: 1

We need to understand the true implications of the GPS being unreliable. The current idea is that the GPS will be deferred if the symptoms arise despite the underlying condition being ever present.(GPS could fail, regardless of the predeparture integrity check Passing)

This risk needs a control, whether that be placing the KNOWN DEFECTIVE units on deferral, placing a restriction on the flight planning predication on GPS availability, or (unlikely) updating the RAIM check to consider the defect in our MMR.

Honeywell iMMR has a confirmed issue causing it to not being able to receive a specific satellite in the GPS constellation. This causes a loss of GPS signal when the iMMR is unable to receive an adequate number of satellites due to the defect.

In pre-departure stage of flight planning Dispatch runs a RAIM check to determine whether GPS signal will be available during the course of the flight. However this RAIM check is not considering the defect in our receivers, thus rendering the check invalid. While the check has passed reality is that the GPS may not be available due to the defective unit.

The greatest risk would be during the landing phase where a flight was dispatched predicated on utilizing a GPS approach. However again due to the inaccurate RAIM check the GPS receiver is not available to resolve the satellite constellation and the flight must divert due to no available approaches.

This situation is worsened if instead of the destination the alternate airport was planned to use a GPS approach, after diverting from their destination the flight now has no approach available at their alternate due to the, invalid RAIM check at the time of flight planning.

In less severe cases we are still planning on having GPS coverage, despite knowing the MMR receiver is faulty and could "fail at any time" (technically it could be forecast when they would fail).

Synopsis

Pilot described the need to understand all implications resulting from the failure of GPS.

ACN: 1750165 *(35 of 50)*

Time / Day

Date : 202007
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZFW.ARTCC
State Reference : TX

Aircraft

Reference : X
ATC / Advisory.Center : ZFW
Aircraft Operator : Air Carrier
Make Model Name : B737 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
Nav In Use : GPS
Flight Phase : Cruise
Route In Use : Direct
Airspace.Class A : ZFW

Component : 1

Aircraft Component : Flight Dynamics Navigation and Safety
Aircraft Reference : X
Problem : Malfunctioning

Component : 2

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

Component : 3

Aircraft Component : Position Computing System
Aircraft Reference : X
Problem : Malfunctioning

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Private
Qualification.Flight Crew : Commercial
Qualification.Flight Crew : Multiengine

ASRS Report Number.Accession Number : 1750165
Human Factors : Troubleshooting
Human Factors : Situational Awareness
Human Factors : Confusion

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Detector.Person : Flight Crew
When Detected : In-flight
Result.General : None Reported / Taken

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Airspace Structure
Contributing Factors / Situations : ATC Equipment / Nav Facility / Buildings
Contributing Factors / Situations : Environment - Non Weather Related
Primary Problem : Ambiguous

Narrative: 1

Enroute just west of LBB in southern New Mexico we received significant GPS jamming and then apparently spoofing. Both GPS units lost position, and then later they showed position, but position determined by NAVAIDs was different than GPS position. Multiple other aircraft reported same issue transiting the area. Luckily we were only "direct to a fix" so our navigation westbound was not significantly affected. However, our transponder failed at one point (had a fail light), presumably because of a problem with ADS-B and no GPS signal. Military jamming and spoofing GPS. Position not exact. Could cause ATC problems with loss of ADS-B. Limit GPS jamming and spoofing to non-daylight, low volume hours to avoid loss of ATC services, navigation, and ability to use RNAV navigation in short term. In long term, develop a back up navigation system, such as E-LORAN for navigation when GPS not available.

Synopsis

B737 Pilot reported suspected GPS jamming at this location.

ACN: 1748181 *(36 of 50)*

Time / Day

Date : 202006
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : UUWV.ARTCC
State Reference : FO

Aircraft

Reference : X
ATC / Advisory.Center : UUWV
Aircraft Operator : Air Carrier
Make Model Name : Commercial Fixed Wing
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Cargo / Freight / Delivery
Nav In Use : FMS Or FMC
Nav In Use : GPS
Flight Phase : Cruise
Route In Use : Direct

Component : 1

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

Component : 2

Aircraft Component : Position Computing System
Aircraft Reference : X
Problem : Malfunctioning

Person

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 : 1748181
Human Factors : Distraction
Human Factors : Situational Awareness

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.ATC Issue : All Types
Detector.Person : Flight Crew

When Detected : In-flight
Result.General : None Reported / Taken

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : ATC Equipment / Nav Facility / Buildings
Contributing Factors / Situations : Environment - Non Weather Related
Primary Problem : Ambiguous

Narrative: 1

Suspected GPS jamming Aircraft X Moscow, UUWV FIR at LAMAG along G724 at XA:14Z. FL340 ADS-B OUT L from XA:14Z through remainder of flight/blocked in XC:55Z, also ADS-B OUT R intermittent from XA:16Z through XA:24Z selected transponder R /selected ref nav data, Rad Nav Inhibit off. Unknown [cause]. Possible jamming?

Synopsis

Air carrier Captain reported possible GPS jamming with both L/R ADS-B malfunctioning or inoperative.

ACN: 1747135 *(37 of 50)*

Time / Day

Date : 202006
Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : SUS.Airport
State Reference : MO
Altitude.MSL.Single Value : 1500

Environment

Weather Elements / Visibility.Visibility : 10
Weather Elements / Visibility.Other

Aircraft

Reference : X
ATC / Advisory.Tower : SUS
Make Model Name : Small Aircraft, Low Wing, 1 Eng, Retractable Gear
Crew Size.Number Of Crew : 1
Operating Under FAR Part : Part 91
Flight Plan : None
Route In Use : Visual Approach
Airspace.Class D : SUS

Component

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

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Function.Flight Crew : Single Pilot
Qualification.Flight Crew : Private
Experience.Flight Crew.Total : 325
Experience.Flight Crew.Last 90 Days : 20
ASRS Report Number.Accession Number : 1747135
Human Factors : Distraction

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation - Track / Heading : All Types
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Detector.Person : Flight Crew
When Detected : In-flight
Result.General : None Reported / Taken

Assessments

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

Narrative: 1

Lost GPS contact, got off track while reviewing the sectional chart.

Synopsis

Pilot reported loss of GPS and a track deviation.

ACN: 1746653 *(38 of 50)*

Time / Day

Date : 202006
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.TRACON
State Reference : US
Altitude.MSL.Single Value : 15000

Aircraft

Reference : X
ATC / Advisory.TRACON : ZZZ
Make Model Name : Learjet 45
Crew Size.Number Of Crew : 2
Flight Plan : IFR
Mission : Passenger
Nav In Use : FMS Or FMC
Nav In Use : GPS
Flight Phase : Cruise
Route In Use : Direct
Route In Use.STAR : ZOMBZ THREE
Airspace.Class E : ZZZ

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
Function.Flight Crew : Captain
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
ASRS Report Number.Accession Number : 1746653
Human Factors : Other / Unknown

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.ATC Issue : All Types
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation - Altitude : Crossing Restriction Not Met
Anomaly.Deviation - Track / Heading : All Types
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Detector.Person : Air Traffic Control
When Detected.Other
Result.General : None Reported / Taken

Assessments

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

Narrative: 1

Our flight on the XXth of June 2020 originated in ZZZ1 to ZZZ and terminated on ZZZ2. After departing ZZZ1 to ZZZ we received a message (while at cruse altitude) on our FMS that our number one GPS had failed. We did not notice any abnormalities. When we were within 30 miles of ZZZ, we were given vectors for the LOC-DME E approach to Runway 15. Our clearance from ZZZ to ZZZ3 was the ZZZZZ Departure to ZZZZZ to ZZZZZ1 to ZZZZZ2 and the ZZZZZ3 Arrival into ZZZ2. Once airborne and prior to reaching the waypoint we were given a right turn direct to ZZZZZ1. Prior to reaching ZZZZZ1 we were cleared direct to ZZZZZ3 and instructed to descend per the ZZZZZ3. We were to cross ZZZZZ3 at 15,000 per the STAR. Then after ZZZZZ to cross ZZZZZ4 at between 14,000 and 13,000. Our FMS showed us over ZZZZZ3 and the autopilot started a slight right turn over ZZZZZ3 turning towards ZZZZZ4. At this time we started our decent to cross ZZZZZ4 at 14,000 to 13,000. We were then given vectors to Runway XXL. We questioned the controller, we stated that we were landing at ZZZ3. She said that she assumed we were going to ZZZ4 airport because almost everyone coming over ZZZZZ3 normally landed at ZZZ4. She gave us a new vector for ZZZ3. A second person came on the radio and stated that the controllers were working with new software. After landing at ZZZ3 we were asked to call Approach Control on the land line about a possible altitude deviation. He said that we started our decent prior to ZZZZZ3 and I assured him that our FMS showed us over ZZZZZ3 and the autopilot started a right turn toward ZZZZZ4 and we started our descent. He said that their radar showed us level at 15,000 and we started our decent 9.7 miles prior to ZZZZZ3. If this is true and they observed us starting our decent early. Why wasn't we questioned about starting down prior to ZZZZZ3. We have reported this to our radio shop and they said the failed GPS could be the antenna and it will be inspected and also the lack of proper satellite reception could cause a problem. The FMS will be taken out and bench checked.

Synopsis

Lear 45 pilot reported a possible altitude deviation due to GPS failure.

ACN: 1744849 *(39 of 50)*

Time / Day

Date : 202003

Place

Locale Reference.ATC Facility : ZZZ.Tower
State Reference : US
Altitude.MSL.Single Value : 2000

Aircraft

Reference : X
ATC / Advisory.Tower : ZZZ
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 : VFR
Mission.Other
Flight Phase : Cruise
Route In Use : VFR Route
Airspace.Class D : ZZZ

Component

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

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization.Other
Function.Flight Crew : Single Pilot
Qualification.Flight Crew : Private
ASRS Report Number.Accession Number : 1744849
Human Factors : Situational Awareness
Human Factors : Troubleshooting

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Airspace Violation : All Types
Anomaly.Deviation / Discrepancy - Procedural : FAR
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Detector.Person : Flight Crew
When Detected : In-flight
Result.General : None Reported / Taken

Assessments

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

Narrative: 1

I left on a VFR flight using GPS guidance for navigation. The direct route took me through class D airspace. Using the GPS to stay clear of this airspace was planned before departure. After departing the GPS was working OK and was on course to stay clear of any controlled airspace. Some time thereafter the GPS lost signal and stopped moving but the map showed I was still clear of any conflict as it was not updating to show my exact position.

This leading me to be closer to the airspace than my GPS screen showed. After the entering of controlled airspace and realizing the GPS was not updating and after a close inspection of the GPS it was determined that a loose connection of the antenna wiring was causing the GPS to lose its signal and this was corrected and this problem should not happen again. The reason for the conflict was equipment failure and a way to prevent this from happening again would be to have a backup GPS or have flight following so ATC can also back up your route of flight. Personally I am going to just IFR from now on and not rely on one source of navigation.

Synopsis

PA-32 Pilot reported possible airspace violation due to GPS failure.

ACN: 1743436 *(40 of 50)*

Time / Day

Date : 202005
Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : UHMM.ARTCC
State Reference : FO

Aircraft

Reference : X
ATC / Advisory.Center : UHMM
Aircraft Operator : Air Carrier
Make Model Name : Commercial Fixed Wing
Crew Size.Number Of Crew : 3
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Nav In Use : FMS Or FMC
Nav In Use : GPS
Flight Phase : Cruise
Route In Use : Direct
Airspace.Class A : UHMM

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 : Captain
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1743436
Human Factors : Troubleshooting
Human Factors : Workload
Human Factors : Situational Awareness

Person : 2

Reference : 2
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 : Instrument
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
ASRS Report Number.Accession Number : 1743437
Human Factors : Troubleshooting
Human Factors : Situational Awareness
Human Factors : Confusion
Human Factors : Workload

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Inflight Event / Encounter : Other / Unknown
Detector.Automation : Aircraft Other Automation
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Overcame Equipment Problem
Result.Aircraft : Equipment Problem Dissipated

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Airspace Structure
Primary Problem : Ambiguous

Narrative: 1

The operating flight crew notified me of a problem while I was resting in the bunk. I went to the Flight deck and they informed me that the NAV Performance system indicating up to a 15 mile ANP. They informed me that they ran through the appropriate checklist. I stayed on the flight deck while the ANP return to a normal value. This only lasted for about 20 minutes. We continued to Anchorage and landed without incident.

I suggest we track the locations and times of these events in order to determine whether they are internal aircraft system related or external signal interference related.

Narrative: 2

GPS R & ADS-B R failed.
Between Navigation points UNEDA to NOKID, GPS L remained on and accurate, but was not updating FMC positions. RNP required 4.0. ANP rose slowly to approximately 2.6. After 3 minutes, the ANP jumped to approximately 15.6 then continued to rise slowly. Crew completed GPS R Fail and ADS-B Fail checklists. ANP did not recover from checklist completion. Crew reported loss of RNP capability to Magadan Control.

Crew verified position vs navigation reference pages and from radar contact (Magadan) at point BE. The aircraft did not receive an active bearing pointer from BE. The autopilot maintained previous planned track, no navigation deviations noted.

Near NOKID GPS R and ADS- B R status messages cleared and ANP rapidly Normalized to 0.08. No further issues were noted.

Suspect Active GPS jamming in the area. Suspect system logic problem for L GPS not supplying position information to the FMC's/ANP after GPS R failed.

Under radar control flight segments or within range of ground based navigation facilities, verifying an accurate location is a common and easy task.

Synopsis

Air carrier flight crew reported possible GPS jamming resulted in loss of GPS and ADS-B.

ACN: 1742421 *(41 of 50)*

Time / Day

Date : 202005
Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : TYQ.Airport
State Reference : IN
Relative Position.Angle.Radial : 000
Relative Position.Distance.Nautical Miles : 10
Altitude.MSL.Single Value : 2700

Environment

Flight Conditions : VMC
Weather Elements / Visibility.Visibility : 10
Light : Daylight
Ceiling.Single Value : 6500

Aircraft

Reference : X
ATC / Advisory.TRACON : IND
Aircraft Operator : Personal
Make Model Name : Small Aircraft, Low Wing, 1 Eng, Retractable Gear
Crew Size.Number Of Crew : 1
Operating Under FAR Part : Part 91
Flight Plan : None
Mission : Training
Nav In Use : GPS
Flight Phase : Initial Approach
Route In Use : Direct
Airspace.Class C : IND

Component

Aircraft Component : PFD
Aircraft Reference : X
Problem : Malfunctioning

Person

Reference : 1
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 : Instrument
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Flight Instructor
Qualification.Flight Crew : Multiengine
Experience.Flight Crew.Total : 34500
Experience.Flight Crew.Last 90 Days : 120

Experience.Flight Crew.Type : 350
ASRS Report Number.Accession Number : 1742421

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Airspace Violation : All Types
Anomaly.Conflict : Airborne Conflict
Anomaly.Deviation - Track / Heading : All Types
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Detector.Person : Flight Crew
Miss Distance.Horizontal : 12000
Miss Distance.Vertical : 600
When Detected : In-flight
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Exited Penetrated Airspace

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

During an ILS instrument approach to TYQ RNW 36 we lost the Primary Flight Display (PFD) resulting in loss of data from GPS temporarily. The aircraft was positioned parallel to the Class C airspace of IND in a position I believed to be just north of IND Class C by reference to visual points on the ground. I instructed the student to fly 10 degrees further north of the Class C airspace. After reset of the PFD my flight track showed on the northern edge of the Class C IND airspace at 2700' MSL. My command to turn further left to a heading of 080 had us clear of Class C. I believe we may have been inside Class C airspace by approximately .1 to .2 nm for approximately less than 1 minute. I had visual reference to a light twin about 600' below and 1-2 mi east of my position on an approach to EYE. We had no traffic advisory and no separation standards were compromised. We proceeded to TYQ without incident.

Synopsis

Instructor Pilot reported an airspace violation related to loss of the Primary Flight Display and GPS data.

ACN: 1742053 *(42 of 50)*

Time / Day

Date : 202005
Local Time Of Day : 0001-0600

Place

Locale Reference.ATC Facility : ZAB.ARTCC
State Reference : NM

Environment

Flight Conditions : VMC

Aircraft

Reference : X
ATC / Advisory.Center : ZAB
Aircraft Operator : Air Carrier
Make Model Name : Widebody, Low Wing, 2 Turbojet Eng
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Nav In Use : FMS Or FMC
Flight Phase : Cruise
Airspace.Class A : ZAB

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 : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
ASRS Report Number.Accession Number : 1742053

Events

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

Assessments

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

Narrative: 1

At cruise, we got a message "GPS position lost". I checked the GPS position on the FMS, which confirmed GPS position lost indication. The flight release was planed for Runway 04, which has an RNAV GPS Approach, but there was no RAIM report annotated on the release. We updated WX (weather) which favored Runway 22, so we did not need to shoot the 04 RNAV Approach, so we set up for ILS 22 Approach. I sent [Operations] an ops report of the GPS loss. Thereafter, we received a [Operations] report that the White Sands restricted area was disrupting the GPS signal, so we knew then that it was not an aircraft GPS fault. I wrote up the fault annotating all listed. Due to quick changing WX, we did a missed approach to 22 (tail wind out of limits) and shifted to Runway 04. Since we had no GPS signal, we shot the Visual to 04 with the VOR as a backup utilizing FPV and PAPI's for vertical guidance to the runway. White Sands NM restricted area doing GPS jamming testing. ELP is somewhat of an isolated airport with frequent high density altitudes due to temps, and high winds. In addition, the airport has two runways and two ILS approaches, a VOR, and a couple RNAV (RNP and GPS) approaches, of which runway 04 is supported by a VOR and RNAV approaches. The test jamming performed at White Sands directly affects the available vertical guidance approaches to Runway 04, which has a high CFIT [threat] due to the climbing terrain in the local area. As a result of last minute wind increase, we were forced to Runway 04 with a pre-dawn landing with no access to the RNAV approach with vertical guidance. We set up the VOR, as a backup for the visual, utilizing FPV and the PAPI for a landing on 04. I failed to discuss the RAIM check for a possible 04 Approach, so it was never provided on release. I did coordinate for an alternate due to all mentioned, and the Dispatcher gave us ABQ. Such airports should always have a RAIM check done and annotated on the release for an early review by the crew therefore facilitate early planning for available runways in quick changing WX events.

Synopsis

Air carrier Captain reported loss of GPS signal apparently due to jamming from White Sands.

ACN: 1741940 *(43 of 50)*

Time / Day

Date : 202005
Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : ZZZ.Airport
State Reference : US

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.TRACON : ZZZ
Aircraft Operator : Corporate
Make Model Name : Cessna Citation Sovereign (C680)
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 91
Flight Plan : IFR
Mission : Test Flight / Demonstration
Nav In Use : FMS Or FMC
Nav In Use : GPS
Flight Phase : Initial Approach
Route In Use : Direct
Airspace.Class C : ZZZ

Component

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

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Corporate
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Commercial
ASRS Report Number.Accession Number : 1741940
Human Factors : Other / Unknown

Person : 2

Reference : 2
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Corporate
Function.Flight Crew : Pilot Flying

ASRS Report Number.Accession Number : 1741941
Human Factors : Other / Unknown

Events

Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Detector.Person : Other Person
Detector.Person : Flight Crew
When Detected.Other
Result.General : None Reported / Taken

Assessments

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

Narrative: 1

Operating VFR with own navigation in the west practice area, flying the ZZZ ILS XX. Notified Approach we would be turning off GPS and changing our callsign. Approach acknowledged the change and we updated the flight ID accordingly. Upon completion of the GPS off testing we notified Approach we were complete with the GPS off portion of the flight and updated the flight ID. Approach switched back to the original callsign. We identified the non-compliance during discussion with the safety officer a week later. We should have been operating under the "[letter]" callsign for the duration of the flight. Clarify the guidance / LOA / SOPs regarding GPS off testing.

Narrative: 2

[Report narrative contained no additional information.]

Synopsis

CE-680 pilots reported not following SOP for testing the GPS.

ACN: 1741925 *(44 of 50)*

Time / Day

Date : 202005
Local Time Of Day : 0001-0600

Place

Locale Reference.ATC Facility : ZAB.ARTCC
State Reference : NM
Altitude.MSL.Single Value : 38000

Environment

Flight Conditions : VMC

Aircraft

Reference : X
ATC / Advisory.Center : ZAB
Aircraft Operator : Air Carrier
Make Model Name : Widebody, Low Wing, 2 Turbojet Eng
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Cargo / Freight / Delivery
Flight Phase : Cruise
Airspace.Class A : ZAB

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 : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
ASRS Report Number.Accession Number : 1741925

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.ATC Issue : All Types
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Air Traffic Control : Provided Assistance

Assessments

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

Narrative: 1

At FL380, between PNH (Panhandle) and ZUN (ZUNI), received ATC Fault and GPS EICAS. Ran QRH. Faults did not clear. Contacted ATC. Jamming confirmed by ATC. Passing ZUN, ATC Fault and GPS malfunctions cleared. No further problems remainder of flight. Submitted AML (maintenance log) entries for ATC Fault and GPS EICAS at ZZZ1 in accordance with FOM. Possible jamming from White Sands.

Synopsis

Air carrier Captain reported receiving a GPS EICAS alert related to possible jamming from White Sands.

ACN: 1741194 *(45 of 50)*

Time / Day

Date : 202004
Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : ZZZ.Airport
State Reference : US
Relative Position.Angle.Radial : 300
Relative Position.Distance.Nautical Miles : 3
Altitude.MSL.Single Value : 4000

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft

Reference : X
Aircraft Operator : Personal
Make Model Name : Sail Plane
Crew Size.Number Of Crew : 1
Operating Under FAR Part : Part 91
Flight Plan : None
Mission : Personal
Flight Phase : Climb
Route In Use : Direct
Airspace.Class B : ZZZ

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 : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Flight Instructor
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 3300
Experience.Flight Crew.Last 90 Days : 30
Experience.Flight Crew.Type : 440
ASRS Report Number.Accession Number : 1741194
Human Factors : Workload
Human Factors : Troubleshooting

Human Factors : Confusion
Human Factors : Situational Awareness

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Airspace Violation : All Types
Anomaly.Deviation / Discrepancy - Procedural : FAR
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Became Reoriented
Result.Flight Crew : Exited Penetrated Airspace

Assessments

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

Narrative: 1

I was flying a glider today and launched from ZZZ. ZZZ is located under the outer shelf of the ZZZ1 Class B airspace. I am well aware of this airspace as a regular pilot at ZZZ (glider and SEL airplanes typically) and have been based here for 10+ years. Today I was attempting to climb in the glider (using thermals / rising air currents and no engine or other power source) to almost the base of the Class B (3500 feet MSL) and then use the altitude to cruise NW out of the Bravo lateral boundaries before climbing higher. I rely on my installed electric/gps-based glide computer to help me avoid the Bravo lateral confines as it has a very accurate moving map display and provides audible "airspace warning" alerts. I had made a few climbs and stopped by 3400 feet MSL to avoid the 3500 feet Bravo base and headed west. My flight computer showed me outside of the Bravo lateral limits so I continued a climb at some point. As I was passing 4000 or 4100 feet while climbing in circles (thermalling) I noticed that the map on my glide computer was not moving like it usually does when I circle. (As I try to keep my eyes outside for traffic, I listen to my "audio variometer" to judge my climb speed and the glide computer gives verbal airspace alerts when I approach the Bravo or other airspace usually. So I do not glance inside the cockpit at the glide computer very often when thermalling/climbing.) I checked the status screen on the flight computer and realized it had no GPS location lock. I knew I was close to the edge of the Bravo from visual references but I thought I was still NW of the lateral boundary. I opened my "backup" flight computer on my iPhone which uses the iPhone built-in GPS and realized I was inside the outer shelf of the Bravo at about 4000 MSL. Oh no! I immediately turned west and made a direct run out of the Bravo as soon as I realized this. I continued my flight relying on my backup (iPhone) glide computer and never did get a GPS signal on my primary installed glide computer for the rest of this flight. When I landed, I opened the back of the instrument panel and discovered my problem - the GPS antenna wire had vibrated loose and fallen out of the port in the glide computer. I plugged it back in, screwed it tight and tested the glide computer to determine that I now had a working GPS signal. Unfortunately this event occurred because of my over-reliance on the installed GPS technology to keep me out of the Bravo airspace instead of good old fashioned pilotage using landmarks. Contributing to this was the fact that the glide computer does not provide any sort of "GPS Lost" alert (audible or visual) and the fact that I was concentrating on circling/climbing and not glancing at the computer very often, which I should have done since I knew I was near the Bravo and there was a westerly wind aloft (5-7 knots) that was likely blowing me towards the Bravo as I circled.

Finally, I could have also had my backup iPhone computer/position alerts working as a double-check while I was close to the Bravo airspace. In the future, I will glance at the installed map once every circle when climbing or operating near controlled airspace to make sure I have a valid GPS signal. I will also have my backup iPhone computer activated during flight near/under Bravo airspace as a double check. Finally, I will rely more on landmarks to make sure I remain clear of the airspace whenever near the vertical limits of it.

Synopsis

Mini-LAK Glider pilot reported a malfunction with the electronic flight bag and loss of the GPS signal. Glider pilot reported inadvertent Class B Airspace penetration.

ACN: 1739000 *(46 of 50)*

Time / Day

Date : 202003
Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : BWI.Airport
State Reference : MD
Altitude.AGL.Single Value : 0

Aircraft

Reference : X
ATC / Advisory.Tower : BWI
Aircraft Operator : Air Carrier
Make Model Name : B737-800
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 : GPS
Flight Phase : Takeoff / Launch
Route In Use : Direct

Component

Aircraft Component : Position Computing System
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 : Captain
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1739000
Human Factors : Troubleshooting
Human Factors : Workload
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

Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1739003
Human Factors : Other / Unknown
Human Factors : Workload
Human Factors : Confusion

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Detector.Person : Flight Crew
When Detected : Taxi
Result.General : Maintenance Action
Result.Flight Crew : Rejected Takeoff

Assessments

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

Narrative: 1

We were cleared for takeoff on Runway 15R at BWI. I was the Pilot Flying. When we lined up on the runway the data in my [display] did not look accurate. I elected to vacate the runway. We assessed the information and were re-cleared for take off with no further issue.

Narrative: 2

Prior to pushing up the throttles up for takeoff, the Captain stated that their [display] was not correct. I told Tower we were going to taxi clear as there was an aircraft on final. We looked down and the Flight Director was not displaying guidance even though the switches were on and the FMS correctly loaded.

At the gate we had some kind of electrical MEL (I can't recall what). Also the IRUs were not aligning like normal. We called Maintenance who sent contract BWI Maintenance who told us that the gates at BWI had a problem with acquiring the GPS signal (this was strange as the terminal was north of the plane so that the plane had a clear path towards the equator). We discussed and the Captain decided we would push into the alley to try and get a signal. Again that didn't work and we discussed with Maintenance on the ops frequency who told us the closer we got to the runway it would work. We decided to taxi towards the runway. On the taxi out GPS 2 acquired a signal, but was intermittent. We pulled into the de-ice area adjacent to Taxiway P by Runway 15R. Finally we got both GPS signals to acquire which was required for our RNAV route and Required RNP FMS message.

If the BWI gates historically have problems with acquiring the GPS signal, then a note about that (and if associated the Flight Directors not providing guidance) should be added to the company pages in the Jeppesen FD Pro App. If the failure was associated with the MEL, then a note about it and the flight directors not providing guidance should be added to the associated MEL in the B737 NG Minimum Equipment List / Configuration Deviation List.

Synopsis

B737 pilot crew reported the IRU's would not align, resulting in a rejected takeoff.

ACN: 1733501 *(47 of 50)*

Time / Day

Date : 202003

Place

Locale Reference.ATC Facility : LTAA.ARTCC
State Reference : FO

Aircraft

Reference : X
ATC / Advisory.Center : LTAA
Aircraft Operator : Air Carrier
Make Model Name : B777 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

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Check Pilot
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 15938
Experience.Flight Crew.Last 90 Days : 135
Experience.Flight Crew.Type : 8869
ASRS Report Number.Accession Number : 1733501
Human Factors : Workload
Human Factors : Situational Awareness
Human Factors : Distraction

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation - Track / Heading : All Types
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Inflight Event / Encounter : Other / Unknown
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : FLC complied w / Automation / Advisory

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Airspace Structure

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

Narrative: 1

Upon crossing into the Ankara FIR after crossing TOMBI intersection, our GPS was jammed intermittently for about 5 minutes. All SOP complied with.

Synopsis

B777 Line check Captain reported suspected GPS jamming during cruise.

ACN: 1732979 *(48 of 50)*

Time / Day

Date : 202003
Local Time Of Day : 0001-0600

Place

Locale Reference.ATC Facility : ZLA.ARTCC
State Reference : CA

Environment

Flight Conditions : VMC

Aircraft

Reference : X
ATC / Advisory.Center : ZLA
Aircraft Operator : Air Carrier
Make Model Name : A300
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Cargo / Freight / Delivery
Nav In Use : FMS Or FMC
Flight Phase : Cruise
Route In Use : Direct
Airspace.Class A : ZLA

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 : Air Carrier
Function.Flight Crew : Captain
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1732979
Human Factors : Human-Machine Interface

Events

Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Detector.Person : Flight Crew
When Detected : Aircraft In Service At Gate
Result.General : None Reported / Taken

Assessments

Contributing Factors / Situations : Airspace Structure
Contributing Factors / Situations : Company Policy
Contributing Factors / Situations : Manuals
Contributing Factors / Situations : Procedure
Primary Problem : Company Policy

Narrative: 1

GPS jamming was being conducted. In accordance with FOM (Flight Operations Manual) a mandatory report is required in the event of "GPS interference, jamming, or navigation disruption." With the latest revision to the FOM this report is now required to be entered in the AML (Aircraft Maintenance Log). I inadvertently forgot to make an AML entry after I had made two other entries for maintenance related items. As there is nothing wrong with the aircraft GPS equipment when GPS jamming is being conducted, it is easy to forget to make an AML entry. I have previously brought attention to our Flight Safety Department the fact that GPS interference testing is not being included in our NOTAMS. The notifications are available at faasafety.gov. There is additional interference testing going on throughout [this month]. I doubt these will be entered in our company NOTAMS. It is rather frustrating to see in our NOTAMS over two pages on latitude-longitude coordinates for cranes at PHX but none for GPS interference testing which our company now requires an AML entry, a Flight Safety report, and a Security Report.

A new requirement for an AML entry in the event of GPS jamming was inadvertently overlooked. Change the FOM mandatory report table to read "unknown" or "unforecast" GPS interference, jamming, or navigation disruption and include FAA published GPS interference testing advisories in company NOTAMS. Not doing so leads to willful noncompliance with the FOM.

Synopsis

A300 Captain reported they failed to document a GPS jamming event in the Aircraft Maintenance Log.

ACN: 1731570 *(49 of 50)*

Time / Day

Date : 202002
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZLC.ARTCC
State Reference : UT

Environment

Flight Conditions : VMC
Light : Daylight
Ceiling : CLR

Aircraft

Reference : X
Make Model Name : Cessna 402/402C/B379 Businessliner/Utiliner
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 135
Flight Plan : IFR
Mission : Passenger
Nav In Use : GPS
Flight Phase : Cruise
Route In Use : Direct

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 : Air Taxi
Function.Flight Crew : Pilot Flying
Function.Flight Crew : Captain
ASRS Report Number.Accession Number : 1731570
Human Factors : Confusion
Human Factors : Troubleshooting
Human Factors : Human-Machine Interface

Events

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

Assessments

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

Narrative: 1

While inbound, we experienced a dual GPS failure. We recycled each com panel separately in an effort to trouble shoot the situation. After recycling, one of the GPS did fail again, momentarily, before it resumed operating normally. The Powder River MOA (Military Operating Area) is in the vicinity of our flight planned routes.

Synopsis

C402 Captain reported a dual GPS failure during flight.

ACN: 1729913 *(50 of 50)*

Time / Day

Date : 202002
Local Time Of Day : 1201-1800

Place

Relative Position.Angle.Radial : 027
Relative Position.Distance.Nautical Miles : 8
Altitude.MSL.Single Value : 4500

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft

Reference : X
Aircraft Operator : Personal
Make Model Name : SR22
Crew Size.Number Of Crew : 1
Operating Under FAR Part : Part 91
Flight Plan : None
Mission : Personal
Nav In Use : GPS
Flight Phase : Descent
Route In Use : Direct
Airspace.Class E : ZTL

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 : Multiengine
Qualification.Flight Crew : Commercial
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 2170
Experience.Flight Crew.Last 90 Days : 32
Experience.Flight Crew.Type : 1240
ASRS Report Number.Accession Number : 1729913
Human Factors : Distraction
Human Factors : Confusion
Human Factors : Situational Awareness
Human Factors : Troubleshooting

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Airspace Violation : All Types
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Inflight Event / Encounter : Other / Unknown
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Became Reoriented
Result.Aircraft : Equipment Problem Dissipated

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Airspace Structure
Contributing Factors / Situations : ATC Equipment / Nav Facility / Buildings
Primary Problem : Aircraft

Narrative: 1

I was attempting to transition south west to north east below the Class B airspace when I visually saw the airport and 3 towers. This seemed odd given the MFD map position didn't agree with what I saw with regard to this particular airport and associated towers. I looked at the GPS that was driving the MFD and noticed a message indicating GPS loss of integrity. After checking for traffic, I immediately started a decent and in a direction to keep me out of a lower Class B shelf ahead. Almost simultaneous to this I opened foreflight on my phone to see if I had better reception and coverage for the Class B airspace. I did have proper coverage and got to an altitude I knew was below the Class B shelf. Once stabilized in altitude and direction, I reset the aircraft GPS to see if the loss of integrity signal would go away and it did.

Synopsis

SR22 pilot reported receiving incorrect GPS information.