

## ASRS Database Report Set

# Fuel Management Issues

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Report Set Description.....	A sampling of reports referencing incidents of fuel mismanagement, and operational concerns for fuel planning.
Update Number.....	34.0
Date of Update .....	November 29, 2018
Number of Records in Report Set.....	50
Number of New Records in Report Set .....	50
Type of Records in Report Set.....	For each update, new records received at ASRS will displace a like number of the oldest records in the Report Set, with the objective of providing the fifty most recent relevant ASRS Database records. Records within this Report Set have been screened to assure their relevance to the topic.

National Aeronautics and  
Space Administration

**Ames Research Center**  
Moffett Field, CA 94035-1000



TH: 262-7

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

**SUBJECT: Data Derived from ASRS Reports**

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

ASRS reports are submitted voluntarily. 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.

A handwritten signature in cursive script, appearing to read "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: 1581985 *(1 of 50)*

### Synopsis

Air carrier Dispatcher reported a 777 Captain was unhappy because original flight plan required a reroute enroute, adding flight time and increased fuel burn.

ACN: 1581240 *(2 of 50)*

### Synopsis

EMB-145 Captain reported during MEL operation, computer software was unable to compute landing performance for given conditions.

ACN: 1581200 *(3 of 50)*

### Synopsis

B737 Captain reported an autopilot failure into IMC airport led to a diversion.

ACN: 1581041 *(4 of 50)*

### Synopsis

A VFR Bonanza pilot reported encountering IMC weather and was guided to an airport by ATC.

ACN: 1580777 *(5 of 50)*

### Synopsis

Air carrier Captain reported the NOTAM system had not provided important Oceanic airspace information to both the Captain and the Dispatcher.

ACN: 1580627 *(6 of 50)*

### Synopsis

CRJ-200 Captain reported the flaps would not retract beyond 20 degrees after takeoff.

ACN: 1580224 *(7 of 50)*

### Synopsis

Small aircraft pilot reported an engine failure inflight resulting in an off airport forced landing and aircraft damage.

ACN: 1579531 *(8 of 50)*

### Synopsis

Air carrier Captain reported a challenging approach with multiple clearances and runway changes into DFW due to bad weather.

ACN: 1579289 *(9 of 50)*

### Synopsis

B777 flight crew reported discovering a rapidly decreasing fuel quantity indication at the first enroute checkpoint.

ACN: 1579278 *(10 of 50)*

### Synopsis

B737 flight crew reported diverting after experiencing a fuel system malfunction resulting in a fuel tank imbalance.

ACN: 1579197 *(11 of 50)*

### Synopsis

PA-32 Instructor reported a loss of engine power due to a loss of fuel from the left fuel tank.

ACN: 1578488 *(12 of 50)*

### Synopsis

Airbus A320 series Captain reported a fuel leak prior to departure and a maintenance item that was missed as a result.

ACN: 1577375 *(13 of 50)*

### Synopsis

PA-46 Pilot reported that on downwind the engine quit due to fuel starvation.

ACN: 1576622 *(14 of 50)*

### Synopsis

Air Carrier Captain reported difficulties with weather and ATC communications resulting in a diversion.

ACN: 1576056 *(15 of 50)*

### Synopsis

CRJ-200 flight crew reported returning to departure airport after takeoff due to a Fuel Channel Fail EICAS messages and being unable to maintain normal fuel balance.

ACN: 1575571 *(16 of 50)*

### Synopsis

Experimental Aircraft pilot reported engine roughness and unexplained power loss.

ACN: 1575444 *(17 of 50)*

### Synopsis

ERJ145 captain reported reaching a critical fuel state due to deteriorating weather conditions at the destination airport, and subsequent difficulty finding a suitable alternate.

ACN: 1575001 *(18 of 50)*

### Synopsis

Cessna 210 pilot reported a temporary loss of engine power due to improper fuel tank management.

ACN: 1574982 *(19 of 50)*

### Synopsis

A Cessna 206 pilot reported experiencing engine roughness while feeding from the left fuel tank, which subsequently was found to be missing a fuel cap.

ACN: 1574775 *(20 of 50)*

### Synopsis

Air carrier flight crew reported declaring minimum fuel with ATC after incurring delay vectors due to unanticipated weather conditions at the destination.

ACN: 1574183 *(21 of 50)*

### Synopsis

B737 Flight Crew reported issues with the FMC fuel burn computations.

ACN: 1574128 *(22 of 50)*

### Synopsis

B737 flight crew reported fuel fumes/odor in the aft cabin resulted in a direct approach and landing at the planned destination.

ACN: 1574044 *(23 of 50)*

### Synopsis

Air carrier Captain reported excessive vectoring from ATC caused a critical fuel situation.

ACN: 1573571 *(24 of 50)*

### Synopsis

B737 flight crew reported Master Caution illuminating with Fuel and ENG warning lights led to a return to the departure airport.

ACN: 1573174 *(25 of 50)*

### Synopsis

C210 pilot and flight instructor reported landing short of the runway due to mismanagement of the fuel system.

ACN: 1572984 *(26 of 50)*

### Synopsis

B737 Captain reported landing with less than minimum fuel due to a takeoff delay waiting on weights and being unable to obtain updated wind information.

ACN: 1572898 *(27 of 50)*

### Synopsis

C150 instructor pilot reported a loss of engine power and off field landing due to fuel starvation.

ACN: 1572121 *(28 of 50)*

### Synopsis

Air carrier flight crew reported a fuel system tank anomaly causing fuel to become trapped and unusable and necessitating an immediate diversion.

ACN: 1571253 *(29 of 50)*

### Synopsis

Air carrier Dispatcher reported high work load and ATC confusion about airport conditions contributed to a less than optimum diversion plan.

ACN: 1570645 *(30 of 50)*

### Synopsis

Homebuilt aircraft pilot reported engine failure resulting in an off airport landing.

ACN: 1569346 *(31 of 50)*

### Synopsis

Piper Cub pilot reported landing at a closed airport because of low fuel.

ACN: 1569122 *(32 of 50)*

### Synopsis

B737NG flight crew reported diverting to an alternate airport when they were unable to control fuel transfer from a wing tank into the center tank.



ACN: 1568451 *(33 of 50)*

### Synopsis

B767 flight crew reported failing to use correct weights for takeoff and landing planning.

ACN: 1568405 *(34 of 50)*

### Synopsis

A320 Captain reported Maintenance deferred an inoperative spoiler.

ACN: 1567136 *(35 of 50)*

### Synopsis

B737-800 pilot reported diverting with minimum fuel after PHX began experiencing dust storms and microbursts.

ACN: 1566981 *(36 of 50)*

### Synopsis

Boeing 737 First Officer reported fuel system issue and returned to the departure airport

ACN: 1566169 *(37 of 50)*

### Synopsis

C172 pilot reported landing safely on a highway after running out of fuel.

ACN: 1563310 *(38 of 50)*

### Synopsis

EMB-135 Captain reported returning to departure airport following fuel quantity display anomalies due to fuel contamination.

ACN: 1562629 *(39 of 50)*

### Synopsis

A320 Captain reported diverting to an alternate when their fuel system, which was on MEL restrictions, was not performing as expected.

ACN: 1562322 *(40 of 50)*

### Synopsis

Bonanza pilot reported difficulties with fuel crossfeed while using tip tank fuel resulting in a temporary engine failure due to fuel starvation.

ACN: 1561937 *(41 of 50)*

## Synopsis

PA28 flight instructor reported the engine lost fuel pressure and shut down in cruise, resulting in an off-field landing.

ACN: 1561903 *(42 of 50)*

## Synopsis

GA pilot reported a complete engine failure that required a dead stick landing to an off-airport location.

ACN: 1559381 *(43 of 50)*

## Synopsis

B767 Captain reported that each time the gear was raised or lowered there was a loud bang and a strong jolt.

ACN: 1558356 *(44 of 50)*

## Synopsis

Hot air balloon pilot reported landing in the trees.

ACN: 1556973 *(45 of 50)*

## Synopsis

GA pilot reported executing a forced landing following engine failure related to fuel exhaustion.

ACN: 1556664 *(46 of 50)*

## Synopsis

B737-700 flight crew reported diverting to an alternate airport after experiencing fuel system anomalies.

ACN: 1554697 *(47 of 50)*

## Synopsis

B737 flight crew reported returning to departure airport after noting the center fuel tank boost pumps were inoperative. Crew reported some difficulty with the First Officer's iPad.

ACN: 1554609 *(48 of 50)*

## Synopsis

C-185 pilot reported a loss of control during a forced landing following the loss of engine power.

ACN: 1554409 *(49 of 50)*

## Synopsis

EMB-175 flight crew reported that the MCDU (Multipurpose Control Display Unit) provided inaccurate fuel calculation which was far more than FOM (Figure of Merit), causing landing with less than minimum fuel.

ACN: 1554162 *(50 of 50)*

## Synopsis

C172 pilot reported a loss of engine and off field landing due to fuel starvation.

# Report Narratives

## Time / Day

Date : 201809

## Aircraft

Reference : X  
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 : Cargo / Freight  
Route In Use : Oceanic  
Route In Use : Direct

## Person

Reference : 1  
Location Of Person : Company  
Reporter Organization : Air Carrier  
Function.Dispatch : Dispatcher  
ASRS Report Number.Accession Number : 1581985

## Events

Anomaly.ATC Issue : All Types  
Anomaly.Deviation - Procedural : Published Material / Policy  
Anomaly.Inflight Event / Encounter : Weather / Turbulence  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew  
Detector.Person : Dispatch  
When Detected : Aircraft In Service At Gate  
Result.General : None Reported / Taken

## Assessments

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

## Narrative: 1

Flight was re-routed by ATC. Received call today at from a Captain asking for dispatcher who worked flight (I only flight followed,) voicing concern about the re-route because it added nearly an hour to the flight (his words) making for a long trip for only a 2 man crew and also the re-route was because the filed route went through restricted airspace. I checked the route originally filed and while there is a restricted area nearby, the route did not go through it, though it did go through a surrounding warning area. Explained that to the Captain, but not being the one who released flight initially, have no way of knowing if revised route was coordinated and/or approved by [Foreign] ATC. Captain is going to

reach out and contact the dispatcher who initially released flight. Another flight [that] was filed on same route through this area and similarly re-routed, though that flight was held down in altitude and ultimately had to land short of destination for fuel.

I cannot state what the cause of the event was. I took over these flights after they were released and only flight followed them, re-calculating burns as needed for the re-routes, and in the case of [the other flight] making every attempt to make it work to reach destination before finally deciding with concurrence of Captain to stop short for fuel stop.

Not knowing what caused this to happen in first place, I can't say. I don't know if coordination/approval was obtained from [Foreign] ATC for this routing or not since it did involve off airway, point to point flying. Without this knowledge, or what was looked at during the initial planning/release process, I can't address a cause or how to prevent it.

## Synopsis

Air carrier Dispatcher reported a 777 Captain was unhappy because original flight plan required a reroute enroute, adding flight time and increased fuel burn.

## Time / Day

Date : 201809  
Local Time Of Day : 1201-1800

## Place

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

## Environment

Light : Daylight

## Aircraft

Reference : X  
Aircraft Operator : Air Carrier  
Make Model Name : EMB ERJ 145 ER/LR  
Crew Size.Number Of Crew : 2  
Operating Under FAR Part : Part 121  
Flight Plan : IFR  
Mission : Passenger  
Flight Phase : Descent

## Component

Aircraft Component : Engine Air Anti-Ice  
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 : Instrument  
Qualification.Flight Crew : Air Transport Pilot (ATP)  
Qualification.Flight Crew : Multiengine  
ASRS Report Number.Accession Number : 1581240  
Human Factors : Communication Breakdown  
Human Factors : Troubleshooting  
Communication Breakdown.Party1 : Flight Crew  
Communication Breakdown.Party2 : Dispatch

## Events

Anomaly.Aircraft Equipment Problem : Less Severe  
Anomaly.Deviation - Procedural : Published Material / Policy  
Anomaly.Deviation - Procedural : MEL  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew

When Detected : In-flight  
Result.Flight Crew : Overcame Equipment Problem

## Assessments

Contributing Factors / Situations : Procedure  
Contributing Factors / Situations : Aircraft  
Contributing Factors / Situations : MEL  
Contributing Factors / Situations : Company Policy  
Primary Problem : Ambiguous

## Narrative: 1

Flight was delayed due to a late inbound aircraft. When we arrived at the airport I called Dispatch for a brief and to discuss the proposed departure time. In the brief we discussed the MEL that was applied to the aircraft for the anti ice valves. The valve in question was wired to the open position and the MEL stated several things:

MEL #30-XX-XX-X: TO (takeoff), Engine override knob placed in the engine position for the entire flight/all phases. Engine ice on applied to the TLR (Takeoff Landing Report), Weight penalty applied, these stipulations were discussed in the brief.

Once I received my paperwork I reviewed the TLR and saw that the penalties had been applied in the [takeoff] section. However I missed that they were not applied to the landing section.

On the arrival the First Officer stated that the ACARS wasn't giving speeds because of a note saying that engine A/I not required with temps above 10C. I then said then we would have to utilize the TLR to get our required numbers. This is where I noticed the lack of engine A/I on for the landing performance. I sent several ACARS messages to Dispatch stating that I needed these numbers. They replied that the computer system wouldn't allow them to select A/I on with temps above 10C. I said that something needed to be done because our landing numbers will differ from those without engine A/I on. Also as a reminder the MEL states that the override switch must remain in the ENG position for the entirety of the flight in all phases.

I looked at the QRH to see if there was a performance chart that could be utilized to derive a landing distance and weight for the above condition. There wasn't one. I then reviewed the QRH procedures to see if there was a factor to apply to an unfactored distance. There wasn't one.

In this time I coordinated with ATC for some delay vectors so that we could formulate a plan. Our fuel was about 800 pounds over divert. I mentioned to Dispatch that we needed some numbers sooner than later and they replied that they were working to produce them. I informed ATC that we wanted to slow to 210 kts to save some fuel while we waited. They were happy to help with providing vectors just south of ZZZ. A short while later we heard back from Dispatch that there were no weight limits for Runway XXR for our configuration using flaps 45. We then noted that our fuel was showing 3,900 lbs over Runway XXR (Divert fuel was 3,881 lbs). We told ATC that we were ready for the approach. He vectored us to the approach and at this time we noticed that we were going to dip below divert (flight time remaining was about 6 minutes to the airport). Speed control in the descents played a part in the extra fuel used due to increased idle N2 settings with A/I on. Flaps were extended earlier than normal to aid in these speed and altitude changes. Upon landing we had 3,660 lbs of fuel which was well above our final



divert of 3,188.

After arriving at the gate I immediately called Dispatch to discuss the situation. I asked how the numbers were derived and I was told that they told the computer that the temp was 10C to eliminate the messages. The temperature in ZZZ was 15C and our next trip was to ZZZ1 where the temp was 33C. I said that this wasn't a good solution because of the effects of temperature on performance. I then said that I was going to ask for a different aircraft since, at this time, there was no way to produce accurate landing numbers. A different aircraft was provided for the remainder of the flights.

I also called my Chief Pilot to discuss the situation. I was asked if I planned to [report] the event and I confirmed that I was. The Chief Pilot then called me back to say that he discussed the situation with another manager who said that it seems like this might be a limitation with the software. I mentioned that the MEL shouldn't be used if there was such a limitation in the planning software.

There seems that there were several chances for this event to be averted. However it was missed in the planning and implementation phases. I usually verify the headers and notes on the TLR but this time I overlooked the landing notes. It wasn't until I noticed that the ACARS didn't want to provide info that I began digging deeper. Here is where I began the conversation with Dispatch. We were very focused on our fuel to ensure that we had adequate supply. It was my intention to ensure the safe operation of the aircraft, as always. Thus the request for delay vectors from ATC while we waited for numbers from Dispatch. I'm always trying to operate the aircraft by the book! However, in this case I missed my mark. I feel that we managed the situation the best that we could under the given circumstances. I must say that It was a frustrating situation, but one where I've learned.

Hopefully this event will shed some light on what seems like a software limitation that is critical in complying with the MEL. I also hope that this [report], while embarrassing and frustrating, will shed some light on an overlooked part of one MEL that can become more common as winter approaches.

## Synopsis

EMB-145 Captain reported during MEL operation, computer software was unable to compute landing performance for given conditions.

## Time / Day

Date : 201809  
Local Time Of Day : 1801-2400

## Place

Locale Reference.ATC Facility : ZZZ.TRACON  
State Reference : US  
Altitude.AGL.Single Value : 2000

## Environment

Flight Conditions : IMC

## Aircraft

Reference : X  
ATC / Advisory.Tower : ZZZ  
ATC / Advisory.TRACON : ZZZ  
Aircraft Operator : Air Carrier  
Make Model Name : B737-700  
Crew Size.Number Of Crew : 2  
Flight Plan : IFR  
Mission : Passenger  
Flight Phase : Final Approach  
Route In Use.Other  
Airspace.Class C : ZZZ

## Component

Aircraft Component : Autopilot  
Aircraft Reference : X  
Problem : Failed

## 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)  
Experience.Flight Crew.Last 90 Days : 140  
Experience.Flight Crew.Type : 2098.5  
ASRS Report Number.Accession Number : 1581200  
Human Factors : Human-Machine Interface

## Events

Anomaly.Aircraft Equipment Problem : Less Severe  
Anomaly.Deviation - Procedural : Published Material / Policy  
Anomaly.Inflight Event / Encounter : Weather / Turbulence  
Anomaly.Inflight Event / Encounter : Fuel Issue

Detector.Person : Flight Crew  
When Detected : In-flight  
Result.General : Maintenance Action  
Result.Flight Crew : Diverted  
Result.Flight Crew : Executed Go Around / Missed Approach

## Assessments

Contributing Factors / Situations : Aircraft  
Primary Problem : Aircraft

## Narrative: 1

We were arriving ZZZ with weather reported at 700 overcast and 4 miles visibility. The ILS was out of service, so we briefed and flew the RNAV Approach. This aircraft has no speed intervention. I was flying the approach with the autopilot connected, Lnav and Vnav active, flaps 5 and controlling speed with the throttles. We configured with gear down, flaps 15, then flaps 25. The autopilot disengaged, and would not reengage, so we requested vectors straight ahead and received clearance to maintain 2000 feet. We completed the missed approach, and received a climb and vectors for another approach. We set up and briefed the RNAV Y for this second attempt, then received vectors for approach. Again while configuring, the autopilot disengaged and we executed a missed approach. The weather was less than 1000/3, so there was no approach we could fly without the autopilot. Due to this and our fuel state I elected to divert to ZZZ1. Being in the high traffic approach environment I made this decision without contacting dispatch. Our dispatcher saw the two missed approaches and acars destination change. He contacted us by acars to let us know he was working with the ZZZ1 station and we let him know a short reason for the divert. We landed with 4200 pounds of fuel and the station did an excellent job with the short notice divert.

## Synopsis

B737 Captain reported an autopilot failure into IMC airport led to a diversion.

## Time / Day

Date : 201809  
Local Time Of Day : 1201-1800

## Place

Locale Reference.ATC Facility : ZZZ.TRACON  
State Reference : US  
Altitude.MSL.Single Value : 9500

## Environment

Flight Conditions : IMC  
Weather Elements / Visibility : Cloudy  
Weather Elements / Visibility.Visibility : 1  
Light : Daylight  
Ceiling.Single Value : 800  
RVR.Single Value : 5280

## Aircraft

Reference : X  
ATC / Advisory.TRACON : ZZZ  
Aircraft Operator : Personal  
Make Model Name : Beechcraft / Beech Aircraft Corp Undifferentiated or Other Model  
Crew Size.Number Of Crew : 1  
Operating Under FAR Part : Part 91  
Flight Plan : VFR  
Mission : Personal  
Flight Phase : Descent  
Route In Use : Vectors  
Route In Use : Direct  
Airspace.Class E : ZZZ

## Person

Reference : 1  
Location Of Person.Aircraft : X  
Location In Aircraft : Flight Deck  
Reporter Organization : Personal  
Function.Flight Crew : Pilot Flying  
Function.Flight Crew : Single Pilot  
Qualification.Flight Crew : Private  
Experience.Flight Crew.Total : 210  
Experience.Flight Crew.Last 90 Days : 30  
Experience.Flight Crew.Type : 80  
ASRS Report Number.Accession Number : 1581041  
Human Factors : Training / Qualification  
Human Factors : Situational Awareness

## Events

Anomaly.Deviation - Procedural : FAR  
Anomaly.Inflight Event / Encounter : VFR In IMC

Anomaly.Inflight Event / Encounter : Fuel Issue  
Anomaly.Inflight Event / Encounter : Weather / Turbulence  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : Became Reoriented  
Result.Flight Crew : Requested ATC Assistance / Clarification  
Result.Air Traffic Control : Provided Assistance  
Result.Air Traffic Control : Issued New Clearance  
Result.Air Traffic Control : Separated Traffic

## Assessments

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

## Narrative: 1

Departed [and] en route to ZZZ direct. I filed flight plan via ForeFlight. At time of file, my arrival airport was indicating Marginal VFR and both my alternates VFR. Departed on a 2 hour and 57 minute flight with approximately 4 hours of fuel. I picked up Flight Following from ATC as soon as I got enough altitude for them to receive. I climbed on top of the clouds for favorable winds at 9,500 feet and all was well. The only time I saw the ground en route, I started looking for any holes or openings to drop in through 100 miles out. At 25 miles out from my arrival airport, I decided to turn southeast looking for any opening as I was aware of the weather system west and figured getting to the ocean's warmer air might provide me a spot to get underneath. I estimated approximately 1 hour fuel remaining at this time.

I called ATC asking for vectors to any clearings, but they only see precipitation, not clouds. ATC [advised] on my behalf and that's when the real fun began. ATC advised there was no airports within 150 miles reporting VFR and I knew I did not have enough fuel to get 150 miles away. We were privy to ATC asking all pilots at all airports in the area for PIREPS. All of them reporting being in the clouds after lift off and the tops at 8,000 to 9,500 feet depending on their area. I lowered my landing gear as to not have to think about it anymore, reduced my airspeed and leaned out my engine in effort to conserve fuel.

The rest is really a blur. I have had approximately 10 hours of IFR training on simulator and under the hood in flight shooting approaches into my local airports. I've been in IMC with my instructor in the right seat. However, when ATC asked me to load an approach, I just couldn't focus enough to do so. My passenger and I had spent time reviewing procedures during the flight as he will be in the right seat often with me for work and started teaching him how to be an active co-pilot, if you will. He was playing with the G796 and learning its functions enroute. When ATC asked me how many souls on board, it became real to my passenger whom knew he had to remain calm on my behalf. He wasn't aware of the fuel situation until I advised ATC both my gauges were reading empty. My air traffic controllers from TRACON were unbelievable in their professionalism and calmness. I advised that I just needed to be vectored in. I'm a very good pilot (I feel) and track my fuel usage in flight best that I can. It's like a game to me to see how much fuel I fill up with as opposed to my notes and how much I thought I had burned. In descent, I made a conscious choice to switch tanks from left to right as I knew my right wing had more fuel than the left and knew that when I got below, I needed to make left hand turns and keep my right wing high. We dropped out at 750 feet.

I don't know that there is anything I could have done different or better for the situation I was in. Truly, the one thing on my mind through this event was to fly the plane until it wouldn't fly anymore while preserving fuel to the best of my ability. I can assure any and all that I WILL be IFR certified within the next 30-45 days and will spend much time on the ground mastering the functions of both my G530 and G796. I am eternally grateful to [the] 2 air traffic controllers whom I have been invited to meet and will be a better pilot because of the experience I encountered.

## Synopsis

A VFR Bonanza pilot reported encountering IMC weather and was guided to an airport by ATC.

## Time / Day

Date : 201809  
Local Time Of Day : 0001-0600

## Place

Altitude.MSL.Single Value : 34000

## Environment

Flight Conditions : VMC  
Light : Night

## Aircraft

Reference : X  
Aircraft Operator : Air Carrier  
Make Model Name : Boeing Company Undifferentiated or Other Model  
Crew Size.Number Of Crew : 2  
Operating Under FAR Part : Part 121  
Flight Plan : IFR  
Mission : Passenger  
Flight Phase : Cruise  
Route In Use : Oceanic

## 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 : Flight Instructor  
Qualification.Flight Crew : Air Transport Pilot (ATP)  
Qualification.Flight Crew : Multiengine  
Qualification.Flight Crew : Instrument  
Experience.Flight Crew.Total : 5300  
Experience.Flight Crew.Last 90 Days : 241  
Experience.Flight Crew.Type : 1300  
ASRS Report Number.Accession Number : 1580777  
Human Factors : Communication Breakdown  
Communication Breakdown.Party1 : Flight Crew  
Communication Breakdown.Party2 : Other

## Events

Anomaly.ATC Issue : All Types  
Anomaly.Deviation - Procedural : Published Material / Policy  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew  
Detector.Person : Dispatch  
Detector.Person : Air Traffic Control  
When Detected : In-flight

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

## Assessments

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

## Narrative: 1

My crew and I departed on [a] standard routing to Guam planned with Max payload. The flight was routine and uneventful until ATC advised us that we would be receiving new routing to due to "military exercise/airspace" east of Guam. We were given a reroute. Shortly after uploading the new route into the FMC and noticing that our planned arrival fuel had fallen by roughly 3000 pounds, we then Sat-Phoned our Dispatch the new route to verify that we still met ETOPS and fuel requirements. Unfortunately, at this point, we had been encountering headwinds 20 kts stronger than planned for majority of the flight. We received ACARS from Dispatch that we were unable to proceed on the requested reroute due to stronger headwinds and insufficient fuel to meet depressurization scenarios. We informed ATC that we could not accept the reroute and they then asked us [if we wanted] to "declare [low fuel]", we told them we would call them back ASAP, as we had roughly 1 hour before joining the northerly rerouted course. We then Sat-Phoned our Dispatch and [the personnel] was able to conference call the Chief Pilot; I asked what he wanted me to do as our options were to turn for KWAJALEIN or Declare a Fuel Emergency. To turn for KWAJALEIN, it would've involved traversing a rather large area of weather that included a SIGMENT which wasn't ideal, unless it was an utmost emergency. After discussing the options over the Sat-Phone with our dispatch and the Chief Pilot I was instructed that I needed to "declare [low fuel]" to get our jet safely to its destination. Repeatedly during the discussion, our Dispatcher said he had no information on the NOTAMED airspace/exercise and this was reconfirmed by me and my crew by re-reviewing the FIR NOTAM packet we reviewed at the onset of that day's flight. This also is why initially we never were planned around this exercise. I informed ATC that we were "declaring [low fuel]" and that we requested to remain on our route as it was originally planned. ATC asked us if we could return to [departure airport]; I informed them that this was not possible at this time due to fuel remaining. ATC cleared us to return to original routing and advised us that we would be entering military airspace. We were given a discrete squawk prior to entering the military airspace and Guam Center. Once two-way radio contact was made with Guam Center, we were asked if we were under a fuel emergency and we advised them that we were no longer [low fuel], which was the result of being allowed to fly the planned route. We proceeded and landed at Guam with no further incidence.

I must further state and stress that when we left, our NOTAM package and accompanying usual routing gave me nor my crew any indication that we would be needing to avoid a restricted or prohibited area along our route. Later communications with the [Dispatcher] revealed that a "glitch" in the NOTAM retrieval process led to this error. It was further stated that it was neither my crew nor the specified Dispatcher's fault for this error. The Manager at [the Flight Planning Service] soon after landing communicated that processes for retrieval of these type of NOTAMS were immediately being put in place to rectify this error to never let this happen again



I want to commend everyone who helped deal with this unfortunate situation and hope measures are put in place to avoid it.

## Synopsis

Air carrier Captain reported the NOTAM system had not provided important Oceanic airspace information to both the Captain and the Dispatcher.

## Time / Day

Date : 201809

Local Time Of Day : 0601-1200

## Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

## Environment

Flight Conditions : IMC

## Aircraft

Reference : X

Aircraft Operator : Air Carrier

Make Model Name : Regional Jet 200 ER/LR (CRJ200)

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Climb

## Component

Aircraft Component : Flap Control (Trailing & Leading Edge)

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 Not Flying

Function.Flight Crew : Captain

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

ASRS Report Number.Accession Number : 1580627

## Events

Anomaly.Aircraft Equipment Problem : Less Severe

Anomaly.Inflight Event / Encounter : Fuel Issue

Detector.Person : Flight Crew

When Detected : In-flight

Result.General : Flight Cancelled / Delayed

Result.General : Maintenance Action

Result.Flight Crew : Requested ATC Assistance / Clarification

Result.Flight Crew : Landed As Precaution

Result.Flight Crew : Landed in Emergency Condition

Result.Flight Crew : Diverted  
Result.Air Traffic Control : Provided Assistance

## Assessments

Contributing Factors / Situations : Aircraft  
Primary Problem : Aircraft

## Narrative: 1

Climbing out after departing the FO (First Officer) (PF [Pilot Flying]) called for flaps 8. After selecting flaps 8 we received a single chime and a master caution. Checked the CAS and noticed a flaps fail message and that the flaps remained in the 20 degree position. We continued the climb out keeping our focus on flying the aircraft. We received a climb and after reaching roughly 6,000 ft I made sure the FO had the controls and radios and I took out the Flaps Fail QRH. At this time ATC had cleared us up to our cruise altitude but we informed them we needed to level at 15,000 for the time being. I ran the QRH and the FO and I discussed the fuel situation. At 15,000 we were burning roughly 2200 lbs per side with about 5,000 lbs of fuel remaining. At this point we were still 45 min from ZZZ which was IFR and landing north. After calculating our fuel we determined it was not possible to make it to ZZZ with the fuel burn and the weather. The FO and I agreed at this point we would go ahead and precautionary [notify ATC and request] to give us priority into ZZZ1. I informed dispatch originally of the flaps fail and that we intended to go to ZZZ if possible. Later on they messaged me asking if we were going to ZZZ1 which I acknowledged. I called the FA (Flight Attendant) normally and let her know the situation and did the TEST items and that we did not need to brace. I then made a PA to the passengers just letting them know due to the issue we unfortunately don't have enough fuel to make it to ZZZ and that we would be diverting to ZZZ1. After I briefed the approach I took the flight controls from the FO to perform the flaps 20 landing. Once handed to approach they asked if we wanted the fire trucks standing by and we confirmed as a precautionary measure. We landed and on rollout received a left thrust reverser unlock which ultimately would not stow. Other than that we landed without incident. We cleared the runway, [advised ATC], and taxied into the gate. We deplaned and the ground crew was very accommodating in helping the passengers.

The emphasis on flaps fail in training over my 2.5 years here really helped in knowing what to expect and how to properly handle the situation.

## Synopsis

CRJ-200 Captain reported the flaps would not retract beyond 20 degrees after takeoff.

## Time / Day

Date : 201809

Local Time Of Day : 1201-1800

## Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : Personal

Make Model Name : Small Aircraft, High Wing, 1 Eng, Fixed Gear

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Mission : Personal

Flight Phase : Cruise

Route In Use : None

Airspace.Class E : ZZZ

## Component

Aircraft Component : Engine

Aircraft Reference : X

Problem : Failed

## Person

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Single Pilot

Function.Flight Crew : Pilot Flying

ASRS Report Number.Accession Number : 1580224

Human Factors : Distraction

Human Factors : Troubleshooting

Human Factors : Time Pressure

Human Factors : Situational Awareness

Analyst Callback : Completed

## Events

Anomaly.Aircraft Equipment Problem : Critical

Anomaly.Deviation - Procedural : Published Material / Policy

Anomaly.Inflight Event / Encounter : Fuel Issue

Detector.Person : Flight Crew

When Detected : In-flight

Result.General : Evacuated

Result.Flight Crew : Landed in Emergency Condition

Result.Flight Crew : Requested ATC Assistance / Clarification

Result.Flight Crew : Took Evasive Action

Result.Air Traffic Control : Provided Assistance

Result.Aircraft : Aircraft Damaged

## Assessments

Contributing Factors / Situations : Aircraft  
Primary Problem : Aircraft

#### Narrative: 1

[The night before] I filled the aircraft. Both tanks were full. [The following morning my passenger and I] departed [our home airport] and flew to [an intermediate stop] where we picked up two [additional passengers]. From there we flew to [another airport] about 80 miles and had lunch. When we departed, I looked at the fuel totalizer on the instrument panel and saw that we had used 9.9 gallons. I did not look at the fuel quantity indicators which are located in the wing roots. When we were about 8 miles from home the engine quit. I called ZZZ Center, gave them our position and activated the 406 ELT. We landed in a marsh and flipped over. Everyone exited the aircraft and waited on the wing until the [State] Troopers helicopter arrived. There were no injuries. After the aircraft was recovered by helicopter, I notices the right fuel cap was off.

#### Callback: 1

Pilot stated the missing fuel cap caused fuel starvation.

#### Synopsis

Small aircraft pilot reported an engine failure inflight resulting in an off airport forced landing and aircraft damage.

## Time / Day

Date : 201809

Local Time Of Day : 1801-2400

## Place

Locale Reference.Airport : DFW.Airport

State Reference : TX

## Environment

Flight Conditions : IMC

Weather Elements / Visibility : Thunderstorm

Weather Elements / Visibility : Rain

Light : Daylight

## Aircraft

Reference : X

ATC / Advisory.Center : ZFW

Aircraft Operator : Air Carrier

Make Model Name : Medium Transport, Low Wing, 2 Turbojet Eng

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Initial Approach

Route In Use.STAR : BOOVE4

Airspace.Class B : DFW

## Person

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Carrier

Function.Flight Crew : Pilot Not Flying

Function.Flight Crew : Captain

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

ASRS Report Number.Accession Number : 1579531

## Events

Anomaly.ATC Issue : All Types

Anomaly.Deviation - Procedural : Published Material / Policy

Anomaly.Inflight Event / Encounter : Unstabilized Approach

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Anomaly.Inflight Event / Encounter : Fuel Issue

Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Requested ATC Assistance / Clarification

Result.Flight Crew : Landed As Precaution  
Result.Air Traffic Control : Provided Assistance

## Assessments

Contributing Factors / Situations : Weather  
Primary Problem : Weather

## Narrative: 1

While holding at FL230 at KILO on the BOOVE4 arrival we determined Abilene was our best alternate. We calculated the fuel required and decided we would shortly depart for Abilene. Just as we prepared to depart the hold for ABI ATC informed us that we could go to DFW if we could cross BOOVE at 11000 feet. We determined this was possible and complied with an ATC clearance to cross BOOVE at 11000 feet. We were instructed to depart CURLE heading 015 for 18R. As we approached BOOVE we were cleared to continue our descent to 6000 feet and were then passed off to the next controller.

As we checked in the controller told us descend to 3000 feet for 13R. There was heavy rain and lightning in the clouds to the west and south west of airport. ATC advised that other traffic had reported smooth rides though the weather. ATC repeatedly queried us if we had airport in sight. We were continuously in IMC up to this point. We received a clearance to 2100 feet. When airport queried us for visual contact with airport we responded "negative" and were then cleared to 2000 feet. At 2000 we still did not see airport. ATC gave us a 070 vector and instructed us to climb to 3000 feet. As we were configuring to comply with these instructions a different controller jumped in and told us to keep turning to 070 and maintain 2000 feet for a vector to 18R. Although this was the 3rd runway change we determined we could be adequately prepared and accepted the clearance.

We encountered VMC and reported airport in sight. I immediately observed lightning strikes all quadrants around airport. Our last vector had left us slightly inside the final approach fix on base leg. We considered a missed approach due to the potential lack of stabilized approach criteria. However the radar and visual scan surrounding airport and the departure end of 18R revealed heavy rain and continuous lightning. We were fully configured with all checklists completed and decided to continue the approach while continuing to observe the conditions for a possible missed approach. The conditions continued to reveal highly unfavorable conditions to conduct a missed approach. Another consideration was the fuel used during our holding. A missed approach followed by a diversion to our alternate would have left us with less than planned arrival fuel at our alternate. Potential deviations around the weather on the way to our alternate may have put us in a critical fuel situation. Throughout the remainder of the approach the vertical descent had momentary excursions outside standard approach criteria. However due to the surrounding airport conditions, and fuel considerations, a continued approach with a slightly higher than standard descent rate was deemed to be the safer option. We finalized our decision to land on short final (approximately 100 feet) when we heard windshear reports broadcast.

## Synopsis

Air carrier Captain reported a challenging approach with multiple clearances and runway changes into DFW due to bad weather.

## Time / Day

Date : 201809

Local Time Of Day : 1201-1800

## Place

Locale Reference.ATC Facility : ZZZ.ARTCC

State Reference : US

Altitude.MSL.Single Value : 33000

## 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 : 3

Operating Under FAR Part : Part 121

Mission : Passenger

Flight Phase : Cruise

## Component

Aircraft Component : Fuel Quantity-Pressure Indication

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

Experience.Flight Crew.Total : 15700

Experience.Flight Crew.Last 90 Days : 300

Experience.Flight Crew.Type : 3000

ASRS Report Number.Accession Number : 1579289

## 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  
Experience.Flight Crew.Total : 13300  
Experience.Flight Crew.Last 90 Days : 133  
Experience.Flight Crew.Type : 619  
ASRS Report Number.Accession Number : 1579499

## Person : 3

Reference : 3  
Location Of Person.Aircraft : X  
Location In Aircraft : Flight Deck  
Reporter Organization : Air Carrier  
Function.Flight Crew : Pilot Not Flying  
Function.Flight Crew : First Officer  
Function.Flight Crew : Relief Pilot  
Qualification.Flight Crew : Air Transport Pilot (ATP)  
Qualification.Flight Crew : Instrument  
Qualification.Flight Crew : Multiengine  
Experience.Flight Crew.Total : 17000  
Experience.Flight Crew.Last 90 Days : 230  
Experience.Flight Crew.Type : 11000  
ASRS Report Number.Accession Number : 1579489

## Events

Anomaly.Aircraft Equipment Problem : Less Severe  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : Returned To Departure Airport

## Assessments

Contributing Factors / Situations : Aircraft  
Primary Problem : Aircraft

## Narrative: 1

At our first abeam [fuel] checkpoint approximately 1:00 hour into the flight, we noted the fuel score was off by minus 2,500 pounds. We checked progress page 2 on the FMC and monitored the Totalizer vs. calculated figures. The Totalizer was decreasing at an abnormally high rate compared to normal. The disparity eventually reached a fuel score of minus 7,000 pounds. We accomplished the checklists, conferred with Dispatch and Maintenance Control and determined the best course of action was to return to ZZZ. We determined we did not have a fuel leak from the main tanks and could safely continue to ZZZ but that an overweight landing would be the safest choice of action. Dumping fuel with an unreliable fuel quantity system seemed a bad option. ATC, ZZZ Fire, Dispatch, Maintenance Control and Cabin Crew were all advised and responded professionally. The landing was uneventful.

## Narrative: 2

I was the Pilot Monitoring. Approaching ZZZZZ intersection, I recorded the fuel and noted a 2,700 pound discrepancy. We looked at progress page 2 fuel values and noted the

Totalizer fuel decreasing at a rapid rate. We looked at the fuel synoptic and it indicated that the center tanks were using fuel at an unusually high rate. It became obvious that a fuel imbalance was imminent, so we reviewed the appropriate checklists and contacted Dispatch and Maintenance Control. We did get a fuel disagree EICAS which led us to the Fuel Leak Checklist. Initially we had a 2,700 pound discrepancy that went up to 7,000 pounds. Upon discussion with Dispatch and Maintenance Control, we returned to ZZZ and [requested priority]. After performing the Fuel Leak Checklist, we switched to the L and R main tanks and the center tank seemed to stabilize. We went back to the center tank and it was still stable and seemed to be operating normally. Since we had what seemed to be a fuel leak, we decided to land overweight and not dump fuel as we weren't sure of our fuel status and if we had a leak or not. We landed at 620,000 [pounds], used the longest runway, flaps 30 and auto brakes 4. We had the emergency vehicles meet us and they reported that they didn't see any fuel leakage or spillage. We returned to the gate still indicating a 7,000 pound imbalance between Totalizer and calculated fuel values. When we shut down engines, the fuel values both went to the Totalizer value (the lower of the two). We debriefed with mechanics and shared all the information we had and exchanged phone numbers in case of any further questions or findings.

### Narrative: 3

I was the Relief Pilot and had been on break for approximately 50 minutes when the Captain called me to tell me he suspected a fuel leak or fuel quantity malfunction. They had been monitoring the fuel because the fuel quantity had been 3,000 [lbs] less than the flight plan fuel at the waypoint fuel check. They also said the center tank synoptic quantity was decreasing rapidly. He asked me to go to the cabin and look for any signs of a fuel leak. I did and reported that while I couldn't see any evidence of a leak, there were large areas that couldn't be inspected. I returned to the flight deck and while the Captain had a SATCOM call with Dispatch and Maintenance Control; I talked to ATC while the other First Officer flew the aircraft. At that time, the calculated fuel was 7,400 pounds less than the Totalizer fuel. Dispatch and Maintenance Control requested that we return to ZZZ for maintenance. We got clearance to turn back, and after discussion with Dispatch, decided to [request priority], and to land overweight. I advised the flight attendants that we had about an hour and twenty minutes until landing, so they finished their dinner service. As we approached ZZZ, we asked the flight attendants to do a Cabin Advisory, to increase their awareness in case there was a fuel leak that caused an issue during the landing. From that point, things seemed to go smoothly until on short final we got a TCAS alert from a VFR aircraft cruising

### Synopsis

B777 flight crew reported discovering a rapidly decreasing fuel quantity indication at the first enroute checkpoint.

## Time / Day

Date : 201809

Local Time Of Day : 1801-2400

## Place

Altitude.MSL.Single Value : 36000

## Environment

Flight Conditions : IMC

## Aircraft

Reference : X

Aircraft Operator : Air Carrier

Make Model Name : B737 Undifferentiated or Other Model

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Mission : Passenger

Flight Phase : Cruise

## Component

Aircraft Component : Fuel Quantity-Pressure Indication

Aircraft Reference : X

Problem : Malfunctioning

## Person : 1

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Carrier

Function.Flight Crew : Pilot Not Flying

Function.Flight Crew : First Officer

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Instrument

Experience.Flight Crew.Type : 650

ASRS Report Number.Accession Number : 1579278

## Person : 2

Reference : 2

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

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 : 200

Experience.Flight Crew.Type : 1127  
ASRS Report Number.Accession Number : 1579294

## Events

Anomaly.Aircraft Equipment Problem : Less Severe  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : Diverted

## Assessments

Contributing Factors / Situations : Aircraft  
Primary Problem : Aircraft

## Narrative: 1

In cruise flight, we encountered a potential fuel leak. We were cruising at 36,000 feet. We had been monitoring the fuel against the [planned burn] the entire flight. We had been down very little according to the [planned burn] but we were consistently at the same number. After we crossed some weather, we noticed a large fuel imbalance, approximately 800 pounds (left side low). The captain and I discussed our problem and began to run the Fuel Imbalance Checklist. As we [are] running the checklist, the imbalance became larger than 1,000 pounds and we got the fuel imbalance message. We followed the checklist, including ensuring that the cross feed valve is closed (it was). We monitored the total fuel quantity indication and noted that it was decreasing rapidly. At one point we were down about 2,000 pounds and received a Using RSV Fuel message. The Fuel Imbalance Checklist led us to the Engine Fuel Leak Checklist. We ran the checklist up to the point of engine shut down. We then called [Maintenance Control], discussed it with them and [requested priority]. We were entering an area of the [mountains] that had few close, suitable alternates. We diverted to [closest airport].

## Narrative: 2

In cruise at 36,000 feet. All systems were normal; we were approaching a cold front and received a reroute by ATC. Approaching the cold front, I had the flight attendants take their jump seats for potential turbulence. As we were passing the front, we noticed the left fuel tank quantity decreasing and eventually had an Imbalance alert. We ran the [Fuel] Imbalance Checklist as well as the Fuel Leak Engine Checklist. Totalizer and calculated fuel were decreasing at an accelerated rate. We received an FMC using reserve fuel message. We had a phone patch call with Maintenance Control. During discussion with Maintenance Control, imbalance increase subsided. At this point arrival fuel was approximately 1,700 pounds less than when the issue first started. Then, the imbalance resumed again slowly with left tank decreasing and imbalance increasing. We were advised Maintenance Control and Dispatch that we would divert before proceeding any further into the inter mountain west. We advised ATC and were cleared direct for an uneventful approach and landing.

## Synopsis

B737 flight crew reported diverting after experiencing a fuel system malfunction resulting in a fuel tank imbalance.

## Time / Day

Date : 201809

Local Time Of Day : 1801-2400

## Place

Locale Reference.Airport : HEF.Airport

State Reference : VA

## Environment

Flight Conditions : VMC

Light : Daylight

## Aircraft

Reference : X

ATC / Advisory.TRACON : PCT

Aircraft Operator : Personal

Make Model Name : PA-32 Cherokee Six/Lance/Saratoga/6X

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 91

Flight Plan : VFR

Mission : Training

Flight Phase : Initial Climb

Route In Use : Vectors

Airspace.Class E : PCT

## Component : 1

Aircraft Component : Engine

Aircraft Reference : X

Problem : Improperly Operated

## Component : 2

Aircraft Component : Fuel Line, Fittings, & Connectors

Aircraft Reference : X

Problem : Failed

## Person

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Instructor

Qualification.Flight Crew : Flight Instructor

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Commercial

Experience.Flight Crew.Total : 970

Experience.Flight Crew.Last 90 Days : 400

Experience.Flight Crew.Type : 400

ASRS Report Number.Accession Number : 1579197  
Human Factors : Training / Qualification

## Events

Anomaly.Aircraft Equipment Problem : Critical  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : Overcame Equipment Problem

## Assessments

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

## Narrative: 1

After takeoff climbing to cruise altitude, we lost engine power. I, as the instructor, took flight controls and [notified ATC]. I was able to restart the engine while being low to the ground and made it back to [our departure] airport. Upon landing I saw that the left fuel tank was empty.

The student had verified that the tanks were filled to the tabs, however it drained out after takeoff.

## Synopsis

PA-32 Instructor reported a loss of engine power due to a loss of fuel from the left fuel tank.

## Time / Day

Date : 201809  
Local Time Of Day : 0601-1200

## Place

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

## Aircraft

Reference : X  
Aircraft Operator : Air Carrier  
Make Model Name : Airbus 318/319/320/321 Undifferentiated  
Crew Size.Number Of Crew : 2  
Operating Under FAR Part : Part 121  
Flight Plan : IFR  
Mission : Passenger  
Flight Phase : Parked

## Component

Aircraft Component : Fuel  
Aircraft Reference : X  
Problem : Failed

## Person

Reference : 1  
Location Of Person : Gate / Ramp / Line  
Location In Aircraft : Flight Deck  
Reporter Organization : Air Carrier  
Function.Flight Crew : Pilot Flying  
Function.Flight Crew : Captain  
Qualification.Flight Crew : Air Transport Pilot (ATP)  
Qualification.Flight Crew : Instrument  
Qualification.Flight Crew : Multiengine  
ASRS Report Number.Accession Number : 1578488

## Events

Anomaly.Aircraft Equipment Problem : Less Severe  
Anomaly.Deviation - Procedural : MEL  
Anomaly.Deviation - Procedural : Hazardous Material Violation  
Anomaly.Deviation - Procedural : Published Material / Policy  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Ground Personnel  
Detector.Person : Flight Crew  
When Detected : Pre-flight  
Result.General : Work Refused  
Result.General : Maintenance Action  
Result.Flight Crew : Took Evasive Action

## Assessments

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

## Narrative: 1

My First Officer and I were getting our airplane ready for departure. While on aircraft, we experienced an extensive fuel leak. For the next 40 minutes we dealt with a high stress situation having 100+ gallons of fuel spill under the aircraft. After talking with my Dispatcher, he agreed to find us a new aircraft. As I was doing my pre-flight duties [on the replacement aircraft], I noticed the aircraft had 4 MEL'S and 1 CDL. It's unfortunately not uncommon to have a long list of MEL's at [this company]. I spent the next 15 minutes looking through every MEL and CDL. I was aware of the follow-up required on CDL 52 but misinterpreted the actions required by Maintenance. I made sure the dispatch release included the takeoff and en-route weight penalties as well as an increased fuel consumption of 0.64% as stated to do under Operations Procedures. While looking at the maintenance procedures, it has them deactivate the forward cargo compartment door access panel. The follow-up required (FR) was to make sure all latching hooks are checked latched and locked before each flight. When the ramp agent came up with the final paperwork, I had him look and make sure the door was secured and the latching hooks were checked latched. I believed that I was following all duties required by this CDL. It wasn't until I got to [destination airport] that I looked further back in the logbook and noticed that there were multiple FRs done by maintenance personnel. I then called Dispatch and Maintenance to verify and they stated that it should have been done by a mechanic in [departure airport]. A couple contributing factors was stress from the prior airplane having an excessive fuel leak, an aircraft swap, multiple deferrals on the new aircraft, and being behind schedule for a "head start flight". One more factor that led me to believe the FR was supposed to be by the flight crew, and not Maintenance was our ability to get an AWP. Vol 1 25.20 states: When a Maintenance FR is required, the AWP will be locked out and crews will contact Dispatch through their responsible Dispatcher. We were able to get AWP data with no problem. This led us to believe that we were doing everything correctly. From now on, anytime I have an aircraft with a FR, I will contact Dispatch and or Maintenance Control to verify the correct action to be taken with the MEL/CDL.

## Synopsis

Airbus A320 series Captain reported a fuel leak prior to departure and a maintenance item that was missed as a result.



## Time / Day

Date : 201808  
Local Time Of Day : 0601-1200

## Place

Locale Reference.Airport : ZZZ.Airport  
State Reference : US  
Altitude.AGL.Single Value : 800

## Environment

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

## Aircraft

Reference : X  
ATC / Advisory.UNICOM : ZZZ  
Aircraft Operator : Personal  
Make Model Name : PA-46 Malibu Meridian  
Crew Size.Number Of Crew : 1  
Operating Under FAR Part : Part 91  
Flight Plan : None  
Mission : Training  
Flight Phase : Landing  
Route In Use : None  
Airspace.Class E : ZZZ

## Component

Aircraft Component : Engine Driven Pump  
Aircraft Reference : X  
Problem : Failed

## Person

Reference : 1  
Location Of Person.Aircraft : X  
Location In Aircraft : Flight Deck  
Reporter Organization : Personal  
Function.Flight Crew : Instructor  
Qualification.Flight Crew : Multiengine  
Qualification.Flight Crew : Commercial  
Qualification.Flight Crew : Flight Instructor  
Qualification.Flight Crew : Instrument  
Experience.Flight Crew.Total : 2800  
Experience.Flight Crew.Last 90 Days : 210  
Experience.Flight Crew.Type : 51  
ASRS Report Number.Accession Number : 1577375  
Human Factors : Workload  
Human Factors : Troubleshooting

## Events

Anomaly.Aircraft Equipment Problem : Critical  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Anomaly.Inflight Event / Encounter : Weather / Turbulence  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : Inflight Shutdown  
Result.Flight Crew : Landed in Emergency Condition  
Result.Flight Crew : Took Evasive Action  
Result.Flight Crew : Overcame Equipment Problem

## Assessments

Contributing Factors / Situations : Aircraft  
Primary Problem : Aircraft

## Narrative: 1

I was performing a familiarization flight with the owner of a Piper PA-46. After flying for roughly 1.5 hours, we entered the left traffic pattern for Runway XX. The wind was 130@15G20, so we had a significant tailwind on downwind. I let the owner/student perform a wider than usual pattern to allow the airplane time to slow down and for him to perform his checklists, as he was getting behind the airplane. On the midfield, downwind at 800 feet AGL, our engine quit. I immediately moved all power levers full and switched fuel tanks, which didn't do anything. I took control of the airplane and began searching for an emergency landing spot while I asked the student to perform the Engine Failure Checklist. The student turned on the emergency "high" fuel pump at approximately 400 feet AGL. He continued to crank the starter to try and restart the engine before and after switching the emergency fuel pump on. In the meantime, I retracted the landing gear and found a field to land [on] and was setting up on a base. With the tailwind, there was a slim chance I could make it to the runway. I turned onto final for my designated field and was probably less than 100 feet AGL when the emergency fuel pump kicked in and came back to life with full power. It felt like an eternity, but was most likely 30-45 seconds that it took the emergency fuel pump to kick in. I used ground effect to help generate some airspeed, climbed out, and headed straight to the airport and landed on Runway XX. The emergency fuel pump on this type of airplane is designed to flood out the engine if the mechanical engine driven fuel pump is working. It even has a guard on the switch to prevent someone from inadvertently activating it in-flight. When I shut the airplane off with the mixture after landing, it continued to run smoothly. I shut the emergency fuel pump off and then the engine shut down. Based on that, I am speculating that the engine driven fuel pump quit working in the traffic pattern. The airplane is obviously grounded until we can confirm and replace the defective components. The biggest takeaway of this report is to always perform a traffic pattern within gliding range of the runway. I let the student perform wider pattern which prevented us from gliding to the runway when our engine quit. Had we been within gliding distance we would have been able to execute a successful short approach for Runway XX or XY.

## Synopsis

PA-46 Pilot reported that on downwind the engine quit due to fuel starvation.

## Time / Day

Date : 201809

Local Time Of Day : 1201-1800

## Place

Locale Reference.ATC Facility : KZAK.ARTCC

State Reference : CA

Altitude.MSL.Single Value : 5500

## Environment

Flight Conditions : VMC

Weather Elements / Visibility : Rain

## Aircraft

Reference : X

ATC / Advisory.Center : KZAK

Aircraft Operator : Air Carrier

Make Model Name : Large Transport, Low Wing, 2 Turbojet Eng

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Initial Approach

Airspace.Class E : KZAK

## 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 : Multiengine

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Instrument

Experience.Flight Crew.Total : 7779

Experience.Flight Crew.Type : 1133

ASRS Report Number.Accession Number : 1576622

Human Factors : Communication Breakdown

Communication Breakdown.Party1 : Flight Crew

Communication Breakdown.Party2 : Dispatch

Communication Breakdown.Party2 : ATC

## Events

Anomaly.ATC Issue : All Types

Anomaly.Deviation - Procedural : Clearance

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Anomaly.Inflight Event / Encounter : Fuel Issue

Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Executed Go Around / Missed Approach

Result.Flight Crew : Diverted

## Assessments

Contributing Factors / Situations : Environment - Non Weather Related

Contributing Factors / Situations : Weather

Primary Problem : Environment - Non Weather Related

## Narrative: 1

Following second missed approach due to weather climbed to VMC below FL055 in TKK. [Another flight] was holding in the high altitude above TKK, but we did not know what altitude they were holding at. Leveled below and preceded NW to ZZZ due to fuel concerns. Tried contacting KZAK (Oakland Oceanic) on CPDLC....no answer. Tried breaking into SFO radio on HF....no luck. Tried contacting both KZAK and SFO radio via SATCOM....no luck. KZAK would not answer SATCOM call....rang over 30 times. KZAK would not answer EMERGENCY SATCOM call....rang over 30 times. Started to climb to higher altitude VMC, all while trying to contact for clearance. Leveled at FL245 while maintaining VMC. Finally was able to break into SFO radio's reading of SIGMETS to multiple flight by declaring PAN, PAN, PAN. Was unable to coordinate altitude de-confliction with [other flight] on both 123.45, and 121.5, but did observe them on the TCAS well above our altitude. Received clearance from SFO radio after almost 5-10 minute further delay after contact. [Dispatch] was not verbally contacted following the flight. [Dispatch] was contacted via ACARS.

## Synopsis

Air Carrier Captain reported difficulties with weather and ATC communications resulting in a diversion.

## Time / Day

Date : 201809

Local Time Of Day : 1201-1800

## Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Altitude.MSL.Single Value : 5000

## Environment

Flight Conditions : VMC

Light : Daylight

## Aircraft

Reference : X

ATC / Advisory.TRACON : ZZZZ

Aircraft Operator : Air Carrier

Make Model Name : Regional Jet 200 ER/LR (CRJ200)

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Climb

Airspace.Class D : ZZZ

## Component

Aircraft Component : Fuel Distribution System

Aircraft Reference : X

Problem : Failed

Problem : Malfunctioning

## Person : 1

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Carrier

Function.Flight Crew : Pilot Flying

Function.Flight Crew : Captain

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

ASRS Report Number.Accession Number : 1576056

Human Factors : Situational Awareness

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 : Air Transport Pilot (ATP)  
Qualification.Flight Crew : Instrument  
Qualification.Flight Crew : Multiengine  
ASRS Report Number.Accession Number : 1576057  
Human Factors : Confusion  
Human Factors : Troubleshooting  
Human Factors : Situational Awareness

## Events

Anomaly.Aircraft Equipment Problem : Critical  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Automation : Aircraft Other Automation  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : Returned To Departure Airport  
Result.Flight Crew : FLC Overrode Automation  
Result.Flight Crew : Requested ATC Assistance / Clarification  
Result.Flight Crew : Overcame Equipment Problem  
Result.Flight Crew : Landed As Precaution  
Result.Air Traffic Control : Issued New Clearance  
Result.Air Traffic Control : Provided Assistance

## Assessments

Contributing Factors / Situations : Aircraft  
Primary Problem : Aircraft

## Narrative: 1

Normal takeoff and initial climb from Runway XX at ZZZ. In the left turn to the north for our first fix, we received the Caution chime and the "FUEL CH 1/2 FAIL" message illuminated. It remained on for approximately 10 seconds then went out. We commented "that was odd" and then it illuminated again with the chime. It cycled this way 2 more times before we got to 5000 feet, and as Pilot Flying I called for the QRH checklist for FUEL CH 1/2 FAIL. Pilot Monitoring read and performed the checklist while I talked with ATC, stopping our climb at 5000 feet (we had been cleared to 10) and getting a vector to stay in the local area while we ran the checklist. The QRH instructed that we land at the nearest suitable airport, and ZZZ was less than 10 miles away so the decision to return was easily made. While Pilot Monitoring was running the QRH, the Caution message returned and remained on throughout the procedure.

I advised ATC we would be returning and requested vectors to final for Runway XX, which they provided along with a descent. In the descent, as Pilot Monitoring was finishing the QRH, I made an announcement in the back that we would be returning to the airport for a fuel distribution problem. The Flight Attendant called up and I apologized for not calling her first and gave her the details. (We talked later and I told her she did the right thing).

Pilot Monitoring finished the QRH and we monitored fuel, slipping the aircraft as required to try to maintain fuel balance. During our climb to 5000 feet, the fuel had gone from balanced to 300 lbs difference in less than 2 minutes. By the time we finished the

checklist, the unbalanced condition had worsened to 500 lbs, and by slipping the aircraft we arrested the imbalance trend. We remarked that we needed to get on the ground. I asked Pilot Monitoring to grab the landing numbers as we turned Final but he had already done so and he bugged the numbers as we contacted Tower and were cleared to land.

After finishing the QRH, the status message "FUEL CH 2 FAIL" appeared and the Caution message disappeared. I slipped the aircraft most of the way down final in order to keep the fuel from becoming more unbalanced. We landed without incident. By the time we landed, the aileron trim was required to be almost to the right wing down limit in order to keep pressure off the yoke. Total time from takeoff to touchdown was less than 15 minutes.

We had no time in which to send a message to Dispatch. I recall considering sending a message and asked Pilot Monitoring to do so at one point, but then said something like, "Never mind that there isn't time we will be on the ground in 1 minute and I'll call them." If we had been further from the airport by 5 minutes, we would have had time to send a message. However, since we were on a wide downwind when the Caution message appeared and the fuel balance degraded so quickly, it would have been unsafe to delay the landing while sending a message via ACARS. After landing, Pilot Monitoring and I as well as the jump seater all commented that the aircraft was leaning to the heavy side, so it was apparent this was not an indication failure. [The cause was a] Fuel System failure.

#### Narrative: 2

[Report narrative contained no additional information.]

#### Synopsis

CRJ-200 flight crew reported returning to departure airport after takeoff due to a Fuel Channel Fail EICAS messages and being unable to maintain normal fuel balance.

## Time / Day

Date : 201809

## Environment

Flight Conditions : VMC

Light : Dusk

## Aircraft

Reference : X

ATC / Advisory.Tower : ZZZ

Aircraft Operator : Personal

Make Model Name : Amateur/Home Built/Experimental

Crew Size.Number Of Crew : 1

Flight Phase : Cruise

Airspace.Class D : ZZZ

## Component

Aircraft Component : Powerplant Fuel Distribution

Aircraft Reference : X

Problem : Improperly Operated

## Person

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Pilot Flying

Function.Flight Crew : Single Pilot

Qualification.Flight Crew : Private

Experience.Flight Crew.Type : 700

ASRS Report Number.Accession Number : 1575571

Human Factors : Confusion

Human Factors : Situational Awareness

## Events

Anomaly.Aircraft Equipment Problem : Less Severe

Anomaly.Deviation - Procedural : Published Material / Policy

Anomaly.Inflight Event / Encounter : Fuel Issue

Detector.Person : Flight Crew

When Detected : In-flight

Result.General : Flight Cancelled / Delayed

Result.General : Police / Security Involved

Result.Flight Crew : Landed As Precaution

Result.Flight Crew : Returned To Departure Airport

Result.Flight Crew : Overcame Equipment Problem

## Assessments



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

## Narrative: 1

I departed for a brief (10-minute) flight to collect a single performance data point above the airport close to sunset. During the flight, a roughness and unexplained power loss was experienced. Since I was above the airport with an assured landing but concerned about the fuel situation and/or engine condition, I chose a power-off landing after clearance was received. After a normal rolling exit from the runway onto the desired taxiway, I requested/advised tower off frequency for a moment. I checked for any leaks or concerns. None were observed, but it was getting dark, so I requested straight ahead to the ramp from Ground and, receiving "proceed as requested", pushed the airplane ahead to the ramp. I was greeted unnecessarily by police. I explained the events and he seemed ok with just taking my name. I had about 5 gallons of fuel remaining, since I added 20 and the gauges read afterward 25. It's possible that my original measurements of unusable fuel (almost none) were inaccurate for some combination of the flight conditions. It's possible that the fuel computer had bad data. It's possible that some other issue (debris, etc) was a source of the problem. I had checked the fuel level during preflight and met the night VFR required reserve. The flight was aborted after less than 10 minutes. The engine ran normally for the taxi back to the hangar.

## Synopsis

Experimental Aircraft pilot reported engine roughness and unexplained power loss.

## Time / Day

Date : 201809

Local Time Of Day : 0601-1200

## Place

Locale Reference.ATC Facility : ZZZ.TRACON

State Reference : US

## Environment

Flight Conditions : IMC

Light : Daylight

## Aircraft

Reference : X

ATC / Advisory. TRACON : ZZZ

Aircraft Operator : Air Carrier

Make Model Name : EMB ERJ 145 ER/LR

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

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

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 : 1575444

Human Factors : Communication Breakdown

Human Factors : Situational Awareness

Human Factors : Time Pressure

Communication Breakdown.Party1 : Flight Crew

Communication Breakdown.Party2 : Dispatch

## Events

Anomaly.Deviation - Procedural : Published Material / Policy

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Anomaly.Inflight Event / Encounter : Fuel Issue

Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Requested ATC Assistance / Clarification

Result.Flight Crew : Diverted  
Result.Air Traffic Control : Issued New Clearance

## Assessments

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

## Narrative: 1

Reaching our intended destination ZZZ, the weather was reported close to approach minimums for ILS 9R. Because of only single runway in use, arrivals were being given extensive delaying vectors, our flight included. During this time, I checked the weather for our filed alternate ZZZ1, our secondary alternate ZZZ2 and ZZZ3 since we had just flown over that area on the arrival. ZZZ1 was well below minimums for an approach, ZZZ2 was VFR and ZZZ3 was pretty much CAVU. The fuel burn to ZZZ2, our most distant alternate was calculated at 1459lbs. During the vectoring delays, I decided on my BINGO fuel to be 3400 lbs in case a diversion became necessary. When our turn came to shoot the approach we were still above this number. My trainee who was on his second OE (Operational Experience) trip with [the company] and his 10th leg total was flying the approach. Upon reaching minimums, the runway environment was not in sight and a missed approach was executed. After the missed approach and being vectored around, our fuel was now at approximately 3200 lbs, below my desired BINGO fuel. Just to add some background, my personal comfort zone is to land with at least 2000 lbs in order to deal with any unforeseen contingencies. Knowing that my 1st alternate ZZZ1 was well below minimums and that the fuel burn to my 2nd alternate ZZZ2 would put me below my comfortable reserve of 2000 lbs, I requested several times from Dispatch a fuel burn calculation for a diversion to ZZZ3. The response I received from my dispatcher can only be described as uncooperative and smart aleck. The dispatcher refused to provide me a fuel burn calculation to ZZZ3 after 2 requests. Knowing that ZZZ3 and ZZZ2 are approximately equidistant from ZZZ and that an ATC clearance to ZZZ2 often requires an extensive detour to the west and that flights to ZZZ3 are often cleared almost direct, I chose the safest course of action for the situation that we were in and diverted to ZZZ3.

This flight was put into this situation after a missed approach in ZZZ and requests for assistance were made to Dispatch. The primary cause was a lack of any cooperation from my dispatcher during a very high workload situation. I was conducting OE with a new hire FO (First Officer) during a very busy time, a missed approach had just been conducted, we had gone below our BINGO fuel and a diversion needed to be planned. The error that I committed during this high workload time, was that I omitted to provide Dispatch our current fuel on board. However, despite my omission, I think it's pretty clear that the dispatcher was annoyed and inconvenienced with my predicament and requests. Instead of providing the information that I requested, the dispatcher instead decided to throw obstacles in my way. First by not providing the information requested and next by purposefully trying to suck me into playing 20 questions via ACARS with unhelpful answers to my requests. From my perspective my decision to divert to ZZZ3 had not been part of the game plan for this dispatcher and since there was no desire from the dispatcher to adapt to the changing situation, there would be no assistance given to our flight.

## Synopsis

ERJ145 captain reported reaching a critical fuel state due to deteriorating weather conditions at the destination airport, and subsequent difficulty finding a suitable alternate.

## Time / Day

Date : 201808

Local Time Of Day : 1201-1800

## Place

Locale Reference.ATC Facility : ZZZ.TRACON

State Reference : US

Altitude.MSL.Single Value : 3500

## Environment

Weather Elements / Visibility.Visibility : 10

Light : Daylight

## Aircraft

Reference : X

ATC / Advisory.TRACON : ZZZ

Aircraft Operator : Personal

Make Model Name : Cessna 210 Centurion / Turbo Centurion 210C, 210D

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 E : ZZZ

## Component

Aircraft Component : Fuel Crossfeed

Aircraft Reference : X

Problem : Improperly Operated

## Person

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Pilot Flying

Function.Flight Crew : Single Pilot

Qualification.Flight Crew : Flight Instructor

Qualification.Flight Crew : Instrument

Experience.Flight Crew.Total : 4500

Experience.Flight Crew.Last 90 Days : 25

Experience.Flight Crew.Type : 1000

ASRS Report Number.Accession Number : 1575001

Human Factors : Situational Awareness

Human Factors : Troubleshooting

Human Factors : Confusion

## Events

Anomaly.Aircraft Equipment Problem : Less Severe  
Anomaly.Deviation - Procedural : Published Material / Policy  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : Overcame Equipment Problem  
Result.Flight Crew : Requested ATC Assistance / Clarification  
Result.Flight Crew : Returned To Departure Airport

## Assessments

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

## Narrative: 1

The purpose of the flight was to perform some post-maintenance engine performance tests. Prior to the flight I determined there was plenty of fuel available. After some take-offs and landings at a local airport, I climbed to 6500' and contacted Approach for advisories while I knew I would be somewhat distracted. I again confirmed adequate fuel but decided I should switch tanks when heading back to base. The tests went smoothly and I turned to head home, descending to 3500' and forgetting to switch tanks. Just east of ZZZ1 the engine stopped. I immediately turned back to ZZZ1, advised ATC of the problem and began trouble shooting. Finally I checked the fuel gauges and realized my error. Switched tanks and the engine soon recovered. Resumed the flight to base and landed without further issue, landing with well more than legal minimums.

My take away--anything other than flying the airplane should be more than a solo activity. Using ATC as a second set of eyes for traffic was good but not a substitute for me as PIC keeping focused on flying while someone else does the data collection. Also, be very generous with fuel available.

## Synopsis

Cessna 210 pilot reported a temporary loss of engine power due to improper fuel tank management.

## Time / Day

Date : 201808

Local Time Of Day : 0601-1200

## Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Relative Position.Distance.Nautical Miles : 8

Altitude.MSL.Single Value : 6500

## Environment

Flight Conditions : VMC

Light : Daylight

## Aircraft

Reference : X

ATC / Advisory.TRACON : ZZZ

Aircraft Operator : Corporate

Make Model Name : Cessna Stationair/Turbo Stationair 6

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 91

Flight Plan : VFR

Mission : Photo Shoot

Flight Phase : Descent

Route In Use : Visual Approach

Airspace.Class E : ZZZ

## Component : 1

Aircraft Component : Engine

Aircraft Reference : X

Problem : Malfunctioning

## Component : 2

Aircraft Component : Fuel Tank Cap

Problem : Improperly Operated

## Person

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Corporate

Function.Flight Crew : Pilot Flying

Function.Flight Crew : Single Pilot

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Commercial

Experience.Flight Crew.Total : 470

Experience.Flight Crew.Last 90 Days : 40

Experience.Flight Crew.Type : 10  
ASRS Report Number.Accession Number : 1574982  
Human Factors : Situational Awareness  
Human Factors : Time Pressure

## Events

Anomaly.Aircraft Equipment Problem : Critical  
Anomaly.Deviation - Procedural : Published Material / Policy  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : Diverted  
Result.Flight Crew : Landed As Precaution  
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 : Human Factors  
Primary Problem : Human Factors

## Narrative: 1

I was flying several photo missions for my company with [several] locations. I was flying enroute to ZZZ at 7500 ft. MSL. I was using flight following services with TRACON. I cleared the terrain at 7500 ft. MSL, initiated a planned descent to 3500 ft. slowly. At about 6500 ft. MSL, I experienced manifold drop of 4-5 inches with associate loss in RPM to roughly 2100 (from 2400). I pushed throttle, propeller, and mixture in and verified engine temperatures, oil pressure, and fuel flow were in the green. (Noted Oil Pressure of 41psi which is low for cruise power but still within normal limits). The power remained consistently low for 5-10 seconds then recovered to full power and 2600+ RPM without other adjustments. Adjusting settings back to cruise (27 in., 2400 RPM) worked as expected. Then, another power loss occurred... same result. 27 in. down to 21 in. I worked the engine controls; my operator/co pilot changed fuel tank from left to right.

The power did not recover to full power immediately, but held steady (at 20-21 in.) then recovered to full. On that 2nd power drop, I declared to [TRACON] that we are experiencing partial engine failure and would be heading to ZZZ1 for landing. We were about 6-8 miles north of ZZZ1. I switched over to Tower, told them we are experiencing partial engine failure and coming in to land. They cleared us to do one circling descent, so I did. They suggested to do one more circle or circle to land XX but I decided to do straight in XXR. They cleared us to land XXR.

During circling to lose altitude, we experienced engine power responding to control inputs as expected. Not knowing what has caused the partial reduction of power, I still made a decision to land at ZZZ1. I landed at XXR. We requested taxi to run up and performed quick magneto checks. We did not see anything out of ordinary. We taxied to [FBO] and notified our company and mechanic.

Since we experienced the engine roughness on the left tank, we asked [FBO] to top off only the left tank. That was when I was told the left tank fuel cap is missing. I was the one who fueled the plane and I did not remember securing the left fuel. We relayed that info to

our hub and my coworkers learned from a maintenance shop a fuel cap had been recovered on the taxi. One of my coworkers verified it was ours and drove it up to ZZZ1.

After inspecting/installing the fuel cap, we, then, asked to get the tank topped off again. The right tank took about 20 gallons and the left tank took about 40 gallons (proving it was empty). Knowing that we flew about an hour on the right tank and experienced partial engine roughness about 30 minutes in on the left tank, we preliminarily decided that cause of partial engine roughness was due to fuel starvation on the left tank.

After getting fuel, we did extensive run ups at low and high power settings and also high speed taxi on the runway. Since we did not see any problems with the engine, we requested a circling up to 2900 ft. MSL and stayed in the vicinity of the airport. Not experiencing any problems, we continued the flight and finished several of the left over photo missions. Fuel consumption was proven to be consistent with normal operation.

As a precaution, we ordered a new fuel cap to replace the one that got dropped.

## Synopsis

A Cessna 206 pilot reported experiencing engine roughness while feeding from the left fuel tank, which subsequently was found to be missing a fuel cap.



## Time / Day

Date : 201809

Local Time Of Day : 1801-2400

## Place

Locale Reference.ATC Facility : ZSHA.ARTCC

State Reference : FO

Altitude.MSL.Single Value : 40000

## Environment

Flight Conditions : VMC

Weather Elements / Visibility : Thunderstorm

Weather Elements / Visibility : Rain

Light : Night

## Aircraft

Reference : X

ATC / Advisory.Center : ZSHA

Aircraft Operator : Air Carrier

Make Model Name : Widebody, Low Wing, 2 Turbojet Eng

Crew Size.Number Of Crew : 4

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Nav In Use : FMS Or FMC

Flight Phase : Initial Approach

Flight Phase : Final Approach

## 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

Experience.Flight Crew.Total : 7461

Experience.Flight Crew.Last 90 Days : 209

Experience.Flight Crew.Type : 518

ASRS Report Number.Accession Number : 1574775

Human Factors : Workload

## Person : 2

Reference : 2

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Carrier

Function.Flight Crew : Pilot Not Flying  
Function.Flight Crew : Relief Pilot  
Function.Flight Crew : First Officer  
Qualification.Flight Crew : Air Transport Pilot (ATP)  
Qualification.Flight Crew : Instrument  
Qualification.Flight Crew : Multiengine  
Experience.Flight Crew.Total : 4615  
Experience.Flight Crew.Type : 2014  
ASRS Report Number.Accession Number : 1575124  
Human Factors : Workload

#### Person : 3

Reference : 3  
Location Of Person.Aircraft : X  
Location In Aircraft : Flight Deck  
Reporter Organization : Air Carrier  
Function.Flight Crew : First Officer  
Function.Flight Crew : Pilot Not Flying  
Function.Flight Crew : Relief Pilot  
Qualification.Flight Crew : Instrument  
Qualification.Flight Crew : Multiengine  
Qualification.Flight Crew : Air Transport Pilot (ATP)  
Experience.Flight Crew.Total : 3044  
Experience.Flight Crew.Last 90 Days : 208  
Experience.Flight Crew.Type : 447  
ASRS Report Number.Accession Number : 1574770  
Human Factors : Workload

#### Person : 4

Reference : 4  
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 : 10482  
Experience.Flight Crew.Last 90 Days : 180  
Experience.Flight Crew.Type : 1263  
ASRS Report Number.Accession Number : 1574748  
Human Factors : Workload

#### Events

Anomaly.ATC Issue : All Types  
Anomaly.Deviation - Procedural : Published Material / Policy  
Anomaly.Inflight Event / Encounter : Weather / Turbulence  
Anomaly.Inflight Event / Encounter : Fuel Issue  
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 : Airport  
Contributing Factors / Situations : Human Factors  
Contributing Factors / Situations : Procedure  
Contributing Factors / Situations : Weather  
Primary Problem : Human Factors

## Narrative: 1

I was the Captain and pilot flying to 25PD. On descent for approach and landing into 25PD, unexpected weather that was not forecast for the time of our arrival had created traffic delays that were increasing in length. The delays were exacerbated by three runway changes within approximately an hour of our arrival. Thunderstorms moving through the area, rain, and reduced visibility in the arrival corridors precipitated the changing runways even though conditions at the airport were mostly VMC with few clouds. ATC seemed to be overwhelmed by the changing conditions and having to reorient arriving traffic as the runways changed. Preflight forecast weather was for temporary TSRA (Thunderstorms and Rain) in the vicinity, but with clearing weather and low clouds three hours prior to our ETA.

Shanghai Control gave us our first vector off course prior to airway fix DUMET headed south and clear of weather. Continuing on vectors while descending we were given two successive orbits to the right, followed by a left orbit. There was some initial confusion by the PM (Pilot Monitoring) and [the Relief Pilots] whether or not instructions to orbit from ATC were for a single turn or continuous multiple turns in orbit. I, as the PF (Pilot Flying), interpreted the ATC instructions as given, "Fly an orbit to the right/left" as meaning a single complete turn to the right or left. Inquiry with ATC confirmed this understanding, and was supported by the [Relief Pilots] search of area information found in the [International Operations Manual]. Meanwhile, all four pilots, using our best CRM/TEM (Crew Resource Management/Threat and Error Management) skills, vocalized our rising concern for the ever deteriorating REMF (Remaining Fuel on Board) state, making contingency plans, and running "what if" scenarios out loud amongst us. No EFC (Expected Further Clearance) or expected time of delay was ever issued. The length of the vectors caused added concern that we might have been forgotten in the melee of aircraft. We inquired a couple of times as to the length of our delay. At one point we were told five minutes, and at another that we were headed for landing. We had clearly become part of an insidious creeping approach delay. Minimum Fuel and Emergency Fuel contingencies were discussed. ZSSS/SHA diversion was considered. We pressed on, analyzing the traffic display ahead of us on TCAS, and choosing to continue to 25PD as our best and safest alternative.

With 10.6K lbs. of fuel remaining, I decided to declare Minimum Fuel. Approach Control acknowledge our declaration and advised us of a 60 km run until landing. I had the PM advise Approach Control that we were unable to run 60 km; unable to accept further delays. We did not ask for priority handling, but were given an immediate right turn to base leg and an intercept to final, Runway 17R. Another flight was heard being given orbit instructions soon afterward, presumably in deference to our handling priority. Approach and landing were normal, but for the preceding landing aircraft that delayed landing clearance until about 650 feet AGL. Landing fuel, 9,300 lbs., was noted clear of the runway. Block fuel was 6,800 lbs.

An item of note is that Civil Aviation Administration China (CAAC) requested and was provided with a statement from the Captain describing the fuel state onboard and the decision to declare Minimum Fuel.

Narrative: 2

[Report narrative contained no additional information.]

Narrative: 3

[Report narrative contained no additional information.]

Narrative: 4

[Report narrative contained no additional information.]

Synopsis

Air carrier flight crew reported declaring minimum fuel with ATC after incurring delay vectors due to unanticipated weather conditions at the destination.

## Time / Day

Date : 201809

## Place

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

## Environment

Flight Conditions : VMC

## Aircraft

Reference : X  
ATC / Advisory.Center : ZZZ  
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  
Flight Phase : Cruise  
Route In Use : Oceanic  
Airspace.Class A : ZZZ

## Component

Aircraft Component : FMS/FMC  
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  
Experience.Flight Crew.Type : 4190  
ASRS Report Number.Accession Number : 1574183  
Human Factors : Troubleshooting  
Human Factors : Human-Machine Interface

## Person : 2

Reference : 2  
Location Of Person.Aircraft : X  
Location In Aircraft : Flight Deck  
Reporter Organization : Air Carrier

Function.Flight Crew : Pilot Flying  
Function.Flight Crew : First Officer  
Qualification.Flight Crew : Air Transport Pilot (ATP)  
Qualification.Flight Crew : Multiengine  
Qualification.Flight Crew : Instrument  
Experience.Flight Crew.Last 90 Days : 30  
ASRS Report Number.Accession Number : 1574195  
Human Factors : Troubleshooting

## Events

Anomaly.Aircraft Equipment Problem : Less Severe  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : Overcame Equipment Problem  
Result.Flight Crew : FLC Override Automation

## Assessments

Contributing Factors / Situations : Aircraft  
Primary Problem : Aircraft

## Narrative: 1

In cruise flight just past the point of equal time enroute to ZZZ, an Insufficient Fuel alert message flashed. It then went away. It returned and this became the new norm - this message coming and going about every 30 seconds. Also, the time to our next waypoint became erratic and changing. Also, our FMS predicted landing fuel began to vary from quite low to insufficient to make destination. We began to trouble shoot with manual time speed calculations and also manual fuel flow over time calculations. The fuel totalizer (gauges) looked fine/normal. It was only predicted/projected values in the FMS that were erratic and incorrect. We notified FSS Radio of a possible time error for next waypoint of more than two minutes, and that we were having computer problems with unreliable predictions of time at next fix. We looked over multiple procedures in the QRH and Flight Manual but nothing seemed to fit our scenario. We were certain that we did not have a fuel leak based on fuel aboard for our given time in flight. It suddenly dawned on me that since the FMS problems were all due to predictive and/or calculation errors, and that since we were in managed speed using Cost Index, perhaps I could alleviate some of the computer's issues by hard coding speeds in the VNAV pages. This had the almost immediate effect of solving/removing all of the problems we were experiencing. The remainder of the flight proceeded normally and without issue. To my recollection, our times crossing fixes were always within two minutes of reported for next. We wrote the problem up and reported to maintenance technicians upon landing.

## Narrative: 2

[Report narrative contained no additional information.]

## Synopsis

B737 Flight Crew reported issues with the FMC fuel burn computations.

## Time / Day

Date : 201808

Local Time Of Day : 1201-1800

## Place

Locale Reference.ATC Facility : ZFW.ARTCC

State Reference : TX

Altitude.MSL.Single Value : 22000

## Environment

Flight Conditions : VMC

Light : Daylight

## Aircraft

Reference : X

ATC / Advisory.Center : ZFW

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

Flight Phase : Cruise

Route In Use : Direct

Airspace.Class A : ZFW

## Component

Aircraft Component : Fuel 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 : Pilot Flying

Function.Flight Crew : Captain

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

Experience.Flight Crew.Total : 22000

ASRS Report Number.Accession Number : 1574128

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 : Pilot Not Flying  
Function.Flight Crew : First Officer  
Qualification.Flight Crew : Air Transport Pilot (ATP)  
Qualification.Flight Crew : Multiengine  
Qualification.Flight Crew : Instrument  
Experience.Flight Crew.Total : 11590  
ASRS Report Number.Accession Number : 1573976  
Human Factors : Situational Awareness

## Events

Anomaly.Aircraft Equipment Problem : Critical  
Anomaly.Flight Deck / Cabin / Aircraft Event : Smoke / Fire / Fumes / Odor  
Anomaly.Flight Deck / Cabin / Aircraft Event : Illness  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Attendant  
Were Passengers Involved In Event : Y  
When Detected : In-flight  
Result.Flight Crew : Landed in Emergency Condition  
Result.Air Traffic Control : Issued New Clearance

## Assessments

Contributing Factors / Situations : Aircraft  
Primary Problem : Aircraft

## Narrative: 1

At the top of climb/level off/cruise, 22,000 ft, one of the aft cabin flight attendants called the cockpit and complained about an odor that was making her nauseous. I asked what the odor smelled like and she stated she wasn't sure. I then asked her if it smelled like something burning, electrical, or fuel. She stated it was probably more of a fuel smell. I asked her if the smell was throughout the cabin and she wasn't sure. I then called the forward #1 Flight Attendant and asked her if she had any strange odors in the forward cabin. She stated no, she smelled nothing. I then asked the aft cabin Flight Attendant if any passengers could smell the odor and if passengers were becoming nauseated. She did not know. I then asked her to walk forward from the rear of the cabin toward the front to determine where the smell began and where it stopped and to check and see how the passengers in the affected cabin were feeling. At this point the First Officer and I started the Aircraft Odor checklist. Several minutes later the aft cabin Flight Attendant called me back and stated that one passenger thought the odor smelled like hydraulic fluid and several others thought it smelled like fuel. She also stated the smell began around Row 17 and continued all the way back to the aft galley/rear of the aircraft, but that it seemed to be less intense. I then asked her how she was feeling and how the passengers were feeling. She reported that both of them (#2 and #4 flight attendants) and several passengers were now feeling nauseous, light headed and dizzy. I asked if she thought the odor still smelled like fuel and if the odor was getting stronger and she stated yes.

At this point, with the number #1 Flight Attendant also on the interphone, I explained to them that I was going to [advise ATC] and get us on the ground as quickly as possible, and that I would get back to them shortly. I quickly gave the aircraft and radio control



over to the First Officer and had him [advise ATC], directing him to proceed direct to the RNAV IAF. I then completed the Aircraft Odor checklist with the assumption being FUEL as the possible source. The difficulty for me in accomplishing this checklist was trying to determine if the odor was classified as strong or as mild/moderate. I chose strong and proceeded to the Smoke, Fire and Fumes checklist. Accomplishing this checklist left me somewhat confused since we had no smoke, fire or fumes, but rather a strong aircraft odor that smelled like fuel. In this case the Smoke, Fire or Fumes Checklist sent me back to the Aircraft Odor Checklist. By this point in the Aircraft Odor Checklist we had started our descent and I then referred to and accomplished the non routine landing checklist, advised dispatch via ACARS, briefed the #1 Flight Attendant on a precautionary landing and emphasizing no ground evacuation anticipated, and then made an address to the passengers regarding our situation.

Once I was able to focus my attention back in the cockpit I accomplished the descent checklist and then took back control of the aircraft. The First Officer did an outstanding job getting the aircraft direct and coordinating with ATC. The approach and landing were uneventful. Once we landed and cleared the runway I let the flight attendants know what was occurring and that we were not going to evacuate. I then stopped the aircraft on a taxiway and had the fire chief check our aircraft, in particular for potential fuel leaks and/or heat signatures. Then I made a passenger address further explaining what was occurring outside the aircraft and that everything was ok and safe. The fire chief then gave us an all clear report and we proceeded to our gate with the fire trucks following closely behind. Once at the gate and parked the aft cabin flight attendants called again and reported that the fuel odor/fumes were even stronger than before. Within a minute the fire chief came to the cockpit and report strong fuel fumes outside around the airplane. We quickly deplaned the passengers. Hind sight indicates an obvious fuel leak that penetrated the air conditioning system.

According to the QRH Aircraft Odor Checklist, an ODOR is not smoke or fumes associated with a fire source, an odor is any smell, and a fume is dangerous to inhale. So what did I have on my flight an ODOR or a FUME? With so many new, young, and inexperienced flight attendants in our airline today the descriptions, or lack of descriptions, leave Captains unsure of what really is an odor or a dangerous fume. Once on the ground and at the gate it was clear that we had a major fuel leak, fume, or vapor problem. I think we should look at further defining the word FUMES in our Smoke, Fire or Fumes Checklist to include Fuel Fumes. Furthermore, with hindsight as a guide, I think the checklist needs to address passenger electronic equipment, which should be immediately turned off and shut down if fuel fumes exist in the cabin. Numerous cases in the United States have had individuals igniting gasoline fumes at fueling pumps while parked at a gas station, blowing up the entire gas station and killing themselves, all because they answered their cell phone or turned on the light function on their cell phone. Static electricity appears to be the problem with electronic devices, and if fuel fumes are strong enough in the cabin of an airplane, then the subsequent result could be catastrophic.

Narrative: 2

[Reported narrative contained no additional information.]

Synopsis

B737 flight crew reported fuel fumes/odor in the aft cabin resulted in a direct approach and landing at the planned destination.

## Time / Day

Date : 201808

Local Time Of Day : 0601-1200

## Place

Locale Reference.ATC Facility : ZMA.ARTCC

State Reference : FL

## Environment

Flight Conditions : Marginal

Weather Elements / Visibility : Thunderstorm

Light : Daylight

## Aircraft

Reference : X

ATC / Advisory. TRACON : MIA

Aircraft Operator : Air Carrier

Make Model Name : Medium Transport, Low Wing, 2 Turbojet Eng

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Initial Approach

Flight Phase : Descent

Route In Use : Vectors

Route In Use.STAR : FLIPR5

Airspace.Class B : MIA

## Person

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Function.Flight Crew : Captain

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Instrument

ASRS Report Number.Accession Number : 1574044

Human Factors : Communication Breakdown

Human Factors : Situational Awareness

Human Factors : Time Pressure

Communication Breakdown.Party1 : Flight Crew

Communication Breakdown.Party2 : ATC

## Events

Anomaly.ATC Issue : All Types

Anomaly.Deviation - Procedural : Published Material / Policy

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Anomaly.Inflight Event / Encounter : Fuel Issue

Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Requested ATC Assistance / Clarification

Result.Flight Crew : Landed in Emergency Condition

Result.Air Traffic Control : Issued New Clearance

## Assessments

Contributing Factors / Situations : Human Factors

Contributing Factors / Situations : Procedure

Contributing Factors / Situations : Weather

Primary Problem : Weather

## Narrative: 1

We received a very extensive vectoring to arrive in Miami. We were reassigned several arrivals and at one point while in cruise were instructed to turn the wrong direction and we flew the wrong direction for quite some distance and they would not allow us to slow down. We were reassigned several arrivals and many changes. We were really on constant vectoring.

The loop at the top was a high speed vector that cost about 1000 pounds. After many changes we were assigned direct Freeport and the FLIPR Five arrival. We declared minimum fuel at this point because we did not have enough to go all the way to LUCSS at the south end of arrival we told ATC this several times. ATC assured us we wouldn't have to go that far. This change in arrival and vectoring added about 300 miles to the trip. We finally receive direct to FLIPR. Which was a westerly heading. As we were going there the [company] in front of us was assigned a 220 heading. They refused the heading because just to the south of the course was a large cell. ATC got upset with them and then assigned us the same 220 heading. I refused it as well because I will not fly into a cell. At this point they turned us to 360 heading asked us what our alternate was. I stated FLL. They said you are now going to Fort Lauderdale.

I did not ask for Fort Lauderdale. I did not ask to divert. I did not have any extra fuel to waste taking a chance going to Fort Lauderdale as there were rain and storms over the field at Fort Lauderdale. We were really not prepared to go to FLL. Our calculation shows had we continued on the arrival as assigned we were predicting to land with 2.6 FOB (Fuel on Board) at Miami and 2.1 FOB at Fort Lauderdale. Dispatch had recalculated the bingo repeatedly for each change in proposed routing. Each time the computer calculated insufficient fuel for the proposed route. So both our FMS and dispatch systems agreed the fuel was low.

On the 360 heading after giving it some thought and looking at the weather at Fort Lauderdale I decided to [advise ATC of our fuel situation] as we were down to about 3600 pounds. I was not willing to let ATC back me into any more corners I felt as though this was the safest plan as we could see Miami. Fort Lauderdale was questionable and we never asked for Fort Lauderdale and I feel as though there vectoring to Fort Lauderdale was retaliatory because we were unwilling to fly into a cell. At this point I didn't have trust in ATC.

Again there was weather over FLL. Our inability to fly into a very strong cell is what caused them to order us to go to Fort Lauderdale. ATC is not authorized to order us to go somewhere. At this point the safest course was to land in Miami as our fuel was running low and we had burned over 2000 additional pounds over the original plan burn. I'm not going to allow them to run me out of gas or put the safety of flight in jeopardy. With [ATC

advised] we went a considerably shorter distance to MIA from where we were expecting. This did result in landing with more fuel. We were dispatched with more than adequate fuel to handle normal contingencies and normal vectoring and some holding. ATC well exceeded this. There was plenty of room between storms and the weather in the area and this was unnecessary extra vectoring. This is my first and only [time advising ATC of my fuel situation] in 17 years at the airline and 14 as captain.

## Synopsis

Air carrier Captain reported excessive vectoring from ATC caused a critical fuel situation.

## Time / Day

Date : 201808

Local Time Of Day : 1201-1800

## Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Relative Position.Distance.Nautical Miles : 15

Altitude.MSL.Single Value : 23000

## Environment

Light : Daylight

## Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : Air Carrier

Make Model Name : B737-700

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Climb

Airspace.Class A : ZZZ

## Component

Aircraft Component : Engine Indications

Aircraft Reference : X

Problem : Malfunctioning

## Person : 1

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Carrier

Function.Flight Crew : Pilot Flying

Function.Flight Crew : First Officer

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Instrument

Experience.Flight Crew.Last 90 Days : 131

ASRS Report Number.Accession Number : 1573571

## Person : 2

Reference : 2

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Carrier

Function.Flight Crew : Pilot Not Flying  
Function.Flight Crew : Captain  
Qualification.Flight Crew : Air Transport Pilot (ATP)  
Qualification.Flight Crew : Multiengine  
Qualification.Flight Crew : Instrument  
Experience.Flight Crew.Last 90 Days : 384  
ASRS Report Number.Accession Number : 1573239  
Human Factors : Human-Machine Interface

## Events

Anomaly.Aircraft Equipment Problem : Less Severe  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : FLC Overrode Automation  
Result.Flight Crew : Landed As Precaution  
Result.Flight Crew : Landed in Emergency Condition  
Result.Flight Crew : Returned To Departure Airport  
Result.Flight Crew : Requested ATC Assistance / Clarification  
Result.Air Traffic Control : Provided Assistance

## Assessments

Contributing Factors / Situations : Aircraft  
Primary Problem : Aircraft

## Narrative: 1

On departure from ZZZ, passing through FL 230, we saw the following indications almost simultaneously: Master Caution lights with FUEL and ENG illuminated and left and right fuel Filter Bypass lights illuminated on the upper panel. There were also indications of a computer data problem as the aircraft went into CWS Pitch and out of VNAV with DISPLAY SOURCE 2 (amber, in the bottom left of the PFD). The flight director became unreliable to nonexistent and we began to hand fly off of the raw data, cross checking primary and standby instruments with minimal thrust lever movements. After we leveled off, we ran the QRH for Filter Bypass, [notified ATC], and returned for a precautionary landing at ZZZ which was uneventful, below MGLW (Maximum Gross Landing Weight), with no hot brake concerns. There were no known deviations from QRH, ATC, or Company procedures despite the aircraft malfunction(s).

The QRH is very straightforward regarding the dual Filter Bypass light condition, so we [notified ATC] and returned in a safe and expeditious manner. It wasn't until after we were on the ground and able to reflect on everything, that we began to figure that it was likely not a fuel contamination problem, but a DEU (Display Electronics Units) failure of some sort and we began researching possible connections between that and the Filter Bypass lights. There is nothing that we could find in [our electronic guides] or our manuals linking these conditions... which led to a little head-scratching during the event, although it would not have affected our clear decision to land as soon as possible. Looking back, I would have at least tried the other autopilot to see if maybe that would have alleviated some of the task load, but it was just so much simpler at the time to just hand fly and not spend time worrying about the automation. It would be nice to get some follow-up from Maintenance about what they found.

## Narrative: 2

Climbing out of ZZZ to FL 190 we were cleared to maintain FL 230. As we were about to level off, we had a dual fuel filter bypass. We read the QRH, [notified ATC], and returned to ZZZ. We do not believe we deviated or oversped, and we did follow QRH, ATC and Company procedures to the best of our knowledge. We did initially lose VNAV but still no deviation.

## Synopsis

B737 flight crew reported Master Caution illuminating with Fuel and ENG warning lights led to a return to the departure airport.

## Time / Day

Date : 201808  
Local Time Of Day : 1201-1800

## Place

Locale Reference.Airport : ZZZ.Airport  
State Reference : US  
Altitude.AGL.Single Value : 500

## Environment

Flight Conditions : VMC  
Light : Daylight

## Aircraft

Reference : X  
ATC / Advisory.Tower : ZZZ  
Aircraft Operator : Personal  
Make Model Name : Cessna 210 Centurion / Turbo Centurion 210C, 210D  
Crew Size.Number Of Crew : 2  
Operating Under FAR Part : Part 91  
Flight Plan : IFR  
Mission : Test Flight  
Flight Phase : Final Approach  
Route In Use : Visual Approach  
Airspace.Class D : ZZZ

## Component

Aircraft Component : Fuel Selector  
Manufacturer : Cessna  
Aircraft Reference : X

## Person : 1

Reference : 1  
Location Of Person.Aircraft : X  
Location In Aircraft : Flight Deck  
Reporter Organization : Personal  
Function.Flight Crew : Pilot Flying  
Qualification.Flight Crew : Instrument  
Qualification.Flight Crew : Private  
Experience.Flight Crew.Total : 2749  
Experience.Flight Crew.Last 90 Days : 2  
Experience.Flight Crew.Type : 1165  
ASRS Report Number.Accession Number : 1573174  
Human Factors : Human-Machine Interface  
Human Factors : Situational Awareness  
Human Factors : Troubleshooting  
Human Factors : Distraction

## Person : 2



Reference : 2  
Location Of Person.Aircraft : X  
Location In Aircraft : Flight Deck  
Reporter Organization : Personal  
Function.Flight Crew : Pilot Not Flying  
Function.Flight Crew : Instructor  
Qualification.Flight Crew : Flight Instructor  
Qualification.Flight Crew : Glider  
Qualification.Flight Crew : Multiengine  
Qualification.Flight Crew : Private  
Qualification.Flight Crew : Sea  
Qualification.Flight Crew : Instrument  
Qualification.Flight Crew : Commercial  
Experience.Flight Crew.Total : 4400  
Experience.Flight Crew.Last 90 Days : 45  
Experience.Flight Crew.Type : 30  
ASRS Report Number.Accession Number : 1572481  
Human Factors : Situational Awareness  
Human Factors : Human-Machine Interface  
Human Factors : Distraction  
Human Factors : Training / Qualification

## Events

Anomaly.Aircraft Equipment Problem : Critical  
Anomaly.Deviation - Procedural : Published Material / Policy  
Anomaly.Ground Event / Encounter : Gear Up Landing  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.General : Flight Cancelled / Delayed  
Result.Flight Crew : Landed in Emergency Condition  
Result.Flight Crew : Inflight Shutdown  
Result.Aircraft : Aircraft Damaged

## Assessments

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

## Narrative: 1

My friend, who is a Gold Seal CFII, and I departed to do an engine break-in flight in my Cessna. I was in the left seat. We had waited about 2 hours for the ceilings to lift above 1000 feet so that we would have visual conditions if we were to have an engine failure. My mechanic had flown my Cessna for about 0.5 hours the previous day to do an initial check-out of the newly overhauled engine that he had installed. We climbed VFR until we passed through a broken layer of clouds starting at 1200 feet with tops at 7200 feet and entered a holding pattern while in contact with ATC at 8000 feet. Traffic increased so ATC had us hold north east at 9000 feet. During almost the entire time we were, as intended, within gliding distance of four other airports based on looking at the ForeFlight glide range display. I did note that I was not holding altitude as well as I would like with deviations up to 200 feet, probably from not flying for nearly 8 months. Fuel flow was much higher than I expected as I had to keep the mixture richer than the aircraft manual flow numbers to

keep cylinder head temperatures below 400 degrees.

We discussed a practice instrument approach, but thought it would put us too far from our destination since our fuel levels were low, and we would need to use lower engine power levels that were recommended by the break-in procedure, so we requested direct. I thought we were on the fullest fuel tank at that time. ATC vectored us further east than we desired before turning us toward the runway a little north of the ILS approach. I should have cancelled IFR and kept high enough to be within gliding range an airport at all times. Flying the ILS certainly does not provide that margin. Instead, I even let myself drop 400 feet lower than the ATC requested altitude while looking for the airport. We were slightly above the glide slope and north far enough that the localizer needle was fully deviated to the left inbound on a Visual Approach. We had the gear extended with an airspeed of about 140 knots (higher than normal 120 knots as break-in procedure specified keep power above 65% if possible and to reduce power slowly).

Somewhere about a mile out from the airport, we both thought we heard a little pop, and the engine stopped producing power. There was no response to the throttle, so I pulled the prop back to full coarse pitch, and my friend raised the gear to increase our glide ratio. I raised the nose slightly to reduce speed to about 85 knots (a little over no wind best glide speed, but we had a slight headwind). I was very concerned that we would not make it over the embankment on the west side of the highway, but we managed to clear it by [about] 40 feet. I turned left to avoid the structure supporting the approach lights, remembered to switch fuel tanks, and then leveled the wings for landing. There was no time to extend the gear so I just landed with the gear up, roughly about 35-45 seconds after the engine stopped producing power. The landing did not seem much rougher than some landings I have had on rough gravel strips many years ago. Neither of us had any physical injuries at all.

Fuel flow rates during a break-in procedure may need to be much higher than even the rich of peak expected fuel flows in the aircraft manual in order to keep cylinder head temperatures below the levels that cause cylinder damage. Fuel flow rates were roughly twice the fuel flow rate I use when flying lean of peak with my GAMIjectors. I remembered to switch tanks too late as I assumed it was the newly overhauled engine that had failed. I thought we had switched tanks before leaving the holding area, but apparently I did not because the left tank I switched to had about 10 gallons showing on the fuel gauge and the right tank fuel gauge showed empty when the FAA requested the engine installer to check the fuel after the aircraft was towed back to the hangar. Had I switched fuel tanks immediately after the engine stopped producing power, perhaps the engine would have fired back up in time to prevent my off runway landing if the empty left tank was really the problem. I also forgot to turn the master switch off and crack the aircraft doors before landing. In the future, I will have the emergency procedures memorized before flying because I only had seconds to make decisions.

Verbalize checklists while high enough above the ground to allow configuration changes. With another pilot in the adjacent seat, have that pilot verify the configuration matches the checklist. Stay within predicted glide range to an airport with about a 500 feet vertical margin when doing an engine break-in procedure so you are guaranteed to make the runway in the case of a complete engine failure. It also gives the extra time to diagnose what the problem might be. In the case of my aircraft, it is easy to slip it with full flaps and gear down as needed to lose altitude once it is guaranteed that you can make the runway.

Narrative: 2

The flight was with owner of aircraft to break-in a newly overhauled engine. The owner was flying. We spent about 2 hours flying large holding patterns above several airports in the area, trying to stay within gliding distance of an airport. We did not trust the new engine. About an hour and a half into the flight, I realized we were down to about an hour of fuel remaining, since we were running at very high power and full rich for the break in. My personal habit is to always be on the ground when fuel gets down to an hour, and I explained this to the owner/pilot. For some reason, I let him convince me it was "OK" and we did one more holding pattern, then got vectors back to the home base for an ILS approach. When we made the decision to continue, an airport with fuel available was right below us in VFR conditions. Why didn't we land and get gas? Because we were focused on the engine break-in! We also could have canceled IFR, since we were in VMC, and simply entered the pattern at the home airport. But instead, we let ATC give us long vectors to a Visual Approach.

On Final, about 1 mile from the runway threshold, there was a "pop" and the engine stopped producing power. We both assumed it was a failure of the new engine, and proceeded with an engine-out landing. The airport is on top of a small [hill], and we were gliding for impact with the embankment well short of the runway. So, we agreed to raise the gear to improve our glide angle, and pull the prop control back to reduce drag. We cleared the embankment by less than 50 feet, just missed the approach lights for the runway, and came to a stop after skidding 300 feet, and only 600 feet short of the threshold. The time from the "pop" sound to coming to a stop gear-up on the dirt and grass was no more than 45 seconds. Maybe even only 30 seconds. Neither of us was hurt at all. It has not been determined what caused the power loss. Maybe a mechanical problem? Maybe running a tank dry?

How to prevent this? Nearly all of our focus was on performing the engine break-in, which caused us to ignore simple, basic flying practices, like having lots of fuel. We didn't even keep the idea of not trusting the engine at the front of our minds; on final approach, we could have come in at a much steeper angle so a glide to the runway was assured, but instead we flew a "standard" ILS.

## Synopsis

C210 pilot and flight instructor reported landing short of the runway due to mismanagement of the fuel system.

## Time / Day

Date : 201808  
Local Time Of Day : 0601-1200

## Place

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

## Environment

Flight Conditions : VMC

## Aircraft

Reference : X  
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  
Flight Phase : Taxi

## 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)  
Experience.Flight Crew.Last 90 Days : 240  
Experience.Flight Crew.Type : 3376  
ASRS Report Number.Accession Number : 1572984  
Human Factors : Time Pressure  
Human Factors : Communication Breakdown  
Communication Breakdown.Party1 : Flight Crew  
Communication Breakdown.Party2 : Dispatch

## Events

Anomaly.Deviation - Procedural : Weight And Balance  
Anomaly.Deviation - Procedural : Published Material / Policy  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : Landed in Emergency Condition  
Result.Air Traffic Control : Provided Assistance

## Assessments

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

## Narrative: 1

This flight is a known fuel critical flight. Because of the high density altitude in ZZZ it takes a lot of ATC coordination sometimes to get a departure runway for this flight. ATC did a great job in getting us Runway XXR and expediting our taxi against the flow of landing traffic. Our company failed miserably though in getting us our final weights so that we capitalize on this coordination and get airborne in any kind of timely way and more importantly, land [at our destination airport] with a safe amount of fuel. We pushed 2 minutes early and accomplished a single engine taxi even at an extremely heavy weight, and then sat short of the runway for 42 minutes waiting for ramp and load planning to get us our numbers. We landed [at our destination airport] 39 minutes late after declaring minimum fuel specifically because of that ground delay in ZZZ. That is inexcusable. Also, we had the same problem uplinking cruise winds during preflight that I have had on several flights because Dispatch keeps flight planning waypoints that are more than 900 miles in between. In this situation, the winds will not uplink inflight either. This is inexcusable also because now it's up to the pilots to continually be manually entering winds on a 5 1/2 hour flight. If these winds are even just a little inaccurate, we don't have a good indication. We landed with 5000 lbs of fuel with a flight plan that said we should have 7000 lbs of fuel.

## Synopsis

B737 Captain reported landing with less than minimum fuel due to a takeoff delay waiting on weights and being unable to obtain updated wind information.

## Time / Day

Date : 201808  
Local Time Of Day : 0601-1200

## Place

Locale Reference.Airport : ZZZ.Airport  
State Reference : US  
Altitude.MSL.Single Value : 4000

## Environment

Flight Conditions : VMC  
Light : Daylight

## Aircraft

Reference : X  
ATC / Advisory.Tower : ZZZ  
Aircraft Operator : Personal  
Make Model Name : Cessna 150  
Crew Size.Number Of Crew : 2  
Operating Under FAR Part : Part 91  
Flight Plan : VFR  
Mission : Training  
Flight Phase : Initial Approach  
Route In Use : Visual Approach  
Airspace.Class E : ZZZ

## Component : 1

Aircraft Component : Engine  
Aircraft Reference : X  
Problem : Improperly Operated

## Component : 2

Aircraft Component : Fuel  
Aircraft Reference : X

## Person

Reference : 1  
Location Of Person.Aircraft : X  
Location In Aircraft : Flight Deck  
Reporter Organization : Personal  
Function.Flight Crew : Pilot Flying  
Qualification.Flight Crew : Instrument  
Qualification.Flight Crew : Commercial  
Qualification.Flight Crew : Flight Instructor  
Qualification.Flight Crew : Multiengine  
Experience.Flight Crew.Total : 600  
Experience.Flight Crew.Last 90 Days : 100  
Experience.Flight Crew.Type : 550

ASRS Report Number.Accession Number : 1572898  
Human Factors : Situational Awareness

## Events

Anomaly.Aircraft Equipment Problem : Critical  
Anomaly.Deviation - Procedural : FAR  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : Landed in Emergency Condition  
Result.Flight Crew : Took Evasive Action

## Assessments

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

## Narrative: 1

It was a normal training flight. We had planned to practice Simulated Emergencies and basic maneuvers. Like always, since we have reduced fuel we estimated how much fuel we would need. We calculated roughly 7 gallons were all we were going to need for our 1.5 hr flight today. The weather was clear. Winds were 200 at 10 knots. Fairly calm.

Upon arrival to the airplane, we began the preflight. Everything checked out to be ok, except for the right tank. The right tank had some water contaminate in the fuel. We had to sump the tank 3 times to get the water out and to be able to verify that the fuel was clean. Once we verified that the fuel was clean, we manually dipped the tanks to find that we had a total of 17 gallons. 9 gallons in the left tank and 8 gallons in the right tank. Seeing that we had 7 gallons we knew that that should give us roughly 2.5 hrs of flight allowing us to meet VFR fuel requirements of a reserve and then some. From there we started the plane up, with no issues. The run up was text book perfect. We had no issues with flying the plane.

We departed from ZZZ and made a slow climb, avoiding Bravo airspace, up to 6,000 feet MSL. We started our maneuvers like Steep Turns and Slow flight. We were in slow flight with reduced power for roughly 30 minutes. We then practiced a Simulated Emergency Engine Failure, which allowed us to get to an altitude appropriate for Ground Reference maneuvers. From there flew over to ZZZ1 for 1 touch'n'go and 1 go-around. We then departed the area to the north back to ZZZ.

Once we were above the VFR Waypoint at 4,000 feet, we called to Tower and received clearance to enter Right Traffic 17R and to Report Mid-Field Downwind. Shortly after reporting back the call we felt the engine start to sputter. In attempt to give the airplane as much possible power, we gave the airplane a full rich mixture, fuel pump on, and full throttle. We noticed no change in power, so we started to prepare ourselves for a forced landing. I considered turning and trying to glide towards ZZZ since we were so close, but being only 1,500 feet off of the ground the math didn't add up. We wouldn't have made it to ZZZ. Fortunately, my student has a couple of thousands of hours in helicopters, so he took the radios, and I flew the plane. We executed good Crew Resource Management. He helped me by pointing out obstacles to avoid on our way down. I had made my 180 degrees turn to face into the southerly wind and when landing on the [highway] was assured I nosed down to allow myself to have some extra speed to bleed off during the

landing flare. I tried to stay 15-20 feet off the ground while bleeding the speed to allow car traffic to see me. As we slowed down, I slowly bumped in flaps helping keep us aloft. Traffic cleared and we had plenty of space to touch down. We did not hit anything. The touch-down was very soft. There were no injuries to [the student] nor I. There was no damage to the airplane itself.

## Synopsis

C150 instructor pilot reported a loss of engine power and off field landing due to fuel starvation.



## Time / Day

Date : 201808

Local Time Of Day : 1201-1800

## Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Altitude.MSL.Single Value : 36000

## Environment

Flight Conditions : VMC

## Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : Air Carrier

Make Model Name : Widebody Transport

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Cargo / Freight

Flight Phase : Cruise

Airspace.Class A : ZZZ

## Component

Aircraft Component : Fuel Tank

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 : 1572121

Human Factors : Time Pressure

Human Factors : Troubleshooting

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 Not Flying  
Qualification.Flight Crew : Air Transport Pilot (ATP)  
Qualification.Flight Crew : Instrument  
Qualification.Flight Crew : Multiengine  
ASRS Report Number.Accession Number : 1572125  
Human Factors : Situational Awareness  
Human Factors : Troubleshooting  
Human Factors : Time Pressure

## Events

Anomaly.Aircraft Equipment Problem : Critical  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : Diverted  
Result.Flight Crew : Landed in Emergency Condition  
Result.Flight Crew : Requested ATC Assistance / Clarification  
Result.Air Traffic Control : Issued New Clearance

## Assessments

Contributing Factors / Situations : Aircraft  
Primary Problem : Aircraft

## Narrative: 1

While at cruise FL360 received a "tank 3 pumps off" alert. Consulted QRH which stated that the alert could be considered normal if fuel was less than 10,500 pounds in tanks 1 or 3 because of tip fuel transfer balancing. Crew then received alert "TNK 3 tip trapped", followed by a "Tank 3 QTY low" alert. Tank 3 fuel quantity showed 7,000 lbs. Consulted QRH which said that tip fuel (5800 lbs.) was trapped and unusable. This put us in a possible emergency fuel state. Our destination was 160 miles away and closest suitable was ZZZ which was 50 miles away. [Operations Control] and [Maintenance Control] were consulted and decision was made to divert to ZZZ. [ATC was notified about] the low fuel situation. An uneventful approach and landing was accomplished. Landed with 14,000 on fuel gauges and estimated 8,500 with the trapped fuel deducted.

The Number 3 tip tank that contains roughly 5,800 lbs of fuel did not drain into main tank as it normally should. Thus becoming fuel that is unusable. There is no crew action or QRH procedure for crew to perform to correct this. Usually caused by a stuck float/valve switch in tank.

## Narrative: 2

[Report narrative contained no additional information.]

## Synopsis

Air carrier flight crew reported a fuel system tank anomaly causing fuel to become trapped and unusable and necessitating an immediate diversion.

## Time / Day

Date : 201807

Local Time Of Day : 1801-2400

## Place

Locale Reference.ATC Facility : ZAB.ARTCC

State Reference : NM

Altitude.AGL.Single Value : 0

## Environment

Flight Conditions : IMC

Light : Night

## Aircraft

Reference : X

ATC / Advisory.Center : ZAB

Aircraft Operator : Air Carrier

Make Model Name : B737 Next Generation Undifferentiated

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Nav In Use : FMS Or FMC

Flight Phase : Descent

## Person

Reference : 1

Location Of Person : Company

Reporter Organization : Air Carrier

Function.Dispatch : Dispatcher

Qualification.Dispatch : Dispatcher

ASRS Report Number.Accession Number : 1571253

Human Factors : Workload

## Events

Anomaly.ATC Issue : All Types

Anomaly.Deviation - Procedural : Published Material / Policy

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Anomaly.Inflight Event / Encounter : Fuel Issue

Detector.Person : Flight Crew

Detector.Person : Dispatch

When Detected : In-flight

Result.Flight Crew : Diverted

## Assessments

Contributing Factors / Situations : Human Factors

Contributing Factors / Situations : Procedure

Contributing Factors / Situations : Weather  
Primary Problem : Human Factors

## Narrative: 1

The Captain advised me he was diverting to ABQ, with FOB (fuel onboard) of 7.0. I advised ABQ burn of 4,296 LBS with reserve of 3,652 LBS, and suggested LAS as being less burn since I observed he was using reserve fuel to divert to ABQ. I made sure he declared minimum fuel with ZAB. I also repeatedly queried his current FOB and fuel over destination to verify I was calculating fuel correctly.

Erroneous ATC communication about TUS closure; irregular operations with dust storm at PHX. My desk had 4 PHX arrivals at the same time during a dust storm, this was not an optimum workload.

Aircraft attempted to land PHX with 2 SM visibility; Captain at that point felt weather conditions were unsafe, asked to divert to listed alternate of TUS. ATC advised TUS was closed, which was incorrect. Captain advised he was diverting to ABQ. I feel the cause of this low fuel arrival was communications. I was unaware of the fact that ATC had advised the Captain that TUS was closed. There were a few scattered cells in TUS area, which was why I thought he chose ABQ instead.

## Synopsis

Air carrier Dispatcher reported high work load and ATC confusion about airport conditions contributed to a less than optimum diversion plan.

## Time / Day

Date : 201808

Local Time Of Day : 1801-2400

## Place

Locale Reference.Airport : PGV.Airport

State Reference : NC

Relative Position.Angle.Radial : 110

Relative Position.Distance.Nautical Miles : 5

Altitude.MSL.Single Value : 4000

## Environment

Flight Conditions : VMC

Weather Elements / Visibility.Visibility : 10

Light : Daylight

Ceiling : CLR

## Aircraft

Reference : X

ATC / Advisory.CTAF : PGV

Aircraft Operator : Personal

Make Model Name : Amateur/Home Built/Experimental

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : None

Mission : Personal

Flight Phase : Climb

Route In Use : Direct

## Component

Aircraft Component : Powerplant Fuel System

Aircraft Reference : X

Problem : Failed

## Person

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Single Pilot

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Private

Experience.Flight Crew.Total : 3050

Experience.Flight Crew.Last 90 Days : 60

Experience.Flight Crew.Type : 2600

ASRS Report Number.Accession Number : 1570645

## Events

Anomaly.Aircraft Equipment Problem : Critical  
Anomaly.Ground Excursion : Runway  
Anomaly.Inflight Event / Encounter : Object  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : Landed in Emergency Condition  
Result.Aircraft : Aircraft Damaged

## Assessments

Contributing Factors / Situations : Aircraft  
Primary Problem : Aircraft

## Narrative: 1

Tanks full at takeoff, sumped all points after fueling, departed on Runway 5. Normal power on initial climbout. 8 to 10 minutes into flight reduced fuel flow and some loss of power. Another 5 minutes complete power loss. Tried mixture, throttle, fuel selector to aux tank, at this point 1 mile from PGV 3,500 feet. Spiral down to field. Ended up not aligned with runway at too low an altitude and had to land off the runway at an angle. Safe landing but some damage to the aircraft. Tanks near full when on the ground. At this point reason for fuel flow problem not determined. [It] would be good to practice spiral down to runway. [I'm] not sure what to do to detect the flow issue. Fuel pressure normal, full fuel, hot day, sumped for water. Maybe a larger sump sample. Maybe longer settling time.

## Synopsis

Homebuilt aircraft pilot reported engine failure resulting in an off airport landing.

## Time / Day

Date : 201808  
Local Time Of Day : 1201-1800

## Place

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

## Environment

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

## Aircraft

Reference : X  
ATC / Advisory.Tower : ZZZ  
Aircraft Operator : Personal  
Make Model Name : J3 Cub  
Crew Size.Number Of Crew : 1  
Operating Under FAR Part : Part 91  
Mission : Ferry  
Flight Phase : Initial Approach  
Airspace.Class D : ZZZ

## Person

Reference : 1  
Location Of Person.Aircraft : X  
Location In Aircraft : Flight Deck  
Reporter Organization : Personal  
Function.Flight Crew : Single Pilot  
Qualification.Flight Crew : Private  
Experience.Flight Crew.Total : 90  
Experience.Flight Crew.Last 90 Days : 2  
Experience.Flight Crew.Type : 8  
ASRS Report Number.Accession Number : 1569346  
Human Factors : Time Pressure  
Human Factors : Training / Qualification  
Human Factors : Situational Awareness

## Events

Anomaly.Airspace Violation : All Types  
Anomaly.Ground Event / Encounter : Loss Of Aircraft Control  
Anomaly.Inflight Event / Encounter : Weather / Turbulence  
Anomaly.Inflight Event / Encounter : Unstabilized Approach  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Air Traffic Control  
When Detected : In-flight  
Result.Flight Crew : Requested ATC Assistance / Clarification

Result.Flight Crew : Landed As Precaution  
Result.Air Traffic Control : Provided Assistance

## Assessments

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

## Narrative: 1

I was conducting a ferry flight. It was my first time flying the route myself and the airspace is particularly tricky. The problem occurred on approach. I had successfully and safely navigated all airspace until this point. The ATIS has stated that the field was closed due to firefighting operations in the airspace. I did not hear this part of the ATIS so I called the Tower and requested to land.

Tower denied this request, so I remained outside of the airspace. I had not flown a Piper Cub very much since I got my endorsement about a year ago and this was my first time flying this specific Cub, which had a setup different than what I was used to. The airplane had a bit over six gallons of fuel when we departed and although I remembered that it burned about 4 gallons of fuel an hour I was not confident that we had enough fuel to turn around and return to the nearest airport. This was because I had not checked the time when we left so I was not sure how long we had been in the air and because I had trouble interpreting the Cub's fuel quantity indicator, a vertical unlabeled metal strip whose height is supposed to represent the fuel quantity.

This being the case, at the time I felt that it would be unsafe to turn around so I called Tower again stating that we were low on fuel and needed to land. Tower granted us clearance after confirming that we were low on fuel. I then entered the airspace and landed however there was an 11 knot crosswind with gusts of 10 kts and unfortunately I spun out on the runway. I did not spin off the runway and I spun 360 degrees before coming to a stop. I then taxied off the runway to parking.

The plane was undamaged and no one got hurt. I called Tower on the phone afterwards to discuss the situation. In hindsight I do believe that human factors were the cause of this incident. I did not know the airplane as well as I should have and it was my misperception of the fuel quantity indicator that caused me to think we could not divert when in fact we had 45 minutes of fuel on board. I also really wanted to get into ZZZ and this may have also clouded my judgment. I also spent some time circling outside of the airspace that I could have used more efficiently. Ultimately, I believe that to prevent future incidents like this I should ensure that I know the main important numbers on any aircraft I fly. I should also explicitly plan on having to divert and knowing with confidence that I have enough fuel to divert at any point during my flight. I should be sure that I know the drawbacks of certain elements on airplanes I fly and calculate the fuel I plan to use, even on short flights. Finally, I should listen more closely to the remarks section of the ATIS and listen again if I have trouble hearing it.

## Synopsis

Piper Cub pilot reported landing at a closed airport because of low fuel.



## Time / Day

Date : 201808

## Environment

Flight Conditions : VMC

## Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : Air Carrier

Make Model Name : B737 Next Generation Undifferentiated

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 : ZZZ

## Component

Aircraft Component : Fuel 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 : Pilot Flying

Function.Flight Crew : Captain

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Instrument

Experience.Flight Crew.Type : 704

ASRS Report Number.Accession Number : 1569122

## 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 : Air Transport Pilot (ATP)

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Instrument

Experience.Flight Crew.Type : 130

ASRS Report Number.Accession Number : 1569124

## Events

Anomaly.Aircraft Equipment Problem : Less Severe  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.General : Maintenance Action  
Result.Flight Crew : Landed As Precaution  
Result.Flight Crew : Diverted

## Assessments

Contributing Factors / Situations : Aircraft  
Primary Problem : Aircraft

## Narrative: 1

We had the same aircraft for three legs on the same day. On the first leg we experienced problems with the center tank fuel pumps not functioning properly and then fuel transferring into the center tank once they were turned off. We notified Maintenance of this and they said to check it again on the way to ZZZ. We experienced the same thing on that leg and wrote it up again. In ZZZ Maintenance said to check it again on the way to ZZZ1. On the way to ZZZ1 it occurred again but this time so seriously that we were unable to control where the fuel was going. It was quickly getting out of balance and we were not able to control that so we diverted into ZZZ2.

## Narrative: 2

This was the 3rd leg of the day on this aircraft. We had written up the left center fuel pump light on the first leg because it was on. When in ZZZ1 we added more fuel to the center tank and was told to monitor. On the way to ZZZ the fuel pump light did not come on, however some of the fuel from the wing tanks entered the center tank. At ZZZ we filled up the center tank and was told to monitor it again. We had about 2,000 lbs in the center, 19.0 planned gate. Took off with 6 pumps on. On the climb out, the left center fuel pump light came on when there was still around .28 left in center tank. We turned the left pump off and kept the right center on. At that time no fuel was being used out of the center even with the pump on and was creating an imbalance so we turned the right center pump off. As we did that, the left wing tank quantity rapidly decreased and the center tank quantity started increasing. At one point the center tank had accumulated around .95 (where it had previously been around .25 when we turned the right center pump off). Because the fuel was rapidly moving out of the left and into the center we decided to divert to ZZZ2 as we were abeam and make a safe landing.

## Synopsis

B737NG flight crew reported diverting to an alternate airport when they were unable to control fuel transfer from a wing tank into the center tank.

## Time / Day

Date : 201808

Local Time Of Day : 1801-2400

## Place

Locale Reference.Airport : ZZZZ.Airport

State Reference : FO

Altitude.AGL.Single Value : 0

## Environment

Flight Conditions : VMC

Light : Night

## Aircraft

Reference : X

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 : Cargo / Freight

Flight Phase : Cruise

Route In Use : Direct

## Component : 1

Aircraft Component : Fuel Quantity-Pressure Indication

Aircraft Reference : X

Problem : Malfunctioning

## Component : 2

Aircraft Component : Parking Brake

Problem : Malfunctioning

## Component : 3

Aircraft Component : Antiskid System

Aircraft Reference : X

Problem : Malfunctioning

## Component : 4

Aircraft Component : ACARS

Aircraft Reference : X

Problem : Malfunctioning

## Component : 5

Aircraft Component : Hydraulic System Pump

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 : Air Transport Pilot (ATP)  
Qualification.Flight Crew : Instrument  
Qualification.Flight Crew : Multiengine  
Experience.Flight Crew.Total : 15000  
Experience.Flight Crew.Last 90 Days : 64  
Experience.Flight Crew.Type : 4000  
ASRS Report Number.Accession Number : 1568451  
Human Factors : Confusion  
Human Factors : Distraction

## Person : 2

Reference : 2  
Location Of Person.Aircraft : X  
Location In Aircraft : Flight Deck  
Reporter Organization : Air Carrier  
Function.Flight Crew : Pilot Not Flying  
Function.Flight Crew : First Officer  
Qualification.Flight Crew : Air Transport Pilot (ATP)  
Qualification.Flight Crew : Multiengine  
Qualification.Flight Crew : Instrument  
ASRS Report Number.Accession Number : 1568452  
Human Factors : Time Pressure  
Human Factors : Workload

## Events

Anomaly.Aircraft Equipment Problem : Less Severe  
Anomaly.Deviation - Procedural : Weight And Balance  
Anomaly.Deviation - Procedural : Published Material / Policy  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : Overcame Equipment Problem

## Assessments

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

## Narrative: 1

This trip started with our ground transport showing up more than 30 minutes late. We were still able to arrive close to our scheduled arrival time. Arriving at the aircraft, I did not feel rushed. I try not to rush and take the time to look over paperwork carefully. We already had the flight departure paperwork when we arrived at the aircraft. The logbook

was not on the aircraft so I spent some time looking over the paperwork. We were eventually told by maintenance that the logbook was being filled out for a previous write up and that we could begin preflight. I noticed a number of deferral stickers on the aircraft. When the mechanic arrived, he spent some time explaining a write up from the inbound leg regarding a fuel balancing problem in flight. He could find no problems with the fuel system and signed off the problem. I asked about the deferred parking brake and pulled the MEL up on my [Electronic Flight Bag]. I was concerned about not only having no parking brake during engine start/shutdown, but more critical in my mind at the time was the inoperative anti-skid. Auto brakes would also not be available.

I briefed the threats related to inop anti-skid, particularly if an RTO (Rejected Takeoff) was required during takeoff. Between this MEL, an MEL for the right center hydraulic pump, an MEL for right runway turnoff light, and the previously discussed fuel balance issue, I felt a little behind looking up all the information and discussing the related threats. However, I still did not feel rushed. I noticed in the parking brake MEL the note "The parking brake light and EICAS advisory will be continuously displayed. ACARS operation may be affected." The info about "ACARS operation may be affected" should have made me realize that some of the ACARS functions that seemed to not be working as usual were due to this MEL. I think I was so focused on the threat of no anti-skid that I didn't process the info I was receiving, like arrival ATIS info coming up instead of departure.

Aircraft was loaded early with Hazmat and Weight and Balance paperwork brought to the aircraft. I don't remember if ACARS Weight and Balance even came up at this point. I filled out paperwork and read ZFW (Zero Fuel Weight) to my FO (First Officer), which he input and read gross weight. I confirmed this weight against Weight and Balance paperwork and read off takeoff gross weight and verbalized this was below planned weight. At this point I felt a little behind and was still concentrating on all the threats we would encounter with the loss of the parking brake and anti-skid systems. I don't remember inputting info into the ACARS for FDP data but considering the issues that I now see we were having with the ACARS, a manual request for data must have been made. Apparently when the data was requested, the ACARS must have retained the previous flights ZFW and fuel on board. When the data came back I finished the Weight and Balance paperwork and handed the load supervisor his copy. I asked my FO to double check the numbers on our Weight and Balance copy. I printed the FDP (Flight Data Processing) data and again confirmed the flight number, OFP (Operational Flight Program), and that the FDP data included [the parking brake MEL], but again must not have noticed the weight difference on the first part of the data. I did notice the alerts for ZFW and GTOW less than planned but seeing this as a common alert misread how much lower. I was still preoccupied with the threat of starting engines while having to hold the brakes manually and the lack of anti-skid during a possible RTO, which I briefed.

We departed with what seemed a normal takeoff and climb out. We still did not realize our error. Enroute to ZZZ, we did notice what the previous crew had written up regarding a fuel balance problem. The left totalizer fluctuated in quantity. We spent some time monitoring and cross checking calculated fuel against totalizer and fuel used. I wrote up the problem and notified dispatch as the ACARS would not bring up the maintenance function. This was another distraction that delayed our noticing the incorrect take off data. As we got closer to ZZZ, my FO sent for landing data. We discussed the lack of autobrake distance info in the data due to no autobrakes available. We discussed brake usage with no anti-skid and looked up info for brake application. There was some concern that the only info we would get back was for "Max Man", which we would not use with anti-skid inop. I compared the landing weight in the FDP data with the FMC data and that's where I noticed the discrepancy. The FDP data landing weight was off by more than 60,000 lbs.

When I am in a 767, I print out the data to look more closely at the data to avoid the very mistake we made. I pulled out my previously printed TO data and was shocked to see our error.

What I had thought to be a ZFW of approximately 8000lbs less than planned was actually 83,500 less. GTOW, instead of what I thought to be around 6000 lbs less than planned was actually 69,000 less. I looked over the data and compared it to the FMC and Weight and Balance paperwork. This was when I realized we missed seeing the incorrect ZFW info that we should have caught and corrected. I remember seeing the Weight and Balance info come up on ACARS but still don't remember requesting FDP data manually. I let expectation bias and numerous distractions cause me to miss a VERY critical part of preparation. I know the [operational] procedures include to verify accuracy of conditions used for performance data. I thought I always did this meticulously. I allowed distractions caused by what seemed a very unusual deferral with serious threats cause me to miss critical details that caused an even larger threat to my aircraft. I corrected the errors in the FDP landing data conditions and resent the request. The correct data now showed more than 7000 feet required for Max Man, again which we would not be doing. ZZZ ATIS was advertising landing runway XXR and departing XXC. Though total length for both runways is the same XXR has less runway beyond glideslope. We told ZZZ we would need XXC for operational necessity. I again briefed the landing with reduced braking and made a normal landing with no problems.

Additionally, I corrected TO conditions and sent a new TO data request to compare to our incorrect data. V1 and Vr were 19kts higher. V2, R40, and R80 were 17kts higher. Power settings and MTOW were the same with trim a little further aft. Due to the incorrect speeds used with the original TO data, I inspected the tail and tail skid after landing. The areas were normal with no indication of damage. I still can't believe this happened. In retrospect, I should have not allowed distractions to take me out of my normal flow and procedures. I do confirm numbers in the FDP info with both the FMC and Weight and Balance paperwork. I allowed numerous distractions to cause me to not only miss critical mistakes, but also allowed expectation bias to cause me to misinterpret data that should have alerted me to those mistakes. I will make sure in the future to continue carefully checking data regardless of outside distractions. I believe a stronger note in the MEL regarding ACARS operation with [the parking brake MEL] may prevent some confusion and possibly help future crews recognize earlier some of the issues we experienced. "ACARS operation may be affected" is pretty weak considering the many issues we noticed. Additionally, I believe there should be more guidance on determining a practical minimum runway with anti-skid inop. We do not do "Max Man" braking without anti-skid but that is the only distance we see in the FDP landing data. Ultimately though, it is my job to trap these types of errors. I failed in that respect and will work that much harder in the future to avoid missing critical details, distractions or not.

## Narrative: 2

I was the FO (First Officer) on [the flight] to ZZZ. On this flight I failed to notice that the ZFW (Zero Fuel Weight) that came back with the TO performance data was incorrect. This resulted in us taking off with inaccurate TO data. There were numerous factors that led to this event. First and most importantly was my inattention to detail that caused me to not notice the incorrect ZFW. Other contributing factors were the MEL for the inop brakes that was causing the ACARS to not populate data correctly. Much of the info from the previous flight was still present even after the CA (Captain) initialized the aircraft. I was struggling to get the clearance because of the unfamiliar procedures and the data had to be manually rendered because of the MEL issue. By the time I got the clearance resolved I was feeling way behind but I did not verbalize this to the CA. When the TO data came back I checked

the OFP (Operational Flight Program) and the runway but not the ZFW. This led to us using the incorrect data that came back. There were several ways I could have prevented this event from occurring. Most importantly I should have been professional enough to admit to the CA that I was behind and that would have allowed us to slow down and get back together. Additionally, knowing that I was behind I should have paid special attention to critical safety of flight issues like the TO data. In the future I will ensure I do not allow that to occur again.

## Synopsis

B767 flight crew reported failing to use correct weights for takeoff and landing planning.

## Time / Day

Date : 201808

Local Time Of Day : 1201-1800

## Place

Locale Reference.ATC Facility : ZZZ.ARTCC

State Reference : US

Altitude.MSL.Single Value : 35000

## Environment

Flight Conditions : VMC

## Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : Air Carrier

Make Model Name : A320

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Airspace.Class A : ZZZ

## Component

Aircraft Component : Spoiler 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

Function.Flight Crew : Pilot Flying

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Multiengine

Experience.Flight Crew.Total : 7214

Experience.Flight Crew.Last 90 Days : 240

Experience.Flight Crew.Type : 6764

ASRS Report Number.Accession Number : 1568405

## Events

Anomaly.Aircraft Equipment Problem : Less Severe

Anomaly.Inflight Event / Encounter : Fuel Issue

Detector.Person : Flight Crew



When Detected : In-flight  
Result.General : Maintenance Action

## Assessments

Contributing Factors / Situations : Aircraft  
Primary Problem : Aircraft

## Narrative: 1

Inbound flight had a "Flight control - Spoiler fault."

Maintenance deferred Number 5 spoiler. This deferral required the Number 5 spoiler to be "inoperative, retracted, and deactivated" per the MEL. Enroute, we discovered that the airplane with the autopilot on, was flying with 2.5 degrees left rudder trim and about 2-3 degrees right bank. FO (First Officer) made an inspection of the spoilers from the cabin.

It was discovered that the right spoiler was "floating" i.e. extended during flight when it should have been retracted along with all the other spoilers. Per QRH, this causes an additional 10% fuel burn. As this was a relatively short flight, we determined that the additional fuel burn was not a big concern. As we were beginning descent at this point, the decision to continue to destination was made with no further notification (due to time constraints and relatively minor effect on the flight plan.) We didn't believe this met the criteria for declaring an emergency, and therefore did not.

The flight was continued to destination, landing about 900 lbs short of planned fuel due to the extended spoiler. Maintenance "write-up" was made, and out bound crew advised.

## Synopsis

A320 Captain reported Maintenance deferred an inoperative spoiler.

## Time / Day

Date : 201807

Local Time Of Day : 1801-2400

## Place

Locale Reference.ATC Facility : ZAB.ARTCC

State Reference : NM

Altitude.MSL.Single Value : 14000

## Environment

Weather Elements / Visibility : Haze / Smoke

Weather Elements / Visibility : Windshear

Weather Elements / Visibility : Thunderstorm

## 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 : Initial Approach

Route In Use.STAR : EAGUL6

## 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 : Air Transport Pilot (ATP)

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

ASRS Report Number.Accession Number : 1567136

## Events

Anomaly.Deviation - Altitude : Undershoot

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Anomaly.Inflight Event / Encounter : Fuel Issue

Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Executed Go Around / Missed Approach

Result.Flight Crew : Diverted

## Assessments

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

## Narrative: 1

Our flight to PHX had been uneventful until we started the EAGUL6 arrival. Our radar started painting a substantial amount of thunderstorm activity between us and the airport. The thunderstorm activity ran basically south to north, east of the field by about 10 miles. ATC rerouted us to the north on a different arrival. I believe it was the DSERT2, but I am not sure. It really does not matter as the thunderstorms prevented us from actually doing this arrival.

We deviated around the storms, following the aircraft in front of us. Once on the backside of the weather, we noticed a substantial amount of dust being kicked up by strong low level winds. Even at 14,000 ft we could see the dust moving rapidly to the west. ATC advised us that the previous aircraft had reported moderate turbulence ahead. In less than 30 seconds we experienced exactly that, with a 45 kt increase and altitude deviations of 200 feet.

As we followed the line of planes to the airport the ride did not improve, with wild fluctuations in speed, pitch and bank. The autopilot kicked off a few times. As we were on downwind for Runway 8 we noticed 2 things. First, we could not see the airport due to the dust. We were in the clear, but the dust was obscuring most of the ground below about 1000 feet. Second, despite having a strong wind from the west at our altitude, you could clearly see the dust moving rapidly from the east below us. We discussed how it didn't look like we could land using Runway 8 since it appeared to be a large tailwind.

Shortly after that conversation, ATC told us they were changing the airport around due to the preceding 4 aircraft going around. We turned around and got set up on a downwind for Runway 26, all the while still getting a very rough ride. As we passed over the city we flew beyond the dust clouds and the ride became smooth. Turning base we could actually make out the runway. We noticed however that the dust "front" was between us and the runway. We discussed go around procedures recognizing that landing might not be possible.

I configured the airplane early so we could be stable and recognize any adverse trends as soon as possible. Just prior to the dust, we got the beginning of a microburst. Power was near idle, airspeed increased (to almost over speeding the flaps), and an increase of altitude putting us way above the glideslope. We could not have landed if we had to. We called for the go around, getting a very rough ride.

We told ATC that we were diverting to our alternate of ZZZ. They advised us it was closed. This was news to us as we had not received any word from Dispatch that our alternate was no longer viable. We asked ATC what was the nearest open airport. After a minute of checking he told us ZZZ1, and one other I can't remember. ZZZ1 was the closest but still 234 miles away with weather between us! We put ZZZ1 in the FMS and it showed us arriving with less than 2,000 lbs of fuel. We declared min fuel and told ATC that after deviating around the storms our route to ZZZ1 would be direct. We notified Dispatch of our diversion and FOB. We climbed fairly high for a short route to save fuel. The Captain did a flaps 15 landing, again to use less fuel. We landed with about 2.7 FOB.

I believe we got "painted into a corner" due to the weather rapidly deteriorating at both our destination and alternate at the same time. Also, this isn't the Midwest or North East.

Airports aren't every 50 miles.

My only question is this: why did we not get any notification from Dispatch about our alternate? Did the weather in ZZZ go downhill and Dispatch not notice? Or, did the weather that closed ZZZ happen so fast that there was no time to notify us? If we had had that one piece of information we would not have tried to land in PHX. We would have gone somewhere else sooner and wouldn't have been in such a low fuel situation.

## Synopsis

B737-800 pilot reported diverting with minimum fuel after PHX began experiencing dust storms and microbursts.

## Time / Day

Date : 201808  
Local Time Of Day : 1201-1800

## Place

Locale Reference.ATC Facility : ZZZ.ARTCC  
State Reference : US  
Altitude.MSL.Single Value : 36000

## Environment

Light : Daylight

## Aircraft

Reference : X  
ATC / Advisory.Center : ZZZ  
Make Model Name : B737-800  
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 : Fuel 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 Not Flying  
Function.Flight Crew : First Officer  
Qualification.Flight Crew : Air Transport Pilot (ATP)  
Qualification.Flight Crew : Multiengine  
Qualification.Flight Crew : Instrument  
ASRS Report Number.Accession Number : 1566981  
Human Factors : Troubleshooting  
Human Factors : Human-Machine Interface

## Events

Anomaly.Aircraft Equipment Problem : Less Severe  
Anomaly.Deviation - Procedural : Weight And Balance  
Anomaly.Inflight Event / Encounter : Weather / Turbulence  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Returned To Departure Airport

## Assessments

Contributing Factors / Situations : Aircraft

Primary Problem : Aircraft

## Narrative: 1

We took off with fuel balanced and approximately 8,300 pounds per tank. During climb out we were focused on weather deviation and communicating with the Flight Attendants to keep them seated. At level off at FL360 we noticed the yellow imbalance annunciation on the fuel panel, and noted the readings to be 5,600 pounds in the left tank (and dropping rapidly) and 7,100 pounds in the right tank (burning normally). We initiated an immediate turn around back to [departure airport] with Center, unsure if there was a leak or some other malfunction responsible for the huge imbalance. They also gave us a descent.

We began running the Fuel Leak [Checklist]. When we reached the point of the checklist requiring confirming an engine fuel leak we noted the fuel level was no longer dropping as rapidly. We asked the Flight Attendants to inspect for signs of a leak and they reported they didn't see anything out of the ordinary. We elected to leave both engines running, as at that point we were being vectored on to final approach. We landed uneventfully, but noted as we cleared the runway it looked like the left side was dropping rapidly again. We shut down the #1 engine and asked the Airfield Ops vehicles on scene to inspect our engine for signs of a leak. They reported no evidence of a leak. We taxied back to the gate. Our Passengers deplaned normally, and Maintenance took the aircraft from us. They also said there were no immediate signs of a leak, but would have to troubleshoot to find the cause of the imbalance.

## Synopsis

Boeing 737 First Officer reported fuel system issue and returned to the departure airport

## Time / Day

Date : 201808  
Local Time Of Day : 1801-2400

## Place

Locale Reference.Airport : ZZZ.Airport  
State Reference : US  
Relative Position.Distance.Nautical Miles : 15  
Altitude.MSL.Single Value : 4500

## Environment

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

## Aircraft

Reference : X  
Aircraft Operator : Personal  
Make Model Name : Skyhawk 172/Cutlass 172  
Crew Size.Number Of Crew : 1  
Operating Under FAR Part : Part 91  
Flight Plan : None  
Mission : Personal  
Flight Phase : Cruise  
Route In Use : Direct

## Component

Aircraft Component : Engine  
Aircraft Reference : X  
Problem : Failed

## 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 : Commercial  
Experience.Flight Crew.Total : 818  
Experience.Flight Crew.Last 90 Days : 16  
Experience.Flight Crew.Type : 818  
ASRS Report Number.Accession Number : 1566169  
Human Factors : Situational Awareness

## Events

Anomaly.Aircraft Equipment Problem : Critical  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : Inflight Shutdown  
Result.Flight Crew : Landed in Emergency Condition

## Assessments

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

## Narrative: 1

Lost engine power possibly due to fuel exhaustion near the end of a VFR cross country flight. Landed safely on [a highway] without harm to the pilot and 3 passengers or people on the ground.

The aircraft was fully fueled to 50 gallons before departing. After 3.5 hours to [destination], the pilot had 24 gallons of 100 LL added at the FBO. Due to the aircraft being close to gross weight, it was not topped off. Total flight time that day was 7 hours with a total of 74 gallons available.

The C172 has an STC that installed a Lycoming 180 hp engine. The pilot discussed with the owner the fuel consumption planning number as 8.1 gph and had seen that performance on previous flights of the aircraft, mostly solo flights. The STC paperwork was provided by the owner to the pilot for computing the weight and balance for the flights. The STC increases the max takeoff weight to 2550 pounds. The pilot loaded the STC weight and balance values into his Garmin Pilot app and used it to compute the weight and balance. The STC paperwork did not include changes to the aircraft endurance, climb, or other performance changes from an unmodified C172.

The pilot used 8.1 GPH for planning the flights thinking that he had a total endurance of over 9 hours for both flights. Not completely knowing how the aircraft would perform with the maximum payload may have allowed the pilot to underestimate the fuel that would be consumed. Perhaps STCs should more fully describe any impacts to the aircraft performance.

## Synopsis

C172 pilot reported landing safely on a highway after running out of fuel.



## Time / Day

Date : 201807

Local Time Of Day : 1201-1800

## Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

## Environment

Flight Conditions : VMC

Light : Daylight

## Aircraft

Reference : X

ATC / Advisory.TRACON : ZZZ

Aircraft Operator : Air Taxi

Make Model Name : EMB ERJ 135 ER/LR

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 135

Mission : Passenger

Flight Phase : Climb

## Component : 1

Aircraft Component : Fuel Quantity-Pressure Indication

Aircraft Reference : X

Problem : Malfunctioning

## Component : 2

Aircraft Component : Fuel

Aircraft Reference : X

## Person

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Taxi

Function.Flight Crew : Pilot Not Flying

Function.Flight Crew : Captain

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

ASRS Report Number.Accession Number : 1563310

## Events

Anomaly.Aircraft Equipment Problem : Less Severe

Anomaly.Inflight Event / Encounter : Fuel Issue

Detector.Person : Flight Crew

When Detected : In-flight

Result.General : Maintenance Action  
Result.Flight Crew : Returned To Departure Airport  
Result.Flight Crew : Landed As Precaution

## Assessments

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

## Narrative: 1

During our enroute climb out I noticed the yellow dashes briefly appeared on the fuel quantity gauge on the MFD (Multi-function Display). After the dashes cleared I noticed an irregularity with the fuel quantity indication showing lower than required. My FO (First Officer) stated that he had this issue before but couldn't remember what aircraft, that combined with a fuel leak issue we had earlier in the day with the same aircraft led us to the decision to not take any chances and return to [departure airport] to sort the issue out on the ground. We did not [advise ATC] but asked for no delay in returning to the airport. We landed without incident and taxied to the ramp. I coordinated with Maintenance Control who called onsite maintenance to come troubleshoot the issue. Upon arrival I described the issue to the mechanic who stated "We have actually had numerous fuel gauge or quantity issues this past week due to the heat and fuel contamination. We should sump the tanks and see what we find." I agreed and the mechanic did sump the tanks and did find approximately 1 cup of water after the sumping was complete. The mechanic then added that with the finding of water in the system, the amount they found was enough where it very well could have led to the erroneous indication issue we saw. I refueled the aircraft and monitored the fueling in person to ensure no contamination was present and quantity was correct on all available instrumentation. Upon receiving the all clear from the mechanic and Maintenance Control we then took off and completed the flight without further disruption.

## Synopsis

EMB-135 Captain reported returning to departure airport following fuel quantity display anomalies due to fuel contamination.

## Time / Day

Date : 201807

Local Time Of Day : 0001-0600

## Place

Locale Reference.ATC Facility : ZZZ.ARTCC

State Reference : US

Altitude.MSL.Single Value : 10000

## Environment

Flight Conditions : VMC

Light : Night

## Aircraft

Reference : X

Make Model Name : A320

Flight Phase : Cruise

Flight Phase : Climb

Airspace.Class E : ZZZ

## Component

Aircraft Component : Fuel 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

Function.Flight Crew : Pilot Flying

Qualification.Flight Crew : Air Transport Pilot (ATP)

ASRS Report Number.Accession Number : 1562629

## Events

Anomaly.Aircraft Equipment Problem : Critical

Anomaly.Deviation - Procedural : Published Material / Policy

Anomaly.Deviation - Procedural : MEL

Anomaly.Deviation - Procedural : Maintenance

Anomaly.Inflight Event / Encounter : Fuel Issue

Detector.Person : Flight Crew

When Detected : In-flight

Result.General : Maintenance Action

Result.Flight Crew : Diverted

Result.Flight Crew : Landed As Precaution

## Assessments

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

## Narrative: 1

Diverted to [an alternate airport] as the result of fuel valve malfunction (outer to inner tank valves, right wing tank). This [has] been a recurring maintenance issue on this aircraft. It required a repetitive inspection and maintenance action prior to each departure. We had a mechanic assigned to travel with us as contract maintenance was unavailable. Prior to departure our mechanic experienced difficulty accomplishing the prescribed maintenance action per MEL and contacted Maintenance Control. After repeated attempts to secure the fuel valves open, the left valves indicated fully open, but the right valve indicator indicated approximately 1/2 open. Maintenance Control assured us that this was a valid position and met the criteria for the MEL action required as it allowed the fuel in the outer wing tanks to migrate to the inner wing tank, which it did. We strenuously disagreed with this assessment as it was not consistent with the previous 3 legs that we had flown this day. He insisted it was in compliance and we departed. Climbing through 10,000 feet we reviewed the systems pages and discovered that the outer to inner fuel valves had closed and there was now about 200 pounds of fuel in the outer wing tanks. As the flight progressed we noted that the outer tanks were filling at an alarming rate. In about 30 minutes we had 3,000 pounds in the outer wing tanks and felt that if this continued we would not have enough fuel in the inner tanks to reach [destination] if the valves did not open on schedule as the result of the maintenance action performed before departure. We contacted Dispatch and suggested a diversion to [a nearby alternate]. The Dispatcher concurred and we proceeded to [divert] and landed uneventfully. The maintenance crew that met us upon reviewing the maintenance log and speaking with the Mechanic that was assigned to our trip felt that the procedure that was applied [before departure] was incorrect. [They] produced a printed page from the maintenance manual and applied the procedure with positive results. An entry was made into our logbook reflecting this assessment. We boarded our passengers and continued uneventfully.

## Synopsis

A320 Captain reported diverting to an alternate when their fuel system, which was on MEL restrictions, was not performing as expected.

## Time / Day

Date : 201807

Local Time Of Day : 1801-2400

## Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Altitude.MSL.Single Value : 10000

## Environment

Light : Daylight

## Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : Personal

Make Model Name : Bonanza 35

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Personal

Nav In Use : FMS Or FMC

Flight Phase : Cruise

Airspace.Class E : ZZZ

## Component

Aircraft Component : Fuel Storage System

Aircraft Reference : X

Problem : Malfunctioning

## Person

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Single Pilot

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Multiengine

Experience.Flight Crew.Total : 4500

Experience.Flight Crew.Last 90 Days : 67

Experience.Flight Crew.Type : 321

ASRS Report Number.Accession Number : 1562322

Human Factors : Troubleshooting

## Events

Anomaly.Aircraft Equipment Problem : Less Severe

Anomaly.Deviation - Procedural : Published Material / Policy

Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : Overcame Equipment Problem

## Assessments

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

## Narrative: 1

While en-route to ZZZ I experienced an engine fuel starvation event. I have a Beech V35B with two main tanks and Osborne Tip Tanks. The tip tank design is a direct feed system where the fuel from the tip tanks is fed directly to the engine via a 5 position fuel selector. The positions are off, left, right, right tip and left tip. The fuel tanks can both feed at the same time via a crossfeed valve that is open only while using fuel from the tips and closed in normal operations while feeding from the main tanks. I usually plan on burning 20 gallons from the left main and then using the tip tanks because the fuel system while using the tip tanks will return the extra fuel to the left main fuel tank. The engine driven fuel pump will return about 10-11 gallons/hour to the left main fuel tank.

I have a known problem of sometime the tip tank fuel line from the tip to the fuel selector will not be "primed" and the engine will stutter as the fuel flow is reduced as I start to feed from the tip tanks. I also had a time where even with the cross feed open the tanks did not symmetrically feed. So my SOP is to burn a gallon from the right tip and a gallon from the left tip and then open the crossfeed. This will ensure that both lines are primed and will prevent an imbalance.

On this day I burned the 20 gallons from the left main and began my tip tank procedures. 1 gallon from the left and 1 gallon from the right. When I selected the left tank the engine stumbled a little and the fuel flow decreased a bit and recovered after about 10 seconds.

After 1 gallon was burned from the left tip I switched to the right tip and it ran ok for a while and I relaxed. Then it ran rough for a second and then all power was lost. I had a good headset on and was listening to music so I didn't even realize the engine stopped. The prop was still turning and the oil pressure was still good. The autopilot was on and I saw the pitch trim wheel going up and the airspeed rapidly decaying. I looked at the engine monitor which shows digital EGT and CHT they were both zero. I knew I had an engine failure so I clicked off the autopilot and since I was below best glide and slowing I pushed over and trimmed for best glide. I was directly over an airport so I knew I had an out. I switched tanks to the right main since that is the closest position on the fuel selector to a main tank. I slightly enriched the mixture since I was lean of peak at cruise. I knew there was air in the lines and our engine driven fuel pumps don't work well as suction pumps - I turned on the electric fuel boost pump for a second and the engine started.

I was at 10,000 feet so I had a lot of time to glide there was no panic except for a delayed response the engine fuel starvation occurred and I should have switched tanks when the fuel flow fluctuated too much.

I lost about 500 feet during this process. I was IFR and ATC (ZZZ Center) called me to ask if I had a problem. There was traffic below me which I saw on ADSB and was called out to me by ATC. I reported to ATC that I had an engine problem and that I had restarted the

engine and was climbing back to 10000 feet. ATC was very helpful because as soon as I said I had an engine problem they provided the bearing and range to an airport. Luckily it was right under me.

Some lessons learned. I will prime the tip tanks lines on the ground by selecting that tip tank on the ground and using the fuel strainer on the fuel selector to draw fuel in the line from the tip to the fuel selector. This should ensure there is no air in the lines when I go to use the tip tanks in flight.

## Synopsis

Bonanza pilot reported difficulties with fuel crossfeed while using tip tank fuel resulting in a temporary engine failure due to fuel starvation.

## Time / Day

Date : 201807

Local Time Of Day : 1201-1800

## Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Relative Position.Distance.Nautical Miles : 10

Altitude.MSL.Single Value : 2700

## Environment

Weather Elements / Visibility.Visibility : 10

Weather Elements / Visibility.Other

Light : Daylight

Ceiling.Single Value : 12000

## Aircraft

Reference : X

Aircraft Operator : FBO

Make Model Name : PA-28 Cherokee/Archer/Dakota/Pillan/Warrior

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 91

Flight Plan : VFR

Mission : Personal

Flight Phase : Cruise

Route In Use : Direct

Airspace.Class E : ZZZ

## Component : 1

Aircraft Component : Powerplant Fuel System

Aircraft Reference : X

Problem : Failed

## Component : 2

Aircraft Component : Engine

Aircraft Reference : X

Problem : Failed

## Person

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : FBO

Function.Flight Crew : Instructor

Function.Flight Crew : Pilot Flying

Qualification.Flight Crew : Flight Instructor

Qualification.Flight Crew : Commercial

Experience.Flight Crew.Total : 672



Experience.Flight Crew.Last 90 Days : 87  
Experience.Flight Crew.Type : 29  
ASRS Report Number.Accession Number : 1561937  
Human Factors : Situational Awareness

## Events

Anomaly.Aircraft Equipment Problem : Critical  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : Diverted  
Result.Flight Crew : Landed in Emergency Condition  
Result.Flight Crew : Inflight Shutdown

## Assessments

Contributing Factors / Situations : Aircraft  
Primary Problem : Aircraft

## Narrative: 1

I was enroute to ZZZ as a diversion due to an aircraft having landed gear up which consequently closed the runway at ZZZ1. Approximately 10 NM south southeast from ZZZ1 and 1 mile due east from the town, I was switching fuel tanks from the right fuel tank to the left fuel tank at the completion of that action the aircraft sputtered and the engine instrument displayed "0" Fuel Pressure which caused my aircraft's engine to cease operation thus requiring me to perform an emergency descent and off airport landing. With limited time to conduct the engine failure checklist, I troubleshot the situation by cycling the throttle and fuel pump switch which did not cure the situation. It was at this point in the event, that I opted to put the aircraft into a field which at the time seemed the safest course of action. The aircraft impacted the ground softly on the landing gear and rolled to a stop approximately 100 yards south of [the] road. The aircraft came to a stop with no visible damage. I secured that aircraft, exited and contacted emergency services to report my situation and to notify Approach Control that I was on the ground safe and was in no further need of aid. This event was a PART 91 operation.

## Synopsis

PA28 flight instructor reported the engine lost fuel pressure and shut down in cruise, resulting in an off-field landing.

## Time / Day

Date : 201807

Local Time Of Day : 0601-1200

## Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Relative Position.Distance.Nautical Miles : 10

Altitude.MSL.Single Value : 3000

## Environment

Flight Conditions : VMC

Weather Elements / Visibility.Visibility : 20

Light : Daylight

Ceiling.Single Value : 12000

RVR.Single Value : 20

## Aircraft

Reference : X

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

Flight Phase : Cruise

Route In Use : Direct

## Component

Aircraft Component : Engine

Aircraft Reference : X

Problem : Failed

## Person

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Pilot Flying

Function.Flight Crew : Single Pilot

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Private

Experience.Flight Crew.Total : 1100

Experience.Flight Crew.Last 90 Days : 30

Experience.Flight Crew.Type : 50

ASRS Report Number.Accession Number : 1561903

Human Factors : Troubleshooting

## Events

Anomaly.Aircraft Equipment Problem : Critical  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : Landed in Emergency Condition

## Assessments

Contributing Factors / Situations : Aircraft  
Primary Problem : Aircraft

## Narrative: 1

Crossing terrain elevation at 3000 feet on my way to ZZZ1, I experienced an engine reduction of power followed by complete loss of power. Prior to departure at ZZZ, the fuel was drained and found to be normal. The airplane gauge read 1/4 tank enough for one hour of flying. ZZZ1 was expected to be a 20 min flight in VMC. I contacted ZZZ1 Tower and declared a fuel flow problem. I entered 7700 into the transponder as per instructions from the tower. I knew I was near a grass strip and other safe landing areas. There were no towers or other power lines in the immediate area. I flew a straight in approach. My airspeed was adequate to approach and make a safe landing. I landed and was met by emergency responders. I called the Tower when on the strip and let them know I was OK and there was no damage to the airplane. I removed two gallons of fuel from the airplane. I flushed new fuel through the carburetor. I drained the fuel tank and carburetor twice. I added a total of seven gallons to the plane. I completed a full power run up for one and a half minutes. I was confident any contaminants were flushed and the engine was making full power. I left for ZZZ1 and contacted the Tower when 500 and climbing. I landed at ZZZ1 with no problems or issues.

## Synopsis

GA pilot reported a complete engine failure that required a dead stick landing to an off-airport location.

## Time / Day

Date : 201807

Local Time Of Day : 1201-1800

## Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Altitude.AGL.Single Value : 2000

## Environment

Flight Conditions : VMC

## Aircraft

Reference : X

ATC / Advisory.TRACON : ZZZ

Aircraft Operator : Air Carrier

Make Model Name : B767 Undifferentiated or Other Model

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Mission : Passenger

Flight Phase : Landing

Airspace.Class B : ZZZ

## Component

Aircraft Component : Landing Gear

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 : Instrument

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Multiengine

Experience.Flight Crew.Total : 9278

Experience.Flight Crew.Type : 1749

ASRS Report Number.Accession Number : 1559381

Human Factors : Situational Awareness

## Events

Anomaly.Aircraft Equipment Problem : Critical

Anomaly.Deviation - Procedural : Published Material / Policy

Anomaly.Inflight Event / Encounter : Fuel Issue

Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Requested ATC Assistance / Clarification

Result.Flight Crew : Landed in Emergency Condition

Result.Flight Crew : Executed Go Around / Missed Approach

Result.Air Traffic Control : Provided Assistance

Result.Aircraft : Aircraft Damaged

## Assessments

Contributing Factors / Situations : Aircraft

Primary Problem : Aircraft

## Narrative: 1

On climbout of ZZZ and approaching FL350 we heard a loud bang and felt a strong jolt. It sounded as though something had struck the aircraft from outside. All engine instruments read normal and there was no airframe vibration so we pressed on to ZZZ1. On arriving into ZZZ1 during the approach I as the pilot flying called for "gear down." There was another violent jolt and we received a GEAR DISAGREE warning and proceeded to do a go-around. During the go-around I used the standard go around callouts and called for "Gear up." As soon as I called for the gear up I mentioned to the FO (First Officer) that "no, we should leave the gear down" but it was too late as he immediately had raised the gear and we felt another violent jolt. ATC climbed us to 5,000 feet where I handed the aircraft to the FO so that I could run the QRH. I ran the QRH and it called for Landing Gear Lever down and Accomplish Normal Landing. The GEAR DISAGREE light extinguished but it was here I noted the R SIDE BRACE light illuminated. I quickly ran thru the (R) SIDE BRACE QRH but was becoming concerned about the fuel remaining as we were down to 6,000 pounds at this point. I instructed the FO we needed to get the aircraft on the ground and initiate the approach with ATC. The FO was still flying the aircraft and handling communications with ATC. I made a quick call to the Flight Attendant Lead and also a brief PA to the passengers explaining the gear problem. ATC had us fly over ZZZ2 Tower and they reported all gear appeared down. We proceeded to land in ZZZ1. Landing was normal but as I was unsure of the status of the gear I informed Tower that we were disabled on the runway.

Later I was told that I did not give the Flight Attendants sufficient time to prepare the cabin and that I did not give the "Brace" signal before landing. I did call and inform the Flight Attendants after the Go Around of our current gear condition after we leveled at 5,000 feet and before attempting to call dispatch. I attempted numerous contacts with Dispatch via Satcom, Telephone, and VHF radio. I answered numerous calls from various Flight Attendants via intercom to the cockpit while attempting to run the QRH. Finally, after noting our fuel quantity at 6,000 pounds and knowing we were to initially land with 10,600 pounds I was focused on getting the aircraft on the ground. I spoke with the lead Flight Attendant and informed her we were beginning our approach.

## Synopsis

B767 Captain reported that each time the gear was raised or lowered there was a loud bang and a strong jolt.

## Time / Day

Date : 201807

Local Time Of Day : 0601-1200

## Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Altitude.AGL.Single Value : 100

## Environment

Flight Conditions : VMC

Weather Elements / Visibility.Visibility : 10

Light : Daylight

Ceiling : CLR

## Aircraft

Reference : X

Aircraft Operator : Personal

Make Model Name : Balloon

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : None

Mission : Passenger

Flight Phase : Landing

Route In Use : Visual Approach

## Person

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Contracted Service

Function.Flight Crew : Captain

Function.Flight Crew : Pilot Flying

Qualification.Flight Crew : Lighter-Than-Air

Qualification.Flight Crew : Commercial

Experience.Flight Crew.Total : 305

Experience.Flight Crew.Last 90 Days : 9

Experience.Flight Crew.Type : 305

ASRS Report Number.Accession Number : 1558356

Human Factors : Situational Awareness

## Events

Anomaly.Deviation - Procedural : Published Material / Policy

Anomaly.Ground Event / Encounter : Loss Of Aircraft Control

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Anomaly.Inflight Event / Encounter : Fuel Issue

Anomaly.Inflight Event / Encounter : CFTT / CFIT

Detector.Person : Flight Crew

Were Passengers Involved In Event : Y

When Detected : In-flight  
Result.General : Police / Security Involved  
Result.Flight Crew : Landed in Emergency Condition  
Result.Flight Crew : Diverted  
Result.Aircraft : Aircraft Damaged

## Assessments

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

## Narrative: 1

On an early morning flight with 2 passengers after a nice flight up the valley in a strong, favorable high pressure weather pattern with surface winds in the 5-7 MPH area. After several landing approaches in variable but gentle winds (and an attempt to land at the airport with other balloons), winds became calm in the final phase of the flight, making steering difficult and landing opportunities scarce. After drifting towards then hovering stationary over power lines at approximately 100 to 150 feet, in control of the balloon but running low on fuel at this point, I ascended to catch a wind that would move us away from and thus avoid the hazard. I drifted over a pine grove (about one acre), attempted a field landing within 2 rows of pine trees. The balloon descended to treetops so that passengers and pilot could "walk" the balloon to the edge of the field by pulling on high branches from the basket and thus slide to the edge of the field. The balloon descended lower between two pine trees, holding the balloon like a funnel. The only corrective options at this point were to climb down the trees or lower the balloon to the ground. I chose the safer option, venting heat so the balloon would slowly deflate as trees guided us down. 10 feet from the ground, I vented further to reach the ground. This turned out to be the safest landing decision given the circumstances, a decision that resulted in no injuries - my primary goal given the situation. First responders arrived to assist. All the passengers and the pilot were safe and walked to vehicles for the return ride to the launch site. No injuries. No property damage. Passengers refused EMT attention. First responders assisted balloon crew in carrying balloon and basket out of the woods. Negligible damage to aircraft. The pilot has considerable flying experience in this area and familiarity with the terrain. The flight two days prior was the same direction in a similar weather pattern, with a normal landing that was literally 300 yards west of the pine grove. Given passenger weight, ambient temperature, the conditions were well within parameters for a safe balloon flight.

## Synopsis

Hot air balloon pilot reported landing in the trees.

## Time / Day

Date : 201806  
Local Time Of Day : 1201-1800

## Place

Locale Reference.Airport : ZZZ.Airport  
State Reference : US  
Altitude.MSL.Single Value : 2500

## Environment

Flight Conditions : Marginal  
Weather Elements / Visibility : Rain  
Weather Elements / Visibility : Turbulence  
Weather Elements / Visibility : Thunderstorm  
Weather Elements / Visibility.Visibility : 10  
Light : Daylight  
Ceiling.Single Value : 1200

## Aircraft

Reference : X  
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 : Personal  
Flight Phase : Landing  
Route In Use : None  
Airspace.Class G : ZZZ

## Person

Reference : 1  
Location Of Person.Aircraft : X  
Location In Aircraft : Flight Deck  
Reporter Organization : Personal  
Function.Flight Crew : Single Pilot  
Qualification.Flight Crew : Private  
Experience.Flight Crew.Total : 1000  
Experience.Flight Crew.Last 90 Days : 3  
Experience.Flight Crew.Type : 2  
ASRS Report Number.Accession Number : 1556973  
Human Factors : Situational Awareness

## Events

Anomaly.Aircraft Equipment Problem : Critical  
Anomaly.Deviation - Procedural : Published Material / Policy  
Anomaly.Ground Event / Encounter : Ground Strike - Aircraft  
Anomaly.Inflight Event / Encounter : Weather / Turbulence  
Anomaly.Inflight Event / Encounter : Fuel Issue



Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : Landed in Emergency Condition  
Result.Flight Crew : Inflight Shutdown  
Result.Aircraft : Aircraft Damaged

## Assessments

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

## Narrative: 1

â€¢ **Navigation** Equipment: Magnetic Compass, Garmin GMC 250XL  
â€¢ **Fuel: Main tank: Full 11 Gallons. Aux Tank, Not used.**  
â€¢ **Estimated TIE (Time Inflight Enroute): One hour.**

After waiting for morning fog to lift and after a phone conversation with a fellow pilot, who reported the weather [at intended destination] to be fine with no low ceiling and very good visibility, I took off. I had previously loaded my route into an iPad and carried a related GPS receiver in my shirt pocket. My estimated TIE was one hour.

I departed with a scattered ceiling of 1200 ft. and turned west. As soon as I reached 2500 ft., well above the scattered scud clouds and well below the high overcast I tried following my progress on the iPad, which was strapped to my left leg. Unfortunately, the glare was so bright that I couldn't see any detail, I SHOULD HAVE TURNED BACK! Knowing the approximate headings of my planned route, I decided to continue by using my magnetic compass, MISTAKE No. 2!

At first all went well until the scattered clouds began to build, I was unable to stay clear of them and maintain my intended heading. I descended to about 1,000 feet and continued. I was now trying to utilize my Sectional map but due to the turbulent air, I was unable to take my hand off the control stick and study the map. In spite of this I continued. The overcast became more solid and grew dark. Because of my inability to properly navigate, due to the turbulence, I lost track of my position.

For the next hour, I continued flying southwest, but in order to maintain VFR I had to deviate from my intended heading often. I still thought I would find the reported clear air. By this time, the thunderstorms were violent and I was having a major problem avoiding them, not to mention maintaining control of my aircraft. It was now two hours into a planned one-hour flight and my need to find an airport was all I could think about. After the first hour, I began seriously looking for an airport but because I was lost and even though I flew close to a few small towns, I did not see a single airport.

I headed west looking for a place to land. Based on the specs, my 11 gallons of fuel should [have] resulted in OVER 2 1/2 hours of flight, my engine quit at approximately 2 hours and 20 minutes.

The weather had me down to about 800 feet and I was not close to anything that looked like a safe landing site. With only a few seconds to manage a forced landing, I saw a reasonable flat but very small area. I turned toward it and was able to make the turn and pull the nose up into a stall at the same time I arrived. The airplane didn't slide any if at all and stopped abruptly.

Fortunately, and although I was thoroughly shook up, I was not injured. Later a few bruises confirmed my rough landing. My airplane looked fine, except it was on its belly in a very unfriendly looking area.

#### CONCLUSION:

1. There were a few opportunities, early in the flight, when I should have turned back, but because of the expected clear air up ahead I did not.
2. Because this was a new and strange airplane for me, I elected to leave the landing gear down to keep the flight as simple as possible; this no doubt reduced my distance covered.
3. I obviously was too concerned about my inflight situation, because I failed to lean the mixture at all, again reducing my distance covered.
4. Also obviously, I was so lost I must have zigzagged far from my intended route to have flown for 2 hours and about 20 minutes on a one-hour route.

#### Synopsis

GA pilot reported executing a forced landing following engine failure related to fuel exhaustion.

## Time / Day

Date : 201806  
Local Time Of Day : 0601-1200

## Place

Locale Reference.ATC Facility : ZZZ.ARTCC  
State Reference : US  
Altitude.MSL.Single Value : 18000

## Environment

Light : Daylight

## Aircraft

Reference : X  
ATC / Advisory.Center : ZZZ  
Aircraft Operator : Air Carrier  
Make Model Name : B737-700  
Crew Size.Number Of Crew : 2  
Operating Under FAR Part : Part 121  
Flight Plan : IFR  
Mission : Passenger  
Nav In Use : FMS Or FMC  
Flight Phase : Climb  
Airspace.Class A : ZZZ

## Component

Aircraft Component : Fuel 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 : Pilot Flying  
Function.Flight Crew : Captain  
Qualification.Flight Crew : Air Transport Pilot (ATP)  
Qualification.Flight Crew : Instrument  
Qualification.Flight Crew : Multiengine  
Experience.Flight Crew.Last 90 Days : 158  
Experience.Flight Crew.Type : 8646  
ASRS Report Number.Accession Number : 1556664

## 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 : Air Transport Pilot (ATP)  
Qualification.Flight Crew : Multiengine  
Qualification.Flight Crew : Instrument  
Experience.Flight Crew.Last 90 Days : 335  
Experience.Flight Crew.Type : 1500  
ASRS Report Number.Accession Number : 1557067

## Events

Anomaly.Aircraft Equipment Problem : Less Severe  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.General : Maintenance Action  
Result.Flight Crew : Landed As Precaution  
Result.Flight Crew : Diverted

## Assessments

Contributing Factors / Situations : Aircraft  
Primary Problem : Aircraft

## Narrative: 1

We took off with 13.0 fuel on board. During climbout, at approximately FL180, we received a fuel imbalance yellow on Number 1 fuel gauge. According to gauge, fuel was burning out of Number 1 tank at a high rate. It seemed double the rate as usual. Fuel flows were the same on both engines. Fuel burned matched and were equal on both engines. Total fuel remaining equaled the planned fuel remaining. We even had a FA (Flight Attendant) check the wings for a possible fuel leak. We chose to run the IMBAL QRH.

CROSSFEED open and Number 1 pumps off, we were able to slow the fuel burn out of the Number 1 tank, but were not able to stop it. We called Maintenance Control over the radio and were advised to follow the QRH. At that point we had approximately 5.3 in the Number 2 tank and 2.2 in the #1 tank [so] we decided the prudent action was to [advise ATC] and divert to [a nearby alternate]. We landed with 1.9 Number 1 and 5.1 Number 2 showing on the fuel gauges. We landed with no problems and taxied to the gate. FMC fuel burn calculations had us landing with the correct fuel in [destination], we just could not stop the fuel burning from the Number 1 tank.

It would be nice during airborne patch to Maintenance if they were allowed to help you trouble shoot and not just say "Legally all we can say is follow the QRH." Not looking for someone to tell me what to do, but extra eyes troubleshooting would be nice.

## Narrative: 2

[Report narrative contained no additional information.]

## Synopsis

B737-700 flight crew reported diverting to an alternate airport after experiencing fuel system anomalies.

## Time / Day

Date : 201806  
Local Time Of Day : 0601-1200

## Place

Locale Reference.Airport : ZZZ.Airport  
State Reference : US  
Altitude.MSL.Single Value : 15000

## Environment

Flight Conditions : VMC  
Light : Daylight

## Aircraft

Reference : X  
ATC / Advisory.Center : ZZZ  
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  
Flight Phase : Climb

## Component : 1

Aircraft Component : Fuel Booster Pump  
Aircraft Reference : X  
Problem : Malfunctioning

## Component : 2

Aircraft Component : Electronic Flt Bag (EFB)  
Aircraft Reference : X  
Problem : Malfunctioning

## Person : 1

Reference : 1  
Location Of Person.Aircraft : X  
Location In Aircraft : Flight Deck  
Reporter Organization : Air Carrier  
Function.Flight Crew : Pilot Flying  
Function.Flight Crew : Captain  
Qualification.Flight Crew : Air Transport Pilot (ATP)  
Qualification.Flight Crew : Instrument  
Qualification.Flight Crew : Multiengine  
Experience.Flight Crew.Type : 594  
ASRS Report Number.Accession Number : 1554697  
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 Not Flying  
Qualification.Flight Crew : Multiengine  
Qualification.Flight Crew : Air Transport Pilot (ATP)  
Qualification.Flight Crew : Instrument  
Experience.Flight Crew.Total : 9577  
Experience.Flight Crew.Last 90 Days : 160  
Experience.Flight Crew.Type : 1848  
ASRS Report Number.Accession Number : 1554691

## Events

Anomaly.Aircraft Equipment Problem : Less Severe  
Anomaly.Deviation - Procedural : Weight And Balance  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : Returned To Departure Airport  
Result.Flight Crew : Landed As Precaution  
Result.Air Traffic Control : Issued New Clearance  
Result.Air Traffic Control : Provided Assistance

## Assessments

Contributing Factors / Situations : Aircraft  
Primary Problem : Aircraft

## Narrative: 1

As we were climbing through 15,000 ft. both of the low fuel pressure lights in the center [fuel] tank illuminated. We executed the appropriate checklist which directed us to turn the center tank pump switches off. This extinguished the lights but we were not able to use the center tank fuel. I contacted dispatch and [maintenance] and a decision was made to return to [our departure airport]. We made the request with Center who gave us a vector back and began preparations to land. These were negatively affected by the following: When the First Officer attempted to locate the overweight landing checklist in his iPad, Content Locker crashed and he could not access either the QRH or the flight manual. He searched through the hard copy of the QRH but was unable to locate an overweight landing checklist. Using my iPad he was able to execute the return to departure checklist.

After a successful landing a search of both the iPad and hard copy of the QRH revealed that there is no overweight landing checklist for the 737.

## Narrative: 2

We departed and on the departure both center fuel pump pressure lights illuminated. I tried to run the checklist out of my iPad Content Locker but the app would not load and would not respond. I then went to the paper checklist and we ran the checklist per the QRH and returned to [our departure airport]. We landed overweight. The landing was soft

with no side loads. After arriving at the gate we [entered] into the ELB (Electronic Logbook) the Overweight Landing and Fuel Pump Low Pressure condition of the center tank. We did not declare an emergency or require any assistance.

## Synopsis

B737 flight crew reported returning to departure airport after noting the center fuel tank boost pumps were inoperative. Crew reported some difficulty with the First Officer's iPad.

## Time / Day

Date : 201806  
Local Time Of Day : 1201-1800

## Place

Locale Reference.Airport : ZZZ.Airport  
State Reference : US  
Relative Position.Distance.Nautical Miles : 14  
Altitude.MSL.Single Value : 1200

## Environment

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

## Aircraft

Reference : X  
Aircraft Operator : Personal  
Make Model Name : Seaplane or Amphibian  
Crew Size.Number Of Crew : 1  
Operating Under FAR Part : Part 91  
Mission : Personal  
Flight Phase : Descent  
Route In Use : Visual Approach  
Airspace.Class G : ZZZ

## Component : 1

Aircraft Component : Engine  
Aircraft Reference : X

## Component : 2

Aircraft Component : Fuel Tank Cap  
Aircraft Reference : X  
Problem : Improperly Operated

## Person

Reference : 1  
Location Of Person.Aircraft : X  
Location In Aircraft : Flight Deck  
Reporter Organization : Personal  
Function.Flight Crew : Single Pilot  
Qualification.Flight Crew : Instrument  
Qualification.Flight Crew : Private  
Experience.Flight Crew.Total : 1900  
Experience.Flight Crew.Last 90 Days : 10  
Experience.Flight Crew.Type : 800  
ASRS Report Number.Accession Number : 1554609



## Events

Anomaly.Aircraft Equipment Problem : Critical  
Anomaly.Ground Event / Encounter : Loss Of Aircraft Control  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : Landed in Emergency Condition  
Result.Flight Crew : Took Evasive Action

## Assessments

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

## Narrative: 1

While descending from 2,000 feet MSL through 1,200 feet MSL in a Cessna 185 float equipped airplane for a water landing, the engine suddenly lost all power. I turned on the boost pump and got a quick surge of power. Knowing that I could not make it to the lake, I located a swampy area off to my right side to set down in. I made the landing area and landed just fine, as the plane slowed to around 15 miles per hour, I hit a patch of alder bushes that tripped the bow of the floats causing the plane to pitch up going over on its back. There was no personal injury. [The next day] the plane was flipped back onto the pontoons. There was virtually no hull damage to the aircraft. It was discovered after righting the plane that the left side inboard gas filler cap was off. It is my belief that the filler cap did not get properly secured at the last refueling 55 minutes before the power loss, allowing the fuel to be drawn out of the tank and giving a false high fuel level reading on the left fuel tank. I had a fellow pilot friend helping with the refueling and I only did a visual check to verify the fuel cap was in place and did not climb up on the wing to physically check it. Lesson learned.

## Synopsis

C-185 pilot reported a loss of control during a forced landing following the loss of engine power.

## Time / Day

Date : 201806

Local Time Of Day : 1201-1800

## Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

## Environment

Flight Conditions : VMC

Weather Elements / Visibility : Thunderstorm

## Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : Air Carrier

Make Model Name : EMB ERJ 170/175 ER/LR

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Cruise

Airspace.Class A : ZZZ

## Component

Aircraft Component : Data Processing

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 : Air Transport Pilot (ATP)

ASRS Report Number.Accession Number : 1554409

Human Factors : Time Pressure

## 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 : Air Transport Pilot (ATP)

ASRS Report Number.Accession Number : 1554410  
Human Factors : Time Pressure

## Events

Anomaly.ATC Issue : All Types  
Anomaly.Inflight Event / Encounter : Weather / Turbulence  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : Requested ATC Assistance / Clarification  
Result.Flight Crew : Landed in Emergency Condition  
Result.Flight Crew : Diverted  
Result.Air Traffic Control : Provided Assistance

## Assessments

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

## Narrative: 1

While proceeding to ZZZ and deviating around thunderstorms near the ZZZZZ Intersection, we received significant reroute instructions from ATC. The new clearance was to proceed direct to the VOR, direct ZZZZZ1 Intersection, then via the arrival. The MCDU recalculated the fuel at touchdown to be 2,400 lbs. As this was a few hundred pounds above reserve, and ATC indicated no delays into ZZZ, we elected to continue while closely monitoring the fuel situation. After crossing the VOR, we realized that our calculations on fuel remaining at the destination were not matching the amount being generated by the MCDU. While crossing ZZZZZ1 we checked with ATC again to verify no delays into ZZZ and declared a "minimum fuel" state, but also started planning for a potential diversion into ZZZ1 (as it was the nearest suitable airport) should the fuel state continue to deteriorate per our calculations.

Shortly after crossing ZZZZZ1 we determined that there was no possible way to safely descend via the arrival due to having to fly past ZZZ for an approach to Runway XX. We requested a diversion to ZZZ1, and asked ATC for a direct route to that airport. While proceeding direct to ZZZ1, ATC began vectoring us to the south for traffic. We determined that additional vectors were no longer possible due to our calculated fuel remaining on touchdown state. We requested priority handling to the airport with approximately 2,600 lbs. of fuel on board.

We completed a primarily thrust idle descent to ZZZ1 by the most direct routing possible, and continued actively monitoring the fuel burn vs. amount remaining. We conducted a visual approach to a landing on Runway XXC at ZZZ1. When we touched down, there was approximately 2,300 lbs of fuel on board the aircraft, and the MCDU fuel data was showing that we should expect to landing in ZZZ1 with 2,700+ pounds of fuel. This calculation was off by far more than Figure of Merit (FOM). Upon exiting the runway, we taxied to a location on the airport as directed by ZZZ1 Ground, and contacted Dispatch for further instructions and coordination.

[The cause was a] significant reroute while joining the original arrival into ZZZ, causing an approximately 1,500 lbs change to the arrival fuel. [The] MCDU fuel at destination calculations (which we factored into our initial continue vs. divert assessment) were

definitely inaccurate. This inaccuracy did not become clearly apparent until nearly the point in which we were preparing to descend via the new arrival. I have never seen the MCDU Fuel Data provide such an inaccurate number. I do understand the MCDU data is advisory, and it part of a larger fuel monitoring plan that should be utilized by the flight crew (hence the reason we were using the Flight Program printout and our own calculations to verify the data). Usually when landing, I am within 100 or so lbs. of the MCDU projected landing fuel. The system generally appears to be quite accurate. The First Officer (FO) also indicated that he had never seen a situation like what we were seeing from the computer develop.

I am personally going to increase my "fuel at landing" (or contingency fuel) limitation to something closer to 2,800-3,000 lbs for this particular aircraft should future rerouting ever put me into a similar situation.

It wouldn't hurt to provide a bit of additional ground and or simulator training regarding the Fuel Information provided by the MCDU. Although I feel that we appropriately used the information provided by the computer, and caught this issue by running our own calculations, it would be nice to have a better understanding of how the system generates these numbers.

A simulator training scenario putting pilots into a minimum fuel / emergency fuel state would be very helpful. I would have like to see this situation in a training environment before encountering it in the aircraft.

## Narrative: 2

[Report narrative contained no additional information.]

## Synopsis

EMB-175 flight crew reported that the MCDU (Multipurpose Control Display Unit) provided inaccurate fuel calculation which was far more than FOM (Figure of Merit), causing landing with less than minimum fuel.

## Time / Day

Date : 201806  
Local Time Of Day : 1201-1800

## Place

Locale Reference.Airport : ZZZ.Airport  
State Reference : US  
Altitude.MSL.Single Value : 1500

## Environment

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

## Aircraft

Reference : X  
Aircraft Operator : Personal  
Make Model Name : Skyhawk 172/Cutlass 172  
Crew Size.Number Of Crew : 1  
Operating Under FAR Part : Part 91  
Flight Plan : None  
Mission : Personal  
Flight Phase : Cruise  
Airspace.Class E : ZZZ

## Component : 1

Aircraft Component : Engine  
Aircraft Reference : X  
Problem : Improperly Operated

## Component : 2

Aircraft Component : Fuel  
Aircraft Reference : X  
Problem : Improperly Operated

## Person

Reference : 1  
Location Of Person.Aircraft : X  
Location In Aircraft : Flight Deck  
Reporter Organization : Personal  
Function.Flight Crew : Pilot Flying  
Function.Flight Crew : Single Pilot  
Qualification.Flight Crew : Flight Engineer  
Qualification.Flight Crew : Air Transport Pilot (ATP)  
Qualification.Flight Crew : Multiengine  
Qualification.Flight Crew : Instrument  
Experience.Flight Crew.Total : 10235

Experience.Flight Crew.Last 90 Days : 231  
Experience.Flight Crew.Type : 350  
ASRS Report Number.Accession Number : 1554162  
Human Factors : Situational Awareness

## Events

Anomaly.Aircraft Equipment Problem : Critical  
Anomaly.Deviation - Procedural : Published Material / Policy  
Anomaly.Ground Event / Encounter : Other / Unknown  
Anomaly.Inflight Event / Encounter : Fuel Issue  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : Landed in Emergency Condition

## Assessments

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

## Narrative: 1

I departed for a short flight. Both fuel gauges indicated over one quarter tank of fuel available. Approximately 5-10 minutes into the flight the engine began to surge. I elected to land on a pasture rather than risk the return to the airport. Dipping the fuel tanks prior to departure would have given a better indication of the fuel quantity than the fuel gauges. Though I do not have a lot of hours in the type of aircraft, I've been flying this particular aircraft for over thirty five years and am very familiar with it. I believe this gave me a false sense of security and over confidence in the fuel gauges. I will dip the tanks to get a true reading in all future general aviation flights.

## Synopsis

C172 pilot reported a loss of engine and off field landing due to fuel starvation.