

7/10/2025

FOR YOUR INFORMATION

2025-166/4-6

2241079

To: Airport Manager, Chicago O'Hare Int'l, (ORD), IL, FAA (AGL-600)

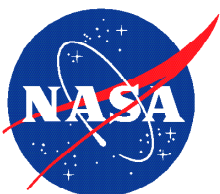
Info: FAA (Director of Air Traffic Operations CSA, AAS-1, AAS-300, ATM ORD Tower, AVP -1, AVP-200, AFS-260, AFS-200, Runway Safety Team), A4A, AAAE, ALPA, AOPA, APA, ASAP, ATSAP, ATSG, CAPA, IATA, ICASS, IFALPA, IPA, NATCA, NBAA, NTSB, RAA, SWAPA

From: Becky L. Hooey, Director
NASA Aviation Safety Reporting System

Re: ORD Runway 22L Navigation Interference

We recently received ASRS reports describing a safety concern that may involve your area of operational responsibility. We do not have sufficient details to assess either the factual accuracy or possible gravity of the report. It is our policy to relay the reported information to the appropriate authority for evaluation and any necessary follow-up. We feel you should be aware of the enclosed deidentified report.

To properly assess the usefulness of our alert message service, we would appreciate it if you would take the time to give us your feedback on the value of the information that we have provided. Please contact Dr. Becky Hooey at (408) 541-2854 or email at becky.l.hooey@nasa.gov.



Aviation Safety Reporting System
P.O. Box 189 | Moffett Field, CA | 94035-0189



ACN 2241079**DATE / TIME**

Date of Occurrence	202504
Local Time Of Day	1201 to 1800

PLACE

Locale	ORD.Airport
State	IL
Altitude - AGL	0

ENVIRONMENT

Weather	Cloudy
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AIRCRAFT / EQUIPMENT X

Make Model Name	Commercial Fixed Wing
Operating Under FAR Part	121

COMPONENT 1

Aircraft Component	AHRS/EFIS
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PERSON 1

Function - Flight Crew	Captain
Function - Flight Crew	Pilot Not Flying
ASRS Report Number	2241079

PERSON 2

Function - Flight Crew	First Officer
Function - Flight Crew	Pilot Flying
ASRS Report Number	2241085

EVENTS

Anomaly	Aircraft Equipment Problem - Less Severe
Detector - Automation	Aircraft Other Automation
Detector - Person	Flight Crew
Result - General	Maintenance Action
Result - Flight Crew	Returned To Gate

NARRATIVE 1

I was the Captain of Flight ABCD from ORD to ZZZ on Day 0. After completing ZZZ1 – ORD, we were assigned a different aircraft to operate Flight ABCD. After closing the main cabin door my headset would not transmit or receive on the intercom or radio. After several minutes of troubleshooting, we had to open the door which meant a return to the gate. Following that return to the gate, we were assigned a new airplane, Aircraft X. Preflight and taxi proceeded as normal.

While holding short of Runway 22L at ORD for departure, we were given a line up and wait clearance for 22L. Once we lined up on the runway and stopped, I handed my First Officer (FO) the controls and I took the radios. Following SOP, both crew members noticed the Captain's Primary Flight Display (PFD) and Multi-function Flight Display (MFD) displaying a red magnetic flag indicating loss of heading on AHRS 1 and loss of Captain's Flight Director (FD) with a red line through the takeoff mode on the Flight Mode Annunciator (FMA). My FO's flight instruments were normal. At the same time this was noticed, ATC gave us a takeoff clearance. After both crew members agreed to not take off, my FO informed ATC we were unable to depart and we needed to pull off the runway and contact Maintenance.

Right after we pulled off the runway, Aircraft Y also cancelled their takeoff and pulled off the runway. My FO asked over the radio if they had lost their heading indication as well and they did. As directed by Maintenance, I wrote this event up in the log as a discrepancy for rejected takeoff (despite not beginning the takeoff roll at any point) due to the red magnetic flag on Captain's PFD and MFD. Both Aircraft Y and our flight returned to the gate. After landing check was accomplished and all SOP procedures were followed for returning to the gate and writing up the discrepancy.

Upon returning to the gate, Maintenance performed an operations check of Aircraft X's AHRS system and it passed the operations check. The plane was signed off and we were good to attempt the flight again. Preflight and taxi to the runway proceeded normally and per SOP procedures. However, once we lined up on 22L at ORD for departure again following a line up and wait clearance, the same exact thing happened only seconds after lining up on 22L. The Captain's PFD and MFD both displayed the red magnetic flag, no FD, and a red line through the takeoff mode on the FMA. This time, my FO informed ATC we would not be able to take off before ATC issued a takeoff clearance. Returning to the gate again, the after landing check was accomplished and all SOP procedures were followed for returning to the gate and writing up the discrepancy.

On the way back to the gate, Dispatch sent us an ACARS which we received once we already got to the gate asking us to try to depart on a different runway. There were two concerns I had with doing this. First, both the FO and I were now past our normal duty limit and flying into our 2-hour extension which we both accepted. While neither of us were fatigued, we would time out of our flight duty period at XB:45 and it was XA:15 at the time of taxiing back to the gate. I did not believe we would have enough time to complete the flight at this point without exceeding the time. The second concern I had is if we continued through with departing, we would have departed with a known discrepancy with AHRS 1. Per SOP procedures I felt the proper course of action per procedures and with the best interest of the safety of the flight was to log the discrepancy and return to the gate.

After the second return to the gate, I briefed the passengers face-to-face from the Flight Attendant (FA) PA to advise them of what happened and why we returned to the gate twice for the same issue. The passengers appreciated it, and this seemed effective at reducing passenger frustration.

Prior to this flight, I have never once experienced a complete loss of heading on either AHRS system when departing from Runway 22L at ORD.

I am filing a report because I believe there is an issue with 22L significantly affecting flight instruments which can cause safety of flight issues. As of now, I have not found guidance that allows us to take off with a red magnetic flag and no FD on the PFD. If anything, taking off with no FD and a red magnetic flag violates SOP procedures.

One thing I would have done differently is asked for a different runway for departure on the second taxi out in Aircraft X. Besides that, I believe my FO and I made the most conservative decisions for prioritizing safety and following our procedures.

NARRATIVE 2

The contents of this report cover two gate returns of Flight ABCD for the same issue, discussed chronologically for each departure attempt with an effort to avoid redundancy.

Cleared to line-up-and-wait on 22L at ORD, Aircraft X was taxied onto the centerline and brought to a stop. The Captain transferred controls to me, and the aircraft was held in position. As we cross-checked the instruments, the left Primary Flight Display (PFD) displayed red "magnetic" and "Flight Director (FD)" flags. Tower provided a takeoff clearance, which we immediately refused, citing a magnetometer loss, and stating

that we would need to pull off of the runway and troubleshoot. The aircraft remained stopped on the runway centerline until the Tower instructed us where to move. No takeoff thrust was added, and the aircraft never moved forward on the runway. Aircraft control was transferred back to the Captain, and we exited the runway as instructed. The exact location of the aircraft when the abnormality occurred was on the centerline of 22L with the full aircraft body inside of the painted threshold markings.

Once clear of the runway, the parking brake was set and Maintenance Control was reached by phone. Our discussion resulted in a decision to return to the gate for two reasons: a takeoff clearance was rejected, and a maintenance discrepancy had presented itself in the form of a magnetometer failure. Despite the sign near the 22L departure end mentioning to check compass due to possible extreme magnetic deviation, a total loss of heading data on one side of the airplane – when unbriefed and unexpected and no procedure to mitigate – is not acceptable to begin a takeoff roll with. The Captain and I were in full agreement on this point. The next plane after us in line for takeoff on 22L, Aircraft Y, reported the same issue, and also returned to the gate.

Once at the gate, we were met by Maintenance. The discrepancy logged read approximately: aborted takeoff due to red “magnetic” and “FD” flags on left-side PFD when positioned on runway centerline. The Mechanic cleared the discrepancy by performing an operations check of the left AHRS and standby heading indication, with no defects noted. Being satisfied that the appropriate maintenance action had been completed and the aircraft being returned to service, we refueled before departing the gate for departure.

Again, once at Runway 22L, a line-up-and-wait clearance was given, and the aircraft was brought to a stop on the runway centerline, in the exact spot as our previous attempt: on the centerline, with the full body of the aircraft inside of the threshold markings. Control was transferred to me, and within a few seconds the left-side PFD showed red “magnetic” and “FD” flags. As before, we pulled off the runway. The only difference with this attempt was that we were able to tell the Tower we had an issue before they provided a takeoff clearance, so in this case there was no denial of a takeoff clearance.

Clear of the runway with the parking brake set, Maintenance Control was again consulted via phone. Some disagreement was expressed on whether a gate return was necessary since there was no rejection of a takeoff clearance. However, the ultimate decision made by the flight crew was that a maintenance discrepancy once again presented itself, and a maintenance procedure was necessary to clear it. A gate return was imminent, and taxiing to a different runway for departure would not be acceptable given the discrepancy we observed.

The discrepancy logged after the second gate return read approximately: left-side PFD and Multi-Function Flight Display (MFD) displayed red “magnetic” and “FD” flags on runway centerline. The Captain and I had reached our duty limit for the day, so once the passengers were deplaned we left the aircraft with the above discrepancy open in the logbook.

SYNOPSIS

Air carrier flight crew reported that the left side PFD and MFD malfunctioned at the same location on Runway 22L at ORD during two takeoff attempts. Another aircraft experienced a similar issue at same location.