KOMITE NASIONAL KESELAMATAN TRANSPORTASI
REPUBLIC OF INDONESIA

FINAL

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Aircraft Serious Incident Investigation Report

PT. ASI Pudjiastuti Aviation (Susi Air)

Cessna 208B; PK-BVE

Yuvai Semaring Airport, Long Bawan, North Kalimantan

Republic of Indonesia

24 May 2022

2024

This Final Report is distributed parties relevant to the investigation by the Komite Nasional Keselamatan Transportasi (KNKT), whose address is on the Transportation Building, 3rd Floor, Jalan Medan Merdeka Timur No. 5 Jakarta 10110, Indonesia.

The report is based upon the investigation carried out by the KNKT. It is in accordance with Annex 13 to the Convention on International Civil Aviation, the Indonesian Aviation Act (UU No. 1/2009) and Government Regulation (PP No. 62/2013).

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Jakarta, 11 November 2024
KOMITE NASIONAL
KESELAMATAN TRANSPORTASI
CHAIRMAN

SOERJANTO TJAHJONO

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ABBREVIATIONS AND DEFINITIONS

ACL	:	Authorization Condition & Limitation
AIP	:	Aeronautical Information Publication
AIS	:	Aeronautical Information Services
AM	:	Aerodrome Manual
AOC	:	Air Operator Certificate
ARB	:	Area Reference Booklet
ARO	:	Aeronautical Reporting Officers
ARP	:	Aerodrome Reference Point
ATS	:	Air Traffic Services
BMKG	:	*Badan, Meteorologi, Klimatologi dan Geofisika* (the Bureau of Meteorology, Climatology and Geophysics of Indonesia)
C of A	:	Certificate of Airworthiness
C of R	:	Certificate of Registration
CASR	:	Civil Aviation Safety Regulation
CPL	:	Commercial Pilot License
DGCA	:	Directorate General of Civil Aviation Indonesia
DOA	:	Directorate of Airport
FISO	:	Flight Information Service Officer
GPS	:	Global Positioning System
ICAO	:	International Civil Aviation Organization
IFR	:	Instrument Flight Rules
KNKT	:	*Komite Nasional Keselamatan Transportasi* (is the Indonesia Independent Investigation Authority also known as National Transportation Safety Committee/NTSC)
LT	:	Local Time
MOS	:	Manual of Standard
OM	:	Operation Manual
PF	:	Pilot Flying
PIC	:	Pilot in Command
PM	:	Pilot Monitoring
SD	:	Secure Digital
SI	:	Staff Instruction
SIC	:	Second in Command
UTC	:	Universal Time Coordinate

SYNOPSIS

On 24 May 2022, a Cessna 208B aircraft registered PK-BVE was being operated by PT. ASI Pudjiastuti Aviation (Susi Air) for an unscheduled passenger flight. At 0958 LT, on a daylight condition, the aircraft departed from Malinau to Yuvai Semaring with 12 passengers on board and cruised at altitude of 6,500 feet. In this flight, the Pilot in Command (PIC) acted as Pilot Flying (PF) and the Second in Command (SIC) acted as Pilot Monitoring (PM).

About 10 Nm from Yuvai Semaring, the PM made initial contact with the Yuvai Semaring Flight Information Service Officer (FISO) and was informed of the meteorological information, including the visibility of Yuvai Semaring, which was 5 Km. The FISO also advised that the runway in use was Runway 22 and provided traffic information. When the aircraft was on long final for Runway 22, the PM reported to the FISO and was advised that Runway 22 was clear.

At 1025 LT, the aircraft landed using Runway 22 and making 180° turn maneuver to vacate the runway via Taxiway C. While taxiing to the apron, the PIC discussed with the SIC regarding the aircraft parking position as the PIC has not flown to Yuvai Semaring for eight months. The SIC informed the PIC that the parking area supposed to be near the terminal area. The PIC decided to taxi the aircraft close to the apron edge line and to park the aircraft near to the terminal building with intention to comfort the passenger disembarkation and provide sufficient space for the next arriving aircraft.

During the taxi maneuver to the apron the aircraft's left-wing leading edge colliding with the apron floodlighting pole. No one was injured in this occurrence and the aircraft was slightly damaged.

The investigation determined no issues related to aircraft system malfunction or health of the pilots was reported prior to the occurrence. The weather was also clear with a visibility of five kilometers, as confirmed by both pilots. The investigation highlighted safety issues related to pilot awareness, aeronautical information, and aerodrome oversight activities. The KNKT concluded the contributing factors as follows:

- inconspicuous coloring of the floodlighting pole and the lack communication related to the existence of the pole reduced the pilot situational awareness towards the obstacle;
- the reduced pilot situational awareness towards obstacle and lack of taxiway guidance markings on the apron with intention to park close to the terminal building resulted in the aircraft maneuver was too close to the obstacle.

KNKT acknowledged the safety actions taken by aircraft operator and airport operator. The safety actions were considered relevant for improving safety. However, there were still safety issues that need to be addressed. Therefore, KNKT issues safety recommendations to the airport operator and the civil aviation authority.

1 FACTUAL INFORMATION

1.1 History of the Flight

On 24 May 2022, a Cessna 208B aircraft registered PK-BVE was being operated by PT. ASI Pudjiastuti Aviation (Susi Air) for an unscheduled passenger flight. The flight plan of the day for both the aircraft and the pilots was from Malinau[1] – Tarakan[2] – Malinau – Yuvai Semaring[3] – Nunukan[4] – Yuvai Semaring – Malinau.

At 0000 UTC (0800 LT[5]), the aircraft departed from Malinau to conduct the first planned flight of the day. The flight to Tarakan and the return to Malinau were uneventful.

At 0958 LT, in daylight conditions, the aircraft departed from Malinau to Yuvai Semaring with 12 passengers on board and cruised at altitude of 6,500 feet. In this flight, the Pilot in Command (PIC) acted as Pilot Flying (PF) and the Second in Command (SIC) acted as Pilot Monitoring (PM).

During cruising, the pilots received broadcast information from another pilot which was flying from Tanjung Selor[6] to Yuvai Semaring with a similar estimated time of arrival. The incoming pilot decided to slow down the aircraft, and PK-BVE became the first in the sequence to land in Yuvai Semaring.

About 10 Nm from Yuvai Semaring, the PM made initial contact with the Yuvai Semaring Flight Information Service Officer (FISO) and was informed of the meteorological information, including the visibility of Yuvai Semaring, which was 5 Km. The FISO also advised that the runway in use was Runway 22 and provided traffic information. When the aircraft was on long final for Runway 22, the PM reported to the FISO and was advised that Runway 22 was clear.

At 1025 LT, the aircraft landed using Runway 22 and performed a 180° turn maneuver to vacate the runway via Taxiway C. During the landing roll, both pilots of PK-BVE heard the incoming aircraft pilot reporting to the FISO that the aircraft was on long final. Both pilots of the PK-BVE considered that the distance of the aircraft on long final to land would provide sufficient time for PK-BVE to vacate the runway and a higher taxi speed was not required.

While taxiing to the apron, the PIC was aware that there was no taxiway centerline nor aircraft parking stand markings as taxi guidance to park the aircraft on the apron. The PIC discussed with the SIC regarding the aircraft parking position as the PIC had not flown to Yuvai Semaring for eight months. The SIC informed the PIC that the parking area was supposed to be near the terminal building. The PIC decided to taxi the aircraft close to the apron edge line and park it near the terminal building with the intention of facilitating passenger disembarkation and providing sufficient maneuvering and parking space for the next arriving aircraft.

[1] Malinau in this report is referred to Robert Atty Bessing Airport (WAQM).
[2] Tarakan in this report is referred to Juwata International Airport (WAQQ).
[3] Yuwai Semaring in this report is referred to Yuvai Semaring Airport (WAQJ), Long Bawan.
[4] Nunukan in this report is referred to Nunukan Airport (WAQA).
[5] The 24-hours clock in Local Time (LT) is used in this report to describe the local time as specific events occurred. Local time is Universal Time Coordinated (UTC)+7 hours.
[6] Tanjung Selor in this report is referred to Tanjung Harapan Airport (WAGD).

During the taxi to the intended parking area, the pilot did not see any other aircraft or obstruction in the taxi path. Both pilots focused ahead of the taxi path, and the PIC sometimes observed the surface of the taxi path.

The aircraft maneuver is illustrated by blue dotted line in Figure 1. At the intersection of Taxiway C and the apron, the aircraft turned left and taxied along the northwest side of the apron. As the aircraft passed taxiway B and about to reach the intersection of apron and Taxiway A, it executed a 90° right turn. Thereafter, the aircraft made another 90° right turn to the southeast of the apron with intention of positioning the aircraft facing northwest direction on the south side of the apron. During the second 90° right turn, the left-wing leading edge impacted an apron floodlighting pole. The aircraft stopped, and the PF shut down the engine. The passengers then disembarked.

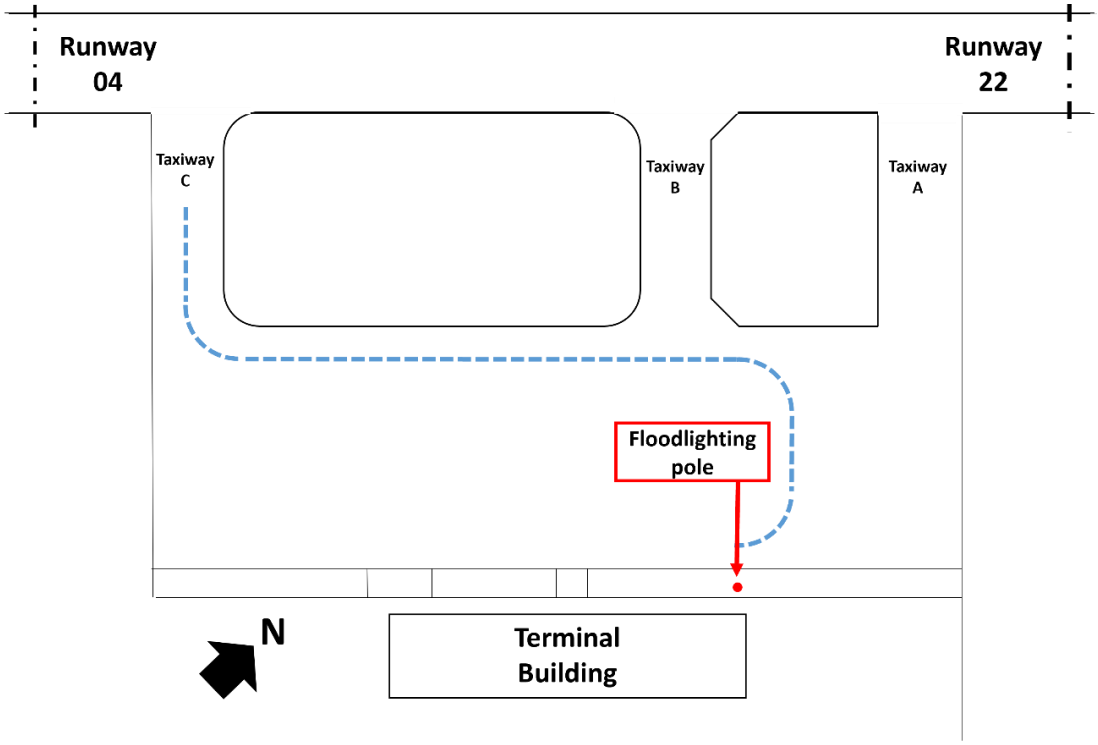

Figure 1: The illustration of the aircraft maneuver – not to be scaled

1.2 Injuries to Persons

No injuries to persons as a result of this occurrence.

1.3 Damage to Aircraft

The aircraft was slightly damaged.

1.4 Other Damage

No other damage to property and/or the environment was reported as result of this occurrence.

1.5 Personnel Information

1.5.1 Pilot in Command

The PIC was Indonesia nationality and held a valid Commercial Pilot License (CPL), qualified as single engine land aircraft pilot. The PIC also held valid Class I medical certificate without any medical limitations.

The PIC had a total flying time of 2,670.1 hours, including 2,518.1 hours on Cessna 208B aircraft. On the day of the occurrence, the pilot had flown for 1.2 hours prior to the occurrence.

On 11 February 2021, the PIC conducted route familiarization of Yuvai Semaring route with an experienced captain pilot before being released as PIC to fly to Yuvai Semaring. The total flying experience of the pilot at Yuvai Semaring was 98 landings. The pilot's last flying experience to Yuvai Semaring before the occurrence was on 4 September 2021. The PIC did not receive any information regarding the apron floodlighting pole, which was built on 23 September 2021.

The last proficiency check for the PIC was conducted on 5 March 2022, and the result was satisfactory without any remarks.

1.5.2 Second in Command

The SIC was Uruguay nationality and held a valid Commercial Pilot License (CPL), qualified as single engine land aircraft pilot. The SIC also held valid Class I medical certificate without any medical limitations.

The SIC had a total flying time of 1,273.4 hours, including 196 hours on Cessna 208B aircraft. The SIC had flown for 1.2 hours prior to the occurrence. The SIC had completed 32 landings at Yuvai Semaring. The SIC last flying experience to Yuvai Semaring before the occurrence was on 6 May 2022. The SIC was aware of the existence of the apron floodlighting pole.

The SIC underwent initial and Cessna 208B training as mandated by the aircraft operator's procedures. Training concluded on 18 January 2021, and the performance assessment during the company proficiency check proved satisfactory.

1.6 Aircraft Information

The Cessna 208B, serial number C208B2142, was manufactured by Cessna Aircraft Company, United States of America in 2009. The aircraft was registered as PK-BVE and had valid Certificate of Airworthiness (C of A) and Certificate of Registration (C of R).

The aircraft's total hour since new was 13,761.2 hours, and the total cycles was 17,343 cycles. The engine installed on the aircraft was PT6A-114, manufactured by Pratt & Whitney, with serial number of PCE-PC1615. The engine's total time since new was 9961.3 hours.

On the day of the occurrence, the aircraft was airworthy when dispatched for the flight and operated within the weight and balance envelope.

1.7 Meteorological Information

The meteorological report published by the *Badan Meteorologi Klimatologi dan Geofisika* (Bureau of Meteorology, Climatology and Geophysics) indicated that the airport visibility at 0200 UTC (1000 LT) was 5 km and at 0300 UTC (1100 LT) was 8 km. According to both pilots' recollection, the visibility of the apron area was clear.

1.8 Aids to Navigation

The aircraft operator provided the pilot with a route guidance booklet which included guidance to fly from Malinau to Yuvai Semaring. The guidance was intended for internal use only and contained route information, waypoint coordinates to be set in the Global Positioning System (GPS), minimum fuel requirements on departure, list of alternate aerodromes and notes for the pilot. The notes for Yuvai Semaring advised the pilot to be aware of windshear in the arrival area and a high volume of arrival flights from other aircraft companies.

1.9 Communications

All communications between the FISO and the pilot were recorded by ground based automatic voice recording equipment. The quality of the aircraft's recorded transmissions was excellent, with no discernible issues. The recorded communication between FISO and the pilot indicated that prior to landing, the FISO advised the pilot that the runway was clear. After the aircraft landed, the FISO advised the landing time and the taxi information to the pilot. The taxi information was limited to the taxiway that can be used to vacate the runway, without any additional information of the aircraft parking area nor the existence of the apron floodlighting pole.

1.10 Aerodrome Information

The following information about Yuvai Semaring was taken from the Aeronautical Information Publication (AIP) Volume III chapter WAQJ AD:

Aerodrome Reference Point (ARP) Coordinate	:	03°53'00" N; 115°42'00" E
Elevation	:	2,540 feet
Runway Designation Number	:	04 – 22
Runway Length	:	1,600 meters
Runway Width	:	30 meters
Surface	:	Asphalt

The AIP Volume III chapter WAQJ AD 2 - 2 (Aerodrome Geographical and Administrative Data) contained the same ARP coordinate as the airport certificate issued by the DGCA in 2016. However, based on Google Earth, the ARP's coordinates were located about 1 Nm southeast of the actual airport location.

The airport has three paved taxiways named Taxiway A, B and C connecting the runway and the apron as illustrated by Figure 1. The apron did not have taxi guidelines that could provide guidance for taxiing from the runway centerline to the aircraft stands.

The apron was equipped with an apron floodlighting as shown in Figure 2, which was built on 23 September 2021. The floodlighting pole was situated near the terminal building at coordinates 3°54'7.32"N 115°41'35.94"E. The distance between the floodlighting pole and the apron edge line was about 4.5 meters, with a height of 15 meters. The pole's color was similar with the color of the terminal building.

Figure 2: The floodlighting pole

The AIP Volume III chapter WAQJ AD 2 - 10 (Aerodrome Obstacles) provided obstacles information for the airport and the information in Area 3[7] was stated NIL. The information of floodlighting pole was not included in the AIP.

1.11 Flight Recorders

The aircraft was not fitted with a flight data recorder or cockpit voice recorder. Neither recorder was required by current Indonesian aviation regulations for this type of aircraft.

The aircraft was equipped with Garmin G1000 GPS, which has the capability of data logging to store various flight information on a Secure Digital (SD) data card. During the occurrence flight, the SD data card was not installed in the GPS.

1.12 Wreckage and Impact Information

The impact of the left-wing leading edge with the floodlighting pole is shown in Figure 3.

[7] According to the Civil Aviation Safety Regulation Part 175, Area 3 is defined as the area bordering an aerodrome movement area that extends horizontally from the edge of a runway to 90 m from the runway center line and 50 m from the edge of all other parts of the aerodrome movement area.

Figure 3: The left-wing leading edge impacted floodlighting pole

The outer surface of the left-wing leading edge was dented, as shown by Figure 4, between the wing sections 276.24 to 308.00.

Figure 4: The damaged of the left-wing leading edge

The following damage location, as shown by Figure 5, was illustrated by KNKT using a typical drawing of Cessna 208 Series taken from the Cessna Model 208 Series Maintenance Manual.

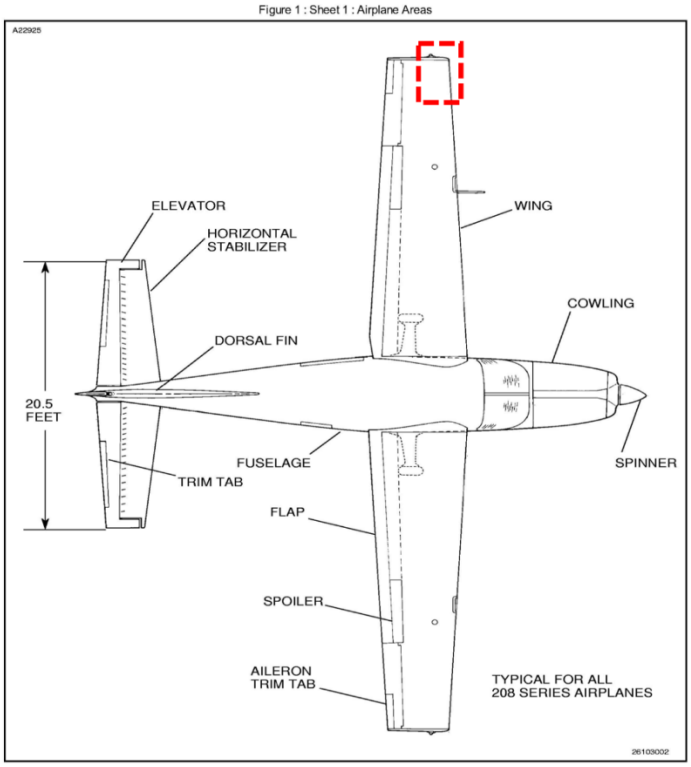

Figure 5: The damaged location of the left-wing leading edge

1.13 Medical and Pathological Information

No medical or pathological investigations were conducted as a result of this occurrence, nor were they required.

1.14 Fire

There was no evidence of post-impact fire.

1.15 Survival Aspects

The pilot shut down the engine, after which the pilots, crew, and passengers disembarked from the aircraft on their own.

1.16 Tests and Research

No tests or research were required to be conducted as a result of this occurrence.

1.17 Organizational and Management Information

1.17.1 Aircraft Operator

The aircraft was operated by PT. ASI Pudjiastuti Aviation (Susi Air), which held a valid Air Operator Certificate (AOC) number 135-028. Susi Air was authorized to conduct air transportation carrying passengers and cargo in scheduled and non-scheduled operations, in compliance with Civil Aviation Safety Regulation (CASR) Part 135. Susi Air developed operation manuals (OM) which contain policies and procedures approved by the Directorate General of Civil Aviation (DGCA).

1.17.1.1 Airport Aeronautical Data Provided to Pilot

According to the Authorization, Condition and Limitations (ACL) issued by the DGCA, Susi Air was approved to use several sources of airport aeronautical data, including the AIP and company's area reference booklet.

The Operation Manual Part C (OM-C), which provides area, route and aerodrome information, described that the Susi Air primarily uses Area Reference Booklet (ARB) issued by the company. The ARB provided pilots with information on local areas of flight, including reference to airport details and any other relevant information deemed useful or suitable for the flight operations.

The airport aeronautical information for Yuvai Semaring in the ARB contained information of runway designation number, length, slope, and airport elevation. The ARB did not include any information concerning the floodlighting pole.

1.17.2 Airport Operator

Yuvai Semaring Airport, Long Bawan, was operated by the *Unit Pelaksana Bandar Udara* (Technical Operating Unit) of DGCA. The airport operation was overseen by the Directorate of Airport (DOA) of DGCA.

The Yuvai Semaring Aerodrome Manual (AM) dated 25 June 2015, in Chapter 3 specifies the aerodrome geographical data that should be reported to the AIS. This includes the coordinates of the aerodrome reference point, runway information, and terrain and obstacle information in the vicinity of the aerodrome. According to Chapter 4 of the AM, the reporting task was the responsibility of the airport personnel who were appointed as Aeronautical Reporting Officer (ARO).

AM Subchapter 4.1.4 mentions that any new obstacles should be detected during daily inspections. The responsibility for conducting inspections in the movement area and obstacle limitation surface lies with Airport Infrastructure Engineering personnel, as specified in Chapter 4.2.2. These detected obstacles should then be reported to the ARO of the airport to be forwarded to the AIS.

AM Chapter 4.1.4 also requires that the ARO receives training related to the following matters in order to effectively carry out the reporting procedure:

- knowledge of the physical characteristics of airport movement areas, obstacle limitation surfaces, markings, signs, lighting, and airport safety facilities;
- knowledge of aerodrome information contained in the AIP.

There is no requirement for Airport Infrastructure Engineering personnel to receive such training related to obstacle identification.

In 2015, the airport operator appointed two airport officers as ARO. About a year prior to the occurrence, all of them were no longer working as dedicated ARO of the airport, and since then the airport did not have dedicated personnel to conduct the reporting procedure.

1.17.4 Civil Aviation Authority

Civil aviation in Indonesia is regulated and overseen by DGCA under the Ministry of Transportation. The DGCA includes several directorates, one of which is the Directorate of Airport (DOA) that is responsible for formulating regulations related to airports, supervising aerodrome operations, and issuing aerodrome certificates.

The audit for the certificate extension of Yuvai Semaring Airport was conducted virtually from 2 to 4 February 2022 due to COVID 19 pandemic. During the audit, the DOA identified the absence of taxiway centerlines and apron markings. This finding was classified as non-compliance[8] and needed to be rectified within two months. The audit results also indicated that there were no findings regarding obstacles at the airport.

For the oversight activities, the DOA uses the guidance of Staff Instruction (SI) 139-01 which contains a checklist for the implementation of certification, registration and supervision of airport operations. The checklist did not include an item to ensure that the airport operator has a procedure to identify and measure the geographical coordinates of obstacles in Area 3.

The DGCA inspector's methodology for ensuring the availability of data and information that must be reported to AIS and included in the AIP relied on comparing the information written in the aerodrome manual with the AIP data. If the data matched, the DGCA inspector would assume that all required data/information had been appropriately forwarded to the AIS.

1.17.4.1 Regulation on Taxiway Center Line Marking

Civil Aviation Safety Regulation (CASR) Part 139 described the detail of operational and technical standard for aerodrome. It was contained in the Manual of Standard CASR Part 139 Volume I (MOS 139).

MOS 139[9] subchapter 5.2.8 requires paved taxiways and aprons to be marked with taxiway center line marking in such a way as to provide continuous guidance between the runway center line and aircraft stands.

1.17.4.2 Regulation on Aerodrome Obstacle

MOS 139 Volume 1 Chapter 6.2.3.1 stated that all fixed objects to be marked shall, whenever practicable, be colored, but if this is not practicable, markers or flags shall be displayed on or above them, except that objects that are sufficiently conspicuous by their shape, size or color need not be otherwise marked.

CASR Part 175: Aeronautical Information Services[10] Subpart 175.220 defines Area 3 as the area bordering an aerodrome movement area that extends horizontally from the edge of a runway to 90 meters from the runway center line and 50 meters from the edge of all other parts of the aerodrome movement area as illustrated by Figure 6. As defined by CASR Part 175, movement area is the part of an aerodrome used for the take-off, landing, and taxiing of aircraft, consisting of the maneuvering area and the apron(s).

[8] Non-compliance, as defined by SI 139, refers to a finding of non-adherence to regulatory provisions and requires follow-up actions.
[9] The MOS 139 in this report is referred to the Director General of Civil Aviation Regulation No. 326 of 2019.
[10] The CASR Part 175 in this report is referred to Ministry of Transportation Regulation No. 111 of 2018.

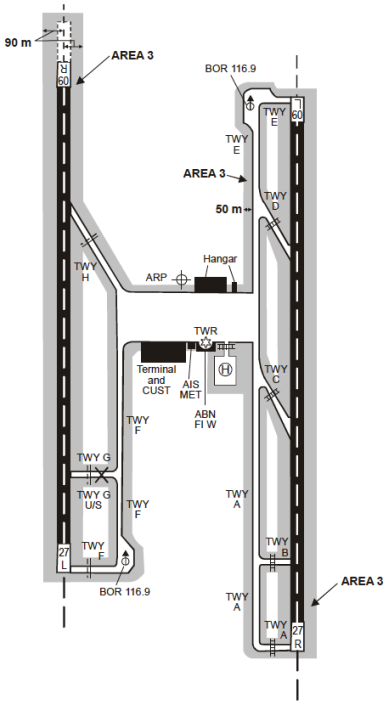

Figure 6: The typical of Area 3 of an aerodrome

CASR Part 175 Appendix A-3 point 3 describes that all terrain and obstacles within the horizontal spatial extent of Area 3 that extend more than 0.5 meters above the horizontal plane passing through the nearest point on the aerodrome surface movement area may be hazardous for surface movement and must be surveyed and stored on the aerodrome mapping database.

MOS 139 Chapter 2.2.5 states that the geographic coordinates of obstacles in Area 3 must be measured and reported to Aeronautical Information Service (AIS) in degrees, minutes, seconds, and tenths of a second. Additionally, the type, markings, lighting (if any), and elevation of the obstacle must be reported to Aeronautical Information Service (AIS).

CASR 139 Subpart 139.075 requires airport operators to appoint one or more Aeronautical Reporting Officers (ARO). The officers are responsible for providing the AIS provider with updated aeronautical information whenever there are changes at the aerodrome and ensuring the accuracy and correctness of aeronautical data and information included in the Aeronautical Information Publication (AIP).

1.18 Additional Information

There was no other factual information that was relevant to the circumstances leading up to the occurrence.

1.19 Useful or Effective Investigation Techniques

The investigation was conducted in accordance with the KNKT approved policies and procedures, and in accordance with the standards and recommended practices of Annex 13 to the Chicago Convention.

2 ANALYSIS

Based on the factual information gathered during the investigation, no issues related to aircraft system malfunction or health of the pilots was reported prior to the occurrence. The weather was also clear with a visibility of five kilometers, as confirmed by both pilots. Therefore, the analysis will not address aircraft system, medical concerns, or weather conditions. The analysis highlighted safety issues related to pilot awareness, aeronautical information, and aerodrome oversight activities.

2.1 Pilot Awareness

During the flight to Yuvai Semaring, the Pilot in Command (PIC) acted as Pilot Flying (PF), which included controlling the aircraft during the taxi maneuver.

The PIC had not flown to Yuvai Semaring since before the installation of the apron floodlighting pole and did not receive any information about its existence. There was also no aeronautical publication which included information of the floodlighting pole at Yuvai Semaring. The SIC possessed more recent experience at Yuvai Semaring and was aware of the presence of the floodlighting pole.

While taxiing to the apron, the PIC discussed the aircraft parking position with the SIC, given that the PIC had not flown to Yuvai Semaring for eight months. The SIC informed the PIC that the parking area was supposed to be near the terminal. During the discussion, the SIC did not convey the information of the new floodlighting pole to the PIC, assuming that the PIC was already familiar with the updated layout of the apron. The SIC did not also expect that the taxi maneuver would be too close to the pole, assuming that the pole would be visible to the PIC. The assumption highlights a potential complacency in communication practices, where critical information is overlooked or assumed rather than explicitly communicated.

Knowing there were no taxi guidance markings to park the aircraft on the apron, the PIC aimed to park the aircraft close to the terminal building to facilitate passenger disembarkation and provide space for other arriving aircraft. The PIC decided to taxi the aircraft close to the apron edge line.

Despite the regulation stated on MOS 139 that all fixed objects should be marked whenever practicable, the apron floodlighting pole was not marked with a distinctive color, making it less conspicuous. Its color blended with the building behind it, creating a visual hazard, especially for pilots unfamiliar with its presence. The absence of information regarding the apron floodlighting pole and the lack of visual cue meant the PIC was unaware of the new obstacle.

During the taxi maneuver, both pilots focused on the path ahead. However, the PIC's unawareness of the pole reduced his situational awareness. Additionally, without taxiway guidance markings, the pilot maneuvered the aircraft based on their judgment. The unawareness of the obstacle and the intention to park close to the terminal building caused the final right turn towards the intended parking position to be too close to the apron floodlighting pole, resulting in the aircraft’s left-wing leading edge colliding with the pole.

2.2 Aeronautical Information

The Civil Aviation Safety Regulation (CASR) Part 175 defines Area 3 as the area bordering an aerodrome movement area that extends horizontally from the edge of a runway to 90 meters from the runway center line and 50 meters from the edge of all other parts of the aerodrome movement area. As defined by CASR Part 175, movement area is the part of an aerodrome used for the take-off, landing, and taxiing of aircraft, consisting of the maneuvering area and the apron(s). An object in Area 3 is considered an obstacle if it extends 0.5 meters (0.5 m) or more above the horizontal plane passing through the nearest point on the aerodrome movement area. According to MOS 139 Vol 1, any obstacles in Area 3 should be measured by the airport operator and reported to the Aeronautical Information Service (AIS) to be included in the Aeronautical Information Publication (AIP).

A 15-meter-high apron floodlighting pole, situated near the terminal building and approximately 4.5 meters from the apron edge line, falls within Area 3 as defined by CASR Part 175 and is considered an obstacle for surface movement. However, the obstacle data in Area 3 for Yuvai Semaring, provided in AIP Volume III subsection WAQJ AD, was stated as NIL. This statement misled users of the AIP to believe there were no obstacles in Area 3 of Yuvai Semaring.

CASR Part 139 requires airport operators to appoint one or more Aeronautical Reporting Officers (ARO) to report known obstacles within the aerodrome area to the Aeronautical Information Service (AIS) provider or Air Traffic Services (ATS) provider. It also mandates that the airport operator ensures the appointed officers understand and can perform the procedures for reporting aeronautical information.

The Yuvai Semaring Aerodrome Manual (AM) specifies that any new obstacles should be detected during daily inspections by Airport Infrastructure Engineering personnel. These known obstacles should then be reported to the Yuvai Semaring ARO to be forwarded to the AIS. However, the airport operator lacked dedicated resources to conduct this reporting procedure. The AM did not specify the requirement for Airport Infrastructure Engineering personnel to receive training in obstacle identification and the types of aeronautical information to be included in the AIP. This training was only mandated for AROs, creating a gap in knowledge between the personnel who conduct inspections of obstacle in the movement area, and the AROs responsible for forwarding this information to the AIP. Additionally, there was no detailed procedure for inspecting obstacles in Area 3. These discrepancies led to new obstacles in this area not being identified and reported, as the personnel conducting the inspections may not be aware of the specific requirements for Area 3 obstacles.

The lack of resources and the gap in operational procedures made the airport operator unable to identify the new apron floodlighting as an obstacle that must be included in the AIP.

2.3 Safety Oversight

Prior to the occurrence, from 2 to 4 February 2022, the Directorate General of Civil Aviation (DGCA) conducted an audit as part of the airport certificate renewal. Due to the COVID-19 pandemic, the audit was conducted virtually. This audit highlighted the absence of taxiway centerlines and apron markings but overlooked the omission of information regarding the new apron floodlighting as an Area 3

obstacle in the AIP, as well as the absence of markers or flags on the floodlighting pole.

From 16 to 20 May 2022, the DGCA conducted on-site safety inspections for Yuvai Semaring Airport operations. During this inspection, the inspector checked the data and information that must be forwarded to the AIS. However, it did not include inspections on the availability of markings in the movement area or on fixed objects. The absence information of the new apron floodlighting as an Area 3 obstacle in the AIP was also not identified during this safety inspection.

The oversight checklist described in the Staff Instruction (SI) 139-01 did not include an item to ensure the airport operator had procedures to identify and measure the geographical coordinates of obstacles in Area 3. This omission led to the Yuvai Semaring airport operator lacking a procedure to identify and measure any obstacles in Area 3. Since the apron floodlighting pole was not identified as an obstacle, it was exempted from the requirement to have markers or flags.

The DGCA inspector's methodology to ensure the availability of data/information that must be reported to AIS and included in the AIP was relied on comparing the information written in the aerodrome manual with the AIP data. If the data matched, the DGCA inspector would assume that all required data/information had been appropriately forwarded to the AIS. This approach provided no assurance for identifying Area 3 obstacles and considered insufficient in identifying the absence information about the new apron floodlighting as an Area 3 obstacle in the AIP.

The oversight activities identified the absence of taxiway centerlines and apron markings. This finding was classified as non-compliance which had to be rectified within two months. However, until the day of the occurrence (three months later), the investigation did not find any follow-up action taken by the airport operator nor a reminder from the DGCA regarding the absence of taxiway centerlines and apron markings. This absence of follow-up action led to the continuation of airport operations without taxiway centerlines and apron markings until the day of the occurrence.

The inadequate oversight checklist and lack of follow-up on non-compliance revealed the deficiencies in oversight practices which compromised the safety assurance of airport operations.

3 CONCLUSIONS

3.1 Findings

The findings are statements of all significant conditions, events or circumstances in the accident sequence. The findings are significant steps in the accident sequence, but they are not always causal, or indicate deficiencies. Some findings point out the conditions that pre-existed the accident sequence, but they are usually essential to the understanding of the occurrence, usually in chronological order.

In this occurrence, the KNKT identified several findings as follows:

1. On the day of the occurrence, the aircraft was airworthy when dispatched for the flight and operated within the weight and balance envelope.
2. Around the time of the occurrence, visibility at the airport and apron was clear.
3. The aircraft was not equipped with a flight data recorder or cockpit voice recorder, as neither recorder was required by current Indonesian aviation regulations for this type of aircraft.
4. The aircraft was equipped with a Garmin G1000 Global Positioning System (GPS) which has the capability of data logging to store various flight information on a Secure Digital (SD) data card. During the occurrence flight, the SD data card was not installed in the GPS. This result in the flight data unable to be retrieved for the investigation.
5. Both pilots held valid CPL and were qualified as single engine land aircraft pilots. Both pilots also had valid first-class medical certificates without any medical limitation.
6. The aircraft operator provided ARB for the pilots, which included guidance for flying from Malinau to Yuvai Semaring. The ARB did not include any information about the floodlighting pole.
7. During the flight to Yuvai Semaring, the Pilot in Command (PIC) acted as Pilot Flying (PF), which included controlling the aircraft during the taxi maneuver.
8. The PIC had not flown to Yuvai Semaring since before the installation of the apron floodlighting pole and did not receive any information about its existence.
9. The Second in Command (SIC) possessed more recent experience at Yuvai Semaring and was aware of the presence of the floodlighting pole.
10. The SIC did not convey the information of the new floodlighting pole to the PIC, assuming that the PIC was already familiar with the updated layout of the apron. The SIC did not also expect that the taxi maneuver would be too close to the pole, assuming that the pole would be visible to the PIC. During the taxi maneuver, both pilots focused on the path ahead.The apron did not have taxi guidance markings to park the aircraft on the apron as required by the Manual of Standard CASR Part 139 Volume I (MOS 139). Without taxiway guidance markings, the pilot maneuvered the aircraft based on their judgment
11. The PIC decided to taxi the aircraft close to the apron edge line and park near to the terminal building to facilitate passenger disembarkation and provide adequate space for other arrival aircraft.

12. The unawareness of the obstacle's location and the intention to park close to the terminal building, caused the final right turn towards the intended parking position to be too close to the apron floodlighting pole, resulting in the aircraft's left-wing leading edge colliding with the pole.

13. The apron floodlighting pole was installed on 23 September 2021, and its color blends with the terminal building. The pole was located within Area 3 and qualified as an obstacle for surface movement according to CASR Part 175.

14. According to Manual of Standard of MOS 139 Vol 1, any obstacles in Area 3 should be measured by the airport operator and reported to the Aeronautical Information Service (AIS) to be included in the Aeronautical Information Publication (AIP).

15. CASR Part 139 requires airport operators to appoint one or more Aeronautical Reporting Officers (ARO) to report known obstacles within the aerodrome area to the Aeronautical Information Service (AIS) provider or Air Traffic Services (ATS) provider. It also mandates that the airport operator ensures the appointed officers understand and can perform the procedures for reporting aeronautical information.

16. The Yuvai Semaring Aerodrome Manual (AM) specifies that any new obstacles should be detected during daily inspections by Airport Infrastructure Engineering personnel. These known obstacles should then be reported to the Yuvai Semaring ARO to be forwarded to the AIS.

17. The airport operator lacked dedicated resources to conduct aeronautical reporting procedures after the previous ARO no longer worked in Yuvai Semaring.

18. The AM did not specify the requirement for Airport Infrastructure Engineering personnel to receive training in obstacle identification and the types of aeronautical information to be included in the AIP. Additionally, there was no detailed procedure for inspecting obstacles in Area 3. These discrepancies led to new obstacles in this area not being identified and reported, as the personnel conducting the inspections may not be aware of the specific requirements for Area 3 obstacles.

19. The lack of resources and the gap in operational procedures made the airport operator unable to identify the new apron floodlighting as an obstacle that must be included in the AIP as required by MOS 139.

20. The ARP coordinates recorded in the AIP and the airport certificate were approximately 1 nautical mile southeast of the actual airport location.

21. The airport operator did not have dedicated resources to report updated aeronautical information to AIS provider as required by CASR Part 139.

22. The DGCA conducted a virtual audit for airport certificate renewal from 2 to 4 February 2022. The audit noted missing taxiway centerlines and apron markings but did not address the omission of new apron floodlighting as an Area 3 obstacle in the AIP, nor the lack of markers or flags on the floodlighting pole.

23. The DGCA conducted an on-site safety inspection at Yuvai Semaring Airport from 16 to 20 May 2022. The DGCA reviewed data forwarded to the AIS but

did not verify the presence of markings in the movement area or on fixed objects. The inspection did not identify the absence of information regarding new apron floodlighting as an Area 3 obstacle in the AIP.

24. The oversight checklist described in Staff Instruction (SI) 139-01 did not include an item to verify if the airport operator had procedures in place to identify and measure the geographical coordinates of obstacles in Area 3.
25. The DGCA's verification process for data/information reported to AIS and included in the AIP was based on manual comparison, with compliance assumed upon matching data sets.
26. The DGCA oversight activities identified the absence of taxiway centerlines and apron markings. This finding was classified as non-compliance which had to be rectified within two months.
27. Until the day of the occurrence (three months later), the investigation did not find any follow-up action taken by the airport operator nor a reminder from the DGCA regarding the absence of taxiway centerlines and apron markings.
28. Absence of follow-up action led to the continuation of airport operations without taxiway centerlines and apron markings until the day of the occurrence.
29. The inadequate oversight checklist and lack of follow-up on non-compliance revealed the deficiencies in oversight practices which compromised the safety assurance of airport operations.

3.2 Contributing Factors

Contributing factors is defined as actions, omissions, events, conditions, or a combination thereof, which, if eliminated, avoided or absent, would have reduced the probability of the accident or incident occurring, or mitigated the severity of the consequences of the accident or incident.

The identification of contributing factors does not imply the assignment of fault or the determination of administrative, civil or criminal liability. The presentation of the contributing factors is based on chronological order and does not show the degree of contribution.

The KNKT concluded the contributing factors as follows:

- inconspicuous coloring of the floodlighting pole and the lack communication related to the existence of the pole reduced the pilot situational awareness towards the obstacle;
- the reduced pilot situational awareness towards obstacle and lack of taxiway guidance markings on the apron with intention to park close to the terminal building resulted in the aircraft maneuver was too close to the obstacle.

4 SAFETY ACTION

At the time of issuing this investigation report, the KNKT had been informed of safety actions resulting from this occurrence taken by the aircraft and the airport operator.

4.1 Susi Air

Following the occurrence, the Susi Air implemented the following safety actions:

- Coordinated with Yuvai Semaring Airport operator to recommend clearer identification of the apron floodlighting pole.
- Issued a Notice to Crew reminding pilots of sterile cockpit and "clear left/right call out" procedures as per standard operating procedures.
- Issued safety notices to pilots emphasizing the importance of conducting preflight and approach briefings, focusing on braking strategies and airport familiarity threats.
- Issued safety notices to ensure all pilots are updated on the latest changes when returning to or during their duties.

Details of the correspondence and notices can be found in the Appendices.

4.2 Yuvai Semaring Airport Operator

On 3 August 2022, KNKT issued the following safety recommendations to Yuvai Semaring airport operator as follows:

- ***04.B-2022-03.02***

  Manual of Standard CASR Part 139 Volume I (MOS 139) subchapter 5.2.8 requires paved taxiway and apron to be provided by taxiway center line marking in such a way as to provide continuous guidance between the runway center line and aircraft stands. The airport has paved apron without taxiway centerline marking that can be used as guidance between runway centerline and aircraft stands. The absence of the taxiway centerline marking is not accordance with the MOS 139 and considered hazard for aircraft operation.

  Therefore, KNKT recommends the Yuvai Semaring Airport Operator to provide taxiway centerline marking in accordance with the MOS 139.

Responding to the safety recommendation, the Yuvai Semaring Airport operator painted the taxiway centerline and apron markings in compliance with MOS 139.

Figure 7: The painted taxiway centerline markings

5 SAFETY RECOMMENDATIONS

KNKT acknowledged the safety actions taken by aircraft operator and airport operator. The safety actions were considered relevant for improving safety. However, there were still safety issues that need to be addressed. Therefore, the KNKT issued safety recommendations to address safety issues identified in this report.

The safety recommendations in this investigation report are intended to prevent accidents or incidents and in no case has the purpose of creating a presumption of blame or liability for an occurrence.

5.1 Yuvai Semaring Airport Operator

On 3 August 2022, KNKT issued the following safety recommendations to Yuvai Semaring airport operator as follows:

- ***04.B-2022-03.01***

  The Aerodrome Reference Point (ARP) mentioned in the Aeronautical Information Publication (AIP) Volume III chapter WAQJ AD 2 - 1 was in accordance with the airport certificate issued by the DGCA in 2016. The coordinate location was located about 1 Nm southeast direction of the actual airport location. Considering that the ARP mentioned in the AIP would be use as reference for pilot, the incorrect location might become hazard for aircraft operation.

- *Therefore, KNKT recommends the Yuvai Semaring Airport Operator to ensure location coordinate provided in the AIP contains correct coordinate.**04.B-2022-03.03***

  The CASR Part 175 subpart 175.210 described Area 3 as the area bordering an aerodrome movement area that extends horizontally from the edge of a runway to 90 meters from the runway center line, and 50 meters from the edge of all other parts of the aerodrome movement area including the apron or taxiway. The terrain and obstacles in the Area 3 which extends a half-meter (0.5 m) above the horizontal plane passing through the nearest point on the aerodrome movement area to be provided electronically and included in the AIP of the aerodrome data.

  The apron floodlighting pole in the Yuvai Semaring Airport was located at 4.5 meters from the apron edge line with height of 15 meters. The AIP Volume III chapter WAQJ AD 2 - 10 provided aerodrome obstacles of the airport which did not include the floodlighting pole information in the Area 3. The absence of floodlighting pole information that located in the region of the Area 3 may be hazardous for surface movement.

  Therefore, KNKT recommends the Yuvai Semaring Airport Operator to ensure obstacles in the Area 3 are published in aeronautical information publication in accordance with the CASR Part 175.

At the time of issuing this report, no response to these safety recommendations was received. Therefore, KNKT recommends to the airport operator that the following recommendations be implemented and that actions taken in response be reported.

- **04.B-2022-03.04**

  The DGCA oversight activities for Yuvai Semaring Airport identified the absence of taxiway centerlines and apron markings. This finding was classified as non-compliance which had to be rectified within two months. Until the day of the occurrence, three months later, the investigation found that the airport operator had not taken any follow-up action to address the issue. Absence of follow-up action led to the continuation of airport operations without the necessary markings up to the day of the occurrence.

  Therefore, KNKT recommends the Yuvai Semaring Airport Operator ensure non-compliance findings must be rectified in a timely manner and the necessary safety precaution shall be conducted prior to the completion of the finding rectification.

5.2 Directorate General Civil Aviation

- **04.R-2022-03.05**

  The oversight checklist described in Staff Instruction (SI) 139-01 did not include an item to verify if the airport operator had procedures in place to identify obstacles in Area 3. This omission led to the airport operator lacking a procedure to identify and measure obstacles in Area 3.

  In addition, the DGCA inspector's methodology to ensure the availability of data/information that must be reported to AIS and included in the AIP was relied on comparing the information written in the aerodrome manual with the AIP data. If the data matched, the DGCA inspector would assume that all required data/information had been appropriately forwarded to the AIS. This approach provided no assurance for identifying Area 3 obstacles and considered insufficient in identifying the absence information about the new apron floodlighting as an Area 3 obstacle in the AIP.

  Therefore, KNKT recommends the DGCA review the SI 139-01 to ensure that the oversight checklist includes item to verify if the airport operator implements procedures to identify obstacles in Area 3 and include it in the Aeronautical Information Publication (AIP).

- **04.R-2022-03.06**

  The DGCA oversight activities for Yuvai Semaring Airport identified the absence of taxiway centerlines and apron markings. This finding was classified as non-compliance which had to be rectified within two months. Until the day of the occurrence (three months later), the investigation did not find any follow-up action taken by the airport operator nor a reminder from the DGCA regarding this issue. Absence of follow-up action led to the continuation of airport operations without the necessary markings up to the day of the occurrence.

  Therefore, KNKT recommends the DGCA to monitor the non-compliance findings to ensure the completion of rectification action in a timely manner.

6 APPENDICES

6.1 Susi Air Notice to Crew

Susi Air PT ASI Pudjiastuti Aviation	Notice to Crew PT ASI Pudjiastuti Aviation	Document No.: NTC_20220601_00 Date: June 01, 2022 Page: 1

Sterile Cockpit

Effective

Immediately

Applicability

Flight Crew

Background

Reference from the eSMS-S Hazard Report Number #44656

Procedure

Standard Operating Procedures (SOP) C208B G1000 3.3
Standard Operating Procedures (SOP) C208B Legacy 3.3

Reminder

No flight crewmember may engage in any activity which would distract any flight crewmember from the performance of his/her duties or which could interfere in any way with the conduct of those duties.
Activities such as eating meals, paperwork and engaging in non-essential conversations during critical phases of flight are not permitted. Both pilots should be "heads up." Critical Phases of Flight include all ground operations, taxi, takeoff, landing, flight conducted below 5.000 feet above aerodrome elevation and the last 1.000 feet prior to assigned or chosen level.
Flight crews are not to read publications not related to the proper conduct of the flight.

STATUS: **ACTIVE**	Prepared by: **ER**	Checked by: **RM**

Clear Left/Right Call Out Procedure

Effective

Immediately

Applicability

All flight crew

Background

Reference from the eSMS-S Hazard Report Number #44656

Previous Procedure

This Notice to Crew overrides NTC_20210214_00- Clear Left/Right Call Out Procedure

New Procedure

When entering or crossing Taxiways or Runways and making visual turns during flight or ground operations the Pilot Flying (**PF**) is to call "clear Left/Right" depending on their respective seating position, the Pilot Monitoring (**PM**) shall then call "Clear Right/Left" on their respective side or "Standby". If the Pilot Flying (**PF**) miss the call out the Pilot Monitoring (**PM**) should call for his respective side and expect the Pilot Flying (**PF**) to check his side and do the Clear Left or Right call out.

Example 1: Copilot as **PF** making a turn to the Left. Prior to initiating the turn the Co Pilot shall call "Clear Right" the Captain's response shall be "Clear Left" or "Standby"

Example 2: Captain as **PF** making a turn to the Left. Prior to initiating the Turn the Captain shall call "Clear Left" and the copilot's response shall be "Clear Right" or "Standby"

Example 3: Copilot as **PF**, prior to entering or crossing a Taxiway or Runway shall call "Clear Right" and the Captain shall call "Clear Left" or "Standby"

Example 4: Captain as **PF**, prior to entering or crossing a Taxiway or Runway shall call "Clear Left" and the Copilot shall call "Clear Right" or "Standby"

6.2 Susi Air Safety Notice

Safety Notice 08/2022

Base latest changes

EFFECTIVE AND REFERENCE:

This notice aims to ensure that all Flight Crew members will be aware of the latest changes when returning to duties or during the tour.

APPLICABILITY:

This Safety Information applies to all Flight Crew members, Base Management, Base Safety Officers, Chief Pilot, and Operations Manager.

Procedures:

1. All Flights Crew members returning from holidays, leaves, or any other period without performing duties as a flight crew member shall contact the immediate supervisor and request a briefing on the latest changes in the area of operations.
2. All Flight Crew members shall report any new hazards encountered in any airstrip, including taxing and parking problematic conditions. This information shall be used to increase awareness and provide data for the briefings provided by the immediate supervisor.
3. All Susi Air staff holding "supervisor" positions (Base Management, Chief Pilot, Operations Manager) shall remain updated on the latest changes and new hazards around the operations area.
4. All Base Safety Officers and Safety Management shall remain vigilant about such hazards, provide information about how and what should be considered hazards, and facilitate the reporting process.

Safety Notice 09/2022

Preflight and Approach Briefing – Braking Strategy and Expected Taxi

EFFECTIVE AND REFERENCE:

This notice aims to remind all flight crew regarding the necessity of briefing the Braking Strategy and Taxi expectations as stated in Susi Air C208B SOP.

Ref: Standard Operating Procedures G1000 and Legacy.

APPLICABILITY:

This Safety Information applies to all Flight Crew members, including crew members of fleets other than C208B, all Ground, Simulator, and Flight Instructors.

Procedures:

SOP 5.11.4 Expanded Briefing Information

OPERATIONAL

- Notams
- Type of takeoff/ landing if non-standard
- Weight restrictions
- Chart warnings
- Runway conditions (characteristics, i.e., slippery, rough in certain areas, slope)
- Speed control o Configuration
- Key Points o Use of AP
- Flight mode selection
- Non-normal procedures
- Crew duties o Holding
- **Braking strategy, exit strategy (i.e., braking to exit via „c" taxiway)**
- Diversion plan and requirements
- Extra fuel available

THREATS

- ATC o Comm's
- Tracking o Procedural Control
- Traffic Density
- Missed approach vital actions if there is a high probability of a missed approach
- Non-ILSLS approaches
- Vertical profile monitoring
- Offset approaches

- Runway characteristics
- People and animal incursions on runways
- Night
- Crew
- **Airport familiarity**
- Experience levels
- Fatigue
- Training flights
- GPS cloud break procedures "In the event we get a terrain warning, we will"… (review crew coordination in section 10)

NOTE

If you mention a threat, you must also mention the strategy you wish to use to overcome that threat.

1. All Flights Crew members shall include in the preflight and approach briefing the expected taxi directions and turns during the operational phase of the briefing.
2. All Flight Crew members shall include the airport familiarity on the preflight and approach briefing during the threats phase of the Briefing.
3. All Ground, Simulator, and Flight Instructors shall instruct and evaluate such items during ground and flight lessons.

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