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AVIATION WITHIN A NATION

CIVIL AVIATION AUTHORITY OF MALAYSIA
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ABOUT AWAN

AWAN was conceptualized by a team of industry experts with great experience and authority to deliver concise, comprehensive and timely articles with a wide scope of coverage on all sectors of Malaysia's aviation industry. Published quarterly, AWAN provides insider knowledge, industry insights, latest news, current trends, updates on regulations and interpretation on the key issues impacting aviation in Malaysia.

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By **Khairana Rahman & Ganesha Anandarajan**

In preparation for the Langkawi International Maritime & Aerospace (LIMA) Exhibition that takes place biennially, a Level III Search and Rescue Exercise (SAREX) LIMA was planned to assess the capabilities and preparedness of participating Search and Rescue (SAR) agencies under the National SAR Organisation in the event of any air, land or sea emergencies during the LIMA Exhibition.

The exercise was organised and coordinated by Civil Aviation Authority of Malaysia (CAAM) and Royal Malaysian Air Force (RMAF) in collaboration with National SAR Agencies and private companies that was held at Langkawi from 9th to 11th May 2023. The programmes for SAREX LIMA `23 are as follows:

- a) On the 9th May 2023, the Main Exercise Brief (MEB) was organized in which during this session all the participants were briefed regarding the flow of conduct of Water and Land SAREX, Meteorology conditions, Blackbox search techniques, life winching and life raft deployment.
- b) On the 10th May 2023, the Water SAREX Level III was executed within the Langkawi Waters near Dayang Bunting Island, in which the survivors are required to follow the flow of the exercise by getting themselves into the waters from the vessels in order to simulate the actual scenario of the event.
- c) On the 11th May 2023 the Land SAREX Level III which is similar to the conduct of water SAREX took place within the vicinity of Langkawi Airport. This event is swiftly followed by the Debrief session whereby the findings were discussed for future betterment.

A total of 982 participants from various Government Agencies and private entities participated in the exercise. They were from:

- a) National SAR Agencies: Civil Aviation Authority of Malaysia (CAAM), Royal Malaysian Airforce (RMAF), Royal Malaysian Police (RMP), Royal Malaysian Navy (RMN), Malaysian Maritime

Enforcement Agency (MMEA), Fire & Rescue Department Malaysia (FRDM), Airport Fire Rescue Services (AFRS) Marine Department, Ministry of Health (MOH), Malaysian Meteorological Department (MET) and Malaysia Airport Holding Berhad (MAHB);

- b) A total of 62 participants who acted as 'Survivors' were from AirAsia, Air Asia X, MYAirline, Langkawi District Land Office (PDTL) and Ministry of Youth and Sports (KBS);
- c) Evaluators and observers from National SAR Agencies, National Security Council, Air Accident Investigation Bureau (AAIB) Malaysia Inspectors, Petronas, students from University Putra Malaysia attending the 'Emergency Response & Planning' Master's Degree programme; and
- d) International SAR Observers from Singapore and Philippines.

For the purpose of LIMA `23, a forward field base known as Langkawi Joint Rescue Sub Centre (Langkawi JRSC) was established at CAAM Langkawi premise and this base will be activated from 18th to 27th May 2023 for LIMA `23. All matters related to aeronautical and maritime SAR operation within the designated area of responsibility will be referred to and coordinated by Langkawi JRSC. JRSC Langkawi will be manned by SAR personnel from CAAM and RMAF, together with Liaison Officers from various SAR Agencies. A well-spelled-out Safety Operation Manual (SOP) was developed to ensure the JRSC's operation is bound to the stipulated regulations and directives. The SOP was duly signed by CAAM's Deputy Chief Executive Officer (Operation), Zainul Abidin bin Maslan and Maj Gen Dato' Mahadzer bin Amin RMAF, Panglima Wilayah Udara 1 on 19th April 2023.

The SOP were put to the test during the SAREX LIMA `23 to ensure its effectiveness and feasibility. All in all, the objectives and the requirement of Malaysia National SAR Plan were fulfilled by the huge success of this event.

SAFETY AND SECURITY SHOWCASE AT LIMA '23

BEST PRACTICES AND INNOVATIONS

By **Captain Muhamed Afizan bin Jaafar**

The Langkawi International Maritime and Aerospace Exhibition 2023 (LIMA '23) showcases the latest developments in the aerospace and maritime industries. It is held biennially on the island of Langkawi, Malaysia, and attracts thousands of visitors from around the world. The 16th edition of LIMA '23 happening on 23rd to 27th May 2023 features a range of innovative technologies aimed at promoting safety and security in the aviation and maritime sectors.

Safety and security are of utmost importance in the aerospace and maritime industries. The risks associated with these industries are high, and any lapse in safety or security may bring disastrous consequences. Therefore, LIMA '23 is focused on promoting the latest safety and security technologies and best practices to ensure that these risks are minimized.



One of the key areas of focus at LIMA '23 is the use of advanced technologies to enhance safety and security. This includes the use of Unmanned Aerial Vehicles (UAVs), also known as drones, for surveillance and monitoring. UAVs have become increasingly popular in recent years due to their ability to provide real-time data on a range of activities, including traffic monitoring, search and rescue operations, and security surveillance. At LIMA '23, visitors will be able to see firsthand how UAVs are being used to enhance safety and security in the aerospace and maritime industries.

Another key area of focus at LIMA '23 is the use of big data analytics to enhance safety and security. Big data refers to the vast amounts of data generated by various sources, including sensors, social media, and other sources. By analyzing this data using advanced analytics tools, it is possible to identify patterns and trends that can help improve safety and security. For example, big data analytics can be used to identify potential safety hazards in real-time, allowing for immediate corrective action to be taken.

In addition to these technologies, LIMA '23 will also showcase a range of best practices aimed at promoting safety and security in the aerospace and maritime industries. These best practices include the use of Safety Management Systems (SMS), which are a set of policies, procedures, and processes designed to manage safety risks. SMS is becoming increasingly popular in the aviation and maritime industries, as it allows for a systematic approach to safety management, rather than relying on ad-hoc measures.

Another best practice that is showcased at LIMA '23 is the use of risk assessments to identify and mitigate safety and security risks. Risk assessments involve identifying potential hazards, assessing the likelihood of those hazards occurring, and identifying measures to reduce or eliminate the risks. By conducting regular risk assessments, it is possible to identify potential safety and security issues before they become major problems.

LIMA '23 will also feature a range of workshops and seminars aimed at promoting safety and security in the aerospace and maritime industries. These workshops and seminars will provide an opportunity for industry experts to share their knowledge and experience, and to discuss the latest developments in safety and security technologies and best practices. Visitors to LIMA '23 will be able to attend these workshops and seminars to learn about the latest safety and security trends, and to network with other industry professionals.

In conclusion, LIMA '23 provides an opportunity for the aerospace and maritime industries to showcase the latest safety and security technologies and best practices. By promoting these technologies and best practices, LIMA '23 aims to minimize the risks associated with these industries, and to ensure that safety and security remain a top priority. With the use of advanced technologies such as UAVs and big data analytics, and the implementation of best practices such as SMS and risk assessments, the aerospace and maritime industries.





By **Captain Norazman Mahmud**

REGULATOR AS AN ENABLER TO THE INDUSTRY

WORKING HAND IN HAND FOR PUBLIC SAFETY

Leaders and thinkers alike, for ages, have deemed that the first duty of a government is to ensure public safety which is narrowly defined as protecting individuals or property from any third-party harm, which includes natural element.

Industries at times view regulators as a hindrance to their growth and profitability or even, innovation. This has reached to a point where organisations refuse or delay their innovation, especially in technology due to the perception that the regulators would hinder their progress. However, this perception is not entirely accurate. In fact, far from it, regulators are not there to stifle innovation, but to ensure that businesses operate in a way that is safe for the public and the environment. When

industry and regulators work together, they can create a win-win situation, where innovation and growth are enabled in a way that is sustainable and safe.

One of the main goals of regulators is to ensure public safety. When new products or technologies are introduced, it is the regulator's responsibility to assess their potential impact on the environment and public health. Regulators ensure that any new technology introduced is safe for people and the environment. Working together regulators, businesses can gain the trust of the public, which is essential for the success of any new product or technology.



Regulators are not just there to enforce rules and regulations, they are also a valuable resource for businesses. Regulators can provide guidance and support to help businesses navigate the regulatory landscape by offering expertise and advice on best practices and emerging trends. By working together, hand in hand, businesses and regulators can develop new technologies in a controlled manner, where all safety risks are mitigated.

It's important to understand that regulators want to regulate thriving industries. Regulators are not looking to shut down businesses or prevent innovation. Instead, they want to ensure that businesses operate in a way that is safe for the public and the environment. When regulators are able to do this, they can create a regulatory framework that enables growth and innovation.

Another important aspect of working with regulators is ensuring the sustainability of the new technology introduced. Regulators are concerned with the long-term impact of new technologies on the environment and public health. Businesses that work with regulators to address these concerns will be more successful in the long run. By developing technologies that are sustainable,

businesses can not only protect the environment and public health, but also ensure that their products and services are relevant in the years to come.

As the sole technical regulatory body of Malaysia's civil aviation industry, CAAM views the relationship between regulator and industry players as collaborative, where regulator listens and understands the industry, work together and consider options. This would create a high level of transparency and most importantly, trust.

In conclusion, the relationship between industry and regulators should not be viewed as adversarial. Instead, businesses should work hand in hand with regulators to ensure the safety and security of the public. By gaining the trust of the public and regulators, businesses can introduce new ideas and products with confidence. The goal is to develop new technologies in a controlled manner, where all safety risks are mitigated, and ensure their sustainability. When businesses and regulators work together, they can create a regulatory framework that enables growth and innovation, while also protecting the environment and public health.



THE LAUNCH OF CAAM SAFETY REPORTING SYSTEM (CARES)

By **Mohd Amri Bin Mohd Akib**

As part of the Civil Aviation Authority of Malaysia (CAAM) effort to increase efficiency and ease the process of Mandatory Occurrence Reporting (MOR) and voluntary occurrence reporting (VOR), CAAM successfully launched the “CAAM Aviation Safety Reporting System” or known as CAREs. This new system which can be accessible via CAAM website replaces the previous reporting channel with the aim of improving the reporting process and encourage reporting culture in Malaysian aviation industry.

Reporting occurrences is of paramount importance in the aviation industry as it helps to identify potential hazards, reduce risks, and improve safety standards. CAREs is designed as a platform that simplifies the reporting process, making it easier for aviation stakeholders to report occurrences.

CAAM recognises that mandatory and voluntary reporting is essential in ensuring that all incidents, hazards, and near-misses are reported, which helps to identify potential safety issues and allows for corrective actions to be taken. Additionally, CAAM will be publishing amended directives that are related to CAREs in the near future. These directives will provide detailed guidance on using the new system and the type of occurrences to be reported.

The introduction of CAREs is a significant step towards improving the safety culture in the aviation industry. CAAM encourages all aviation stakeholders to familiarize themselves with CAREs and to report any occurrences in a timely and accurate manner.

CAREs is accessible via CAAM website at www.safetyreporting.caam.gov.my



CHARTING THE SKIES:

CAAM'S STRATEGIC INITIATIVE OF SHORT SIDS AND STARS FOR A SUSTAINABLE AND EFFICIENT AVIATION INDUSTRY

By **Raja Amsyar Hillman Bin Raja Badrul Hisham**

The aviation industry was seriously affected by the COVID-19 pandemic, and its recovery was an immediate priority for governments and stakeholders around the world. Following this, the Civil Aviation Authority of Malaysia (CAAM) made the proactive approach to publish the short Standard Instrument Departures (SIDs) and Standard Terminal Arrival Routes (STARs) to facilitate airliners in their post COVID-19 recovery. This initiative will benefit the overall civil aviation industry including air operators, air traffic controllers (ATC), and the environment.

WHAT ARE SIDS AND STARS?

SIDs and STARs are standardised routes that aircraft must follow during take-off and landing. These procedures are essential for ensuring safe and efficient operations in congested airports. SIDs are procedures used by aircraft during take-off to navigate from the runway to the en-route phase of flight. STARs, on the other hand, are procedures used by aircraft during landing to navigate from the en-route phase of flight to the runway.

The use of SIDs and STARs has several advantages for the aviation industry, including reduced workload on air traffic controllers and improved

safety. These procedures also help to reduce fuel consumption and emissions, resulting in cost savings and environmental benefits. These advantages are achieved as the published SID STARs provide the airlines, pilots and ATC a known flight path that allows proper planning, structured approach to departures and arrivals and this in turn promotes safety when all users including the Controllers are trained and familiar with these paths.

CAAM'S EFFORTS

As a further enhancement to these SID STARs, CAAM reviewed the various flight patterns and movements of aircraft in the peninsular. Over a 24-hour period there are 4 peaks where during these times of congestion, due to high movements, the existing SID STARs are critical to provide safety separation between aircraft, allowing the highest possible capacity movements in the same given airspace and time. However, there were no requirements to operate the whole published procedures outside these peak hours as capacity was lower, and it created the available gaps between the operating aircraft. CAAM analysed the data that showed 82% of aircraft during these

periods were already track shortened hence bringing them in for a safe landing or minimised departure procedure. This in return, allows fuel and time saving for the given flight. The initiative to develop this short SID STARs also came as part of CAAM's effort to promote carbon and cost reduction for all. These shortened procedures are published officially and had already taken into account the movement capacity that allowed these gaps, shortened flying distances and safe separation between aircraft. The key advantage here is that airlines flying these routes during these published times can now plan these shortened routes resulting in a much lesser fuel order due to these procedures. The reduction in fuel order is a direct saving that can be reflected in the airline annual fuel budget and recorded as immediate carbon footprint reduction.

The development of these procedures of short SIDs and STARs in Malaysian airspace was a joint collaborative work with air operators, ATC, and other aviation stakeholders. Modern aircraft today are equipped with Area Navigation (RNAV) and Required Navigation Performance (RNP) capabilities which allow the SID/STAR to be designed in such way that were previously impossible. It enables pilots to use onboard GPS technology to follow exact tracks without the assistance of ground-based navigational aids. Short SIDs and STARs are aimed to reduce fuel use, exhaust emissions, and noise pollution, particularly in neighbourhoods near airports, by minimising the distance for an aircraft to fly. These new procedures are expected to benefit airlines and ATC in various ways, including improving safety, efficiency, and reducing operational costs.

THE BENEFITS OF SHORT SIDS AND STARs TO AIR OPERATORS

Short SIDs and STARs have several benefits to airlines, that includes reducing fuel consumption, improving safety, and reducing operational costs by optimizing aircraft flight paths, resulting in shorter flight times, reduced delays, and improved on-time performance. By flying the pre-determined standard procedure which shorten the track miles from the conventional route, fuel consumption and carbon emissions can be reduced, resulting in cost savings and environmental benefits. These procedures also help to reduce the workload of pilots

and improve situational awareness which leads to safer operations. By collaborating with CAAM in the development and publication of SIDs and STARs, air operators may contribute to the improvement of the aviation industry's safety and efficiency standards.

BENEFITS OF SHORT SIDS AND STARs TO AIR TRAFFIC CONTROLLERS

Short SIDs and STARs will also benefit ATC by reducing their workload and improving situational awareness.

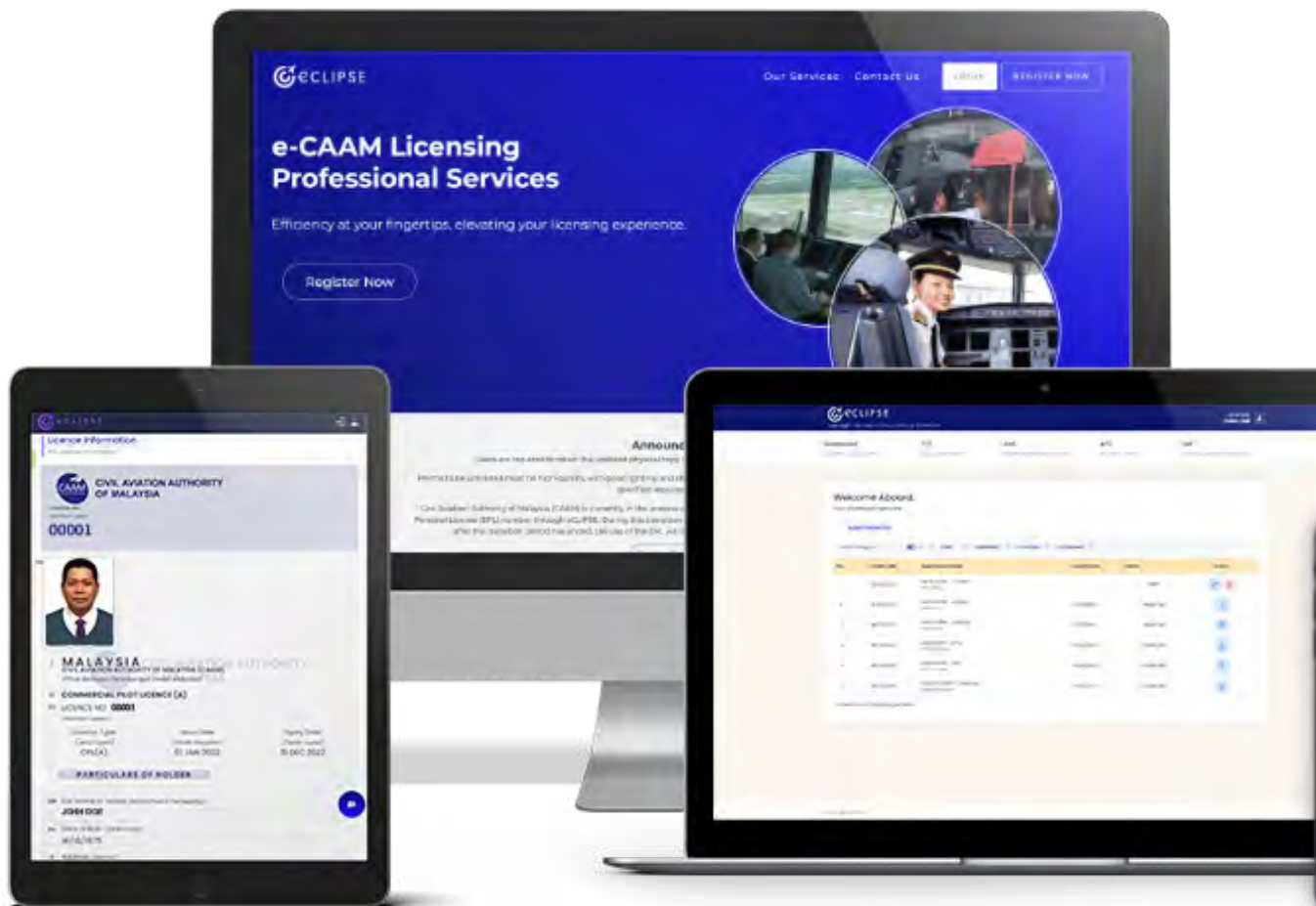
When aircraft flies the pre-determined standard procedures, ATC can manage air traffic more efficiently, leading to safer and more efficient operations without applying conventional tactical vectoring. These procedures also allow ATC to handle higher traffic volumes, reducing delays and improving on-time performance.

BENEFITS OF SHORT SIDS AND STARs TO THE ENVIRONMENT

The aviation industry has a significant impact on the environment, with emissions from aircraft contributing to climate change. Short SIDs and STARs can help to reduce the aviation industry's impact on the environment by reducing fuel consumption and emissions. By optimizing flight paths, short SIDs and STARs can help to reduce the aviation industry's carbon footprint. These procedures at the same time can also help to reduce noise pollution, resulting in a quieter and more environmentally friendly aviation industry.

In conclusion, CAAM's efforts towards publishing short SIDs and STARs in Malaysia's airspace have significant benefits to the aviation industry, including improving safety, efficiency, and reducing carbon emissions. These procedures benefit not just to airlines and ATC, but also the environment. CAAM will continuously analyse and improve the short SIDs and STARs to ensure that they are safe, efficient, and optimized to reduce fuel consumption and carbon emissions. CAAM is looking forward to work collaboratively with all stakeholders to gather feedback and improve the procedures from time to time.

CAAM'S JOURNEY TOWARDS DIGITAL AIRCRAFT MAINTENANCE LICENCING SYSTEM



By **Muhammad Huzaifah Bin Md Akhir & Ahmad Ferdouse Pasha Bin Ahmad Anwar**

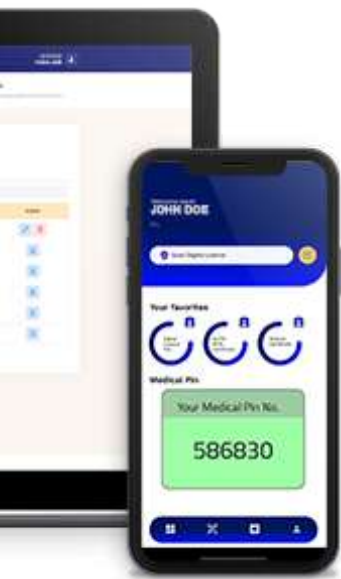
THE PAST

During the BCAR Section L days, the manual processing of aircraft maintenance licenses (AML) was a tedious and time-consuming process. The average time taken to issue an AML took more than 3 months with the exclusion of examination marking time.

With the introduction of the DCAM Part-66 licensing requirement in 2011, part of the examination process and assessment of candidates was taken by the Maintenance Training Organisation (MTO) which frees up the Department of Civil Aviation Malaysia's (DCAM) burden to conduct examinations and consequently reduces some backlog in AML

issuance. At this point in time, the average AML issuance processing time has reduced between 1 to 3 months. The improvement, however, is not significant as compared to BCAR Section L as there was an increase in paperwork to be reviewed due to the modular nature of Part-66. Additionally, DCAM has to review the increasing number of examination papers, student exams and assessment records, and the selection of qualified instructors, assessors and examiners including evaluation of maintenance experience records of AML candidates.

The effort to look for a better option i.e. digital licensing platform started with the embarkation of the e-examination system back in 2012 as part



of the government initiatives under the Economic Transformation Programme (ETP). With CAAi UK e-exam services, DCAM has set up 3 examination centres in Sepang, Kuching and Kota Kinabalu where AML candidates can sit for module examinations electronically. Application for sitting an examination was made online. This came with various advantages. The E-examination system was faster and more efficient. Digital processing eliminated the delays and backlogs that were common in the traditional manual process. With automation software, it is possible to process the examination results much faster. We used to joke with the candidates, “You sit for the exam today, you get your result yesterday”.

THE PRESENT

The transformation from DCAM to Civil Aviation Authority of Malaysia (CAAM) has induced CAAM to revise its publication structure and internal work process. This includes making references available to the public through CAAM website which is more organised. AML-related requirements and guidance were progressively enhanced to improve AML processes. The average time taken to process AML issuance is reduced to 1 month or less. AML renewal is done within 1 hour. This is a significant achievement well commended by the aviation industry. But CAAM doesn't stop here.

In its effort to strive for greater efficiency, CAAM continues moving forward towards having a fully digitalised licensing system. Hence, the Electronic Personnel Licensing (EPL) system known as electronic CAAM Licensing Professional Services (eCLIPSE) was developed. For the AML applicants and holders, this means no more taking time off work and dealing with long queues and paperwork. Digital licensing allows AML applicants to submit their

applications online, and view their licence and application status from the comfort of their homes. This not only saves time but also makes the licensing process more accessible to people living in remote areas.

At the moment, eCLIPSE allows users to register their accounts, view personal details and information, make AML renewal applications, as well as AML validation and verification.

THE FUTURE

Shortly, eCLIPSE will extend its features to include AML issuance application, AML variation application - endorsement of aircraft type and addition of licence category, the introduction of AML e-logbook and reactivation of inactive licence. “With

the introduction of an online application and e-logbook, CAAM targets to improve its client charter for AML issuance”, says Mr Ahmad Ferdouce Pasha, Head of Licensing, Airworthiness Division. He further explains, “in the near future, CAAM plans to embark on a central e-examination system which provides examination service with standardised examination questions to all candidates including those enrolled under Maintenance Training Organisation's basic licence training program”. He added that CAAM also intends, with the expansion of eCLIPSE's capability, to replace the current paper-based licence with a digital licence in the future for all AML holders.

THE FINAL DESTINATION

The journey towards the digital aircraft maintenance licensing system is nearing its final destination. However, the rapid changing of technologies requires CAAM to continuously improve its delivery services so that Malaysian AML holders can have the pride of having the most sophisticated AML in the world.





FATIGUE RISK MANAGEMENT SYSTEM (FRMS)

By **Perumal A/L Subramaniam**

Fatigue

Fatigue is the general term used to describe the physical and/or mental weariness which extends beyond normal tiredness. Physical fatigue concerns the inability to exert force with one's muscles to the degree that would be expected. It may be an overall tiredness of the whole body, or be confined to particular muscle groups. Physical fatigue most commonly results from physical exercise or loss of sleep. Physical fatigue often leads to mental fatigue. Mental fatigue, which may include sleepiness, concerns a general decrease of attention and ability to perform complex, or even quite simple tasks with customary efficiency. Mental fatigue often results from loss or interruption of the normal sleep pattern and is therefore of great concern to pilots and Air Traffic Control Officer (ATCO), who are frequently required to work early in the morning or at night. Fatigue usually results in impaired standards of operation with increased likeliness of error. For example: increased reaction time, reduced attentiveness, impaired memory, and withdrawn mood. For an ATCO, fatigue may result in:

- Poor decision making;
- Slow reaction to changing situation;
- Failure to notice an impending confliction;

- Loss of situational awareness;
- Length of previous rest period/forgetfulness;
- Physical conditions (temperature, airlessness, noise, comfort, etc.);
- Workload (high or low);
- Emotional stress (in family life or at work);
- Lifestyle (including sleeping, eating, drinking and smoking habits) and Fitness;

To separate this action and activities this is commonly known as a Fatigue Risk Management System (FRMS).

Fatigue Risk Management System

“A physiological state of reduced mental or physical performance capability resulting from sleep loss or extended wakefulness, circadian phase, or workload (mental and/or physical activity) that can impair a crew member's alertness and ability to safely operate an aircraft or perform safety-related duties” ... ICAO DOC 9966

“Fatigue risk management system (FRMS) means a data-driven means of continuously monitoring and managing fatigue-related safety risks, based upon scientific principles, knowledge and operational experience that aims to ensure relevant personnel

FATIGUE RISK MANAGEMENT SYSTEM



are performing at adequate levels of alertness.”
 ... Civil Aviation Directive (CAD) 11 CAAM

Fatigue Management - CAAM

Guidance on the development and implementation of fatigue management regulations is contained in the Manual for the Oversight of Fatigue Management Approaches (ICAO Doc 9966).

For the purpose of managing fatigue in the provision of air traffic control services, the Air Traffic Service (ATS) provider shall comply with the following:

- a) Prescriptive Fatigue Management Regulations in accordance with CAD 11 Appendix 5; and/or
- b) Fatigue Risk Management System (FRMS) requirements to manage fatigue in accordance with CAD 11 Appendix 6.

FRMS
 Service providers meet additional requirements to have flexibility outside of prescriptive limitation regulations

SMS
 Service providers manage fatigue risks using SMS processes within prescribed limits

BASIC
 Service providers follow hard limits set by the regulator



APPENDIX 5

A) Ensure that the limitations are not exceeded and that non-duty period requirements are met

B) Familiarise its personnel with the principles of fatigue management and its policies with regard to fatigue management

C) Establish a process to allow variations from the prescriptive limitation regulations to address any additional risks associated with sudden, unforeseen operational circumstances in MATS Vol. 2

D) Ensure the variations to these regulations using an established process in order to address strategic operational needs in exceptional circumstances, based on the air traffic services provider demonstrating that any associated risk is being managed to a level of safety equivalent to, or better than, that achieved through the prescriptive fatigue management regulations. These may be achieved through the implementation of safety risk assessment (SRA).

APPENDIX 6

A) Processes to integrate FRMS functions with its other safety management functions

B) Ensure the FRMS, according to a documented process, that provides a level of safety acceptable to the Authority

C) The ATS provider shall establish an FRMS contain, at a minimum:

- I. FRMS policy and documentation
- II. Fatigue risk management processes
- III. FRMS safety assurance processes
- IV. FRMS promotion processes

MALAYSIA'S FIRST AGRICULTURAL UNMANNED AERIAL WORK CERTIFICATE (UAWC) HOLDERS

By **Wafi Abdulfatah Haron**



The Civil Aviation Authority of Malaysia (CAAM) depicts an agricultural Unmanned Aircraft System (UAS) operations as the operations of a UAS for the purpose of dispensing any 'agricultural payload' intended for plant nourishment, soil treatment, propagation of plant life, or pest control; or engaging in dispensing 'agricultural payload' and surveillance activities directly affecting agriculture, horticulture, or forest preservation, but not including the dispensing of live insects.

CAAM is pleased to announce that Vision One UAS Sdn. Bhd. and Aerodyne Geospatial Sdn. Bhd. are the first UAWC holders approved to operate agricultural UAS operations utilising drones. The certificate is granted an initial period of one year validity from 1st March 2023 to 28th February 2024. Subsequent audit will determine the UAWC Holder's competency, and the approval validity may be valid up to a maximum of five (5) years.

	Aerodyne Geospatial Sdn. Bhd.	Vision One Sdn. Bhd.
Number of Drone	146	2
Drone Model	1. DJI Agras T20 2. DJI Phantom 4RTK	1. XAG XP2020 Pro 2. XAG XP 2020
Number of Pilots	70	4
Locations	55	3
Target Crop	Palm Oil (Sime Darby Plantation)	Paddy Field (Sabak Bernam and Kedah)
	Certification Requirements	Certification Requirements
CAD	CAD 6011 Part II	CAD 6011 Part II
Regulation	Regulation 136, 140, 144	Regulation 136, 140, 144
	Expansion Plan	Expansion Plan
Locations	East Malaysia	Northern side of Peninsular - Kedah and Perlis
Drone	Add 100 UA	



Privileges of an Agricultural UAS AWC holder

An Aerial Work Certificate (AWC), for private or commercial, authorises the holder to perform operations and associated training including the following:

- a) Service or operation, utilising the UAS, and on location as listed in the holder's AWC;
- b) Ground or flight training appropriate to the UAS operated or intended to be operated;
- c) Test or check flights to determine the competence of flight crew; and
- d) Tests or checks to determine the competence of other persons providing the operations or carrying out the operations listed in the holder's Operations Manual, Maintenance Procedure Manual.

The following requirement must be followed to be deemed as private Agricultural UAS Operator:

- a) The Remote Pilot (RP) must hold a valid RCoC issued by CAAM (Kindly refer to CAD 6011 (I) for guidance);

- b) The RP is the owner of the UAS or is an employee operating the aircraft on the UAS owner's behalf;

- c) The UAS is being operated over the owner's property or property leased by the owner;

- d) The RP or the owner/leaseholder does not receive direct reward or compensation for the operation;

- e) Applicant must provide the proof of a bona fide property interest.

Note: This requires the applicant to provide a deed or agricultural use lease for the property where operators will perform agricultural UAS activity.

Only declaration!

The application for an Aerial Work Certificate for both Private and Commercial UAWC is RM 800 for the first initial application. Applicant is not required to apply for Authorization to Fly (ATF) once issued a UAWC unless for surveillance purposes.



REGULATORY CHALLENGES ON APPROVAL OF NESTED UAS OPERATIONS

By **CAAM UAS Unit**

Captain Illyaquila Fateen Ismail, Muhammad Fadillah Rosli, Muhammad Hazmi Razak, Wafi Abdulfatah Haron, Amin Muhammad Salleh Muda

The nested Unmanned Aircraft System (UAS) project was proposed to solve illegal encroachment (that is, digging, intrusion, etc.) into Petronas Gas Berhad (PGB) pipeline infrastructure, of more than 2000 KM, across Peninsular Malaysia by deploying an UAS from any of the strategically deployed nest station (i.e., within PGB gas pipeline) to the detected encroachment area. The whole operation is conducted Beyond Visual-Line-of-Sight (BVLOS) from a Command-and-Control Center located in Cyberjaya, Selangor, via a high-speed fibre optics network infrastructure.

The concept of operations was simple, to operate a DJI Mavic 2 enterprise out of a Hextronic Nest situated at a strategic location for the best line of sight within the Petronas Gas Berhad premises. An antenna is erected approximately 5 meters high using a telescopic pole which is connected to the remote-control antenna. With the extended antenna configuration, the continuous feeding operations was tested and proven to achieve a maximum range of 2 km using the normal frequency band allowed by Malaysian Communications and Multimedia Commission.

Integrated with the nested UA system is the Flytnow Unified Traffic Management which enable the safe integration of the UAS into airspace region. Flytnow Flight Management and Monitoring System provides a guest sharing platform to regulatory body which would display real time UAS tracking as well as the telemetries for monitoring purposes.

A sensor system is be installed along the PGB Pasir Gudang Main Line. The sensor connected to one end of the fiber uses a laser to send thousands of short pulses of light along the fiber every second. Any vibrations from the surrounding environment, will disturb the light in the fiber and will therefore send the coordinate of the activity to the nested UAS system.

On the other hand, a flight plan will be created using

Flytnow Software, once the detection from sensor system is triggered, Flytnow Software will receive the coordinates and feed the information to the Flytnow flight planning system before deploying the UAS to perform pre-programmed surveillance mission at the location obtained from the sensor system.

The initial project has 3 phases to cover more than 100 KM of gas pipeline, each nest station equipped with UAS docking platform, automated recovery and charging system, hyperlocal proximity sensors to guide the aircraft into the station, communication links (i.e., AES-256 encrypted UAS C2 link and internet connectivity), environmental monitoring systems and weatherproof enclosure.

The UAS is equipped with visual and thermal sensor, while the effective range only limited to the operation's geographical area and legal allowable radio frequencies (RF) transmission output. Typical operation duration lasts between 5 to 15 minutes per flight.

In March 2021, CAAM published a Civil Aviation Directive (CAD) on Special UAS Project designed to cater the medium risk category such as Beyond Visual Line of Sight. The CAD was put to test by evaluating and assessing this concept of operations. Within the CAD, there are 5 stages an applicant may be required to undergo, which are pre-application phase, formal application phase, document evaluation, demonstration and inspection and certification. The 1st phase of approval process took approximately 9 months to complete (i.e., 1 location for proof-of-concept) and additional 3 locations approved in about 3 months. Currently the project is still on-going and entering the 2nd phase of approval process.

The approval process begins with the cursory review of the draft of Specific Operation Risk Assessment (SORA). Once our team believes the operator has a sound Concept of



Operations (CONOPS), we would engage with a Committee called Jawatankuasa UAS which consists of other regulatory bodies requirements (that is to review the RF class assignment, aerial videography permit, restricted and prohibited area etc.). Immediately after, the applicant submits the formal application, all nominated post holders (i.e., accountable manager, flight operation manager, safety manager and authorized technical personnel) were called for an interview session and the documentation review phase begins with the review of operational procedures documents (i.e., SORA, operation manual, safety management system, emergency response plan etc.).

Once completed, the approval process entering demonstration and inspection phase, by visiting both the remote site and command and control center, and at the same time witnessing the demonstration flight by the applicant. Audit activities were conducted concurrently on both locations (the command and control and the nested facility). All findings and the corrective action plans were discussed and closed within 14 days and once approved by the Technical and Licensing Committee (TLC), the Special UAS Project Approval or what CAAM term it as SUPA was issued out to the applicant. With a one-year validity.

As the first ever nested UAS operation approval, the proposed project was entirely evaluated using Specific

Operations Risk Assessment (SORA) framework developed by Joint Authorities for Rulemaking on Unmanned Systems (JARUS) which later had been adopted and adapted by European Union Aviation Safety Agency (EASA), which CAA of Malaysia was inspired by. To those unfamiliar with the SORA process, it is a 10-step process, looking into the ground risk (i.e., GRC) and air risk (i.e., ARC). Once these two elements will be used to determine the Safety Assurance Integrity Level (SAIL) which sets the UAS operational robustness requirements (i.e., Operational Safety Objectives -OSOs).

The SORA provides flexibility as it is not prescriptive requirements, CAAM realizes that introducing it to the industry may be a challenge. Therefore, CAAM created Compliance Questions (CQs), guiding the applicant the 10 steps process. The initial SAIL number collected, will provide the applicant to a page of the applicable OSO requirements.

For the proposed UAS nested operation, the final accepted GRC was 4.

The mitigation items proposed by Operator and accepted by CAAM are as depicted in the picture above and the final accepted ARC was ARC-b. Hence the SAIL number is III. An important fact to note, SAIL number may not be the same in different area and it is highly depending on the Concept of Operations (ConOps) that also includes the operational volume risk (i.e., risk on the ground and in the air).

Since the SORA framework is new and it is still under rapid development,

many challenges during the approval process requires CAAM to be more proactive and to quickly adapt to the new regulatory requirements and managing applicant's expectations.

It is a time consuming process that includes the time needed for the designated inspectors to be equipped with the right knowledge (i.e., training) and gain more experience in the subject. Other issues such as the limited operational volume over the gas pipeline right-of-way made the evaluation process complicated as it increases safety risk, reduced the operational range, and introduced new automated mission issue. Airspace was one of the area that requires multiple coordination with other stakeholders such as the air traffic controllers, both civil and military, which adds to the overall approval complexities. Issues such as competency requirements, human machine interface, system integration and overall system performances were relatively minor challenges as these would require proper investment in time (i.e., competency-based training), technical capabilities (i.e., vendor supports) and financial resources.

In conclusion, the whole approval process for the nested UAS project has been a valuable experience for both CAAM as the regulator, to improve on the overall approval process, and for Aerodyne in setting the benchmark for future UAS operations to improve on in terms of safety, technical capabilities and operational limitations.

Congratulations to Aerodyne for being Malaysia's first Special UAS Project Approval Holder for a nested BVLOS operations.



REVOLUTION OF THE FLYING ACADEMY FOR THE NEW GENERATION

By **Captain Kenneth Yap Kean Foo** |
Co- Founder of Asia Aeronautical Training Academy

based in Johor Bahru, Malaysia, that provides world-class aviation education and training to aspiring pilots. As the Co-Founder of the academy, I started this flying school because of my passion for aviation and to establish a quality aviation training academy in Malaysia. With my passion for flying and my background in education, I decided to establish AATA to provide a holistic, comprehensive aviation training program.

I am Captain Kenneth, Co-Founder of Asia Aeronautical Training Academy, with over 16 years of experience in the aviation industry. My passion for flying began when I was a child, fascinated by airplanes and the science behind them.

After completing my pilot training in the United Kingdom, I am grateful to Department of Civil Aviation Malaysia (DCA) and the school that accepted and trained me as their Assistant Flight Instructor. I started my career as a flight instructor in Malaysia, and while flying, I discovered my love for teaching and sharing my knowledge with others, which ultimately led me to co-found AATA. AATA stands for the Asia Aeronautical Training Academy, which is currently the only flying school

My aspirations for the aviation industry in Malaysia are to see it soar to new heights in terms of education, safety, quality, and efficiency. Over the next 5 years, I anticipate a surge in demand for aviation services, including pilot training, flight instructor training, flight crew training, and passenger transportation services via electric aircraft, helicopters, and seaplanes.

To meet these demands, we require a robust aviation infrastructure, equipped with state-of-the-art airports, modern aircraft, and well-trained pilots as well as ground crew. Our mission is to provide high-quality aviation education and training to the next generation of pilots and help them realize their dreams.



Finally, as we love our earth, ESG (Environmental, Social, and Governance) is an area that AATA will focus on to improve the organization's environmental impact by lowering carbon emissions and promoting social responsibility and corporate governance.

To achieve this vision, I hope to run a flying academy that is people-oriented, focusing on improving our teaching quality and facilities while incorporating the latest technology. We need to focus more on people, which means spending more time communicating with our students and instructors to achieve our vision of a flight academy that cares about its students.

We must understand each student's strengths to provide them with personalized guidance, ensuring that cadets from AATA are not treated like robots and can easily adapt to their future jobs. Soft skills such as leadership, communication, teamwork and decision-making are crucial for a successful career in the aviation industry, and we must emphasize their importance.

Modernizing training programs is crucial to improve the efficiency and performance of our students and instructors, so we will incorporate the latest technologies and techniques in aviation training. Our aim is to enhance the quality of education and produce highly skilled pilots who are ready to meet the demands of the industry.

I believe that the revolution of flying academy for the new generation is not just a vision, but a reality waiting to be realized. With passion, innovation, and dedication, the sky's the limit for the future of aviation.

So, let us soar together and inspire the next generation of pilots to reach for the stars.



AATA's ambition and vision for the future are to transform the flying academy industry and establish a sustainable aviation sector in Malaysia, with highly skilled pilots, innovative technologies, and a strong people culture. Our goal is to become a leading aviation training academy in the region. To achieve this, we have formed partnerships with domestic airlines to provide job opportunities for our graduates. These collaborations will not only enhance the quality of education we offer but also strengthen our reputation in the industry. We are committed to continuously improving and adapting to meet the evolving demands of the aviation sector.

There are three main areas that I believe can be improved in the Malaysian aviation industry at present:

Firstly, AATA will continue to focus on the value and the employment rate for our graduates. During the COVID-19 pandemic, we have learned a hard fact that as a pilot, without a flying job, we may not fit into other industries with the qualifications that we have. AATA will upgrade to a Private College status and design "Industry Need" Diploma courses for our graduates. With this Diploma, our graduates have more opportunities to be accepted to not only the aviation industry but other industries as well.

Secondly, AATA will focus on the MPL program and continually improve our academy to be an MPL-ready Flight Academy.