

# KERIS TERBANG

ISSUE 15



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## FIRST ALL FEMALE AIRCREW FORMATION FLYPAST LEAD

JULY TO SEPTEMBER  
2023



## Editor-in-Chief

Maj (U) Mohd Kaisan

## Managing Editor

Maj (U) Alli Farid

## Content Director

Lt (U) Nabil

Lt (U) Fariz

Lt (U) Tengku

Lt (U) Hafiy

Lt (U) Sheikh

## Proofreading and Photos

Lt (U) Rabiatal

A2, RBAirF

## Contributing Writers

Maj (U) Alli Farid

Cpt (U) Asiah

Lt (U) Rabiatal

Lt (U) Alwani

Lt (U) Aqeel

Lt (U) Syakir

Lt (U) Zahirul

Lt (U) Najib

Lt (U) Ghazali

Lt (U) Rauf

Lt (U) Dziqry

Lt (U) Zainul

## EDITOR-IN-CHIEF'S REMARKS

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Welcome back to issue 15 of our quarterly Keris Terbang.

Our magazine aims to provide an highlight the daily routine and events going on within and around the Royal Brunei Air Force showcasing the commitment and professionalism of our airmen and airwomen in making sure everything runs smoothly and safely.

In this edition of Keris Terbang we have provided a depiction of our yearly activities and key milestones. Notably in this edition we look at our proud involvement in the celebration of our monarch's 77th birthday through various channels. We also look at our continuous involvement regional engagements such as through the ASEAN Air Chiefs Conference and Exercise Airguard, as well as national events including the Maulidur Rasul national celebration. I do hope this magazine gives a great insight into the day to day running of the organisation whilst also providing educational benefits through the different case studies, tech summaries and a fitness article for the running enthusiasts.

We do hope that the 15th edition of Keris Terbang will be an enjoyable and informative read as we aspire to motivate and reward the personnel of the RBAirF in all their hard work and commitment. I would also like to take this opportunity to thank the editorial team and all article writers who have contributed and dedicated their time to the success of this magazine.

ISSUE 15

*Keris Terbang*  
*Editorial Team*



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# ***A MAJESTIC CELEBRATION: HIS MAJESTY'S 77TH BIRTHDAY COMMEMORATED WITH GRAND PARADE***

by Lt (U) Rabiatul



The bustling streets of Bandar Seri Begawan came alive as the nation celebrated the 77th birthday of His Majesty Sultan Haji Hassanal Bolkiah Mu'izzaddin Waddaulah ibni Al-Marhum Sultan Haji Omar 'Ali Saifuddin Sa'adul Khairi Waddien, the Sultan and Yang Di-Pertuan of Brunei Darussalam. The Grand Parade, a finale of meticulous preparations and patriotic enthusiasm, marked the occasion with striking excellence and military precision.

The heartbeat of the Grand Parade resonated with the participation of the Royal Brunei Air Force (RBAirF) and other uniform personnel. A total of 109 male personnel represented the RBAirF contingents in a pride march, led by Major (U) Muhammad Ammar Rusyduddin bin Ahmad. Additionally, 25 RBAirF female personnel added grace to the spectacle with their presence in the Women Military Personnel contingent.

The parade reached its peak with three resounding cheers of "Daulat Kebawah Duli Tuan Patik." The skies, adorned with national pride, witnessed a historic fly-past by RBAirF's fleet of 07 Blackhawk S70i helicopters. Major (U) Dayangku Nurazriana binti Pengiran Hassanani led the aerial display, with an all-female crew, leaving spectators in awe.



## The Preparation:

The grandeur of the Grand Parade was not a mere display but the result of meticulous preparations that began on 27 June 2023. The final touches leading up to the event on 13 July 2023, saw the RBAirF actively participating in the parade march and fly-past.

A total of 134 personnel marched proudly in the parade, showcasing the spirit of patriotism and dedication. An additional 32 personnel took to the skies, contributing to the aerial display that captivated the nation. Their involvement and commitment reflect not only the celebration of His Majesty's birthday but also the representation of national pride and unity.

The Grand Parade, commemorating His Majesty's 77th birthday, transcended mere festivities, becoming a symphony of tradition, military excellence, and unwavering patriotism. The RBAirF's graceful participation elevated the spectacle, leaving an unforgettable mark on the hearts of citizens and visitors alike. Beyond the grandness, this celebration serves as a powerful reminder of Brunei's unity, resilience, and collective commitment to honouring its rich heritage and the exemplary leadership of His Majesty Sultan Haji Hassanal Bolkiah Mu'izzaddin Waddaulah. The echoes of the parade will undoubtedly resonate for years to come, symbolising a nation standing strong and united under the visionary guidance of its esteemed monarch.



The grand parade



Female contingent of RBAirF



His Majesty inspecting the grand parade





The all female aircrew

# FIRST ALL FEMALE AIRCREW FORMATION FLYPAST LEAD

by Cpt (W) Asiah

Looking back to July 15th, 2023, I was the Co-Pilot for the leading formation flypast aircraft for His Majesty Sultan Haji Hassanal Bolkiah Mu'izzaddin Waddaulah ibni Al-Marhum Sultan Haji Omar 'Ali Saifuddien Sa'adul Khairi Waddien, the Sultan and Yang Di-Pertuan of Brunei Darussalam's 77th Birthday Celebration in Bandar Seri Begawan.

It was the first that an all female aircrew was chosen as the formation flypast lead signifying a milestone in the books of RBAirF.



The flypast at the grand parade



Formation flying towards Bandar Seri Begawan

Prior to this we have already experienced flying using an all female aircrew, just not during a flypast. To prepare for such occasion, we were trained, and we flew several flypast sorties to make sure that the task would be a smooth one.

Not forgetting the groundwork, although we have flown the flypast route every year, preparation such as mental flying and groundwork such as map planning and flight plan must not be taken lightly and had to be done in advance to ensure the flying was efficient and on time.

Reflecting on that moment, personally, after long hours of flying, struggles and sweat, I was so proud to see how we made the IMPOSSIBLE - POSSIBLE, how we got through the norm and how we made people believe in our ability to lead.

This just does not apply to this sole flight only, but it applies in our everyday lives as a flyer. We continue to strive for greater achievements and work hard and smart to maintain our standard regardless of gender and be at par with each other's performances in the squadron.

I sincerely hope with this achievement that my crew and I will become an inspiration for the young women and future generations to pursue their dream in aviation. I strongly believe that having the 'will' and 'drive' to become a FLYER is not ENOUGH. It must be accompanied by hard work, dedication, commitment along with the prayers from our loved ones, and always believe in rezeki from Allah.

# ASEAN AIR CHIEFS CONFERENCE

by Lt (U) Alwani

Myanmar,  
2023

## What is the AACC?

The ASEAN Air Chiefs Conference (AACC) is an annual conference attended by all the ASEAN Air Chiefs on a rotational basis Chairmanship. AACC is a platform where the Air Force Chiefs from the member countries of the Association of Southeast Asian Nations (ASEAN) gather to discuss matters of common interest related to Regional Security, Disaster Relief and any other rising issues in order to enhance mutual understandings and promote peace and stability between ASEAN Air Forces which is essential for regional security.



Commanders at the conference

In the year 2023, Myanmar hosted the 20th ASEAN Air Chiefs Conference (AACC) at the Myanmar International Convention Centre (MICC) in Nay Pyi Taw on 12th September 2023. Last year's Conference discussed the theme of "ASEAN Air Forces' Cooperation for Sustainable Environment".



Paying respects at the memorial



## Personal Experience During Conference

*The experience as a delegate of the ASEAN Air Chiefs Conference (AACC) was both rewarding and enlightening. As a delegate, you would have the opportunity to engage with high ranking officials from various ASEAN countries, including the Air Force Chiefs and senior military officers. This interaction allows for valuable networking and fosters a one-on-one understanding of their work ethics.*

*This year's theme centered on fostering a sustainable environment and Air bases from each country showcased their "going green" initiatives and this offers clear insights, lessons learned, and strategies, setting a precedent for ongoing efforts to achieve a more sustainable environment.*

*Overall, my experience as a delegate of the AACC was truly eye-opening. As a Junior Officer, it was not overwhelming but rather provided a unique opportunity for learning and growth. It underscored the significance of such engagements for my professional development.*



# ROYAL BRUNEI AIR FORCE JOINS MAULIDUR RASUL CELEBRATION

by Lt (U) Aqeel



His Majesty and members of the Royal Family leading the procession

On Thursday, September 28th, 2023, the Royal Brunei Air Force (RBAirF) stood proud as it joined 144 other participants in a profoundly significant event – the Maulidur Rasul Celebration. Held under the esteemed leadership of His Majesty Sultan Haji Hassanal Bolkiah Mu'izzaddin Waddaulah, the occasion took place at the revered Taman Haji Sir Muda Omar 'Ali Saifuddien in Bandar Seri Begawan, the capital city of Brunei.

The ambiance of the celebration was imbued with spirituality from the outset. The resonating echoes of Dikir Marhaban, Sayyidul Istighfar, and Selawat reverberated through the air, setting a tone of reverence and devotion.

The procession that followed, encompassing Bandar Seri Begawan, was a solemn yet uplifting journey, uniting RBAirF's Senior Officers, Officers, and personnel in a shared spiritual experience.

At its core, this year's Maulidur Rasul bore the theme 'Sunnah Dihayati, Hidup Diberkati' – a powerful reminder to embrace the teachings of Prophet Muhammad SAW and to live a life blessed by adherence to his Sunnah.



Commander RBAirF at the nightly dikir ceremony

This theme encapsulated the essence of the celebration, emphasizing not only reverence for the Prophet Muhammad SAW but also the importance of embodying his teachings in daily life.

The Maulidur Rasul Celebration served as a poignant reminder of the values that underpin Brunei's Muslim community – unity, spirituality, and adherence to the principles of Islam. It provided a platform for collective reflection, fostering a sense of communal belonging and reinforcing the bonds that unite the nation.

In retrospect, the RBAirF expresses profound gratitude for the privilege of participating in such a significant event. The opportunity to partake in the Maulidur Rasul Celebration was not merely ceremonial but served as a testament to the Air Force's commitment to faith, community, and national identity. It was a momentous occasion that will be cherished in the annals of the RBAirF's history, symbolizing the enduring spirit of unity and devotion that defines Brunei's Muslim community.



Participation from officers as well as members of the public



Dikir syarafil anam recitation



Performing mass Isya' prayers



2023

LUMUT CAMP MINI STADIUM

# RBAF FOOTBALL CHAMPIONS

by Lt (U) Syakir

The RBAirF football team emerged as the champions of the RBAF football tournament, securing victory over the combined Ministry of Defence (MinDef) football team in the final match. The tournament was held at Lumut Camp, 3rd Battalion, RBLF from 04 to 11 August 2023. Participating teams included the RBLF, RBN, RBAirF, and a combined MinDef team.

Present as the Guest of Honour during the match was Major General Dato Paduka Seri Haji Muhammad Haszaimi bin Bol Hassan, the Commander of RBAF. Also present were Services Commanders, Senior Officers, Officers, and personnel of RBAF.

The tournament kicked off with a group stage league, with the combined MinDef team topping the table, followed by the RBAirF team in second place. The tournament was followed by a Champions League Final, where the RBAirF team triumphed over the combined MinDef team in a thrilling penalty shootout, with Cpt (U) Muhammad Nazmi bin Dato Paduka Mohammad Shahminan scoring the decisive penalty.





Commander RBAF with the champions



Celebrating the win after the shootout



Team manager lifting the coveted trophy

***“I am honored to have been chosen to represent the RBAirF team in my first RBAF Football Tournament experience. My sole aim was to win every match and ultimately the entire tournament. Despite juggling work commitments, all the players demonstrated unwavering dedication during training sessions, showcasing their deep passion for the sport and the tournament.*”**

***Despite facing time constraints for preparation and training, the collective efforts and teamwork of both the management and players yielded remarkable results, culminating in our victory in the football tournament. The final match, especially against the combined MINDEF team, was intense, but through our team's determination and camaraderie, we managed to secure a victory, clinching the championship title of the RBAF Football Tournament.”***

***Lt (U) Ahmad,  
RBAirF Football Team Manager 2023***





RBAirF Contingent at  
His Majesty's Birthday  
Grand Parade



# EXERCISE AIRGUARD 2023

by Lt (U) Zahirul



This year's Exercise Airguard, the 27th edition is a memorable one for me as this is my first participation in the prestigious exercise. This bilateral exercise which was hosted by the 18 Divisional Artillery Battalion (18 DA Bn), Republic of Singapore Air Force (RSAF) is an annual GBAD exercise between RSAF and RBAirF. This year's exercise was Co-Directed by Lt Col Ang Khim Seng, Commanding Officer of 18 DA Bn, RSAF and Lt Col (U) Amierul Halip bin Talip, CO, No. 2 Wing, Operations Group, RBAirF. Both COs were present during the opening ceremony on 31 August 2023 in Chong Pang Camp, 18 DA Bn.

As part of the Exercise Airguard's hearts and minds campaign, a community service activity at the MINDS Employment Development Centre (A Centre for Children with Autism) Woodlands, Singapore was also conducted.

The aim was to establish connections among Non-Governmental Organisations (NGOs) by providing community support, hence reinforcing the bond between the participants as well as the public of the two nations. We were given the opportunity to interact with the students and experience the different ways to approach them.

Exercise Airguard ultimately provides an opportunity for participants to engage with and understand each other's diverse cultures and lifestyles, while also exchanging expertise in air defence matters. Over a two-week period, the focus extends beyond Ground-Based Air Defence (GBAD) systems to include cultural immersion, sports and interactions. The program consists of knowledge exchange sessions in the first week and the execution of a Field Training Exercise (FTX) in the second week.



VIP visit during the field deployment

The first week involves various activities such as ice-breaking sessions, camp orientation, sports, games, and community service, fostering camaraderie among Air Force personnel. However, the second week was more challenging, particularly due to adverse weather conditions, hindering the execution of planned injects and scenarios during the FTX.

On the third day of the FTX, Col (U) Hishamuddin bin Abidin, COG, RBAirF and SLTC Lau Kai Heng Anthony, Commander Divisional Air Defence Group, RSAF visited the SAFTI Live Firing Area, Pasir Laba Camp to witness the 27th Exercise Airguard and then followed by the closing ceremony.

Furthermore, on September 8, 2023, the RSAF organised an open squadron at the Paya Lebar Air Base, showcasing their assets, including Jet Fighters, Unmanned Ground Vehicles, and GBAD systems. This event presented a rare opportunity for RBAirF personnel to attend.

On September 11, 2023, marking the final day of the 27th Exercise AIRGUARD, the 18 DA Bn personnel organised an unofficial closing ceremony, allowing GBAD personnel to come together and share our final moments at Chong Pang Camp, 18 DA Bn. It was a memorable experience, and I look forward to participating in the next Exercise AIRGUARD, hosted by RBAirF, Brunei Darussalam.



Listening to the Troop Commander's brief



Prior to making cultural visits in Singapore



Community service at MINDS Centre

# AIRCRAFT UNDERWATER ESCAPE TRAINING

by Lt (U) Najib

# 15

Squadron, Number 1 Wing, Operations Group, Royal Brunei Air Force (RBAirF), underwent two significant trainings for the currency of its aircrew, Aircraft Underwater Escape Training (AUET) and Jungle Survival Training (JST), both of which were done in a span of two working weeks in the month of August 2023.

The AUET is usually done by helicopter aircrew and is known by a different name, Helicopter Underwater Escape Training (HUET). Comparatively, the AUET done by 15 Squadron aircrew is more focused on the ditching techniques used in a fixed wing aircraft, rather than in a helicopter, which is the focus for HUET.

It was my first time undergoing the AUET at Megamas Training Company in Kuala Belait. The training was a two-day course comprising of classroom-based theory classes on the first day, followed by practical sessions on the second.



Getting ready for the drill

The theory part of the course focused mainly on the what the training is about, why it is required and the techniques used when an emergency ditching of the aircraft is done. Generally, ditching an aircraft is done during an emergency situation over water, where the captain of the aircraft has to call for an emergency landing on water, due to all other options being exhausted.



Floating drill while waiting to be rescued

The practical sessions of the training focused on the use of the emergency breathing system (EBS), the ditching procedure of a fixed wing aircraft at day time as well as night time (simulated), then the procedures following the use of a dinghy which is usually on board the aircraft and deployed during the ditching procedure.

It was a lot to take in at first, with the training being my first time experiencing all the procedures involved. Despite this, with the instructors being very experienced and helpful, it helped me understand the fundamentals of the training as it came to a close.

# JUNGLE SURVIVAL TRAINING



Winching drill



Briefing on survival equipment



Trying out the survival equipment

Overall, the training helped me understand how crucial it is for aircrew and why they are required to attend the course every two years to refresh their knowledge and skills on the emergency procedures required.

The second significant training done by 15 Squadron was the JST, spanning over a four-day period. For this training, I was involved as an organiser, rather than a participant.

A lot of coordination was required prior to the commencement of the training. Personnel involved in the training included medics from the Medical Reception Services (MRS), survival instructors from Number 2 Wing, religious instructors from the Religious Department, Royal Brunei Armed Forces, survival pack instructors from 75 Squadron, Number 7 Wing as well as navigation instructors from The Parachute Airborne Tactical Delivery Unit (PATDU), Number 3 Wing. Similar to the AUET course, the participants for the JST were mainly aircrew of 15 Squadron.

In this training, the classes started off with basic survival techniques - shelter building, jungle etiquette as well as the proper animal slaughtering techniques based on Islamic teachings.

The second day of the training comprised of classes based on the contents of the group survival pack that is usually brought along an aircraft.

The participants were taught on how to use all of the contents found in the group survival pack during emergencies in a jungle environment. This class was followed by lessons on animal trap making, plant recognition in different jungle environments as well as fire-making techniques.

On the final day of the JST, the participants underwent a navigation exercise in jungle to find a dedicated helicopter winching area for a simulated rescue winch. For this, RBAirF's 11 Squadron (Blackhawk) aircrew played an important role in simulating multiple rescue winching procedures to bring the participants to the dedicated safe zone.

Having done the JST prior to organising one, I have learned a lot, not only in the techniques of surviving in jungle during an emergency landing, but also, in terms of coordinating with other personnel of The RBAF in ensuring the smooth running of a course that is aimed to train aircrew in the case of an emergency landing into jungle areas.

Ultimately, both the AUET and JST are important courses to ensure aircrew and RBAF personnel are equipped and made aware of the techniques and practices of survival in both aquatic as well as harsh jungle environments, which is where most of RBAirF aircrafts fly over during training and operations.



RBAirF Personnel Joining the  
National Maulidur Rasul  
Celebration

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ  
لَقَدْ كَانَ لَكُمْ فِي رَسُولِ اللَّهِ أُسْوَةٌ حَسَنَةٌ  
دَمِي سَسُو عَكَوَهْتِ قَدْ دِيرِي رَسُولِ اللَّهِ آيْتَادِ چونتوه يَغْ بَائِقِ بَاكِي كَامُو  
الأحزاب آية ٢١

ANGKATAN BERSENJATA  
DIRAJA BRUNEI

# How to Stop Cyber-Bullying?

## Raise Awareness

Educate individuals about the impact of cyber-bullying through workshops, seminars, and social media campaigns. Awareness is the first step towards prevention.

## Promote Digital Etiquette

Encourage the practice of respectful communication online. Teach the importance of digital etiquette, emphasizing that words shared online have real-world consequences.

## Open Communication Channels

Foster open communication between parents, educators, and students. Create a supportive environment where individuals feel comfortable reporting incidents of cyber-bullying.

## Use Reporting Mechanisms

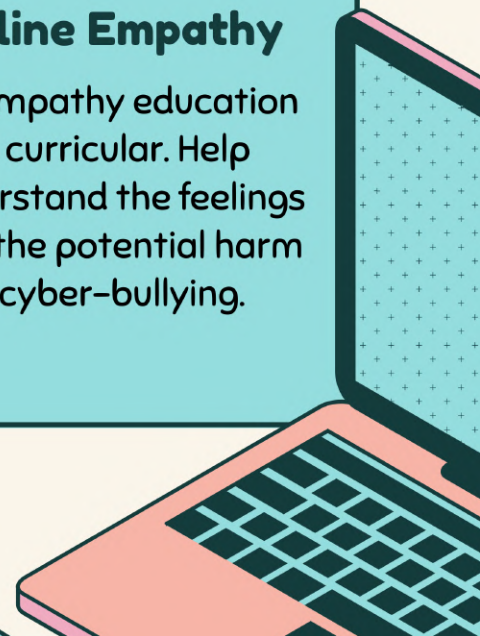
Implement reporting mechanisms on social media platforms and websites. Empower users to report incidents easily, and ensure swift action is taken against offenders.

## Set Clear Policies

Establish and enforce clear anti-cyber-bullying policies in schools and workplaces. Ensure consequences for perpetrators and support for victims.

## Teach Online Empathy

Incorporate empathy education into school curricular. Help students understand the feelings of others and the potential harm caused by cyber-bullying.



# PHOTOGRAPHY COMPETITION



## ANY PICTURE

related to RBAirF, please email or whatsapp  
and send to:

**JOIN NOW!**

+6738614899 | [allifarid.ibrahim@mindef.gov.bn](mailto:allifarid.ibrahim@mindef.gov.bn)

# OVERCOMING STRESS IN THE WORKPLACE

by Maj (U) Alli Farid

Feeling stressed in the workplace is a common issue among employees. This problem can affect mental health. The World Health Organisation defines stress as a state of worry or mental tension caused by a difficult situation.

Stress is a natural human response that prompts us to address challenges and threats in our lives. Everyone experiences stress to some degree. The way we respond to stress, however, makes a big difference to our overall well-being and mental health.

One of the biggest effect of stress is that it makes it hard for us to relax and may result in a range of emotions, including anxiety and irritability. When stressed, we may find it difficult to concentrate. We may experience headaches or other physical body pains, an upset stomach or trouble sleeping. We may find we lose our appetite or eat more than usual.

Chronic stress can worsen pre-existing health problems and may increase our use of alcohol, tobacco and other substances.

Stressful situations can also cause or exacerbate mental health conditions, most commonly anxiety and depression, which require access to health care. When we suffer from a mental health condition, it may be because our symptoms of stress have become persistent and have started affecting our daily functioning, including at work or school.



## Symptoms of Stress



Difficulty Sleeping



Feeling Anxious or Worried



Feeling Irritable or Moody



Lack of Energy



Headaches



Muscle Tension or Pain



Stomach Problems



Racing Thoughts



## Stress in the workplace can result in

- Lack of creativity
- Easy to get angry
- Bad teamwork
- Feel tired

## Causes of stress

- Work pressure
- **Deadline**
- **Bad strategic direction**
- **Bad lifestyle**
- **Low salaries**
- **Lack of social support**

## How to overcome stress

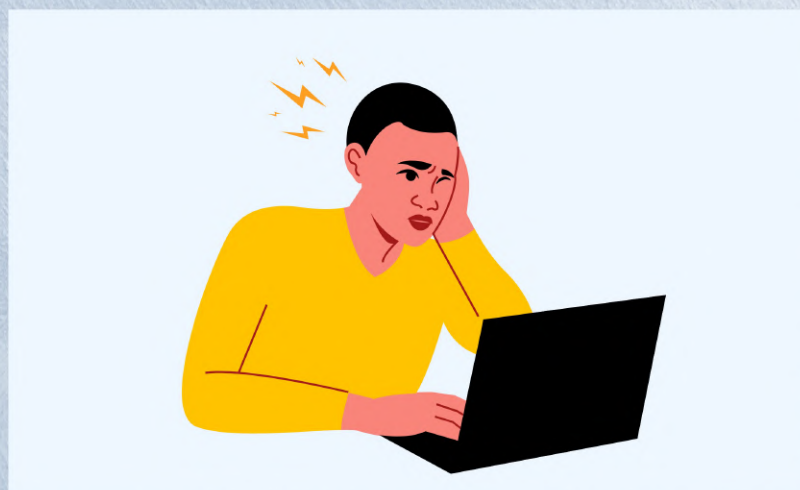
- Take time to recharge
- **Build good communication with your colleague**
- **Get some support**
- **Get enough rest**



1 in 5 people feel burnout in their workplace, and it is a common thing.

35%

of line managers believe this issue matters.



# AIR-CYBER INTEGRATION

by Maj [U] Ali Farid



## Introduction

The increasing reliance, dependence and advancements of technology in the cyber domain, has made it imperative for a military force be able to gain and maintain control in such domain to ensure mission success. Virtually all modern military operations are planned and executed with a major consideration on the cyber domain. Adversaries also always continue to look for vulnerabilities and intelligence especially through the probing of networks to look for weaknesses. A common way of doing this is through the conduct of cyber attacks, which, depending on the intent can have a variable degree of impact and effect.

## The cyber domain and its growing importance in modern military operations

As technological assets and platforms become cheaper and more readily available, the potential for cyber attacks becomes more likely. Secure communications, surveillance systems and unmanned aircraft are examples of such technologies and can be easily acquired and improvised to perform functions such as crudely-targeted kinetic attacks.

Surface-to-air missile capabilities for example are heavily reliant on effective and secure Command, Control, Communications, Computers and Intelligence centres to fully function to its full potential. For example, when a tactical radar for a surface-to-air missile is compromised by a cyber attack, there will be very limited opportunity to engage threats as most modern missiles have to make use of radars for guidance.

## Air-cyber Integration

Air-cyber integration is the use of air and cyber capabilities to achieve certain desirable effects, whether in the physical or virtual battle domains. These can either involve cyber operations in support of air operations or the other way round. Generally these can be divided into two operations, defensive or offensive air-cyber operations.



### Offensive Air-Cyber Operations

These operations focus mainly on targeting the adversary's cyber capabilities and assets to enable the effective employment of air operations in a battlespace. The simplest example is the degrading of an air defence network through cyber attacks resulting in the crippling of the main air defence system capability and enabling adversary's offensive air assets such as fighters to operate freely.

### Defensive Air-Cyber Operations

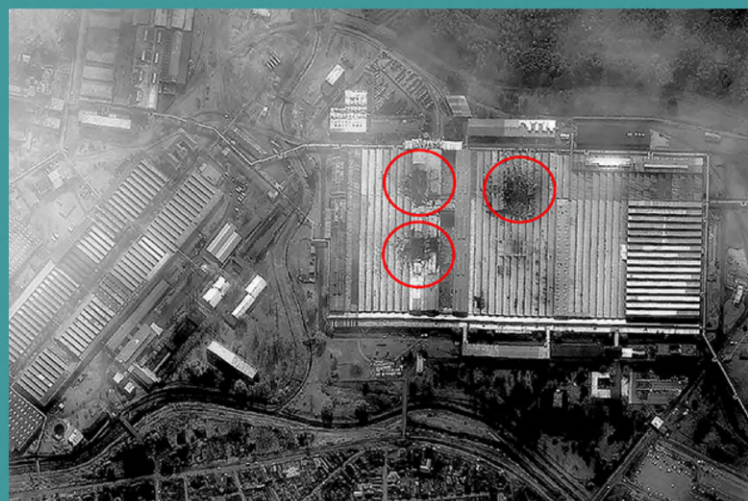
Defensive Air-Cyber Operations on the other hand focuses mainly on protecting systems which are critical in the employment of air power. The critical success factors of such operations relies heavily on understanding the capabilities and vulnerabilities to the assets being defended and catering specific means to address these attributes.

### Case Studies

One of the earliest example of Air-Cyber operation is the Operation Allied Force during the Kosovo Campaign. The NATO performed cyber attacks to Serbian Air Defence systems by sending false track information to the Serbian radars. These attacks were carefully timed and synchronised to be in tandem with planned sorties for aircraft operating within the heights of the Serbian Air Defence. These track information must be subtle enough to ensure that the radar is only a bit off so as to deceive the adversary to think of it only as a minor blip or mechanical flaw in the system, as if it was too obvious then the Serbians will be able to determine it as a sabotage.



Another example is when the Israeli Air Force undertook a mission to destroy a nuclear processing plant which was under construction at Al Kibar, Syria in 2007. The main challenge was to evade the highly capable Syrian Integrated Air Defence system safely in order to achieve the mission. This mission, Operation Orchard was successful through the detailed and precise electronic warfare jamming and cyber operation resulting in the disruption of the data link connecting the radars and the radar screen of the operators. As a result, the attack aircraft were not seen on the radar and were able to perform their mission successfully.





# NAVIGATING THE SKIES: UNDERSTANDING HUMAN FACTORS IN AVIATION

by Lt (U) Ghazali

Aviation, with its marvels of technology and human ingenuity, has revolutionized global connectivity and transportation. However, behind the sleek metal fuselages and roaring jet engines lies a critical component often overlooked: the human factor. Human factors in aviation encompass a broad spectrum of elements ranging from pilot decision-making and crew coordination to aircraft design and maintenance practices. Understanding these factors is not just crucial for ensuring safety in the skies but also for enhancing the efficiency and effectiveness of air transportation systems worldwide.

At the heart of aviation operations are pilots whose skills, judgment, and decision-making abilities play a pivotal role in ensuring the safety of flights. Factors such as fatigue, stress, and workload can significantly impact a pilot's performance. Long duty hours and irregular schedules can lead to fatigue, impairing cognitive functions and reaction times. Moreover, high-stress situations, such as adverse weather conditions or mechanical failures, can escalate decision-making challenges for pilots. External factors such as being distracted by outside-of-the-cockpit problems or other underlying issues with no relation to the particular flight are some of the most common human factors challenges pilots face in the cockpit as mentioned by 1026 Maj (U) Mohammad Aliff bin Haji Zulkifli.

Crew Resource Management (CRM) emphasizes effective communication, teamwork, and decision-making skills among flight crews, enabling them to effectively manage emergencies and mitigate potential hazards. 1026 Maj (U) Mohammad Aliff points out that human factors training is really important as it educates the pilots and aircrew on the importance of CRM and buddy-to-buddy systems especially in a long task or a dynamic environment.

Modern aircraft are marvels of engineering, meticulously designed to optimize performance, efficiency, and safety. However, an often-overlooked aspect of aircraft design is its human-centeredness. Human factors engineering focuses on designing systems, equipment, and interfaces that accommodate the capabilities and limitations of human operators. The state-of-the-art Blackhawk S70i equipped with automation capabilities helps to keep the workload in check, abusing it, however, to some degree may affect the manual flying skills of individual pilots, especially of those greenhorn pilots.

From cockpit layout and instrument design to control interfaces and warning systems, every aspect of an aircraft is meticulously crafted to enhance usability and minimize the potential for human error. For example, ergonomically designed cockpit layouts ensure that pilots can access critical controls and instruments with ease, even in high-stress situations. Similarly, intuitive warning systems and automation features provide pilots with timely alerts and assistance, reducing the likelihood of accidents due to human oversight.

Beyond the cockpit, human factors also play a crucial role in aircraft maintenance and safety practices. Maintenance technicians are responsible for ensuring that aircraft are in optimal condition for flight, conducting routine inspections, repairs, and component replacements. However, human error in maintenance procedures can have catastrophic consequences, leading to mechanical failures and in-flight emergencies.

To mitigate these risks, aviation maintenance practices emphasize strict adherence to standard operating procedures (SOPs), comprehensive training programs, and robust quality assurance measures. Additionally, fostering a culture of safety within maintenance organizations encourages open communication, reporting of safety concerns, and continuous improvement initiatives.

Human factors in aviation represent a complex interplay between individuals, technology, and organizational systems. By understanding and addressing these factors, aviation stakeholders can enhance safety, efficiency, and reliability across all facets of air transportation. From pilot training and aircraft design to maintenance practices and organizational culture, prioritizing human factors ensures that the skies remain safe for passengers and crew alike. As aviation continues to evolve and expand, ongoing research and innovation in human factors will remain paramount in shaping the future of flight.



## *Aviation* Human Factors



# PHASED ARRAY RADAR SYSTEMS

by Lt (U) Rauf

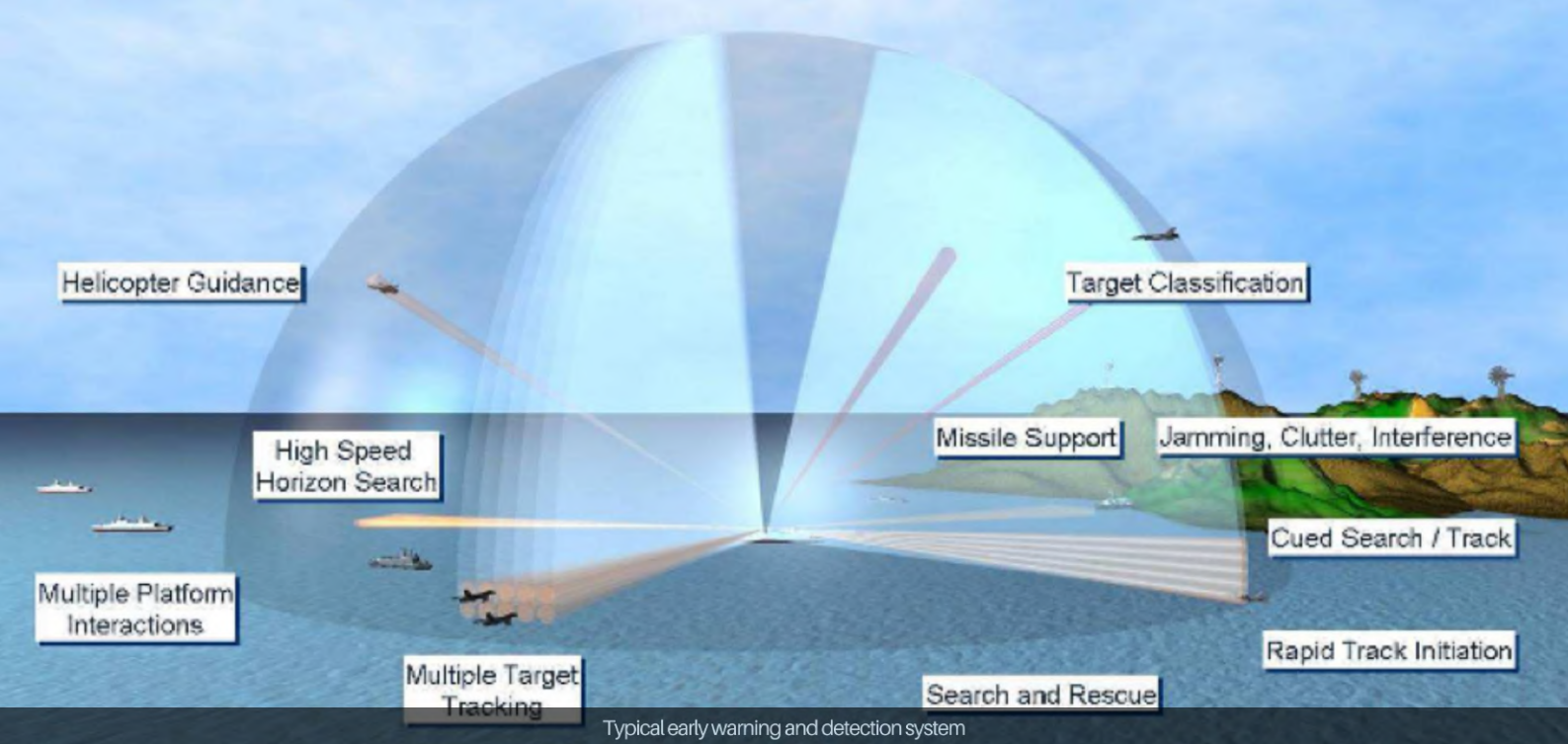


Phased array radar systems available worldwide



Phased Array Radar Systems have emerged as a revolutionary technology in the field of radar technology which offers unparalleled capabilities in surveillance, tracking, and target identification. As opposed to traditional radar systems, phased array radars employ multiple antenna elements that work in harmony to steer and shape the radar beam electronically. This not only enhances their flexibility but also enables rapid beam scanning, improved accuracy, and increased reliability.

Phased Array Radar Systems at the core lies a unique arrangement of antenna elements that can be controlled individually to manipulate the direction and shape of the radar beam. Traditional radar systems rely on mechanical operation, such as rotating antennas to steer the radar beam. In contrast to that, phased array radar systems use phase shifters to adjust the timing of the signals sent to each antenna element, enabling electronic beam steering without any physical movement.



The phased array radar systems consist of an array of elements, each equipped with a transmitter and a receiver. These elements are arranged in a specific pattern, and by controlling the phase of the transmitted signals, the radar system can electronically steer the beam in a desired direction. This electronic control allows for rapid beam scanning, reducing the time required to cover a specific area compared to mechanical systems.

### WEATHER MONITORING

Phased Array Radar Systems find extensive use in military applications for air defence and surveillance. The ability to rapidly scan the sky and track multiple targets simultaneously is crucial in detecting and responding to potential threats. The electronic beam steering capability of phased array radars allows for quick adjustments to changing scenarios, providing a significant advantage in dynamic military environments.

### SURVEILLANCE AND AIR DEFENCE

Phased Array Radar Systems have also proven valuable in meteorological applications. Their ability to scan the atmosphere rapidly and precisely tracks the movement of weather phenomena such as storms and precipitation which makes them instrumental in weather monitoring and forecasting. The ability to adapt flexibly in scanning patterns of specific weather conditions enhances the accuracy of predictions and helps in issuing timely warnings.

### AEROSPACE AND AVIATION

In terms of aviation, Phased Array Radar Systems are employed in Air Traffic Control (ATC) systems and for aircraft surveillance. The rapid beam scanning capabilities ensure efficient monitoring of airspace which contributes to safer and more organised air travel. These radar systems also play a crucial role in detecting and tracking airborne objects, aiding in collision avoidance and overall airspace management.

Phased Array Radar Systems have undoubtedly revolutionised the field of radar technology by offering unprecedented capabilities in surveillance, tracking, and target identification. The electronic beam steering, rapid scanning and adaptability to various operational requirements make these systems indispensable in military, aerospace, and meteorological applications. With ongoing advancements, the future holds even more developments and improvements to Phase Array Radar Systems. As technology continues to evolve, we can expect further enhancements in performance, efficiency and the range of applications, solidifying the position of Phased Array Radar Systems as a cornerstone in modern sensing and detection technologies.

# ROBOTIC DOGS



## BOSTON DYNAMICS

by Lt (U) Dziqry

In the realm of robotics, innovation knows no bounds. From assisting in household chores to performing intricate surgeries, robots have seamlessly integrated into various aspects of our lives. Among these advancements, one particularly intriguing development has been the creation of robot dogs. These mechanical companions, inspired by their flesh-and-blood counterparts, are not only fascinating pieces of technology but also raise profound questions about the intersection of artificial intelligence and emotional connection.

At first glance, robot dogs may appear as mere toys or novelties. However, their capabilities extend far beyond simple amusement.

Equipped with sophisticated sensors, cameras, and artificial intelligence algorithms, these robotic canines boast remarkable agility and intelligence. They can also navigate complex environments, respond to voice commands, and even learn from their interactions with humans and other objects.

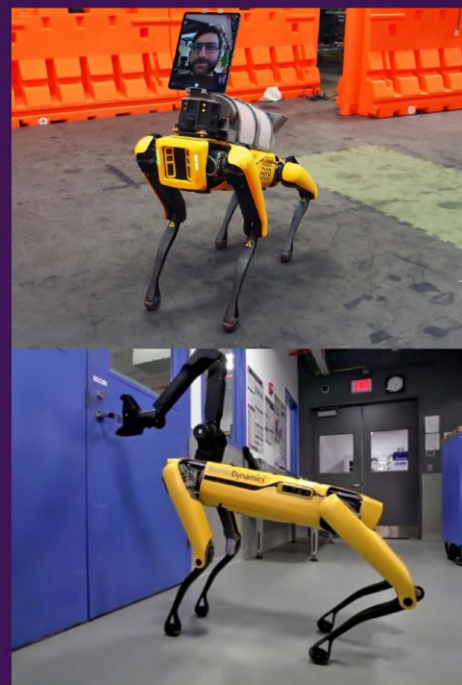
One of the most prominent examples of robot dogs is Boston Dynamics' Spot. With its sleek design and impressive mobility, Spot has captured the imagination of both technology enthusiasts and industry professionals alike. Originally developed for applications such as inspection and surveillance in industrial settings, Spot has since found its way into various other domains, including entertainment, research, and even as a companion for the elderly.

The versatility of robot dogs extends beyond their physical capabilities. These machines are also capable of fostering emotional connections with humans. Research has shown that people often develop strong attachments to robotic pets, experiencing similar feelings of companionship and empathy as they would with real animals. This phenomenon has significant implications for fields such as therapy and education, where robot dogs can provide comfort and support to individuals in need.

However, the rise of robot dogs also raises important ethical considerations. As these machines become more lifelike and integrated into our daily lives, questions emerge regarding their rights, responsibilities, and the potential impact on society. Ensuring the ethical treatment of robot dogs involves addressing implications for pet ownership and animal welfare, which requires thoughtful consideration and regulation.

Despite these challenges, the future looks promising for robot dogs. As technology continues to advance, we can expect to see even more sophisticated and capable versions of these mechanical companions. Whether serving as loyal assistants in the workplace, providing companionship to the elderly, or sparking joy in children's hearts, robot dogs are poised to become an integral part of our society, redefining what it means to have a "man's best friend" in the age of artificial intelligence.

In conclusion, the emergence of robot dogs represents a fascinating convergence of technology and emotion. These mechanical companions offer a glimpse into a future where man and machine coexist in harmony, enriching our lives in ways we have yet to fully comprehend. As we navigate this new frontier, it is essential to approach the development and integration of robot dogs with careful consideration, ensuring that they enhance our lives while upholding our values and ethical principles. After all, in the journey towards creating our robotic counterparts, we must never forget the importance of empathy, compassion, and the enduring bond between humans and their beloved pets.



| Base Robot   |  | Battery & Payload  |                                    |
|--|--|--|------------------------------------|
| <b>DIMENSIONS</b>  | <b>LOCOMOTION</b>                          | <b>TERRAIN SENSING</b>   | <b>CONNECTIVITY</b>                |
| <b>Length</b><br>1100 mm (43.3 in)                               | <b>Max Speed</b><br>1.6 m/s                | <b>Horizontal Field of View</b><br>360°  | <b>WIFI</b><br>2.4GHz / 5GHz b/g/n |
| <b>Width</b><br>500 mm (19.7 in)                                 | <b>Max Slope</b><br>±30°                   | <b>Range</b><br>4 m (13 ft)  | <b>Ethernet</b>                    |
| <b>Height (Sitting)</b><br>191 mm (7.5 in)                       | <b>Max Step Height</b><br>300 mm (11.8 in) | <b>Lighting</b><br>> 2 Lux   |                                    |
| <b>Default Height (Walking)</b><br>610 mm (24.0 in)              | <b>ENVIRONMENT</b>                         | <b>Collision avoidance</b><br>maintains set distance from stationary obstacles |                                    |
| <b>Max Height (Walking)</b><br>700 mm (27.6 in)                  | <b>Ingress Protection</b><br>IP54          |  |                                    |
| <b>Min Height (Walking)</b><br>520 mm (20.5 in)                  | <b>Operating Temp.</b><br>20°C to 45°C     |  |                                    |
| <b>Net Mass/Weight (Spot with battery)</b><br>32.7 kg (72.1 lbs) |  |  |                                    |



Basic specs of the Boston Dynamics Spot Robot Dog

# SUGAR INTAKE

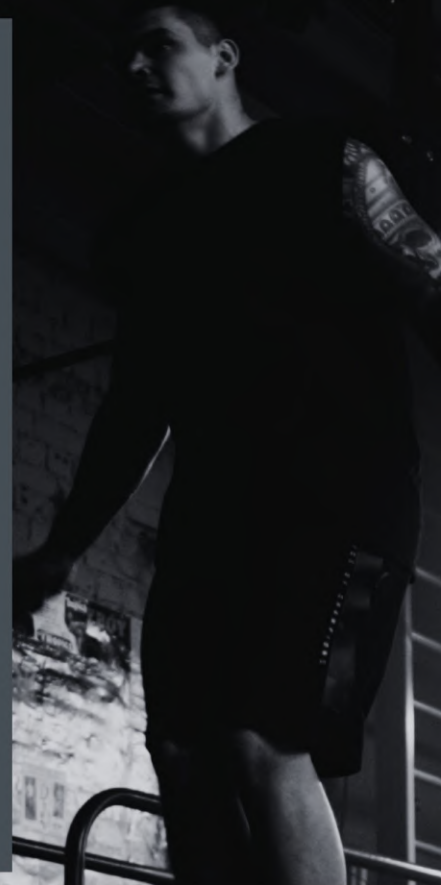
## AND

# FITNESS

by Lt (U) Zainul

Sugar intake can have a significant implication for both fitness and overall health. Sugar is a form of carbohydrate that provides an immediate source of energy for the body and mind. For most athletes, they usually use sugar for a quick energy boost, particularly during intense physical activities. There are two types of sugar, namely glucose and fructose, in which both can be quickly absorbed into the bloodstream because they are just simple sugar. For individuals seeking sustained energy during prolonged exercise, opting for complex carbohydrates found in whole grains and vegetables is preferable. While sugar can provide a quick source of energy, excessive intake may result in weight gain due to its high calorie content. When sugar consumption surpasses the body's capacity, it gets stored as fat. Moreover, excessive sugar intake can cause fluctuations in blood sugar levels, leading to mood swings and energy crashes. Over time, this pattern can contribute to the development of insulin resistance and potentially increase the risk of Type 2 diabetes.

Although sugar can provide a quick energy release, relying on it too much can lead to inconsistent performance due to fluctuating blood sugar levels. Having a proper intake of carbohydrates, protein, and fats is much better in order to increase and improve performance in terms of endurance and fitness. However, sugar when combined with protein can be used to replenish glycogen stores as it enhances the process of muscle recovery. There are many dietary guidelines provided by many health organisations where they recommend limiting the added sugar into the body to less than 10% of total daily calories. This can be done easily by reading the food label and choosing natural sources of sugar like fruits which can greatly help in managing the sugar intake. Sugar may not only affect the physical state of a person, but it can also have psychological impacts as sugar can have addictive properties, resulting in individuals experiencing cravings or urges to consume sweets. Even the nutrient density in sugar is lacking in many ways because sugar does not contain vitamins, minerals or even fibres which is essential in everyday lifestyle. By filling up on sugary treats, you may be missing out on important nutrients which are necessary for overall health and fitness.





In order to manage your sugar intake effectively for fitness purposes, you should consider focusing more on whole foods like fruits, vegetables, whole grains, lean proteins, and healthy fats into your diet because these foods can provide essential nutrients without the added sugars. Cutting back on sugary beverages like soda, sport drinks, and sweetened coffee drinks can also be one of the tips to manage the sugar intake in the body and focuses more on drinking more water, herbal tea, or unsweetened options instead. To help stabilise the blood sugar levels and provide more energy into the body is by aiming for a balanced meal that includes a combination of protein, healthy fats, and complex carbohydrates.

The timing of sugar consumption can also impact fitness performance for example by consuming simple sugar before a workout can provide a quick source of energy for immediate use. Bear in mind that by having a high sugar intake, it can contribute to cravings and a cycle of blood sugar spikes and crashes which can lead to overeating and difficulty maintaining a healthy diet if your goal is to have a healthy lifestyle and to reach your fitness goal.

In summary, controlling your sugar intake is crucial for sustaining a healthy and active lifestyle. By conscientiously monitoring the types and quantities of sugars you consume, considering timing, managing cravings, staying adequately hydrated, and ensuring a balanced intake of macronutrients, you can effectively support your fitness objectives, enhance your overall health, and promote well-being.

## KEY POINTS:

1. Glucose and fructose can be absorbed easily as quick fuel
2. Complex carbohydrates in wheat and grains can be used for sustained energy
3. Relying on sugar alone will not give consistent performance
4. Sugar can cause addiction
5. Consume sugar before a workout for quick boost
6. High sugar intake can lead to unbalanced diet





**KERIS TERBANG**

