



KERIS TERBANG



ISSUE 20 (OCTOBER - DECEMBER 2024)

**Operasi Badai Tadah
HADR**

RBAirF provided
Humanitarian Aid in the
Philippines

Cyber Defence Exercise

RBAirF A6 team secured
third place in CDEX 2024

**Senior Fellowship in
Public Service
Program in Singapore**

One senior officer as a
representative from RBAirF



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OCT - DEC 2024

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Editorial Team



EDITOR-IN-CHIEF'S REMARKS

Reaching the 20th issue of Keris Terbang is a testament to the Royal Brunei Air Force's (TUDB) commitment to excellence, adaptability, and continuous learning. This edition highlights key operations, international collaborations, and technological advancements shaping the future of air power.

Our participation in Operasi Badai Tadah, UNIFIL MALBATT 850-11, and Combat Search and Rescue with TNI-AU reflects TUDB's dedication to humanitarian aid, peacekeeping, and joint training. Articles on Jungle Warfare Skills Meet and CSC in New Zealand emphasize the importance of resilience and professional growth.

Innovation remains critical, with insights into Cyber Defence Exercise, Cybersecurity, eVTOL, and The Evolution of Air Power from WW1 to the Drone Era. As threats evolve, so must our strategies and capabilities.

This issue also highlights the human element, from the perseverance of TUDB Runners to the importance of Functional Fitness & Mobility Training and lessons from Near Misses – A Blessing in Disguise.

May this edition continue to inspire learning, unity, and a steadfast commitment to excellence in service.

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RBAirF team welcomed by Colonel Romulo Y Dilag PAF, Group Commander of the Tactical Operation Group 5, Philippines Air Force.



Food supplies loaded into RBAirF's Blackhawk S70i helicopter.



S70i helicopter headed to the affected areas around Sumaoy Island.

OPERASI BADAI TADUH

A JOURNEY OF SERVICE:
MY EXPERIENCE AS REAR CREW ON A LONG
NAVIGATION MISSION TO THE PHILIPPINES

By Cpl (U) Addy Roshafuad

As a member of 11 Squadron, one of the most significant moments in my career as a rear crew came during a long navigation mission to the Republic of the Philippines aboard the Black Hawk S-70i. This mission was not just a testament to our squadron's skill and professionalism but also a reminder of the profound impact of military aid in the face of natural disasters.

The Philippines had recently been struck by a devastating typhoon, leaving countless villages in ruins and many lives upended. The gravity of the situation was clear when we were tasked with providing humanitarian aid. Knowing that our work could help ease the suffering of those affected gave this mission a sense of purpose unlike any other.

Preparation for a long navigation mission is always meticulous, and this was no exception. As a rear crew, my role was pivotal in ensuring the success of the operation. From loading the aircraft with essential supplies—such as food, water, and medical kits—to conducting pre-flight inspections, every detail mattered. The coordination with pilots and ground crew had to be seamless to avoid any delays or complications. The navigation to the Philippines presented unique challenges. Long flights over vast stretches of ocean required precise planning, including fuel management, waypoints, and contingency plans for emergencies. Despite the technical demands, I felt a strong sense of camaraderie and determination among the crew.

Flying aboard the Black Hawk S-70i was an experience I will never forget. The aircraft, designed for versatility and reliability, performed exceptionally well during the long journey. From my position as rear crew, I had the responsibility of monitoring cargo security and ensuring the safety of all on board. Communication with the cockpit was constant, especially as we encountered turbulence or needed to adjust course due to unpredictable weather conditions.

We made several stops for refueling and crew rest, often at remote airstrips or military bases. These breaks were brief but crucial, allowing us to recalibrate and prepare for the next leg of the journey. Despite the fatigue, I remained focused, driven by the knowledge of what awaited us at our destination.

As a rear crew member of the Black Hawk S-70i, I have experienced many flights and missions, but our recent landing in Tawi-Tawi after a journey from Brunei was truly special. The moment our helicopter safely touched down on one of the picturesque islands of the Philippines, we were met with a warm reception that reflected the hospitality and camaraderie of the local people and security forces.

Under the shade of a beautifully structured pavilion, with the vast ocean stretching behind us, we were greeted by military personnel and local officials who had prepared a welcoming meal for us. The aroma of freshly cooked food filled the air, and it was clear that they had gone out of their way to ensure we felt at home. After a long flight, this kind gesture was deeply appreciated, reinforcing the strong bonds between allied forces and communities working together for a common cause.

However, our presence in Tawi-Tawi was not just for camaraderie; we had an important mission ahead. The region had recently been affected by a powerful typhoon, leaving many villages devastated. Our task was clear—we were to assist in humanitarian operations, delivering aid and providing relief to those in desperate need. The Philippine military, along with local authorities, briefed us on the situation, highlighting the urgent need for food, medical supplies, and infrastructure restoration.

As we sat around the table discussing our operations, I couldn't help but reflect on the importance of our role. The Black Hawk S-70i is not just a machine of power and precision; it is a vessel of hope. With its capacity to carry essential supplies and personnel, we were ready to extend a helping hand to the people who had lost so much.

The hospitality we received in Tawi-Tawi served as a reminder of why we do what we do. Beyond military operations and strategic tasks, our role extends to humanitarian assistance—being there when people need us the most. The mission ahead would be challenging, but knowing that we were making a real difference fueled our determination.

As we prepared for our next deployment, the support and warmth from our hosts in Tawi-Tawi remained with us. Their kindness reinforced the essence of our mission—not just as soldiers or aviators, but as protectors, responders, and humanitarians. The sky may be our domain, but our hearts remain grounded in service to those in need. Touching down at Pagadian City, Zamboanga del Sur, our Black Hawk S-70i crew successfully completed another mission, demonstrating precision and professionalism in every aspect of the flight. As we stepped onto the tarmac, we were warmly welcomed by a distinguished officer pilot from the Philippine Air Force, a moment that highlighted the strong camaraderie among military aviators. Beyond the warm reception, one of the Philippine Air Force aviators provided us with a detailed weather update for the region. This briefing was crucial in ensuring our situational awareness for future operations, as weather conditions play a significant role in mission planning and flight safety. The exchange of critical information and professional courtesies reinforced the importance of collaboration in maintaining operational effectiveness. As we prepare for the next task ahead, this experience serves as a testament to the skill, discipline, and unwavering dedication of those who take to the skies in service of their nation. The partnership and coordination between our teams exemplify the shared commitment to mission success and regional security.



Group photo with the locals on Sumaoy Island, Republic of the Philippines.

A meaningful moment between a Black Hawk S-70i pilot, Maj (U) Haqim and a Philippine Air Force pilot, both signing a commemorative board that honors the "Air Warriors in Western Mindanao – Tactical Operations Group 9." This act symbolizes their shared commitment to aerial missions and national security.

The two airmen stand proudly as they add their names to a board already filled with signatures. This gesture reflects their dedication to the mission and their connection to the broader community of aviators operating in Western Mindanao.

It is a testament to the strong partnership between different aviation units, the professionalism of aircrew members, and the enduring spirit of those who take to the skies in service of their country.

As the Black Hawk S-70i touched down at the military hangar in Legazpi City, the weight of our mission settled upon us. We, the rear crew from Brunei, had arrived at Tactical Operations Group 5—not as mere passengers, but as lifelines to those in need. Beyond the rotor's fading hum, the devastation of the typhoon-stricken villages loomed like an unspoken plea for help.

The air was thick with the scent of rain and salt, remnants of the storm's fury. Yet amidst the wreckage, there was resilience. With every crate of supplies we unloaded, every word of reassurance we offered, we were not just crew members of a Black Hawk—we were messengers of hope. The people welcomed us with weary but grateful eyes, and in that moment, the distance between Brunei and the Philippines disappeared.

As we stood beneath the shadow of our aircraft, watching the golden hues of the setting sun blend with the silhouette of Mayon Volcano, we knew this mission would stay with us forever. It was more than just a landing; it was a promise kept—a testament to how borders fade when humanity calls.

The tarmac of Naga Airport buzzed with urgency as we, the rear crew of Brunei's Black Hawk S-70i, moved swiftly, loading boxes of rations into our aircraft. Each box carried more than just food and supplies—it carried hope for those stranded on an island battered by the typhoon's wrath. The sun bore down on us, sweat forming beneath our flight suits, but we pressed on. This was more than duty; it was a calling. Every crate we secured brought us closer to those in need, bridging the vast expanse of sea between despair and relief. The hum of the Black Hawk's rotors grew louder, a promise that help was on the way.

As we stood by, watching our bird lift off with its precious cargo, a sense of purpose filled us. We were not just crew members; we were part of something greater—a testament to the unbreakable bond between nations in times of crisis. In that moment, we were not just flying—we were delivering hope.



Group photo with Philippine Air Force pilots.



Maj (U) Haqim signed on the Air Warriors in Western Mindanao board as a memory.



Self portrait of Cpl (U) Addy at Naga Airport.



Mayon Volcano were seen during the journey to the affected areas.



Group photo of Cpl (U) Addy with Minister of Defence II and his family after safely landed at Rimba Air Force Base.

After a successful humanitarian aid operation in the Republic of the Philippines, I finally landed safely back at Rimba Air Force Base in Brunei. As a rear crew member of the Black Hawk S-70i, the mission was both physically and emotionally demanding, requiring us to transport relief supplies and provide assistance to those affected by the disaster. Despite the challenges, I felt immense fulfillment knowing that our efforts contributed to saving lives and bringing aid to those in need.

The moment I stepped off the aircraft and saw my family waiting for me, a wave of relief and joy washed over me. In the photo, I am holding my son tightly, cherishing the long-awaited reunion. Standing beside me was my wife, also in uniform, sharing in my happiness. Next to us was Yang Berhormat Pehin Datu Lailaraja Mejar Jeneral (Retired) Dato Paduka Seri Awang Haji Halbi bin Haji Mohd Yussof, a highly respected leader whose presence at the base was an honour. My father-in-law, standing to my right, was also there to welcome me home, making the moment even more special.

The image captures not just a personal milestone but also the essence of duty, sacrifice, and the importance of family. The mission reaffirmed my commitment to serving my country, but nothing compares to the warmth of returning home to the people who matter most. At that moment, surrounded by loved ones, I felt an overwhelming sense of gratitude and pride.

As rear crew members of Brunei's Black Hawk S-70i, we had flown into the heart of a disaster, not just as soldiers but as lifelines. The typhoon's wrath had left devastation in its wake, but through every supply drop, every evacuation, and every reassuring nod to those in need, we had played our part. Now, as our mission came to an end, the gratitude of the Philippine Air Force was something we never expected—but deeply appreciated.

That evening, they treated us to a feast at a beautiful restaurant, a gesture that spoke of more than just thanks. It was a celebration of camaraderie, a moment where uniforms and ranks faded, and friendship took their place. As we shared laughter over warm meals, the exhaustion of the past days melted away, replaced by the unspoken bond of those who had served side by side.

Looking out at the Philippine night sky, we knew this mission had given us more than just experience—it had given us brothers. The Black Hawk may have carried us across the skies, but it was the spirit of humanity that truly lifted us.



Group photo with Senior Rank Bravo Company.

UNIFIL MALBATT 850-11

By Sgt (U) Hj Izzatul Izzat



Group photo with Lebanese Armed Forces (LAF).



Deploying for CIMIC activities.



Photo with one of the monuments in LAF Camp.

First of all, Alhamdulillah and praise to Allah for our safe return to our beloved home with family and country Brunei Darussalam. I would also want to express my huge gratitude to the Royal Brunei Armed Force (RBAF) and Royal Brunei Air Force (RBAirF) for giving me the rare opportunity of joining the mission under the United Nation Interim Force In Lebanon (UNIFIL) along with the Malaysian Battalion (MALBATT 850-11) from November 2023 to November 2024. For me, joining this mission was a lifetime experience and very memorable while I am still wearing my military uniform in RBAF because this marks my achievement to dedicate my service and loyalty as one of the 29 personnels bearing the Brunei flag on such missions.

18th October 2023, date of our departure from Brunei International Airport to Malaysia, the feelings of leaving your whole family for the first time for one whole year, a mixture of sadness and happiness was felt, although, for the sake of duty, my spirit must be strong.



Group Photo of RBAirF Personnel in 850-11.



Section foot patrol lead by Sgt (U) Hj Izazul Izzat.



Self portrait of Sgt (U) Hj Izazul Izzat at Entry/Exit Point 00.

Before being deployed to Lebanon, we underwent Force Integration Training (FIT) with various professions from the Malaysian army (Royal Malay Regiment, Royal Malaysian Navy, Royal Malaysian Air Force) for two months at MALBATT VILLAGE in Port Dickson Negeri Sembilan from the Malaysian Peacekeeping Centre because our deployment was not intended for combat operations, but rather for peacekeeping purposes. For this mission, I was given the task of Section Commander for Section 1, 5th Platoon of BRAVO Company stationed at UNP 2-1 (Ma'arakah Camp).

On 7th November 2023, the day of MALBATT 850-11 landed on 'Bumi Anbiya', 7545 KM away from Malaysia and 8730 KM from Brunei Darussalam, I felt the sense of pride and anticipation in representing Brunei as a flag bearer in a conflict-affected country.



Group Photo after Medal Ceremony with Defence Attache of Brunei Darussalam in Malaysia.

Every time we went outside the camp to carry out any tasks given to me, as a section commander, my responsibility was not just completing the job, the most important part for me was thinking about the safety of my section, that meant seven more lives were under my command. Despite encountering hostility from some locals—such as being unlawfully stopped in the middle of a remote village, followed, obstructed, provoked, and even pelted with stones—the safety and discipline of the personnel under my care remained my top priority. As peacekeepers, it was imperative that we exercised restraint and avoided any action that could escalate tensions or further provoke the local population.

As for BRAVO Company, our task was to conduct 24/7 patrol in MALBATT's area of responsibility, the patrol consisted of conducting independent vehicle or foot patrols occasionally with the Lebanese Armed Forces (LAF). Patrols we made are to ensure the safety of the civilians and their freedom of movement as well as helping the Lebanese Government in accordance to the UN and MALBATT Mandate.

When conducting independent patrol, either by vehicle or on foot, one section would deploy out from camp to patrol the route that has been gazette and approved by United Nation HQ in Naqura. The difference of independent patrols and with LAF (Lebanese Armed Forces) is the size in which one section was deployed along with the Platoon Commander.

For BRAVO Company, we had other post duties outside camp that we called Entry/Exit Point 00 (EPOO). This post located alongside of Litani river, while guarded by the cooperation of one section from MALBATT and one section from LAF, exists as one of the entry and exit points of United Nation area of responsibility in Lebanon.



Group Photo with one of the Lebanese counterparts.

23rd September 2024, one of my unforgettable moments, when the attack started in Lebanon, I was on duty in Entry Point 00 with my section for a week with few food rations and drinking water left due to no movements allowed from the United Nation HQ. It is difficult to put into words the experiences we went through there, but Alhamdulillah, we are grateful to have returned safely to Malaysia without harm.

JUNGLE WARFARE SKILLS MEET

By Lt (U) Yaqin



Group Photo with all participants.



RBAirF proudly secured the silver medal.



One of the obstacles that involved planning.



Closing Ceremony for the Jungle Warfare Skills Meet.

The first ever Jungle Warfare Skills Meet, organized by Third Battalions, Royal Brunei Land Force and the Royal Gurkha Rifles, and the event was attended by His Royal Highness Prince Haji Al-Muhtadee Billah ibni His Majesty Sultan Haji Hassanal Bolkiah Mu'izzaddin Waddaulah, the Crown Prince, held at Kargu Dam, Andulau Forest Reserve, Sungai Liang, Belait District. So how I felt going in to the competition was understandably nerve-wrecking and anticipation, as my duty was to assemble a team and lead them in this competition. The weight of responsibility was heavy, but I knew that I had to lead by example.



Moving through the jungle during the competition.

Training with the Royal Gurkha Rifles was an incredibly tough and challenging experience that tested every aspect of physical and mental endurance. From the grueling fitness routines to the intense field exercises, the training pushed us to our limits. The rigorous physical demands were matched by the psychological resilience required to succeed, as participants were often placed in high-pressure scenarios where quick thinking and teamwork were crucial. However, despite the difficulty, the knowledge gained from such a disciplined and respected regiment was invaluable. The Gurkha soldiers' tactical expertise, attention to detail, and the emphasis on humility and respect shaped a unique learning environment. The emphasis on endurance, adaptability, and teamwork was particularly enlightening, providing a deeper understanding of what it truly means to be part of a cohesive unit. Learning their way offered profound insights into the importance of personal integrity and collective strength. The experience fostered a deeper sense of discipline and resilience, both in terms of physical capability and personal growth.



Morning Run with the Royal Gurkha Rifles.

basic military skills to uphold the standards entrusted upon us going in to the competition. This was no ordinary challenge. It wasn't just about executing tactics, managing logistics, or ensuring safety. The dense jungle, unpredictable weather, and unfamiliar terrain had the potential to make or break our journey.

What struck me the most was the sense of teamwork, as we leaned on one another and every team member had a role to play, and no one was left behind. The jungle, with all its challenges, brought us closer as a team. I was constantly amazed by the adaptability and resourcefulness of my team. We were pushed to our limits, but we found ways to not only survive but thrive in the environment.



Class discussion with one of Royal Gurkha Rifles instructor.

Looking back, I realised how much I learned, both about myself and my team. The Jungle Warfare Skills Meet was more than just a competition, it was a journey of growth. What began as an experience filled with nervous energy and self-doubt ended with a profound sense of accomplishment. I came out of the jungle not only with a deeper understanding of warfare tactics but also with a renewed sense of confidence in my ability to lead in the most challenging environments. It was a reminder that, as leaders, we are capable of far more than we realize, and the greatest challenges often lead to the greatest personal growth.

Though, my team had little experience in the jungle, we dedicated two weeks before the competition to improve our fitness and revised



Group Photo with Maj (U) Pg Qamarul, Act OC 236 Squadron.

RBAF CYBER - DEFENCE EXERCISE

By WO1 (U) Eddy



RBAirF Cyber Defence Exercise team photo.

Participating in a Cyber Defense Exercise (CDEX) offers a unique, hands-on experience in tackling real-world cybersecurity challenges. During one such exercise I took part in, the primary objective was to investigate deeper into the simulated network environment to locate the source of the cyberattacks launched set the organiser in order to ensured network security and integrity of services.

The exercise was set up in a controlled environment, representing a private network with various systems, servers and endpoints. The exercise included 6 categories; network exploitations, web exploitations, forensics, packet analysis, and general skills. Each categories consisted of 4 tasks and each task has its own values accordingly. The exercise lasted for 6 hours and each team needed to complete as much task as possible within the time duration given.

One of the first things I learned was the importance of proactive monitoring. We began by scanning the network for any signs of unusual activity. Using tools like Wireshark software, we were able to detect anomalies in real-time, such as unusual traffic packet. This monitoring was essential in identifying potential threats before they could escalate into full-blown attacks.

As the exercise progressed, I became deeply involved in incident response. This stage was crucial because it wasn't just about detecting an intrusion, but also about responding to it effectively. I had to work quickly with my team to contain the breach, analyse compromised systems, and begin the process of remediation. This involved identifying the attack vector, isolating affected systems, and applying patches or configuration changes to prevent further exploitation. The red team would often exploit weaknesses like weak password policies or outdated software, which served as a stark reminder of the importance of regular vulnerability assessments and patch management.

The most rewarding part of the exercise was the post-incident debrief. This phase involved analysing what went well and what could have been improved. It was a chance to reflect on decisions made during the exercise and to understand the consequences of any lapses or delays in response. The insights gained were invaluable for improving both the technical and procedural aspects of our security posture.

In addition to technical skills, the exercise reinforced the importance of teamwork and communication. A coordinated response between different teams—incident responders, system admins, and network engineers—was essential for managing the crisis effectively. Clear communication, especially under pressure, was vital to ensure everyone was on the same page and that the right actions were taken swiftly.

Overall, the cyber defense exercise provided a deep and comprehensive learning experience. It sharpened my technical expertise, improved my ability to respond to security incidents, and highlighted the need for a strong, proactive defense strategy in the face of evolving cyber threats.



Visit from Deputy Joint Force Commander, RBAF.

One of the more challenging moments of the exercise occurred when the red team executed a DDoS (Distributed Denial of Service) attack, flooding our network with excessive traffic and overwhelming our servers. We had to collaborate closely with network engineers to reroute traffic, deploy web application firewalls (WAF), and implement rate-limiting protocols to mitigate the impact. It became clear how essential strong network architecture, redundancy, and threat mitigation tools are in maintaining service availability under such attack scenarios.



Group Photo with the Deputy Joint Force Commander, RBAF.



Wargaming Session at VUW Lecture Room.

In line with the NZDF Command and Staff College's motto, "Strength Through Wisdom and Virtue", the ACSC was both rewarding and challenging, marked by its collegial and cohesive educational approach encompassing a wide spectrum of subject matter. The 48-weeks long course included an integrated academic programme conducted in partnership with Victoria University of Wellington (VUW), leading to the award of a postgraduate Master of Strategic Studies (MSS) – as well as the 'passed staff course (joint)' qualification. In general, the course was divided into four broad modules: Foundation Studies, Strategic Studies, Security Studies and Military Studies.

Through the lens of the Indo-Pacific, the module provided a deeper understanding of the wide-ranging security challenges confronting defence practitioners in the contemporary security environment.

Lastly, Military Studies ensure a robust understanding of command and its application, emphasising on leadership theories and individual professional growth. Additionally, the module aimed to explore the strategy-operation nexus, deliberating the foundation of contemporary warfare and evaluating campaigns and operations planning and execution.

NZDF ACSC (Joint) Course No. 65

'Strength Through Wisdom and Virtue'

By Maj (U) Emad



Maj (U) Emad received Course Certificate from the Guest of Honour, NZDF VCDF, Rear Admiral Mathew Williams.

Foundation Studies aimed to develop core transferable oral and written skills, combined with harnessing critical and creative thinking, to equip students with holistic and life-long learning.

Strategic Studies was designed to enhance overall appreciation of strategy development and evaluation, as well as understanding strategic defence matters on both regional and international landscapes. Meanwhile, Security Studies focused on New Zealand's security environment and the importance of defence in the nation's national security agenda and system.



Wreath Laying Ceremony at the Australian War Memorial in Canberra.

Study Tours

Amidst the prolonged hours divided between lectures and seemingly incessant writing on the laptop, several breaks in the guise of Study Tours were planned across the year. These included the 'New Zealand Battlefield Tour' conducted during the course earlier junctures, setting the scene to understanding both New Zealand's historical battles and cultural context in the 1700s and providing the prelude for the importance of battlefield concepts and operational mastery.

Before the end of Term 1, students were also allocated the opportunity to visit various NZDF military bases throughout the North Island including Devonport Naval Base, army camps at both Waiouru and Linton, and the Royal New Zealand Air Force Base at Ohakea.



Course Photo while attending the Australian Study Tour with the Australian Parliament House in the background.

Overseas Study Tours include traveling to Canberra, Australia in May 2024 and to Tokyo, Japan near the latter end of the course. These overseas study tours exposed students to valuable senior leadership engagements with foreign friendly military forces and provided the platform to establish a wider web of connections amongst military peers. Furthermore, the overseas study tours revealed to students the manifestation of strategic geography and the commonalities shared between the nations visited from a defence perspective.



Course Photo while attending the Australian Study Tour.



Posing with the C-130H: Our "preferred" mode of transportation.



Syndicate 1 Group Photo at the Graduation Ceremony.

Graduation

The long-awaited day for graduation arrived on the 4th of December 2024. Whilst the graduation day was scheduled for the 4th, one last final 5,000 words essay was due to be submitted on the 16th of December – marking the culmination of the course proper, and fulfilling the academic requirements (pending assessments) for the award of the MSS.

Ultimately, the graduation day was an expectedly jovial occasion, with family members and NZDF Command and Staff College personnel congregating at the Silverstream Retreat, Lower Hutt, New Zealand. The ACSC has undoubtedly provided me the avenue to expand my military knowledge and sharpen both critical and creative thinking. Ngā Mihi.



Course Photo with NZDF VCDF.

SENIOR FELLOWSHIP IN PUBLIC SERVICE PROGRAMME IN SINGAPORE

By Lt Col (U) Pg Md Farisan



National Governance Seminar.



Lt Col (U) Pg Md Farisan during sharing session.



Lt Col (U) Pg Md Farisan sharing his opinion during the program.

Alhamdulillah, from 14 October to 15 November 2024, I had the privilege of attending the 6th Senior Fellowship Programme at the Lee Kuan Yew School of Public Policy in Singapore. Alongside two senior officers from the Royal Brunei Land Force and the Royal Brunei Navy, I joined 49 senior public servants and military leaders from 17 different nationalities, including representatives from ASEAN member states, China, Costa Rica, Egypt, Kazakhstan, Pakistan, Peru and South Africa. This intensive five-week program was meticulously designed for senior leaders across various public sectors.

Some key takeaways from the leadership session highlighted that a leader's main intention must always be the well-being of the people. True leadership is about uniting a team, not dividing it, while valuing each member's contributions. Leaders must uphold the highest standards of integrity and have the courage to stand for the truth. Successful leaders share several essential qualities: a strong ethic, a willingness to learn from everyone, the ability to connect with and work through people, resilience under stress, and determination in adversity. They must be able to overcome life's imperfections, learn from failure, and remain driven in the pursuit of their goals. Great leaders also have the courage to step out of their comfort zones, take risks, and seize opportunities, while cultivating a strong network of friends from an early stage. Decisiveness is crucial, as hesitation can hinder progress. Moreover, effective leaders must possess the ability to critically assess and streamline processes, ensuring efficient governance without unnecessary complexity.

Another outstanding module focused on technology, where we explored Singapore's Smart Nation initiatives. The discussions emphasised the critical roles of education, public-private partnerships, data-driven decision-making, infrastructure development, and cybersecurity resilience. In this era of rapid technological advancement—particularly with artificial intelligence (AI)—it would be unwise not to leverage technology. This aligns with our principle of war, “economy of effort,” ensuring greater efficiency and effectiveness with optimise effort in achieving our objectives.



Institution visit.

We also had the opportunity to visit key institutions such as the Advanced Remanufacturing and Technology Centre (ARTC) and the Urban Redevelopment Authority (URA). These visits provided valuable insights into the innovative use of technology and the significance of strategic urban planning—both of which have played a crucial role in shaping Singapore into the thriving city it is today.



Participant site visit, Singapore.



Group Photo with Emeritus Senior Minister Goh Chok Tong.

14 November 2024



Completion and Celebration Ceremony.



Family Photo at the Ceremony.

One of the most memorable moments of the course was the Fireside Chat session with Emeritus Senior Minister Goh Chok Tong, Singapore's second Prime Minister. It was an exclusive privilege to engage with him directly, gaining firsthand insights into his leadership experience and perspectives on the survival of small states in today's complex world. His thoughtful responses provided profound wisdom, reinforcing the importance of carefully considering key factors before making strategic decisions that shape the future of a nation.

Personally, I am truly grateful for this program, which has been a truly transformative experience. It reinforced my understanding of the impact of leadership in government, the critical considerations in policymaking, and the strategic use of technology. It also deepened my awareness of key global challenges, including demographic shifts, climate change, geopolitical dynamics, and the importance of fostering religious harmony. Beyond the knowledge gained, the friendships forged during this program are invaluable, forming a strong foundation for future collaboration. Lastly, I strongly recommend that the Royal Brunei Air Force continue to send its potential future leaders to this prestigious program. The insights and strategic foresight they will gain will be instrumental in preparing them for higher responsibilities.





RBAirF participation during the Nationwide Beach Cleaning Campaign.



COMBAT SEARCH AND RESCUE

By LCpl (U) Arif

09 August 2024, I had participated in the Combat Search and Rescue (CSAR) course, an intensive training regimen designed to prepare military personnel like myself for high stakes operations in hostile environments. This course was essential for ensuring that I could effectively and safely rescue personnel from dangerous situations, whether they were downed pilots, stranded troops, or other individuals in need of emergency extraction. Eager to enhance my skills and readiness for such demanding missions, I joined a team of military personnel to embark on a three

month CSAR course in Indonesia. The training took place at a facility known for its state-of-the-art resources and expert instructors, where I gained the skills needed to navigate various terrains, both urban and remote, under extreme pressure. The decision to train in Indonesia highlighted the importance of international cooperation and the exchange of military knowledge, as the Indonesian military had a strong reputation for conducting rigorous training programs tailored to rescue operations in diverse environments.



Group Photo with CSAR Participants.



Participant Shooting at the range.



LCpl (U) Arif during the Course



Radio testing during the Mission Exercise.

Throughout the course, I was exposed to a wide range of scenarios that tested my physical endurance, decision making abilities, and tactical proficiency. The CSAR training covered everything from basic survival techniques to advanced extraction tactics, ensuring that I was well-prepared to face the challenges of real world combat situations. I also received instruction on the use of specialised equipment, such as helicopters, inflatable boats, and all-terrain vehicles, which are often integral to CSAR operations. With a focus on both land and maritime operations.

The training simulated rescue missions in dense jungles, rugged mountains, and even on open waters. In addition to technical and tactical training, the course emphasized the importance of teamwork, communication, and leadership—critical elements in CSAR missions, where the ability to coordinate quickly and efficiently can mean the difference between life and death.



Participants group run.



WINGDIK 800/PASGAT



Participants Group Photo at the Completion of the Course.

PASSION AND GRIT OF TUDB RUNNERS

By Cpt (U) Radzi

A TESTAMENT TO DISCIPLINE AND RESILIENCE

In the military, physical fitness is more than a requirement—it is a way of life, embodying discipline, resilience, and the strength to overcome challenges. For many in the Royal Brunei Air Force (RBAirF), long-distance running has transcended mere fitness; it has become a personal journey, a test of mental toughness, and a source of pride. The TUDB runners exemplify this spirit, showcasing how passion, grit, and perseverance can lead to extraordinary achievements. Their stories are not just about crossing finish lines but about pushing boundaries, building camaraderie, and inspiring others to strive for greatness.



Maj (U) Hj Nasrul at the Ultra Trail Marathon.

FROM NOVICE TO ULTRA MARATHONER - Maj (U) Nasrul began running actively in late 2023 after participating in a 'Running Mileage Challenge.' His motivation stems from fitness goals and religious obligations. Learning from local coach Zainal, he improved his techniques and endurance, completing his first full marathon at the Pacific Island Countries Challenge in 5 hours and 32 minutes and earning the title of Ultra Marathoner after finishing the TMBT 50KM Ultra Marathon in 9 hours and 47 minutes. Nasrul advises aspiring runners to enjoy the process, run consistently, and incorporate varied training.

FUELED BY COMMITMENT - SSgt (U) Khairul's passion for running began in 2017, motivated by his role as uniformed personnel and the need to maintain fitness for annual tests. Initially struggling with motivation due to a busy schedule, he was inspired by an officer's advice to prioritise running. Upgrading his gear and mindset, Khairul completed his first international race at the Putrajaya Marathon in Kuala Lumpur. He emphasises time management and consistency, advising new runners to persist, as speed will follow with dedication.



SSgt (U) Khairul at the Putrajaya Marathon.



Cpl (U) Hamdan finishing the marathon in Kuala Lumpur.

FROM FAILURE TO TRIUMPH - Cpl (U) Hamdan's running journey began in 2010 after failing a Basic Fitness Test (BFT). Determined to regain his fitness, he has since achieved significant milestones, including completing the Kuala Lumpur Standard Chartered Marathon in 2023 with a time of 3 hours and 49 minutes. His personal best for a full marathon stands at 3 hours and 47 minutes. Balancing work and running, Cpl (U) Hamdan prioritizes health, efficient time management, and proper training gear. His philosophy is to live with no regrets, embrace challenges, and chase personal greatness.

AIMING FOR NATIONAL GLORY - Pvt (U) Fathurrahman discovered his passion for running in 2019 and joined the Track and Field National Scheme in 2020. His motivation stems from a desire to set a national record, improve his health, and inspire his peers. Initially running for fitness, his journey took a significant turn when he was recruited as a national athlete by Coach Nyambui. Balancing military duties with running, Pvt (U) Fathurrahman emphasises time management, training discipline, and mental strength. He encourages new runners to make running a lifestyle, remain patient, and never give up.



Pvt (U) Fathurrahman at the Track & Field in Kota Kinabalu.

A DECADE OF DEDICATION - Cpl (U) Amirul's running journey began in 2016, driven by personal interest and a competitive spirit. Over the years, he has achieved remarkable milestones, including a 3rd-place finish in the 2024 Borneo Marathon with a time of 2 hours, 54 minutes, and 21 seconds. Balancing his military duties with an intense training regiment, Cpl (U) Amirul runs 140-160 kilometers weekly, starting his day at 4:00 AM and dedicating evenings to post-work training. His journey has required sacrifices, such as early mornings and missed moments with loved ones, but he emphasises the importance of consistency, patience, and focus. Cpl (U) Amirul's advice to aspiring runners is simple: embrace discipline, stay humble, and never stop improving.



Cpl (U) Amirul finishing marathon in Borneo Marathon, Kota Kinabalu Sabah.



Pvt (U) Shafiq at the Borneo Run.

INSPIRED BY ROLE MODELS - Pvt (U) Syafiq began running in 2019, inspired by his father and Indonesian long-distance runner Agus Prayogo. His most memorable achievements include securing third place in the Borneo Run (10KM) and finishing seventh in the Miri Marathon (21KM), an international event that marked his proudest moment. Balancing military duties with running, Syafiq emphasizes discipline in diet, training, and rest to avoid injuries. His motto, "Sometimes you win, sometimes you lose. Learn from it and work harder," reflects his dedication to continuous improvement.



A Culture of Excellence

The stories of these TUDB runners highlight the transformative power of running, fueled by passion, grit, and an unyielding commitment to excellence. Each runner began their journey with personal motivations—whether to emulate role models, achieve national records, or maintain fitness for military duties—and overcame challenges through relentless consistency, time management, and mental resilience. Their achievements, from local to international races, are a testament to the sacrifices they made, the early mornings they endured, and the unwavering focus they maintained.

These runners remind us that success is not just about physical fitness but also about cultivating humility, passion, and the grit to push through obstacles. To all RBAirF personnel, let their journeys inspire you to embrace running with passion, face challenges with grit, and strive for greatness. Every step you take brings you closer to achieving your goals and inspiring those around you. Running is not just a sport; it is a way of life, a reflection of discipline, and a path to personal and collective excellence.



PPE: YOUR LAST LINE OF DEFENCE, NOT YOUR FIRST

By Cpt (U) Akmal

Personal Protective Equipment (PPE) is undoubtedly a cornerstone of workplace safety, providing critical protection against various hazards. Whether it is hard hats on a construction site or gloves in a laboratory, PPE shields workers from the risks that are inherent in their tasks.

However, while essential, **PPE should not be the primary method for managing workplace hazards.** Instead, it should serve as the last line of defence when other, more proactive safety measures have been exhausted.

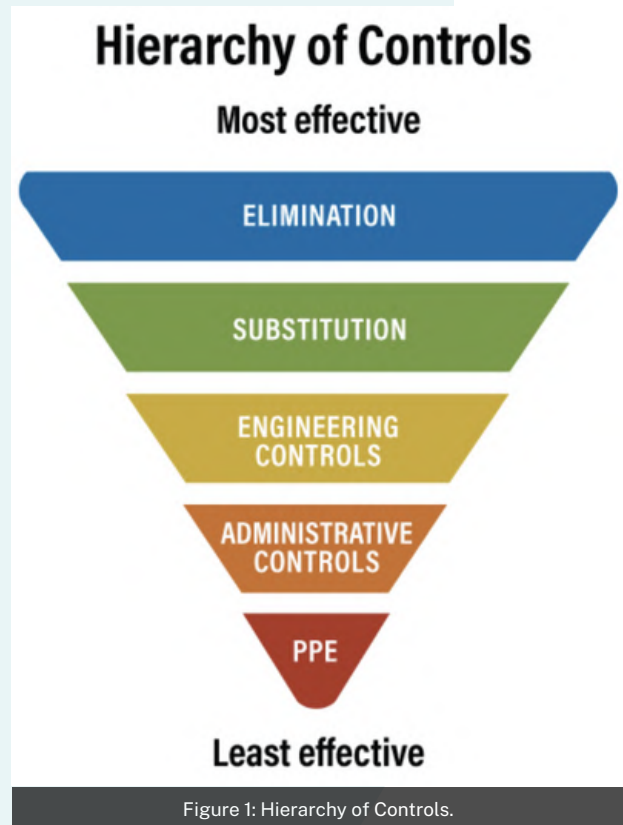
HIERARCHY OF CONTROLS: A SMARTER APPROACH TO SAFETY

To understand why PPE should be a last resort, it is important to consider the "**Hierarchy of Controls**" as seen in **Figure 1**, a framework that prioritises different safety measures based on their effectiveness in eliminating or mitigating risks.

This hierarchy, widely adopted in health and safety practices eliminates or reduce hazards at their source, with PPE serving as the final line of defence when all else fails. Controlling a hazard at its source is far more effective than relying on PPE because it does not eliminate the hazard but only mitigates the risk after exposure has occurred.

1. **Elimination:** The most effective approach, involving the removal of the hazard entirely. For example, removing a dangerous machine from the work environment entirely or changing a process to avoid exposure to harmful substances.

2. **Substitution:** Replacing hazardous materials or processes with less dangerous alternatives. This could mean switching from toxic chemicals to non-toxic or biodegradable substances.



3. **Engineering Controls:** Implementing physical changes to equipment or the work environment that reduce or isolate the hazard. Ventilation systems, noise barriers, or automated processes can help minimise exposure.

4. **Administrative Controls:** These involve changing workplace policies or practices to reduce the risk of harm. This includes measures like rotating workers to reduce exposure time, limiting access to hazardous areas, or providing safety training.

5. **PPE:** As the final safety measure, PPE is employed when the risk cannot be sufficiently controlled through the other methods. This includes items such as helmets, gloves, respirators, and protective clothing.

WHY PPE SHOULD BE THE LAST LINE OF DEFENCE

PPE is not foolproof. When not used right, maintained properly, or matched to the right hazard, it can fail, leaving workers exposed to danger. A worker wearing a respirator might still be exposed to toxic fumes if the ventilation system in the workplace is inadequate or if proper work practices are not in place.

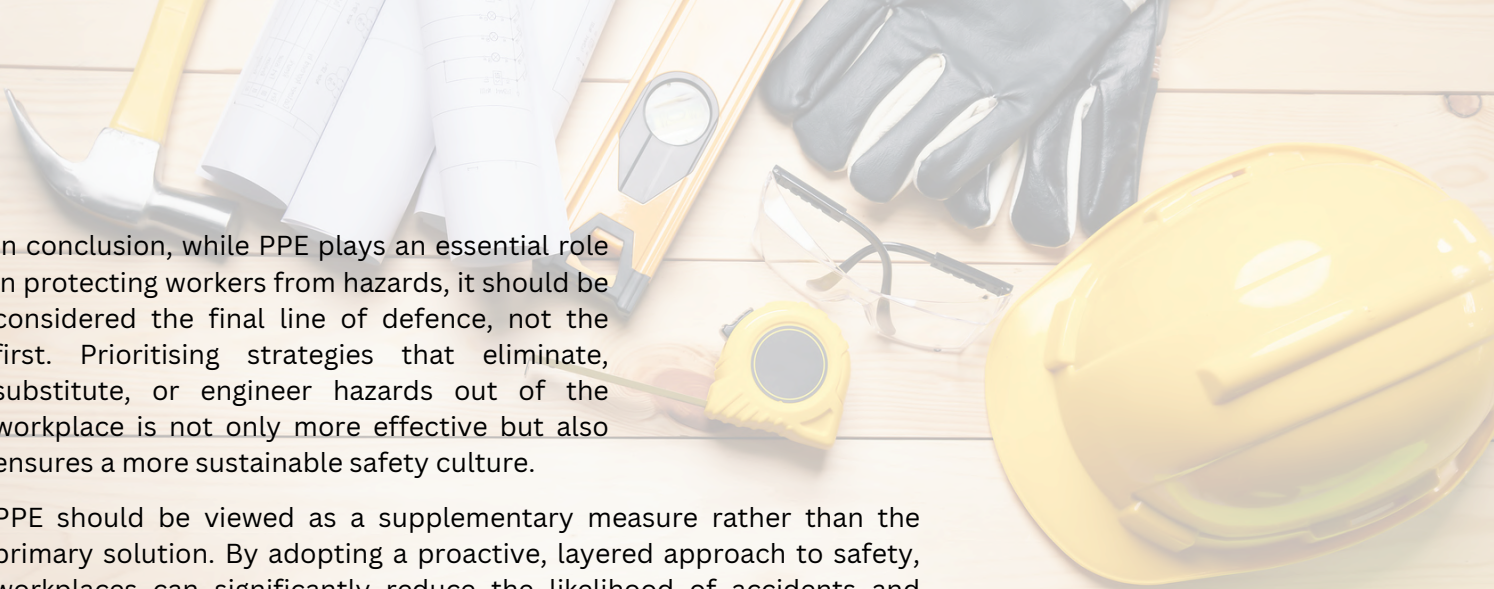
The real key to a safer workplace is tackling risks at their source. By eliminating hazards or engineering safer processes, the need for extensive PPE use is reduced, and overall safety is enhanced. PPE should be the backup, not the first line of defence.

CASE STUDY: THE PIPER ALPHA DISASTER

The **1988 Piper Alpha disaster in the North Sea** is a tragic example of the dangers of relying solely on PPE for safety. This catastrophe claimed the lives of 167 workers, highlighting the critical flaws in safety management in the following:

- **Poor safety management:** Safety systems were either bypassed or poorly maintained.
- **Inadequate equipment:** PPE was not enough to protect workers from the magnitude of hazards, like flammable gases and fires.
- **Limited escape options:** Many workers had difficulty accessing escape routes, and the PPE was not designed for the specific dangers they faced.

A strong engineering controls, such as automatic shut-off systems and better containment for flammable substances been implemented, the disaster could have been prevented. This tragedy underscores the importance of comprehensive safety systems, beyond just relying on PPE, to address the root causes of risks and prevent loss of life.



In conclusion, while PPE plays an essential role in protecting workers from hazards, it should be considered the final line of defence, not the first. Prioritising strategies that eliminate, substitute, or engineer hazards out of the workplace is not only more effective but also ensures a more sustainable safety culture.

PPE should be viewed as a supplementary measure rather than the primary solution. By adopting a proactive, layered approach to safety, workplaces can significantly reduce the likelihood of accidents and improve the well-being of workers.

Lastly, by ensuring that PPE is the final step in a comprehensive safety strategy, we can foster environments where risk is minimised, and safety is built into the very processes and systems that drive our work.



THE EVOLUTION OF AIR POWER: FROM WWI TO THE DRONE ERA



By Maj (U) Mohd Qamarul



A British bombing squadron drawn up at St. Omer, France during World War I.

The Dawn of Air Power: World War I (1914-1918)

World War I marked the first major use of aircraft in warfare. Initially, airplanes were used for reconnaissance, replacing cavalry scouts to observe enemy movements. Early aircraft were fragile and unarmed, but as the war progressed, the need for air superiority led to the introduction of fighter planes with mounted machine guns.

Aerial dogfighting emerged, with aces like Manfred von Richthofen, the "Red Baron," demonstrating air combat's effectiveness. Strategic bombing debuted with German Zeppelin raids on London and Allied bombers targeting enemy installations. Although rudimentary, these tactics laid the foundation for future air power.

The Interwar Years and Strategic Bombing (1919-1939)

The interwar period saw rapid advancements in aircraft technology. Nations recognised air power's potential, leading to more advanced fighters and bombers. The concept of strategic bombing gained traction, influenced by theorists like Giulio Douhet, who argued air superiority could decisively win wars.

Air forces became independent military branches, underscoring their growing importance. Innovations like all-metal airframes, enclosed cockpits, and powerful engines set the stage for World War II's aerial dominance.

World War II: Air Power Comes of Age (1939-1945)

World War II showcased air power's full potential, with major battles fought over Europe, Africa, and the Pacific. Air superiority was decisive, as seen in the Battle of Britain, where the RAF defended the UK against the German Luftwaffe.

Strategic bombing played a crucial role, with the Allies targeting German industry and Axis powers conducting raids. Long-range bombers like the B-17 Flying Fortress and Lancaster enabled devastating air strikes.

The war also saw jet aircraft like the German Me-262 and the expanded use of aircraft carriers, revolutionizing naval warfare. The atomic bombings of Hiroshima and Nagasaki in 1945 underscored air power's devastating potential and ushered in the nuclear age.



A captured Me 262A-1a undergoing evaluation in the United States.

The Cold War: The Jet Age and Air Superiority (1947 - 1991)

The Cold War era was defined by rapid jet advancements, supersonic flight, and air-to-air missile development. NATO and the Soviet Union heavily invested in air forces, leading to iconic aircraft like the F-86 Sabre, MiG-15, and later, the F-4 Phantom and MiG-21.

Strategic deterrence became paramount, with nuclear-capable bombers like the B-52 Stratofortress and Tu-95 Bear patrolling the skies. The Cuban Missile Crisis of 1962 highlighted air power's role in global diplomacy.



TU-95 Bear patrolling the skies.

Conflicts such as the Korean and Vietnam Wars demonstrated air power's effectiveness and limitations. Air mobility became critical, with helicopters like the UH-1 Huey proving indispensable in counterinsurgency operations.

The Gulf War and Precision Warfare (1991 - Present)

The 1991 Gulf War marked a turning point, showcasing precision-guided munitions, stealth technology, and integrated air campaigns.

The U.S.-led coalition's air dominance overwhelmed Iraqi forces, highlighting air superiority's importance in swift victories.

Stealth aircraft like the F-117 Nighthawk and later, the B-2 Spirit, changed air combat by penetrating heavily defended airspace. The rise of multi-role fighters, such as the F-22 Raptor and Eurofighter Typhoon, emphasized the shift toward high-tech warfare.

The Drone Era: Unmanned Aerial Systems (2000s - Present)



The most significant recent development has been the rise of Unmanned Aerial Systems (UAS), commonly known as drones. Platforms like the MQ-1 Predator and MQ-9 Reaper have revolutionised intelligence, surveillance, and precision strikes. Drones have been instrumental in counterterrorism operations, offering extended loitering time and reducing pilot risk.

Drone proliferation has expanded to various nations and non-state actors, raising concerns over asymmetric warfare and air defence challenges. Hypersonic weapons, artificial intelligence integration, and autonomous combat drones represent air power's next frontier.



Conclusion : The Future of Air Power

Air power has evolved from reconnaissance aircraft to advanced, multi-role platforms dominating modern warfare. The integration of AI, hypersonic missiles, and next-generation stealth fighters will continue to shape future battlefields. As global forces adapt to emerging threats and technology, air power remains a decisive factor in military strategy and security.



The journey from World War I dogfights to today's precision strikes underscores air power's adaptability and significance. Innovation and technological integration will determine future aerial dominance in an evolving warfare landscape.





NEAR MISSES A BLESSING IN DISGUISE

By Lt (U) Norfariz

Aviation is one of the safest modes of transportation, but like any complex system, it is not without its risks. One of the most critical safety incidents in aviation is the "near miss"—situations where two aircraft come dangerously close to a collision but avoid disaster, often through quick actions or sheer luck. While these incidents can be alarming, they also serve as vital learning experiences for the aviation industry. By studying near misses, aviation professionals can improve safety protocols, refine training programs, and enhance technology to prevent future accidents.

What Is A Near Miss?

In aviation, a near miss refers to an event where two aircraft come into close proximity—less than the required separation distance—but avoid a collision. These incidents may occur during takeoff, in-flight, or while approaching for landing. A near miss does not necessarily result in physical damage or injury but represents a significant risk that could have led to catastrophic consequences.

Near misses can happen due to a variety of factors, including human error, technical malfunctions, weather conditions, or communication failures. They can involve two or more aircraft in the same airspace, and while the exact definition of a near miss can vary, most regulatory bodies like the Federal Aviation Administration (FAA) consider an event to be a near miss if the aircraft come within a dangerous proximity of each other.

**A Near Miss
Not Reported
Is The Next Accident**



The Importance of Investigating Near Misses

Though near misses are typically avoided before they result in an accident, they are considered significant events in aviation safety. Investigating near misses is crucial to improving safety standards and preventing accidents in the future. Several key lessons can be learned from analyzing these events:

1 Human Error & Communication Breakdowns

Human error is a leading cause of near misses. Miscommunications between air traffic control (ATC) and pilots, misunderstanding of flight instructions, or failure to follow standard operating procedures can all contribute to near misses.

For example, in 2002, two aircraft narrowly avoided collision in southern Germany due to a miscommunication between ATC and the pilots. The event was classified as a near miss because the pilots' quick reactions and the timely intervention of ATC averted disaster.

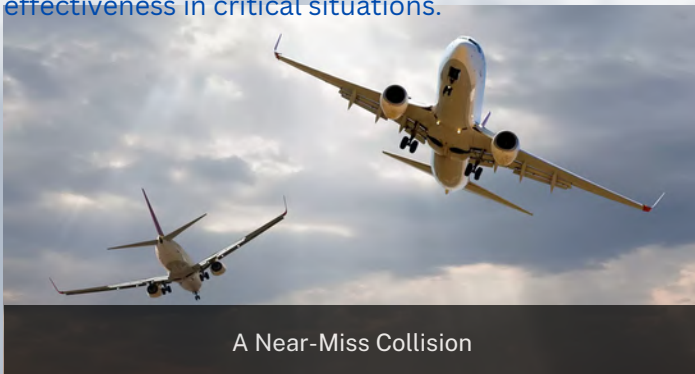
Investigating such incidents led to improvements in communication protocols, such as more stringent requirements for pilot-controller communications, especially in high-density airspace.

2 Technological Limitations

Advancements in aviation technology, such as radar systems and collision avoidance tools, have helped reduce the likelihood of near misses. However, technology can only be effective if used correctly.

A notable case occurred in 2006 when a mid-air collision was narrowly avoided between two aircraft in the skies over the United Kingdom. Although the aircraft were equipped with Traffic Collision Avoidance Systems (TCAS), one of the aircraft's pilots failed to respond appropriately to a TCAS alert, resulting in a dangerously close encounter.

This incident highlighted the need for ongoing training on the use of these systems and prompted further refinement in TCAS algorithms to improve their effectiveness in critical situations.



3 Air Traffic Management and Congestion

High traffic volumes in certain airspace sectors can also contribute to near misses. As more aircraft share the skies, the risk of proximity increases.

A near miss at New York's LaGuardia Airport in 2017, involving two aircraft on final approach, was attributed to congestion in the airspace and a delay in clearance for one of the planes.

The incident led to a review of congestion management procedures and improvements in airspace design to minimize traffic conflicts in busy regions.

Lessons Learned from Near Misses

The investigation of near misses in aviation has led to the development of improved safety protocols, training programs, and technological advancements. Key takeaways from such incidents include:

● Enhanced Pilot Training

Focus on improving situational awareness, decision-making, and adherence to procedures under stress.

● Improved ATC Procedures

Clearer communication protocols and stricter monitoring of air traffic in congested areas.

● Refinement of Safety Technologies

Ongoing updates to collision avoidance systems and the introduction of new tools to detect and prevent proximity risks.

Conclusion:

A Blessing in Disguise

Aviation near misses, while concerning, play a crucial role in the advancement of aviation safety. Through detailed investigations, the industry has been able to identify areas for improvement in human factors, technology, and air traffic management.

Far from being just a close call, each near miss is an opportunity to refine practices, improve systems, and prevent future accidents. As aviation continues to evolve, the lessons learned from near misses will remain central to enhancing the safety and efficiency of air travel worldwide.

As a result, near misses serve as a blessing in disguise, offering valuable insights that help make flying safer for everyone.

THE ROLE OF CYBERSECURITY IN MILITARY TECHNOLOGY

By Cpt (U) Al-Hafizh

Modern military operations rely on technology for communication, intelligence, and weapon systems, making cybersecurity critical for success and data protection. Cyberattacks target these systems to disrupt operations, steal information, or undermine national security. Secure communication channels, intelligence systems, logistics networks, and weaponry like drones and missiles all require robust cybersecurity to prevent disruptions and maintain functionality.

Evolving Threats



Cyber threats have grown increasingly sophisticated. Attackers now use ransomware, advanced persistent threats (APTs), and zero-day exploits. Nation-states deploy cyberattacks for espionage or damage without direct conflict, while terrorists and hackers exploit vulnerabilities for their goals.

For example, North Korea's alleged cyberattacks on Sony Pictures in 2014 highlighted the nation's capability to launch politically motivated cyber sabotage. Similarly, the use of commercial off-the-shelf (COTS) technology in military systems increases risks due to lower security standards.



Military Cyber Defence Strategies



Militaries implement advanced encryption, secure networks, and AI-driven threat detection to safeguard sensitive systems. Regular training, software updates, and penetration testing strengthen resilience, while collaboration with allies and private-sector experts enhances defenses.

Emerging technologies like quantum cryptography and blockchain offer innovative security solutions. For instance, Israel's Iron Dome missile defence system integrates cybersecurity measures to protect against potential cyber intrusions, ensuring operational continuity.

Offensive Cyber Capabilities



Offensive cyber capabilities allow militaries to disrupt or degrade hostile systems without traditional combat. These operations include espionage, sabotage, and malware attacks.

A notable example is the U.S.-led Stuxnet attack, which targeted Iran's nuclear enrichment facilities, delaying their nuclear program significantly. While these operations can be highly effective, they raise ethical and legal concerns, including unintended consequences and attribution challenges.

The increasing use of AI and quantum computing in cyber capabilities further emphasizes the need for careful regulation and ethical considerations.



Global Impact of Cyberwarfare



Cyberwarfare affects civilian infrastructure, economies, and international relations. Attacks on power grids, financial systems, and other critical infrastructure disrupt services and cause economic losses. The 2017 NotPetya attack, attributed to Russian state actors, crippled systems in Ukraine and caused billions of dollars in damages globally, demonstrating the far-reaching consequences of cyberattacks. Non-state actors, like terrorist organisations and hacktivist groups, exploit vulnerabilities to further their agendas, while corporations face risks of espionage and sabotage.

International collaborations, such as NATO's collective defense initiatives, help nations pool resources and intelligence to counter these threats. However, establishing global regulations to govern cyberwarfare remains a challenge.

Future of Military Cyber Security



The future of military cyber security will emphasise advanced technologies to counter evolving threats. AI and machine learning will enhance threat detection and response, while quantum-resistant encryption will address emerging risks.

Technologies like blockchain and IoT will bolster the security of interconnected systems such as drones and autonomous vehicles. Additionally, space-based assets like satellites will require robust defences against cyberattacks.

Global collaboration and the establishment of international norms will be crucial to managing cyber conflicts and fostering stability. Investments in specialised training, AI-augmented teams, and resilience planning will ensure preparedness against advanced threats like AI-driven malware.

Conclusion



Cyber security is a cornerstone of modern military operations, safeguarding systems from evolving threats and ensuring national security. By leveraging advanced technologies, fostering partnerships, and adhering to international norms, militaries can secure operations and maintain dominance in the cyber domain. Cybersecurity is no longer a defensive tool but a strategic enabler for modern military success.



THE FUTURE OF URBAN AIR MOBILITY: A LOOK AT EVTOL TECHNOLOGY

By Lt (U) Nazwan Shah

In recent years, the world has witnessed remarkable advancements in electric vehicle technology. From electric cars to electric bicycles, the movement toward cleaner and more sustainable transportation is gaining significant momentum.

One of the most exciting developments on the horizon is the emergence of eVTOLs, or electric Vertical Take-Off and Landing aircraft, which hold the potential to transform urban and intercity travel.

eVTOL Technology

eVTOLs, or electric Vertical Take-Off and Landing aircraft, represent a new class of vehicles capable of ascending and descending vertically, similar to helicopters, but powered by electricity rather than traditional fossil fuels.

These aircraft utilize multiple rotors or fans to generate lift, enabling them to take off straight from the ground without the need for a runway. Unlike helicopters that depend on a single, large rotor, eVTOLs typically feature distributed electric propulsion systems, which incorporate several small electric rotors strategically placed across the craft. This design seeks to enhance safety, efficiency, and noise reduction.

One of the primary advantages of eVTOLs is their suitability for urban environments, where space for conventional airports or helipads is often scarce. These aircraft could potentially take off and land from rooftops, parking lots, or designated vertiports, facilitating faster and more efficient travel within cities.

While the design and technology surrounding eVTOLs are still in development, numerous companies are already conducting test flights and constructing prototypes with the goal of launching commercial services in the near future.

Promise of Urban Air Mobility

The rapid advancement of eVTOL technology is largely fueled by the exciting concept of urban air mobility (UAM). As urban areas across the globe face increasing congestion, traditional transportation methods often struggle to meet the demands of growing populations. eVTOLs present a promising alternative, offering a way to alleviate traffic on crowded roads and enhance public transit options.

Beyond just accelerating travel times, urban air mobility holds the potential for cleaner and more sustainable transportation solutions. With eVTOLs operating on electricity, we can expect a significant reduction in urban air pollution compared to traditional gasoline-powered vehicles, which contribute heavily to emissions in city environments. Additionally, these aircraft are designed to be quieter than conventional helicopters, making them more appropriate for use in densely populated areas.

Leading companies such as Joby Aviation, Lilium, and Vertical Aerospace are pioneering the development of eVTOLs with a clear vision of the future. They are working toward a world where these innovative aircraft facilitate short commuter flights, serve as air taxis, and even assist in delivery services. Although the notion of flying taxis may have once seemed like a concept reserved for science fiction, these organisations are making remarkable strides toward turning that vision into a tangible reality.

Technological Challenges and Advancements

Despite the potential of eVTOLs, several significant challenges must be addressed before these aircraft can become a common sight in our cities. One of the most pressing obstacles is battery technology. Currently, the batteries utilised in eVTOLs do not provide the necessary range for longer flights. Most eVTOL prototypes are designed for short journeys—typically under 100 miles—making them more suitable for urban and regional travel rather than cross-country routes.

While battery efficiency is improving, it must reach new milestones to support the performance required for commercial air taxis. Furthermore, the weight of the batteries and the complexities associated with managing multiple rotors or fans on a single aircraft introduce additional engineering challenges.

Safety remains a critical concern, as eVTOLs will need to adhere to rigorous aviation safety standards before they can be allowed to operate in congested airspaces.

Regulation and Infrastructure

The adoption of electric vertical takeoff and landing (eVTOL) aircraft presents significant challenges, particularly in terms of regulatory frameworks and infrastructure development. To effectively manage the anticipated influx of eVTOLs in urban airspace, air traffic control systems will require significant updates. Moreover, new infrastructure, specifically vertiports—small landing platforms designed for eVTOL operations—will need to be established. These vertiports should be strategically located in areas with high passenger demand, such as business districts, airports, and residential neighbourhoods.

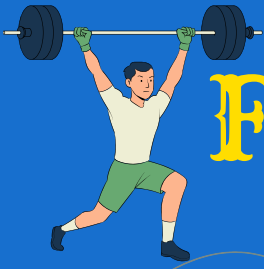
Regulatory agencies and governments are proactively working to establish guidelines and safety standards for eVTOL integration. In the United States, the Federal Aviation Administration (FAA) is developing certification processes tailored for electric aircraft. Similarly, the European Union Aviation Safety Agency (EASA) is advancing regulations aimed at facilitating the safe incorporation of eVTOLs into public airspace.

A Glimpse Into The Future

As advancements in electric vertical takeoff and landing (eVTOL) technology progress, the realization of urban air mobility is becoming increasingly feasible. In the near future, it is possible that air taxis will operate from urban rooftops, providing commuters with a more efficient, quieter, and environmentally sustainable alternative to conventional modes of transportation. These developments will not only transform mobility but will also influence urban planning and the design of transportation infrastructure.

Although the onset of widespread commercial eVTOL operations remains several years away, the momentum of progress is noteworthy. Continuous investment, technological innovations, and the pursuit of regulatory approvals suggest that the future could witness a proliferation of electric aircraft in urban environments, thereby revolutionizing urban travel and positively impacting the structure of our cities.





Functional Fitness & Mobility

By Sgt. (U) Wan Nazirul

INTRODUCTION

Functional fitness and mobility training are both key components of a well-rounded fitness program. While they share some common goals, they focus on different aspects of physical health and performance. Unlocking the full potential of our bodies through functional mobility exercises is crucial for overall health and fitness.

As awareness of functional mobility training continues to grow in Brunei Darussalam, more individuals are embracing these exercises to enhance their strength, flexibility, and overall movement. Whether you're an athlete striving for peak performance or improving everyday mobility, incorporating functional mobility exercises into your fitness routine can yield remarkable results.



WHAT IS FUNCTIONAL FITNESS?

Functional fitness refers to exercises that mimic and improve the movements you use in daily life. The idea is to train muscles to work together, enhancing your ability to perform common tasks efficiently and with less risk of injury. Rather than isolating specific muscles, functional fitness exercises target multiple muscle groups and focus on movements that involve balance, strength, coordination, and endurance.

KEY BENEFITS OF FUNCTIONAL FITNESS

Improved Daily Functionality

It makes everyday activities—like lifting groceries, carrying children, bending down to tie your shoes—easier and safer.

Enhanced Performance

It can improve your performance in sports or other physical activities.

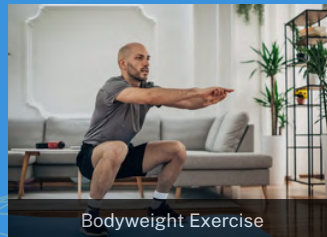
Injury Prevention

Functional fitness focuses on strengthening the muscles and joints that are used in real-world activities, reducing the risk of injury.

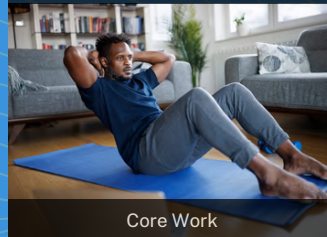
Core Strength

Many functional exercises emphasize core stability, which is crucial for posture and overall movement efficiency.

Some common aspects of functional fitness training might include:



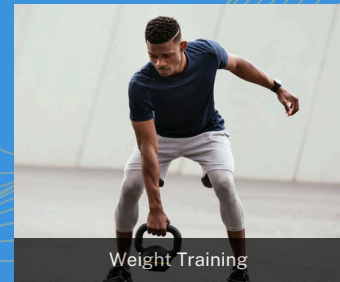
Bodyweight Exercise



Core Work



Stability Exercise



Weight Training



Agility Drill

These exercises are great for improving functional strength and preventing injuries by enhancing joint mobility and muscular balance. Some people love the variety it brings to workouts, and the results often translate into better performance in daily tasks or sports.



WHAT IS MOBILITY TRAINING?

Mobility training focuses on improving the range of motion in your joints and increasing flexibility in your muscles. It helps prevent stiffness and discomfort, especially in areas like the hips, shoulders, and spine. While flexibility deals with muscle length, mobility focuses on the movement and functionality of the joint itself, which is crucial for performing functional exercises with proper form and reducing the risk of injury.

KEY BENEFITS OF MOBILITY TRAINING

Increased Range of Motion (ROM)

Helps joints move more freely and with greater ease.

Enhanced Performance

Improves your ability to perform exercises and sports movements more effectively

Injury Prevention

Reduces stiffness and increases joint stability, lowering the risk of sprains and strains.

Improved Posture

Corrects imbalances in muscle flexibility and joint alignment, leading to better posture.

Here's what mobility training might involve:

Joint Mobility Exercises

Focus on improving the movement of specific joints, such as the hips, shoulders, or ankles.

It might include hip circles, shoulder rolls (using a band or a dowel), wrist stretches, and ankle mobility.

Dynamic Stretching

Performed before a workout to activate muscles and increase the ROM in a controlled way.

It might include leg swings, arm circles, or walking lunges.

Static Stretching

Stretching held for 20-30 seconds to improve flexibility over time.

Breathing Techniques

Breathing is often incorporated into mobility training to help relax muscles and improve range of motion.

Mobility training is typically included as part of a warm-up or cool-down, but it can also be a stand-alone workout. It's especially helpful if you sit for long periods, have poor posture, or experience stiffness in certain areas like the hips or lower back. Plus, it's beneficial in injury recovery.

HOW THEY WORK TOGETHER

Functional Fitness

Improve your ability to perform everyday tasks and sports by building strength, balance, and coordination.



Mobility Training

Ensures that your joints and muscles are flexible enough to perform these movements safely and efficiently

A good fitness program will include both functional fitness and mobility training to enhance overall movement, strength, and longevity. You might start with mobility work to ensure your body has the flexibility and range of motion it needs before performing more intense functional exercises.

This combination leads to a more well-rounded, injury-resistant body. Both types of training, when combined, create a foundation for a resilient and functional body capable of handling the extreme physical demands.



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