

BACKGROUND GUIDE





LETTER FROM THE EXECUTIVE BOARD

Dear Delegates,

Welcome aboard our committee, where policy takes flight and your ideas won't only stay grounded in theory.

For the next three days, you will oversee India's aviation regulations. What is your mission? To find a way to do the impossible: keep people safe while encouraging new ideas, make more connections while protecting the environment, and keep the skies clear while not missing out on chances.

The agenda in front of you is meant to be broad, much like the airspace you oversee. Your job will require both technical accuracy and creative thinking. For example, you will have to deal with aviation safety standards that are being tested by automation and cybersecurity concerns, as well as airspace optimization that is being stressed by drones, military operations, and the promise of flying taxis. As India's aviation business grows at an unprecedented rate, you'll have to deal with pilot training reforms for an AI-assisted era, investigate LAT Aerospace's groundbreaking electric aircraft, find ways to make the industry more environmentally friendly, and make sure that the market is fair.

But here comes the turbulence: You won't just talk about it; you'll make a choice. Crisis situations will put your ability to adapt to the test. To be successful, you need to do more than defend your established viewpoints. You need to figure out what needs to be done right now, get everyone on the same page, and write policies that India can follow.

This isn't about getting to cruising altitude and turning on the autopilot. It's about flying through complicated weather with rules in place. So put on your seatbelt, go over your briefing documents, and get ready to leave. The skies over India are waiting for you to lead.

For paperwork and queries contact us at - dgca.lmun2025@gmail.com

Clear skies and calm discussions!

Regards,

ISHAAN BHASIN
Minister of Civil Aviation
Government of India

ARYAN AHUJA
Director General of Civil Aviation
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INTRODUCTION TO THE COMMITTEE

The Directorate General of Civil Aviation (DGCA) serves as India's principal regulatory body for civil aviation. It is tasked with guaranteeing the safety, efficiency, and dependability of air transport both domestically and internationally.

The DGCA is central to India's aviation ecosystem, overseeing pilot license, aircraft certification, airworthiness regulation, and operational standard enforcement. As technology progresses and global aviation undergoes fast transformation, the DGCA must likewise adapt. Contemporary civil aviation confronts difficulties that extend beyond mechanical reliability, including automation, cybersecurity, environmental sustainability, and airspace congestion.

In this committee, members will assume the roles of aviation policymakers, analysts, and regulators. Their objective is to re-envision the future of civil aviation considering technology changes, environmental constraints, and emerging operational issues.

OVERALL AIM OF THE COMMITTEE

The committee's major objective is to foster innovative analysis and collaborative problem-solving rather than merely discussing predetermined subjects.

Every delegate, irrespective of their designated portfolio or job, possesses an equal right and status to: ☒ Present issues they consider most urgent.

- Convince the committee to address concerns for discussion.
- Propose novel solutions or reforms.
- Engage with others to establish consensus.

The DGCA committee is structured to be extremely interactive, guaranteeing that every opinion is valued. Delegates are urged to adopt the mindset of actual regulators—evaluating difficulties, formulating regulations, and addressing crises as they arise.

During the sessions, there will be imaginative, unforeseen, and plausible hypothetical updates that simulate actual aviation occurrences, such air mishaps, technological advancements, or regulatory disputes. These modifications aim to render debates vibrant, engaging, and authentic, while evaluating each delegate's flexibility and leadership abilities. The committee seeks to achieve a balance between substantive policy discourse and engaging simulation, guaranteeing that delegates acquire profound knowledge while enjoying the experience.



UNDERSTANDING THE AGENDA

The committee's deliberative architecture is based on three interrelated foundational pillars. Initially, **Safety Standards** emphasize the necessity of guaranteeing the safety of passengers, aircraft, and operations in the context of swift technology progress and increasing operational intricacy. Secondly, **Airspace Optimization** pertains to the effective administration of increasingly congested airspace, especially considering the incorporation of unmanned aerial vehicles, military airspace demands, and the growth of commercial aviation activities. Third, **Type Rating Protocols** evaluates the necessity to update pilot certification and training processes to align with current aircraft capabilities and advancing automation technology. In addition to these main topics, the agenda includes the **examination of several pertinent critical areas: environmental sustainability and pollution reduction strategies, market equity and competitive regulatory structures, technological advancements** represented by organizations like LAT Aerospace, efforts to enhance regional air connectivity, and the overarching issues of air traffic management and regulatory readiness. The committee's deliberately expansive mission allows delegates to assert agency in identifying priority areas, promoting meaningful discourse, and developing consensus-oriented policy proposals through cooperative involvement.

AVIATION SAFETY STANDARDS: ADAPTING TO MODERN REALITIES

a. The Foundation of Safety

The most important part of civil aviation regulation is safety in aviation. The DGCA keeps a close eye on all safety-critical procedures, including pilot license, aircraft maintenance, airport operations, and airworthiness certification. But technological progress, fleet growth, and the growing interconnection of global aviation systems are putting unprecedented pressure on existing safety standards. These modern circumstances necessitate a rigorous reassessment of current regulatory frameworks to guarantee their ongoing efficacy in upholding operational safety requirements.

b. Modern Safety Challenges

The changing aviation safety environment is marked by several new problems. Dependence on automation is a major worry since too much reliance on automated systems could cause basic manual flying skills to go away, which could make pilots less able to handle system failures or unusual operational situations. As avionics and air traffic control systems have become more digital, the dangers to cybersecurity have also grown. This makes important infrastructure more exposed to cyber threats and unauthorized access. Pilot tiredness and human factors have become significant issues, as increased operating tempos and commercial pressures result in working situations that may impair crew vigilance and decision-making efficacy. The trend towards outsourcing maintenance services for economic reasons has also made it harder to ensure quality and accountability. This has made it necessary for regulatory bodies to step up their oversight to make sure that all third-party maintenance organizations follow airworthiness standards



UNDERSTANDING THE AGENDA

c. Discussion Directions

- Should the DGCA focus on results instead of rules when it comes to safety? ☐ What can India do to make its rules for pilot mental health and fatigue stronger
- Should safety audits incorporate cybersecurity frameworks?
- Can private companies help the DGCA keep an eye on safety and do audits?

AIRSPACE OPTIMIZATION: THE CHALLENGE OF CONGESTION

a. The Problem

There is more demand for Indian airspace than ever before, as commercial airlines, cargo carriers, military aircraft, unmanned aerial vehicles, and private aviation services all fight for restricted airspace. Inefficient allocation methods and limited infrastructure have made operations very difficult, causing aircraft delays, higher fuel use, and bad effects on the environment. The existing way of managing airspace isn't working well enough for today's aviation operations, which are bigger and more complicated than ever. This means that the rules need to be completely changed.

b. Emerging Challenges

Airspace management is becoming more difficult because of several things. Drone integration is now very important since thousands of unmanned systems are entering Indian airspace for business objectives including logistical delivery, aerial imaging, and surveillance. This has made traffic management protocols increasingly important. Urban Air Mobility (UAM) is a new way of doing things. Electric vertical take-off and landing (eVTOL) aircraft and aerial taxi ideas are changing the rules for low-altitude airspace and how cities operate. Civil-military coordination problems continue because large military restricted areas generate airspace bottlenecks that compel commercial traffic onto longer, less efficient routes. This raises costs and harms the environment. Also, there are still big gaps in technological infrastructure, especially in smaller towns that don't have current radar systems or advanced air traffic control systems. This makes it harder to improve the national aviation network.

c. Discussion Directions

- What steps should India take to set up a unified system for managing civil and military airspace? ☐ Should there be separate flight paths for drones and air taxis?
- What new technologies, like GAGAN navigation that uses satellites, can make things work better? ☐ How can we get Indian skies ready for the next generation of planes?



TYPE RATING AND PILOT TRAINING: REFORMING THE FUTURE WORKFORCE

a. Context

Type rating is a particular certification that lets pilots fly certain types of planes. It is an important part of making sure that flying is safe. As aircraft systems have become more advanced in terms of technology, especially when it comes to automation, avionics integration, and flight management systems, the current training and certification systems are under more pressure to change as well. The conventional framework of type rating, based on aircraft-specific technical expertise, must now integrate a wider range of competencies, including automation management, systems redundancy understanding, and adaptive decision-making in intricate operational contexts.

b. Current Gaps

The current type rating scheme has several problems. The quality and realism of simulator training are still not constant. Many training organizations only give limited access to high-fidelity simulation settings that accurately show how planes behave in non-normal and emergency situations. Type rating transition protocols, especially for derivative aircraft variants like the change from Boeing 737 Next Generation (NG) to 737 MAX configurations, have sometimes not been strict enough. Shortened training programs have raised serious safety concerns about whether pilots are ready for the operational characteristics and system differences that come with each variant. Moreover, modern training curricula exhibit inadequate focus on cognitive and psychological readiness, encompassing stress management, decision-making amid ambiguity, and crew resource management in highly automated flight deck settings. The incorporation of artificial intelligence in flight operations has necessitated new competency needs that are largely ignored in existing certification standards, resulting in a disparity between technology capabilities and pilot proficiency in operating AI-enhanced systems.

c. Discussion Directions

- Should DGCA change its type rating system to require better standards for simulators?
- How can pilot training include cybersecurity, AI, and automation?
- Should it be required for some types of aircraft to be familiar with other types?
- Can mental health and exhaustion be included in the process of renewing a pilot's license?



LAT AEROSPACE AND THE FUTURE OF AVIATION

a. Introduction to LAT Aerospace

LAT Aerospace has been a major player in the development of new aviation technologies in Asia. They focus on electric and hybrid-electric aircraft platforms, sustainable propulsion systems, and urban air mobility (UAM) solutions. The company's technology path signifies a major shift in the way aviation works and the rules that govern it. This has effects on everything from certification processes to infrastructure needs to the way operations are set up. LAT Aerospace's progress requires a complete overhaul of the rules to make room for new technology that challenge traditional ways of running aircraft.

b. Key Technological Advancements

LAT Aerospace has a lot of new ideas, including some that are very disruptive. Electric Vertical Take-Off and Landing (eVTOL) aircraft are a new type of flying vehicle that can carry 2 to 4 people over short distances in cities with very little pollution. They could change the way people get around in cities and help ease traffic on the ground. Hybrid-electric propulsion systems have a lot of environmental benefits. They can cut carbon emissions by more than 70% compared to traditional turbine power. This makes them a good choice for regional aviation operations. AI- assisted avionics platforms have smart cockpit systems that automatically optimise operational parameters including fuel economy, routing to avoid turbulence, and navigation efficiency. This makes the pilot's job easier and improves operational accuracy. LAT's experimental unmanned aerial vehicles and air taxi platforms also have autonomous operational capabilities. These allow for semi-autonomous flight operations using AI-guided sensor arrays and satellite-based navigation networks. This is a step towards fully autonomous commercial aviation.

c. Implications for DGCA and Civil Aviation

- **Regulatory Preparedness:** The current certification framework of the DGCA does not have clear rules for electric and hybrid-electric aircraft. This means that airworthiness standards, certification processes, and maintenance requirements need to be completely rethought. Important questions come up: How should the standards for airworthiness be changed for batterypowered propulsion systems that have very different failure mechanisms and performance characteristics than traditional turbine engines? Should autonomous or semi-autonomous aircraft have different certification processes that consider algorithmic decision-making, sensor redundancy, and human-machine interface issues that aren't present in aircraft that are flown by people?
- **Infrastructure Readiness:** For urban air mobility to work, new ground infrastructure is needed, such as vertiports for eVTOL operations, electrical charging stations, and unique maintenance capabilities for electric propulsion systems. Regulatory consideration must address: What kinds of partnerships should DGCA and city governments have to make sure that UAM infrastructure is included in city planning? What rules should regulate the use of lowaltitude airspace below 500 meters, such that UAM operations can coexist with existing helicopter operations, drone activities, and traditional aviation safety standards?



LAT AEROSPACE AND THE FUTURE OF AVIATION

- **Pilot and Operator Training:** eVTOL and hybrid-electric aircraft have different skill needs than regular planes. These include managing electric propulsion systems, following battery safety rules, keeping an eye on thermal management, and overseeing semi-autonomous systems. Regulatory frameworks must ascertain: How should type rating processes change to take into account the unique operational features and failure modes of eVTOLs? Should companies like LAT Aerospace be allowed to run its own training programs for their planes, or should standardised third-party training standards be required to make sure that regulations are followed and quality is guaranteed?
- **Safety and Liability:** Hybrid and autonomous flying operations make it much harder to figure out what caused an accident and who is responsible for it. When AI systems help make operational decisions or make them themselves, traditional liability systems that are based on human operator accountability don't function anymore. Regulatory frameworks must address: How should responsibility be divided among aircraft operators, AI system developers, and manufacturers in accidents involving algorithmic decision-making? Should the DGCA create detailed AI accountability frameworks that include rules for algorithmic openness, criteria for decision auditability, and methods for dividing liability?
- **Environmental and Economic Implications:** LAT's electric aircraft platforms have a lot of environmental benefits, like lower emissions, less noise, and lower operating costs. However, they also create problems for long-term sustainability. Making batteries requires a lot of resources for mining and manufacturing, and getting rid of them at the end of their life is bad for the environment if there isn't enough recycling infrastructure. Regulatory consideration must include: Should the DGCA use incentives like subsidies, different landing fees, or faster depreciation allowances to get more people to use electric planes? How can rules and regulations make sure that sustainability accounting is done in a way that covers the whole life cycle of an aeroplane, from getting the raw materials to making it, using it, and finally recycling or throwing it away?

d. Discussion Directions

- Should DGCA establish a special regulatory wing for electric and hybrid aviation?
- How can DGCA collaborate with LAT Aerospace to conduct joint trials and simulations?
- Can LAT's innovations make regional air connectivity (e.g., under UDAN) more affordable and sustainable?
- Should DGCA partner with LAT to pilot an Indian model of Urban Air Mobility?



FAIR MARKET PRACTICES AND ETHICAL GOVERNANCE

As India's aviation industry goes through a lot of market consolidation, making sure that competition is fair and that consumers are well protected has become a very important regulatory goal. The fact that fewer carriers have a lot of market strength raises important questions about how competition works and means that regulators need to be more careful to stop anti-competitive behavior and protect the interests of passengers.

a. Key Challenges

The current market system has several problems that are all connected to each other. When only a few airlines control the market, they can engage in anti-competitive tactics such as predatory pricing, strategic capacity allocation, and tacit coordination that could keep smaller competitors out of the market and hurt consumers by limiting their options and raising rates. Carriers' financial instability poses two risks: financially troubled airlines may cut costs by skipping important safety investments and maintenance standards, and at the same time, operational economies may lower service quality, which hurts passenger experience and reliability. Also, a lack of openness in operational audits and price systems makes both regulations less effective and consumers less powerful. Not telling passengers the results of safety audits stop them from making smart choices, and unclear dynamic pricing systems and fare-setting processes hide any anticompetitive behavior and make it harder for customers to figure out what is worth their money. These difficulties are all linked, so we need to make big changes to the rules to make sure that market efficiency goals are in line with competitive integrity, operational safety requirements, and real consumer protection.

b. Discussion Directions

- Should DGCA mandate public safety audit disclosures?
- How can predatory pricing and anti-competitive alliances be regulated?
- Should DGCA collaborate with the Competition Commission of India (CCI) to ensure fairness?



ENVIRONMENTAL IMPACT AND SUSTAINABILITY

a. Context

The aviation industry is a major cause of climate change caused by humans, making up about 2–3% of all greenhouse gas emissions. In India, the fast growth of many sectors and the lack of strong environmental regulations have made sustainability a top policy priority. If the government doesn't step in, the Indian aviation industry is expected to develop a lot, with more planes, more flights, and more passengers. This might have a big impact on the environment. As a result, incorporating environmental sustainability concepts into aviation governance has moved from being a goal to being a need. This means that policies must be put in place that balance expansion with environmental responsibility.

b. Key Focus Areas

There are a few strategic intervention areas that need regulatory attention. Adopting Sustainable Aviation Fuel (SAF) is a key strategy to reduce carbon emissions. To make it easier for everyone to use, we need to create blending standards, supply chain infrastructure, and economic incentives. Electrifying ground support activities, which include airport cars and ground service equipment, could greatly reduce emissions in non-flight operations. To make this happen, we need investment frameworks and technical standards for integrating electric vehicles. Solarpowered airport infrastructure offers prospects for the use of renewable energy throughout terminal facilities, airside operations, and auxiliary systems, necessitating regulatory requirements and public-private partnership frameworks to attain net-zero energy goals. Also, creating incentive structures for fuel-efficient planes and operations, such as different landing fee systems, faster depreciation benefits, and operational flexibility for carriers that show better environmental performance, can effectively align business interests with sustainability goals. This will encourage people to adopt environmentally responsible practices on their own, even if they don't have to.

c. Discussion Directions

- Should DGCA set a mandatory SAF blending target?
- How can airports transition to net-zero energy systems?
- Should DGCA impose carbon-based landing fees to encourage greener operations?



EXPANDING AIR CONNECTIVITY

a. The UDAN Scheme

The "Ude Desh ka Aam Nagrik" (UDAN) program is a strategic policy endeavor to make air travel more democratic by bringing commercial aviation services to smaller towns and underserved regional markets. The program's goals are to make transportation more accessible to people in less populated areas and to boost economic growth in those areas. Even while UDAN is important for policy, its implementation has faced many problems that make it less successful in practice. Airlines have been less likely to fly into small airports because of problems with the infrastructure, such as poor runway conditions, limited terminal capacity, and inadequate air navigation facilities. This has made operations less safe and efficient. Limited commercial interest shows that airlines are worried about how profitable their routes will be. They are not willing to spend money on markets that they think will have unpredictable demand and low revenue potential. Low passenger demand on many UDAN-designated routes is also caused by several things, including low local purchasing power, a lack of public knowledge about available services, and price sensitivity among target populations. All these things put the long-term financial viability of regional air connectivity operations at risk.

b. Discussion Directions

- Should the DGCA give regional airlines free maintenance or fuel?
- How can cooperation between the public and commercial sectors make Tier 2/3 airports better?
- Can LAT Aerospace's electric short-haul planes make UDAN routes easier to use?

FUNCTIONING OF THE COMMITTEE

The committee's operational framework is meant to encourage group discussion while also adding dynamic elements that mimic the challenges of making regulatory decisions in the real world. Delegates will take part in structured debates and consensus-building activities, and they will be faced with realistic hypothetical situations that demand them to adjust their responses within time and information limits. Crisis simulations like these could include, but are not limited to, a major cybersecurity breach that affects aviation systems infrastructure, an incident with autonomous aircraft technology (like a LAT Aerospace platform malfunction), or the International Civil Aviation Organization (ICAO) issuing urgent environmental compliance directives. These scenario injectors are meant to make things less predictable and more complicated, which tests delegates' abilities to work together to solve problems, set priorities, and make policy decisions based on facts when things go tough.

Individual delegate performance will be assessed based on several criteria: the demonstrated capacity to identify and articulate significant regulatory challenges necessitating committee consideration; efficacy in coalition-building and persuading peers to prioritize specific issues; and contribution to consensus-building and the formulation of actionable policy recommendations. On the other hand, the success of the whole committee will be measured by two main things: the ability of all the delegates to come to a shared understanding of complex technical and policy issues, and the creation of a final recommendation document that contains clear, actionable policy guidance that shows the committee's combined analytical judgement and strategic vision for Indian civil aviation regulation.



CONCLUSION

The DGCA Committee is different from other deliberative groups because it asks delegates to take on the analytical and decision-making roles of regulatory officials instead of just being advocates. Participants are given the important job of creating the future of India's civil aviation by carefully balancing competing needs, such as operational safety, technical innovation, environmental sustainability, and fair access to air travel. This forum has a dynamic agenda, which is different from traditional committee structures that have set focal points. Delegates work together to find priority issues, make strong cases for their consideration, and deal with changing situations that mimic the complexity of real-world regulation. The success of this committee will not depend on sticking to set stances, but on the members' ability to identify systemic problems, generate consensus among delegations, and react to new developments as they come up. The DGCA Committee wants to train the next generation of leaders in the aviation industry by using structured dialogue, creative problem-solving, and collaborative policy-making. These leaders will need to have the analytical rigour, regulatory sophistication, and strategic vision to keep India's aviation ecosystem safe, environmentally responsible, and ready for long-term growth in an increasingly complicated global landscape.



THE TWELFTH SESSION