FEDERATION OF INDIAN PILOTS

Ref No: FIP/DGCA/2023 - 14 2nd December 2023

To,
Capt.Vivek Chhabra,
CFOI,
Office of the Director General of Civil Aviation,
Opp. Safdarjung Airport,
Aurobindo Marg,
New Delhi - 110 003.

Subject: Comments and suggestions of the "**Federation of Indian Pilots**" (FIP) on the draft revision to CAR Section 7 Series J Part III- Flight Duty Period, Flight Time Limitations and Prescribed Rest Periods- Flight crew engaged in Scheduled Air transport Operations.

Ref: Proceedings before the Hon'ble High Court of Delhi, namely Federation Of Indian Pilots v. Director General Of Civil Aviation W.P.(C) 616/2023. (hereinafter "Writ Petition")

Dear Sir,

The Director General of Civil Aviation ("**DGCA**") has circulated for comments a draft revision to CAR Section 7 Series J Part III - Duty Period, Flight Duty Period, Flight Time Limitations and Prescribed Rest Periods – Flight crew Engaged in Scheduled Air Transport Operations ("**Draft CAR**"). As a part of the consultation process, the DGCA had placed the soft copy of the proposed Draft CAR on its website inviting comments on the same from general public, stakeholders or the persons likely to be affected thereby for a period of thirty days from the date of such publication.

On behalf of the Federation of Pilots (also referred to as "**FIP**"), which is a petitioner in the aforesaid Writ Petition, we are sharing the organisations comments on the Draft CAR.

A. ABOUT FEDERATION OF PILOTS:

The Federation of Indian Pilots is a registered as a Society under the Societies Registration Act 1860 and as a Public Trust under the provisions of the Bombay Public Trust, 1950, having its office at Gate No. 2, Air India Complex, Kalina, Santa Cruz (East), Mumbai - 400029. FIP has around 5000 members who are pilots and/ or related to the field of aviation. Its objects include inter alia, to carry out all activities to develop the profession of and the field of aviation; and to submit views or make representation before the Government or other authorities on any subject affecting the interest of its members.

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A. CURRENT ISSUES FACED BY PILOTS

The pilots are important stakeholders in the Civil Aviation sector and on whom the sector is very reliant. At the outset, it would be appropriate to set out some of the issues faced by pilots and related matters which directly and indirectly affect the aims and objectives of the Draft CAR.

a) **Long duty hours:** Pilots have to work long hours, which can lead to fatigue and compromise safety. Long duty hours can also impact their work-life balance and lead to stress and burnout. It is pertinent to mention that the Federation of Indian Pilots have challenged the vires of "*Civil Aviation Requirement, Section 7 - Flight Crew Standards Training and Licensing, Series J, Part III dated 24.04.2019*" whereby DGCA had severely reduced rest period as prescribed by the 2011 CAR. vide a writ petition titled *FIP v. DGCA WP(C) No. 616 of 2023* before the Hon'ble High Court of Delhi and the same is pending for adjudication

b) **Poor working conditions**: Pilots may have to work in poor working conditions, such as cramped cockpits, inadequate rest facilities, or outdated technology. Poor working conditions can impact their comfort and safety, as well as their overall job satisfaction.

c) **Pilot fatigue management:** Pilots are often required to work long hours, arising from improper flight scheduling and cancellations, which can lead to fatigue and compromised safety. The Draft Car is needed to be amended to include specific Requirements on pilot duty hours, rest periods, and fatigue management.

B. ANALYSIS OF THE DRAFT BILL

I. Recommendation to the Definition

i. **Acclimatized:** It is suggested a crew member should be considered to be acclimatized to a 2-hour wide time zone surrounding the local time at the point of departure, instead of instead of 3 hours as mentioned in the Draft. The modification will be in line with international standards that provide for base acclimatization on a 2-hour wide time zone surrounding the local time at the point of departure.

ii. **Flight Duty Period**: The DGCA has failed to account for the time taken by pilots to complete necessary shutdown procedures while defining "Flight Duty Time". This includes checklists and other confirmations which a pilot is statutorily mandated to complete on the landing of a flight that has been operated by him. Therefore, when combined over a number of flights operated by an individual pilot, cumulative fatigue levels rise to significant amounts, and the

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same goes unaccounted for, thereby depriving a pilot of rest he is otherwise entitled. The definition is therefore arbitrary and unreasonable and does not cater to real-world scenarios. It is suggested that at least 15 minutes after Engine shutdown should also be considered as part of the Flight Duty Period to cater to the necessary cockpit checks like shutdown procedures and checklists to complete the flight.

iii. **Mixed Duty**: Requiring pilots to report for duty ahead of their flight time goes against the stipulated Minimum Rest Period before flights, as outlined in Requirement 10 of the Draft CAR. This practice overlooks the fatigue resulting from prior duties, like simulator training or office work, leaving pilots insufficiently rested for their flights. Additionally, the absence of defined daily duty limits allows this practice to be exploited, potentially compelling pilots to attend office duties after their Flight Duty Periods (FDP), resulting in harsh work conditions and cumulative fatigue. Notably, the concept of "Mixed Duty" lacks international recognition by ICAO, rendering its inclusion in the draft Flight Duty Time Limitations (FDTL) unnecessary. The existing concept of 'split duty' adequately covers flight duties with designated breaks.

iv. **Temporary Home Base**: The incorporation of the concept of a "Temporary Home Base" to satisfy the Weekly Rest requirement, even when a pilot happens to be lodged in hotels due to flight duty rather than at a designated Home Base without flight duties, appears arbitrary and unjustifiable. The use of an administrative concept of "Temporary Home Base" while framing Duty Time Requirements, lacks any scientific basis. Weekly rest given to crew availing of hotel stays at temporary bases is not the same in principle as weekly rest given to crew at home base, where they are home and completely free of flight duties. That the concept herein does not ensure reduction of fatigue endured by the pilots operating a flight and is therefore in direct contravention to DGCA's responsibilities under Rule 42A of the Aircraft Rules 1937 ("Rules").

v. **Night Duty**: Inclusion of **any** duty period between 0000 hours and 0600 hours is a positive revision and is beneficial for flight safety. Thus, if positioning after flight duty encroaches the night period it must be considered towards consecutive night operations as prescribed under Requirement 13 of the Draft CAR. To elaborate on the aforesaid, we would like to elaborate vide the following illustration:

Illustration*: At present pilot lands at 23:00hrs and then may be positioned in such a way that he/she reaches his/her place of rest at 04:00hrs. He/She can then be scheduled for night duty for the next two nights. This can be followed by another day flight with night positioning post-flight. As a result, the pilot has been awake for 4 consecutive nights without proper rest. Similarly, at present a pilot may be utilised for simulator duty for 3 nights followed by 2 consecutive night flights.*

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Additionally, the concept of 'night' cannot be different for rest and duty. The operator is allowed to pick any 8hrs between 2200-0800 for the purpose of defining 'local night' but once they have done it, this would apply throughout the FDTL CAR for all purposes of interpreting "night " i.e.- period of night for 'night duty' as well as for ' local night for rest'.

vi. **Rest Period**: Standby provision adequately caters to airline contingencies. However, the concept of reserve creates the potential for airlines to effectively keep a crew on duty without formally acknowledging it as such. FIP opposes incorporating this concept in the CAR, and suggests the exclusion of the term "reserve" from this definition.

vii. **Rest facility**: It is stated that the current CAR provides that the Rest Seat will be at least a "*Horizontal Rest' outside the cockpit and separated from passengers by a dark curtain. The conditions of rest should be such that a flight crew member can obtain recuperative rest in a comfortable horizontal seat, or in a bunk*". However, it is noted that the DGCA has not included the said requirement in the Draft CAR and has proceeded to include the concept of Bunk and Isolated Rest Seat, which does not provide for horizontal rest. It is stated that such an amendment is irrational and allows less than horizontal rest facilities in the draft CAR without any supporting studies or rationale. We, propose the following criteria for defining rest facilities:

a) **Bunk**: A 'Bunk' should facilitate a completely flat/horizontal sleeping position and should be situated distinctively from both the flight crew compartment and the passenger cabin. It should be positioned in an area that allows crew to control light and provides isolation from noise and disturbance for optimal rest.

b) **Isolated Rest Seat**: It is suggested that 'Isolated Rest Seat', should be a seat within an aircraft cabin, having a recline of at least 45° from the vertical position, with a minimum pitch of 55 inches and a width of at least 20 inches (50 cm). This seat must offer adequate leg and foot support and be partitioned from passengers by a thick/heavy curtain to ensure darkness and moderate sound isolation. Furthermore, it should be situated in an area reasonably free from disturbances caused by other passengers or crew members and **should not be adjacent to any seat occupied by passenger**

c) **Basic Rest Seat**: This type of rest facility cannot be acceptable and contrary to the object of the CAR for fatigue management. The proposed 'Basic Rest Seat' within the flight crew compartment or cabin, as outlined in the draft, equates mere more than "controlled rest in the flight deck" and will offer minimal to no fatigue management capabilities.

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Additionally, the type of rest facilities must be included in the Minimum Equipment List (MEL) of the aircraft, even in a retrofit scenario with the following stipulations:

a) Any unserviceability/malfunction of the components of the rest facility (for example but not limited to – curtain, footrest, recline mechanism, light controls, ventilation, safety equipment etc) would render it unusable for the purpose of this provision.
b) Such an aircraft would have to be despatched either with augmentation of crew or flight duty time utilising "FDTL without rest facility"
c) Passenger seats in the cabin cannot be substituted in lieu of the unserviceable designated rest facilities.

viii. **Unforeseen operational circumstances**: The DGCA has blatantly generalized the definition of unforeseen operational circumstances to include circumstances not considered unforeseen in principle and has therefore purposefully widened the scope for extending flight and duty time for pilots. It is pertinent to note here that unforeseen operational circumstances are exigencies strictly beyond the control of the operator and not events such as those related to passengers which are not part of normal functioning. Such broadening of definitions by the DGCA is against the interest of pilots or helps manage the fatigue endured by the pilots.

ix. **Window of Circadian Low (WOCL)**: The WOCL shift definition should be across 2 or more time zones as acclimatized definitions worldwide are based on a 2 hour time zone change.

II. Recommendation to the Requirements

i. Requirement 4: Operator's Responsibility

a) Constant verification and inspection by the DGCA are essential for upholding compliance with this Requirement. The significance of the points detailed regarding the operator's responsibilities would be rendered meaningless without the oversight and audits conducted by the DGCA. In essence, the effective implementation of these practices relies heavily on the DGCA's continued scrutiny and monitoring.
b) Presently, most pilots refrain from reporting fatigue due to the fear of retribution from management in subtle yet impactful ways. These include
   - obstructing career advancements,
   - subjecting individuals to harassment during training or simulator sessions,
   - deducting fatigue management days from sick leave allowances, and
   - denying requested leave.

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Moreover, numerous airlines scuttle pilot fatigue reports by asserting that since the flight fell within permissible Flight Duty Time Limit constraints, it cannot be deemed fatigue-inducing. This approach entirely undermines the concept of Fatigue Risk Management Systems (FRMS), which relies on operational experiences to ensure that key personnel, such as pilots, operate with sufficient levels of alertness. Consequently, the reports submitted by operators fail to accurately depict the prevalence of fatigue within operational settings.

c) **Requirement 4.1**: The term "adequate buffer margin during roster planning," demands explicit clarification on the definition of adequacy. Currently, operators habitually structure rosters to exploit crew availability to the absolute limits permitted by the Flight Duty Time Limit.

d) **Requirement 4.7**: Temporary postings are recommended to a maximum limit of 28 days with no minimum gap specified between consecutive postings. Temporary postings are an admin matter, however, if a minimum/max limit of postings is recommended then a minimum gap between consecutive postings must also be recommended considering the quantum of time the crew has been away from home.

e) **Requirement 4.8**: Operators might publish rosters, but in practice, these are only nominal. Crew members are compelled to review their rosters every evening, even during rest periods or days off, and are mandated to accept daily changes or risk facing disciplinary measures. Scheduling malpractices and inefficiencies stand as the primary causes of mental stress and cumulative fatigue for a significant portion of the crew. To address this issue, it's recommended that the DGCA conduct quarterly audits to evaluate fleet-wise roster stability, assess the buffer margin from the airline's maximum Flight Duty Time Limit (FDTL), and determine the percentage of the roster left uncovered by standby crew.

ii. Requirement 6: Flight Time And Flight Duty Period Limits: Two Pilot Operation

a) The flight load on the pilot has been increased in various slots of flight and duty time by virtue of increasing the overall duty period for the higher slots of flying times of upto 9 hours from 12:30 to 13:00 hours. Further, the impact of night duty is only accounted for under 6.1.4 under the acclimatized zone.

b) It is suggested that WOCL encroachment should limit the FDP for operations outside of the acclimatized zone. For operations outside of the acclimatized zone, when the FDP starts in the WOCL, the maximum FDP stated under Requirement 6.1.1 to 6.1.13 of the Draft CAR shall be reduced by 100% of its encroachment up to a maximum of 2 hours. When the FDP ends in or fully encompasses the WOCL, the maximum FDP stated in the table shall be reduced by 50% of its encroachment

c) Also, it is suggested an inclusion in the rules that endeavours to keep landings of four or more in a day to a minimum due to feedback on fatigue concerns on such duty patterns specifically

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during bad weather conditions. A limit on such landings should be considered. Alternatively, a limit on the number of days in a week, a pilot may be rostered for a duty, that includes 4 or more landings to not more than 2 such days.

iii. Requirement 7- Flight Time And Flight Duty Period Limits: Augmented Crew

a) As mentioned in our recommendation regarding the definition of the type of rest facilities, the flight times and as prescribed in the draft are acceptable provided the definitions of "Bunk" and "Isolated Rest Seat" are amended accordingly. The basic rest seat facility and the FDP prescribed along with it is not acceptable.

b) Requirement 7.2.2 proposes that flight time should exclusively count when the crew is actively controlling the aircraft. While this directive holds relevance for pilots' logged flight experience, it appears to be a carryover from previous Civil Aviation Requirements (CARs) without contributing to fatigue measurement or Flight Duty Time Limit (FDTL) considerations. The definition of "flight time" in point 3.5.3 explicitly defines it as the duration from "*chocks to chocks*." All cumulative flight time limits and FDTL rest requirements are dictated by this definition, and applicable to both augmented and un-augmented crews. The inclusion of Requirement 7.2.2 needlessly generates confusion, potentially allowing for operator misuse. Therefore, it should be excluded. Some operators have already misused this point by scheduling augmented crews beyond the maximum cumulative flight time limitations (as per point 8), using this statement as justification.

iv. **Requirement 10- Minimum Rest Period**

a) **Requirement 10.1-** Rest before a flight: Rest time for all other duties should also be at least 12 hours as other duties including the simulator can go up to eight hours including the briefing times plus travel time in which case 10 hours of rest is not sufficient to operate a flight, especially if the simulator has been conducted at odd hours.

b) Rest after return from leave: Pre-flight rest will start only after the leave period ends. Thus, if the pilot returns from holiday leave or sick leave the duty can be scheduled only 12 hours later. This will ensure that the pilot is sufficiently rested before undertaking flight duty.

c) **Requirement 10.5-** Transportation time- The review of transportation time considering its contribution to fatigue is appreciated.

d) **Requirement 10.6**- Weekly Rest- The increase in weekly rest to 48 hrs and 2 local nights is appreciated. The further relief of increase in weekly rest to 60hrs and 3 local nights in case of multiple night operations is a needed positive step. It is pertinent to mention that Weekly rest must be planned at the crew's home base. It should not combined with the crew's immediate rest after the flight under any circumstances. The rest time after a flight is utilized

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by the crew purely to recover from the fatigue and the time zone changes incurred as a result of the flight and cannot be utilized as weekly rest. Also, as stated earlier the concept of the temporary base should be removed from the duty time legislation. Weekly rest given to crew availing of hotel stays at temporary bases is not the same in principle as weekly rest given to crew at home base where they are home.

e) It is recommended that the provision for 168 hours makes weekly rest stretch up to the 7th day when it should be given on the 7th day in principle. The weekly rest should also be mandatorily printed in the roster by the operator to avoid misuse after the roster is printed.

f) **Requirement 10.7 & 8-** Rest after return to base- Rest times post flight were reduced from the 2011 FDTL CAR arbitrarily and without any scientific study or data collection. The practise of reducing the post flight rest by including it within the weekly rest instead of the previous provision which was, rest on return to base *plus* weekly off was done without any inputs from pilots.

g) It is pertinent to draw attention to the misuse of Point 10.1 (Rest period before a flight) versus Point 10.7 (Rest at home base) by certain operators. For flights covering 3-7 time zones, regulations stipulate a 36-hour rest at home base and an 18-hour rest at the layover station. Some operators exploit this clause by arranging for pilots returning from long-range (LR) operations to land at an Indian station other than their designated home base. To elaborate on the aforesaid FIP would like to elaborate vide the following illustration:

Illustration

Flight London-Delhi is operated by 2 crew as follows: Pilot 1 DEL base, Pilot 2 BOM base

DEL Pilot 1 :
Day 1 :VIDP-EGLL 9.5 hours flight,
Rest 18 hours at LON,
Day 2: EGLL-VIDP 9.5 hours flight,
Rest 36 hours with 2 local nights at DEL home base.

BOM Pilot 2:
Day 1 VABB - EGLL 9.5 hours flight,
Rest 18 hours at LON,
Day 3 EGLL- VIDP 9.5 hours flight,
Rest 18 hours at DEL (here he is considered to be still at a layover station and given 18 hours rest only).
Day 4 VIDP-VECC-VIDP-VIAR-VIDP 12 hour duty followed by DH to base BOM where he gets 12 hours rest.

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h) Operators are sidestepping the mandated rest period according to 10.7 ("rest after return to home base") by strategically arranging for the crew to land at an Indian station other than their designated home base. Subsequently, these crew members are often assigned domestic or short-haul flights. Consequently, they are continuously utilized for long-range (LR) and ultra-long-range (ULR) operations without ever receiving the necessary rest period outlined in requirement 10.7. This manipulation blatantly undermines the Flight Duty Time Limitations (FDTL).

In the cited example, both pilots operated identical duties from LHR-DEL, yet one pilot's rest time is merely half of the other pilot's rest period. Accordingly, it is suggested that in Requirement 10.7 the Rest after return to home base should be changed to "Rest after return to home base ***time zone***." which would apply to any Indian station and avoid misuse.

v. Requirement- 13- Consecutive Night Operation

a) The committee (hereinafter referred to as the "Zaidi Committee") published its report dated 15.09.2010 titled "Report of Dr. Nasim Zaidi Committee on Flight & Duty Time Limitation and Rest Requirements for Flight Crew Members" (hereinafter referred to as the "Zaidi Report"). The Zaidi Report was based upon scientific principles, amongst discussions with all the stakeholders. It is pertinent to note that the Zaidi Committee also included a medical expert Gp. Capt. Deepak Gaur, Director Medical Services (AM), IMF who substantially helped in formulating the fatigue involved and its effects on the flight crew members. The Zaidi Report analysed the scientific principles necessary to determine how many consecutive night flights can be operated by a Pilot, and stated the following –

*"k. This report places limits in consecutive night operations in domestic and international passenger operations. However, keeping in view the difficulty experienced by domestic cargo operators, who operate only during night, night operations of cargo aeroplanes have been addressed differently by providing additional rest requirements to undertake consecutive night operations." (page **vi**, Zaidi Report)*

*"34. Night operations of passengers and cargo operators and crew members have been dealt with separately. In case of domestic and international passenger operator, neither operator nor flight crew member should engage in consecutive nights involving 0000 to 0500 hours." (page **xiii**, Zaidi Report)*

b) Therefore, despite there being scientific basis for disallowing consecutive night operations, the DGCA has purposefully placed passenger safety in jeopardy. The 2011 CAR specifically prohibited two consecutive night operations for passenger planes. It is submitted that including consecutive night operation in the Impugned CAR would only lead to additional stress and fatigue on pilots and that the DGCA's illegal inclusion of the same is a blatant attempt at subverting its obligations under the Act and Rules towards the pilots and public safety.

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vi. **Requirement-15- Ultra long range (ULR)** :

a) It is submitted that, as per the 2011 CAR, a stipulation existed mandating minimum rest away from home base on ULR flights to be 48 hours, with 2 local nights included. However, the DGCA, in what seems would put profit over passenger safety, has arbitrarily, illegally and without any scientific basis, removed the said stipulation. It is submitted that such removal will inevitably lead to increased fatigue due to lack of sleep and shall have a direct impact in passenger safety and fatigue endured by the pilot of the flight.

b) The basis of the reduction of rest from the previous CAR is said to be done to improve the quality of rest by not allowing the crew to become acclimatized to the local time zone. The said basis in itself is contradictory, as the reduction in rest cannot lead to being better rested and no input was taken from the pilots who regularly undertake such operations. Further ULR operations with their long sector length and time zone changes, the pilots are no longer acclimatized to the home time zone anyway.

c) Similarly, the rest after return to base was arbitrarily reduced from the previous 6 days (including 5 local nights) to 120 hours without any supporting study or data. The increase of the rest period by 24 hours in case of consecutive ULR in the draft CAR is a progressive welcome step.

d) For ULR flight times that exceed 17 hours (FDP limit 21hrs to remain unchanged) we propose the following fatigue management:

   i. Rest at layover station (away from home base time zone): 48 hours including 2 local nights.

   ii. Rest after return to home base time zone: 144 hours. (In case of consecutive ULR flights 15.6.2 would still apply and 24 hours would be added to the above minimum rest i.e 144+24hrs.)

vii. **Requirement-16- Unforeseen Circumstances**

a) Vide the Draft CAR, the DGCA has blatantly generalized the definition of unforeseen operational circumstances to include circumstances not considered unforeseen in principle and has therefore purposefully widened the scope for extending flight and duty time for pilots. It is pertinent to note here that unforeseen operational circumstances are exigencies strictly beyond the control of the operator and not events such as those related to passengers which are not part of normal functioning. Such broadening of definition by the DGCA operates against the interests of the flight safety and does not safeguard public interest by managing the fatigue endured by the pilots.

b) The definition of "Unforeseen Operational Circumstances" has been unfairly broadened to suit the requirements of the operator to cover even normal eventualities. The reduction in the extension limits are though appreciated, however, the number of landings allowed in 28 days must be limited as well to not more than one such additional landing. Monitoring of FDTL extensions by DGCA is also an important and welcome addition to the draft CAR.

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c) It is recommended that no extension of duty time should be permitted out of base or main base stations in the home country of the airline. The airline should endeavour to provide a change of crew in situations where replacement is possible. The provisions of FDTL extensions must be utilised only on rare occasions when the flight safety risk of operating under extended duty is well understood and acceptable to the crew. Any report or evidence of coercion/pressure by the Operator to extend duty limits must be dealt with seriously by the DGCA.

III. **Other recommendation**

i. The revision of the CAR should prompt the DGCA to also include comprehensive guidelines concerning ionizing radiation and medical risks in aviation. Pilots operate within an environment exposing them to circadian dysrhythmia, chronic fatigue, reduced atmospheric pressure, mild hypoxia, low humidity, sound, vibration, ionizing and non-ionizing radiation, and electromagnetic fields. These occupational exposures pose significant long-term physiological challenges to their health, resulting in an increase in both temporary and permanent medical unfitness among pilots. Recent reports of sudden pilot deaths underscore the extreme danger which it would have caused to passengers had such incidents occurred during the course of a flight.

ii. Requirements must extend beyond fatigue management, encompassing the long-term physiological and psychological well-being of pilots, especially those engaged in continuous Ultra Long Range (ULR) flights, a practice unique to Indian flight crews. However, no efforts have been made to study or measure the impact of such flying on the human body using dosimeters, actigraphy devices, or biomedical models. Leaving radiation protection for aircrew in the hands of the operator risks placing commercial interests ahead of flight crew safety.

iii. The International Labour Organisation (ILO) to which India is a signatory, in the article 'Radiation Protection of Workers, -April 2011 states that –

> *"Doses to aircrew from cosmic rays depend on the routes flown and the flying time. On average, the annual dose is around 3 mSv, but could be twice as much for long flights continually at high altitudes. By the nature of the radiation and the operations, such doses are unavoidable. With the relatively high dose rates experienced in air travel as a result of the elevated levels of cosmic rays at flying altitudes, authorities consider that supervision is also required for aircrew*."

In accordance with the ILO, a Category A worker is an individual whose probability of exposure exceeds 6 mSv of effective dose or surpasses 3/10 of the equivalent dose to the eye lenses, skin, hands, and feet within a year. As endorsed by international aviation regulatory bodies like the

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Federal Aviation Administration and those in the European Union, aviation crew members, particularly those involved in Long Haul (LH) and Ultra Long Haul (ULH) operations, are classified as Category A workers.

iv. Hence, the DGCA should mandate the availability of the following provisions:
   a) For all LH and ULH flights, compulsory carriage of compact, cost-effective dosimeters. Dose measuring devices onboard aircraft where cockpit crew have a display of dose rate and accumulated flight exposure. Dose rate warning devices, signalling sudden increases in dose rates and outlining protective measures.
   b) For all short and medium haul flights, utilisation of mathematical models or software calculations to estimate radiation exposure.

v. At present 20mSV is used as the upper limit for aircraft crew radiation exposure. However, radiation exposure combined with the nature of flight duties, stress, lack of sleep, and shift work all contribute to making air crew high risk candidates for cancers and other life threatening illnesses. Exposure to non-ionising radiation such as UV-A rays as well as high energy visible light are increasingly suspected to have adverse health effects on skin and eyes.

vi. Accordingly, it is recommended that the DGCA shall also consider to incorporate the following:
   a) It is therefore recommended that the initial dose reference levels for all flight crew should be set at 6mSv/year, exposure doses should be individually monitored and optimised to ALARA (as low as reasonably achievable) even if the reference dose level is not exceeded.
   b) Active dose minimisation by flight plan optimisation and roster planning should be done by operators.
   c) Operators should produce individual annual dose records which the aircrew have permanent access to. Exposures caused by energetic particle events (solar particle events) must be taken into account.
   d) Education of flight crew by making them aware that high altitude flying exposes them to significantly higher ionising radiation levels and associated health implications.
   e) Reduction of exposure to other ionising radiation - security scanning devices, non-essential radiological examinations etc. The aviation medical centres for flight crew medicals must be sensitised to not demand unnecessary radiological examinations for the same reason.
   f) Female flight crew members should be adequately informed that radiation exposure to the foetus should not generally exceed the limit of 1.0mSV and operators should have provisions in place to make sure the crew member does not exceed this dose after declaration of pregnancy. Including, undertaking duties which include positioning by flight for office or simulator duty etc.

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g) To allow a better comparison with cancer statistics and facilitate epidemiological studies in the future, dose and medical records (de-identified data) should be kept until the greater of crew member reaches/would have reached the age of 75 or at least 30 years after retiring from flying.

CONCLUSION:

Flight crew duty time requirements should be rooted in scientific principles and aligned with international standards to establish a comprehensive set of rules aimed at enhancing flight safety and mitigating fatigue. It's crucial to incorporate input from pilots, stakeholders, and insights derived from Fatigue Risk Management Systems (FRMS) and fatigue reports in shaping duty time regulations. This collaborative approach forms a pivotal aspect of structuring legislation governing duty time. Moreover, these requirements should undergo regular review, expansion, and enhancement to ensure continual improvement in their scope and effectiveness.

The Draft CAR failed to address most of key issues leading to the filing of the writ petition, namely FIP v. DGCA WP(C) No. 616 of 2023. This indicates that more comprehensive revision efforts from DGCA are required. It is important to consider the issues raised in the multiple reports, i.e. Zaidi Report. The DGCA would lose a very good opportunity to set right the various ills plaguing the Civil Aviation sector and against the interest of pilot, if the Draft CAR is implemented in the current form without rectifying the ills stated above.

We would be happy to discuss the above points in detail if a personal hearing is provided. The Hon'ble High Court of Delhi in the above mentioned Writ Petition had vide its order dated 23.2.2023 stated as follows –

> " *12) .... Accordingly, the Petitioner Associations who are before this Court shall also be issued notice and their comments/inputs shall also be taken. After receipt of inputs, if there are any concerns to be addressed, the requisite steps can be taken in the next CAR."*

Suitable deliberation in the spirit of the Order of the Hon'ble High Court would be beneficial for all concerned. Necessary modifications to the Draft CAR in terms of the suggestions noted above in this representation would help achieve higher standards of flight safety in our country.

Hoping for a favourable response.

Capt Surinder Mehta
President
Federation of Indian Pilots.

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