Airmen FRMS Report

Part I

An RBAC Model Fit for Brazil

Revision # 1

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1 Introduction

Current airmen bill (8.255/14) states that an operator holding FRMS approval may have some flight duty period, flight time and other limits extended.

According to The International Civil Aviation Organization (ICAO) Standards in documents *Implementation guide for operators* and *Implementation guide for regulators,* Brazilian Civil Aviation Authority endorses that scientific and human physiology knowledge should be the cornerstone of this work.

ICAO recommendation does not mention prescriptive values, leaving to the local authority to prescribe such values, considering relevant scientific data, past experience in local regulation, cultural aspects, infrastructure and local peculiarities that may play a role in human fatigue.

Airmen representative entities (SNA, ABRAPAC, ASAGOL e ATT), after in depth study of the regulation and best international practices, and considering the specifics of Brazil and its crews, brings forth this report in order to provide operators with operational flexibility, as long as they can assure crews are operating with alert levels at or above those met when operating under bill 8.255/14 prescriptive values.

The objectives of this study are to identify the dangers and mitigate the risks associated with crew fatigue, reduce absenteeism, aggregate continued improved quality of operations and flight safety and to keep the balance between productivity and operational safety.

As presented in the part II of this report, a new study based on the bio-mathematical model SAFTE-FAST allow the construction of a duty period table for minimum crew adapted to Brazilian reality and with due mitigation of identified risks [Clause 4.2.10(a)].

However, this same study does not include the impacts of fatigue caused by desynchronization of the body clock, which in turn, is caused by the crossing of two or more time zones. With that in mind, the tables of augmented crews [Clause 4.2.10 (b) e (c), respectively] have a preliminary

character, since they take into account the un-augmented duty time limits [clause 4.2.10 (a) and recent studies that estimates the effect of in-flight relief. The results are depicted in Annex II of Part II of this Report.

As ICAO directives recommend that each state finds, in its particularities, duty periods that best translate the balance between productivity and operational safety, airmen representatives strongly recommend that the tables presented here be adopted by the authority until further studies are conducted that can include the assessment of fatigue related risks, as well as labor and industry impacts. The task force should include representatives of the authority, the employers and the workers to provide a result based on scientific principle, within a defined schedule for its conclusion.

Airmen report Part I is divided in eight chapters: (1) Introduction, (2) Crew and Operator responsibility, (3) Definitions, (4) Fatigue Risk Management Program for 121 operators, (5) FRMS approval criteria for RBAC 121 operators, (6) Procedures for controlled rest on the flight deck, (7) Fatigue Risk Management Program for operators under RBAC 135, (8) FRMS approval criteria for RBAC 135 operators.

2 Crew and Operator responsibility

2.1 Operator Responsibility

2.1.1 Fit for duty

The crewmember who declares him or herself unfit for duty due to fatigue, whether it is a flight duty or a standby duty, previously published or not, should be relieved. In these cases, it is left for the crew to decide if he or she is going to undertake part of the duty, as long as the crewmember feels apt to perform the tasks without affecting safety.

2.1.2 Non punitive policy

From the moment a crewmember declares unfit for duty due to fatigue, the company will remove this crewmember from flight without any kind of administrative sanction.

2.1.3 Fatigue Safety Action Group (FSAG)

The FSAG will be responsible for coordination of all activities of fatigue risk management for the operator, including:

I. The responsibility of data collection, analysis and the elaboration of reports about data that allow the evaluation of risks related to crew fatigue.
II. Make sure that the FRMS or FRMP fulfill its safety objectives defined in the policy approved by the Brazilian Civil Aviation Authority.
III. Assure compliance with legal requirements.

The FSAG answers directly to the Operational Safety Director (DSO) and its composition should include at least one representative of each of the following groups:

I. Company management
II. Flight schedule
III. Crewmembers (appointed by the legal representation of the category)

Note1: The Operational Safety Director will be responsible for the authorization of actions/recommendations proposed by the FSAG, as well as the oversight of items previously authorized, maintaining operational safety and mitigation strategies against the effects of fatigue.

Note2: The FSAG shall maintain regular meetings as for authorization received by the Civil Aviation Authority (FRMS or FRMP).

Note3: Operators with more than 1.000 crewmembers should have in its FSAG at least 2 crew appointed by the legal crews' representatives.

2.1.4 Files and reports

2.1.4.1 An operator must store for a period of at least 12 months, files related (including corresponding documents and reports) to the following subjects:

I. Crews' planned and executed Flight schedules.
II. Executed duty periods and flight times.
III. Duty period interruptions, standby duties and days-off periods.

2.1.5 Operation Manual

Operators shall establish the following procedures in its Operations Manual:

I. Identification of any threat that might impair a crewmember state of alertness during his or her duties.
II. Determining the limits and necessary requisites that take into consideration the threats identified in the operation.
III. Continued monitoring and evaluation of operational policy, established limits, organizational practices and experiences, taking into consideration threats identified in the operation in order to improve the Fatigue Risk Management System.

2.1.6 Training

The training of flight schedule personnel shall include topics on the effects of circadian cycle disturbance and sleep deprivation. Training according to this paragraph should allow in depth knowledge of the following items:

I. Causes of fatigue
II. Fatigue consequences
III. Management of fatigue related risks
IV. Operator's procedures and obligations concerning FRMS established by this document and in its operation manual.

Training shall instruct cabin and flight crewmembers on how to act by this document.

Note: Training required by this paragraph may be incorporated on existing training programs. After initial classroom training, online training may be accepted.

2.1.7 Sleep quality and sleep opportunity

When out of the domicile base, the operator shall provide crews with adequate accommodations (layover hotels), as well as sleep opportunities that allow them to perform at an adequate level of alertness. Such accommodations shall comply with normative MTE-NR17 and NBR 10152.

2.1.8 Duty period fatigue report

At any time during a duty period or before the flight, if a crewmember declares to be under the effects of fatigue, his or her schedule will be altered in order to maintain operational safety.
The FSAG will analyze if the reported fatigue was actually caused by the duty period in question. If so, this duty period shall be eliminated by the operator within 30 days.

2.1.9 Layover hotel contracts

The company shall include in the contracts, that crewmembers accommodations be located in areas of minimum noise level (as for NBR 10152). Also, rooms shall be reserved as high as possible in the hotel. Maintenance or routine cleaning shall be scheduled as not to interfere with crew rest.

2.1.10 Meals

Hot meals will be provided for the flight and cabin crews undertaking flight duty periods of more than 4 (four) hours.
Operators shall provide opportunity for crews to have their meals within the first 2 (two) hours.
Intervals between meals on the same flight duty period shall not exceed 3 (three) hours.
Note: In the period within 02:00 to 07:00 (local time in which the crewmember is acclimatised) the offered food shall be comprised of composed carbs, no fat proteins, vegetables and fruits. Food with high

sugar concentration is not recommended.

2.2 Crew responsibility

2.2.1 Fit for duty

2.2.1.1 No crewmember shall undertake a duty period, previously published or due to alterations, if he or she is feeling fatigued in a way that can affect their performance and jeopardize operational safety.

Note1: Crews shall use their rest periods and days off to get sufficient amounts of sleep, so they are prepared for the next duty period.

Note2: Members of augmented crews shall use the onboard rest facilities and manage their alertness for the rest of the flight.

2.2.1.2 Crewmembers shall inform the employer of any event that can affect compliance with fatigue risk management policy established by the operator, as well as limits and criteria established by the Civil Aviation Authority in his or her next duty period, previously published or not.
Note1: events that can affect compliance with fatigue risk management policy may include:

I. A crew second job;
II. Impossibility of getting recovery sleep prior to the next duty;
III. Time spent on transportation from the rest place to the airport that restricts sleep opportunity;
IV. Any event that can affect recovery sleep prior to the start of next duty.

2.2.2 Training

Flight and cabin crew shall undertake initial and recurrent training concerning fatigue risk management related to their tasks.

2.2.3 Sleep quality and rest quality

All flight and cabin crew shall make best use of rest installations and opportunities, as well as plan and use adequately their rest periods.

2.2.4 Crews that resides outside domicile base (commuting):

In case of incident, serious incident or accident, if the investigation made

by the authority points fatigue as contributing factor, and if this was caused by the crewmember's noncompliance with 2.2.1.2 III, this crewmember will be subjected to administrative sanctions imposed by the civil aviation authority.

3 Definitions

3.1 Acclimatisation

It is the mental and physiological state of a crewmember who's biorhythm and body functions are considered adapted to the local time. In domicile base, the crewmember is considered adapted after spending the number of consecutive nights indicated in table A of item 4.2.4. Crewmembers are considered acclimatised in a new place when they have spent sufficient time in this place as described in 4.2.4.

3.2 Layover hotel accommodation

It is understood as suitable accommodation, those with the following characteristics:

I. An individual room;
II. Clean and hygienized installation;
III. A bed that is comfortable, straight and horizontal, that allows a person to sleep in any position: log, free-faller, starfish;
IV. Minimum noise levels, including random noises, according to NBR 10152;
V. Means for controlling temperature and ventilation according to NBR 16401-3;
VI. Means for controlling light levels.

Note1: The crewmember's home complies with the definition of suitable accommodation.

3.3 Domicile base or contract base (airport)

The airport designated by the operator, where the crewmember's contract is registered. In counties or conurbations served by two or more airports operated by the same company, the operator shall designate only one as domicile base.
Note: Commuting is the time spent by the crewmember traveling from home to the domicile base by any transport modal.

3.4 Onboard rest

Rest took onboard the aircraft at installations offering the crewmember with a sleep opportunity according to 3.14 of this regulation and according to MTE - NR 17 and NBR 10152.

3.5 Fatigue

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

3.6 Regular day off

It is the period of time, no less than 24 (twenty four) consecutive hours in which the crewmember, in his or her domicile base and with no income deduction, is free from all duties related with work.

3.7 Single day off

It represents a single period of 24 (twenty four) hours initiating after the regular rest period.

Note1: A single day off shall include two local nights and the next duty period shall begin after 10:00 am local domicile base the day after.

Note2: The FSAG shall analyze if the single day off criteria is sufficient to assure the crewmember full recovery such that he or she can start a duty period with no signs of fatigue.

3.8 FRMS

A data driven means of continuously monitoring and managing fatigue-related safety risks, based upon scientific principles and knowledge as well as operational experience that aims to ensure relevant personnel are performing their duties with adequate levels of alertness.

3.9 Late night duty

3.9.1 Reduced late night duty

The time period of less than two hours between 00:00 and 06:00 am. domicile base time.

3.9.2. Full late night duty

The time period of more than two hours between 00:00 and 06:00 am. domicile base time.

3.10 Local night

The period of unrestricted sleep, not less than 8 (eight) hours between 22:00 and 08:00 domicile base time.

3.11 FRMP

Fatigue Risk Management Program.

3.12 FRMS

Fatigue Risk Management System.

3.13 Deadheading crew

A deadheading crew is considered as effective crew regarding duty period limits and rest periods. The flight in which the deadheading crew is scheduled, will be computed as duty period. A passenger cabin seat will be provided for the deadheading crew. Flight Duty period limits will depend on the rest category provided. In case of different categories, limits will be based on the least rest category.

3.14 Onboard rest categories

a) Category 1: A bunk bed or other surface that:
(i) allows for a horizontal rest position; and
(ii) is located apart from the cockpit and passenger cabin and isolated from noises and other disturbances.

b) Category 2: A passenger cabin seat with recline angle similar to that of the business class and:

(i) the seat destined to the crew's rest won't be located at the same row of passenger's seats, next to toilets, service areas or galleys;
(ii) allows for a horizontal rest position with at least 45º recline position in relation to its vertical axis;
(iii) a width of at least 50 centimeters;
(iv) distance between seats of at least 140 centimeters;
(v) Support for feet and leg rest;
(vi) is located separated from passengers by at least a curtain that

provide light and noise attenuation;
(vii) is in a place free from disturbances caused by passengers and crew.

c) Category 3: A cockpit or passenger cabin seat that:

(i) has at least a 40 degrees recline position; and
(ii) provides support for feet and leg rest in the reclined position;
(iii) the seat destined to the crew's rest won't be located at the same row of passenger's seats or next to toilets, service areas or galleys.

Note: Rest category 3 will only be applied in narrow-body aircrafts and/or with only one isle.

3.15 Time zone

Planet region that has an uniform local time and that is different from adjacent regions by an hour or fractions of an hour.

4 Fatigue Risk Management Program for 121 operators

4.1 Pre-requisites for approval by the Civil Aviation Authority

4.1.1 The airlines operating under the RBAC 121 may have previous extensions allowed through authorization of a FRMP (Fatigue Risk Management Program) authorized by a Civil Aviation Authority.

Note 1: The FSAG (Fatigue Safety Action Group) shall maintain regular meetings with minimum intervals of 60 days in order to evaluate the items of the FRMP and the extensions permitted under the operator's FRMS program.

Note 2: The operator interested in apply for flight duty periods extension according to 19th article of the 8255/14 law, shall fulfill some pre-requisites:

a. Extensions will only be granted for flights with two or more pilots.

b. The operator must comply with all items of chapter 2 of this regulation (Operator's Responsibility).

4.1.2 The operator shall develop, along with the FSAG, a FRMP and obtain the approval from the Civil Aviation Authority for each following element:

a. The operator shall guarantee that its flight crews are being scheduled under the adequate level of alertness to operate the aircraft.
b. The operator shall have a methodology aimed at manage fatigue related risks

This methodology shall:

1. Be based on scientific studies related to flight crew fatigue;
2. Comply with prescribed limits and/or with FRMS;
3. Mitigate the risks related to fatigue, keeping them within the acceptable limits and the lowest levels that can be reached;
4. Establish a specific crew fatigue reporting form;
5. Establish a mitigating procedure for flight operations reported by crews containing immediate actions for the crewmembers involved and the subsequent days of their schedule.
6. Provide annual reports to the Civil Aviation Authority with the FDM (Flight Data Monitoring) statistics where there are traces

of fatigue. These reports must contain the following data:

I. Time when the FDM event occurred;
II. Wake-sleep cycle of the pilots on the preceding 72 hours of the FDM event;
III. Crew Flight schedule of the 72 hours preceding the FDM event;
IV. Any other relevant data for the event analysis.

c. The operator should have processes and procedures in order to manage the fatigue related risks with the purpose of determine the minimum rest periods and calculate the crew duty limits:
   1. For all flights, duties and schedules;
   2. For flight duties as deadheading crew;
   3. For training time preceding the flights;
   4. For administrative and ground works that precede the flight;

Note: The operator shall have processes and procedures to exclude from the crew's schedule, flight duty periods that presents unacceptable fatigue risks.

d. The operator must have processes and procedures to ensure the promotion of safety, publishing in its operations manual and informing its crew through written notice, at least the following items:

   1. All specifications according to item 4.1.2 (c);
   2. Who needs to be trained;
   3. Minimum curricular content for the training;
   4. Training format and minimum attendance;
   5. Training evaluation;
   6. All documents have to be filed for 12 months.

Note: The ICAO publications shall be used as base line for the development and implementation of the FRMP/FRMS.

4.1.3 In order to grant the approval for implementation of a Fatigue Risk Management Program, the Civil Aviation Authority should make sure that the operator:

a. Comply with all items on item 4.1.2;
b. Have a secure and integrated system, data fed, able to monitor and mitigate the human fatigue risks in a continued and effective way, using scientific principles and knowledge as well as operational

experience.

4.1.4 After the implementation of the items 4.1.1, 4.1.2 and 4.1.3 of this regulation, the operator shall submit all the documents to the Brazilian civil aviation authority. The authority will have 60 for the documents analyses.

4.1.5 The civil aviation authority can:

a. Authorize the operator's FRMP completely, so that all the extensions under section 4.2 of this regulation are also approved;
b. Request new documents, reports or evidential studies proving that crews are operating with alert levels at or above those met when operating under bill 8.255/14 prescriptive values.

4.1.6 The approval will only be issued to operators who are able to assure crews are operating with alert levels at or above those met when operating under bill 8.255/14 prescriptive values

4.1.7 The granted changes shall be communicated to the flight crews by means of the operations manual and other documents.

4.1.8 The civil aviation authority will determine a deadline for the FRMP in a period of XX days.

4.1.9 After the timeframe defined on item 4.1.8, there will be a technical analyses (including the FSAG and the civil aviation authority) in order to determine whether or not the approved extension will be maintained.

4.1.10 The operator shall indicate the manager (part of the operational safety directory) responsible for authorizing the actions proposed by the FSAG and for internal monitoring of items already authorized, maintenance of Operational Safety and proposed mitigations for the effects of fatigue in aviation.

Note: Any member of the FSAG or Civil Aviation Authority has autonomy to request internal data for exclusive use on studies, revise authorizations or investigation of reports made by crewmembers. The information shall be kept classified.

4.2 Extensions approved by the Civil Aviation Authority to the operators that comply with all the requisites to implement the FRMP

4.2.1 Single day off or regular day off

a) A crewmember must have a minimum of one (1) day off for each period of seven consecutive days. (168 hours)

b) The next duty after a single day off should initiate after 10:00am (ten) hours local time .

c) A crewmember must have two consecutive days off after each 14 consecutive days.

4.2.2 Consecutive late night duty

4.2.2.1 Flight crew or cabin crew schedules will respect the maximum of two (2) consecutive late night duties, limited to four (4) late night duties in the period of 168 consecutive hours, counted from the moment a crew member first reports for work.

a) The flight crew or cabin crew can be scheduled to work the third consecutive night duty (reduced or full), only as deadheading crew returning to the domicile base, ending his or her workday. In this case, the crew member cannot be scheduled as effective crew in the period before the third consecutive night duty (reduced or full) in the same flight duty period.

b) The period of 168 consecutive hours referred to in the item 4.2.2.1 may be closed, starting again whenever a period of at least 48 hours free form all duties is made available for the crew member and the report time to the next duty is after 10am, if only a single day off had been provided.

d) Notwithstanding the provisions of paragraph 4.2.2.1(b) the period of 168 consecutive hours referred to in item 4.2.1 may be closed, starting again whenever a period of at least 60 hours free form all duties is made available for the crew member.

Note 1: Operators having an approved FRMS under chapter 5 of this regulation may be allowed to extend its crews duties up to 2 (two) full nights in a 168 hours period.

Note 2: Operators having an approved FRMS under chapter 5 of this regulation may be allowed to extend its crews duties regarding the 168 consecutive hours referred to on item 4.2.1. The period starts again always the crewmember is off duty for more than 48 consecutive hours.

4.2.2.2 If the crew member is scheduled for duty starting or ending in an airport other than his/her domicile base airport, located at the same metropolitan area of his/her domicile base airport, the late night period is considered to be between 11PM and 07AM.

4.2.3 Domicile base in a county or conurbation that has two or more airports operated by the employer.

4.2.3.1 If the crewmember is scheduled for duty starting or ending in an airport other than his/her domicile base airport, located at the same metropolitan area of his domicile base airport (less than 50 kilometers) the following criteria should be used:

a. If the crewmember is scheduled for duty starting or ending in an airport other than his/her domicile base airport, the employer should provide free transportation between airports at intervals not greater than 1h (one hour).
b. If the crewmember is scheduled for duty starting in an airport other than his/her domicile base airport, the minimum resting period prior to the duty has to be, at least, 2h (two hours) longer.
c. If the crewmember is scheduled for duty ending in an airport other than his/her domicile base airport, the minimum resting period after the duty has to be, at least, 2h (two hours) longer.
d. If the crewmember is scheduled for duty ending in an airport other than his/her home base airport and his next flight also starts at an airport other than his/her domicile base airport, the minimum resting period has to be, at least, 4h (four hours) longer.

4.2.3.2 If the crewmember is scheduled for duty starting or ending in an airport other than his/her domicile base airport, located at the same metropolitan area of his domicile base airport (more than 50 kilometers) the following criteria should be used:

a. The employer should provide free transportation between airports;
b. The time spent between domicile base airport and the airport designated for duty start should be counted as duty time;
c. The time spent between the duty end airport and the domicile base airport should not be counted as rest time.

4.2.4 Acclimatisation

I – The crewmember will be considered acclimatised in his/her domicile base when:

a. The difference between the local time where the duty starts and where it ends is equal or less than 2 (two hours);
b. The difference between the local time where the crew reports to duty and where it is free from duty is more than 2 (two hours) and the time lapse between the time the flight crew reports to duty and where it is free from duty is less than 60 (sixty) hours;
c. Returning from flights where the time difference between the place where the crew reports for duty and where it is free from duty is more than 2 (two) hours, the flight crew will be considered acclimatised after spending the number of local nights off duty as shown in Table A.

Table A: Number of local nights required for recovery after the returning to the contractual base

Elapsed time between check-in and the return to the contractual basis (check-out)	**Maximum time difference from the contractual basis**						
	3	4	5	6	7	8-9	10+
60-84	1 (2)	1 (2)	2 (3)	2 (3)	2 (3)	2(3)	3
84-108	2(3)	2(3)	2(3)	3	3	3	3
108-132	2(3)	3	3	4	4	4	5
132-156	3	3	3	4	4	5	5
156+	3	3	4	4	5	5	6

Note: The values in the parenthesis are applicable to flights that start heading east (heading east on the first leg and west at the second leg) on the cases that the limit is exceeded at the opposite way.

II – If the crewmember is considered acclimatised in a new local time zone, this local time zone will be used as reference, when:

a. The time difference between the local he/she reported to duty and the local he/she is free from duty is more than 2 (two hours), and
b. The time lapse since the crew reported to duty at his/her domicile base is more than 60 (sixty) hours, and
c. He/she is free from all duty for the time intervals presented at table B.

Table B: Minimum time off duty for acclimatisation at a new time zone.

The time difference between the local he/she reported to duty and the local he/she is free of duty		**Time off duty required (hours)**
Heading East	Heading West	
2	2-4	36
3-4	5-6	36
5-6	7-8	84
7-8	9-11	108
9+	12+	132

4.2.5 Maximum standby time

The standby time will be computed as duty time of the crewmember.

4.2.6 On call duty

a. The maximum allowable continuous time on call is 16 (sixteen) hours.
b. The maximum flight duty period, following a call to work should be reduced by the number of hours exceeding 12 (twelve) hours of standby.
c. If the crewmember is not called to work, his/her time free from duty should be at least 10 (ten) consecutive hours.

4.2.7 Minimum rest periods

4.2.7.1 The minimum rest periods for acclimatised crews will consider the previous duty, observing the following limits:

a) twelve (12) hours of rest after duty of twelve (12) hours;

b) sixteen (16) hours of rest after duty of more than twelve (12) hours up to fifteen (15)hours;
c) 24 (twenty four) hours of rest after duty of more than fifteen (15) hours.

4.2.7.2 The minimum rest period for non acclimatised crews shall be equal or more than 12 (twelve) hours, considering the following criteria:

a. Returning to domicile base, the rest period added to the off days preceding the next flight, cannot be less than the limits established at table A.
b. If the flight ends anywhere other than the domicile base, the rest period cannot be less than the limit established at table B.

4.2.7.3 The minimum rest period established at 4.2.7.1 and 4.2.7.2, may be reduced upon implementation of a FRMS in accordance with chapter 5, considering the minimum limit of 10 (ten) hours.

4.2.8 Yearly/Monthly flight time limits

4.2.8.1 The maximum flight time limit for operators having a FRMP, is 90 (ninety) hours monthly and 900 (nine hundred) hours yearly.

4.2.8.2 The maximum flight time limit can be extended to 100 (one hundred) hours monthly and 1.000 (one thousand) hours yearly if the operator has a FRMS approved by the civil aviation authority under the standards of chapter 5.

4.2.9 Flight duty period limits in 7, 14, 30 days cycle

a. The sum of flight duty periods shall not exceed 60 (sixty) hours in a period of 168 (one hundred and sixty eight) consecutive hours.
b. The sum of flight duty periods shall not exceed 100 (one hundred) hours in a period of 336 (three hundred and thirty six) consecutive hours.
c. The sum of flight duty periods in a month cannot exceed 176 (one hundred and seventy six) hours.

4.2.10 Flight duty period and Flight Time limits.

a. Acclimatized minimum crew:

The crewmembers will respect the following flight duty and flight time limits:

Duty and flight time limitations				
Time reported to duty (h)	Number of flight sectors			
	1-2	3-4	5	6
0000-0459	9 (8)	9 (8)	8:15 (7:15)	7:45 (6:45)
0500-0559	11 (9)	10 (8)	9:15 (8)	8:45 (7:45)
0600-0659	11 (9)	10 (9)	9:15 (8)	8:45 (7:45)
0700-0759	12 (9:30)	12 (9)	11:15 (9)	10:45 (9)
0800-1059	12 (10)	12 (9:30)	11:15 (9)	10:45 (9)
1100-1359	12 (9:30)	12 (9)	11:15 (9)	10:45 (9)
1400-1459	10 (9)	10 (9)	9:15 (8)	8:45 (7:45)
1500-1559	10 (9)	10 (8)	9:15 (8)	8:45 (7:45)
1600-2359	9 (8)	9 (8)	8:15 (7:15)	7:45 (6:45)

b. Non-acclimatized minimum crew:

The crewmembers will respect a flight duty time limit of 9 (nine) hours and a flight time limit of 8 (eight) hours in the same duty period, restricted to 4 (four) sectors.
Note: Flight duty time and flight time limits for 5 (five) sector sor more should be determined using a Fatigue Risk management System (FRMS).

c. Acclimatized augmented crew:

The crewmembers will respect the following flight duty and flight time limits:

Duty Time limit (flight time limit) (h) Acclimatized crew – one sector						
Time Reported to duty (h)	Class I		Class II		Class III	
	3-pilot	4-pilot	3-pilot	4-pilot	3-pilot	4-pilot
0000-0459	12 (11)	16 (14)	10:30 (8:30)	11:15 (9:15)	9:30 (7:30)	9:45 (7:45)
0500-0659	13:45 (11:45)	16 (14)	12:45 (10 :45	14 (12)	11:45 (9:45)	12:15 (10:15)
0700-1359	15 (13)	17:30 (15:30)	14 (12)	15:30 (13:30)	12:45 (10:45)	13:15 (11:15)
1400-1559	12:15 (11)	16 (14)	11:30 (9:30)	12:45 (10:45)	10:45 (8:45)	11 (9)
1600-2359	12 (11)	16 (14)	10:30 (8:30)	11:15 (9:15)	9:30 (7:30)	9:45 (7:45)

d. Non-acclimatized augmented crew:

The crewmembers will respect the following flight duty and flight time limits:

Duty Time limit (flight time limit) (h) Non-acclimatized crew – one sector						
Time Reported to duty (h)	Class I		Class II		Class III	
	3-pilot	4-pilot	3-pilot	4-pilot	3-pilot	4-pilot
0000-0459	12 (11)	16 (14)	10 (8)	10:45 (8:45)	9:30 (7:30)	9:45 (7:45)
0500-0659	13 (11)	16 (14)	12:30 (10:30)	13:15 (11:15)	11:30 (9:30)	12 (10)
0700-1359	14:15 (12:15)	16 (14)	13:30 (11:30)	14: 30 (12:30)	12:45 (10:45)	13 (11)
1400-1559	12 (11)	16 (14)	11:15 (9:15)	12 (10)	10:30 (8:30)	10:45 (8 :45)
1600-2359	12 (11)	16 (14)	10 (8)	10:45 (8:45)	9:30 (7:30)	9:45 (7:45)

Note: Flight duty and flight time limits for augmented crew (acclimatized or not) with 2 (two) or more sectors should be determined using a Fatigue Risk Management System (FRMS).

4.2.10.1 For schedule planning, the total flight time (in parenthesis) can't be less than the cumulative flight time expected for that duty, considering also the flight time between the final destination and the diversion airport.

4.2.10.2 1 For schedule planning, the total duty time can't be less than the cumulative duty time expected, considering also the flight time between the final destination and the diversion airport.

Note: As described at chapter one of this text, the tables of the sub-divisions "b", "c", "d" and "e", don't contemplate deep studies of the fatigue risk or even the impact on the labor force. For this reason we recommend the use of the limits in a preliminary way until scientific conclusions can be determined.

4.2.11 Maximum number of landings allowed on the same flight duty period

4.2.11.1 The maximum number of landings for acclimatized minimum crews operating jet aircrafts is limited to 5 (five) landings a day.

4.2.11.1.1 the number of landings in 4.2.11.1 can be increased by one, at the operator discretion, if the preceding rest period has 2 (two) extra hours.

4.2.11.1.2 Notwithstanding the provisions of 4.2.11.1.1, In a case of diversion to another airport, 1 (one) landing can be added to the established at 4.2.11.1.

4.2.11.2 The maximum number of landings for acclimatized minimum crews operating turboprop aircrafts is limited to 6 (six) landings a day.

4.2.11.2.1 The number of landings in 4.2.11.2 can be increased by one, at the operator discretion, if the preceding rest period has 2 (two) extra hours.

4.2.11.2.2 Notwithstanding the provisions of 4.2.11.2.1, In a case of diversion to another airport, 1 (one) landing can be added to the established at 4.2.11.2.

4.2.11.3 The maximum number of landings for non-acclimatized minimum crews is limited to 4 (four) landings a day.

4.2.11.3.1 In the evento f a diversion to another airport, 1 (one) landing can be added to the established at 4.2.11.3.

4.2.11.4 The maximum number of landings for an augmented crew is 1 (one) landing a day.

4.2.11.4.1 In the event of a diversion to another airport, 1 (one) landing can be added to the established at 4.2.11.4.

4.2.12 Schedule change

4.2.12.1 The operator may change a crewmember's schedule, when not in his/her domicile base, as long as:

a. The new duty isn't 4 (four) hours longer than the original schedule;
b. The crewmember consider him or herself able for the duty.

4.2.13 **Flight duty period and flight time limit extension.**

4.2.13.1 The flight duty period and flight time limit can be increased by 60 (sixty) minutes for minimum crews or 120 (one hundred twenty) minutes for augmented crews (3 or 4 pilots), at captain's discretion, in the following cases:

a) Absence, at places of regular service, of appropriate rest accommodation for the crew and passengers;
b) Delays, off the domicile base and at places of regular service, caused by weather or maintenance work; or
c) Unforeseen operational circumstance, understood here as a result of weather events or disasters, something which does not arise due to administrative problems, scheduling problems or flight cancellations.

4.2.13.2 Any flight duty period extension shall be communicated by the captain to the employer no later than 24 (twenty four) hours after the duty in question. The employer shall submit the extension to the Brazilian Civil Aviation Authority within fifteen (15) days.

4.2.13.3 In case of extrapolating the maximum limits in item 4.2.13.1 the operator is required to add two (2) hours on the crew's rest period.

4.2.14 **Flight duty period limit extension - deadheading crew**

For crews traveling as deadheading, a flight duty period extension of two (2) hours will be allowed, provided it is returning to domicile base and a subsequent period of at least two consecutive days off is made available.

4.2.15 **Restrictions for Flight duty period limit extension**

Flight duty period and flight time cannot be extended, if it goes beyond values defined in 4.2.8 and 4.2.9, respectively.

4.2.16 **Report times in case of delays: criteria and values**

4.2.16.1 If the operations manual describes procedures regarding delays, the operator may postpone crewmembers report time if they are informed according to the following:

a. The crewmember is in his/her domicile base,
    i.at least 2 (two) hours before the original report time and;
    ii.at least 2 (two) hours before the new report time or;
b. The crewmember is not in his/her domicile base,
    i.at least 1 (one) hour before the original report time and;
    ii.at least 1 (one) hour before the new report time.

4.2.16.2 If a crewmember is informed of the delay according to 4.2.16.1, the time lapse between the original report time and the new one will be considered as standby time.

Note: The standby time described on 4.2.16.2 will be considered standby time even though it is different from the standby definition.

4.2.16.3 If the crewmember is not informed of the delay according to the sub item 4.2.16.1, the original report time will be considered.

4.2.16.4 In the case of the sub item 4.2.16.3 be applicable, the rest period criteria must be considered even if the flight doesn´t happen.

4.2.16.5 In the case of delays greater than 10 (ten) hours and the crewmember is informed only once about the delay, the operator may:

a. Consider the delay as rest period; and
b. At the end of this rest period request the crewmember to perform a new duty within the applicable limits of this appendix.

Maximum Duty Time After a Delay According to the Operations Manual

4.2.16.6 If a crewmember duty period is delayed according to 4.2.16.1 and the new report time is within 4 (four) hours from the original report time, the duty period limits shall be based on the most limiting criteria of the following:

a. Original report time; or
b. New report time.

4.2.16.7 If a crewmember duty period is delayed according to 4.2.16.1 and the new report time is beyond 4 (four) hours from the original report time, then:

a. The flight duty period will be considered initiated 4 (four) hours after the original report time.
b. the duty period limits shall be based on the most limiting criteria of the following:
    i. Original report time; or
    ii. The time the duty should have been considered initiated.

4.2.16.8 Delays that affect the arrival of the crewmember at his/her domicile base prior to day off are only allowed in case of unforeseen operational circumstances or with the flight crewmember consent.

4.2.17 Criteria for flight or standby duties starting between 06:00 and 07:59 (*early-starts*):

4.2.17.1 Consecutive flight or standby duties starting between 06:00 and 07:59 can occur if the report times for the subsequent days are later than the previous one.

4.2.17.2 Flight or standby duties commencing in airports not the same as the contractual base and located less than 50 (fifty) kilometers of the contractual base or flight or standby duties in airports located more than 30 (thirty) minutes away from the resting place when not at the contractual base should be restricted to 2 (two) consecutive days starting from 06:00 and 06:59.

5 FRMS approval criteria for RBAC 121 operators

5.1 The operator interested on requesting a specific extension in any flight roster, in accordance with article 19, law 8255/14, shall fulfill the following requisites:

(a) Operators that have a SMS (Safety Management System), will not be granted approval of an FRMS, unless the Civil Aviation Authority is satisfied with the FRMP integrated into the SMS.
(b) An operator will not be fit to request an implementation of an FRMS until its FRMP be operational for at least 12 months from the date of approval.

Note 1: clauses (a) and (b) of item 5.1 do not apply to companies that operate under the rules RBAC 121 and operate exclusively on cargo transport.

Note 2: clauses (a) and (b) of item 5.1 do not apply to companies that operate under the rules of RBAC 121 and have less than 1000 (one thousand) crew members.

(c) FSAG shall maintain frequent meetings, with a minimum periodicity of 30 days, in order to evaluate FRMP's items and extensions granted on the operator's FRMS.

5.2 In order to implement an FRMS, the operator should obtain approval of the Civil Aviation Authority for each element below:

(a) The operator shall have a policy in place in order to schedule crew members, in a way that an acceptable level of alertness is assured.
(b) Through FSAG, an operator shall have a methodology with the purpose to manage risks related to fatigue. This methodology should:

1) Have as a foundation scientific principles and related studies on crew members' fatigue.
2) Be in conformity with the limits defined with/or FRMS.
3) Mitigate the risks related to fatigue, keeping them within acceptable limits and on the lowest levels that can be reached.
4) Establish a specific fatigue report form for crew members.

5) Establish a data collection and analysis, using actigraphy as well as attention tests.
6) Provide the Civil Aviation Authority with annual reports regarding statistics on FDM (Flight Data Monitoring) events, where there is fatigue evidence. These reports should include the following details:

i. Time of the FDM event.
ii. Pilot's wake-sleep cycle on the last 72 hours that preceded the FDM event.
iii. Crew roster on the last 72 hours that preceded the FDM event.
iv. Other relevant data helpful to event analysis.

7) Inform in a monthly basis, the amount of fatigue reports received in this period and the total amount of reports received by the organization.

(c) The operator, through FSAG, shall have the necessary procedures and processes to manage fatigue related risks, with the purpose to determine minimum rest periods as well as to calculate crew members working hours:

1) in all flights, trip journey and rosters;
2) flight time, on service, as a deadhead crew
3) training time that precedes the flight;
4) desk work and administrative tasks that precedes the flight;
5) which extensions are in the study phase and/or approved;
6) which mitigations are proposed and/or approved for the required extensions;
7) FSAG members.

Note: the operator shall have in place procedures and processes for the termination of flight rosters that have an unacceptable fatigue risk

(d) The operator shall have procedures and processes in order to guarantee the promotion of the operational safety, publishing in its operation manual and informing its crew members through written notice, at least the following items:

1) All items referent to the clause 5.2(c)
2) Whom should be trained

3) Minimum training curriculum
4) Training format and minimum attendance
5) Training evaluation
6) Keeping of documents for a 12 month period

(e) FRMS implementation shall be in conformity with ICAO documents:

1) FRMS introduction and implementation;
2) Planning;
3) Implementation of a proactive Fatigue Risk Management process;
4) FRMS implementation.

Note: ICAO documents should serve as a guide line for the FRMS development and implementation and also, should be enclosed in the ICAO FRMS implementation for the operator's manual:

5.3 For FRMS approval, the Civil Aviation Authority should be assured that operators:

(a) Have a safe system, integrated, data fed, able to monitor continuously and effectively the risks related to fatigue, using scientific knowledge and principles as well as experience.

5.4 Fulfilled the requirements of clause 5.2, the operator interested in requesting extensions in conformity with FRMS, should, through its FSAG, arrange with the category representative, the study to be done for the required extension.

Note: the arrangement should be done in accordance with collective agreement and, always based on scientific grounds that corroborate that the suggested changes maintain the alertness levels of crew members involved when compared to the alertness provided by FRMS.

5.5 The Civil Aviation Authority will be responsible to authorize the operators' FSAG for the accomplishment of necessary studies with the purpose to prove the requirements of clause 5.2, in which should contain at least:

a) Fixed number of participating members;
b) Study time line (Maximum number of operations and predicted time);
c) Methodology;

d) Risk mitigation process to be used;
e) Study goals (Required extension);
f) Objective measures in PVT, actigraphy, etc.).

5.6 After being subjected to agreement with the professional category representative, the study should be submitted to analysis by the Brazilian Civil Aviation Authority, which will have a dead line of XX days.

Note: During the analysis period, the operation remains authorized

5.7 The Civil Aviation Authority will determine the need of a new study or new mitigated measures for the permanence of the operation or if it gives the authorization to extend the requested operation (for the period of XX days).

5.8 Approval will only be granted to the operator that shows that the related fatigue risks are in an equal or lesser level from those results obtained from the operators' FRMP.

5.9 Granted changes should be communicated to all crew members, through Operations Manuals update or other documents.

5.10 The Civil Aviation Authority will grant extrapolation of the required limit for a period of (XX days)

5.11 After the period stated on item 5.11 of this regulation, a technical analysis will be carried (including FSAG, professional category representative and Civil Aviation Authority) in order to maintain or not the granted extension.

5.12 The operator shall point a manager, related to the Operational Safety Board, who will be responsible to authorize the actions proposed by FSAG, as well as inside monitoring of already authorized items, to maintain Operational Safety and proposals related to fatigue risk mitigation in aviation.

Note: Any FSAG or Civil Aviation Authority member, has the autonomy to request internal data for use, exclusively, in studies, authorization revisions or determination of eventual complaints, keeping confidentiality of the information collected.

6 Procedures for controlled rest on the flight deck

The controlled rest in the cockpit is an effective way to mitigate crew members' fatigue. However it should not be used as roster tool. This mitigation strategy should neither replace a proper sleep before a flight nor the use of multi-crew on flights , but should work as a quick response to unexpected fatigue that might arise on a flight operation.

Below some basic principles are listed:

a) It should be considered a palliative measure.
b) The FSAG should monitor the use of controlled rest in the cockpit, in order to evaluate if the existing actions taken are appropriate.
c) It should only be used on flights with duration that will not compromise or interfere with needed operational tasks.
d) It should only be used on flight phases that have low workload (i.e.: cruise part of flight).
e) It should not be used as a form to extend crewmembers duty time.
f) The procedures for controlled rest in the cockpit should be published and available in the Operations Manual.

Recommended procedures for controlled rest in the cockpit:

The following recommendations are based on survey with major airlines companies. Thus, represent considerable experience all over the world and include variations that reflect the different types of operations.

a) Only one pilot at the time could have a controlled rest in his/her seat. Shoulder harness should be used and the seat should be positioned in way that would not interfere with flight controls.
b) The autopilot and auto-thrust, if available, should be operational.
c) All crosschecks and routine interventions should be planned to take place outside the controlled rest period.
d) It should be pointed out, clearly, which pilot will rest and when the rest should be taken. At any time, the pilot-in-command, may interrupt the controlled rest.
e) It is the pilot-in-command responsibility to establish the criteria for his/her controlled rest interruption.

f) The changes of duty as well as the waking up procedures should be revised.
g) Crew members should only use controlled rest in the cockpit if they are familiarized with the published procedures.
h) The controlled rest period should not exceed 40 minutes to prevent the risk of sleep inertia.
i) The controlled rest should only be used during cruise phase, from top of climb up to 20 minutes before planned top of descent. It is thus intended to avoid the risk of sleep inertia.
j) A brief period of time should be allowed in order to prepare for rest, which should include an operational briefing, the completion of present tasks and care should be taken to crew members' physiological needs.
k) During controlled rest, the pilot that is not resting should pay close attention to the pilot flying (PF) duties as well as to the pilot monitoring (PM) duties, being able to control the aircraft at any time and keep situation awareness all the time. The pilot that is not resting refrains from leaving his/her seat in any situation, including for physiological matters.
l) The resting pilot may make use of accessories such as earplugs, neck pillows, and eye-mask, amongst others.

Note: Some operators use a third crewmember (not necessarily a pilot) to monitor the controlled rest in the cockpit. His or her duties may include a wakeup call, a programmed visit right after the end of the planned rest or even stay in the cockpit throughout the controlled rest period.

7 Fatigue Risk Management Program for operators under RBAC 135

7.1 Companies operating under RBAC 135 may have previous extensions allowed by the authorization of a FRMP approved by the Civil Aviation Authority.

7.1.1 The operator interested in requesting extensions on their duty periods and/or flight duty period, according to Article 19 of the Law 8255/14 , should have some prerequisites:

a) Extensions will only be granted for flights with two or more pilots on board;

b) The operator must ensure the fulfillment of all items of Chapter 2 (Operator's Responsibilities) of this Regulation;

c) The FSAG should hold regular meetings at least every 60 days to assess the items of theFRMP and extensions allowed in the operator's FRMS.

7.1.2 The operator must have, along with the FSAG, one FRMP and obtain approval from the Civil Aviation Authority for each of the following elements:

a) The operator must have a crew schedule policy in order to ensure that they operate with the appropriate alertness level.

b) The operator must have a methodology in order to manage the risks related to fatigue that contains:

1) a basis on scientific principles and studies related to crew fatigue;

2) mitigation of risks related to fatigue, keeping them within acceptable limits and lowest achievable levels;

3) Establish a specific form for fatigue reports by the crew.

4) Establish mitigating procedures for flight operations reported by crew containing immediate actions for the crew involved in the same day and the following days;

c) The operator must have processes and procedures to ensure the promotion of safety, publishing in their operations manual and informing his crew through written notice, at least the following items:

1) All the specifications for the item 7.1.2 (b);

2) Who needs to be trained;

3) Minimum curricular content for the training;

4) Training format and Minimum attendance;

5) Evaluation of Training;

6) Documentation filed for 12 months;

Note: ICAO publications shall base the development and implementation for the FRMP.

7.1.3 Upon completion of the items 7.1.1 and 7.1.2 of this Regulation, the operator must submit all documentation to the Brazilian Civil Aviation Authority which will have XX days for data analysis.

7.1.4 The Civil Aviation Authority may:

a) To authorize the operator FRMP completely so that all extensions related to the session 7.2 of this regulation remain approved for the operator;
b) To authorize the operator FRMP partially so that part of the extensions pertaining to the session 7.2 of this regulation remain approved for the operator;
c) Request new documents, reports or studies substantiating that the alertness level of the crew involved are equal or greater than those achieved by law 8255/14 prescriptive values.

7.1.5 The approval will only be granted to the operators that can prove to ensure levels of protection against fatigue at or above those achieved within the limits determined by law 8255/14.

7.1.6 The changes granted shall be communicated to the crew through their incorporation in Operation manuals or other documents.

7.1.7 The Civil Aviation Authority will determine the deadline for the FRMP for a period of (XX days).

7.1.8 After the period in item 7.1.7 , a technical analysis will be made (including FSAG and the Civil Aviation Authority) in order to determine whether or not to maintain the granted extension.

7.1.9 The operator should indicate the manager [on the Operational Safety Board] responsible for the authorization of the FSAG proposed actions and the internal monitoring of items already authorized, maintenance of Operational Safety and mitigating actions proposals for the effects of fatigue in aviation.

Note: Any member of the FSAG and the Civil Aviation Authority , has the autonomy to request internal data for exclusive use on studies, review of permits or investigation of any complaints, maintaining the classified status of collected data.

7.2 extensions previously approved by the Civil Aviation Authority to operators that meet the requirements for the implementation of PGRF:

7.2.1 Single day off or Regular day off

a) A crewmember must have a minimum of one (1) day off for each period of seven consecutive days. (168 hours)
b) The next duty after a single day off should initiate after 10:00am (ten) hours local time .
c) A crewmember must have two consecutive days off after each 14 consecutive days.

7.2.2 Consecutive late night duty

The duty periods of flight crew or cabin crew will respect the maximum of two (2) consecutive late night duties, limited to four (4) late night duties in the period of 168 consecutive hours, counted from the moment a crew member first reports for work.

a) The flight crew or cabin crew can be scheduled to work the third consecutive late night duty (reduced or full), only as deadheading crew returning to the domicile base, ending his or her workday. In this case, the crew member cannot be scheduled as effective crew in the period before the third consecutive night duty (reduced or full) in the same flight duty period.

b) The period of 168 consecutive hours referred to in the item 7.2.2 may be closed, starting again whenever a period of at least 48 hours free from all duties is made available for the crew member.

7.2.3 Maximum Standby duty time

The time on standby duty will be computed as part of the crew's duty period.

7.2.4 On call duty

a) The maximum allowable continuous time on call is 16 (sixteen) hours.
b) The maximum flight duty period, following a call to work should be reduced by the number of hours exceeding 12 (twelve) hours of standby.
c) If the crewmember is not called to work, his/her time free from duty should be at least 10 (ten) consecutive hours.

7.2.5 Minimum rest periods

The minimum rest periods for acclimatised crews will consider the previous duty, observing the following limits:

a) twelve (12) hours of rest after duty of twelve (12) hours;
b) sixteen (16) hours of rest after duty of more than twelve (12) hours up to fifteen (15)hours;
c) 24 (twenty four) hours of rest after duty of more than fifteen (15) hours.

Note: The minimum rest periods defined in 7.2.5 may be reduced by implementing an FRMS according to Chapter 8, respecting the minimum limit of 10 (ten) hours.

7.2.6 Yearly/Monthly flight time limits

The flight crew or cabin crew whose operators have a FRMP will have a maximum flight time limit per month/year :

a) in conventional aircraft : 100 / 1000 hours;
b) turboprop aircraft : 100/935 hours;
c) jet aircraft : 90/900 hours; and
d) for helicopters : 90/960 hours.

7.2.6.1 The flight crew or cabin crew whose operators have a FRMS approved under section 8 may have extrapolations accepted by the Civil Aviation Authority limited to a maximum of 100/1000 flight hours per month / year.

7.2.7 Daily flight time limit (minimum crew)

The daily limit will be 10 (ten) hours.

7.2.8 Flight duty period limits (minimum crew)

The flight duty period limit will be eleven (11) hours.

7.2.9 Maximum number of landings allowed on the same flight duty period

7.2.9.1 The flight crew or cabin crew operating jet aircraft in minimum crew shall respect the maximum daily limit of 5 (five) landings.

a) The number of landings provided for in 7.2.9.1 may be increased by one (1) at the employer's discretion, provided that the rest preceding the flight duty period is increased by two (2) hours.
b) Notwithstanding the provisions of 7.2.9.1 paragraph "a ", in case of diversion to alternate airport, the addition of one (1) landing to the established limit is allowed.

7.2.9.2 The flight crew or cabin crew operating turboprop aircraft in minimum crew shall respect the maximum daily limit of 7 (seven) landings.

a) The number of landings provided for in 7.2.9.2 may be increased by one (1) at the employer's discretion, provided that the rest preceding the flight duty period is increased by two (2) hours.
b) Notwithstanding the provisions of 7.2.9.2 paragraph "a ", in case of diversion to alternate airport, the addition of one (1) landing to the established limit is allowed.

7.2.10 Flight duty period and flight time limit extension

The flight duty period and flight time limit can be increased by 60 (sixty) minutes for minimum crews or 120 (one hundred twenty) minutes for augmented crews (3 or 4 pilots), at captain's discretion, in the following cases:

a) Absence, at places of regular service, of appropriate rest accommodation for the crew and passengers;
b) Delays, off the domicile base and at places of regular service, caused by weather or maintenance work; or
c) Unforeseen operational circumstance, understood here as a result of weather events or disasters, something which does not arise due to administrative problem, scheduling problems or flight cancellations.

Note 1: Any flight duty period extension shall be communicated by the captain to the employer no later than 24 (twenty four) hours after the duty in question. The employer shall submit the extension to the Brazilian Civil Aviation Authority within fifteen (15) days.

Note 2: In case of extrapolating the maximum limits in item 7.2.10 the operator is required to add two (2) hours on the crew's minimum rest period.

7.2.11 **Flight duty period limit extension - deadheading crew**

For crews traveling as deadheading, a flight duty period extension of two (2) hours will be allowed, provided it is returning to domicile base and a subsequent period of at least two consecutive days off is made available.

7.2.12 Flight duty period interruption
In case of flight duty period interruption, the flight crew or cabin crew may have their duty periods increased up to half of the interruption time in the following cases:

> I - When the duty is interrupted, off the domicile base, by more than three (3) hours and less than six (6) consecutive hours and the employer provides a place for rest, away from the public, with temperature and light control;
> II - When the duty is interrupted, off the domicile base, by more than six (6) hours and less than ten (10) consecutive hours , and the employer provides individual rooms with private bathroom, appropriate conditions of hygiene and safety, minimum noise, temperature and light control.
> Single paragraph. The condition laid down in this article shall be recorded in the Logbook of the aircraft and signed by captain.

8 FRMS approval criteria for RBAC 135 operators

8.1 and 8.2 Previous authorization for study

8.1 The operator interested in requesting extensions on their duty periods and/or flight duty period, according to Article 19 of the Law 8255/14, should have some prerequisites:

a) Extensions will only be granted for flights with two or more pilots on board;
b) The operator must ensure the fulfillment of all items of Chapter 2 (Operator's Responsibilities) of this Regulation;
c) The FSAG should hold regular meetings at least every 30 days to assess the items of the FRMP and extensions allowed in the operator's FRMS.

8.2 For the implementation of the FRMS, the operator shall obtain approval from the Civil Aviation Authority for each of the following elements:

a) The operator must have a crew schedule policy in order to ensure that they operate with the appropriate alertness level.
b) The operator, through the FSAG, must have a methodology in order to manage the risks related to fatigue that should:

1) be based on scientific principles and studies related to crew fatigue;
2) mitigate the risks related to fatigue, keeping them within acceptable limits and lowest achievable levels;
3) Establish a specific form for fatigue reports by the crew .
4) Establish a collection and analysis of data with acti-graphs and attention tests for:

i. Flights, duty periods and other schedules which surpass the time limits imposed by the professional legislation and in the operator's FRMP.
ii. Flights, duty periods and other schedules which have associated crew fatigue reposts.
iii. Rest periods between duty periods.

c) The operator, through the FSAG, must have processes and procedures to manage the risks related to fatigue with the purpose of determining the minimum rest periods and calculate the duty time limits for crew in:

1) all flights and duty periods and other schedules;
2) periods of flight time in deadheading duties;
3) in-flight training;
4) administrative or on-ground duties that may occur before flight duty;
5) which extensions are being studied and approved;
6) schedules in which mitigations are proposed and/or approved for the request of extension;
7) schedules of the members of the FSAG;

d) The operator must have processes and procedures to ensure the promotion of safety, publishing in their operations manual and informing his crew through written notice , at least the following items:

1) All the specifications for the item 8.2 (c)
2) Who needs to be trained
3) Minimum training Curriculum
4) Training format and Minimum Attendance
5) Evaluation of Training
6) Documentation filed for 12 months

8.3 Extension proposal

Upon completion of the requisites in 8.2, the operator interested in requesting duty extensions according to FRMS, should, through the FSAG, establish an agreement with the legal professional representative entity about the study required for the intended extensions.
Note: The agreement should be made and formalized through a worker's class agreement and always based on scientific principles and data, which would confirm that the requested extensions maintain acceptable alertness levels as compared with the use of FRMS.

8.4 to 8.9 Extension proposal approval and implementation

8.4 The Civil Aviation Authority is responsible for approving the requesting operator's FSAG, the necessary required studies in order to ensure that the requirements in 8.2 are being fulfilled. The FSAG request shall list the minimum information as bellow:
a) The number of fixed participating members of FSAG;
b) Duration of the study (maximum number of operations and planned duration);

c) Applied methodology;
d) Fatigue risk mitigation process used;
e) Objective of the study (required duty extension).

8.5 After a signing agreement with the professional class representative, the study shall be submitted to the Civil Aviation Authority for analysis which shall process the request within XX days to approve a temporary authorization for duty extension.

8.6 After the study is complete, the operator's FSAG shall submit the findings of the study to the Civil Aviation Authority for analysis. The analysis shall be concluded with XX days.

Note: During the analysis period the temporary authorization of duty extension shall be valid.

8.7 The Civil Aviation Authority shall determine if there is need for the operator to conduct a new study or establish new fatigue mitigation procedures in order to approve the duty extension requested within XX days.

8.8 The duty extension approval shall only be granted to operators that successfully show that the risks related to fatigue are equal or less than the obtained by the operator's FRMP.

8.9 The approved changes shall be published in the Operations Manual through its updates or other communication documents.

8.10 and 8.11 Time given by the Civil Aviation Authority for specific extrapolation

8.10 The Civil Aviation Authority shall approve the duty extension for a period of XX days.

8.11 After the approved period described in 8.10, the FSAG, the professional class representative and the Civil Aviation Authority shall analyze the duty extension approval in order to determine the extension or renewal of the approval.

8.12 Operation Responsibilities

The operator shall appoint management personnel, under the Operational Safety Department, which will be responsible for the duties related to

FSAG, which include at least the monitoring of approved duty extensions, maintenance of related Operational Safety and the proposals and actions that improve the mitigation of fatigue related risks.

Note: Any member of the FSAG or Civil Aviation Authority may request FSAG internal data exclusively for studies of fatigue, duty extensions approval revisions, or for investigative purposes due to air safety reports or complaints. The information shall remain classified and under the responsibility of the requester.

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