International Civil Aviation Organization

Runway and Ground Safety Working Group

Second Meeting (RGS WG/2)
(Cairo, Egypt, 19-21 May 2015)

Agenda Item 5: Any Other Business

AIRCRAFT NOISE MANAGEMENT

(Presented by the Secretariat)

SUMMARY

This paper highlights the need to monitor and control noise around the airports.

Action by the meeting is at paragraph 3.

REFERENCES

- DGCA-MID/3 Report

1. INTRODUCTION

1.1 Aircraft noise is the most significant cause of adverse community reaction related to the operation and expansion of airports. This is expected to remain the case in most Regions of the world for the foreseeable future. Public pressure against existing operations and the development of new infrastructure could have a negative influence on the future growth of the aviation industry.

1.2 Reducing or limiting the effect of aircraft noise on people and the communities they live in is one of ICAO's environmental goals. However, the forecast growth in aviation will result in an increase in the number of people impacted by such significant aircraft noise. This may lead to an increasing community opposition to future airport development and growth.

1.3 Appendices C, D, E, F and G to Resolution A38-17 cover the issue of aircraft noise in general, while Appendices C, E and F, in particular, contain the principal elements and the basic components of a process for implementing the concept of the "Balanced Approach" to manage aircraft noise at international airports.

2. DISCUSSION

2.1 The ICAO environment-related technical activities are undertaken by the Committee on Aviation and Environmental Protection (CAEP). This Committee assists the Council in formulating policies, and developing and updating Standards and Recommended Practices (SARPs) on aircraft noise and aircraft engine emissions.

2.2 The Balanced Approach needs to be implemented with equal emphasis given to all of its four elements; reduction of noise at source, land use planning, noise abatement operation procedures and operational restrictions. Because local conditions need to be taken into account, the implementation will continue to be on an airport-by-airport basis.

Noise Abatement Operational Procedures

2.3 The meeting may wish to note that noise abatement operational procedures are being implemented to provide noise relief from both arriving and departing aircraft around airports. These procedures contribute to reducing noise levels in the vicinity of airports. Noise abatement operational procedures can be classified into three broad categories:

1- Noise Abatement Flight Procedures
- Continuous Descent Operations (CDO); Noise Abatement Departure Procedures (NADP); Modified approach angles, staggered, or displaced landing thresholds; Low power/low drag approach profiles; and Minimum use of reverse thrust after landing.

2- Spatial Management
- Noise preferred arrival and departure routes; Flight track dispersion or concentration; and Noise preferred runways.

3- Ground Management
- Hush houses and engine run up management (location/aircraft orientation, time of day, maximum thrust level); Auxiliary power-unit (APU) management; Taxi and queue management; Towing; and Taxi power control.

2.4 It is to be noted that, there are numerous system constraints that prevent or hinder the implementation of Noise Abatement Procedures in general in particular capacity requirements, airport/ground equipment, economic constraints, airport configuration, terrain and obstacles, etc.

2.5 The magnitude and scope of the reductions, as well as the specific procedures to be used to achieve them, should be determined through a comprehensive noise study, taking into consideration all positive and negative impacts on safety and environment. The status of implementation of Noise Abatement Operational Procedures and utilization of the Noise Monitoring Systems at International Aerodromes in the MID Region is at **Appendix A**.

Airport Management Plans

2.6 When identifying the baseline noise situation, if an airport has an existing management or master plan, it can be a valuable tool to help estimate future noise levels. Existing management plans often include information about air traffic, for example, the number of landings and take-offs per aircraft type and runway direction, at present and for a planned period into the future.

2.7 Management plans tend to include information on the number of people affected by aircraft noise, or other environmental indicators within certain zones surrounding the airport, and any land-use restrictions already in place within those zones. They may also include housing requirements and restrictions and noise contours for current and planned traffic corresponding to the noise index used for establishing the above-mentioned housing restrictions.

2.8 In addition to any information that may be available in an existing management plan, other current and agreed-to noise mitigation measures should be taken into account in establishing the baseline. These would include measures such as noise abatement operational procedures and existing operating restrictions.

Land Use Planning and Management

2.9 The objective of compatible land-use planning is to direct incompatible land use (such as houses and schools) away from the airport environs and to encourage compatible land use (such as industrial and commercial use) to locate around airport facilities. While not the only compatibility issue, aircraft noise has been the main issue of airport land-use compatibility conflicts.

2.10 Effective land-use measures should be identified early in order to have the most significant and lasting benefits over the long term. This is particularly appropriate to land-use planning at existing airports where it is recognized that the ability to make immediate land-use changes is limited.

2.11 As stated by the ICAO Assembly, ICAO Contracting States are urged, where the opportunity still exists, to minimize aircraft noise problems through preventive measures such as:

- locating new airports in an appropriate place, such as away from noise-sensitive areas;
- taking the appropriate measures so that land-use planning is taken fully into account at the initial stage of any new airport or of development at an existing airport;
- defining and updating zones around airports associated with different noise levels taking into account population levels and growth as well as forecasts of traffic growth and establishing criteria for the appropriate use of such land, taking account of ICAO guidance;
- enacting legislation, establishing guidance or using other appropriate means to achieve compliance with those land-use criteria; and
- ensuring that reader-friendly information on aircraft operations and their environmental effects are available to communities near airports.

2.12 The airport authority should work closely with those authorities responsible for land-use management to educate them regarding the noise impact of aviation operations. ICAO Contracting States should provide a leadership role by encouraging local and regional authorities to implement land-use planning and management around airports through appropriate early action and cooperative mechanisms between interested stakeholders, such as coordination committees.

2.13 The meeting may wish to note that, the DGCA-MID/3 meeting (Doha, Qatar, 27-29 April 2015) was apprised of the status of noise monitoring and control in the MID Region and agreed to the following Conclusion:

DGCA-MID/3 CONCLUSION 3/6 NOISE MONITORING AND CONTROL

That, States be urged to:

a) conduct a comprehensive noise study in order to identify the airports where mitigation measures are necessary to minimize the number of people affected by aircraft noise, and develop associated plans of action, accordingly; and

b) send an update on the results of the study and actions implemented/planned to the ICAO MID Regional Office by December 2015.

3. ACTION BY THE MEETING

3.1 The meeting is invited to take action as appropriate to implement the DGCA-MID/3 Conclusion 3/6.

APPENDIX A

STATUS OF THE NOISE ABATEMENT PROCEDURES AND NOISE MONITORING SYSTEM AT THE MID STATES' INTL AERODROMES

SUMMARY:

- **Total number of International Airports: 66**
- **Number of Airports considering Noise Abatement Procedure: 19 (29 %)**
- **Number of Airport with Noise monitoring system: 3 (5 %)**

STATE/ AD Location Indicator	City/Aerodrome	Procedure Description	Noise Monitoring System
BAHRAIN			
OBBI	BAHRAIN/Bahrain Intl	AIP SUP 02/04: Airport Noise Management at Bahrain International Airport (see AIP SUP 02/04)	-
		AIP Page OBBI AD 2.21: 1- Circuit directions at BAHRAIN INTERNATIONAL airport are: R WY 30L / 30R: right hand; RWY 12L / 12R: left hand. 2- Departing and arriving flights are not permitted to operate within the eighty - degree arc subtended by the 180˚ and 260˚ Radials of the BAH DVOR, and containing the main Bahrain Islands. Exceptionally, flights which the Controlling Authority has deemed operationally essential may be permitted to operate within this arc, provided they can remain either visually clear of the land, or be vectored clear by BAHRAIN APPROACH. 3- Usage of reverse thrust: Usage of reverse thrust more than idle is not permitted during landing between the hours of 2100 and 0300, unless an aircraft is in an emergency and has been cleared to use the reverse thrust by the ATC.	NO

STATE/ AD Location Indicator	City/Aerodrome	Procedure Description	Noise Monitoring System
		4- Engine Run Ups at BAHRAIN INTERNATIONAL airport between the hours of 2100 and 0300, testing of aircraft engines is permissible at ground idle power only. Settings above this, however brief, are not allowed.	
EGYPT			
HEAX	ALEXANDRIA/Alexandria Intl	NIL	NO
HEBA	ALEXANDRIA/Borg El-Arab Intl	NIL	NO
HESN	ASWAN/Aswan Intl	NIL	NO
HEAT	ASYUT/Asyut Intl	NIL	NO
HECA	CAIRO/Cairo Intl	FAN JET AIRCRAFT Low drag low power approach: IFR flights should be conducted in clean configuration, as long as possible, unless otherwise instructed. Aircraft should maintain 250 knots IAS below FL 100. Speed should be reduced continuously so as to reach 170 knots IAS, shortly prior to 5NM from any RWY threshold. These speed restrictions should be maintained within a tolerance of ± 10 knots and are compulsory, except when ceiling is below 500FT and /or ground visibility is less than 2 KM. Pilots unable to comply should advise ATC. Landing: -Idle reverse thrust is recommended during landing. Departure : - Take off to 1800 FT QNH, take off power and take off flaps. - Climb at V2+ (10 to 20 knots) or as limited by body angle. - At 1800 FT QNH: Reduce thrust to not less than climb power 1800 FT to 3300FT QNH, climb at V2 + (10 to 20 knots)or as limited by body angle. - At 3300 FT QNH: Accelerate with flap retraction on schedule to en-route climb 250 knots below FL100.	YES
HEAR	EL ARISH/ El Arish Intl	NIL	NO
HEGN	HURGHADA/Hurghada Intl	NIL	YES
HELX	L UXOR/Luxor Intl	NIL	NO

STATE/ AD Location Indicator	City/Aerodrome	Procedure Description	Noise Monitoring System
HEMA	MARSA ALAM/Marsa Alam Intl	NIL	NO
HEPS	PORT SAID/ Port Said Intl	NIL	NO
HEOW	SHARK EL OWEINAT/Shark El Oweinat Intl	NIL	NO
HESH	SHARM EL SHEIKH/Sharm El Sheikh Intl	NIL	YES
HESC	ST. CATHERINE/St Catherine Intl	NIL	NO
HETB	TABA/Taba Int	NIL	NO
HEAL	ALAMAIN/Alamain Intl	NIL	NO
HESG	SOHAG/Sohag Intl	NIL	NO
IRAN, ISLAMIC REPUBLIC OF			
OIKB	BANDAR ABBAS/Bandar Abbas Intl	NIL	NO
OIFM	ESFAHAN/Shahid Beheshti Intl	1- If Traffic condition permits and Tail wind component is 10 kt or less, Noise abatement procedures may be applied as follow: a. RWY 08L/R may be used for takeoff and RWY 26R/L may be used for landing. b. Delay may be occurred to all DEP and ARR flights from 1900 to 0230(1800-0130) UTC, due to Noise Abatement. c. Left turn for departing aircraft from RWY 26R/L and right turn for departing aircraft from RWY 08R/L are not authorized between 1930-0230 (1830-0130) UTC.	NO
OIMM	MASHHAD/Shahid Hashemi Nejad Intl	NIL	NO

STATE/ AD Location Indicator	City/Aerodrome	Procedure Description	Noise Monitoring System
OISS	SHIRAZ/Shahid Dastghaib Intl	1 - RWY 29L/R is not used for take-off during 1930-0230(1830-0130), except tailwind component for RWY 11L/R is 5KT or more, or traffic/adverse weather condition. 2 - aircraft making Visual approach between 1930-0230(1830-0130) should not descend below 8000 FT AMSL until passing middle of right downwind RWY 29 except all flight in emergency situation. - Visual Right turn for departing aircraft from RWY 29L/R is not authorized between1930-0230(1830-0130).	NO
OITT	TABRIZ/Tabriz Intl	NIL	NO
OIIE	TEHRAN/Imam Khomaini Intl	NIL	NO
OIII	TEHRAN/Mehrabad Intl	1- RWY 11L/R is not used for take-off during 1730-0430 (1630-0330), except tail wind component for RWY 29L/R is 10 KT or more. 2- Aircraft type IL76 (except military), is not authorized to operate at Mehrabad AD between 1930-0330 (1830-0230).	NO
OIZH	ZAHEDAN/Zahedan Intl	NIL	NO
IRAQ			
AIP ENR	ENR 1.1.1 Minimum Safe Height	Civilian aircraft shall not be flown below the minimum safe height except when necessary for take-off and landing. The minimum safe height is the height at which neither an unnecessary noise disturbance nor unnecessary hazards to persons and property in the event of an emergency landing are to be feared. However, over cities, other densely populated areas and assemblies of persons, this height shall be at least 1 000 FT (300 m) above the highest obstacle within a radius of 600 m of the aircraft. Elsewhere, this height shall be at least 500 FT (150 m) above ground or water.	Not Applicable
ORBI	BAGHDAD/Baghdad Intl	NIL	*Information Not Available*

STATE/ AD Location Indicator	City/Aerodrome	Procedure Description	Noise Monitoring System
ORMM	BASRAH/Basrah Intl	ORMM 2.21.1 Omni Directional Departures Take –Off Minimums: RWY 14/32 Standard RWY 14: Climb Gradient 3.3% Climb on Track 134.68 to 600’ before proceeding on course. RWY 32: Climb Gradient 3.3% Climb on Track 314.69 to 600’ before proceeding on course.	*Information Not Available*
ORER	ERBIL/Erbil Intl	ORER 2.21.1 Aircraft are to avoid over flying the airport buildings, construction sites, other aircraft, or fuel point/trucks below 1 000FTAGL whenever possible.	*Information Not Available*
ORSU	SULAYMANIYAH/Sulaymaniyah Intl	NIL	*Information Not Available*
ORNI	AL NAJAF/Al Najaf Intl	ORNI 2.21.1Departures: aircraft departing RWY 28 shall execute an immediate left turn out, above 500 FT AGL and not later than 1000 FT AGL. ORNI 2.21.2 Arrivals: Not required	*Information Not Available*
ORBM	MOSUL/Mosul Intl	NIL	*Information Not Available*
JORDAN			
OJAM	AMMAN/Marka Intl	Aircraft of AUW more than 5700 KGS departing from AMMAN/Marka RWY 24 shall climb with take-off thrust to 4000 FT at V2 + 10KT, At 4000 FT QNH reduce to climb thrust and continue at V2 + 10KT. At 5500, FT QNH accelerates to normal climbing speed.	*Information Not Available*
OJAI	AMMAN/Queen Alia Intl	NIL	*Information Not Available*
OJAQ	AQABA/King Hussein Intl	NIL	*Information Not Available*
KUWAIT			
OKBK	KUWAIT/Kuwait Intl	Non Noise Certificated Subsonic Aeroplane (NNC) operations restricted daily between 1830/ 0530 UTC.	*Information Not Available*

STATE/ AD Location Indicator	City/Aerodrome	Procedure Description	Noise Monitoring System
LEBANON			
OLBA	BEIRUT/ R. B. H - Beirut Intl-	1. Restriction on non-noise certificated aircraft. 1.1 A subsonic jet aircraft must not land or take-off from Beirut airport unless: a) That aircraft has a valid noise certificate issued by the Aeronautical Authority of a country which is a signatory to the Convention on International Civil Aviation or b) There is other documentary proof of compliance with the noise standards prescribed in Annex 16 to the Convention on International Civil Aviation applicable to the aircraft, or c) Special dispensation from the provisions of the Navigation (Aircraft Noise) Regulations, has been obtained. Such dispensation will be granted by the Directorate General of Civil Aviation if requested. 1.2 Aircraft operator/owners are also reminded that the Noise Certificate or documentary proof of compliance must be carried on board and must be forwarded by the Pilot in command of the aircraft subject to inspection if so requested by an authorized officer	NO
LIBYA			
HLLB	BENGHAZI/Benina	Non Noise Certificated subsonic airplane (NNC) operations restricted daily between sunset/sunrise.	NO
HLLS	SEBHA/Sebha	Non Noise Certificated subsonic airplane (NNC) operations restricted daily between sunset/sunrise.	NO
HLLT	TRIPOLI/Tripoli Intl	Non Noise Certificated subsonic airplane (NNC) operations restricted daily between sunset/sunrise.	NO
OMAN			
OOMS	MUSCAT/ Muscat Intl	NIL	*Information Not Available*
OOSA	SALALAH/Salalah	NIL	*Information Not Available*
QATAR			
OTBD	DOHA/Doha Intl	NIL	*Information Not Available*
OTHH	DOHA/Hamad Intl	NIL	*Information Not Available*

STATE/ AD Location Indicator	City/Aerodrome	Procedure Description	Noise Monitoring System
SAUDI ARABIA			
OEDF	DAMMAM/King Fahd Intl	NIL	NO
OEJN	JEDDAH/King Abdulaziz Intl	2.21.1. Jet aircraft taking off from 34L shall not normally be allowed to turn further left than the JDW RDL 310 until at least 5 NM north of JDW DVORTAC unless: a) ATC requirements necessitate such a turn; or b) aircraft are making VFR circuits. 2.21.2. Overflight of the city of Jeddah is prohibited below ALT 5000 FT except for the purposes of take-off and landing in accordance with ATC instructions.	NO
OEMA	MADINAH/Prince Mohammad Bin Abdulaziz Intl	NIL	NO
OERK	RIYADH/King Khalid Intl	NIL	NO
SUDAN			
HSKA	KASSALA/Kassala	NIL	*Information Not Available*
HSSS	KHARTOUM/Khartoum	2.21.1 GENERAL The following noise abatement procedures shall apply for fan jet aircraft. 2.21.2 RUNWAY USAGE Runway 18/36 will be used for departures and arrivals. 2.21.3 ARRIVALS LOW-POWERED /LOW-DRAG APPROACH Aircraft should maintain 250KT IAS (± 10KT) below FL100. Speed should be reduced continuously so as to reach 160KT IAS (± 10KT) shortly prior to 5nm from runway threshold except when ceiling is below 500ft and /or ground visibility is less than 2600m. Pilots unable to comply with should advice ATC. 2.21.4 DEPARTURES Take-off until passing 2760ft: Take-off power, Take-off flaps, Climb at V^2+10KT TO 20KT (or as limited by body angle) Between 2760-4260ft: Reduce thrust to not less than climb power, Climb at V^2+10KT to 20KT (or as limited by body angle)	*Information Not Available*

STATE/ AD Location Indicator	City/Aerodrome	Procedure Description	Noise Monitoring System
		AT 4260ft or above: Accelerate with flap retraction on schedule to en-route; Climb at 250KT IAS below FL 100 2.21.5 LANDINGS REVERSE THRUST It is recommended to use idle reverse thrust whenever possible. 2.21.6 RUN-UP TESTS Run-up tests will be done on runway before take-off-for one minute. If more time is needed, it is to be requested from ATC.	
HSPN	PORT SUDAN/Port Sudan	NIL	*Information Not Available*
SYRIAN ARAB REPUBLIC			
OSAP	ALEPPO/Aleppo Intl	*Information Not Available*	*Information Not Available*
OSLB	LATTAKIA/Bassel Al-Assad Intl	*Information Not Available*	*Information Not Available*
OSDI	DAMASCUS/Damascus Intl	*Information Not Available*	*Information Not Available*
UNITED ARAB EMIRATES			
OMAA	ABU DHABI/Abu Dhabi Intl	NIL	*Information Not Available*
OMAD	ABU DHABI/Al Bateen	2.21.1. The area OMR 66 (ABU DHABI city) is primarily a noise abatement area and restricted for over flights below 2000 FT between 1830 - 0200 UTC. Helicopters shall avoid this area except for authorised VIP and CASEVAC flights to/from city helipads and hospitals. 2.21.2. Aircraft Engine ground runs 2.21.2.1 Engine runs at idle settings a. Approval required from ATC b. Engine runs at idle power only permitted between 0400 - 1600 UTC c. Engine runs on Apron D and E require the aircraft to be parked nose-in to the Apron d. Aircraft are to be given start clearance stating "idle power only" 2.21.2.2 High power Engine runs High power Engine runs may only be conducted on RWY 31 THR in a line up	*Information Not Available*

STATE/ AD Location Indicator	City/Aerodrome	Procedure Description	Noise Monitoring System
		position aligned with the RWY CL a. Approval required from ATC b. Engine runs only permitted between 0400 - 1600 UTC c. All fixed wing aircraft are to use RWY 2.21.3. Hovering work Helicopters requesting hover work engine runs can be accommodated on TWYs and on the RWY as traffic permits	
OMAL	AL AIN/Al Ain Intl	NIL	*Information Not Available*
OMDB	DUBAI/Dubai Intl	2.21.1. Except for passenger operations, aircraft not in possession of noise certification in accordance with the standards of Annex 16 to the ICAO and/or aircraft whose noise certification does not conform to the minimum standards set out in Annex 16, Chapter, 3 Part 2, Volume 1 are not permitted to operate to/from OMDB.	*Information Not Available*
OMDW	DUBAI/Al Maktoum Intl	NIL	*Information Not Available*
OMFJ	FUJAIRAH/Fujairah Intl	2.21.1 Avoid overflying the city below 5,000 FT.	*Information Not Available*
OMRK	RAS AL KHAIMAH/Ras Al Khaimah Intl	NIL	*Information Not Available*
OMSJ	SHARJAH/Sharjah Intl	NIL	*Information Not Available*
YEMEN			
OYAA	ADEN/Aden Intl	*Information Not Available*	*Information Not Available*
OYHD	HODEIDAH/Hodeidah Intl	*Information Not Available*	*Information Not Available*
OYRN	MUKALLA/Riyan Intl	*Information Not Available*	*Information Not Available*
OYSN	SANA'A/Sana'a Intl	*Information Not Available*	*Information Not Available*
OYTZ	TAIZ/Taiz Intl	*Information Not Available*	*Information Not Available*

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