

Expansion of Heliport Facilities at Macau Ferry Terminal - Operational Phase Noise Monitoring (Day Time)

Date: 21 April 2009

Time: 16:09 - 18:10

Location: Wayson Commercial Building (roof level)

Flight Ref. No.	Flight Model	Flight Direction *	Time Period (Approx.)	Flight Event	Duration of Flight Event, s	Noise Level, dB(A)					Other Noise Sources #
						LAeq	LA10	LA90	LAMin	LAMax	
(A). Measured Helicopter Noise Data (with background)											
1	SC76C+	WE	16:28 - 16:34	Approach	31	75	76	74	71	80	-
				Hovering	27	76	77	75	73	81	-
		EW		Idling	348	72	73	72	69	80	-
				Take-off	45	73	73	72	70	77	-
2	SC76C+	WE	16:46 - 17:03	Approach	60	77	78	76	71	83	-
				Hovering	26	75	76	74	71	78	-
		EW		Idling	991	72	72	71	69	79	-
				Take-off	99	73	74	72	69	79	-
3	SC76C+	WE	17:20 - 17:31	Approach	40	76	78	75	73	82	-
				Hovering	26	74	75	74	72	78	-
		EW		Idling	601	71	72	71	68	82	-
				Take-off	77	73	73	72	69	81	-
4	SC76C+	WE	17:58 - 18:06	Approach	79	76	77	75	70	83	-
				Hovering	27	76	77	75	72	83	-
		EW		Idling	404	72	72	71	69	78	-
				Take-off	128	74	74	73	69	80	-

Lmax During the Measurement Period: 83

Remark: # Non-project related noise sources, those peak noise levels significantly mask that recorded due to operation of the new helipad.

* EW - Flight direction from East to West; WE - Flight direction from West to East.

(B). Measured Background level, dB(A)

Flight Ref. No.	Background	Time Duration, s	Noise Level, dB(A)					Major Noise Sources
			LAeq	LA10	LA90	LAMin	LAMax	
1	Background	1159	72	73	71	68	85	Road traffic noise, and noise due to airplane passing-by, and TurboJet arrival/ departure at Macau Ferry Terminal
2	Background	619	71	72	71	68	82	
3	Background	914	72	72	71	69	82	
4	Background	1487	71	72	71	68	81	
5	Background	48	72	72	71	69	74	

Remark: Background noise level recorded before or/and after helipad operation events.

Expansion of Heliport Facilities at Macau Ferry Terminal - Operational Phase Noise Monitoring (Evening-time)

Date: 21 April 2009

Time: 19:00 - 23:00

Location: Wayson Commercial Building (roof level)

Flight Ref. No.	Flight Model	Flight Direction *	Time Period (Approx.)	Flight Event	Duration of Flight Event, s	Noise Level, dB(A)					Other Noise Sources #
						LAeq	LA10	LA90	LAMin	LAMax	
(A). Measured Helicopter Noise Data (with background)											
1	SC76C+	WE	19:00 - 19:03	Approach **							
				Hovering **							
				Idling	77	71	72	71	69	75	
		EW		Take-off	50	71	71	71	70	73	
2	SC76C+	WE	19:28 - 19:37	Approach	54	73	74	72	70	80	
				Hovering	12	73	73	72	72	75	
				Idling	388	71	71	70	68	79	
		EW		Take-off	58	70	71	70	67	76	
3	SC76C+	WE	20:04 - 20:12	Approach	72	74	75	73	68	79	
				Hovering	22	72	72	71	70	77	
				Idling	379	70	71	70	67	79	
		EW		Take-off	49	69	70	68	66	74	Motorcycle passing-by Connaught Road West
4	SC76C+	WE	20:26 - 20:36	Approach	91	74	74	73	67	80	
				Hovering	14	74	75	73	71	78	
				Idling	421	69	69	68	66	74	
		EW		Take-off	114	71	72	71	68	79	

Remark: # Non-project related noise sources, those peak noise levels significantly mask that recorded due to operation of the new helipad.

* EW - Flight direction from East to West; WE - Flight direction from West to East.

** No measurement data is available before 19:00.

(B). Measured Background level, dB(A)

Flight Ref. No.	Background	Time Duration, s	Noise Level, dB(A)					Major Noise Sources
			LAeq	LA10	LA90	LAMin	LAMax	
1	Background *	-	71	71	70	67	79	Road traffic noise, and noise due to airplane passing-by, and TurboJet arrival/ departure at Macau Ferry Terminal
2	Background	1507	71	71	70	67	79	
3	Background	1602	69	70	69	65	85	
4	Background	805	69	70	68	65	78	
5	Background	8713	69	69	68	63	81	

Remark: Background noise level recorded before or/and after helipad operation events.

* Based on background noise level recorded during the second flight event.

(A) - (B). Calculated Helicopter Noise Level (without background)

Flight Ref. No.	Flight Model	Flight Direction ##	Time Period (Approx.)	Flight Event	Duration of Flight Event, s	Noise Level, dB(A) #				
						LAeq	LA10	LA90	LAMin *	LAMax *
1	SC76C+	WE	19:00 - 19:03	Approach **						
				Hovering **						
				Idling	77	64	63	64	69	75
				Take-off	50	61	60	62	70	73
2	SC76C+	WE	19:28 - 19:37	Approach	54	69	71	68	70	80
				Hovering	12	69	70	69	72	75
				Idling	388	61	61	60	68	79
				Take-off	58	61	61	60	67	76
3	SC76C+	WE	20:04 - 20:12	Approach	72	72	73	71	68	79
				Hovering	22	69	69	68	70	77
				Idling	379	62	63	62	67	79
				Take-off	49	59	60	59	66	74
4	SC76C+	WE	20:26 - 20:36	Approach	91	72	73	70	67	80
				Hovering	14	73	74	72	71	78
				Idling	421	59	60	58	66	74
				Take-off	114	67	68	66	68	79
Average Noise Level (4 hrs)						56	57	55		

Remark: * Based on the measured Lmin (with background) and Lmax (with background) noise levels.

** No measurement data is available before 19:00.

In the case the recorded noise level is equal to or smaller than the background noise level recorded during the same measurement time period, an adjustment of "background noise level -10 dB(A)" is applied to represent noise level due to operation of the new helipad.

EW - Flight direction from East to West; WE - Flight direction from West to East.