



Appendix A to APIRG/19 WP/19 Results of the AFI VHF and HF Communications Survey – 2013

1. Introduction

1.1. IATA conducts aeronautical mobile communications surveys in the AFI Region every 18 months with an objective to determine VHF/HF coverage within the region, in order to identify deficiencies in communication and arrive at corrective action plans to address them, in coordination with States and Air Navigation Service Providers (ANSPs).

The last survey was done on the 8 – 29 July 2013.

2. Airlines participation

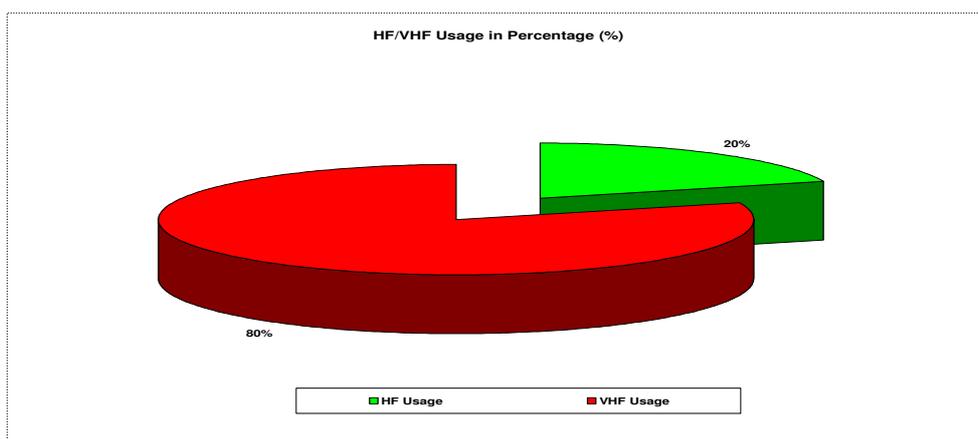
2.1. The following airlines; Arik Air (W3), Air France (AF), British Airways (BA), Delta Air Lines (DL), Emirates Airlines (EK), Ethiopian Airlines (ET), Iberia (IB), KLM Royal Dutch Airlines (KL), Lufthansa (LH), South African Airways (SA) and Air Portugal (TP); provided data representing 2903 communication reports on 38 ATS units. The data covers most of the AFI Region.

3. Participation of States Air Traffic Services Units

3.1. ATS Units of Botswana, Cape Verde, Morocco and Zimbabwe participated in the survey.

4. Summary of the results

4.1. Overall, VHF usage in the continent based on the survey stands at 79%, a decline of 1% compared to the last survey (2012); while HF usage has remained at 20 % (Fig 1).



4.2. In 2012, some FIRs namely, Khartoum, Kinshasa, Luanda and Mogadishu FIR showed a high HF usage indicating that HF was the primary means of communication.



A comparison was also carried out for some FIRs in 2013 survey as per the chart below (Fig 2) to show at a glance any improvement in VHF usage. Additional information on CPDLC has been also been included in the chart.

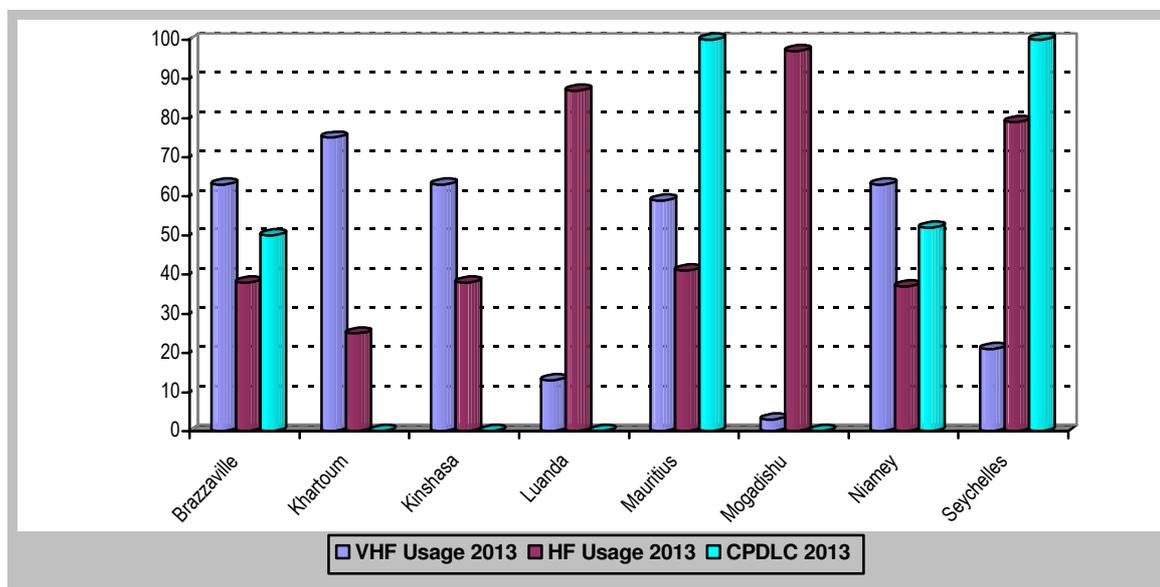


Fig 2

It is generally assumed that an increase in VHF communication usage vis-à-vis a decrease in HF communication usage usually indicates an improvement in the overall status of communication in any FIR. Most airlines switch to the more effective VHF communication whenever available. The opposite is also valid.

This assumption is clearly shown in the marked increase in HF usage for Luanda in 2013 compared to 2012. VHF usage in Luanda FIR has diminished to a mere 13% compared to 62% in 2012. This shows VHF infrastructural challenges. For more details refer to the detailed analysis of Luanda FIR.

Mogadishu mainly uses HF communications only. There were only 10 data points for VHF compared to 280 data points for HF. There is a need to implement ADS-C/CPDLC in this FIR.

4.3. The table below (fig 3) summarizes the VHF/HF and CPDLC usage and the respective success rate. The figures in the table have been arrived at based on the data received during the survey period and are a good indication of the reality on the ground. For the purpose of this report, data points in excess of 18 were considered.

While some of the data was not adequate to deduce any meaningful analyses and conclusions, the information was still published for future reference to encourage further investigation and resolution. In addition to the quantitative analysis based on the data received, qualitative ratings were used to try to interpret what the flight crew intended to report, especially with regards to quality of service (excellent, good, fair and poor).



Fig 3 Table of the summary of the VHF, HF and CPDLC Survey

NO.	ATS UNIT	NO. OF CALLS			% COMMUNICATION SUCCESS		%VHF	%HF	% CPDLC		
		VHF	HF	TOTAL	VHF	HF	Usage	Usage	Log on	Transfer	Log off
1	Abidjan	27	19	46	74	69	59	41	-	-	-
2	Accra	40	29	69	90	66	58	42	52	-	-
3	Addis Ababa	124	9	133	85	44	93	7	-	-	-
4	Algiers	144	17	161	85	71	89	11	51	5	39
5	Antananarivo	6	1	7	NIL DATA	NIL DATA	86	14	-	-	-
6	Bamako	13	0	13	NIL DATA	NIL DATA	100	0	-	-	-
7	Beira	150	11	161	80	77	93	7	-	-	-
8	Brazzaville	50	30	80	76	52	63	38	50	15	28
9	Cairo	71	0	71	79	0	100	0	-	-	-
10	Canarias	0	0	0	0	0	0	0	-	-	-
11	Casablanca	37	0	37	97	0	100	0	-	-	-
12	Dakar	49	34	83	82	97	59	41	70	13	57
13	Dar es salaam	116	0	116	83	0	100	0	-	-	-
14	Djibouti	0	0	0	0	0	0	0	-	-	-
15	Douala	14	0	14	79	0	100	0	-	-	-
16	Entebbe	15	2	17	100	0	88	12	-	-	-
17	Gaborone	21	0	21	100	0	100	0	-	-	-
18	Harare	36	0	36	100	0	100	0	-	-	-
19	Johannesburg	60	0	60	100	0	100	0	92	50	-
20	Kano	173	26	199	35	3	87	13	-	-	-
21	Khartoum	177	59	236	69	61	75	25	-	-	-
22	Kinshasa	30	18	48	3	89	63	38	-	-	-
23	Lagos	110	0	110	68	0	100	0	-	-	-
24	Libreville	6	0	6	100	0	100	0	-	-	-
25	Lilongwe	23	0	23	100	0	100	0	-	-	-
26	Luanda	9	61	70	44	77	13	87	-	-	-
27	Lusaka	28	0	28	57	0	100	0	-	-	-
28	Mauritius	23	16	39	91	100	59	41	100	8	37
29	Mogadishu	10	280	290	60	61	3	97	-	-	-
30	Nairobi	158	8	166	88	NIL DATA	95	5	-	-	-
31	N'djamena	131	18	149	88	83	88	12	97	3	42
32	Niamey	123	72	195	88	88	63	37	52	38	44
33	Nouakchott	33	5	38	70	NIL DATA	87	13	-	-	-
34	Ouagadougou	13	0	13	85	0	100	0	-	-	-
35	Port Hacoourt	17	0	17	94	0	100	0	-	-	-
36	Roberts	8	0	8	100	0	100	0	-	-	-
37	Seychelles	20	74	94	100	86	21	79	100	-	-
38	Windhoek	10	0	10	90	0	100	0	-	-	-

4.4. Notes

Successful (use of VHF/HF) communication or 'VHF/HF success rate' described in this survey is based on ICAO Annex 10 readability definition scales;

- a) read you one = unreadable
- b) read you two = readable now and again
- c) read you three = readable but with difficulty
- d) read you four = readable
- e) read you five = perfectly readable

4.5 VHF/HF was rated unsuccessful whenever a combination of a) and b) was recorded. That is, the call was unreadable and/or readable now and then. When the call was readable but with difficulty, readable and perfectly readable, then communication was rated successful. Readability in this report was determined from reports from flight crew based mainly on strength and clarity.



5.0 Analysis of the results by FIR

5.1 Accra FIR

VHF/HF

A total of 69 calls were made: 40 on VHF and 29 on HF.

Success rate for VHF and HF was at 90% and 66% respectively. Approximately 85% of the VHF calls were readable and perfectly readable.

The low rate in HF was compensated for by CPDLC especially in the oceanic area.

Based on data reviewed, 75% of the HF calls at position GAPEL experienced readability but with difficulty. The amount of data is not enough to conclusively confirm this but is an indication of HF propagation issues as all the calls were made in the late morning hours.

CPDLC

The data indicate that 52% of the CPDLC log-on was successful. There is no report on the success rate for automatic handover and automatic log off. Investigation should be done into the low log on rate experienced.

5.2 Addis FIR

VHF/HF

A total of 133 calls were made: 124 on VHF and 9 on HF.

Success rate for VHF and HF was 85%, which was a slight improvement compared to last survey. There was not enough HF data to arrive at any meaningful analysis and results. However, there are still some challenges at positions EPSIX and EKBUL and further review is required.

CPDLC

No CPDLC available in Addis FIR.

5.2.1 Djibouti FIR

VHF/HF

Note that the upper airspace of Djibouti is delegated to ADDIS FIR (Refer to ADDIS FIR report)

CPDLC

No CPDLC available for Djibouti FIR.

5.3 Algiers FIR

VHF/HF

A total of 161 calls were made: 144 on VHF and 17 on HF.

Success rate for VHF and HF was 86% and 71 % respectively. The main issues on VHF communication are still at positions ERKEL and EREBO which have been reported in previous surveys.

CPDLC

The data indicate that 51% of the CPDLC log-on was successful out of the 96 attempts. Only 5 (5%) managed to auto transfer and a further 37(39%) logged off successfully. Investigation should be done into the low log on rate experienced.



5.4 Antananarivo FIR

VHF/HF

A total of 7 calls were made: 6 on VHF and 1 on HF.

There was not enough data to arrive at any meaningful analysis and results.

CPDLC

Not enough data received on CPDLC that could provide meaningful analysis.

ASECNA Performance report for July success of delivered messages is 99.90%

5.5 Beira FIR

VHF/HF

A total of 161 calls were made; 150 on VHF and 11 on HF.

Success rate for VHF was at 80%. Main areas of concern are at positions EPSEK, AVITO and ANVAK and need further investigation and improvement. There was not enough HF data to arrive at any meaningful analysis and results.

CPDLC

No CPDLC provided in Beira FIR.

5.6 Brazzaville FIR

VHF/HF

A total of 80 calls were made; 50 on VHF and 30 on HF.

Success rate for VHF and HF was at 76% and 52% respectively. No trend in any particular waypoints was visible on VHF data surveyed.

At position ONUDA, which has been a problem so far going by previous survey, data still show poor HF communication. However, with the onset of CPDLC, the problems seem to have been alleviated somewhat. Position NASED also seemed to have HF communications issues and require further investigation.

CPDLC

There were 81 attempts to log on to CPDLC. 44 attempts were successful, which represents a 50% success rate. 12 times the system managed auto transfer and 23 times it achieved auto log off. Investigation should be done into the low log on rate experienced.

However ASECNA Performance report for July suggest opposite (that log in is successful: 99.78%), IATA to enquire from survey participants the reason(s) for the reported unsuccessful log on.

5.6.1 Douala ACC

VHF/HF

A total of 14 calls were made and all were on VHF. Success rate was at 79% with the main concern being on waypoint TAKUM which need further investigation and resolution.

CPDLC

Not provided in Doula UTA.



5.6.2 Libreville UTA

VHF/HF

A total of 6 calls were made, all of which were on VHF with a success rate of 100%. This amount of data is not adequate to deduce meaningful conclusions.

CPDLC

Not provided in Libreville UTA.

5.7 Cairo FIR

VHF/HF

A total of 71 calls were made, all of which were on VHF.

Success rate was at 79% with the main issue manifesting itself at position KITOT at the Jeddah/Cairo FIR. This may be an isolated occurrence but may need further investigation.

CPDLC

No CPDLC provided in Cairo FIR.

5.8 Canarias FIR

VHF/HF

No data was available in the 2013 survey.

CPDLC

No CPDLC data was available for Canarias FIR.

5.9 Casablanca FIR

VHF/HF

A total of 37 calls were made and all were on VHF.

Success rate was at 97%.

CPDLC

No CPDLC provided in Casablanca FIR.

5.10 Dar es Salaam FIR

VHF/HF

A total of 116 calls were made and all were on VHF with a success rate of 83%. The main communication issues were at waypoints BONAP, ITOBO and Mbeya (MB) which need to be investigated and addressed.

CPDLC

No CPDLC provided in Dar FIR.



5.11 Dakar Terrestrial and Oceanic FIRs

5.11.1 Dakar ACC

VHF/HF

A total of 83 calls were made; 49 on VHF and 34 on HF.

Success rate was at 82% and 97% on VHF and HF respectively.

CPDLC in Dakar Oceanic FIR

A total of 30 attempts were reported during the survey. Approximately 21 (70%) log on were successful with 4 that completed auto transfer.

There were 17 (57%) automatic log off captured in the survey.

However ASECNA Performance report for July suggest opposite (that log in is successful: Dakar 98.45% and Abidjan 99.94%), IATA to enquire from survey participants the reason(s) for the reported unsuccessful log on.

5.11.2 Abidjan ACC

VHF/HF

A total of 46 calls were made; 27 on VHF and 19 on HF.

Success rate for VHF and HF were 74% and 69% respectively. On two occasions the crew reported readability at strength for 4 for both occasions but clarity was reported at strength 0 and 1.

There is a possibility that crew perceived clarity in terms of language in either pronunciation or language proficiency. Both cases the quality was good and excellent.

CPDLC

CPDLC data is reflected under Item 5.11.1 Dakar ACC

5.11.3 Bamako ACC

VHF/HF

A total of 13 calls were made, all which were on VHF. Although there was not enough VHF data to arrive at any meaningful analysis and results, possible issues at position EBSUD need further investigation.

CPDLC

No CPDLC provided in Bamako UTA.

5.11.4 Nouakchott ACC

VHF/HF

A total of 38 calls were made; 33 on VHF and 5 on HF.

Success rate for VHF was 70%. The HF data was not adequate to provide conclusive results.

CPDLC

No CPDLC provided in Nouakchott UTA.



5.12 Entebbe FIR

VHF/HF

A total of 17 calls were made; 15 on VHF and 2 on HF.

Success rate was at 100% for VHF. There was not enough data for HF.

CPDLC

No CPDLC provided in Entebbe FIR.

5.13 Gaborone FIR

VHF/HF

A total of 21 calls were made, all on VHF.

Success rate was at 100% for VHF. This provides an indication of the success of VHF communication.

CPDLC

No CPDLC provided in Gaborone FIR.

5.14 Harare FIR

VHF/HF

A total of 36 calls were made, all on VHF.

Success rate was at 100% for the VHF.

CPDLC

No CPDLC provided in Harare FIR.

5.15 Johannesburg FIR

VHF/HF

A total of 60 calls were made, all on VHF.

Success rate of 100% was achieved.

CPDLC

A total of 12 attempts were made via CPDLC with 92% log on successful. Approximately 50% were successful in automatic log off. No data was available for auto transfer (isolated).

5.16 Kano FIR

5.16.1 Kano ACC

VHF/HF

A total of 199 calls were made; 173 on VHF and 26 on HF.

Success rate was at 35% and 4% (four percent) on VHF and HF respectively.

CPDLC

No CPDLC provided in Kano FIR.



5.16.2 Lagos ACC

VHF/HF

A total of 110 calls were made, all of which were on VHF.

Success rate was at VHF 68%. This does not reflect the infrastructure that has been implemented in Nigeria.

CPDLC

No CPDLC provided in Lagos FIR

5.17 Khartoum FIR

VHF/HF

A total of 236 calls were made; 177 on VHF and 59 on HF.

Success rate was at 69% and 61% for VHF and HF respectively. The results of the survey show concern at waypoints SOGIN and IMTAR although it is widespread in the whole FIR.

After posting an improvement in 2012 (73%), the survey results show a slip back to the 2009 figures. In 2009, the survey results showed a 67% success rate while the 2013 results show 69% on VHF. Positions ALRAP, MALAKAL and AVONO did not display any pattern as was in 2012 as the pattern was widespread within the FIR.

The results of the survey show a high level of utilization of HF in the FIR which is an indicator of challenges in still encountered in VHF coverage in the FIR.

CPDLC

No CPDLC provided in Khartoum FIR.

5.18 Kinshasa FIR

VHF/HF

A total of 48 calls were made; 30 on VHF and 18 on HF.

Success rate was at 3% (three percent) and 89% for VHF and HF respectively. The issue of aeronautical mobile communication challenges in DR Congo has been reported over all previous surveys. The 2013 still shows that these challenges have not been addressed. The HF communication has improved, going with the sample of data received from the survey. In 2012 survey, only 33% of the calls were successful based on the assumption applied then. In the current survey which is based on ICAO Annex 10 (more strict than previous surveys) HF still showed remarkable improvement although the sample data was small.

CPDLC

No CPDLC provided in Kinshasa FIR.

5.19 Lilongwe FIR

VHF/HF

A total of 23 calls were made, all of which were on VHF with a success rate VHF 100%. The data is representative of the actual position on the ground.

CPDLC

No CPDLC provided in Lilongwe FIR.



5.20 Luanda FIR

VHF/HF

A total of 70 calls were made; 9 on VHF and 61 on HF.

Success rate was at 44% for VHF and 77% for HF. Although the VHF data was inadequate to arrive at a solid conclusion, the fact that the crew resorted to HF communication (87% of the calls) demonstrates the breakdown of VHF infrastructure. This is in stark contrast to the survey results of 2012 which had shown a jump of 50% in VHF usage. The 2012 survey showed a 94% success rate for VHF based on 100 calls compared to 83% in 2009.

There is an urgent need to return the VHF success rate to the figures shown by the last two surveys.

CPDLC

No CPDLC provided in Luanda FIR.

5.21 Lusaka FIR

VHF/HF

A total of 28 calls were made and all on VHF with 57% success rate. There is a need to investigate communication issues in the North-East sector of the FIR (APGEL and GESAT on UR779). This, however, may not in itself be a real issue but for the fact that the success rate for VHF is down to 57% compared to 2012 figure of 97% notwithstanding the new criteria.

CPDLC

No CPDLC provided in Lusaka FIR.

5.22 Mauritius FIR

VHF/HF

A total of 39 calls were made; 23 on VHF and 16 on HF.

Success rate was at 91% and 100% for VHF and HF 100% respectively.

CPDLC

A total of 38 attempts were made via CPDLC with 100% log on successful. Only 3 out of the 38 data points had a successful auto transfer. Approximately 37% were successful in automatic log off.

5.23 Mogadishu FIR

VHF/HF

A total of 290 calls were made; 10 on VHF and 280 on HF.

Success rate was at 60% and 61% for VHF and HF respectively. The data points for VHF are inadequate to conclude the level of success but goes to demonstrate that Mogadishu relies mainly on HF communication. Although the general deduction is that the communication challenges are spread throughout the FIR, positions ASKEN, AXINA, ITMAR and EGTUL showed particular difficulties in establishing communication on HF.

CPDLC

No CPDLC provided in Mogadishu FIR.



5.24 Nairobi FIR

VHF/HF

A total of 166 calls were made; 158 on VHF and 8 on HF.

Success rate was at 88% for VHF communication. The data for HF was inadequate for any meaningful conclusion.

CPDLC

No CPDLC provided in Nairobi FIR.

5.25 N'Djamena FIR

VHF/HF

A total of 149 calls were made; 131 on VHF and 18 on HF.

Success rate was at 88% and 83% for VHF and HF respectively.

CPDLC

A total of 109 attempts were made via CPDLC with 97% log on successful. Only 3 out of the 109 data points had a successful auto transfer. Approximately 42% were successful in automatic log off.

ASECNA Performance report for July is similar (99.31% messages delivered).

5.26 Niamey FIR

VHF/HF

A total of 195 calls were made; 123 on VHF and 72 on HF.

Success rate was at 88% for both VHF and HF.

CPDLC

A total of 77 attempts were made via CPDLC with 52% log on successful. Only 29 (38%) out of the 77 data points had a successful auto transfer. Approximately 44% were successful in automatic log off. Investigation should be done into the low log on rate experienced.

However ASECNA Performance report for July suggest opposite (that messages were delivered: 99.76%), IATA to enquire from survey participants the reason(s) for the reported unsuccessful log on.

5.26.1 Ouagadougou ACC

VHF/HF

A total of 13 calls were made and all on VHF with success rate of 85%. The HF data was not adequate to provide conclusive results.

CPDLC

No CPDLC provided in Ouagadougou ACC



5.27 Roberts FIR

VHF/HF

A total of 8 calls were made and all on VHF with success rate of 100%. The VHF and HF data was not adequate to provide conclusive results.

CPDLC

No CPDLC provided in Lilongwe FIR.

5.28 Seychelles FIR

VHF/HF

A total of 94 calls were made; 20 on VHF and 74 on HF. Success rate was at 100% and 86% for VHF and HF respectively.

CPDLC

A total of 89 attempts were made via CPDLC with 100% log on successful. Only 2 (isolated) out of the 89 data points had a successful auto transfer. Approximately 57% were successful in automatic log off.

5.29 Tunis FIR

VHF/HF

A total of 18 calls were made all on VHF with success rate was at 100%. The VHF data was not adequate to provide conclusive results.

CPDLC

No CPDLC provided in Tunis FIR.

5.30 Windhoek FIR

VHF/HF

A total of 10 calls were made and all on VHF with success rate of 90%. The VHF and HF data was not adequate to provide conclusive results.

CPDLC

No CPDLC provided in Windhoek FIR.

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