International Civil Aviation Organization
South American Regional Office
Twenty Second Workshop/Meeting of the SAM Implementation Group (SAM/IG/22) - Regional Project RLA/06/901
(Lima, Peru, 19 to 23 November 2018)

SAM/IG/22-WP/18
16/11/2018

Agenda Item 5: Operational implementation of new ATM automated systems and existing integration

PERFORMANCE OF THE AIDC INTERCONNECTION BETWEEN THE LIMA ACC WITH ADJACENT ACC

(Presented by Perú)

EXECUTIVE SUMMARY

This paper work presents the results obtained during the pre-operational and operational phases between the ACC Lima with the ACC Bogota, Guayaquil and Iquique between the months of July and October of 2018.

References:

- Twenty-First Workshop of the SAM Implementation Group (SAM/IG/21) Lima, Perú, May 21 to 25, 2018.
- Fourth Implementation Meeting of the AIDC (Data Communications between ATS facilities) in the SAM Region. Lima, Peru, April 16-20, 2018.

1. Background:

1.1 The Peruvian State through the ANSP CORPAC S.A. initiated the activities to achieve the interconnection via AIDC with the adjacent ACC from the month of January 2014, according to the following table:

ACC	Interconnection Tests	Pre-Operational Phase	Operational Phase
Guayaquil	January 2014	November 2015	18/08/2018
Bogota	January 2014	November 2015	TBD
Amazónico	January 2017	September 2018	TBD
La Paz	TBD	TBD	TBD
Iquique	September 2016	May 2018	18/08/2018
Santiago Oceánico	January 2014	TBD	TBD

1.2 At the Twenty-First Workshop of the SAM Implementation Group (SAM / IG / 21) held in Lima, Peru, from May 21 to 25, 2018, Conclusion SAM / IG / 21-03 was drafted, which provides, among other things, that The SAM States that are operating the AIDC in the pre-operational phase carry out a monitoring of the performance of the same and statistical measurements, to, among other things, accelerate

the transition to the operational phase and reduce the occurrence of errors. Likewise, it is also indicated that these results should be reported in the events and meetings of AIDC implementation in the SAM Region.

1.3 In compliance with Conclusion SAM / IG / 21-03, the Peruvian State has performed a statistical monitoring of AIDC's performance with the adjacent ACCs of Bogota, Guayaquil and Iquique, regardless of the phase in which they are located.

1.4 An updated version of the AIDC Operation Manual was elaborated, based on the current version of the Indra Aircon 2100 system with which the Lima ACC has, which was distributed among the ATC personnel in advance of the entrance to the Operational Phase, for their familiarization. This Manual (Spanish only) is presented as Appendix 1 to this paper work, as a reference for the meeting.

1.5 The Operational Phase between the ACC of Lima and the ACC of Guayaquil and Iquique began on August 18, 2018. The interconnection with the Bogota ACC remains in the Pre-Operational Phase due to the number of human performance errors that still exist.

1.6 The interconnection with the ACC Amazonico entered the Pre-Operational Phase on September 6, 2018. It has not been possible to perform a statistical analysis of the AIDC's performance in this interconnection due to the large number of LRM 62 errors (Undefined Error) part of the Sagittarius system of the ACC Amazonico. The problem has been reported to the Atech´s focal points for analysis, in order to determine the cause of these errors. Likewise, it has been observed that in the ACC Amazonico there is still no homogeneous use of the AIDC to meet the objectives of the Pre-Operational Phase, so we suggest to designated a member of the staff among those who work in that ACC as the person in charge of monitoring the pre-operational tests and solve problems.

2. Analysis

2.1 According to the statistics obtained on the performance of the AIDC in the interconnections between the ACC Lima with the ACC of Bogota, Guayaquil and Iquique, it has been possible to determine the following:

Notification Phase

Bogota

2.2 The occurrence of missing or duplicated FPLs is very low, so the Notification Phase with this ACC is almost always successful.

Guayaquil

2.3 The occurrence of missing FPL with this ACC in the SPIM-SEFG direction is still maintained. The occurrence of duplicate FPL has decreased considerably.

2.4 Occasionally there are errors in the field Route (LRM 41) in the SEFG-SPIM direction due to mutilated routes that do not reach the destination.

2.5 The error LRM 23 (Invalid Time Designator) in the direction SPIM-SEFG occurs with some frequency due to the antiqueness of the version that the Guayaquil ACC has (the new versions no longer generate this error), but this problem does not affect in the following phases, as long as level changes are not made after the Coordination Phase has been reached.

Iquique

2.6 The occurrence of missing or duplicated FPLs is very low, so the Notification Phase with this ACC is almost always successful.

Coordination Phase

Bogota

2.7 The ACC from Lima and Bogota have the capacity for automatic acceptance of EST messages, so this action is completely transparent for the controller. Once an EST message has been received, the system activates the FPL and prints the set of flight progress slots corresponding to the sectors involved, thereby informing the controllers of the received transfer.

2.8 Renegotiations always require manual response by the ATCO of the receiving ACC, either through an Acceptance (ACP), Rejection (REJ) or a new Renegotiation (CDN). In this case, occasional events of Operation Time Out (OTO) have been presented in the SPIM-SKED direction due to lack of response from the ATCO of Bogota.

Guayaquil

2.9 The Guayaquil ACC system requires a manual acceptance of the EST message. Since entering the Operational Phase, this has been met quite rigorously, so the occurrence of cases of Operation Time Out (OTO) is very scarce.

2.10 In the same way, in the case of Renegotiations, they have been carried out with great efficiency, with Operation Time Out (OTO) very rarely presented.

2.11 When the Notification Phase generated an LRM 23 (Invalid Time Designator) in the SPIM-SEFG direction and a Renegotiation is attempted, it will always generate the same LRM 23 again, so for these particular cases the revisions will be perform orally.

Iquique

2.12 The ACC from Lima and Iquique have the capacity for automatic acceptance of EST messages, so this action is completely transparent to the controller. Once an EST message has been received, the system activates the FPL and prints the set of flight progress strips corresponding to the sectors involved, thereby informing the controllers of the received transfer.

2.13 Renegotiations always require manual response by the ATCO of the receiving ACC, either through an Acceptance (ACP), Rejection (REJ) or a new Renegotiation (CDN). This has been done in a fluid way between both ACC.

Transfer Phase

Bogota

2.14 The following problems related to human performance are frequently presented:

- Omission of the Control Transfer´s action (TOC). Instead, only the label corresponding to the flight is "out of control".

- Incorrect answer of the incoming TOC (Handoff) (instead of accepting the transfer through the corresponding action, the action was taken to assume the label, which does not generate AOC message). This generates OTO in the transferring ACC, since it does not get the expected AOC response for the issued TOC.

- Assume tags outside the FIR without having received the corresponding TOC (Handoff) (this causes LRM 57 when the adjacent ACC tries to make TOC)

2.15 These problems do not have a significant impact on AIDC coordination, but they generate discomfort and frustration among the ATC involved. The occurrence of these errors has decreased slightly, but a greater monitoring of the performance of the ATC, especially from the ACC Bogota, is required to reduce or eliminate the occurrence of these events.

Guayaquil

2.16 The Transfer Phase between the ACC from Lima and Guayaquil is carried out quite diligently, so the occurrence of the events mentioned in 2.14 is very rare.

Iquique

2.17 The Transfer Phase between the ACC from Lima and Iquique is carried out quite diligently, so that the occurrence of the events mentioned in 2.14 is almost null.

3. Suggested actions

3.1 The Meeting is invited to:

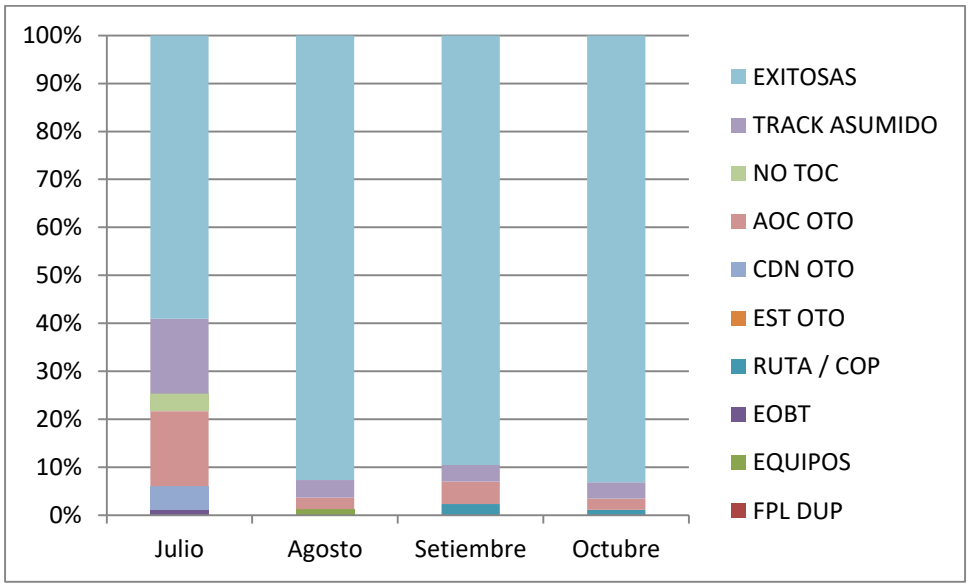
a) Take note of the information presented.

b) Analyze the aspects described in Section 2 of this note and in the Attachments, as follows.

ATTACHMENT 1.- PERFORMANCE OF THE AIDC BETWEEN LIMA AND GUAYAQUIL´S ACC

1.1. FLOW OF AIDC MESSAGES IN SEFG-SPIM DIRECTION

BY TYPE OF ERROR



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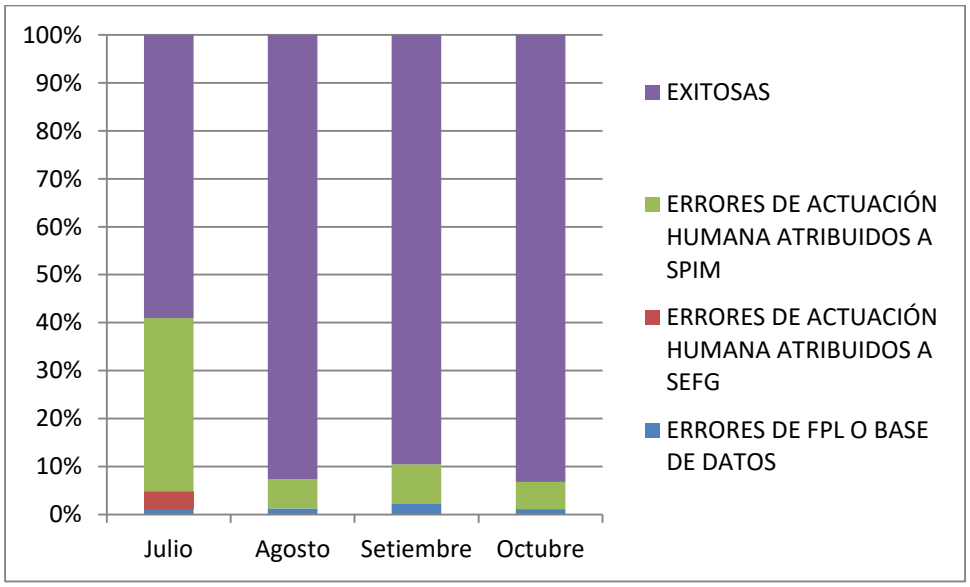

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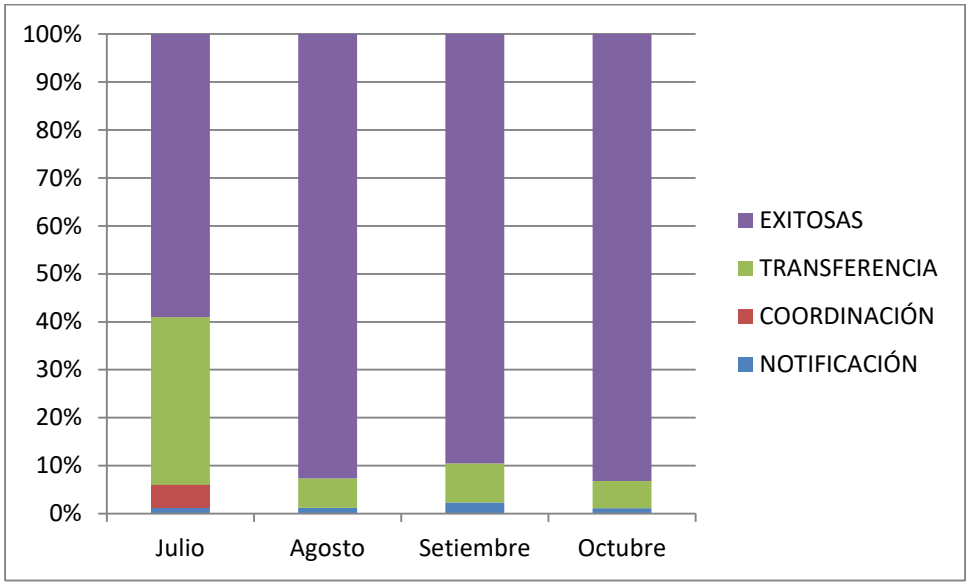
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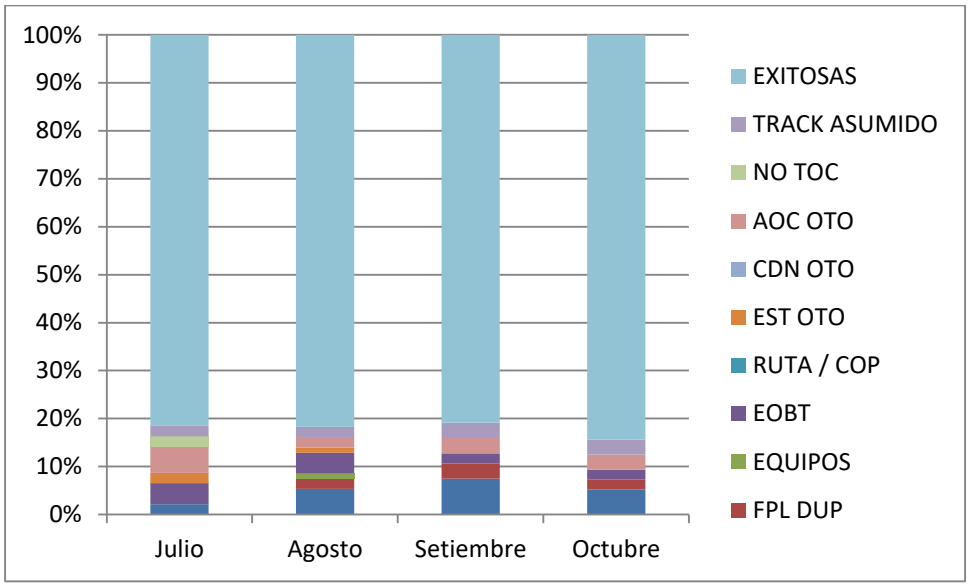
1.2. FLOW OF AIDC MESSAGES IN SPIM-SEFG DIRECTION

BY TYPE OF ERROR



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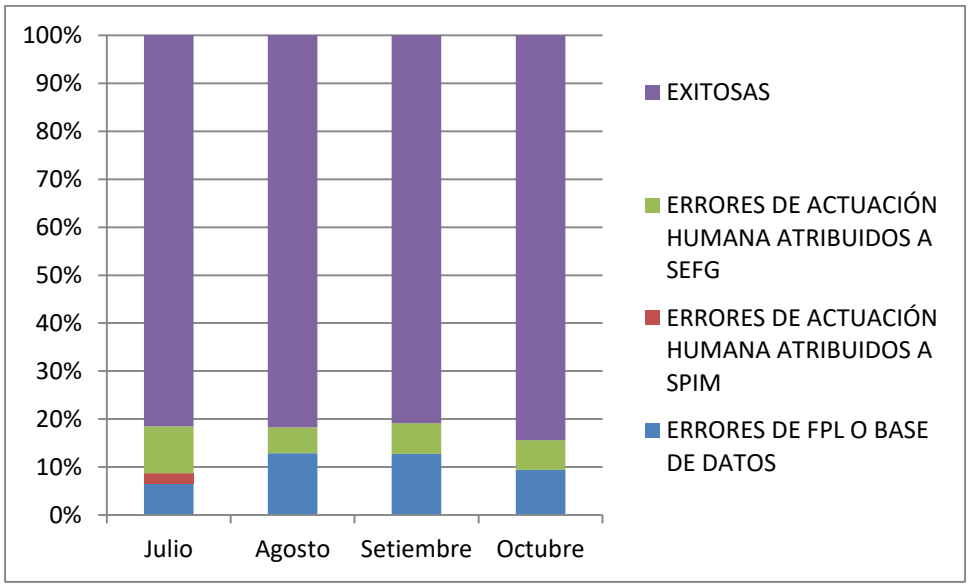

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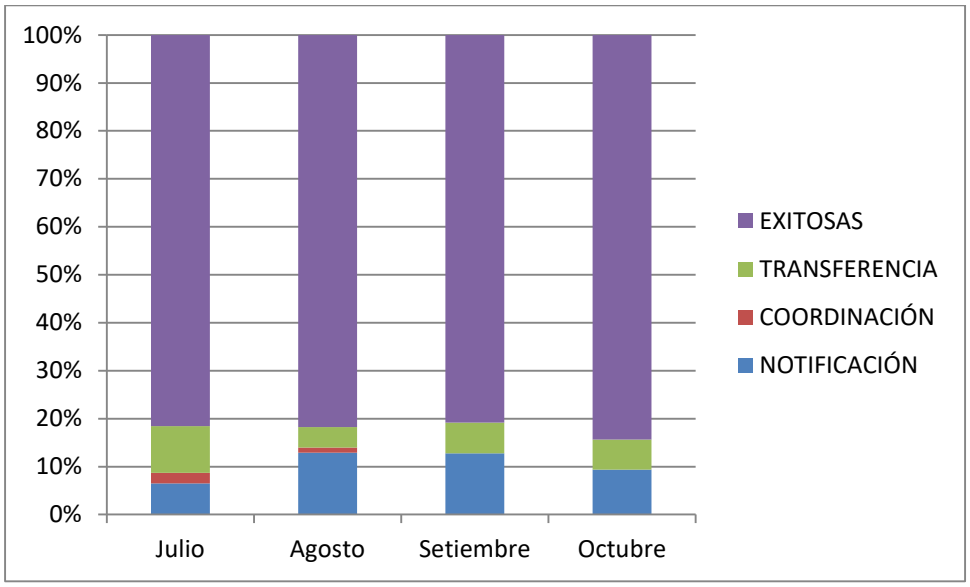
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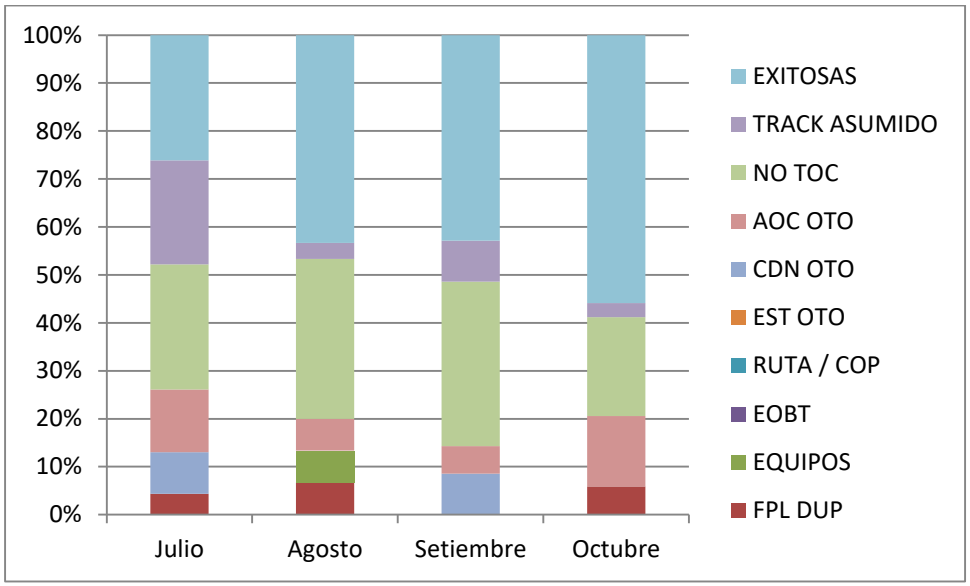
ATTACHMENT 2.- PERFORMANCE OF THE AIDC BETWEEN LIMA AND BOGOTA´S ACC

2.1. FLOW OF AIDC MESSAGES IN SKED-SPIM DIRECTION

BY TYPE OF ERROR



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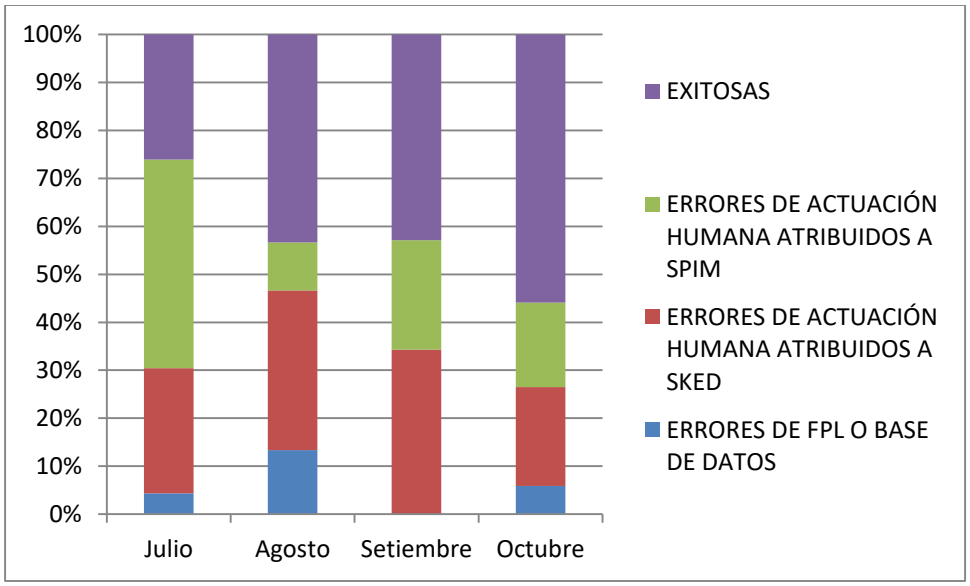

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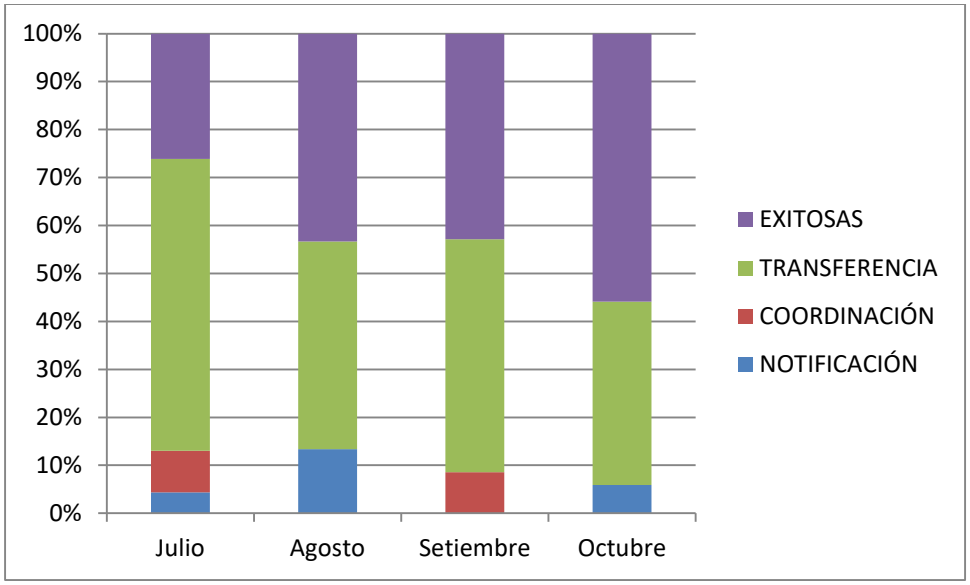
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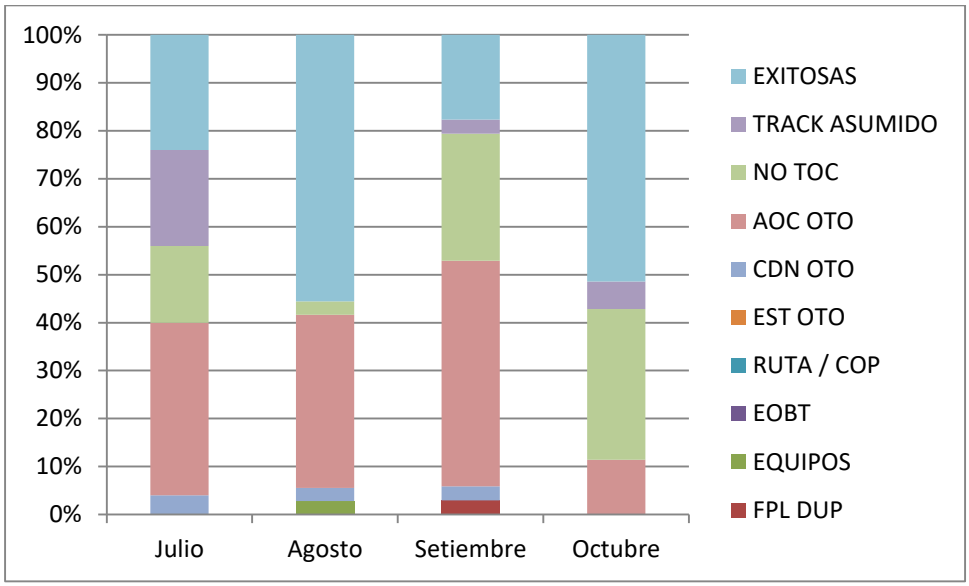
2.3. FLOW OF AIDC MESSAGES IN SPIM-SKED DIRECTION

BY TYPE OF ERROR



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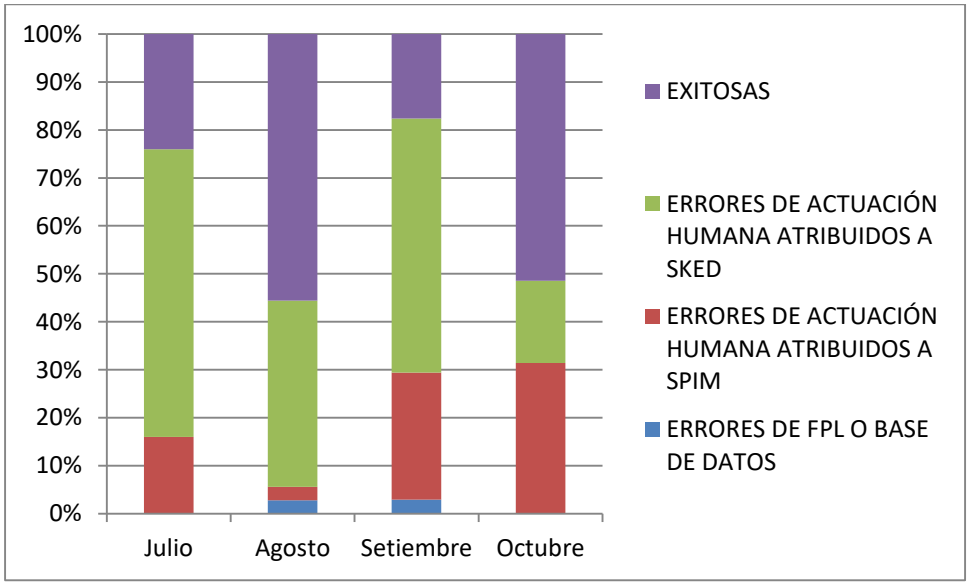

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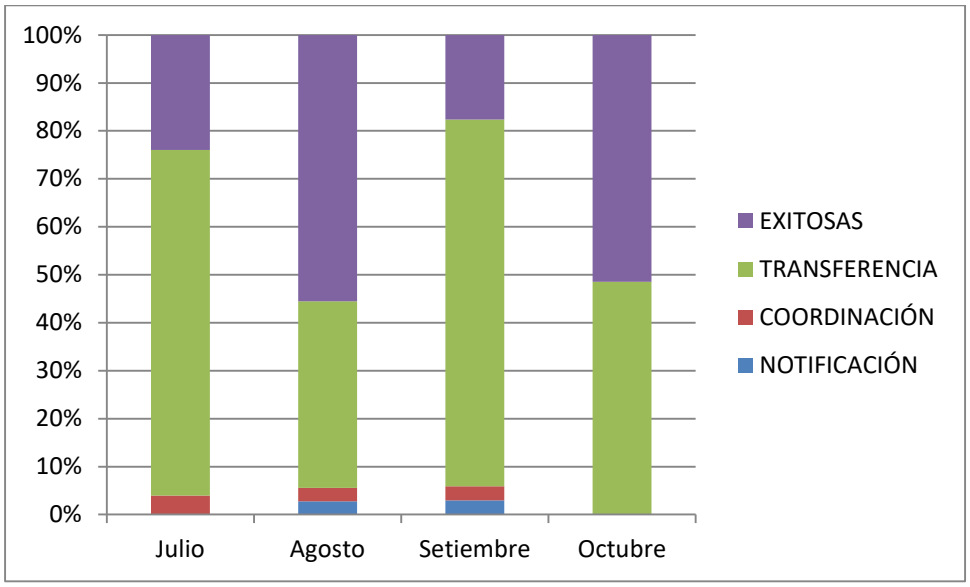
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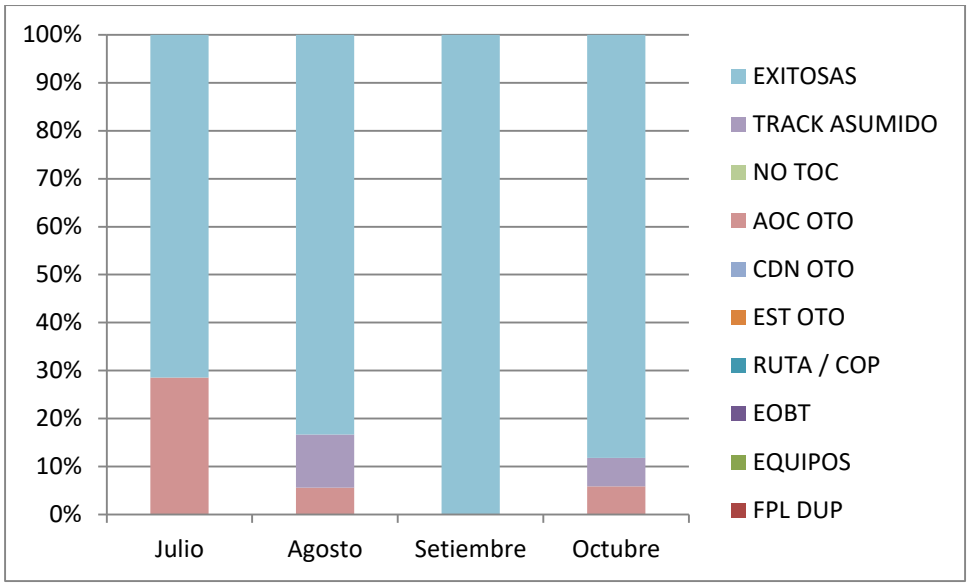
ATTACHMENT 3.- PERFORMANCE OF THE AIDC BETWEEN LIMA AND IQUIQUE´S ACC

3.1. FLOW OF AIDC MESSAGES IN SCDA-SPIM DIRECTION

BY TYPE OF ERROR



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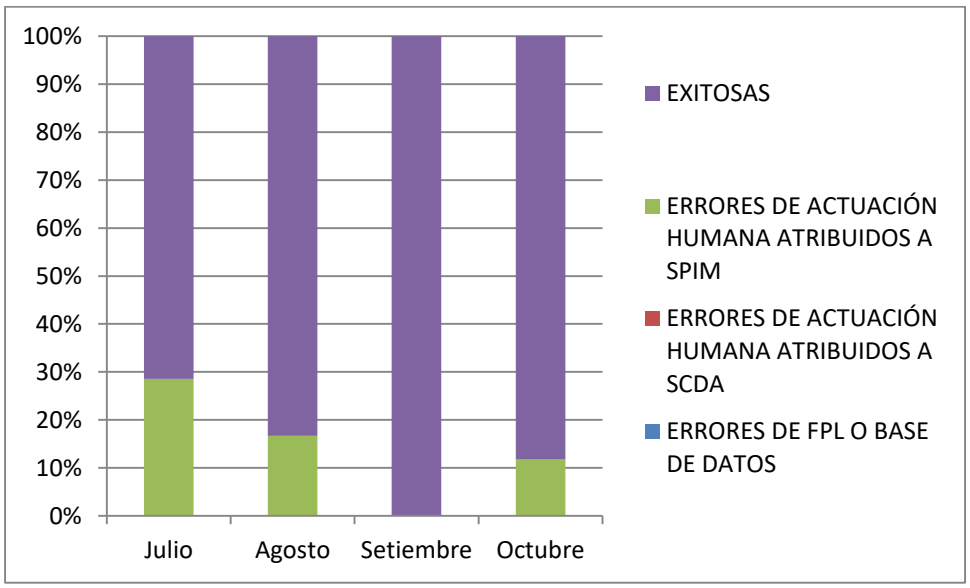

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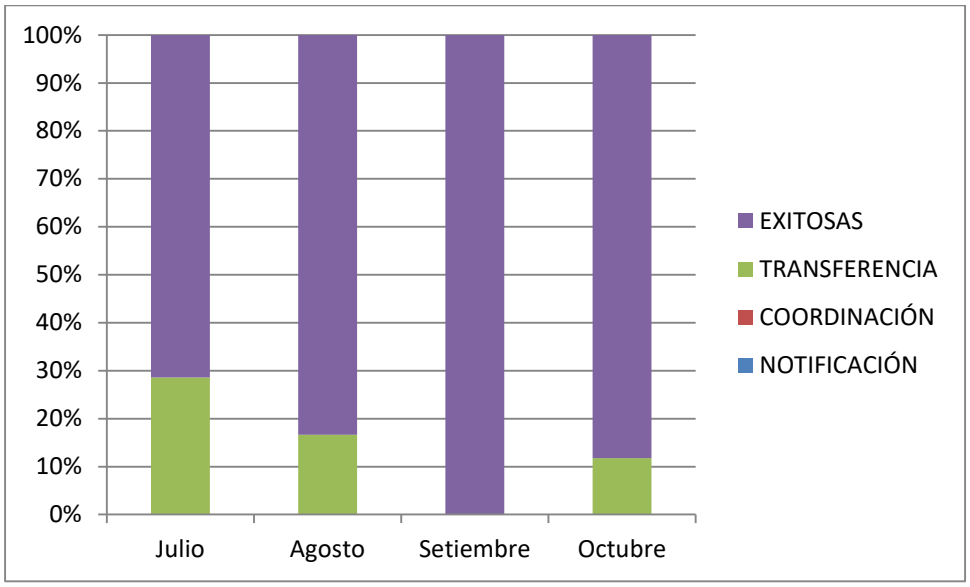
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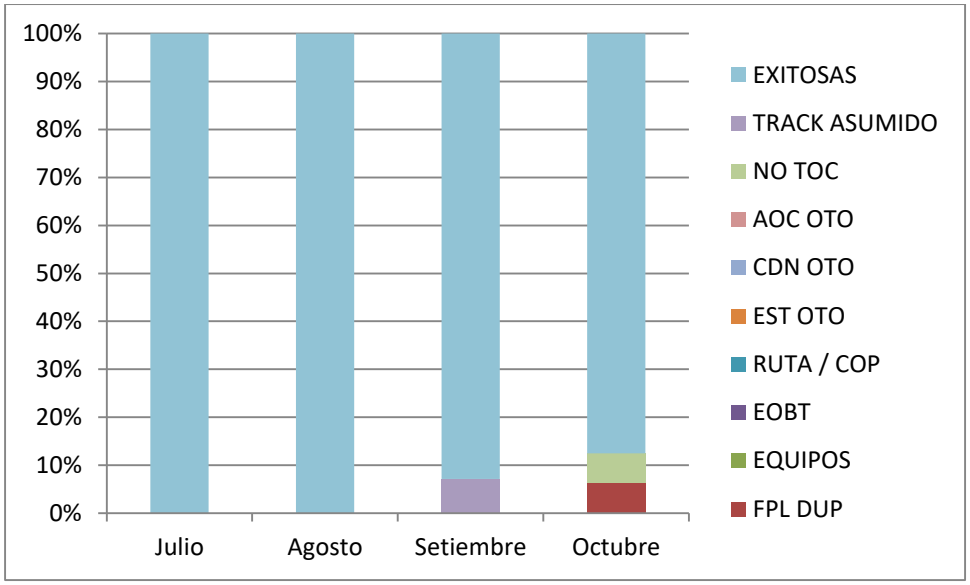
3.3. FLOW OF AIDC MESSAGES IN SPIM-SCDA DIRECTION

BY TYPE OF ERROR



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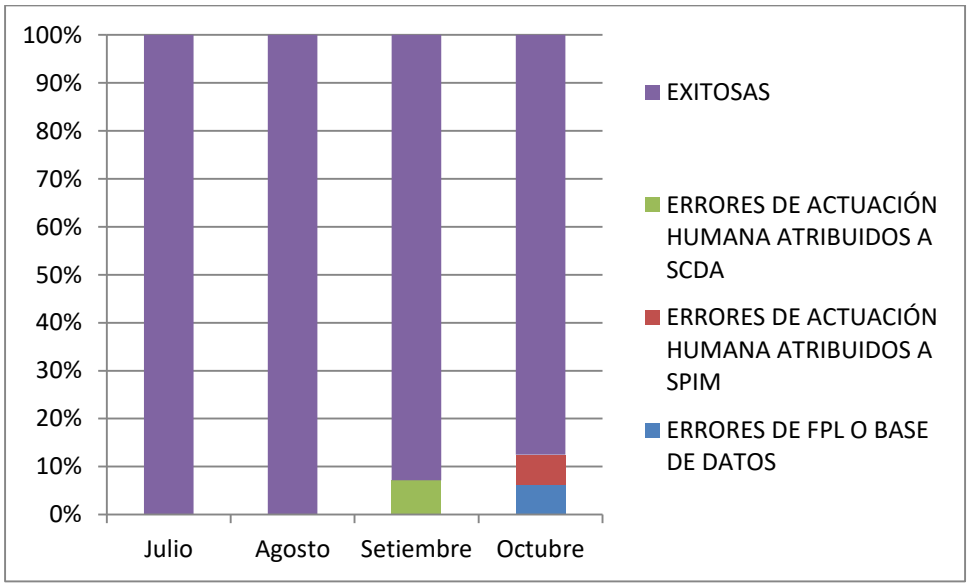

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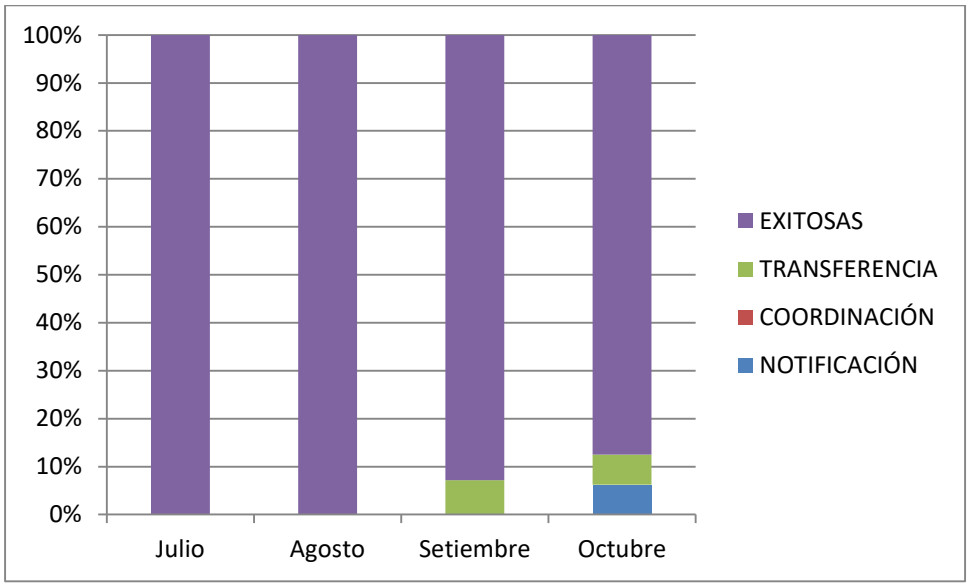
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