*International Civil Aviation Organization*

**The Fifth Meeting of the APANPIRG ATM Sub-Group (ATM SG/5)**

Bangkok, Thailand, 31 July – 04 August 2017

**Agenda Item 4: ATM Systems (Modernisation, Seamless ATM, CNS, ATFM)**

# ALPHA NUMERIC CALL-SIGNPROJECT: PHASE TWO

(Presented by IATA)

**SUMMARY**

This paper proposes the commencement of Phase Two of the Asia Pacific Alpha Numeric Call-sign Project.

## 1. INTRODUCTION

1.1 Alphanumeric call signs are a recognized mitigation measure for instances of call sign confusion/conflict. With the growth in Asia Pacific traffic both current and forecast the possibility of call-sign conflict will only increase which in turn will impact safety and increase both pilot and controller workload.

1.2 ATM/SG/4 in 2016 agreed to initiate the Asia/Pacific Alphanumeric Call Sign Project with a regional survey to ascertain the current capability to accept and process alphanumeric call signs in the region being Phase One of the project. The project was endorsed through APANPIRG conclusion 27/15.

1.3 The results of the ICAO survey are the subject of a separate working paper, from the secretariat, to this meeting.

1.4 It is now time to propose that Asia/Pacific commences Phase Two of the project. The Project Plan for Phase Two is attached to this WP.

1.5 Etihad Airways has agreed to be the airline lead for Phase Two – building on their successful involvement in a similar project for the Middle East Region, and will commence testing with the summer schedules.

1.6 It is of note that incidence of call sign confusion at Abu Dhabi airport had reduced by 85% since implementation of alphanumeric call signs.

## 2. DISCUSSION

Asia Pacific Alphanumeric Call Sign Project Phase Two

2.1 It is proposed to commence Phase Two with the following states - India, Pakistan, Sri Lanka, Maldives, Singapore, Malaysia and Australia.

2.2 Etihad Airways will commence the testing/trials with over flight approval requests for the summer schedule for 2017; in accordance with the project plan.

2.3 Co-ordination with airports; who are new to the trial process; will take place through local base staff to ensure a good understanding of the process.

2.4 To collate reports and gather essential feedback from pilots, controllers, airports etc. it is important that a generic email address is established for example the Middle East we used one for ICAO MIDCSC@icao.int and one for IATA MENACSSU@iata.org.

2.5 A final report on Phase Two will be provided to ATMSG/7 in 2019 together with a recommendation on proceeding with Phase Three.

2.6 A Draft Alphanumeric Call Sign Phase 2 Project Plan is provided at **Attachment A.**

## 3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper; and

b) Agree to the Draft Decision proposed below;

c) Agree to the draft project plan;

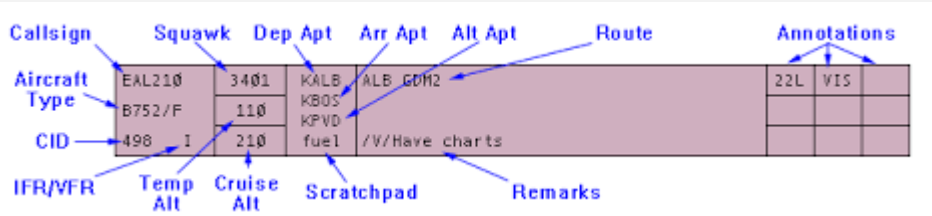
d) Provide points of contact for participating States Australia, India, Malaysia, Maldives, Pakistan, Singapore and Sri Lanka; and.

e) Set up generic email addresses for feedback and reporting

……

<table>
<tr><td colspan="3">Draft Decision ATMSG/5-X: Asia Pacific Alpha Numeric Call-Sign Project (ANCS)</td></tr>
<tr><td colspan="2">What: Agree that:<br><br>i) Phase Two of the Alpha Numeric Call Sign project is commenced, using the project plan at ATM/SG/5 WP/17 Attachment A and with the participation of Australia, India, Malaysia, Maldives, Pakistan, Singapore and Sri Lanka; and<br><br>ii) The results of Phase Two of the project be reported to ATM/SG/7.</td><td>Expected impact:<br>☐ Political / Global<br>☐ Inter-regional<br>☐ Economic<br>☐ Environmental<br>☒ Ops/Technical</td></tr>
<tr><td>Why: To continue the agreed alphanumeric call sign project for Asia Pacific</td><td colspan="2">Follow-up: ☐Required from States</td></tr>
<tr><td>When: 4-Aug-17</td><td colspan="2">Status: Draft to be adopted by Subgroup</td></tr>
<tr><td colspan="3">Who: ☐Sub groups ☒APAC States ☐ICAO APAC RO ☐ICAO HQ ☐Other:</td></tr>
</table>

**PHASE TWO**
**ASIA PACIFIC**
**ALPHANUMERIC CALL SIGN PROJECT:**
**'LIMITED OVERFLIGHT ACCEPTANCE TESTING'**



**OVERVIEW:**

The Asia Pacific Alphanumeric Call-sign project was initiated to help mitigate the known safety issues associated with call-sign confusion/conflict, given the continued significant growth of air traffic in the region.

The project was endorsed by the Fourth Meeting of the Air Traffic Management Sub-Group of APANPIRG (ATM/SG/4) in 2016 and subsequently by APANPIRG. who enabled Phase 1 commenced through a decision requesting ICAO to conduct a regional survey of the current capability to accept and process alphanumeric call signs.

This document provides the plan overview for Phase Two of the Asia Pacific Alphanumeric Call Sign project. Phase Two will involve limited overflight acceptance system testing for ANSPs (ATC systems, billing systems etc), Regulators (overflight approval etc) and will be triggered by a State letter from the ICAO Asia Pacific Office.

The responsibilities for each stakeholder are outlined in section 4 of the document. Testing will take the form of pre co-ordinated flight plans being transmitted to allow stakeholders to review systems and processes to ensure the acceptance and processing of alphanumeric call signs is enabled within their organisation..

ANSPs and Regulators will be requested to report back to the project lead during and after each testing step identifying problems together plans and timelines for resolution.

The project lead for Phase Two will be Etihad Airways, Project support will be provided by IATA andICAO.

A final report for Phase Two, including any recommendations for further project phases will be produced and submitted to the ATM/SG/7 meeting in 2019..

# INDEX

## 1. INTRODUCTION

At the ICAO APAC ATM/SG/4 (2016) meeting the issue of call sign confusion was raised by IATA. The potential for call sign confusion to be a causal factor in safety related events such as hearback/readback errors leading to level busts, runway incursions, as well as general confusion and increased workload for both pilots and controllers was highlighted at ATMSG 4. It was noted, as an example to scale the issue, during the summer of 2014, EUROCONTROL had received 3500 reports of call-sign similarity/confusion from ANSPS.

The use of alphanumeric call signs has proven to be an effective mitigation measure for call sign conflict/confusion.

ICAO Annex 10 and Doc 4444 contain provisions related to the acceptance of alphanumeric call signs with the following definition in DOC 4444:

***Aircraft Identification:*** *A group of letters, figures or a combination thereof which is either identical to, or the coded equivalent of, the aircraft call sign to be used in air-ground communications, and which is used to identify the aircraft in ground-ground air traffic services communications.*

Both Europe and the Middle East ICAO regions have now implemented projects to enable the operational use of alphanumeric call signs. Also, it is known that at least one APAC State has implemented alphanumeric call signs in their high volume domestic environment, with no difficulties.

A phased project for Asia Pacific was proposed at ATM/SG/4 commencing with ICAO conducting a regional survey of States to ascertain their current ability to accept and process alphanumeric call signs with a second phase being the conduct of limited structured testing of submitted and transmitted overflight alphanumeric call signs in flight plans with selected states, the aim being to identify and resolve any problems and issues raised by either airlines or states. Phase Three of the project, if approved, will be to conduct similar testing with a wider selection of Asia Pacific States working toward implementation across the region.

The Phase 2 trials will:

- Test whether ATM systems can in fact accept, process and operationalise alphanumeric call-signs for overflights;
- Familiarise air traffic controllers and pilots with their use;
- Identify and resolve any issues with overflight and landing approvals;
- Ensure appropriate interfaces with other systems (such as billing systems).

ATM/SG/4 supported the proposal and this was endorsed by APANPIRG 27 with the first step (ICAO Survey) enabled by the following conclusion:

***Conclusion APANPIRG/27/15: Use of Alphanumeric Call Signs for Scheduled Airline Operations***
*That, ICAO conducts a survey of Asia Pacific States to ascertain the status of capability to accept/process alphanumeric ATC call signs for scheduled airline operations.*
**This document presents the project plan for Phase 2 of ACNS in Asia Pacific: "Acceptance Testing" :**

## 2. PROJECT SCOPE:

**Phase Two:** The risk with call-sign conflict/confusion is that ATC clearances issued to one flight can be incorrectly read back and complied with by a flight with a similar sounding call-sign. This confusion by either flight crews or ATC can and has lead to safety events. On the surface it may seem simple to change call signs to eradicate the confusion, but there are complicating factors such as:

- The call sign usually reflects the flight number associated with the airline schedule,
- Overflight approvals in certain countries are requested based on the flight number / call sign and it can take an extremely long time to apply for a change (especially in our current geopolitical climate);
- Automation on the ground such as operations systems, flight planning systems, reservations and weight and balance are fed by downlinks from the aircraft (i.e. 0001 messages);
- In areas where datalink is used for communications or surveillance the flight call sign input into the FMS will downlink into ATC systems (meaning the FMS must reflect what is in the ICAO ATC filed flight plan).

Alphanumeric call signs will only be used for the operational systems such as ATM and not effect the 'commercial flight numbers'. Testing will involve "dummy Flight Plans" to validate ATC, regulatory and airport ability to accept and process alphanumeric call signs and should include ATM Systems, regulatory overflight approval, Airport landing/departure approvals and Airport CDM systems.

The testing will be a defined series of structured tests, that do not include the element of a live flight associated with the flight plan, to identify any challenges associated with the regions capability to accepting and process alphanumeric call signs for scheduled airline operations. Each test step will conclude with a series of live test flights to validate results.

Ethiad Airways has, utilising the experience of the successful Middle East region project, volunteered to manage this project initially for Asia Pacific and will deliver a final report to ATM SG 7 (2019) that will include Gap Analysis of issues and resolution actions. The report will also include recommendations for proceeding with Phase 3 – Progressing Implementation.

The testing requires a point of contact in each State and/or ANSP together with associated airports to provide feedback to identify issues and support the gap analysis process. Resolution of issues identified may involve system upgrades or process changes.

**Phase Three:** Phase 3 will progress the Regional acceptance testing of alphanumeric call sign usage for scheduled airline operations.

## 3. PHASE 2 METHODOLOGY:

The project Phase 2 involves the controlled transmission of pre co-ordinated FPLs containing alphanumeric call signs to the states in each step of 4 steps (A to D) below. This testing process will be adjusted as deemed necessary to support the production of the final report and Gap Analysis.

Prior to any ATC system testing states shall be notified through the IATA ASPAC office with the relevant information prior to the planned test, these tests should identify any ATC system challenges associated with acceptance of such flight plans, which ANSPs will be required to report back on to the project lead.

State overflight approvals shall be accomplished through the required application process which can vary from state to state. This phase of testing is solely a paper based approval exercise, therefore no prior notification will be provided with landing and departure approvals requested from identified airports only. This phase of testing is designed to identify if there are any challenges within the regulatory and airport environments.

To validate the testing and not solely rely on results from the simulated test environment, a "Stress Test" shall be conducted prior to the actual live flight validation. The stress test will involve several regional airlines bulk processing their internal flight plan schedule and include a flight plan utilizing an alphanumeric call sign. The aim of this test is to validate processes prior to an actual flight.

Finally, a series of live flights using an **alphanumeric call signs** on its flight plan will be conducted to validate overall testing results and confirm the ability of regional systems to accept and process **alphanumeric call signs**.

## 3.1 SCHEDULE:

ICAO Asia Pacific office will issue a state letter to announce the commencement of Phase 2 which will include this project plan.

**Testing:**
Phase Two will involve the following testing schedule:

- Test 1 and 2 - flight plan testing for **ATC Systems**
- Test 3 - Flight plan testing for **state overflight permissions** which require individual flight plan processing.
- Test 4 - Flight plan testing for **international airport landing and departure approvals** to be based on airport requirements for processing.
- Test 5- **Stress test** utilizing several Asia Pacific based operators processing several days of schedule with embedded flight plans that utilize alphanumeric call signs
- Test 7- **Live flights** to validate final acceptance based upon testing results.

AIRLINE LEAD(s):

- **Ethiad Airways** will take the initial airline lead for the region during phase 2 – point of contact: Ms. Bettina Kohler: BKohler@etihad.ae

STATES:
Phase two will test overflight plans only and involve the following states:

- India: (India has already been accepting ANCS)
- Pakistan:
- Maldives:
- Australia
- Malaysia
- Sri Lanka
- Singapore

SUPPORT:

- ICAO Asia Pacific Office: Shane Sumner ssumner@icao.int
- IATA Asia Pacific Office Dave Rollo rollod@iata.org

## 3.2 PHASE TWO STEPS: 2(A) AND 2(B) TO BE RUN CONCURRENTLY

**PHASE 2:** **DURATION:**

**States:** **India, Pakistan, Sri Lanka, Malaysia, Singapore, Australia, Maldives**
**Starting date:** **TBD**

**Review:**

**Completion date:** **ongoing**

**Project execution:** **1** **Etihad Airways**
**2** **IATA Asia Pacific Office**

**Project Support:** **ICAO Asia Pacific Office**

## 4. STAKEHOLDER RESPONSIBILITIES:

**LEAD AIRLINE(S):**

Etihad Airway (Ms Bettina Kohler) will be the lead airline for phase 2 of the Asia Pacific Alphanumeric Call-sign project:

- Produce and deliver test FPLs
- Carry our paper based testing of overflight approval processes with regulators
- Carry out testing with airports for landing and departure processes
- Manage the 'stress test ' process
- Analyse and identify issues and raise them for resolution with the project team
- Develop and deliver the ANCS Phase 2 final report for submission to ATMSG 7 Including a recommendation for regional implementation

**ANSPS:**
During the testing steps ANSPs will accept and process the FPLs using ANCS and identify any problems in their systems or processes that need to be rectified. This shall include their billing systems. The ANSP will report problems on the form provided and if possible notify the plan to rectify the problem together with a timeline for resolution. If there are no problems in acceptance and processing of ANCS the reporting process should notify this to the lead airline.

**AIRPORTS:**
Airports will accept and process the test FPLs using ANCS including processing them through their landing and departure approval procedures. If the airport has an A-CDM system in place it will also test the ANCS within that systems. The airport will report any problems in their systems or processes that need to be rectified. The Airport will report problems on the form provided and if possible notify the plan to rectify the problem together with a timeline for resolution. If there are no problems in acceptance and processing of ANCS the reporting process should notify this to the lead airline.

**REGULATORS:**
Regulators will conduct a desk top simulation to test 'paper' FPLs submitted with ANCS to identify any problems with regulatory approvals such as overflight permissions. The Regulator will report any problems on the form provided and if possible notify the plan to rectify the problem together with a timeline for resolution. If there are no problems in acceptance and processing of ANCS the reporting process should notify this to the lead airline.

**ICAO:**
The ICAO Asia Pacific Office will issue a state letter to notify the commencement of Phase 2. ICAO will also provide project support in the form of review of ongoing regular reports, support to encourage stakeholder participation during Phase 2 and oversight of the project. Mr Shane Sumner: ssumner@icao.int Regional ATM Officer will be the ICAO APAC point of contact.

**IATA ASIA PACIFIC:**
IATA Asia Pacific will provide ongoing support to the project coordinating with airlines and review of reports and analysis. IATA will assist in the communication requirements for the project with States, ANSPs and airlines. Mr David Rollo: rollod@iata.org will be the IATA point of contact.

## 5. PHASE TWO COMPLETION:

During Phase 2 IATA, ICAO, and Etihad Airways will monitor outcomes and a final report will be provided to the ATM/SG/7 meeting in 2019.

The report will identify any unresolved issues and make a recommendation whether or not to proceed with Phase Three at that time.

## 6. PHASE TWO TIME-LINES:

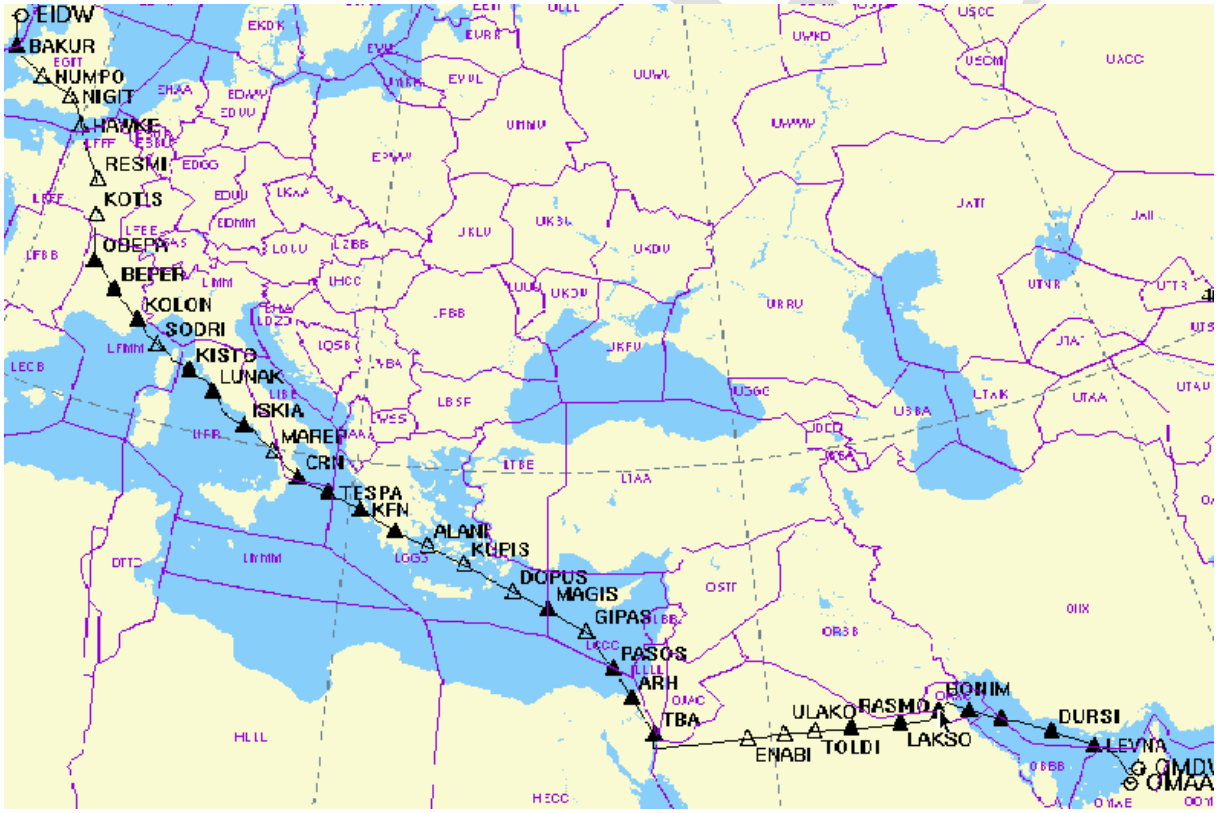
| ACTION | DATE | COMPLETED |
|---|---|---|
| ICAO STATE LETTER ISSUED ANNOUNCING PHASE 2 START | | |
| TESTING START- | | |
| FINAL REPORT | 31ST May for ATMSG/7 | |

## APPENDIX-1: PROJECT WORK PLAN

| Country | ATM System capability | State Overflight Approval | Airport Landing / Departure Approval |
|---|---|---|---|
| INDIA | YES / EMAIL | YES / EMAIL | DEL, BOM, MAA,CCU |
| PAKISTAN | YES / EMAIL | YES / EMAIL | ISB, KHI, LHE successful |
| AUSTRALIA | | | SYD, MEL, |
| MALAYSIA | | | KL |
| SINGAPORE | | | CHANGI |
| SRI LANKA | | | COLOMBO |
| MALDIVES | | | MLE |

## APPENDIX -2: EXAMPLE MIDDLE EAST FLIGHT PLANS
### TEST-1 CONDUCTED FEBRUARY 22ND 2015

(FPL-ETD42DW-IS
-B77W/H-SDE2E3FGHIJ5M1RWXY/SB1D1
-EIDW0820
-N0482F350 PESIT5A PESIT DCT BAKUR UN546 STU UP2 NIGIT UL18 MID UL612 RESMI UM728 KISTO UQ160 MEDAL UM729 PNZ UM603 SOR UM736 CRN UM601 EKTOS/N0467F370 UM601 MIL UN134 ASPIS UG183 PASOS UL550 BOSID B417 KUA B416 AMBIK UB416 KUVER B416 IMDAT R784 ORSAR G666 TANGA
-OMAA0655 OMDW
-PBN/A1B1C1D1L1O1S2T1 DOF/150130 REG/A6ETA EET/EISN0010 EGTT0013 LFFF0043 LIRR0154 LIBB0232 LIRR0242 LGGG0250 LCCC0356 HECC0421 OEJD0449 OKAC0556 OBBB0608 OIIX0613 OMAE0639 SEL/GRLP OPR/ETD RMK/TCAS EQUIPPED)



**FLIGHT PLAN Test-2 conducted March 22nd 2015**

(FPL-ETD42DW-IS
-B77L/H-SDE2E3FGHIJ5M1RWXY/SB1D1
-OMAA0800
-N0479F370 DCT MCT/N0482F380 DCT SYN DCT PSD/N0477F390 DCT LUDAN/N0475F380 DCT KAD/N0456F360 DCT ORER/N0445F350 DCT OTHH DCT
-OMAA0826 OMAL
-PBN/A1B1D1L1O1S2T1 DOF/150316 REG/XXXXX EET/OOMM0010 OEJD0053 OOMM0123 OYSC0128 OEJD0245 HHAA0326 HSSS0334 HECC0403 OEJD0417 OJAC0504 OSTT0524 OLBB0533 OSTT0545 ORBB0614 OIIX0647 ORBB0656 OIIX0657 ORBB0700 OIIX0714 ORBB0716 OIIX0718 ORBB0722 OKAC0726 OBBB0736 OMAE0813 SEL/CJDQ OPR/ETD RMK/TCAS EQUIPPED DUMMY FLIGHT PLAN ONLY NO AIRCRAFT)

## APPENDIX – 3: REPORTING

The template below can be used to report any issues from participating stakeholders:

| ASIA PACIFIC ALPHANUMERIC CALL-SIGN PROJECT<br>ACCEPTANCE TESTING REPORTING FORM | | | |
|---|---|---|---|
| **System/Process** | **Issue description** | **Rectification Plan** | **Rectified by Date** |
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**Please fill out the form at the completion of each testing step and forward to the project lead within 14 working days of test completion:**

**George Chan:** George_g_chan@cathaypacific.com

## APPENDIX – 4: AIRLINE SUMMARY FROM MIDDLE EAST PROJECT:

Etihad has in addition to the successful test trial introduced several live flights into Europe (already using alphanumeric call signs) and live flights to 6 destinations within the Middle East. The trials will continue until the end of our winter schedule. Below are the flights currently successfully operated with an alpha numeric call sign

| Sector | Commercial Flight Number | Alphanumeric ATC Call Sign |
|---|---|---|
| **AUH/DUS** | **EY23** | **ETD35EY** |
| **DUS/AUH** | **EY24** | **ETD56EY** |
| **AUH/MUC** | **EY3** | **ETD46W** |
| **MUC/AUH** | **EY4** | **ETD16E** |
| **AUH/ZRH** | **EY73** | **ETD54B** |
| **ZRH/AUH** | **EY74** | **ETD81C** |
| **AUH/FCO** | **EY83** | **ETD79EY** |
| **FCO/AUH** | **EY84** | **ETD26C** |
| **AUH/GVA** | **EY51** | **ETD28Y** |
| **GVA/AUH** | **EY52** | **ETD27B** |
| **AUH/BRU** | **EY55** | **ETD67E** |
| **BRU/AUH** | **EY56** | **ETD97A** |
| **AUH/BRU** | **EY57** | **ETD46X** |
| **BRU/AUH** | **EY58** | **ETD73Y** |
| **AUH/KWI** | **EY301** | **ETD10RE** |
| **KWI/AUH** | **EY302** | **ETD87XB** |
| **AUH/RUH** | **EY315** | **ETD82YR** |
| **RUH/AUH** | **EY316** | **ETD73UY** |
| **AUH/JED** | **EY313** | **ETD28TR** |
| **JED/AUH** | **EY312** | **ETD25TN** |
| **AUH/MED** | **EY345** | **ETD58UA** |
| **MED/AUH** | **EY346** | **ETD21EU** |
| **AUH/AMM** | **EY513** | **ETD10VA** |
| **AMM/AUH** | **EY514** | **ETD1EY** |
| **AUH/BEY** | **EY535** | **ETD34CB** |
| **BEY/AUH** | **EY534** | **ETD47TM** |

**Technical details:**

1. **Conversion to an alphanumeric call sign**
   It is important to understand that not every single flight number needs to be changed. This would create a reversed negative affect. Etihad has used the EuroControl CSS tool to de-conflict its own schedule. EuroControl has provided alphanumeric call signs to those flight numbers that are phonetically similar.

**Points to be considered:**

We have tested the use of EY as letters (e.g. ETD1EY) but found that it was not practical. Other airline codes may work better.

It was also recommended by our crews to use 2 numbers and 1 letter whenever possible. It is easier to say and to remember. Since this is a global issue we may even run out of possible combinations so this is not always possible

2. **Obtaining overflight permissions and airport approvals**

When applying for overflight it is recommended to apply for both the commercial flight number and the respective alphanumeric call sign. This will help to safeguard the flight in case of any unforeseen problems using the alphanumeric call sign. For airport approvals it is usually sufficient to inform the airport of the alphanumeric call sign that is connected to a commercial flight number.

3. **Internal considerations**

**Flight Plan**

The operational flight plan should include both the commercial and the alphanumeric call sign. The ICAO flight plan however will be filed with its alphanumeric call sign but it is important to add the commercial flight number under field 18 to ensure the connection between the two numbers.

**FMS**

We have tested Airbus A320, A340 and A320, Boeing B787 and Boeing B777. Depending of the FMS used may have to be used to ensure that messages are transmitted to other internal systems such as load planner, fuel dockets etc.

**ACARS**

It is important that the ops control system is set so that it understands both flight numbers. This is important since the aircraft uses alphanumeric in the OOOI messages where the airport offices typically send movement messages with commercial flight numbers.

**Datalink**

We have further tested DCL and CPDLC. We found no issues when using alphanumeric call signs.

**Next Steps**

1. Etihad is planning to introduce alphanumeric call signs (where required) to the following regions starting with the summer schedule

- Europe (all Etihad destinations)
- North America (all Etihad destinations)
- Middle East (all Etihad destinations but depending on the outcome of further trials)