# CO-ORDINATED UNIVERSAL TIME

## 1. Introduction

In the aviation world, the reference time is the co-ordinated Universal Time or UTC called "Zulu" time.

This time is set using several time references in some science laboratories.
This time origin is Greenwich Mean Time (GMT) which is set in the Greenwich meridian 0°.
This time is set as a reference for all countries in the world.

## 2. Why do we use UTC or "Zulu" Time?

### 2.1.     Local time

Depending on its position in the world, a country can adopt its own hour (can be several hours depending on its country zone) in order to have noon time in the middle of the day.

In conclusion, local country times will differ around the world.

Be aware that some countries adopt local hour shifts between spring and winter period in order to save power consumption.

### 2.2.     Problems when using local time

For a flight which takes off at 13H00 local time at Göteborg-Landvetter airport ESGG (Sweden) and lands at 8H00 at Hong-Kong VHHH (China), if you do not know the local time calculation, it is difficult to know the exact number of hours this flight takes.

The result is certainly not 19 hours (19H = (08H – 13 H) + 24)
If you know that the flight takes off at 12H00 UTC on ESGG and lands at 24H00 UTC on VHHH, with the same reference, we are now sure that the flight takes 12Hours ( 12H = 24H – 12H)

That is why all aircraft flight plans adopt UTC time in order to have the same reference all around the world and do not take into account the local hours offset during their flight and also for calculation purposes.

UTC time is mandatory for all flights in order to have the same worldwide reference.

| Universal time and hour | Version 1.4 | 30 june 2016 | Page 1 |
|---|---|---|---|
| © IVAO HQ training department | Training Documentation Manager Erwan L'hotellier | | |

This manual is dedicated only for IVAO™ Network activities. This document must not be used in real aviation or in other networks

## 2.3. Difference between Local time and UTC time

The difference between UTC time and the local time is set by national regulation and the difference is given with a multiple of hours and sometimes one half hour is added.

The table below shows an example of offsets used to calculate the local time in some countries:

| City (country) | Local Time |
|---|---|
| London (UK) | UTC + 0 |
| Paris (France) | UTC +1 |
| Ankara(Turkey) | UTC +2 |
| Manama(Bahrain) | UTC + 3 |
| Teheran(Iran) | UTC +3:30 |
| Moscow(Russia) | UTC + 4 |
| Karachi(Pakistan) | UTC + 5 |
| Delhi(India) | UTC + 5:30 |
| Yekaterinburg(Russia) | UTC +6 |
| Phnom Penh(Cambodia) | UTC +7 |
| Canton(China) | UTC + 8 |
| Tokyo(Japan) | UTC + 9 |
| Canberra(Australia) | UTC + 10 |
| Nouméa(New Caledonia) | UTC + 11 |
| Wellington(New Zealand) | UTC + 12 |
| Nuku'olofa(Tonga) | UTC +13 |
| Pago Pago(Samoa) | UTC -11 |
| Tahiti(French Polynesia) | UTC -10 |
| Anchorage(USA) | UTC -9 |
| San Francisco(USA) | UTC - 8 |
| El Paso(USA) | UTC -7 |
| Chicago(USA) | UTC - 6 |
| New York(USA) | UTC - 5 |
| Caracas(Venezuela) | UTC -4 |
| Halifax(Canada) | UTC -4 |
| Rio de Janeiro(Brazil) | UTC -3 |
| Fernando de Noronha(Brazil) | UTC -2 |
| Acores(Portugal) | UTC -1 |

# 3. Night definition in aeronautical terms

It has been decided that:

- Daytime ends when the sun is less than 6° below the horizon.
- Nigh time ends when the sun is 6° below the horizon

With this definition, it has been agreed that night:

- Starts 30min after the sunset at the latitudes between 30° and 60°
- Starts 15min after the sunset at the latitude between 0 and 30°
- Ends 30min before the sunrise at the latitude between 30° and 60°
- Ends 15min before the sunrise at the latitude between 0 and 30°

| Universal time and hour | Version 1.4 | 30 june 2016 | Page 3 |
| --- | --- | --- | --- |
| © IVAO HQ training department | Training Documentation Manager Erwan L'hotellier | | |

This manual is dedicated only for IVAO™ Network activities. This document must not be used in real aviation or in other networks