

## City Airport Development Programme (CADP1)

### Condition 47: Auxiliary Power Unit (APU) Strategy



February 2020 v2.

## 1.1 Introduction

The City Airport Development Programme (CADP) planning application (13/01228/FUL) was granted planning permission by the Secretaries of State for Communities and Local Government and Transport in July 2016 following an appeal and public inquiry which was held in March/April 2016.

Condition 47 of the CADP permission requires that:

*"The use of any Phase shall not begin until and Auxiliary Power Unit Strategy for the Phase shall be submitted to and approved in writing by the Local Planning authority and implemented.*

*The submitted strategy shall include but not be limited to provide details of the position, orientation and use of aircraft before and after landing and taking off including conditioning of the cabin and equipment.*

*Except in cases of immediate emergency to persons on board an aircraft, or where fault occurs, no Auxiliary Power Unit shall be used other than for essential conditioning of aircraft cabins and equipment prior to departure limited to a maximum of 10 minutes before an aircraft's departure from the stand or 10 minutes after an aircraft's arrival on the stand.*

*Annually on 1 June (or the first working day thereafter) in each year after the Commencement of Development and as a part of the Annual Performance Report, LCY shall provide a report containing details of the use of Auxiliary Power Units at the Airport in the previous calendar year.*

*Reason: In the interest of protecting environmental amenity from noise and pollution impacts."*

This Auxiliary Power Unit (APU) Strategy is submitted to discharge the requirements of Condition 47.

As discussed with officers prior to submission of this strategy, the noise related aspects of the proposed APU strategy are mainly a consolidation of information previously approved under Condition 31 in Appendix H of the Noise Management and Mitigation Strategy (NOMMS) (ref. 19/00835/AOD) while the air quality related aspects were previously submitted to London Borough of Newham on 29 June 2018 under Measure 4 of the airports Air Quality Action Plan 2016 – 2018 and agreed with officers via email on 02 July 2018.

The details in this APU strategy have not materially changed from the previously approved details and have already been incorporated into the current Aerodrome Operational Instructions (AOI's) at London City Airport. For clarity and to satisfy the requirements of condition 47, the airport has taken the opportunity to consolidate all

details into this strategy document with some additional minor updates where relevant to account for the passage of time and the requirements of condition 47.

## **1.2 What is an APU?**

An Auxiliary Power Unit (APU) is a device whose purpose is to provide energy for functions other than propulsion. The primary purpose of an aircraft APU is to provide power to start the main engines. APUs also have several auxiliary functions. Its power is used to run the heating, cooling, and ventilation systems prior to starting the main engines. This allows the cabin to be comfortable while the passengers are boarding without the expense, noise, and danger of running one of the aircraft's main engines.



*Figure 1: Example of an APU*

As shown in Figure 1 an APU is located at the rear of an aircraft with its exhaust located at the back end 'tip' of the plane.

## **1.3 Why is the management of APU's important?**

APU involves burning aircraft fuel to operate. This combustion process will lead to the expelling of exhaust fumes. It is important to limit APU usage to only when it is essential, for example during cold early mornings to acclimatise the aircraft cabin and to enable on board checks when an aircraft is about to taxi off stand.

In addition, due to the size of the APU the noise from its use is usually at a higher pitch compared to other generated noise emissions on the ground. Therefore, it is important to keep the use of APUs limited to only when it is essential. It is via the

management tools detailed in this strategy that LCY will proactively help to ensure this occurs.

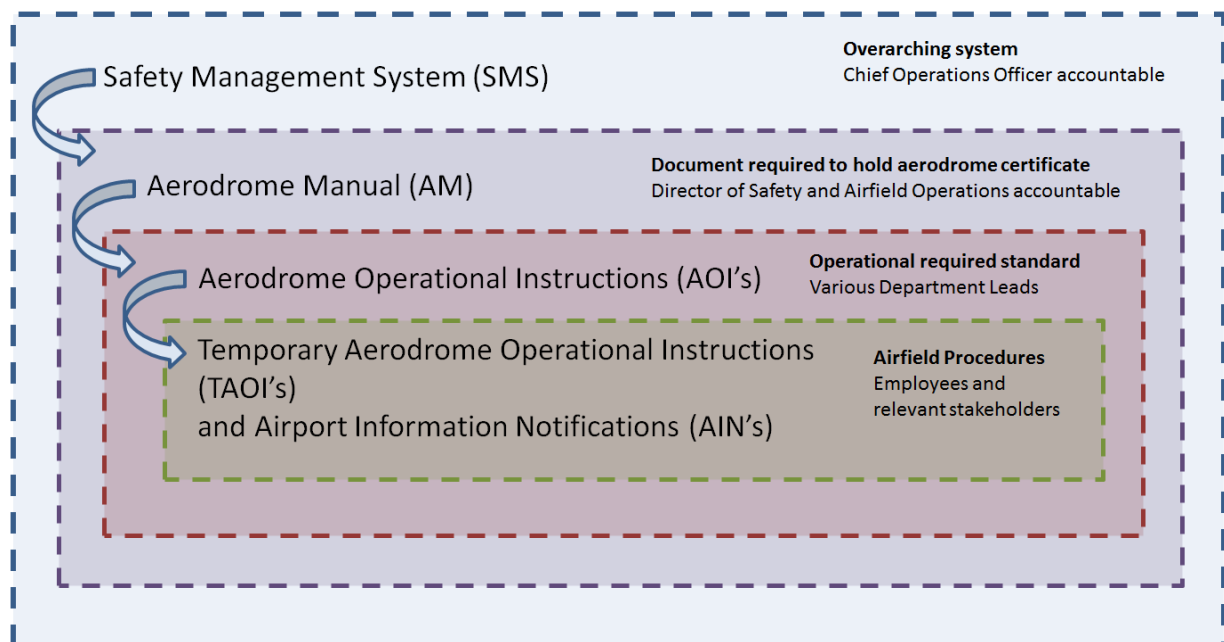
## 1.4 How does London City Airport manage the use of APUs?

The management of APU usage is currently set out in Appendix H of the Noise Monitoring and Mitigation Strategy (NOMMS, Condition 31). The operational procedures in place at the airport are set out in AOI 06 Apron Management and AOI 07 Aircraft Noise & Maintenance. The relevant sections of these documents are reproduced in Appendices 1 and 2.

The Airport has several ways in which it manages all activities on the airfield. These are co-ordinated through the Airports Safety Management System (SMS). The SMS is comprised of a number of policies, procedures and supporting literature which are defined within the Airport's Aerodrome Manual. Figure 1 shows the documented structure of the SMS at a high level and accountability of individuals within the organisation to ensure the SMS is a live management system.

This APU Strategy focuses on the main documents featured in the SMS which indicate the controls associated to APU use at London City Airport. Excerpts of these documents are covered in Appendix 2.

*Figure 1: Layer illustration to show the Framework of the Safety Management System, responsible person for each element and where applicable the method of communication for specific processes and procedures*



The Aerodrome Manual is the central document of the SMS. Aerodrome Operational Instructions (AOI's), Temporary Operational Instructions (TAOI's) and Airport Information Notifications (AIN's) may also be issued to advise of any immediate changes to operational procedures.



When the manual is amended, it will be circulated to all organisations operating on the airfield via email. It is the responsibility of the recipient to distribute this amongst their organisation and ensure compliance.

The Aerodrome Manual is reviewed at intervals of no less than 12 months.

## 1.5 Aircraft position and orientation

The position of aircraft when using APUs will primarily be on aircraft stands. The current procedure is for aircraft to self-maneuvre which results in aircraft oriented to generally face North West when parked on the stands. The current layout of airport stands and their orientation is shown on the airport's Aircraft Parking/Docking Chart, which is reproduced in *Figure 2*.

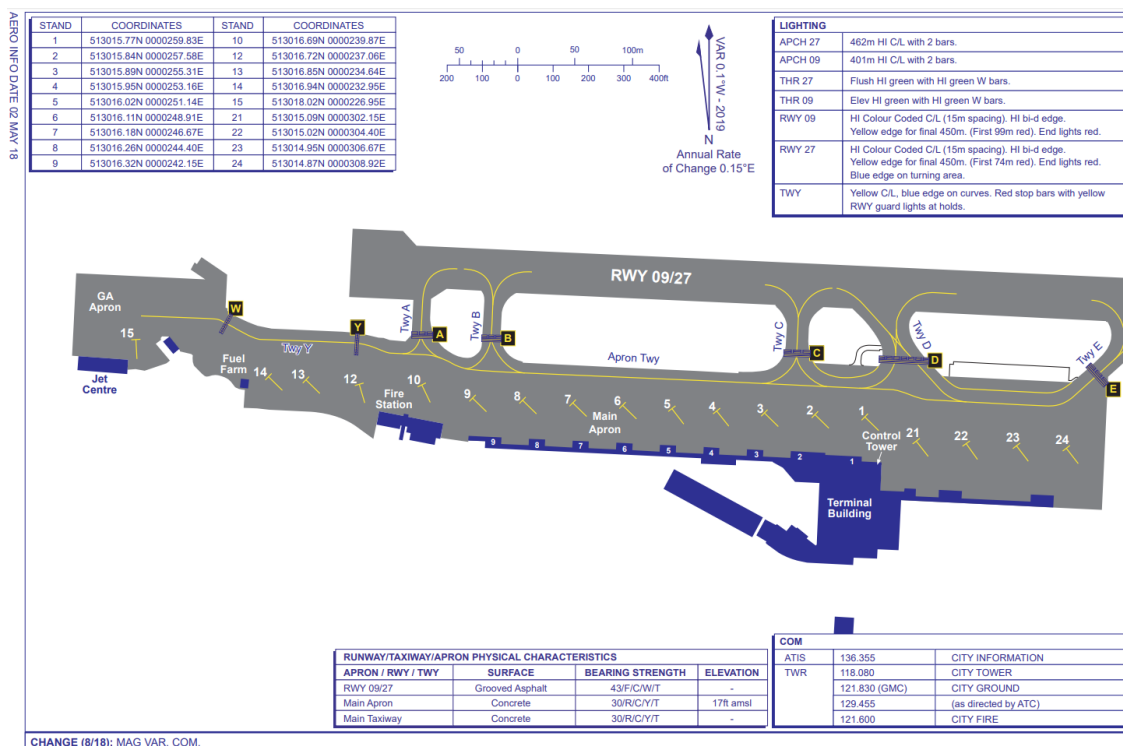
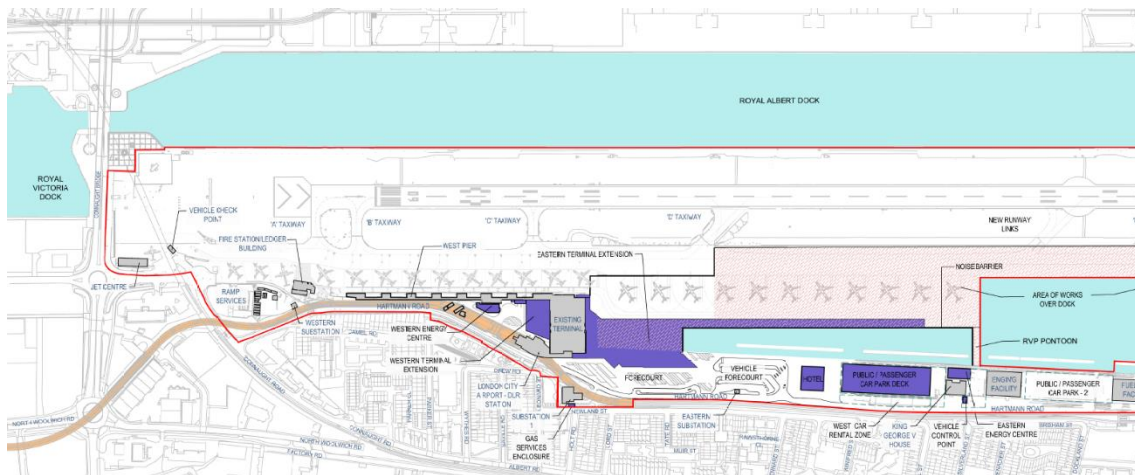



Figure 2: Current Aircraft Parking/Docking Chart

As part of CADP, new stands will be built, and some existing stands will be reconfigured. *Figure 3* shows the proposed layout of the airport once CADP is completed.



The recording of these times is completed on via an online web portal called 'Qlickview'. A snapshot of this information is detailed in Appendix 3 of this strategy document.

As detailed in Figure 4, following the provision of AOI there are also accompanying Airport Information Notices or AIN's. An image of the current AIN in operation is detailed below:



AIRSIDE INFORMATION NOTICE

It is the responsibility of all employers to ensure that relevant notices are brought to the attention of their staff. However, individuals remain responsible for their own actions under the Health & Safety at Work Act 1974. Persons who are in any doubt about the contents of this notice should consult their supervisor or manager.

**SUBJECT:** Running of Auxiliary Power Unit (APU)

**NOTICE NUMBER:** AIN 26/16

**ISSUED BY:** Aerodrome Policy & Assurance Manager

**EFFECTIVE DATE:** 07/11/2016

**EXPIRY DATE:** PERM

PURPOSE

**1. REMINDER - AUXILIARY POWER UNIT (APU) USE**

1.1 The purpose of this AIN is to remind all operators at London City Airport regarding the policy for APU use.

1.2 This policy is documented in the London City Airport Aerodrome Manual, Part E – Airside Operational Instructions (AOI), AOI 07 – Aircraft Noise & Maintenance.

ACTION

**2. POLICY FOR APU USE**

2.1 APUs may only be operated between the hours of 06:30-22:00 (local) Monday-Friday, 06:30-12:30 (local) Saturday & 12:30-22:00 (local) Sunday including within the hours of any approved 30 minutes extensions.

2.2 APUs should be shut down as soon as practicable following the arrival of an aircraft and must not be restarted until 10 minutes prior to Estimated Off Blocks Time (EOBT) except when the outside air temperature, as promulgated via Air Traffic Control (ATC) is below +5°C or above +20°C.

2.3 Operators wishing to use their APU during the weather conditions stipulated in 2.2 should first contact ATC who will seek approval from the Aerodrome Authority as to whether APU running will be permitted, and to record APU use.

2.4 Running of APUs outside the aerodrome's published operating hours (including any extension) is strictly prohibited except where the APU is being run within the confines of 10 minutes prior to EOBT or 10 minutes after on-chocks time.

2.5 Fixed Electrical Ground Power (FEGP) or Mobile Ground Power (MGP) should be used wherever possible.

2.6 FEGP & MGP units may be used out of hours by qualified engineers but may not be driven, relocated or left unattended and should always be switched off after use.

2.7 APU running times are recorded electronically by ATC and Airfield Operations & Safety Unit (AOSU) and are disclosed to the local authority on request.

AIRSIDE INFORMATION NOTICE 26/16

LONDON CITY AIRPORT  
AOSU/ALL INFO NOTICES/AINs/AIN 2616 – Running of Auxiliary Power Units  
V1  
07 November 2016

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Figure 4: Airside Information Notices for APU use at London City Airport

## 1.7 Ground Power Units

In order to minimise the use of APUs, Ground Power Units (GPUs) can be used as an alternative. This practice is encouraged as GPUs are quieter and more environmentally friendly than APUs. GPUs can be either Fixed Electrical Ground

Power (FEGP) or Mobile Ground Power Units (MGPUs). Definitions of these systems are given below.

- FEGPs are ground power systems installed to supply 400 Hz electrical power to aircraft. The current system comprises of converters and distribution panels located adjacent to the terminal building. Cables in a pit and duct system transfer power to ISO (International Standardisation Organisation) pits located adjacent to the aircraft nose wheel. FEGP systems can reduce the amount of ground handling equipment required on a stand during aircraft turnaround and are more efficient than diesel driven mobile units.
- A MGPU is a vehicle capable of supplying power to aircraft parked on the ground, making it even easier to supply electrical power to aircraft. All aircraft require 28V of direct current and 110V 400 Hz of alternating current. The electric energy is carried from a generator to a connection on the aircraft via 3 phase 4-wire insulated cable capable of handling 200 amps. These connectors are standard for all aircraft. Under the requirements of CADP condition 46 use of diesel powered MGPUs is prohibited at the airport from the end of 2020 and after this point only battery powered variants can be used.

## **1.8 Enforcement**

The airfield operations team manage the day-to-day enforcement of the Aerodrome Manual and AOs, including compliance with the requirements for APU usage. Where a breach of the requirements is observed, the airfield operations team will investigate the reason with the airline and/or ramp services. The breach will be recorded on the online web portal Qlickview by the Airfield Operations team alongside the information shown in Appendix 3.

If an explanation is provided that needs addressing (e.g. FEGP broken) then this will be followed up and resolved by the Airfield Operations team. If breaches of the procedure are recurring from the same airline, then the issue will be escalated to the Environment and Technical Operations Team who will address this with the airline management team. Compliance with all aspects of the Aerodrome Manual are compulsory in order to operate aircraft at LCY.

## **1.9 Monitoring and Reporting**

When APUs are likely to run for longer than specified in the AOs due to weather or other extenuating circumstances, airlines will contact the AOSU for permission. In these circumstances, APU run times are recorded electronically by the Airfield Operations & Safety Unit (AOSU). This information will be submitted to the local authority each year as part of the Annual Performance Report (APR).

The airport will determine all current aircraft operational at the airport which require the essential use of APUs. This information is submitted to the local authority each



year as part of the Annual Performance Report for the continued APU operation of the identified aircraft.

The Environment and Technical Operations team will also audit against this process at least once a year (and more frequently if considered necessary) as part of the internal compliance checks.

## **1.10 Maintaining this APU Strategy**

This APU Strategy will be reviewed and updated as and when procedures and responsibilities (legal or otherwise) change at London City Airport.

## Appendix 1 - NOMMS



### APPENDIX H AUXILIARY POWER UNITS

#### H.1 General

An Auxiliary Power Unit is a small engine or generator used to power an aircraft's primary systems when its engines are not running. Further definitions are given at the end of this appendix.

*An approved Auxiliary Power Unit Strategy is to be implemented prior to or on the use of any phase of the CADP1 Development in compliance with CADP1 Conditions 44, 45 and 47 and shall include but not be limited to provide details of the position, orientation and use of aircraft before and after landing and taking off including conditioning of the cabin and equipment.*

Except in cases of immediate emergency to persons on board an aircraft, or where fault occurs, no Auxiliary Power Unit is to be used other than for essential conditioning of aircraft cabins and equipment prior to departure limited to a maximum of 10 minutes before an aircraft's departure from the stand or 10 minutes after an aircraft's arrival on the stand.

#### H.2 Management

The Airport operates a control over the permitted use of auxiliary power units (APU) at the Airport. Permitted use of the APU is contained in AOI 06 APRON MANAGEMENT and in AOI 07 Aircraft Noise & Maintenance. Details of the restrictions on their use are contained in the "Terms and Conditions" for all Aircraft Operators.

The Airport shall ensure as far as reasonably practicable that the auxiliary power unit of any aircraft will not be used except for essential conditioning of the cabin and equipment prior to departure. The Airport requires that the use of auxiliary power units is limited to a maximum of 10 minutes before departure from the stand except under exceptional circumstances, such as during adverse weather conditions, or where no serviceable GPU provision has been provided by the authority. Any such exceptional usage shall only be permitted following a request for and receipt of approval from the Airport.

The use of APU's on arrival is not normally required except when a technical fault gives rise to a request to the Airport for continued use of the APU on arrival on the stand.

The Airport will determine all current aircraft operational at the Airport which require the essential use of APUs. This information will be submitted to the local authority for approval for the continued APU operation of the identified aircraft.

The Airport operates fixed electrical ground power at Stands 1-10 and Stand 15 (Jet Centre). The Airport will continue to work towards installing fixed electrical ground power at aircraft stands. *In any event, fixed electrical ground power will be installed at each new or altered stand before it comes into use at LCA (as part of CADP1)* Where fixed ground power is not available to an aircraft, mobile ground power units (MGPUs) shall be used and a record of their noise output made available for inspection to the Council. The Airport will seek to reduce noise produced by MGPUs by encouraging the use of newer, quieter models and ensuring that the time in use is kept to a minimum. All new or replacement MGPUs must meet the noise requirements set down in the IATA Airport Handling Manual or other such guidelines as may be relevant or issued from time to time modifying extending or replacing those within the IATA Manual.

*In compliance with CADP1 Condition 46, no Mobile Ground Power Unit shall be used anywhere within the Airport after 31<sup>st</sup> December 2020. Up to and including 31<sup>st</sup> December 2020 Mobile Ground Power Units shall only be used during, and in the period 30 minutes before and the period 30 minutes after the permitted take-off and landing times set out in CADP1 Condition 17.*

### H.3 Reporting

Each year on 1 June (or the first working day thereafter) and as part of the Annual Performance Report, a report shall be submitted containing details of the use of Auxiliary Power Units at the airport in the previous calendar year.

## Appendix 2 – AOI 6 and 7

### AOI 06

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#### 10. GROUND POWER

10.1 There are two types of ground power provided at the aerodrome:

- Fixed Electrical Ground Power (FEGP) *Stands 2-10, 15*
- Mobile Ground Power (MGP) *Stands 21-24, 12-14, Jet Centre*

10.2 Aircraft should minimise the use of APUs as much as practicable in accordance with AOI 07 Aircraft Noise & Maintenance and where provided utilise FEGP.

### AOI 07

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#### 2. AUXILIARY POWER UNITS (APU)

2.1 APUs may only be operated between the hours of 0630-2200 (local) Monday – Friday, 0630-1230 (local) Saturday & 1230-2200 (local) Sunday including within the hours of any approved 30 minutes extensions.

2.2 APUs should be shut down as soon as practicable following the arrival of an aircraft and must not be restarted until 10 minutes prior to Estimated Off Blocks Time (EOBT) except when the outside air temperature (as promulgated via Air Traffic Control (ATC)) is below +5°C or above +20°C.

2.3 Operators wishing to use their APU during the weather conditions stipulated in 2.2 should contact ATC and inform them of APU start-up for recording purposes.

2.4 Operators wishing to use their APU outside of the published conditions in 2.2 & 2.3 should first contact ATC who will seek approval from the Aerodrome Authority as to whether APU running will be permitted.

2.5 Running of APUs outside of the aerodrome's published operating hours (including any extensions) is strictly prohibited except where the APU is being run within the confines of 10 minutes prior to EOBT or 10 minutes after on-chocks time.

2.6 Fixed Electrical Ground Power (FEGP) or Mobile Ground Power (MGP) should be used wherever possible.

2.7 FEGP & MGP units may be used out of hours by qualified engineers but may not be driven, relocated or left unattended and should always be switched off after use.

2.8 APU running times are recorded electronically by the Airfield Operations & Safety Unit (AOSU) and are disclosed to the local authority on request.



### Appendix 3 – Qlickview Reporting Example

Date	Location	Aircraft_Type	Airline	Registration	Type	Orientation	Start Time	Finish Time	Reason
01/09/2019	13	DH8D	Flybe	GPRPI	APU	NW	15:49		NO MGPU
02/09/2019	5	DH8D	Flybe	GJEDV	APU	NW	08:17	08:40	NO MGPU
04/09/2019	22	BA3286	British Airways	GLCYD	APU	NW	14:16		TEMP 20+
04/09/2019	5	DH8D	Luxair	LXLQI	APU	NW	07:14	07:30	MGPU U/S
10/09/2019	23	SB20	British Airways	GLGNT	APU	NW	18:19	18:40	NO GPU
10/09/2019	21	dh8d	Flybe	GPRPK	APU	NW	17:02	17:15	GPU U/S
16/09/2019	14	J328	British Airways	OYNCO	APU	NW	19:15	19:25	NO MGPU
18/09/2019	3	DH8D	Luxair	LXLQB	APU	NW	13:04		Temp +14
18/09/2019	7	E190	British Airways	GLCYU	APU	NW	12:50		Maintenance
20/09/2019	24	BCS1	Swiss	HBJBD	APU	NW	18:52	19:05	NO MGPU
20/09/2019	13	J328	Sun Air	OYNCO	APU	NW	18:35	18:50	NO MGPU
20/09/2019	12	E190	British Airways	GLCAB	APU	NW	11:04		GPU failure
29/09/2019	3	DH8D	Luxair	LXLGF	APU	NW	14:26		NO GPU
06/10/2019	10	DH8D	Flybe	GPRPE	APU	NW	14:37	14:55	FGPU U/S
09/10/2019	22	DH8D	Luxair	LXLQJ	APU	NW	20:14	20:26	No GPU
10/10/2019	5	E190	Alitalia	EIRNA	APU	NW	06:45	07:00	Aircon
11/10/2019	8	E190	British Airways	GLCYT	APU	NW	21:41	21:46	Maintenance
14/10/2019	13	DH8D	Flybe	GFLBC	APU	NW	07:52	08:05	NO MGPU