

## Spire Aviation Data Description and Service Level Agreement

This data description (this “**Data Description**”) forms part of a contract between the Spire entity specified in the Order Form (“**Spire**”) and the entity specified in the Order Form as the customer for the Data (“**Customer**”).

The contract between Spire and Customer (this “**Agreement**”) consists of:

- A. The Order Form;
- B. The Spire Data Terms & Conditions (v1.5 dated 1 January 2020) (the “**Terms & Conditions**”); and
- C. This Aviation Data Description.

Capitalized terms not defined in this Data Description will have the meaning provided in the Terms & Conditions.

### 1. Data Service

- 1.1 Spire provides the following ways to access the Data depending on the terms of the Order Form:

#### Subscription Services

- (a) AirSafe Datastream – a push feed of all new Target Updates as soon as available;
- (b) AirSafe Historical API – give access to full history of ADS-B Data available;

#### One-off Data Service

- (c) AirSafe Historical – full history of ADS-B Data points (typically downsampled using 5-minute periods) available for a specified period of time; and

#### Subscription Service or One-off Data Service

- (d) Flight Report – a report giving details of all flights during a particular period. The fields available in a Flight Report are described in [Paragraph 8.1](#) and will depend on the terms of the Order Form.

- 1.2 “**Target Update**” means an update of the location of an aircraft using Data created by combining recently received satellite and terrestrial ADS-B messages.

### 2. Data Category

- 2.1 Spire provides the Data services using access to various types of Data depending on the terms of the Order Form:

- (a) Satellite-ADS-B Data – ADS-B Data collected by Spire’s constellation of satellites; and
- (b) Terrestrial-ADS-B Data – ADS-B Data collected by terrestrial receivers.

### 3. Data Coverage Area

- 3.1 Spire provides the Data services either globally, per aircraft, per airport, per Flight Information Region, for a custom area, or for the regions described in [Annex A](#).

### 4. Data Access

- 4.1 In relation to the Airsafe Datastream services, Customer shall not exceed the number of Permitted Datastream Connections specified in the Order Form.
- 4.2 In the event Customer exceeds the number of Permitted Datastream Connections specified in the Order Form, Spire may immediately suspend Customer’s access to the Data in accordance with Clause 15 of the Terms &

Conditions.

- 4.3 In relation to the Airsafe Historical API service, Customer shall not exceed the number of Permitted Historical API Calls specified in the Order Form.

- 4.4 In the event Customer exceeds the Permitted Historical API Calls specified in the Order Form, Spire may:

- (i) charge an amount of EUR 5 (or the equivalent in USD, GBP or SGD as the case may be) per call in excess of the Permitted Historical API Calls; and/or
- (ii) limit Customer’s access to the Data.

- 4.5 It is Customer’s responsibility to monitor the number of API calls it makes.

### 5. Service Levels - SLs

- 5.1 Spire will use commercially reasonable efforts to achieve the service levels set out below (“**SLs**”) for the AirSafe Datastream and AirSafe Historical API services, as measured by reference to Spire’s business records but excluding:

- (a) commercially reasonable planned downtime;
- (b) the failure of equipment, applications and other systems not under the direct control of Spire or its subcontractors; and
- (c) other circumstances beyond Spire’s reasonable control (collectively, “**Excluded Events**”).

Service Item	Service Level
System Uptime	Monthly average of more than 99.9%  “ <b>Uptime</b> ” means the average time that ADS-B Data was online and available in any given month, as recorded by Spire.
Data Volume global Satellite	An average of more than 400,000 Target Updates per day during a calendar month.  The performance against the SL shall be calculated by dividing (1) the total number of Target Updates delivered to Spire’s APIs in a calendar month; by (2) the total number of days in that calendar month.

## 6. Service Levels - Remedies

- 6.1 In the event that Spire fails to meet the SLs in a given calendar month, but ignoring any failure to the extent attributable to Excluded Events, Customer shall be entitled to receive a number of additional free days access to the Data at the end of the Initial Term or any Renewal Term as applicable (the “**Service Level Credit**”) calculated as follows:

Performance compared to SL (on average during the month) (=X)	Service Level Credit days
100% or more	No credit
Between 50% and 100%	15 days
Below 50%	1 month

*Example for the “Data Volume global Satellite” SL: If the average number of Target Updates delivered per day to Spire’s APIs in a calendar month is equal to 380,000 Target Updates, the Customer shall receive a Service Level Credit of 15 days.*

*Example for the “API uptime” SL (1): If the average uptime of the API in a calendar month is equal to 99.93%, the performance against the SL will be calculated as follows:  
 $(99.93/99.9) * 100 = 100.03\%$  of the SL*

*The customer shall receive no Service Level Credit*

- 6.2 In order to obtain a Service Level Credit in any given calendar month, Customer must send Spire a written notice within 30 days following the end of such calendar month specifying:
- (a) the Data in relation to which Customer is claiming the credit;
  - (b) the dates and or times in which the Data or availability of the Data failed to achieve the applicable SL; and
  - (c) the amount of the Service Level Credit that Customer believes it is owed.
- 6.3 Spire shall check any claim for a Service Level Credit against its business records in order to determine whether (1) the Data has met the SLs; and (2) whether Customer is entitled to a Service Level Credit. Spire’s determination shall be binding in the absence of fraud or manifest error.
- 6.4 The aggregate maximum number of days of additional access to the Data granted as Service Level Credits for any failures in to meet the SLs in a calendar month shall not exceed the number of days in that calendar month. Service Level Credits may not be exchanged for, or converted to, monetary amounts
- 6.5 In the event that Customer receives the maximum Service Level Credit for any 6 consecutive calendar monthly periods, then Customer shall be entitled to terminate this Agreement.
- 6.6 Customer agrees that (a) the Service Level Credits; and (b) Customer’s right to terminate in Paragraph 5.5 are Customer’s sole and exclusive remedy, and Spire’s sole and exclusive liability, for:

- (a) downtime in the availability of the Data; and
- (b) failure of the Data to meet any expectations and performance level.

## 7. ADS-B Data

- 7.1 The ADS-B Data shall consist as minimum of the data fields as listed below. Each record will have timestamp and ICAO address and position (latitude and longitude). Spire produces a target update from all ADS-B Data collected during a 5 second interval, and each target update is saved in the database as a record. If a particular field is missing in the target update record, it means it has not been received or updated during the 5 second interval.
- 7.2 For the avoidance of doubt, Spire may not have ADS-B Data for each aircraft for each of the data fields specified below.

### Spire’s AirSafe Datastream and AirSafe Historical API

Property	Description
<b>icao_address</b> <i>string</i>	Hexadecimal representation of ICAO 24-bit address
<b>callsign</b> <i>string</i>	Communication callsign assigned as unique identifier to an aircraft
<b>timestamp</b> <i>timestamp</i>	timestamp when the message was received by ADS-B receiver
<b>latitude</b> <i>float</i>	latitude in degrees, between -90 and 90 (both inclusive)
<b>longitude</b> <i>float</i>	longitude in degrees, between -180 (exclusive) and 180 (inclusive)
<b>speed</b> <i>float</i>	Aircraft speed over ground represented in knots.
<b>heading</b> <i>float</i>	aircraft heading in degrees (0 is North)
<b>altitude_baro</b> <i>integer</i>	Barometric altitude in feet
<b>collection_type</b> <i>string</i>	Collection type (“satellite” or “terrestrial”)

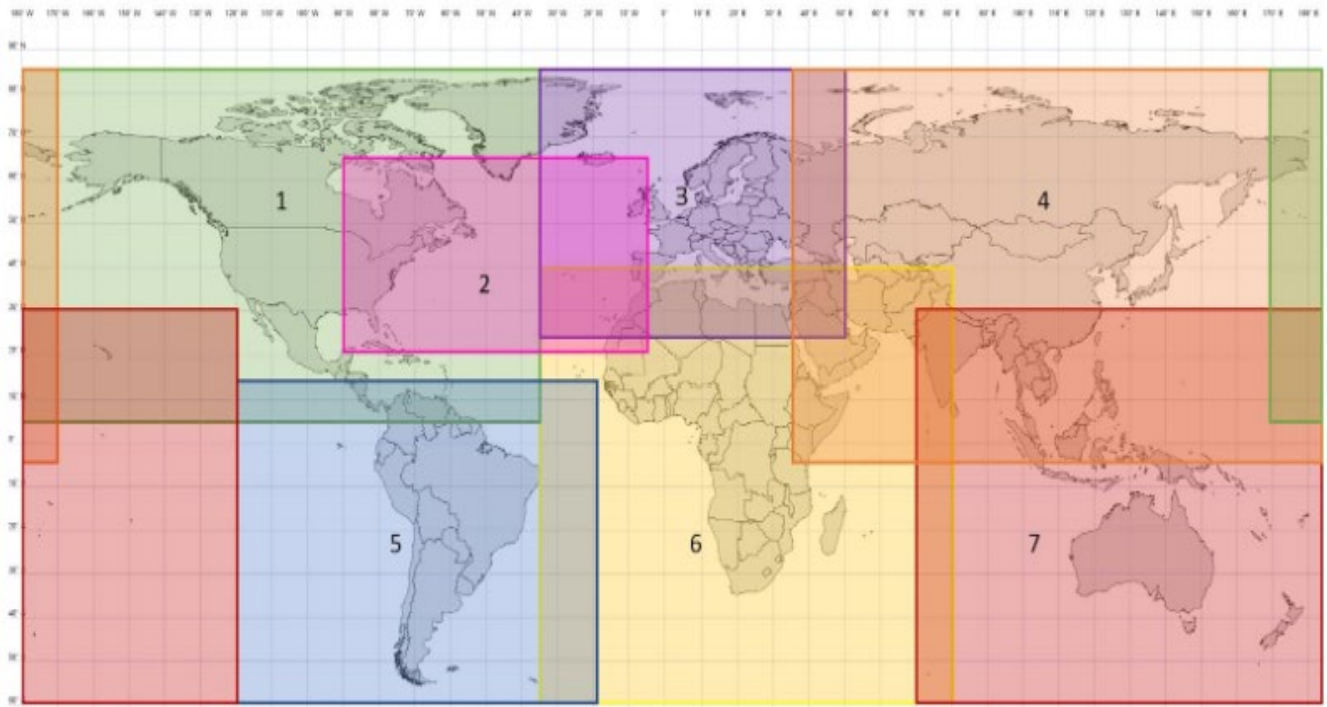
## 8. Flight Report

- 8.1 The fields available for inclusion in a Flight Report (subject to the terms of the Order Form) are described below.

Field	Description
<b>aircraft_type_icao</b> <i>string</i>	Aircraft type (ICAO code)
<b>callsign</b> <i>string</i>	Communication callsign assigned as unique identifier to an aircraft
<b>date</b> <i>timestamp</i>	Date of the flight
<b>flight_number</b> <i>string</i>	Flight number (IATA format)
<b>icao_address</b> <i>string</i>	Hexadecimal representation of ICAO 24 – bit address
<b>tail_number</b> <i>string</i>	Aircraft registration
<b>observation_time_from</b> <i>timestamp</i>	First observation data of the flight through satellite and terrestrial data.

<b>observation_time_to</b> <i>timestamp</i>	Last observation data of the flight through satellite and terrestrial data.
<b>departure_airport_icao</b> <i>string</i>	Origin airport ICAO code
<b>arrival_airport_icao</b> <i>string</i>	Destination airport ICAO code
<b>departure_scheduled_time</b> <i>timestamp</i>	Scheduled departure time.
<b>arrival_scheduled_time</b> <i>timestamp</i>	Scheduled arrival time.

## Annex A - Regions



Regions 1. N. America/C. America/Caribbean 2. Atlantic 3. Europe 4. Asia 5. S. America 6. Africa 7. S.W. Pacific