

CLAIMS

1. A computerised method for monitoring the status of an aircraft comprising:
 sending, from an output module of an aircraft monitoring system, a reporting
 5 contract request to the aircraft's avionics, the reporting contract request defining one or
 more report criteria upon which the aircraft's avionics are required to provide a data signal
 response to the aircraft monitoring system;
 monitoring, at an input module of the aircraft monitoring system, for received data
 signal response sent from the aircraft's avionics to the aircraft monitoring system;
 10 determining, at a processor of the aircraft monitoring system, if one or more alert
 criteria have been satisfied by received data signal responses; and
 generating, at an alerting module of the aircraft monitoring system, an alert based
 on the determination;
 wherein the report criteria defines a first interval at which the aircraft's avionics are
 15 required to provide a data signal response, the alert criteria defines a second interval and
 wherein an alert is generated, at the alerting module of the aircraft monitoring system, in
 the absence of a required data signal response being received during the first or second
 interval.
- 20 2. A computerised method according to claim 1, wherein the report criteria indicates
 an immediate data signal response is required from the aircraft's avionics and wherein an
 alert is generated, at the alerting module of the aircraft monitoring system, in the absence
 of a data signal response being received within the second interval defined by the alert
 criteria.
- 25 3. A computerised method according to claim 1 or 2, wherein the one or more report
 criteria and the one or more alert criteria are received from a criteria database of the
 aircraft monitoring system and wherein the data signal response comprises aircraft location
 information corresponding to the aircraft.
- 30 4. A computerised method according to any preceding claim, wherein an alert is
 generated, at the alerting module of the aircraft monitoring system, if it is determined, at the
 processor, that a received data signal response is an emergency report.

5. A computerised method according to any preceding claim, wherein an alert is generated if the data signal response to the reporting contract request is determined, at the processor of the aircraft monitoring system, to be a connection denial message.
- 5 6. A computerised method according to any preceding claim, wherein the reporting contract request and the corresponding data signal response conform to an Automatic Dependent Surveillance Contract.
7. A computerised method according to any preceding claim, wherein the alerts that
10 have been generated at the alerting module of the aircraft monitoring system are stored in a data store and are provided to a user upon a user request.
8. A system for monitoring the status of an aircraft comprising:
an output module configured to send a reporting contract request to the aircraft's
15 avionics, wherein the reporting contract request defines one or more report criteria upon which the aircraft's avionics are required to provide a data signal response to the system;
an input module configured to receive data signal responses sent from the aircraft's avionics to the system;
a processor configured to determine if the one or more alert criteria have been
20 satisfied by received data signal responses; and
an alerting module configured to generate an alert based on the determination;
wherein the report criteria defines a first interval at which the aircraft's avionics are required to provide a data signal response, the alert criteria defines a second interval and
wherein the alerting module is configured to generate an alert in the absence of a required
25 data signal response being received during the first or second interval.
9. A system according to claim 8, wherein the report criteria indicates an immediate data signal response is required from the aircraft's avionics and wherein the alerting module is configured to generate an alert in the absence of a data signal response being
30 received within the second interval defined by the alert criteria.
10. A system according to claim 8 or 9, wherein the one or more report criteria and the one or more alert criteria are received from a criteria database of the system; and wherein the data signal responses that the input module is configured to receive comprise aircraft
35 location information corresponding to the aircraft.

11. A system according to any of claims 8 to 10, wherein the alerting module is configured to generate an alert if the processor determines that a received data signal response is an emergency report.

5 12. A system according to any of claims 8 to 11, wherein the alerting module is further configured to generate an alert if the data signal response to the reporting contract request is determined by the processor to be a connection denial message.

10 13. A system according to any of claims 8 to 12, wherein the reporting contract requests, that the output module is configured to send, and the corresponding responses, that the input module is configured to receive, conform to an Automatic Dependent Surveillance Contract.

15 14. A system according to any of claims 8 to 13, further comprising a data store, wherein the processor is further configured to store the alerts that have been generated in the data store and to provide the alerts that have been generated to a user upon a user request.

20 ~~15. A computerised method for monitoring the status of an aircraft comprising:~~
~~— sending, from an output module of an aircraft monitoring system, a reporting contract request to the aircraft's avionics, the reporting contract request defining one or more report criteria upon which the aircraft's avionics are required to provide a data signal response to the aircraft monitoring system;~~
~~— monitoring, at an input module of the aircraft monitoring system, for received data signal response sent from the aircraft's avionics to the aircraft monitoring system;~~
25 ~~— determining, at a processor of the aircraft monitoring system, if one or more alert criteria have been satisfied by received data signal responses; and~~
~~— generating, at an alerting module of the aircraft monitoring system, an alert based on the determination;~~
30 ~~— wherein the one or more report criteria and the one or more alert criteria are received from a criteria database of the aircraft monitoring system and wherein the data signal response comprises aircraft location information corresponding to the aircraft; and~~
~~— wherein the input module of the aircraft monitoring system is configured to receive flight plan data and ACARS data corresponding to the aircraft and further wherein an alert~~
35 ~~is generated, at the alerting module of the aircraft monitoring system, if it is determined that~~

~~a flight phase change message corresponding to the aircraft has been received but flight plan data corresponding to the aircraft has not been received.~~

~~16.—A computerised method according to claim 15, wherein the reporting contract request and the corresponding data signal response conform to an Automatic Dependent Surveillance Contract.~~

~~17.—A computerised method according to claim 15, further comprising:
receiving, at the input module, Air Traffic Services Facilities Notification (AFN) messages corresponding to the aircraft;
determining, at the processor, if one or more AFN message criteria have been satisfied by the received AFN messages; and
generating, at the alerting module, an alert based on the determination.~~

~~18.—A system for monitoring the status of an aircraft comprising:
——an output module configured to send a reporting contract request to the aircraft's avionics, wherein the reporting contract request defines one or more report criteria upon which the aircraft's avionics are required to provide a data signal response to the system;
——an input module configured to receive data signal responses sent from the aircraft's avionics to the system;
——a processor configured to determine if the one or more alert criteria have been satisfied by received data signal responses; and
——an alerting module configured to generate an alert based on the determination;
——wherein the data signal responses that the input module is configured to receive comprise aircraft location information corresponding to the aircraft; and
——wherein the input module is further configured to receive flight plan data and ACARS data corresponding to the aircraft and wherein the alerting module is configured to generate an alert if it is determined that a flight phase change message corresponding to the aircraft has been received but flight plan data corresponding to the aircraft has not been received.~~

~~19.—A system according to claim 18, wherein the reporting contract requests, that the output module is configured to send, and the corresponding responses, that the input module is configured to receive, conform to an Automatic Dependent Surveillance Contract.~~

20. — A system according to claim 18, wherein the input module is further configured to receive Air Traffic Services Facilities Notification (AFN) messages corresponding to the aircraft; and wherein the alerting module is configured to generate an alert if the processor determines that an AFN confirmation message has not been received when expected based on the aircraft location information.

21. — A computerised method for monitoring the status of an aircraft comprising:
 — sending, from an output module of an aircraft monitoring system, a reporting contract request to the aircraft's avionics, the reporting contract request defining one or more report criteria upon which the aircraft's avionics are required to provide a data signal response to the aircraft monitoring system;
 — monitoring, at an input module of the aircraft monitoring system, for received data signal response sent from the aircraft's avionics to the aircraft monitoring system;
 receiving, at the input module of the aircraft monitoring system, flight plan data corresponding to the aircraft;
 receiving, at the input module of the aircraft monitoring system, Controller-Pilot Data Link Communications (CPDLC) messages corresponding to the aircraft;
 — determining, at a processor of the aircraft monitoring system, if one or more alert criteria have been satisfied by received data signal responses; and
 — generating, at an alerting module of the aircraft monitoring system, an alert based on the determination;
 — wherein the one or more report criteria and the one or more alert criteria are received from a criteria database of the aircraft monitoring system and wherein the data signal response comprises aircraft location information corresponding to the aircraft; and
 wherein an alert is generated, at the alerting module of the aircraft monitoring system, if the aircraft location information is determined to deviate vertically or laterally from the flight plan data by a given amount and the deviation from the flight plan data is determined, by the processor, not to be authorised in the content of the CPDLC messages.

22. — A computerised method according to claim 21, further comprising storing the CPDLC messages in a data store; wherein the CPDLC messages are provided to a user upon a user request.

23. — A computerised method according to claim 21 or 22, wherein the reporting contract request and the corresponding data signal response conform to an Automatic Dependent Surveillance Contract.

24. — A system for monitoring the status of an aircraft comprising:

— an output module configured to send a reporting contract request to the aircraft's avionics, wherein the reporting contract request defines one or more report criteria upon which the aircraft's avionics are required to provide a data signal response to the system;

— an input module configured to receive data signal responses sent from the aircraft's avionics to the system, flight plan data corresponding to the aircraft and Controller-Pilot Data Link Communications (CPDLC) messages corresponding to the aircraft;

— a processor configured to determine if the one or more alert criteria have been satisfied by received data signal responses; and

— an alerting module configured to generate an alert based on the determination;

— wherein the data signal responses that the input module is configured to receive comprise aircraft location information corresponding to the aircraft; and

— wherein the alerting module is configured to generate an alert if the processor determines that aircraft location information has deviated vertically or laterally from the flight plan data by a given amount and the deviation from the flight plan data is determined by the processor not to be authorised in the content of the CPDLC messages.

25. — A system according to claim 24, wherein the processor is further configured to store the CPDLC messages in a data store and to provide the CPDLC messages to a user upon a user request.

26. — A system according to claim 24 or 25, wherein the reporting contract requests, that the output module is configured to send, and the corresponding responses, that the input module is configured to receive, conform to an Automatic Dependent Surveillance Contract.