US Department of Transportation
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Web Service Description Document (WSDD)

System Wide Information Management (SWIM)
Flight Data Publication Service (SFDPS)

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Federal Aviation Administration
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800 Independence Avenue, SW
Washington, DC 20591

Prepared by
Volpe National Transportation Systems Center
Air Traffic Management Systems Division
55 Broadway, Cambridge, MA 02142

Web Service Description Document

SWIM Flight Data Publication Service

Approval Signatures

Name	Organization	Signature	Date Signed
Chris Pressler	AJM-316		11/09/2015

Web Service Description Document

SWIM Flight Data Publication Service

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1. Scope

This Web Service Description Document (WSDD) describes the web services for the System Wide Information Management (SWIM) Flight Data Publication Service (SFDPS). These Service Oriented Architecture (SOA) services will be available to Federal Aviation Administration (FAA) users and non-FAA users as National Airspace System (NAS) services. This document was prepared in accordance with the FAA Standard Practice Preparation of Web Service Description Documents (FAA-STD-065A).

1.1 Background

This WSDD applies to Phase 1 of the SFDPS. SFDPS is the SWIM program developed to provide flight information services to a wide variety of consumers in a SWIM-compliant manner. The general purpose of Phase 1 is to make En Route Automation Modernization (ERAM) system data easily accessible to a wide variety of consumers. Phase 1 will provide only a one-way data distribution and provide data in response to requests.

SFDPS will transmit data to the data consumers through the NAS Enterprise Messaging Service (NEMS). From a broad perspective, SFDPS and NEMS are subsystems that together provide data services to the data consumers. However, the scope of this document is strictly limited to SFDPS. The relationship of SFDPS and NEMS is clarified in the next section.

The primary functionality of SFDPS Phase 1 is to publish streams of ERAM data The data consumers could be FAA facilities, FAA systems or programs, other government systems or programs, or non-government systems or programs. This data is derived completely from the Host ATM Data Distribution System (HADDS) Common Message Set (CMS) messages. The general behavior is that an incoming CMS message from HADDS will trigger a data publication from SFDPS.

SFDPS will also provide four standard Simple Object Access Protocol (SOAP)-over-HTTPS web services from which users can obtain SFDPS data. They are:

1. En Route Flight Data Publication
2. En Route Airspace Data Publication
3. En Route Operational Data Publication
4. En Route General Message Publication

Each of these services will accept requests for data. These requests will include multiple criteria that consumers can use to specify the type of data they require. The services will process incoming requests, validate them, and upon validation, establish an SFDPS subscription that will stream data corresponding to the requested criteria. Data is streamed back to the consumers through the NEMS interface. These criteria are described in detail in this document and in the SFDPS WSRD. For additional details and the concept of execution for SFDPS subscriptions, refer to the SFDPS Software Design Description Document (SDD) (reference [6]). Also refer to the definition of the term “subscription” in Section 3.1.

2. Applicable Documents

2.1 Government Documents

1. Ken Howard, *FDPS Architecture Description*, Volpe National Transportation System Center, Cambridge, MA, report no. VNTSC-TFM-12-6, March 2012
2. *System/Subsystem Specification (SSS) Document for the En Route SWIM Flight Data Publication Service,* Volpe National Transportation System Center, Cambridge, MA, Version 2.0, January 9, 2015
3. *Host Air Traffic Management (ATM) Data Distribution System (HADDS) Application Programming Interface (API) Document, Revision 1 For Common Message Set (CMS)*, May 2008
4. *System/Subsystem Design Description (SSDD) For the En Route SWIM Flight Data Publication Service, Draft*, Volpe National Transportation System Center, Cambridge, MA, Version 0.37, September 1, 2014
5. *Development Test (DT) Test Plan For the En Route Flight Data Publication Service (FDPS)* Version 1.10, Volpe National Transportation System Center, Cambridge, MA, October 19, 2012
6. *SFDPS Software Design Description Document (SDD), Draft*, Version 1.2, Volpe National Transportation System Center, Cambridge, MA, September 1, 2014
7. *Web Service Requirements Document (WSRD) System Wide Information Management (SWIM) Flight Data Publication Service (SFDPS),* Version 2.2, Volpe National Transportation System Center, Cambridge, MA, July 01, 2015
8. FAA–STD–063, *XML Namespaces*, May 1, 2009 http://www.tc.faa.gov/its/worldpac/standards/faa-std-063.pdf
9. FAA–STD–064, *Web Service Registration*, May 1, 2009 http://www.tc.faa.gov/its/worldpac/standards/faa-std-064.pdf
10. FAA–STD–065A, *Standard Practice Preparation of Web Service Description Documents*, February 26, 2010 http://www.tc.faa.gov/its/worldpac/standards/faa-std-065.pdf
11. FAA–STD–066, *Web Service Taxonomies*, February 26, 2010 http://www.tc.faa.gov/its/worldpac/standards/faa-std-066.pdf
12. *NAS Enterprise Messaging Service (NEMS) Asynchronous Messaging ICD*, *Draft,* Federal Aviation Administration, System Wide Information Management Program, July 20, 2012
13. *SWIM Flight Data Publication Service (SFDPS) Reference Manual, Version 1.1,* Volpe National Transportation System Center, Cambridge, MA, December 16, 2014.
14. *Java Messaging Service Description Document (JMSDD) System Wide Information Management (SWIM) Flight Data Publication Service (SFDPS)*, Version 2.3, Volpe National Transportation System Center, Cambridge, MA, July 01, 2015
15. SFDPS_v1.2.xsd, Volpe National Transportation System Center, Cambridge, MA, December 10, 2014

16. FIXM FIXM 3.0 Schema Files, Volpe National Transportation System Center, Cambridge, MA, December 10, 2014

2.2 Non-Government Documents and Other Publications

17. Web Services Description Language (WSDL) 1.1 W3C Note 15, March 2001 http://www.w3.org/TR/wsdl
18. Web Services Description Language (WSDL) Version 2.0 W3C Recommendation 26, June 2007 http://www.w3.org/TR/wsdl20
19. Web Service Description Requirements, W3C Working Draft, J. Schlimmer, 28 October 2002 http://www.w3.org/TR/2002/WD-ws-desc-reqs-20021028/
20. World Wide Web Consortium (W3C) Web Services Description Language (WSDL) http://www.w3.org/2002/ws/desc/
21. W3C XML Schema http://www.w3.org/XML/Schema
22. Web Services Policy http://www.w3.org/2002/ws/policy/
23. W3C Recommendation, "XML-Signature Syntax and Processing", 12 February 2002. http://www.w3.org/TR/2002/REC-xmldsig-core-20020212/
24. W3C Recommendation, D. Eastlake et al. XML Signature Syntax and Processing (Second Edition). 10 June 2008. http://www.w3.org/TR/2008/REC-xmldsig-core-20080610/
25. Organization for the Advancement Structured of Information Standards (OASIS) SOA Reference Model. http://docs.oasis-open.org/soa-rm/v1.0/soa-rm.pdf
26. OWL-S: Semantic Markup for Web Services W3C Member Submission 22 November 2004 http://www.w3.org/Submission/OWL-S

3. Definitions

3.1 Terms and Definitions

Access Control	Protection of system resources against unauthorized access; a process by which use of system resources is regulated according to a security policy and is permitted by only authorized entities.
Audit	A process that records information needed to establish accountability for system events and for the actions of system entities that cause them.
Audit Trail	A chronological record of system activities that is sufficient to enable the reconstruction and examination of the sequence of environments and activities.
Authentication	The process of verifying an identity claimed by or for a system entity.
Authorization	The granting of rights or permission to a system entity (mainly but not always a user or a group of users) to access a Web service.
Binding	An association between an interface, a concrete protocol and a data format. A binding specifies the protocol and data format to be used in transmitting messages defined by the associated interface.
Business Function	A characteristic action or activity that needs to be performed to achieve a desired objective, or in the context of this standard, to achieve a real world effect.
Client	A client is an external entity that interacts with a service. A client makes a request of a service and receives a response from the service. The client may also request a subscription and receive messages when a service publishes information. A client may be a software system, software application, or another service. A client may be a NAS client or a non-NAS client.
Confidentiality	Protective measures that assure that information is not made available or disclosed to unauthorized individuals, entities, or processes (i.e., to any unauthorized system entity).
Credentials	Data that is transferred to establish the claimed identity of an entity.
Critical Failure	A state or condition in which a service is unable to perform the primary function for which it was designed.
Data Element	A unit of data for which the definition, identification, representation and permissible values are specified by means of a set of attributes.
Datatype	A computer representation of a well-known abstract concept such as integer or date.
Description	An account of the content of a resource.

Discovery The processes through which a service consumer may search for and find services, (generally done by providing criteria to search for against a corpus of service metadata which service providers have provided to describe their services).

Effect A state or condition that results from interaction with a service. Multiple states may result depending on the extent to which the interaction completes successfully or generates a fault.

FAA Data Registry (FDR) The official source of the FAA's data standards. The FDR (http://fdr.gov/fdr/Home.jsp) is a Web-enabled system that provides ready access to the agency's standards and is compliant with the International Organization for Standardization/International Electrotechnical Commission (ISO/IEC) Standard 11179, Information Technology – Metadata Registries (MDR), Parts 1 – 6 (http://metadata-standards.org/11179/).

Fault A message that is returned as a result of an error that prevents a service from implementing a required function. A fault usually contains information about the cause of the error.

Format The arrangement of bits or characters within a group, such as a data element, message, or language.

Idempotent A term used to describe an operation in which a given message will have the same effect whether it is received once or multiple times; i.e., the same action will be taken in response to a given message even if duplicates are received.

Input Data entered into, or the process of entering data into, an information processing system or any of its parts for storage or processing.

Integrity Protective measures that assure that data has not been changed, destroyed, or lost in an unauthorized or accidental manner.

Interface See Service Interface.

Interoperability The ability of software and hardware on multiple machines from multiple vendors to communicate.

Loose-Coupling A characteristic of software systems, in which dependencies among a system's constituting parts have been minimized.

Message An identifiable collection of units of information (data elements), presented in a manner suitable for communication, interpretation, or processing within a context of interacting SOA components.

Message Exchange Pattern (MEP)
A template, devoid of application semantics, that describes a generic pattern for the exchange of messages between agents. It describes the relationships (e.g., temporal, causal, sequential, etc.) of multiple messages exchanged in conformance with the pattern, as well as the normal and abnormal termination of any message exchange conforming to the pattern.

Metadata Data that defines or describes other data.

Name The designation of an object by a linguistic expression.

Namespace A collection of names, identified by a URI reference, that are used in XML documents as element types and attribute names. The use of XML namespaces to uniquely identify metadata terms allows those terms to be unambiguously used across applications, promoting the possibility of shared semantics.

Non-Repudiation Protective measures against false denial of involvement in a communication.

Operation A set of messages related to a single Web service action.

Organization A unique framework of authority within which a person or persons act, or are designated to act, towards some purpose. Any department, service, or other entity within an organization which needs to be identified for information exchange.

Output Data transferred out of, or the process by which an information-processing system or any of its parts transfers data out of, that system or part.

Permissible Values The set of allowable instances of a data element.

Policy-Based Access Control (PBAC)
A process in which access to system resources is defined and enforced centrally according to formal government policy, and not by local administrators.

Precondition A state or condition that is required to be true before an action can be successfully invoked.

Protocol A formal set of conventions governing the format and control of interaction among communicating functional units.

Quality of Service (QoS) Characteristic
A parameter that specifies and measures the value of a provided service.

Queue A staging area that contains messages that have been sent and are waiting to be read.

Real World Effect An ultimate purpose associated with the interaction with a particular service. It may be the response to a request for information or the change in the state of some entities shared between the participants in the interaction.

Registry An enabling infrastructure that uses a formal registration process to store, catalog, and manage metadata relevant to a service. A registry supports the search, identification, and understanding of resources, as well as query capabilities.

Requester Agent A software agent that wishes to interact with a provider agent in order to request that a task be performed on behalf of its owner – the service consumer.

Resource An object of information that is available on an Internet and identified by a unique Uniform Resource Identifier.

Role A predefined set of rules establishing the allowed interactions between a service consumer and the service.

Role-Based Access Control (RBAC)
A form of identity-based access control where the system entities that are identified and controlled are functional positions in an organization or process.

Security The protection of information and data so that unauthorized persons or systems cannot read or modify them and authorized persons or systems are not denied access to them.

Service See Web service.

Service Category One or more values selected from a hierarchical convention that is used to categorize all FAA services.

Service Consumer An organization that seeks to satisfy a particular need through the use of capabilities offered by means of a service.

Service Criticality A single value selected from a list of values that is used to categorize a service in terms of the significance given to a functional failure of that service.

Service Description The information needed in order to use, or consider using, a service.

Service Interface An abstract boundary that a Web service exposes. It defines the types of messages and the message exchange patterns that are involved in interacting with the Web service, together with any conditions implied by those messages.

Service Provider An organization that offers the use of capabilities by means of a service.

Service-Oriented Architecture (SOA)
A paradigm for organizing and utilizing distributed capabilities that may be under the control of different ownership domains. A SOA provides a uniform means to offer, discover, interact with and use capabilities to produce desired effects consistent with measurable preconditions and expectations.

Standard A document established by consensus and approved by a recognized body, which provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context. Note: standards should be based on the consolidated results of science, technology, and experience, and aimed at the promotion of optimum community benefits.

Structured Data Data that is organized in well-defined semantic “chunks” or units that are variously called fields, elements, objects, or entities. Individual units are often combined to form larger, more complex units.

Subscription For Phase 1 of SFDPS, the term “subscription” used in this document or in the service names/artifacts, implies a one-time request for a data set by an SFDPS consumer, resulting in response with a finite data set. Consumers can request specific data sets by specifying values on the request messages, and SFDPS will process this request, and generate one or more messages in response to the request and stream it back to the

consumer. The response message set will be in XML format, either FIXM or SimpleXML.[Note: *In future phases of SFDPS, the term "subscription" may also include a dynamic component – whereby, SFDPS consumers may have the ability not only to request finite, one-time data sets but also to use services to establish permanent dynamic streams of data corresponding to specified criteria. This type of dynamic subscription is, however, not currently supported in SFDPS.*]

Synchronous Operation A type of operation whose message exchange pattern describes temporally coupled or "lock-step" interactions, e.g., remote procedure call (RPC)-style request-response interactions.

Taxonomy A system or controlled list of values by which to categorize or classify objects.

Token A data object or a portable, user-controlled, physical device used to verify an identity in an authentication process.

Topic A distribution mechanism for publishing messages that are delivered to multiple subscribers

Uniform Resource Identifier (URI)
A compact string of characters for identifying an abstract or physical resource.

Uniform Resource Locator (URL)
A type of URI that identifies a resource via a representation of its primary access mechanism (e.g., its network "location"), rather than by some other attributes it may have.

User A human, his/her agent, a surrogate, or an entity that interacts with information-processing systems. A person, organization entity, or automated process that accesses a system, whether authorized to do so or not.

Web Service A platform-independent, loosely coupled software component designed to support interoperable machine-to-machine interaction over a network. It has an interface described in a machine-processable format. Other systems interact with the Web service in a manner prescribed by its description by means of XML-based messages conveyed using Internet transport protocols in conjunction with other Web-related standards.

3.2 Acronyms

AIXM	Aeronautical Information Exchange Model
API	Application Programming Interface
ARTCC	Air Route Traffic Control Center
ASCII	American Standard Code for Information Interchange
ATM	Air Traffic Management
CMS	Common Message Set
COTS	Commercial Off-The-Shelf

CSP	Consumer Services Package
ERADS/P	En Route Airspace Data Service/Publication
ERAM	En Route Automation Modernization
ERFDS/P	En Route Flight Data Service/Publication
ERGMS/P	En Route General Message Service/Publication
ERODS/P	En Route Operational Data Service/Publication
ESB	Enterprise Service Bus
FDIO	Flight Data Input/Output
FDPS	Flight Data Publication Service
FIXM	Flight Information Exchange Model
FTI	FAA Telecommunication Infrastructure
HADDS	Host ATM Data Distribution System
HTTP/S	Hypertext Transfer Protocol/Secure
IFR	Instrument Flight Rules
JMS	Java Message Service
JMSDD	Java Messaging Service Description Document
NAS	National Airspace System
NEMS	NAS Enterprise Messaging System
NextGen	Next Generation Air Transportation System
OSGi	Open Services Gateway initiative
Pub/Sub	Publish/Subscribe
REST	Representational State Transfer
SFDPS	SWIM Flight Data Publication Service
SLOC	Source Lines of Code
SOA	Service Oriented Architecture
SOAP	Simple Object Access Protocol
SSDD	System/Subsystem Design Document
SSS	System/Subsystem Specification
STARS	Standard Terminal Automation Replacement System
STOMP	Streaming Text Oriented Message Protocol
SWIM	System Wide Information Management
TBD	To Be Done/ To Be Determined
TCP/IP	Transmission Control Protocol/Internet Protocol
TFDM	Terminal Flight Data Manager
TFM	Traffic Flow Management
TFMS	Traffic Flow Management System

TMA	Traffic Management Advisory
TRACON	Terminal Radar Approach Control Facility
VLAN	Virtual Local Area Network
W3C	World Wide Web Consortium
WAN	Wide Area Network
WS	Web Service
WSDD	Web Service Description Document
WSDL	Web Services Description Language
WXXM	Weather Information Exchange Model
XML	Extensible Markup Language

4. Service Profile

This document is the Web Service Description Document (WSDD), which describes the service for the En Route SWIM Flight Data Publication Service (SFDPS) Web Service. This WSDD applies to Phase 1 of the SFDPS.

4.1 En Route Flight Data Publication

Name	EnrouteFlightDataPublication
Namespace	us:gov:dot:faa:atm:enroute:services:flightdatapub
Description	This web service will accept subscriptions for flight and track data. It will allow users to specify a range of selection criteria defined in Table 5-6 and Table 5-7. After validating the request, the service will establish an SFDPS subscription and return the consumer a unique Subscription Identifier that the consumer can use to track messages for this subscription. (Refer to Section 3.1 for an elaboration of subscriptionssubscription in the context of SFDPS Phase 1.)
Version	1.2.8.1
Service Category	Flight Information Service
Lifecycle Stage	Production
Criticality Level	Essential

4.2 En Route Airspace Data Publication

Name	EnrouteAirspaceDataPublication
Namespace	us:gov:dot:faa:atm:enroute:services:airspacedatapub
Description	This web service will accept subscriptions for sector and route data. It will allow users to specify a range of selection criteria defined in Table 5-8 and Table 5-9. After validating the request, the service will establish an SFDPS subscription and return the consumer a unique Subscription Identifier that the consumer can use to track messages for this subscription. (Refer to Section 3.1 for an elaboration of subscriptions in the context of SFDPS Phase 1.)
Version	1.2.8.1
Service Category	Navigation Information Service
Lifecycle Stage	Production

Criticality Level Essential

4.3 En Route Operational Data Publication

Name EnrouteOperationalDataPublication

Namespace us:gov:dot:faa:atm:enroute:services:operationaldatapub

Description This web service will accept subscriptions for operational message data. It will allow users to specify a range of selection criteria defined in Table 5-10 and Table 5-11. After validating the request, the service will establish an SFDPS subscription and return the consumer a unique Subscription Identifier that the consumer can use to track messages for this subscription. (Refer to Section 3.1 for an elaboration of subscriptions in the context of SFDPS Phase 1.)

Version 1.2.8.1

Service Category Air Traffic Support Service

Lifecycle Stage Production

Criticality Level Essential

4.4 En Route General Message Publication

Name EnrouteGeneralMessagePublication

Namespace us:gov:dot:faa:atm:enroute:services:generalmessagepub

Description This web service will accept subscriptions for general message publication data. It will allow users to specify a range of selection criteria defined in Table 5-12 and Table 5-13. After validating the request, the service will establish an SFDPS subscription and return the consumer a unique Subscription Identifier that the consumer can use to track messages for this subscription. (Refer to Section 3.1 for an elaboration of subscriptions in the context of SFDPS Phase 1.)

Version 1.2.8.1

Service Category Air Traffic Support Service

Lifecycle Stage Production

Criticality Level Essential

4.5 Service Provider

Name	Federal Aviation Administration (FAA) System Wide Information Management (SWIM) Program Office, Enterprise Programs
Description	A program within the FAA Air Traffic Organization responsible for transforming technologies that provide more efficient operations and streamlined data communications capabilities.
Web page	http://www.faa.gov/nextgen/swim/

4.5.1 Point of Contact

Name	Linda Chen
Organization	Federal Aviation Administration
Title	SWIM Program SFDPS Team Leader
Phone	202-267-7566
email	Linda.Chen@faa.gov

4.6 Service Consumers

Potential consumers of SFDPS data and services include the following:

- **TFMS** – The Traffic Flow Management System (TFMS) monitors all planned and current flights. It will subscribe for all flight plan data, position updates, and other flight data messages. It also needs current sector configurations and route status messages. It is a trusted FAA system, and would therefore get all messages.
- **Terminal Radar Approach Control Facility (TRACON)/Tower** – An FAA system such as the Standard Terminal Automation Replacement System (STARS) or the Terminal Flight Data Manager (TFDM) could subscribe to a subset of the en route data of particular interest to that system. For example, TFDM might want all flight plans for flights departing from or arriving at a certain airport, and track updates for flights approaching that airport. Being an FAA system, they would have access to all of the flight data.
- **Non-FAA Government Data Consumer** – This could be a military group or any other government agency. They would be authorized to get data for any flight, but might have very specific data requirements. That is, they might want only a small subset of the message types or data fields, or for a small subset of flights.
- **Non-government Data Consumer** – This could be an airline or a company that shows flight progress and status. They might want only certain flights; for example, an airline might want position updates for only its own flights. Being non-government

entities, they would not have authorization to get data for military flights or other sensitive flights.

4.7 Service Functionality

SFDPS is the SWIM program developed to provide ERAM en-route flight information services to a wide variety of consumers in a SWIM-compliant manner. For additional details about SFDPS system requirement specifications and architecture, refer to System/Subsystem Specification (SSS) Document for the En Route SWIM Flight Data Publication Service, Version 2.0 (reference [2]) and System/Subsystem Design Description (SSDD) For the En Route SWIM Flight Data Publication Service, Draft, Version 0.37 (reference [4]).

SFDPS will transmit data to consumers through the NAS Enterprise Messaging Service (NEMS). NEMS will also serve as a simple proxy, passing requests from SFDPS consumers to SFDPS after authentication, and passing responses back from SFDPS services to consumers.

Users may request specific messages that SFDPS received in the last fifteen days or they may request current flight, sector, route or altimeter data. To fulfill these requests, SFDPS will provide four standard SOAP-over-HTTPS web services These four web services are described in this document. They are:

1. En Route Flight Data Publication
2. En Route Airspace Data Publication
3. En Route Operational Data Publication
4. En Route General Message Publication

Each of these services will accept requests for data. These requests will include multiple criteria that consumers can use to specify the type of data they require. The services will process incoming requests, validate them and upon validation, establish an SFDPS subscription that will stream data corresponding to the requested criteria. Data is streamed back to the consumers through the NEMS interface. These criteria are described in detail in this document. For additional details and the concept of operation for SFDPS subscriptions, refer to the SFDPS Software Design Description Document (SDD) (reference [6]). Also refer to the definition of the term "subscription" in Section 3.1.

4.8 Security

Security of SFDPS Web Services is shared between SFDPS and NEMS systems. For detailed security function allocation between SFDPS and NEMS refer to the section 4.1.10.2 (SFDPS/NEMS Security Responsibilities) of the SFDPS SSDD (reference [4]).

SFDPS will comply with NEMS security requirements as an FAA producer. NEMS will handle identification and authentication of SFDPS consumers. SFDPS and NEMS, together, are responsible for authorization.

SFDPS obtains updated sensitive flight data tagging files from AJR-2 on a periodic basis or as directed by AJR-2 for time critical requirements. Following the AJR-2 flight data sensitivity identification process, SFDPS uses the information in those files to mark, or tag, service messages as containing sensitive or non-sensitive flight data. During the SWIM on-boarding process, each client is authorized to receive either sensitive or non-sensitive flight data, and is configured accordingly when on-ramped to NEMS. NEMS uses the client configuration and each message's "Send To" tag (FDPS_Sensitive) to ensure messages with

sensitive flight data are only sent to clients authorized to receive sensitive flight data. Flight data tagged as sensitive is Sensitive Security Information (SSI) and must be protected in accordance with FAA Order 1600.75, Protecting Sensitive Unclassified Information (SUI).

4.8.1 Roles

Role	Description
NON-GOVERENMENT-NON-FAA	Access is restricted to non-sensitive data only. SFDPS filters military operations and privacy track data (BARR) sent in real time and marks the filtered data as **FDPS_sensitive** = false.
GOVERNMENT -NON-FAA	Access to non-sensitive data is granted. Access to sensitive data may be granted based upon need-to-know (e.g., US Department of Defense has access to all sensitive and military flight data, whereas NASA does not have access). Data is marked **FDPS_sensitive**=true for unfiltered data or **FDPS_sensitive**=false forfiltered data.
FAA	Unrestricted data access. Data is marked **FDPS_sensitive**= true.

4.8.2 Access Control Mechanisms

Access Control	Description / Regulating Document
Identification & Authentication	Performed by NEMS. Authenticated identity is propagated using Web Services Security: Username Token Profile 1.0, OASIS Standard 200401, March 2004. http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profile-1.0.pdf
Authorization	RBAC. ANSI/INCITS 359-2004 Information Technology - Role Based Access Control International Committee for Information Technology Standards: 03-Feb-2004. http://profsandhu.com/journals/tissec/ANSI+INCITS+359-2004.pdf

4.8.2.1 Security Policies

FAA Order 1370.103, Encryption Policy, dated 11/12/08

FAA Order 1370.104, Digital Signature Policy dated 10/31/2008

FAA Order 1370.112, FAA Application Security Policy dated 10/5/2010

FAA Order 1370.92A, Password and PIN Management Policy dated 8/6/2010

FAA Order 1370.95, Wide Area Network Connectivity Security dated 9/12/2006

FAA Protecting Personally Identifiable Information Order 1280.1B, 12/17/08

FAA Order 1370.113 Web Security Management Policy 5/16/12

4.9 Quality of Services

The availability of the SFDPS Web services will be greater than or equal to .999. It shall have a mean time between failure of more than 5,000 hours. Services shall be restored after any disruption within 10 minutes. Time on any component of SFDPS shall be maintained with 10 milliseconds of the NAS Time Source.

The response to any of the web service requests will be returned to the user within a mean time of 3 seconds, within a 95th percentile of 5 seconds and within a maximum of 10 seconds.

4.10 Service Policies

No specific service policies are applied to this service. However, through the consumer on-ramping process, NEMS designates a consumer as either a NAS or non-NAS consumer.

4.11 Environmental Constraints

The operational implementation of SFDPS is a NAS message producer deployed to publish into the NAS Operational NEMS. The NEMS also operates as a proxy service for SFDPS web requests.

5. Service Interface

5.1 Interfaces

The table below provides the interface names, interface descriptions and corresponding operations for each of the SFDPS web services:

Table 5-1: En Route SFDPS Interfaces

FDPS Service	Interface Name	Interface Description	Operations Supported
En Route Flight Data Publication	FdpsFlightSubscriptionPortType	Subscription interface for FDPS Flight and Track data	GetFdpsSubscription
En Route Airspace Data Publication	FdpsAirspaceSubscriptionPortType	Subscription interface for FDPS Sector and Route data	GetFdpsSubscription
En Route Operational Data Publication	FdpsOperationalSubscriptionPortType	Subscription interface for FDPS Operational data	GetFdpsSubscription
En Route General Message Publication	FdpsGeneralMessageSubscriptionPortType	Subscription interface for FDPS General Message data	GetFdpsSubscription

5.2 Operations

The following table describes the operations and their characteristics for each of the SFDPS services

Table 5-2: SFDPS Operations

	En Route Flight Data Publication	En Route Airspace Data Publication	En Route Operational Data Publication	En Route General Message Publication
Operation Name	GetFdpsSubscription	GetFdpsSubscription	GetFdpsSubscription	GetFdpsSubscription
Description	Establish a new subscription for SFDPS Flight and Track data	Establish a new subscription for SFDPS Route and Sector data	Establish a new subscription for SFDPS Operational data	Establish a new subscription for SFDPS General Message data
Message Exchange Pattern	In-Out	In-Out	In-Out	In-Out
Operation Type	Synchronous	Synchronous	Synchronous	Synchronous
Idempotent	Yes	Yes	Yes	Yes
Precondition	Consumer has an NEMS connection and the consumers and the request has been authenticated and logged	Consumer has an NEMS connection and the consumers and the request has been authenticated and logged	Consumer has an NEMS connection and the consumers and the request has been authenticated and logged	Consumer has an NEMS connection and the consumers and the request has been authenticated and logged
Input Message	FdpsSubscriptionRequestMessage	FdpsSubscriptionRequestMessage	FdpsSubscriptionRequestMessage	FdpsSubscriptionRequestMessage
Output Message	FdpsSubscriptionResponseMessage	FdpsSubscriptionResponseMessage	FdpsSubscriptionResponseMessage	FdpsSubscriptionResponseMessage
Fault Message	FdpsSubscriptionFaultMessage	FdpsSubscriptionFaultMessage	FdpsSubscriptionFaultMessage	FdpsSubscriptionFaultMessage
Effect	If the request passes validation, a new SFDPS subscription is established	If the request passes validation, a new SFDPS subscription is established	If the request passes validation, a new SFDPS subscription is established	If the request passes validation, a new SFDPS subscription is established

The following diagram illustrates message exchanges for SFDPS operations. The same diagram applies to all four services:

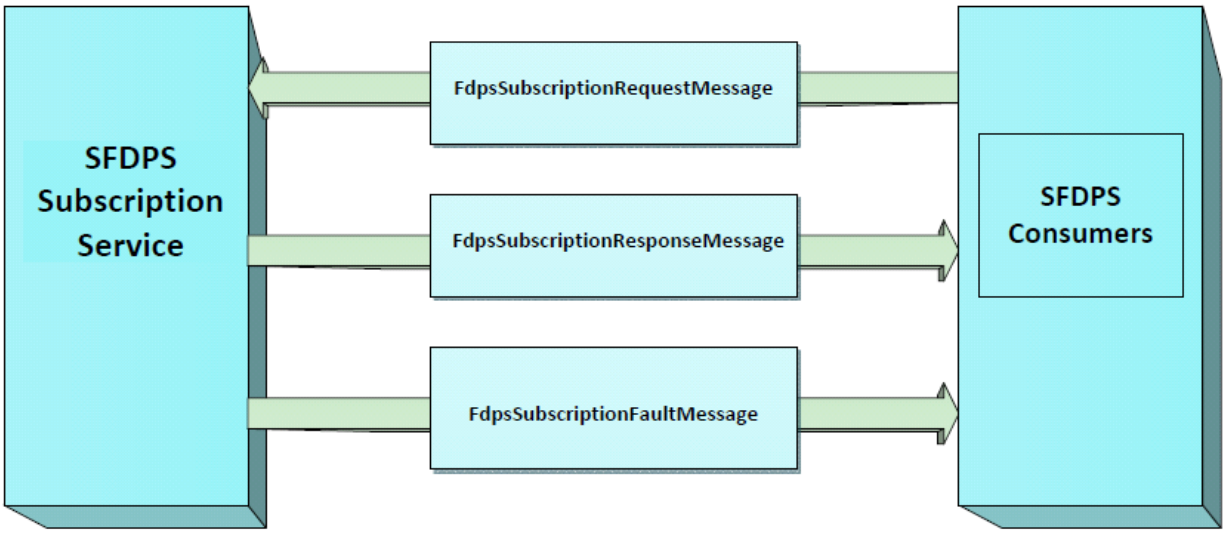

Figure 5-1: Message Exchanges for SFDPS Operations

5.3 Messages

The following tables describe the input andoutput messages for the SFDPS web services.

Table 5-3: SFDPS Input Messages

	En Route Flight Data Publication	En Route Airspace Data Publication	En Route Operational Data Publication	En Route General Message Publication
Message Name	FdpsSubscriptionRequestMessage	FdpsSubscriptionRequestMessage	FdpsSubscriptionRequestMessage	FdpsSubscriptionRequestMessage
Message Description	Subscription Request Message containing a list of subscription criteria that will be used by SFDPS to establish a subscription	Subscription Request Message containing a list of subscription criteria that will be used by SFDPS to establish a subscription	Subscription Request Message containing a list of subscription criteria that will be used by SFDPS to establish a subscription	Subscription Request Message containing a list of subscription criteria that will be used by SFDPS to establish a subscription
Direction	In	In	In	In
Data Elements	FdpsRequestDestinationIdentifier FdpsDataState FdpsDataFormat FDPSEnhancedData FdpsSourcefacility FdpsMessageType FdpsFlightIdentifier FdpsFlightOperator FdpsOriginAirport FdpsDestinationAirport FdpsReceivedTimeStart FdpsReceivedTimeEnd FdpsDepartureTimeStart FdpsDepartureTimeEnd FdpsArrivalTimeStart FdpsArrivalTimeEnd FdpsSpecialFilters	FdpsRequestDestinationIdentifier FdpsDataState FdpsSourcefacility FdpsReportingStation FdpsMessageType FdpsAirspaceDataType FdpsReceivedTimeStart FdpsReceivedTimeEnd FdpsSpecialFilters	FdpsRequestDestinationIdentifier FdpsSourcefacility FdpsMessageType FdpsReceivedTimeStart FdpsReceivedTimeEnd FdpsSpecialFilters	FdpsRequestDestinationIdentifier FdpsSourcefacility FdpsMessageType FdpsReceivedTimeStart FdpsReceivedTimeEnd FdpsSpecialFilters

Table 5-4: SFDPS Output Messages

	En Route Flight Data Publication	En Route Airspace Data Publication	En Route Operational Data Publication	En Route General Message Publication
Message Name	FdpsSubscriptionResponseMessage	FdpsSubscriptionResponseMessage	FdpsSubscriptionResponseMessage	FdpsSubscriptionResponseMessage
Message Description	Results of the subscription request processing. If no faults were generated, this response will contain the subscription id that the consumer can use to track the subscription	Results of the subscription request processing. If no faults were generated, this response will contain the subscription id that the consumer can use to track the subscription	Results of the subscription request processing. If no faults were generated, this response will contain the subscription id that the consumer can use to track the subscription	Results of the subscription request processing. If no faults were generated, this response will contain the subscription id that the consumer can use to track the subscription
Direction	Out	Out	Out	Out
Data Elements	FdpsSubscriptionId FdpsEndpointUrl FdpsDestinationIdentifier FdpsSubscriptionResponse	FdpsSubscriptionId FdpsEndpointUrl FdpsDestinationIdentifier FdpsSubscriptionResponse	FdpsSubscriptionId FdpsEndpointUrl FdpsDestinationIdentifier FdpsSubscriptionResponse	FdpsSubscriptionId FdpsEndpointUrl FdpsDestinationIdentifier FdpsSubscriptionResponse

5.4 Faults

The following table describes the fault messages for the SFDPS web services.

Table 5-5: SFDPS Fault Messages

	En Route Flight Data Publication	En Route Airspace Data Publication	En Route Operational Data Publication	En Route General Message Publication
Message Name	FdpsSubscriptionFaultMessage	FdpsSubscriptionFaultMessage	FdpsSubscriptionFaultMessage	FdpsSubscriptionFaultMessage
Message Description	Fault containing an error description for errors which may occur during subscription processing	Fault containing an error description for errors which may occur during subscription processing	Fault containing an error description for errors which may occur during subscription processing	Fault containing an error description for errors which may occur during subscription processing
Data Elements	FdpsFlightDataSubscriptionFaultElement	FdpsAirspaceDataSubscriptionFaultElement	FdpsOperationalDataSubscriptionFaultElement	FdpsGeneralMessagePublicationSubscriptionFaultElement

5.5 Data Elements

The Data Element namespace for all SFDPS web services is: **us:gov:dot:faa:atm:enroute:flightdatapub.**

Table 5-6: En Route Flight Data Publication Subscription Request Message Data Elements

Element Name	FDR Number	Element Definition	Type	Complex?	Possible Values	Required?
FdpsRequestDestinationIdentifier	To be assigned	NEMS Topic name. Typically this would be the unique NEMS Topic name, and is used to determine where the data stream resulting from the subscription will be directed to.	String	No	The exact format of this element is determined by NEMS during on-ramping.	Yes
FdpsDataState	To be assigned	The state of the SFDPS data being requested. The state of Flight Data can either be Current, which means the data pertains to only flights that are currently active or planned, or Historical, which means that the data can represent flight messages received over a period of time. Message data is retained for 15 days.	String	No	CURRENT HISTORICAL	Yes
FdpsDataFormat	To be assigned	The data formats for the subscription. Possible values include Simple XML format or FIXM format.	String	No	SIMPLEXML FIXM	Yes
FdpsEnhancedData	To be assigned	Flag indicating whether the data will be the enhanced SFDPS stream or the Basic data stream. Basic data returns every CMS message that matches the request. Enhanced data removes messages received from non-authoritative sources.	String	No	BASIC ENHANCED If the data format is SIMPLEXML, then this element can have either BASIC or ENHANCED. If the data format is FIXM, then this element must be ENHANCED>	Yes

Element Name	FDR Number	Element Definition	Type	Complex?	Possible Values	Required?
FdpsSourcefacility	To be assigned	The Source facility for the flight. The ARTCC(s) from which the data update originated. For enhanced data, this will be the data-controlling facility.	String	No	One or more ARTCC's in a comma-separated list or "ALL" . Examples: "ZAU,ZAB,ZLC" or "ALL"	Yes
FdpsMessageType	To be assigned	Indicates the type of CMS message. Individual messages types can be requested only for HISTORICAL requests; ALL should be used for CURRENT requests.	String	No	One or more CMS message types in a comma-separated list or "ALL" . Examples: "FH,TH, HU" or "ALL"	Yes
FdpsFlightIdentifier	To be assigned	This is the call sign or the flight identifier under which the flight is operating.	String	No	One or more Flight Ids in a comma-separated list or "ALL". Examples: "AAL001,BA34,DELTA101" or "ALL"	Yes
FdpsFlightOperator	To be assigned	The FAA-approved three-letter organizational code under which the flight is operating. Applied only if the flight identifier contains a three-letter code.	String	No	One or more three letter codes in a comma-separated list. Example: AAL, DAL	No
FdpsOriginAirport	To be assigned	Origin Airport for the flight	String	No	One or more airports in a comma-separated list or ALL. For example: "KLAX"	Yes
FdpsDestinationAirport	To be assigned	Destination Airport for the flight	String	No	One or more airports in a comma-separated list or ALL. For example: "KBOS"	Yes
FdpsReceivedTimeStart	To be assigned	The start of the time interval during which the messages were received by SFDPS from HADDS.	String	No	Time in XML dateTime format. For example: 2012-10-16T16:43:12Z	Required when FdpsDataState is HISTORICAL
FdpsReceivedTimeEnd	To be assigned	The end of the time interval during which the messages were received by SFDPS from HADDS.	String	No	Time in XML dateTime format. For example: 2012-10-16T16:43:12Z	Required when FdpsDataState is HISTORICAL
FdpsDepartureTimeStart	To be assigned	The start of the time interval during which the flights departed or are expected to depart.	String	No	Time in XML dateTime format. For example: 2012-10-16T16:43:12Z	No

Element Name	FDR Number	Element Definition	Type	Complex?	Possible Values	Required?
FdpsDepartureTimeEnd	To be assigned	The end of the time interval during which the flights departed or are expected to depart.	String	No	Time in XML dateTime format. For example: 2012-10-16T16:43:12Z	Required when FdpsDepartureTimeStart has a value
FdpsArrivalTimeStart	To be assigned	The start of the time interval during which the flights arrived or are expected to arrive	String	No	Time in XML dateTime format. For example: 2012-10-16T16:43:12Z	No
FdpsArrivalTimeEnd	To be assigned	The end of the time interval during which the flights arrived or are expected to arrive	String	No	Time in XML dateTime format. For example: 2012-10-16T16:43:12Z	Required only when FdpsArrivalTimeStart has a value
FdpsSpecialFilters	To be assigned	A set of optional additional filters (reserved for future use)	String	No	Reserved Field	No

Table 5-7: En Route Flight Data Publication Subscription Response Message Data Elements

Element Name	FDR Number	Element Definition	Type	Complex?	Possible Values	Required?
FdpsSubscriptionId	To be assigned	Unique identifier for SFDPS Subscriptions	String	No	A string representing a unique Subscription Id. The string has three parts: the time the request was received, the service identifier (FLT) and the topic id.	Yes
FdpsEndpointUrl	To be assigned	Reserved for future use	String	No	This is a reserved field that may be used in future phases of SFDPS and also be useful in internal testing of the service	No
FdpsDestinationIdentifier	To be assigned	Reserved for future use	String	No	This is a reserved field that may be used in future phases of SFDPS and also be useful in internal testing of the service	No
FdpsSubscriptionResponse	To be assigned	Reserved for future use	String	No	This is a reserved field that may be used in future phases of SFDPS and also be useful in internal testing of the service	No

Table 5-8: En Route Airspace Data Publication Subscription Request Message Data Elements

Element Name	FDR Number	Element Definition	Type	Complex?	Possible Values	Required?
FdpsRequestDestinationIdentifier	To be assigned	NEMS Topic name. Typically this would be the unique NEMS Topic name, and is used to determine where the data stream resulting from the subscription will be directed to.	String	No	The exact format of this element is determined by NEMS during on-ramping.	Yes
FdpsDataState	To be assigned	The state of the SFDPS data being requested. The state of Airspace Data can either be Current, which means the data pertains to sectors, routes or altimeter data that are current, or Historical, which means that the data can represent all airspace data messages received over a period of time. Message data is retained for fifteen days.	String	No	CURRENT HISTORICAL	Yes
FdpsSourcefacility	To be assigned	The Source facility for the data. The ARTCC(s) from which the data update originated.	String	No	Possible values include: One or more ARTCC's in a comma-separated list or "ALL . Examples: "ZAU,ZAB,ZLC" or "ALL"	Yes
FdpsReportingStation	To be assigned	The reporting station for altimeter data	String	No	Possible values include a comma-separated list containing one or more reporting stations or "ALL". The ReportStation must be valid for the SoruceFacility.	Required when fdpsAirspaceDataType is ALTIMETER
FdpsMessageType	To be assigned	Indicates the type of CMS message.	String	No	The values listed for the message type must agree with the value of the FdpsAirspaceDataType element and of the FdpsDataState element as follows: CURRENT SECTOR SH	Yes

Element Name	FDR Number	Element Definition	Type	Complex?	Possible Values	Required?
					CURRENT ROUTE HR CURRENT ALTIMETER HA HISTORICAL SECTOR SH, SU, ALL HISTORICAL ROUTE HR HISTORICAL ALTIMETER HA	
FdpsAirspaceDataType	To be assigned	The type of AirspaceData being subscribed to (i.e. Route or Sector)	String	No	Possible values include: ROUTESECTOR ALTIMETER	Yes
FdpsReceivedTimeStart	To be assigned	The start of the time interval during which the messages were received by SFDPS from HADDS.	String	No	Time in XML dateTime format. For example: 2012-10-16T16:43:12Z	Required when FdpsDataState is HISTORICAL
FdpsReceivedimeEnd	To be assigned	The end of the time interval during which the messages were received by SFDPS from HADDS.	String	No	Time in XML dateTime format. For example: 2012-10-16T16:43:12Z	Required when FdpsDataState is HISTORICAL
FdpsSpecialFilters	To be assigned	A set of optional additional filters (reserved for future use)	String	No	Reserved Field	No

Table 5-9: En Route Airspace Data Publication Subscription Response Message Data Elements

Element Name	FDR Number	Element Definition	Type	Complex?	Possible Values	Required?
FdpsSubscriptionId	To be assigned	Unique identifier for SFDPS Subscriptions	String	No	A string representing a unique Subscription Id The string has three parts: the time the request was received, the service identifier (AIR) and the topic id.	Yes
FdpsEndpointUrl	To be assigned	Reserved for future use	String	No	This is a reserved field that may be used in future phases of SFDPS and also be useful in internal testing of the service	No
FdpsDestinationIdentifier	To be assigned	Reserved for future use	String	No	This is a reserved field that may be used in future phases of SFDPS and also be useful in internal testing of the service	No
FdpsSubscriptionResponse	To be assigned	Reserved for future use	String	No	This is a reserved field that may be used in future phases of SFDPS and also be useful in internal testing of the service	No

Table 5-10: En Route Operational Data Publication Subscription Request Message Data Elements

Element Name	FDR Number	Element Definition	Type	Complex?	Possible Values	Required?
FdpsRequestDestinationIdentifier	To be assigned	NEMS Topic name. Typically this would be the unique NEMS Topic name, and is used to determine where the data stream resulting from the subscription will be directed to.	String	No	The exact format of this element is determined by NEMS during on-ramping.	Yes
FdpsSourcefacility	To be assigned	The Source facility for the flight. The ARTCC(s) from which the data update originated. For enhanced data, this will be the data-controlling facility	String	No	Possible values include: One or more ARTCC's in a comma-separated list or "ALL" . Examples: "ZAU,ZAB,ZLC" or "ALL"	Yes
FdpsMessageType	To be assigned	Indicates the type of CMS message	String	No	Possible values include: One or more CMS message types in a comma-separated list or "ALL". Examples: "AC, AK" or "ALL"	Yes
FdpsReceivedTimeStart	To be assigned	The start of the time interval during which the messages were received by SFDPS from HADDS.	String	No	Time in XML dateTime format. For example: 2012-10-16T16:43:12Z	Yes
FdpsReceivedTimeEnd	To be assigned	The end of the time interval during which the messages were received by SFDPS from HADDS.	String	No	Time in XML dateTime format. For example: 2012-10-16T16:43:12Z	Yes
FdpsSpecialFilters	To be assigned	A set of optional additional filters (reserved for future use)	String	No	Reserved Field	No

Table 5-11: En Route Operational Data Publication Subscription Response Message Data Elements

Element Name	FDR Number	Element Definition	Type	Complex?	Possible Values	Required?
FdpsSubscriptionId	To be assigned	Unique identifier for SFDPS Subscriptions	String	No	A string representing a unique Subscription ID. The string has three parts: the time the request was received, the service identifier (OPR) and the topic id.	Yes
FdpsEndpointUrl	To be assigned	Reserved for future use	String	No	This is a reserved field that may be used in future phases of SFDPS and also be useful in internal testing of the service	No
FdpsDestinationIdentifier	To be assigned	Reserved for future use	String	No	This is a reserved field that may be used in future phases of SFDPS and also be useful in internal testing of the service	No
FdpsSubscriptionResponse	To be assigned	Reserved for future use	String	No	This is a reserved field that may be used in future phases of SFDPS and also be useful in internal testing of the service	No

Table 5-12: En Route General Message Publication Subscription Request Message Data Elements

Element Name	FDR Number	Element Definition	Type	Complex?	Possible Values	Required?
FdpsRequestDestinationIdentifier	To be assigned	NEMS Topic name. Typically this would be the unique NEMS Topic name, and is used to determine where the data stream resulting from the subscription will be directed to.	String	No	The exact format of this element is determined by NEMS during on-ramping.	Yes
FdpsSourcefacility	To be assigned	The Source facility for the flight. The ARTCC(s) from which the data update originated. For enhanced data, this will be the data-controlling facility	String	No	Possible values include: One or more ARTCC's in a comma-separated list or "ALL" . Examples: "ZAU,ZAB,ZLC" or "ALL"	Yes
FdpsMessageType	To be assigned	Indicates the type of CMS message	String	No	Possible value: GH	Yes
FdpsReceivedTimeStart	To be assigned	The start of the time interval during which the messages were received by SFDPS from HADDS.	String	No	Time in XML dateTime format. For example: 2012-10-16T16:43:12Z	Yes
FdpsReceivedTimeEnd	To be assigned	The end of the time interval during which the messages were received by SFDPS from HADDS.	String	No	Time in XML dateTime format. For example: 2012-10-16T16:43:12Z	Yes
FdpsSpecialFilters	To be assigned	A set of optional additional filters (reserved for future use)	String	No	Reserved Field	No

Table 5-13: En Route General Message Publication Subscription Response Message Data Elements

Element Name	FDR Number	Element Definition	Type	Complex?	Possible Values	Required?
FdpsSubscriptionId	To be assigned	Unique identifier for FDPS Subscriptions	String	No	A string representing a unique Subscription Id. The string has three parts: the time the request was received, the service identifier (GEN) and the topic id.	Yes
FdpsEndpointUrl	To be assigned	Reserved for future use	String	No	This is a reserved field that may be used in future phases of SFDPS and also be useful in internal testing of the service	No
FdpsDestinationIdentifier	To be assigned	Reserved for future use	String	No	This is a reserved field that may be used in future phases of SFDPS and also be useful in internal testing of the service	No
FdpsSubscriptionResponse	To be assigned	Reserved for future use	String	No	This is a reserved field that may be used in future phases of SFDPS and also be useful in internal testing of the service	No

Table 5-14: Fault Message Data Elements (Applies to each service)

Element Name	FDR Number	Element Definition	Type	Complex?	Possible Values	Required?
FdpsFlightDataSubscriptionFaultElement	To be assigned	Element describing faults or errors arising during for Flight and Track data processing.	String	No	A string representing a fault identifier and description of the fault. Fault descriptions include: “Access denied”, “No data found”, “Too much data requested”	Yes
FdpsAirspaceDataSubscriptionFaultElement	To be assigned	Element describing faults or errors arising during for Airspace data processing.	String	No	A string representing a fault identifier and description of the fault. Fault descriptions include: “Access denied”, “No data found”, “Too much data requested”	Yes
FdpsOperationalDataSubscriptionFaultElement	To be assigned	Element describing faults or errors arising during for	String	No	A string representing a fault identifier and	Yes

		Operational data processing.			description of the fault. Fault descriptions include: “Access denied”, “No data found”, “Too much data requested”	
FdpsGeneralMessagePublicationSubscriptionFaultElement	To be assigned	Element describing faults or errors arising during for General Message data processing.	String	No	A string representing a fault identifier and description of the fault. Fault descriptions include: “Access denied”, “No data found”, “Too much data requested”	Yes

5.5.1 En Route FDPS Subscription Reply Message Data Elements

The reply data is returned to users over the JMS connection between SFDPS and NEMS. The RREPLY message contains the current state of a flight. All other reply messages returned to users consist of an XML representation of the original CMS message received from ERAM. These messages are described in the SFDPS JMSDD (reference [14]) and in the SFDPS Message Reference Manual (reference [13]). The RREPLY message is constructed by SFDPS and is described here. Users can request the reply messages in either FIXM format (reference [16]) or in an SFDPS specific format named SimpleXML (reference [15]).

Table 5-15: Reply Data Elements

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
sourceId_00e	To be assigned	Source identification that includes a UTC time followed by a four-digit sequence number.	string	No	**"\d{10}"** Ten digits, of which the first 6 digits represent the UTC time (*hhmmss*) and the last four-digits, represent the message sequence number in the range [0000-9999].	2359359001, where the first 6 digits are the UTC time (23:59:35 UTC) and the last 4 digits are sequence number of the message (9001).	Yes
sourceTime_00e1	To be assigned	This element consists in the time component of the previous element, sourceId_00e.	string	No	**"[0-2]\d_[0-5]\d_[0-5]\d"** Time in the format *hh_mm_ss*, where: *hh* stands for the 2-digit-hour in the range 00-23, *mm* stands for the 2-digit minutes in the range 00-59, and *ss* stands for the 2-digit seconds in the range 00-59.	23_59_35 that represents 23:59:35 UTC	Yes
sourceSeqNo_00e2	To be assigned	The message sequence number component of the sourceId_00e element.	string	No	**"\d{4}"** Four-digit number in the range [0000-9999].	9001	Yes

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
flightId_02a	To be assigned	Aircraft ID, or flight ID (also called Call Sign).	string	No	**"\+?[A-Z][A-Z0-9]{1,6}"** One uppercase alphabetic character followed by one to six alphanumeric characters.	AAL20	Yes
computerId_02d	To be assigned	ERAM Computer Identification (Computer ID).	string	No	**"([0-9][A-HJ-NP-Z0-9]{2})|([0-9]{2}[A-HJ-NP-Z0-9])"** The element includes a digit, followed by two alphanumeric characters with the exception of the letters I and O, such as ddd, ddL, dLd, dLL.	020	No
eramGufi_316a	To be assigned	GUFI that uniquely identifies each flight plan in the system.	string	No	**"[A-Z]{2}\d{5}[1-7]\d{2}"** This element includes 10 alphanumeric characters: – International Civil Aviation Organization (ICAO) country code (one letter); – en-route facility ID (one letter); – time in seconds of current day (five digits in the range 00000-86400); – sequence number (two digits).	KB5980017	No
sspId_167a	To be assigned	Site Specific Plan Identifier. It is assigned by Instrument Flight Procedures Automation (IFPA) to uniquely identify a flight plan in each ERAM facility.	string	No	**"\d{1,4}"** One to four-digits.	24	No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
numberOfAircraft_03a	To be assigned	This element includes the number of aircraft for the flight followed optionally by the Special Aircraft Indicator.	string	No	**"\d{0,2}[A-Z]?"** The element consists of zero to two digits optionally followed by one uppercase letter to represent the Special Aircraft Indicator. The indicator can also appear on its own (without the leading digits).	3H The number of aircraft is 3 and the special aircraft indicator is H for Heavy Jet.	No
typeOfAircraft_03c	To be assigned	Type of aircraft.	string	No	**"[A-Z][A-Z0-9]{1,3}"** The element consists of one letter followed by one to three alphanumeric characters.	B747	Yes
airborneEquip_03e	To be assigned	Airborne equipment qualifier. It consists of one alphanumeric character.	string	No	**"[A-Z]"** The element consists of one alphanumeric character, that can have one of the following values: A - Transponder with no Mode C B - Transponder with Mode C E – FMS with Distance Measuring Equipment (DME)/DME and Inertial Reference Unit (IRU) position updating G – Global Navigation Satellite System (GNSS), including Global Positioning System (GPS) or Wide Area Augmentation System (WAAS), with en-route and terminal capability X – No transponder W - Reduced Vertical Separation Minimums (RVSM)	E	No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
beaconCode_04a	To be assigned	Beacon code.	string	No	**"[0-7]{4}"** The element includes four octal digits (i.e. 0-7). When the last two digits of the four-digits are zero, the beacon code is a non-discrete code. A discrete code is any code not ending in 00.	Non-discrete VFR code: 2101	No
externalBeaconCode_04b	To be assigned	External beacon. It contains the requested beacon code when the flight plan is inbound from an adjacent Center or an adjacent Non-U.S. Automated Facility, the requested beacon code is different from the assigned beacon code, and the aircraft is not established on the assigned beacon code. Then, if the facility is adapted to receive Field (04b), Field 04b is be transmitted.	string	No	**"[0-7]{4}"** It has the same format as element beaconCode_04a.	3434	No
trueAirSpeed_05a	To be assigned	True airspeed expressed in knots.	string	No	**"\d{2,4}"** The format is two to four-digits, in the range 01 – 3700 knots. Aircraft speed is required to be specified by using one of the three possible elements: trueAirSpeed_05a, machSpeed_05c or classifiedSpeed_05d.	540 Aircraft true airspeed is 540 knots.	Yes, if neither machSpeed_05c nor classifiedSpeed_05d are included in the message.

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
machSpeed_05c	To be assigned	Mach speed.	string	No	**"M\d{3}"** The letter M followed by three digits. The maximum value is M500.	The speed 0.85 Mach is represented as M085.	Yes, if neither trueAirSpeed_05a nor classifiedSpeed_05dare included in the message.
classifiedSpeed_05d	To be assigned	Adapted classified speed. It is not printed on flight strips.	string	No	**"SC"**	This element may only include the string character SC.	Yes, if neither trueAirSpeed_05a nor machSpeed_05c are included in the message.

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
coordFix_06a	To be assigned	The Coordination fix represents the starting point to begin processing the flight plan route from one of the following points: the departure airport, the airfile fix or the adjacent center inbound coordination fix. For ARTS III flight plans the coordination fix Field 06 is used as the inbound coordination fix or the outbound coordination fix or, for an ARTS internal flight, it can be the departure or destination airport.	string	No	**"([A-Z0-9]{2,5})| ([A-Z0-9]{2,5}\d{6}) | (\d{4}[A-Z]?/\d{4,5}[A-Z]?)| ([A-Z0-9]{3,4}}"** This element can have one of the following formats: Two to five alphanumeric characters for a fix name. The fix name as above followed by six digits, for a fix radial distance. Four-digits followed by an optional alphabetic character, followed by a virgule ('/'), followed by four to five digits followed by an optional alphanumeric character for a lat/long. Three to four alphanumeric characters for a location identifier (LOCID).	AB DFW KDFW AB200010 SHP090015 ATOKA300040 3500/04000 3500N/04000W	Yes
coordStatusTime_07d	To be assigned	Coordination time that represents the starting time in hours and minutes at the coordination fix.	string	No	**"((A|D|E|P|F)[0-1][0-9][0-5][0-9) | ((A|D|E|P|F)2[0-3][0-5][0-9])"** The element includes one letter (possible values are A, D, E, P, or F) followed by four-digits that represent time as *hhmm*.	P1020	Yes
coordStatus_07d1	To be assigned	The coordStatus field is the single letter A, D, E, F, or P, as described for element coordStatusTime_07d.	string	No	**"(A|D|E|P|F)"**	F	Yes
coordTime_07d2	To be assigned	Starting time at the coordination fix.	dateTime	No	dateTime	2014-06-20T20:17:52	Yes

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
delayTime_07e	To be assigned	Delay time in expressed in minutes.	string	No	**"\d{3}"** Three digits.	030	No
assignedAlt_08a	To be assigned	Assigned altitude or flight level expressed in hundreds of feet. Only one of the altitude elements assignedAlt_08a, assignedAlt_08b, assignedAlt_08c, assignedAlt_08d, assignedAlt_08e, assignedAlt_08f, assignedAlt_08g, assignedAlt_08h may be included in the message.	string	No	**"(\d{2,3}) | VFR"** The format consists of either two to three digits, or the constant string VFR. Three digits are required for ARTS III, thus a leading zero needs to be used when necessary.	Assigned altitude of 34,000 feet: 340 Assigned altitude 9,000 feet ARTS III: 090	No
assignedAlt_08b	To be assigned	Fixed value of OTP which indicates VFR-ON-Top. It specifies that the aircraft is flying above the clouds in VFR conditions.	string	No	**"OTP"**	Fixed value of OTP.	No
assignedAlt_08c	To be assigned	VFR-ON-Top with altitude. It represents an Instrument Flight Rules (IFR) flight operating above the clouds in VFR conditions at the specified assigned altitude.	string	No	**"OTP/\d{2,3}"** The format is the constant string OTP/ followed by two to three digits that represent the assigned altitude in hundreds of feet.	Aircraft flying VFR-ON-Top at 25,000 feet: OTP/250	No
assignedAlt_08d	To be assigned	The assigned block of altitudes for the flight to fly at.	string	No	**"\d{2,3}B\d{2,3}"** The format is two to three digits, followed by the letter B, followed by two to three digits. The leading and trailing two to three digits define the block of altitudes in hundreds of feet for the flight to fly at. The lowest altitude must be listed first.	Assigned altitude block of 8,000 feet to 14,000 feet: 80B140	No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
assignedAlt_08e	To be assigned	Element used for IFR flights operating above a specified altitude.	string	No	**"ABV/\d{2,3}"** The format consists of the string ABV/ followed by two to three digits that represent the altitude in hundreds of feet above which the flight is flying.	Aircraft is flying above 60,000 feet. ABV/600	No
assignedAlt_08f	To be assigned	Assigned Altitude/FIX/Altitude element specifies the altitudes to and from a fix for the flight to fly at.	string	No	**"(\d{2,3}/[A-Z0-9]{2,5}/\d{2,3})| (\d{2,3}/[A-Z0-9]{2,5}\d{6}/\d{2,3}) | (\d{2,3}/\d{4}[A-Z]?/\d{4,5}[A-Z]?/\d{2,3})"** The altitudes are specified in hundreds of feet in a two to three digit format. The fix is specified using the same format as the coordination fix element "coordFix_06a". The fix cannot be the departure or arrival point.	240/DAL350010/220 Flight flies at altitude 24,000 feet to the fix radial distance fix and then descend to altitude 22,000 feet.	No
assignedAlt_08g	To be assigned	It is used to specify that the flight is flying Visual Flight Rules (VFR). It can only have the value VFR.	string	No	**"VFR"**	The string VFR.	No
assignedAlt_08h	To be assigned	It is used to specify that the flight is flying VFR at a specified altitude.	string	No	**"VFR/\d{2,3}"** The format consists of the string VFR/ followed by two to three digits that represent an altitude in hundreds of feet.	VFR/75 The aircraft is flying VFR at 7,500 feet.	No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
requestedAlt_09a	To be assigned	The element is used to specify requested altitude or flight level in hundreds of feet. Only one of the seven requested altitude elements (requestedAlt_09a to requestedAlt_08g) may be included in a proposed flight message.	string	No	**"\d{2,3}"** The format consists of two to three digits. ARTS III requires three characters, with a leading 0 when required (such as 090).	340 Aircraft is requesting to fly at 34,000 feet altitude.	No
requestedAlt_09b	To be assigned	The element Requested Altitude format OTP represents an IFR flight requesting to operate above the clouds in VFR conditions. OTP stands for VFR-ON-Top.	string	No	**"OTP"**	The element has a fixed value of OTP.	No
requestedAlt_09c	To be assigned	The element "Requested Altitude format OTP with altitude" represents a flight requesting to operate VFR-ON-Top at the requested altitude. .	string	No	**"OTP/\d{2,3}"** The format consists of the string OTP/ followed by two to three digits that represent the requested altitude in hundreds of feet. ERAM only sends ARTS III the requested altitude with a format of three digits (leading zeroes used when necessary, as in 090) and places a special altitude indicator (U if Heavy Jet) in element numberOfAircraft_03a.	OTP/250 Flight is requesting to fly VFR-ON-Top at 25,000 feet.	No
requestedAlt_09d	To be assigned	Element used for an IFR flight requesting to operate above a specified altitude.	string	No	**"ABV/\d{2,3}"** The format consists of the string ABV/ followed by two to three digits that represent the requested altitude in hundreds of feet.	ABV/600	No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
requestedAlt_09e	To be assigned	Element used to specify a requested block of altitudes or flight levels for the flight to fly at. The altitudes are specified in hundreds of feet.	string	No	**"\d{2,3}B\d{2,3}"** The format consists of two to three digits for the lowest altitude, followed by the letter B, followed by two to three digits for the highest altitude.	250B260 Flight is requesting to fly inside an altitude block between 25,000 feet and 26,000 feet.	No
requestedAlt_09f	To be assigned	This element is used when the aircraft is requesting to fly VFR.	string	No	**"VFR"** It can only include the fixed string "VFR." ERAM sends ARTS III the three characters and also places a special altitude indicator V (not a Heavy Jet) or W (if a Heavy Jet) in element numberOfAircraft_03a.		No
requestedAlt_09g	To be assigned	The element used to represent a flight requesting to fly VFR at a specified altitude.	string	No	**"VFR/\d{2,3}"** The format consists of the constant string VFR/ followed by two to three digits that specify the requested altitude in hundreds of feet.	VFR/35 Aircraft is requesting to fly VFR at 3,500 feet	No
flightPlanRoute_10a	To be assigned	It specifies the trajectory followed by the airplane from the departure point to the arrival point, based on the fixes and routes along that trajectory.	string	No	**"[A-Z0-9+/*]{2,12}_?\.[A-Z0-9+\./]*\.[A-Z0-9+/*]{2,12}_?(/\d{4})?"** The element format consists of a string that includes fixes and routes along the trajectory flown by the airplane. The fixes and routes are specified using the FIX.ROUTE.FIX format, where either element can be implied, such as FIX..FIX, or ROUTE..ROUTE.	OKC.V14S.TUL.TUL090..FYV270.FYV	Yes

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
departurePoint_26a	To be assigned	It is used to specify the point at which to start processing the flight plan route as follows: the departure airport or the airfile point.	string	No	**"([A-Z0-9]{2,5}) | ([A-Z0-9]{2,5}\d{6}) | (\d{4}[A-Z]?/\d{4,5}[A-Z]?)"** Any of the standard ways to represent a fix can be used for this element (fix name, lat/long, or fix-radial-distance), including the standard airport designators.	AB DFW KDFW SHP090015 ATOKA300040 3500N/04000W	Yes
destination_27a	To be assigned	It is used to specify the point at which to end processing the flight plan route.	string	No	**"([A-Z0-9]{2,5}) | ([A-Z0-9]{2,5}\d{6}) | (\d{4}[A-Z]?/\d{4,5}[A-Z]?)"** Any of the standard ways to represent a fix can be used for this element (fix name, lat/long, or fix-radial-distance), including the standard airport designators.	AB DFW KDFW SHP090015 ATOKA300040 3500N/04000W	Yes
FAV_143b0	To be assigned	The element specifies the FAV number containing the first fix where the route alteration occurs due to an AAR application.	string	No	**"\d{4}"** The format is four-digits.	7601	No
FAV_143b1	To be assigned	The element specifies the FAV number containing the second fix where the route alteration occurs due to an AAR application.	string	No	**"\d{4}"** The format is four-digits.	7601	No
FAV_143b2	To be assigned	The element specifies the FAV number containing the third fix where the route alteration occurs due to an AAR application.	string	No	**"\d{4}"** The format is four-digits.	7601	No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
FAV_143b3	To be assigned	The element specifies the FAV number containing the fourth fix where the route alteration occurs due to an AAR application.	string	No	**"\d{4}"** The format is four-digits.	7601	No
ADARId_141a	To be assigned	If required for the flight, this element specifies the ADAR departure arrival route name.	string	No	**"\d{5}"** The format consists of five alphanumeric characters.	DA001	No
ADRId_141b	To be assigned	If required for the flight, the Adapted Route indicator format specifies the ADR adapted departure route name.	string	No	**"\d{5}"**	PD001	No
AARId_141c	To be assigned	If required for the flight, this element specifies the AAR adapted arrival route name.	string	No	**"\d{5}"**	PA001	No
ADARFld10_142a	To be assigned	This element contains the adapted ADAR preferential route in Field 10 format. The Preferential Route Alphanumerics are used to control the flow and separation of traffic departing and arriving at designated airports. An ADAR has the complete preferential routing from the departure airport to the arrival airport. Either this element or the element ADARNonFld10_142b may be included in the message.	string	No	**"[A-Z0-9\./]{4,44}"** Field 10 format.	SX2.PSX.V20.CRP.	No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
ADARNonFld10_142b	To be assigned	This element contains the adapted ADAR preferential route in non-Field 10 format. If required for the flight and if the element ADARFld10_142a is not included in the message, the FH message contains this element for the ADAR adapted route. Either this element or the element ADARFld10_142a may be included in the message.	string	No	**"[A-Z0-9\./\+]{4,44}"** A "+" delimiter precedes and follows the non-Field10 elements.	+LISSE6+ +TS1 MEM270 LIT050+	No
ADRFld10_142c	To be assigned	Adapted ADR preferential route in Field 10 format. Either this element or the element ADRNonFld10_142d may be included in the message.	string	No	**"[A-Z0-9\./*]{4,84}"** Field 10 format.	.ALAMO6.HENLY.J131.FUZ.J105.	No
ADRNonFld10_142d	To be assigned	Adapted ADR preferential route in non-Field 10 format. Either this element or the element ADRFld10_142c may be included in the message.	string	No	**"[A-Z0-9\./\+ -]{4,84}"** A "+" delimiter precedes and follows the non-Field10 elements.	+RV J25+CRP.LISSE6 Notice the non-Field10 substring that is enclosed between "+" characters.	No
AARFld10_142e	To be assigned	This element includes the AAR preferential route in Field 10 format. Either this element or the element AARNonFld10_142f may be included in the message.	string	No	**"[A-Z0-9\./]{4,97}"** Field 10 format.	./.BLEUZ.RYTHM3.	No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
AARNonFld10_142f	To be assigned	This element includes the AAR preferential route in non-Field 10 format. Either this element or the element AARFld10_142e may be included in the message.	string	No	**"[A-Z0-9\./\+]{4,97}"** A "+" delimiter precedes and follows the non-Field10 elements.	.J25.CRP+LISSE6+ Notice the non-Field10 substring that is enclosed between "+" characters.	No
remarks_11c	To be assigned	Flight plan remarks text.	string	No	The string is from 1 to 400 characters in length. It has an attribute called remarktype with the possible values of interfacility or intrafacility.	OAIR EVAC AMG/N0482F290 SQT/N0479F310 JOL+	No
flightRules_908a	To be assigned	This element specifies the flight rules as one character as follows: I = IFR V = VFR Y = IFR First Z = VFR First	string	No	**"[IVYZ]"** If Y or Z is used, the point or points at which a change of flight rules is planned should be shown in the route.	V	No
typeOfFlight_908b	To be assigned	This element specifies the type of flight specified using one of the following characters: S = Scheduled air transport N = Non-scheduled air transport G = General Aviation M= Military O = Other flights	string	No	**"[SNGMO]"**	N	No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
wakeTurbulenceCat_909c	To be assigned	Wake turbulence category specified using one of the following characters: H = Heavy M = Medium L = Light	string	No	**“[HML]”**		No
comNavApproachEquip_910a	To be assigned	Airborne Equipment Qualifier: Radio Communication, Navigation, and Approach AID Equipment.	string	No	**"([A-M,O-Z]{1,25}) | N"** This element has one required plus 24 optional letters. The 25 possible letters are the letters A through Z and each letter can only be used once. If the letter N is present, it must be the only letter present.	SCHJ See ICAO 4444 for the complete list of characters.	No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
survEquip_910b	To be assigned	This element represents the ICAO airborne equipment qualifier.	string	No	**"[NACXPIS][D]?"** The format consists of up to two letters. The first letter must be one of the Secondary Surveillance Radar (SSR) equipment letters and the second letter, if used, must be the Automated Dependent Surveillance (ADS) capability letter “D”. The valid values for the first letter and their significance are: N: Nil A: Transponder Mode A C: Transponder Mode A and C X: Transponder Mode S without both aircraft ID and pressure-altitude transmission P: Transponder Mode S, with pressure-altitude transmission but aircraft ID transmission I: Transponder Mode S with aircraft ID transmission but no pressure-altitude transmission S: Transponder Mode S with both pressure-altitude and aircraft ID transmission D: ADS capability	SSR equipment as Mode S with ADS capability: SD	No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
comNavApproachEquipICAO2012_910c	To be assigned	This element is the ICOA 2012 version of the element comNavApproachEquip_910a.	string	No	**"[A-Z][A-Z0-9]{0,63}"** The valid values are: N – No equipment is carried, or equipment is unserviceable S – Standard equipment is carried and is serviceable A – GBAS landing system B – LPV (APV with SBAS) C – LORAN C D – DME E1 – FMC WPR ACARS E2 – D-FIS ACARS E3 – PDC ACARS F – ADF G – GNSS H – HF RTF I – Inertial Navigation J1 – CPDLC ATN VDL Mode 2 J2 – CPDLC FANS 1/A HDFL J3 - CPDLC FANS 1/A VDL Mode A J4 - CPDLC FANS 1/A VDL Mode 2 J5 - CPDLC FANS 1/A SATCOM (INMARSAT) J6 - CPDLC FANS 1/A SATCOM (MTSAT)	ADE3RV	No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
comNavApproachEquipICAO2012_910c (*cont.*)					J7 - CPDLC FANS 1/A SATCOM (Iridium) K – MLS L – ILS M1 – ATC RTF SATCOM (INMARSAT) M2 - ATC RTF SATCOM (MTSAT) M3 – ATC RTF (Iridium) O – VOR P1-P9 – Reserved for RCP R – PBN approved T – TACAN U – UHF RTF V – VHF RTF W – RVSM approved X – MNPS approved Y – VHF with 8.33 kHz spacing capacity Z – Other equipment carried		

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
survEquipICAO2012_910d	To be assigned	This element is the ICAO 2012 equivalent of the element survEquip_910b.	string	No	**"N|A|C|(C?[BDEGHILPSUVX][BDEGHILPSUVX12]*)"** Minimum element length=1 Maximum element length=20 The valid values are the following: N – No surveillance equipment or equipment unserviceable A – Transponder Mode A C – Transponder Mode A and C E – Transponder – Mode S, including aircraft identification, pressure-altitude and extended squitter Automated Dependent Surveillance-Broadcast (ADS-B) capability H – Transponder – Mode S, including aircraft identification, pressure-altitude and enhanced surveillance capability I - Transponder – Mode S, including aircraft identification, but no pressure-altitude capability L – Transponder – Mode S, including aircraft identification, pressure-altitude, extended squitter (ADS-B) and enhanced surveillance capability	HB2U2V2G1	No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
survEquipICAO2012_910d (cont.)					P – Transponder – Mode S, including pressure-altitude, but no aircraft identification S – Transponder – Mode S, including both pressure-altitude and aircraft identification capability X – Transponder - Mode S with neither aircraft identification nor pressure-altitude capability B1 – ADS-B with dedicated 1090 mHz ADS-B “out” capability B2 – ADS-B with dedicated 1090 mHz ADS-B “out” and “in” capability U1 - ADS-B “out” capability using UAT U2 - ADS-B “out” AND “IN” capability using UAT V1 - ADS-B “out” capability using VDL Mode 4 V2 - ADS-B “out” and “in” capability using VDL Mode 4 D1 – ADS-C with FANS 1/A capabilities G1 - ADS-C with ATN capabilities		

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
altAero_916c	To be assigned	This element contains Alternate Arrival Point(s) or Aerodrome(s), if any. More than one alternate arrival points of aerodromes may be specified.	string	No	**"([A-Z]{4} ?[A-Z]{0,4}) | ([A-Z0-9]{2,5}) | ([A-Z0-9]{2,5}\d{6}) | (\d{4}[A-Z]?/\d{4,5}[A-Z]?) | ([A-Z0-9]{3,4})"** The aerodrome is specified using the 4-letter ICAO name or ZZZZ if no ICAO location indicator has been allocated. The arrival point format has to be one of the fix formats described above (see coordFix_06a). If two or more alternatives are included, they may have any of the valid formats and they have to be separated by blanks.	EBBR EDDL	No
ICAOStoredFormat_918a	To be assigned	This element may only have the value zero, to indicate that none of the Other Information elements (with suffixes 918b – 918x) is present in the message.	string	No	**"0"**	0	No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
EETIndicator_918b	To be assigned	This element specifies Significant Points or Flight Information Region (FIR) Boundary designators and accumulated estimated elapsed times to such points or boundaries, when so prescribed on the basis of regional air navigation agreements, or by the appropriate Air Traffic Service (ATS) authority. EET stands for Estimated Elapsed Time.	string	No	Freeform text up to a total of 3,000 characters. The element consists of one or more Significant Points with appended estimated flying time from departure in *hhmm* format with a blank separating each occurrence of Significant Point and time.	KZNY0046 HUBE0213	No
RIFIndicator_918c	To be assigned	This element specifies the route to a revised destination aerodrome, followed by the aerodrome location code. The revised route is subject to re-clearance in flight. RIF stands for Revised in Flight.	string	No	Free-form string of up to 3,000 characters. The destination aerodrome has to be specified using the four-letter ICAO location code.	DTA HEC KLAX	No
REGIndicator_918d	To be assigned	This element specifies Aircraft Registration (tail number), if different from the aircraft identification specified in element flightId-_02a.	string	No	Free-form string of up to 3,000 characters.	N5258E	No
SELIndicator_918e	To be assigned	This element specifies the SELCAL code. SELCAL is a selective-calling radio system that alerts aircraft crew to incoming radio communications.	string	No	Free-form string of up to 3,000 characters.	ACHA BRLM	No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
OPRIndicator_918f	To be assigned	This field specifies the Aircraft Operator, if not obvious from the aircraft identification in flightId_02a.	string	No	Free-form string of up to 3,000 characters.	UAL	No
STSIndicator_918g	To be assigned	This element specifies the Reason for Special Handling by ATS, such as hospital aircraft.	string	No	Free-form string of up to 3,000 characters. The following are the only valid special handling indicators: ALTRV ATFMX FFR FLTCK HAZMAT HEAD HOSP HUM MARSA MEDEVAC NONRVSM SAR STATE NONRNP10 NO NRPN10 PROTECTED CARGO CARGO FLT	ALTRV	No
TYPIndicator_918h	To be assigned	Type(s) of Aircraft, preceded if necessary by number of aircraft, if ZZZZ is specified in the element numberOfAircraft_03a.	string	No	Free-form string of up to 3,000 characters.	CESNA140	No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
PERIndicator_918i	To be assigned	This element specifies the aircraft performance data.	string	No	Single valid letter specified in PAN-OPS 8168 Volume 1: A – Indicated airspeed (IAS) less than 169 km/h (91kt) B – IAS between 169 km/h (91kt) and 224 km/h (121 kt) C – IAS between 224 km/h (121 kt) and 261 km/h (141 kt) D – IAS between 261 km/h (141 kt) and 307 km/h (166 kt) E - IAS between 307 km/h (166 kt) and 391 km/h (211 kt) H - Helicopters	C	No
COMIndicator_918j	To be assigned	This element contains Communication Equipment Data. It is used for additional Communication Equipment on board not specified in the flightPlanRoute_10a element.	string	No	Free-form string of up to 3,000 characters.	HF ONLY TCAS	No
DATIndicator_918k	To be assigned	This element specifies data related to data link capability.	string	No	Free-form string of up to 3,000 characters. Valid values are: S – satellite data link H – HF data link V – VHF data link M – SSR Mode S data link One or more of the valid letters may be specified in this element.	SV	No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
NAVIndicator_918l	To be assigned	This element contains Navigation Equipment Data. It is used for additional Navigation Equipment not specified in the flightPlanRoute_10a element.	string	No	Free-form string of up to 3,000 characters.	ADF ONLY	No
DEPIndicator_918m	To be assigned	This element contains the name of the Departure Aerodrome if ZZZZ is specified in Field 13, or the ICAO four-letter location indicator of the location of the ATS unit from which supplementary flight plan data can be obtained, if AFIL is specified in Field 13 (flight plan was filed by an active flight). Note: Field 13 does not appear in FH, AH, and HU messages.	string	No	Free-form string of up to 3,000 characters.	NORTON FIELD	No
DESTIndicator_918n	To be assigned	This element includes the name of the destination aerodrome, if ZZZZ is specified in Field 16. Note: Field 16 does not appear in FH, AH, and HU messages.	string	No	Free-form string of up to 3,000 characters.	MILLSPAW FARM	No
ALTNIndicator_918o	To be assigned	This element includes the name of the alternate destination aerodrome(s), if ZZZZ is specified in Field 16. Note: Field 16 does not appear in FH, AH, and HU messages.	string	No	Free-form string of up to 3,000 characters.	MILLSPAW FARM	No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
RALTIndicator_918p	To be assigned	This element contains the en-route alternate aerodrome(s).	string	No	Free-form string of up to 3,000 characters.	JP RANCH	No
CODEIndicator_918q	To be assigned	This element specifies the aircraft Controller-Pilot Data Link Communications (CPDLC) address.	string	No	Free-form string of up to 3,000 characters.	45FA16	No
RACEIndicator_918r	To be assigned	This element specifies the requested altitude and speed en route.	string	No	Free-form string of up to 3,000 characters.	KRAFT/M080F380	No
SURIndicator_918s	To be assigned	This element specifies the surveillance applications or capabilities not specified in localIntendedRoute_10b.	string	No	Free-form string of up to 3,000 characters.	282B	No
DLEIndicator_918t	To be assigned	This element specifies significant en route delay or holding point(s), followed by length of delay.	string	No	Free-form string of up to 3,000 characters. The length of delay is specified in the format *hhmm*.	MDG0030	No
TALTIndicator_918u	To be assigned	This element specifies the take-off alternate aerodrome.	string	No	Free-form string of up to 3,000 characters. Valid formats include aerodrome name or any of the fix formats (i.e., lat/long, fix-radial-distance, or name).	KRAFT FARM	No
DOFIndicator_918v	To be assigned	This element specifies the date of flight.	string	No	Six-digit date in the format *yymmdd*.	140617	No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
ORGNIndicator_918w	To be assigned	This element specifies the originator's eight-letter AFTN address or other appropriate contact details, in cases where the originator of the flight plan may not be readily identified, as required by the appropriate ATS authority.	string	No	Eight-letter character string.	LEBBYNYX	No
PBNIndicator_918x	To be assigned	This element specifies the Area Navigation (RNAV) or Required Navigation Performance (RNP) capability. PBN stands for Performance Based Navigation.	string	No	Up to eight two-character specifications may be included, for a total of 16 characters. RNAV and RNP capabilities are two-characters each, as follows. RNAV specifications: A1 RNAV10 (RNP 10) B1 RNAV 5 all permitted sensors B2 RNAV 5 GNSS B3 RNAV 5 DME/DME B4 RNAV 5 VOR/DME B5 RNAV 5 INS or IRS B6 RNAV 5 LORANC C1 RNAV 2 all permitted sensors C2 RNAV 2 GNSS C3 RNAV 2 DME/DME C4 RNAV 2 DME/DME/IRU D1 RNAV 1 all permitted sensors D2 RNAV 1 GNSS D3 RNAV 1 DME/DME D4 RNAV 1 DME/DME/IRU	B1O1	No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
					RNP specifications: L1 RNP 4 O1 Basic RNP 1 all permitted sensors O2 Basic RNP 1 GNSS O3 Basic RNP 1 DME/DME O4 Basic RNP 1 DME/DME/IRU S1 RNP APCH S2 RNP APCH with BAR-VNAV T1 RNP AR APCH with RF (special authorization required) T2 RNP AR APCH without RF (special authorization required)		
RNVArrival_925a	To be assigned	This element specifies the RNAV accuracy value for the arrival phase of the flight expressed in hundredths (.01) nm.	string	No	**"\d{4}"** The allowable range is 0001-9999. If the value is 0 then the field is not included.	Accuracy of 0.3 nm: 0030	No
RNVEnroute_925b	To be assigned	This element specifies the RNAV accuracy value for the en route phase of the flight expressed in hundredths (.01) nm.	string	No	**"\d{4}"** The allowable range is 0001-9999. If the value is 0 then the field is not included.	Accuracy of 0.1 nm: 0010	No
RNVOceanic_925c	To be assigned	This element specifies the RNAV accuracy value for the oceanic phase of the flight expressed in hundredths (.01) nm.	string	No	**"\d{4}"** The allowable range is 0001-9999. If the value is 0 then the field is not included.	Accuracy of 0.1 nm: 0010	No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
RNVDeparture_925d	To be assigned	This element specifies the RNAV accuracy value for the departure phase of the flight expressed in hundredths (.01) nm.	string	No	**"\d{4}"** The allowable range is 0001-9999. If the value is 0 then the field is not included.	Accuracy of 0.1 nm: 0010	No
RNVSpare1_925e	To be assigned	This is a spare element.	string	No	**"\d{4}"**		No
RNVSpare2_925f	To be assigned	This is a spare element.	string	No	**"\d{4}"**		No
RNPArrival_925g	To be assigned	This element specifies the RNPaccuracy value for the arrival phase of the flight expressed in hundredths (.01) nm.	string	No	**"\d{4}"** The allowable range is 0001-9999. If the value is 0 then the field is not included.	Accuracy of 0.3 nm: 0030	No
RNPEnroute_925h	To be assigned	This element specifies the RN) accuracy value for the en route phase of the flight expressed in hundredths (.01) nm.	string	No	**"\d{4}"** The allowable range is 0001-9999. If the value is 0 then the field is not included.	Accuracy of 0.3 nm: 0030	No
RNPOceanic_925i	To be assigned	This element specifies the RN) accuracy value for the oceanic phase of the flight expressed in hundredths (.01) nm.	string	No	**"\d{4}"** The allowable range is 0001-9999. If the value is 0 then the field is not included.	Accuracy of 0.3 nm: 0030	No
RNPDeparture_925j	To be assigned	This element specifies the RN) accuracy value for the departure phase of the flight expressed in hundredths (.01) nm.	string	No	**"\d{4}"** The allowable range is 0001-9999. If the value is 0 then the field is not included.	Accuracy of 0.3 nm: 0030	No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
RNPSpare1_925k	To be assigned	This is a spare element.	string	No	**"\d{4}"**		No
RNPSpare2_925l	To be assigned	This is a spare element.	string	No	**"\d{4}"**		No
ICAO1stAdaptedField18_999a ICAO1stAdaptedField18_999b ICAO1stAdaptedField18_999c ICAO1stAdaptedField18_999d ICAO1stAdaptedField18_999e ICAO1stAdaptedField18_999f ICAO1stAdaptedField18_999g ICAO1stAdaptedField18_999h ICAO1stAdaptedField18_999i ICAO1stAdaptedField18_999j ICAO1stAdaptedField18_999k ICAO1stAdaptedField18_999l ICAO1stAdaptedField18_999m ICAO1stAdaptedField18_999n ICAO1stAdaptedField18_999o ICAO1stAdaptedField18_999p ICAO1stAdaptedField18_999q ICAO1stAdaptedField18_999r ICAO1stAdaptedField18_999s ICAO1stAdaptedField18_999t ICAO1stAdaptedField18_999u ICAO1stAdaptedField18_999v ICAO1stAdaptedField18_999w ICAO1stAdaptedField18_999x ICAO1stAdaptedField18_999y	To be assigned	Elements having the suffix of _999a through _999y contain the data that is that is present for the optionally adapted element 918 indicators that are transmitted to CMS, when applicable, using a Field Reference Number of 999, with elements a through y. They are formatted as free-form text.	string	No	Free-form string of up to 3,000 characters.		No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
localIntendedRoute_10b	To be assigned	The Local Intended Route element contains the flight plan route that is coordinated to penetrated facilities. It consists of the flight plan route with any expected-to-be-applied-by-the-controlling-center ADRs, ADARs or AARs already applied. It is intended for the clients that wish to know the expected state of the flight plan when the current facility releases control of the flight. Element localIntendedRoute_10b contains the filed route (field 10a) merged with any locally applicable adapted routes (preferential routes, transition fixes and A-line fixes). Optional Field 10b is sent to ATM-IPOP, when Field 10b is not the same as Field 10a.	string	No	**"[A-Z0-9+/*]{2,12}_?\.[A-Z0-9+\./]*\.[A-Z0-9+/*]{2,12}_?(/\d{4})?"** Minimum length = 3 Maximum length = 1000		No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
ATCIntendedRoute_10c	To be assigned	The ATC Intended Route element contains the current cleared flight plan route with any unacknowledged auto routes already applied. The ATC Intended Route includes to-be-applied AARs that are not to be notified in the current center. It is intended for clients that wish to know the currently expected route of the flight across contiguous ERAM airspace. Field 10c contains the filed route (field 10a) merged with any adapted routes (preferential routes, transition fixes and A-line fixes). Optional Field 10c is sent to ATM-IPOP, when parameter Merged ATC Intended Route Switch (MARS) is ON and if either one of the following is true: If Field 10b exists and Field 10c is not the same as Field 10b If Field 10b does not exist and Field 10c is not the same as Field 10a.	string	No	**"[A-Z0-9+/*]{2,12}_?\.[A-Z0-9+\./]*\.[A-Z0-9+/*]{2,12}_?(/\d{4})?"** Minimum length = 3 Maximum length = 1000		No
groundspeed_05b	To be assigned	This element contains the aircraft ground speed in knots.	String	No	**"\d{3}"** The format is three digits. If the aircraft ground speed is not available, this element contains three zeroes.	357 Aircraft ground speed is 357 knots. 000 Indicates that the aircraft ground speed is missing.	No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
reportedAlt_54a	To be assigned	The element is used to specify the reported altitude. For aircraft with operative Mode C capability, this element contains the Mode C altitude. For aircraft without Mode C capability or with non-operative Mode C capability, this element may contain the controller reported altitude. If there is no Mode C or controller reported altitude, or the reported altitude is negative, this element contains “0” or "000" or is optional.	string	No	**"\d{1,3}"** The format consists of one to three digits that represent the reported aircraft altitude in hundreds of feet. Leading zeros may be inserted for altitudes of less than 3 digits.	**310** The aircraft reported altitude is 31,000 feet.	No It may be absent only if element *reportedAlt_54b* = **N**

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
reportedAlt_54b	To be assigned	This field is the reported altitude B4 indicator. The ERAM controllers' full data block used for tracking an aircraft has a special indicator for the B4 character of the full data block.	string	No	**"[ABCFNTVX^v+-/]"** The format of this element is one character as follows: A - Reported altitude (controller entered) equals single assigned altitude. B - Beacon reported altitude is in conformance or controller entered reported altitude is in the block for an aircraft which has been assigned an altitude block (B1 to B3 - low altitude limit of block and C1 to C3=high altitude limit of block). C - Beacon reported altitude is within Altitude Conformance Limits feet. F - Reported altitude (controller entered) equals first altitude or (beacon reported) is within Altitude Conformance Limits of first altitude when assigned altitude is (d)dd/fix/(d)dd and the first altitude is displayed in Field B. N - No beacon reported altitude has been received for the aircraft; no controller entered reported altitude exists for the aircraft; or the aircraft's rate of change is questionable and Computed Rate of Change is being used to make further conformance checks. T - Interim altitude is currently being displayed in the assigned altitude field (B1 through B3). V - Beacon reported or controller entered reported altitude, when no assigned altitude exists for the aircraft. X - Beacon reported altitude becomes disestablished. (C1-C3 also contains `X' character.) ^ - Beacon reported or controller entered reported altitude is below assigned altitude when flight is	**B**	Yes

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
reprotedAlt_54c	To be assigned	The element specifies the reported altitude C4 indicator. The ERAM controllers full data block used for tracking an aircraft has a special indicator for the C4 character of the full data block as follows: If the aircraft is not responding with the Mode C altitude, the controller entered reported altitude is displayed in *reportedAlt_54c* with a pound sign (#) or X in position C4 whenever (1) the controller entered reported altitude does not equal the assigned altitude or is not within the assigned altitude block, (2) no assigned altitude has been entered, or (3) the assigned altitude is VFR, VFR/(d)dd, OTP, or OTP/(d)dd. In either case for a Mode C reported altitude or a controller reported altitude, when an interim altitude is displayed in *reportedAlt_54b* the B4 character position contains the letter "T" and the reported altitude, or either the lower or upper altitude of an assigned block altitude is displayed in *reportedAlt_54c*. In the case where a controller entered reported altitude exists, a pound sign (#) or X is displayed in the C4 position.	string	No	**"[#X]"**	**#**	No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
controllingFacility_138a	To be assigned	This element specifies the facility that is controlling the flight.	string	No	**"LLL"** The format consists of three letters. The value is 3 blank characters if identification of the controlling facility is not available.	ZCH	No
controllingSector_138b	To be assigned	This element specifies the controlling ARTS position or the controlling ERAM ARTCC sector number. The Controlling Sector is the sector/position that is controlling the flight. The value is 00 if identification of the controlling sector is not available.	string	No	**"d[A-Z0-9]"** The format is one digit followed by one alphanumeric.	1W	No
receivingFacitlity_139a	To be assigned	This element specifies the facility that is receiving the flight.	string	No	**"[A-Z]{3}"** The format is three letters.	AIA	No
receivingSector_139b	To be assigned	This element specifies the receiving ARTS position or the receiving ERAM ARTCC sector number. The receiving sector is the sector/position that is receiving the flight. The value is 00 if identification of the receiving sector is not available.	string	No	**"[0-9][A-Z0-9]"** The format is one digit followed by one alphanumeric.	1W	No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
trackPosition_23d	To be assigned	This element specifies the track position form ERAM to ATM-IPOP.	string	No	**"\d{6}[A-Z]/\d{7}[A-Z]"** It is a latitude/longitude pair, separated by a virgule. For latitude, the first two digits are degrees, the second two are minutes, and the last two are seconds. The letter can be N or S. For the longitude, the first three digits are degrees, the second two are minutes, and the last two are seconds. The letter can be E or W.	393106N/0842535 W	Yes
trackVelocity_23e	To be assigned	This element specifies the velocity in nautical miles per hour.	string	No	**"[+\-]\d\d{0,3}/[+\-SH]\d\d{0,3}"** Minimum length = 5 Maximum length = 11 It has an X and a Y component separated by a virgule. Either component can be preceded by either a + or – sign, followed by one to three digits. The second component can be preceded by an S or an H, for speed only (NM/hr), or heading only (degrees), respectively.	+46/-355 -0/S439	Yes
coastIndicator_153a	To be assigned	This element specifies an action indicator. It has only one possible value, C for Coast.	string	No	**"C"**	**C**	No
timeOfTrackData_170a	To be assigned	This element specifies the date and time the track data was stored.	dateTime	No	**dateTime**	**2014-06-20T20:17:52**	No

Element Name [RREPLY]	FDR Number	Element Definition	Type	Complex?	Format/Permissible Values	Example	Required?
targetPosition_171a	To be assigned	This element specifies the ERAM radar target position, in latitude/longitude format, as described in message number.	string	No	**"\d{6}[A-Z]/\d{7}[A-Z]"** Length = 16 It is a latitude/longitude pair, separated by a virgule.	393106N/0842535W	No
targetAlt_172a	To be assigned	This element specifies the Mode C Target altitude (corrected for barometric pressure) in hundreds of feet.	string	No	**"\d{3}"** The format is three digits, with leading zeroes required. If the target altitude is negative, targetAlt_172a is **000**.	**290** **000**	No
targetAltInvalid_172b	To be assigned	If the element *targetAlt_172a* is not valid, this field is set to **INV**, for invalid Mode C altitude.	string	No	**"INV"**	**INV**	No
timeOfTargeData_173	To be assigned	This element specifies the date and time of the correlated target.	dateTime	No	**dateTime**	**2014-06-20T20:17:50**	No

5.6 Machine-Processable Service Description Document

The SFDPS Web Service Description Language (WSDL) for each of the web services can be found in Appendix A.

6. Service Implementation

The SFDPS Request/Response component will enable SFDPS consumers to request a range of SFDPS data through temporary subscriptions. These requests will include multiple criteria that consumers can use to specify the type of data they require. The services will process incoming subscription requests, validate them, and, upon validation, establish a temporary SFDPS subscription that will stream data corresponding to the requested criteria. Data is streamed back to the consumers, through the NEMS Java Messaging System (JMS) interface and are tagged with a unique SFDPS subscription identifier that SFDPS consumers can use to identify and consume data. Consumers may receive the data on the same topic where they receive their pub-sub data.

The Request/Response component includes the following sub-components:

- SFDPS Web Services
- SFDPS Subscription Manager

These sub-components are shown in Figure 6-1 and further described below.

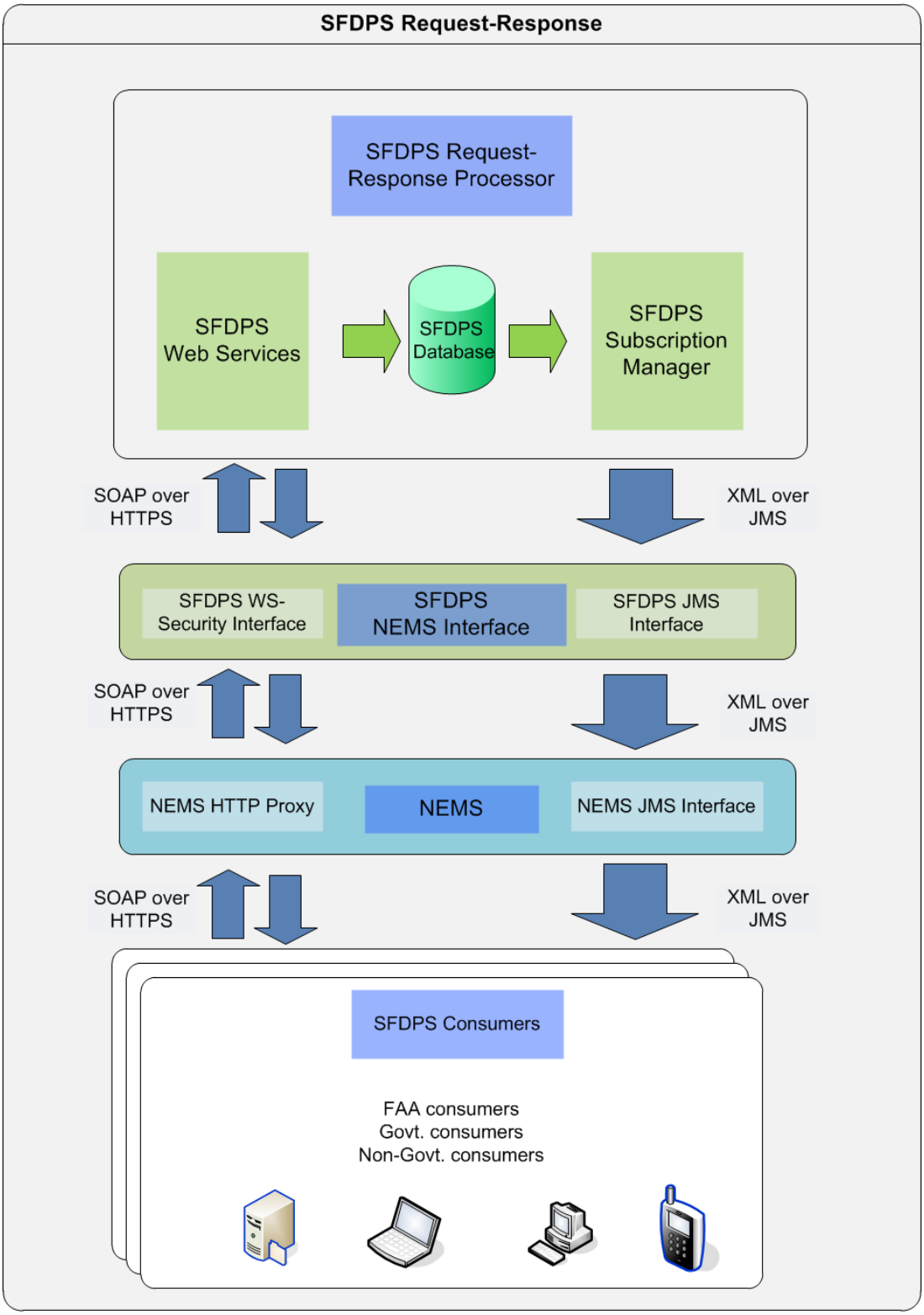

Figure 6-1: SFDPS Request-Response

6.1.1.1 SFDPS Web Services Component Description

SFDPS will provide four standard SOAP-over-HTTPS web services, which consumers can use to request SFDPS data. These four web services are further elaborated in previous sections of this document. They are:

- En Route Flight Data Publication
- En Route Airspace Data Publication
- En Route Operational Data Publication
- En Route General Message Publication

The following type of request will be supported by each of these services.

Request a set of SFDPS messages that meet some selection criteria. The selection criteria are specified in the Web Service as part of the request message and a full list of these is provided in the SFDPS WSRD (reference [7]).Another type of request allows users to obtain a set of messages that define the current state for some type of data. This class of request may be used by data consumers to reconstitute their own databases. This request type applies only to the flight data service and airspace data service. The specific requests, supported in this category will be:

- Request the current flight plan for a set of flights. This returns the current flight plan data for flights that meet some selection criteria. Applies only to the flight data service.
- Return the current sector status for ARTCCs that meet some selection criteria.
- Return the current route status for ARTCCs that meet some selection criteria.
- Return the current altimeter status for ARTCCs that meet some selection criteria.

6.1.1.2 SFDPS Subscription Manager Component Description

Each web service will accept authenticated and authorized web service requests from the NEMS Interface component, validate them for correctness, and if valid, send a response to the consumer that contains a unique SFDPS subscription identifier (ID). Subscriptions are stored in the SFDPS Database. The SFDPS subscription manager will process the subscription request, query the database to retrieve data corresponding to the subscription, and stream one or more messages corresponding to the subscription request criteria back to the consumers via the NEMS JMS interface. Messages sent to consumers will be tagged with the same unique SFDPS subscription ID that was returned to the consumer as part of the HTTP response, so that consumers can inspect messages and use this subscription ID to identify and process these messages.

6.2 Bindings

The first binding describes the web service request and response. The second binding describes the stream of JMS messages published to the user as the reply to the request.

6.2.1 Binding 1

This table describes the bindings for the web services.

Table 6-1: En Route SFDPS Bindings and Associated Interfaces

	En Route Flight Data Publication	En Route Airspace Data Publication	En Route Operational Data Publication	En Route General Message Publication
Binding	FdpsFlightSubscriptionSOAPBinding	FdpsAirspaceSubscriptionSOAPBinding	FdpsOperationalSubscriptionSOAPBinding	FdpsGeneralMessageSubscriptionSOAPBinding
Associated Interface	FdpsFlightSubscriptionPortType	FdpsAirspaceSubscriptionPortType	FdpsOperationalSubscriptionPortType	FdpsGeneralMessageSubscriptionPortType

6.2.2 Data Protocol

All requests and the subscription reply are sent in XML format.

6.2.3 Message Protocol

All FDPS web services use SOAP as the messaging protocol.

6.2.4 Transport Protocol

All FDPS web services use HTTPS as the communications protocol.

6.2.5 Binding 2

6.2.5.1 Data Protocol

All data published to NEMS is formatted in SimpleXML (reference [5]). Data for flight messages is also published in FIXM format (reference[16]).

6.2.6 Message Protocol

All FDPS services that publish data to NEMS use JMS as the messaging protocol.

6.2.7 Transport Protocol

The transport protocol is Transmission Control Protocol (TCP).

6.2.8 End Points

6.2.8.1 End Point 1

SFDPS consumers connect to NEMS as a proxy server for web services. Additional details about the NEMS interface may be obtained in the NEMS ICD (reference [12]).

6.2.8.2 End Point 2

SFDPS consumers connect to NEMS using JMS to retrieve reply data from their subscribed topic. Additional details about the NEMS JMS interface may be obtained in the NEMS ICD (reference [12]).

Appendix A. WSDL Document

A.1 En Route Flight Data Publication: WSDL

WSDL Title: EnRouteFlightDataPublication.wsdl

Version: 1.0

Location: FAA NSRR

```
<?xml version="1.0" encoding="UTF-8"?>
<wsdl:definitions xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/" xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:http="http://schemas.xmlsoap.org/wsdl/http/" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:fdpsflightdatapub="us:gov:dot:faa:atm:enroute:services:flightdatapub" xmlns:fdpsdata="us:gov:dot:faa:atm:enroute:entities:flightdata"
name="enroute-flight-data-publication-wsdl" targetNamespace="us:gov:dot:faa:atm:enroute:services:flightdatapub">
    <wsdl:documentation>EnRoute Flight Data Publication</wsdl:documentation>
    <wsdl:types>
        <xs:schema>
            <xs:annotation>
                <xs:documentation>
                    ******************************************************************
                    EnRouteFlightDataPublicationDataModel.xsd contains the definitions of the data
                    types used in this wsdl
                    ******************************************************************
                </xs:documentation>
            </xs:annotation>
            <xs:import namespace="us:gov:dot:faa:atm:enroute:entities:flightdata" schemaLocation="EnRouteFlightDataPublicationDataModel.xsd"/>
        </xs:schema>
    </wsdl:types>
    <wsdl:message name="FdpsSubscriptionRequestMessage">
        <wsdl:part name="FdpsSubscriptionRequest" element="fdpsdata:FdpsFlightDataSubscriptionRequestElement">
      </wsdl:part>
    </wsdl:message>
    <wsdl:message name="FdpsSubscriptionResponseMessage">
        <wsdl:part name="FdpsSubscriptionResponse" element="fdpsdata:FdpsFlightDataSubscriptionResponseElement">
      </wsdl:part>
    </wsdl:message>
    <wsdl:message name="FdpsSubscriptionFaultMessage">
```

```
        <wsdl:part name="fdpssubscriptionfaultpayload" element="fdpsdata:FdpsFlightDataSubscriptionFaultElement">
      </wsdl:part>
    </wsdl:message>
    <wsdl:portType name="FdpsFlightSubscriptionPortType">
        <wsdl:operation name="GetFdpsSubscription">
            <wsdl:input message="fdpsflightdatapub:FdpsSubscriptionRequestMessage"/>
            <wsdl:output message="fdpsflightdatapub:FdpsSubscriptionResponseMessage"/>
            <wsdl:fault name="FdpsSubscriptionFault" message="fdpsflightdatapub:FdpsSubscriptionFaultMessage"> </wsdl:fault>
        </wsdl:operation>
    </wsdl:portType>
    <wsdl:binding name="FdpsFlightSubscriptionSOAPBinding" type="fdpsflightdatapub:FdpsFlightSubscriptionPortType">
        <soap:binding style="document" transport="http://schemas.xmlsoap.org/soap/http"/>
        <wsdl:operation name="GetFdpsSubscription">
            <soap:operation soapAction="" style="document"/>
            <wsdl:input>
                <soap:body use="literal"/>
            </wsdl:input>
            <wsdl:output>
                <soap:body use="literal"/>
            </wsdl:output>
            <wsdl:fault name="FdpsSubscriptionFault">
                <soap:fault name="FdpsSubscriptionFault" use="literal"/>
            </wsdl:fault>
        </wsdl:operation>
    </wsdl:binding>
    <wsdl:service name="EnrouteFlightDataPublication">
        <wsdl:port name="EnrouteFlightDataPublicationSoapOverHttp" binding="fdpsflightdatapub:FdpsFlightSubscriptionSOAPBinding">
            <soap:address location="https://107.21.4.19:9000/EnrouteFlightDataPublication/"/>
        </wsdl:port>
    </wsdl:service>
</wsdl:definitions>
```

A.2 EnRouteFlightDataPublicationDataModel.xsd: Schema

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2010 rel. 2 (http://www.altova.com) by Patricio O Colon (DOT) -->
<xs:schema xmlns:fdpsdata="us:gov:dot:faa:atm:enroute:entities:flightdata" xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="us:gov:dot:faa:atm:enroute:entities:flightdata" elementFormDefault="qualified" attributeFormDefault="qualified">
	<xs:annotation>
		<xs:documentation>
				*****************************************************************
				This schema contains the definitions of the data
				types  for the subscription request, response and fault messages
				used in Flight Data Publication Services
				*****************************************************************
			</xs:documentation>
	</xs:annotation>
	<xs:complexType name="FdpsFlightDataSubscriptionRequestType">
		<xs:sequence>
			<xs:element name="FdpsRequestDestinationIdentifier" type="xs:string"/>
			<xs:element name="FdpsDataState" type="xs:string"/>
			<xs:element name="FdpsDataFormat" type="xs:string"/>
			<xs:element name="FdpsEnhancedData" type="xs:string"/>
			<xs:element name="FdpsSourcefacility" type="xs:string"/>
			<xs:element name="FdpsMessageType" type="xs:string"/>
			<xs:element name="FdpsFlightIdentifier" type="xs:string"/>
			<xs:element name="FdpsFlightOperator" type="xs:string"/>
			<xs:element name="FdpsOriginAirport" type="xs:string"/>
			<xs:element name="FdpsDestinationAirport" type="xs:string"/>
			<xs:element name="FdpsReceivedTimeStart" type="xs:string"/>
			<xs:element name="FdpsReceivedTimeEnd" type="xs:string"/>
			<xs:element name="FdpsDepartureTimeStart" type="xs:string"/>
			<xs:element name="FdpsDepartureTimeEnd" type="xs:string"/>
			<xs:element name="FdpsArrivalTimeStart" type="xs:string"/>
			<xs:element name="FdpsArrivalTimeEnd" type="xs:string"/>
			<xs:element name="FdpsSpecialFilters" type="xs:string"/>
		</xs:sequence>
	</xs:complexType>
	<xs:complexType name="FdpsFlightDataSubscriptionResponseType">
		<xs:sequence>
			<xs:element name="FdpsSubscriptionId" type="xs:string"/>
			<xs:element name="FdpsEndpointUrl" type="xs:string"/>
```

```
            <xs:element name="FdpsDestinationIdentifier" type="xs:string"/>
            <xs:element name="FdpsSubscriptionResponse" type="xs:string"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="FdpsFlightDataSubscriptionFaultType">
        <xs:sequence>
            <xs:element name="FdpsFlightDataFault" type="xs:string"/>
        </xs:sequence>
    </xs:complexType>
    <xs:element name="FdpsFlightDataSubscriptionRequestElement" type="fdpsdata:FdpsFlightDataSubscriptionRequestType">
        <xs:annotation>
            <xs:documentation>
                    ********************************************************************
                    FdpsSubscriptionRequest defines the Requests for the EnRoute Flight Data Publicationn
                    ********************************************************************
                </xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="FdpsFlightDataSubscriptionResponseElement" type="fdpsdata:FdpsFlightDataSubscriptionResponseType">
        <xs:annotation>
            <xs:documentation>
                    ********************************************************************
                    FdpsSubscriptionResponseElement defines the Response for the EnRoute Flight Data Publication
                    ********************************************************************
                </xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="FdpsFlightDataSubscriptionFaultElement" type="fdpsdata:FdpsFlightDataSubscriptionFaultType">
        <xs:annotation>
            <xs:documentation>
                    ********************************************************************
                    FdpsSubscriptionFaultElement defines the faults for the EnRoute Flight Data Publication
                    ********************************************************************
                </xs:documentation>
        </xs:annotation>
    </xs:element>
</xs:schema>
```

A.3 En Route Airspace Data Publication: WSDL

WSDL Title: EnRouteAirspaceDataPublication.wsdl

Version: 1.0

Location: FAA NSRR

```
<?xml version="1.0" encoding="UTF-8"?>
<wsdl:definitions xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/" xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:http="http://schemas.xmlsoap.org/wsdl/http/" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:fdpsairspacedatapub="us:gov:dot:faa:atm:enroute:services:airspacedatapub" xmlns:fdpsdata="us:gov:dot:faa:atm:enroute:entities:flightdata"
name="enroute-airspace-data-publication-wsdl" targetNamespace="us:gov:dot:faa:atm:enroute:services:airspacedatapub">
    <wsdl:documentation>EnRoute Airspace Data Publication</wsdl:documentation>
    <wsdl:types>
        <xs:schema>
            <xs:annotation>
                <xs:documentation>[
                    ******************************************************************
                    EnRouteAirspaceDataPublicationDataModel.xsd contains the definitions of the data
                    types used in this wsdl
                    ******************************************************************
                </xs:documentation>
            </xs:annotation>
            <xs:import namespace="us:gov:dot:faa:atm:enroute:entities:flightdata"
schemaLocation="EnRouteAirspaceDataPublicationDataModel.xsd"/>
        </xs:schema>
    </wsdl:types>
    <wsdl:message name="FdpsSubscriptionRequestMessage">
        <wsdl:part name="FdpsSubscriptionRequest" element="fdpsdata:FdpsAirspaceDataSubscriptionRequestElement">
      </wsdl:part>
    </wsdl:message>
    <wsdl:message name="FdpsSubscriptionResponseMessage">
        <wsdl:part name="FdpsSubscriptionResponse" element="fdpsdata:FdpsAirspaceDataSubscriptionResponseElement">
      </wsdl:part>
    </wsdl:message>
    <wsdl:message name="FdpsSubscriptionFaultMessage">
        <wsdl:part name="fdpssubscriptionfaultpayload" element="fdpsdata:FdpsAirspaceDataSubscriptionFaultElement">
```

```
        </wsdl:part>
    </wsdl:message>
    <wsdl:portType name="FdpsAirspaceSubscriptionPortType">
        <wsdl:operation name="GetFdpsSubscription">
            <wsdl:input message="fdpsairspacedatapub:FdpsSubscriptionRequestMessage"/>
            <wsdl:output message="fdpsairspacedatapub:FdpsSubscriptionResponseMessage"/>
            <wsdl:fault name="FdpsSubscriptionFault" message="fdpsairspacedatapub:FdpsSubscriptionFaultMessage"> </wsdl:fault>
        </wsdl:operation>
    </wsdl:portType>
    <wsdl:binding name="FdpsAirspaceSubscriptionSOAPBinding" type="fdpsairspacedatapub:FdpsAirspaceSubscriptionPortType">
        <soap:binding style="document" transport="http://schemas.xmlsoap.org/soap/http"/>
        <wsdl:operation name="GetFdpsSubscription">
            <soap:operation soapAction="" style="document"/>
            <wsdl:input>
                <soap:body use="literal"/>
            </wsdl:input>
            <wsdl:output>
                <soap:body use="literal"/>
            </wsdl:output>
            <wsdl:fault name="FdpsSubscriptionFault">
                <soap:fault name="FdpsSubscriptionFault" use="literal"/>
            </wsdl:fault>
        </wsdl:operation>
    </wsdl:binding>
    <wsdl:service name="EnrouteAirspaceDataPublication">
        <wsdl:port name="EnrouteAirspaceDataPublicationSoapOverHttp" binding="fdpsairspacedatapub:FdpsAirspaceSubscriptionSOAPBinding">
            <soap:address location="https://11.22.11.22:9000/EnrouteAirspaceDataPublication/"/>
        </wsdl:port>
    </wsdl:service>
</wsdl:definitions>
```

A.4 EnRouteAirspaceDataPublicationDataModel.xsd: Schema

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2010 rel. 2 (http://www.altova.com) by Patricio O Colon (DOT) -->
<xs:schema xmlns:fdpsdata="us:gov:dot:faa:atm:enroute:entities:flightdata" xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="us:gov:dot:faa:atm:enroute:entities:flightdata" elementFormDefault="qualified" attributeFormDefault="qualified">
	<xs:annotation>
		<xs:documentation>
				*****************************************************************
				This schema contains the definitions of the data
				types for the subscription request, response
				and fault messages used in Flight Data Publication Services
				*****************************************************************
			c</xs:documentation>
	</xs:annotation>
	<xs:complexType name="FdpsAirspaceDataSubscriptionRequestType">
		<xs:sequence>
			<xs:element name="FdpsRequestDestinationIdentifier" type="xs:string"/>
			<xs:element name="FdpsDataState" type="xs:string"/>
			<xs:element name="FdpsSourcefacility" type="xs:string"/>
			<xs:element name="FdpsReportingStation" type="xs:string"/>
			<xs:element name="FdpsMessageType" type="xs:string"/>
			<xs:element name="FdpsAirspaceDataType" type="xs:string"/>
			<xs:element name="FdpsReceivedTimeStart" type="xs:string"/>
			<xs:element name="FdpsReceivedTimeEnd" type="xs:string"/>
			<xs:element name="FdpsSpecialFilters" type="xs:string"/>
		</xs:sequence>
	</xs:complexType>
	<xs:complexType name="FdpsAirspaceDataSubscriptionResponseType">
		<xs:sequence>
			<xs:element name="FdpsSubscriptionId" type="xs:string"/>
			<xs:element name="FdpsEndpointUrl" type="xs:string"/>
			<xs:element name="FdpsResponseDestinationIdentifier" type="xs:string"/>
			<xs:element name="FdpsResponsePayload" type="xs:string"/>
		</xs:sequence>
	</xs:complexType>
	<xs:complexType name="FdpsAirspaceDataSubscriptionFaultType">
		<xs:sequence>
			<xs:element name="FdpsAirspaceDataFault" type="xs:string"/>
		</xs:sequence>
```

```
    </xs:complexType>
    <xs:element name="FdpsAirspaceDataSubscriptionRequestElement" type="fdpsdata:FdpsAirspaceDataSubscriptionRequestType">
        <xs:annotation>
            <xs:documentation>
                ********************************************************************
                FdpsSubscriptionRequest defines the Requests for the EnRoute AirspaceData Publication
                ********************************************************************
            </xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="FdpsAirspaceDataSubscriptionResponseElement" type="fdpsdata:FdpsAirspaceDataSubscriptionResponseType">
        <xs:annotation>
            <xs:documentation>
                ********************************************************************
                FdpsAirspaceDataSubscriptionResponseElement defines the Response for the EnRoute   AirspaceData  Publication
                ********************************************************************
            </xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="FdpsAirspaceDataSubscriptionFaultElement" type="fdpsdata:FdpsAirspaceDataSubscriptionFaultType">
        <xs:annotation>
            <xs:documentation>
                ********************************************************************
                FdpsAirspaceDataSubscriptionFaultElement defines the faults for the EnRoute AirspaceDataPublication
                ********************************************************************
            </xs:documentation>
        </xs:annotation>
    </xs:element>
</xs:schema>
```

A.5 En Route Operational Data Publication: WSDL

WSDL Title: EnRouteOperationalDataPublication.wsdl

Version: 1.0

Location: FAA NSRR

```
<?xml version="1.0" encoding="UTF-8"?>
<wsdl:definitions xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/" xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:http="http://schemas.xmlsoap.org/wsdl/http/" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:fdpsoperationaldatapub="us:gov:dot:faa:atm:enroute:services:operationaldatapub" xmlns:fdpsdata="us:gov:dot:faa:atm:enroute:entities:flightdata"
name="enroute-operational-data-publication-wsdl" targetNamespace="us:gov:dot:faa:atm:enroute:services:operationaldatapub">
    <wsdl:documentation>EnRoute Operational Data Publication </wsdl:documentation>
    <wsdl:types>
        <xs:schema>
            <xs:annotation>
                <xs:documentation>
                    ******************************************************************
                    EnRouteOperationalDataPublicationDataModel.xsd contains the definitions of the data
                    types used in this wsdl
                    ******************************************************************
                </xs:documentation>
            </xs:annotation>
            <xs:import namespace="us:gov:dot:faa:atm:enroute:entities:flightdata"
schemaLocation="EnRouteOperationalDataPublicationDataModel.xsd"/>
        </xs:schema>
    </wsdl:types>
    <wsdl:message name="FdpsSubscriptionRequestMessage">
        <wsdl:part name="FdpsSubscriptionRequest" element="fdpsdata:FdpsOperationalDataSubscriptionRequestElement">
        </wsdl:part>
    </wsdl:message>
    <wsdl:message name="FdpsSubscriptionResponseMessage">
        <wsdl:part name="FdpsSubscriptionResponse" element="fdpsdata:FdpsOperationalDataSubscriptionResponseElement">
        </wsdl:part>
    </wsdl:message>
    <wsdl:message name="FdpsSubscriptionFaultMessage">
        <wsdl:part name="fdpssubscriptionfaultpayload" element="fdpsdata:FdpsOperationalDataSubscriptionFaultElement">
        </wsdl:part>
    </wsdl:message>
```

```
    <wsdl:portType name="FdpsOperationalSubscriptionPortType">
        <wsdl:operation name="GetFdpsSubscription">
            <wsdl:input message="fdpsoperationaldatapub:FdpsSubscriptionRequestMessage"/>
            <wsdl:output message="fdpsoperationaldatapub:FdpsSubscriptionResponseMessage"/>
            <wsdl:fault name="FdpsSubscriptionFault" message="fdpsoperationaldatapub:FdpsSubscriptionFaultMessage"> </wsdl:fault>
        </wsdl:operation>
    </wsdl:portType>
    <wsdl:binding name="FdpsOperationalSubscriptionSOAPBinding" type="fdpsoperationaldatapub:FdpsOperationalSubscriptionPortType">
        <soap:binding style="document" transport="http://schemas.xmlsoap.org/soap/http"/>
        <wsdl:operation name="GetFdpsSubscription">
            <soap:operation soapAction="" style="document"/>
            <wsdl:input>
                <soap:body use="literal"/>
            </wsdl:input>
            <wsdl:output>
                <soap:body use="literal"/>
            </wsdl:output>
            <wsdl:fault name="FdpsSubscriptionFault">
                <soap:fault name="FdpsSubscriptionFault" use="literal"/>
            </wsdl:fault>
        </wsdl:operation>
    </wsdl:binding>
    <wsdl:service name="EnrouteOperationalDataPublication">
        <wsdl:port name="EnrouteOperationalDataPublicationSoapOverHttp" binding="fdpsoperationaldatapub:FdpsOperationalSubscriptionSOAPBinding">
            <soap:address location="https://11.22.11.22:9000/EnrouteOperationalDataPublication/"/>
        </wsdl:port>
    </wsdl:service>
</wsdl:definitions>
```

A.6 EnRouteOperationalDataPublicationDataModel.xsd: Schema

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2010 rel. 2 (http://www.altova.com) by Patricio O Colon (DOT) -->
<xs:schema xmlns:fdpsdata="us:gov:dot:faa:atm:enroute:entities:flightdata" xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="us:gov:dot:faa:atm:enroute:entities:flightdata" elementFormDefault="qualified" attributeFormDefault="qualified">
	<xs:annotation>
		<xs:documentation>
				*****************************************************************
				This schema contains the definitions of the data
				 types for the subscription request, response and fault messages
				used in the FDPS Operational Data Publication Services
				*****************************************************************
			</xs:documentation>
	</xs:annotation>
	<xs:complexType name="FdpsOperationalDataSubscriptionRequestType">
		<xs:sequence>
			<xs:element name="FdpsRequestDestinationIdentifier" type="xs:string"/>
			<xs:element name="FdpsSourcefacility" type="xs:string"/>
			<xs:element name="FdpsMessageType" type="xs:string"/>
			<xs:element name="FdpsReceivedTimeStart" type="xs:string"/>
			<xs:element name="FdpsReceivedTimeEnd" type="xs:string"/>
			<xs:element name="FdpsSpecialFilters" type="xs:string"/>
		</xs:sequence>
	</xs:complexType>
	<xs:complexType name="FdpsOperationalDataSubscriptionResponseType">
		<xs:sequence>
			<xs:element name="FdpsSubscriptionId" type="xs:string"/>
			<xs:element name="FdpsEndpointUrl" type="xs:string"/>
			<xs:element name="FdpsResponseDestinationIdentifier" type="xs:string"/>
			<xs:element name="FdpsResponsePayload" type="xs:string"/>
		</xs:sequence>
	</xs:complexType>
	<xs:complexType name="FdpsOperationalDataSubscriptionFaultType">
		<xs:sequence>
			<xs:element name="FdpsOperationalDataFault" type="xs:string"/>
		</xs:sequence>
	</xs:complexType>
	<xs:element name="FdpsOperationalDataSubscriptionRequestElement" type="fdpsdata:FdpsOperationalDataSubscriptionRequestType">
		<xs:annotation>
```

```
            <xs:documentation>
                    ********************************************************************
                    FdpsOperationalDataSubscriptionRequest defines the Requests for the EnRoute OperationalData  Publication
                    ********************************************************************
                </xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="FdpsOperationalDataSubscriptionResponseElement" type="fdpsdata:FdpsOperationalDataSubscriptionResponseType">
        <xs:annotation>
            <xs:documentation>
                    ********************************************************************
                    FdpsOperationalDataSubscriptionResponseElement defines the Response for the EnRoute OperationalData Publication
                    ********************************************************************
                </xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="FdpsOperationalDataSubscriptionFaultElement" type="fdpsdata:FdpsOperationalDataSubscriptionFaultType">
        <xs:annotation>
            <xs:documentation>
                    ********************************************************************
                    FdpsOperationalDataSubscriptionFaultElement defines the faults for the EnRouteOperationalData Publication
                    ********************************************************************
                </xs:documentation>
        </xs:annotation>
    </xs:element>
</xs:schema>
```

A.7 En Route General Message Publication: WSDL

WSDL Title: EnRouteGeneralMessagePublication.wsdl

Version: 1.0

Location: FAA NSRR

```
<?xml version="1.0" encoding="UTF-8"?>
<wsdl:definitions xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/" xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:http="http://schemas.xmlsoap.org/wsdl/http/" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:fdpsgeneralmessagepub="us:gov:dot:faa:atm:enroute:services:generalmessagepub" xmlns:fdpsdata="us:gov:dot:faa:atm:enroute:entities:flightdata"
name="enroute-general-message-data-publication-wsdl" targetNamespace="us:gov:dot:faa:atm:enroute:services:generalmessagepub">
    <wsdl:documentation>EnRoute General Message Publication</wsdl:documentation>
    <wsdl:types>
        <xs:schema>
            <xs:annotation>
                <xs:documentation>
                    ******************************************************************
                    EnRouteGeneralMessagePublicationDataModel.xsd contains the definitions of the data
                    types used in this wsdl
                    ******************************************************************
                </xs:documentation>
            </xs:annotation>
            <xs:import namespace="us:gov:dot:faa:atm:enroute:entities:flightdata"
schemaLocation="EnRouteGeneralMessagePublicationDataModel.xsd"/>
        </xs:schema>
    </wsdl:types>
    <wsdl:message name="FdpsSubscriptionRequestMessage">
        <wsdl:part name="FdpsSubscriptionRequest" element="fdpsdata:FdpsGeneralMessagePublicationSubscriptionRequestElement">
      </wsdl:part>
    </wsdl:message>
    <wsdl:message name="FdpsSubscriptionResponseMessage">
        <wsdl:part name="FdpsSubscriptionResponse" element="fdpsdata:FdpsGeneralMessagePublicationSubscriptionResponseElement">
      </wsdl:part>
    </wsdl:message>
    <wsdl:message name="FdpsSubscriptionFaultMessage">
        <wsdl:part name="fdpssubscriptionfaultpayload" element="fdpsdata:FdpsGeneralMessagePublicationSubscriptionFaultElement">
      </wsdl:part>
    </wsdl:message>
```

```
    <wsdl:portType name="FdpsGeneralMessageSubscriptionPortType">
        <wsdl:operation name="GetFdpsSubscription">
            <wsdl:input message="fdpsgeneralmessagepub:FdpsSubscriptionRequestMessage"/>
            <wsdl:output message="fdpsgeneralmessagepub:FdpsSubscriptionResponseMessage"/>
            <wsdl:fault name="FdpsSubscriptionFault" message="fdpsgeneralmessagepub:FdpsSubscriptionFaultMessage"> </wsdl:fault>
        </wsdl:operation>
    </wsdl:portType>
    <wsdl:binding name="FdpsGeneralMessageSubscriptionSOAPBinding" type="fdpsgeneralmessagepub:FdpsGeneralMessageSubscriptionPortType">
        <soap:binding style="document" transport="http://schemas.xmlsoap.org/soap/http"/>
        <wsdl:operation name="GetFdpsSubscription">
            <soap:operation soapAction="" style="document"/>
            <wsdl:input>
                <soap:body use="literal"/>
            </wsdl:input>
            <wsdl:output>
                <soap:body use="literal"/>
            </wsdl:output>
            <wsdl:fault name="FdpsSubscriptionFault">
                <soap:fault name="FdpsSubscriptionFault" use="literal"/>
            </wsdl:fault>
        </wsdl:operation>
    </wsdl:binding>
    <wsdl:service name="EnrouteGeneralMessagePublication">
        <wsdl:port name="EnrouteGeneralMessagePublicationSoapOverHttp"
binding="fdpsgeneralmessagepub:FdpsGeneralMessageSubscriptionSOAPBinding">
            <soap:address location="https://11.22.11.22:9000/EnrouteGeneralMessagePublication/"/>
        </wsdl:port>
    </wsdl:service>
</wsdl:definitions>
```

A.8 EnRouteGeneralMessagePublicationDataModel.xsd: Schema

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2010 rel. 2 (http://www.altova.com) by Patricio O Colon (DOT) -->
<xs:schema xmlns:fdpsdata="us:gov:dot:faa:atm:enroute:entities:flightdata" xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="us:gov:dot:faa:atm:enroute:entities:flightdata" elementFormDefault="qualified" attributeFormDefault="qualified">
    <xs:annotation>
        <xs:documentation>
                    ******************************************************************
                    This schema contains the definitions of the data
```

```
                    types for the subscription request, response and fault messages
                    used in Flight Data Publication Services
                    ******************************************************************
                </xs:documentation>
        </xs:annotation>
        <xs:complexType name="FdpsGeneralMessagePublicationSubscriptionRequestType">
            <xs:sequence>
                <xs:element name="FdpsRequestDestinationIdentifier" type="xs:string"/>
                <xs:element name="FdpsSourcefacility" type="xs:string"/>
                <xs:element name="FdpsMessageType" type="xs:string"/>
                <xs:element name="FdpsReceivedTimeStart" type="xs:string"/>
                <xs:element name="FdpsReceivedTimeEnd" type="xs:string"/>
                <xs:element name="FdpsSpecialFilters" type="xs:string"/>
            </xs:sequence>
        </xs:complexType>
        <xs:complexType name="FdpsGeneralMessagePublicationSubscriptionResponseType">
            <xs:sequence>
                <xs:element name="FdpsSubscriptionId" type="xs:string"/>
                <xs:element name="FdpsEndpointUrl" type="xs:string"/>
                <xs:element name="FdpsResponseDestinationIdentifier" type="xs:string"/>
                <xs:element name="FdpsResponsePayload" type="xs:string"/>
            </xs:sequence>
        </xs:complexType>
        <xs:complexType name="FdpsGeneralMessagePublicationSubscriptionFaultType">
            <xs:sequence>
                <xs:element name="FdpsGeneralMessagePublicationFault" type="xs:string"/>
            </xs:sequence>
        </xs:complexType>
        <xs:element name="FdpsGeneralMessagePublicationSubscriptionRequestElement"
type="fdpsdata:FdpsGeneralMessagePublicationSubscriptionRequestType">
            <xs:annotation>
                <xs:documentation>
                    ******************************************************************
                    FdpsGeneralMessagePublicationSubscriptionRequest defines the Requests for the EnRoute  General Message Publication
                    ******************************************************************
                </xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="FdpsGeneralMessagePublicationSubscriptionResponseElement"
type="fdpsdata:FdpsGeneralMessagePublicationSubscriptionResponseType">
```

```
        <xs:annotation>
            <xs:documentation>
                ********************************************************************
                FdpsGeneralMessagePublicationSubscriptionResponseElement defines the Response for the EnRouteGeneralMessagePublication
                ********************************************************************
            </xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="FdpsGeneralMessagePublicationSubscriptionFaultElement" type="fdpsdata:FdpsGeneralMessagePublicationSubscriptionFaultType">
        <xs:annotation>
            <xs:documentation>
                ********************************************************************
                FdpsGeneralMessagePublicationSubscriptionFaultElement defines the faults for the EnRouteGeneralMessagePublication
                ********************************************************************
            </xs:documentation>
        </xs:annotation>
    </xs:element>
</xs:schema>
```