FAA
AJV-2

Federal NOTAM System OCC Scenarios

Including AIXM 5.1 Sample Messages

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1 Introduction

1.1 Introduction to the Federal NOTAMs System (FNS)

The distribution of aeronautical information in an accurate and timely manner is essential to the safety of the National Airspace System (NAS). Aeronautical information encompasses many aspects of the NAS, but the focus with respect to this document is on the origination, storage, and distribution of Notices to Airmen (NOTAM). NOTAMs communicate temporary changes to components of, or hazards in, the NAS. The current NOTAM system is a compilation of many processes and systems, developed over many years, with significant overlap of function. Today's NOTAM system is deficient for both NOTAM originators and NOTAM recipients. Currently, most NOTAMs are reported by verbal, fax, or electronic communication with a flight service station (FSS) specialist. The FSS specialist will then type the NOTAM and submit it to the United States NOTAM System (USNS) for storage and dissemination. This process is slow, cumbersome, and contains errors approximately 40% of the time. Currently, NOTAMs are based largely on free text which limits the ability to sort through each NOTAM to filter only those that are applicable.

The Federal NOTAM System (FNS) is the new NOTAM management system designed to digitize the collection, dissemination, and storage of NOTAMs. The goal is to create a single authoritative source for NOTAM entry and dissemination improving efficiency, safety, and data quality. The concept behind the FNS is to have the originator of a NOTAM, such as an airport, generate and submit the NOTAM using a web-based standard NOTAM template. The inputs from the standard template will be validated against policy-driven business rules and immediately published and available to airmen for review. Also, by adhering to a digital format, these NOTAMs will be in a computer readable format such that air traffic control and flight planning around the world can easily sort through the NOTAMs finding only those that are relevant to their operations.

1.2 Introduction to the Aeronautical Information Exchange Model (AIXM version 5.1)

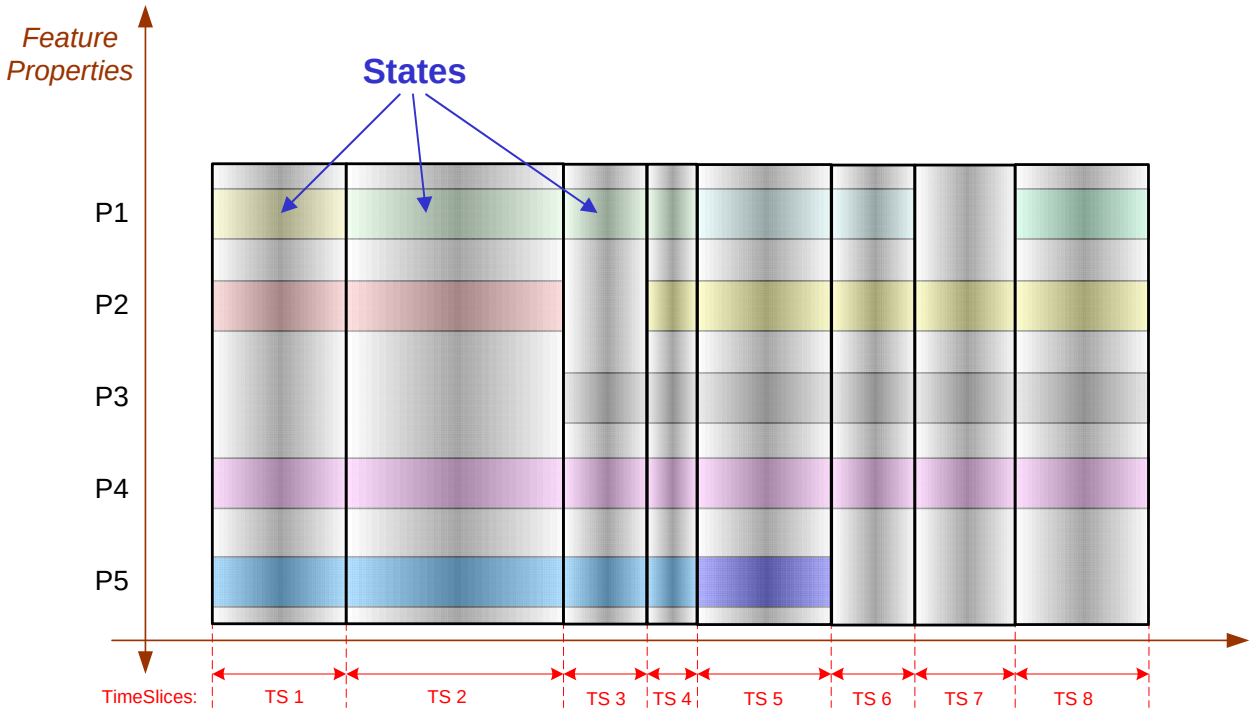
The Aeronautical Information Exchange Model (AIXM) is designed for the management and distribution of Aeronautical Information Services (AIS) data through the use of a common exchange model in digital format. The current version, 5.1, of AIXM uses existing and emerging information engineering standards. AIXM 5.1 contains an extensive temporality model, including support for the temporary information contained within a NOTAM. AIXM 5.1 is also aligned with International Organization for Standardization (ISO) standards for geospatial information, including the use of Geography Markup Language (GML). More information about AIXM can be found at the website: www.aixm.aero. The primary benefit in using AIXM is that by using a common exchange model, systems can achieve neutrality against applications and local views of data.

AIXM has two main components: the AIXM Conceptual Model and the AIXM Extensible Markup Language (XML) Schema. The AIXM Conceptual Model describes the features and properties in the aeronautical domain using the Unified Modeling Language (UML). The Conceptual Model is composed of Features, Objects, Attributes, and Relationships between features and objects. The AIXM XML Schema is an exchange model for aeronautical information data and is an implementation of the Conceptual Model as an XML schema.

1.3 Digital NOTAMs and AIXM version 5.1

A digital NOTAM is a dataset that contains NOTAM information in a structured format and can be fully interpreted by an automated system without human intervention. The concept of the digital NOTAM is based on the temporality rules of AIXM 5.1. NOTAMs communicate temporary changes to the NAS and AIXM can capture these dynamic changes through the use of timeslices. A pictoral representation of the temporality model is shown below. In this case, a feature has five distinct properties, which can vary independently over time. For each property changes, there is a new timeslice associated with the feature.

Figure 1



from Archive at aixm.aero

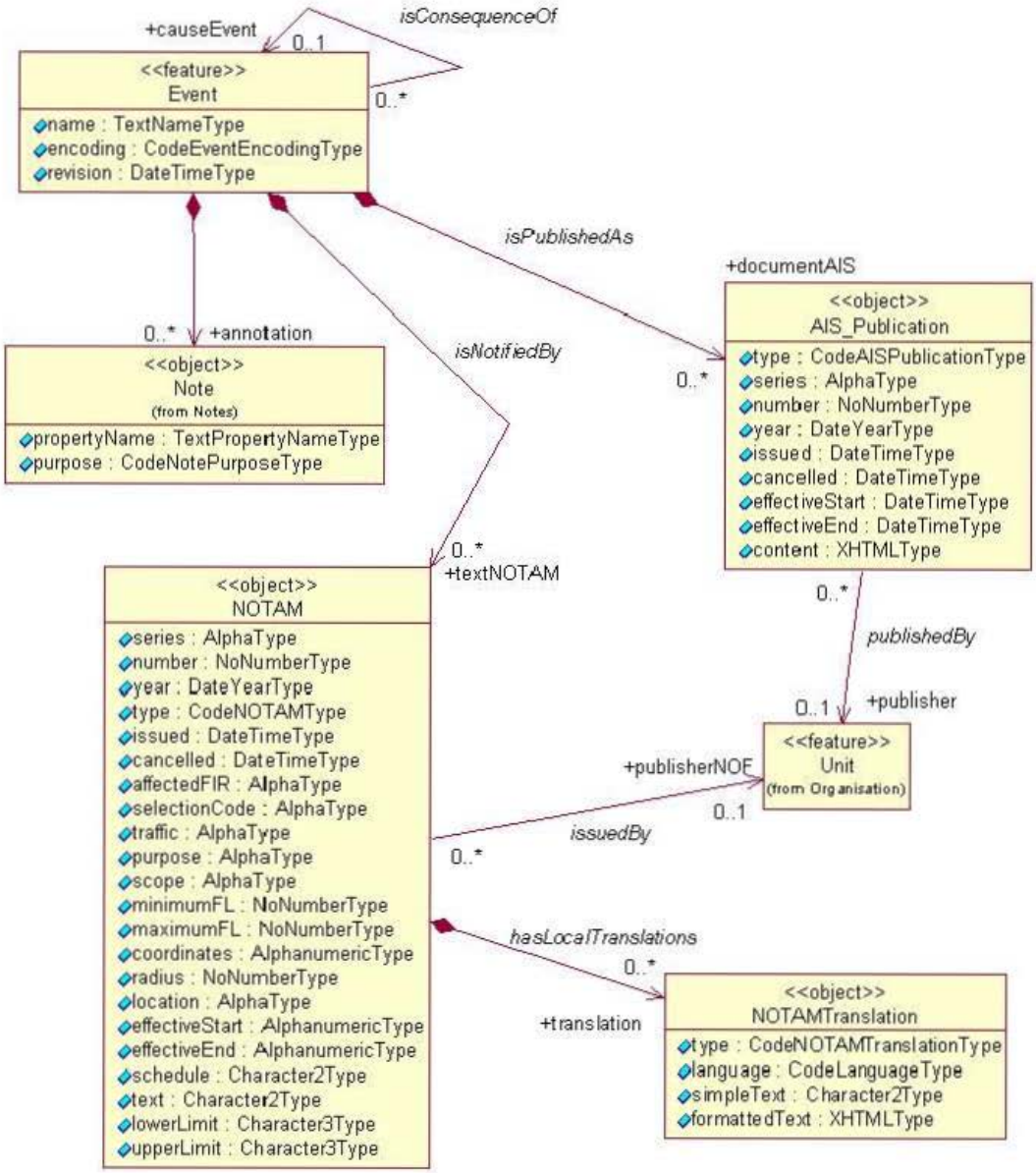
Most Digital NOTAM encodings will be captured as a timeslice of type TEMPDELTA. For example, a runway closure will be encoded as a new timeslice of type TEMPDELTA with the operationalStatus set to UNSERVICEABLE. Because of the structure of the model, a pre-requisite for any digital NOTAM is the availability of the corresponding static data on which the NOTAM information is based.

1.4 AIXM Event Schema for Digital NOTAM Messages

An AIXM application schema for creating the digital NOTAM messages is currently being developed as a collaborative effort between Eurocontrol, FAA, and stakeholders. Messages can be composed of any number of specified features and objects and is used to convey the digital NOTAM information between systems.

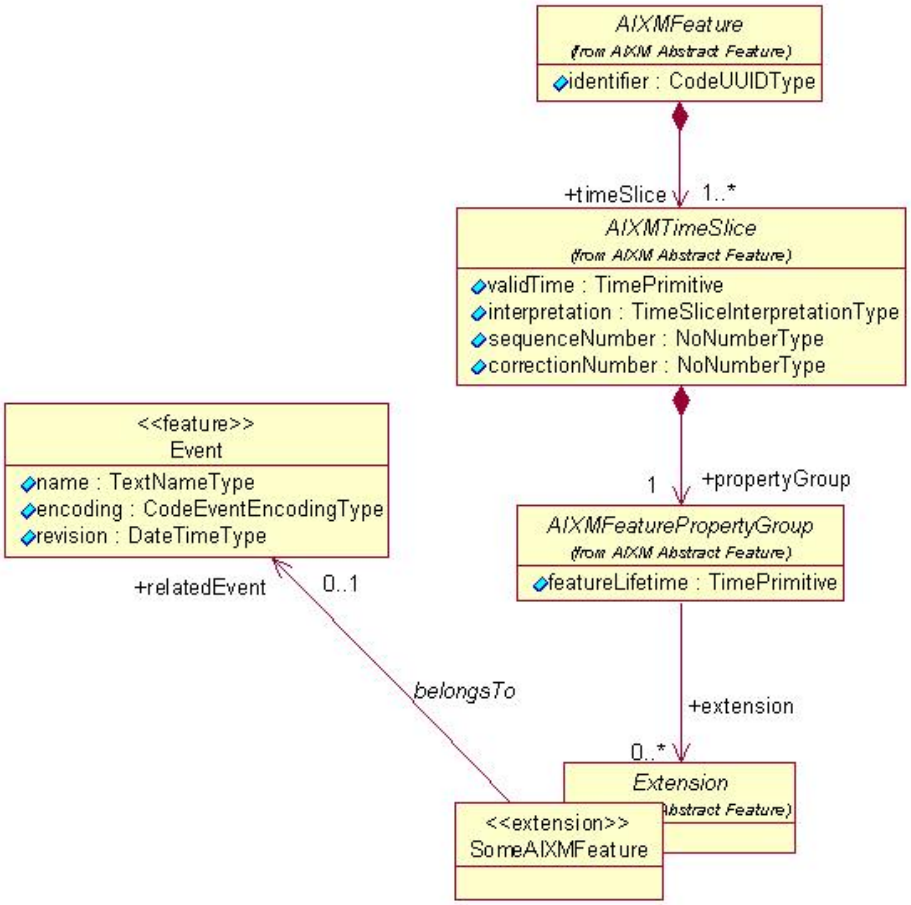
The UML model that defines the structure of the digital NOTAM message is shown in the diagram below. This schema also includes the options of updating other aeronautical information such as information published as AIP Supplements, AIP Amendments or AIC.
Changes to the model are available in the AIXM work area (http://www.aixm.aero/workarea). The model shown below is the most recent version, as of December 20, 2010.

Figure 2


+causeEvent
0..1
isConsequenceOf
0..*
<<feature>>
Event
name : TextNameType
encoding : CodeEventEncodingType
revision : DateTimeType
isPublishedAs
+documentAIS
<<object>>
AIS_Publication
type : CodeAISPublicationType
series : AlphaType
number : NoNumberType
year : DateYearType
issued : DateTimeType
cancelled : DateTimeType
effectiveStart : DateTimeType
effectiveEnd : DateTimeType
content : XHTMLType
0..*
+annotation
<<object>>
Note
(from Notes)
propertyName : TextPropertyNameType
purpose : CodeNotePurposeType
isNotifiedBy
0..*
0..*
+textNOTAM
<<object>>
NOTAM
series : AlphaType
number : NoNumberType
year : DateYearType
type : CodeNOTAMType
issued : DateTimeType
cancelled : DateTimeType
affectedFIR : AlphaType
selectionCode : AlphaType
traffic : AlphaType
purpose : AlphaType
scope : AlphaType
minimumFL : NoNumberType
maximumFL : NoNumberType
coordinates : AlphanumericType
radius : NoNumberType
location : AlphaType
effectiveStart : AlphanumericType
effectiveEnd : AlphanumericType
schedule : Character2Type
text : Character2Type
lowerLimit : Character3Type
upperLimit : Character3Type
0..*
publishedBy
0..1
+publisher
<<feature>>
Unit
(from Organisation)
+publisherNOF
0..1
issuedBy
0..*
hasLocalTranslations
0..*
+translation
<<object>>
NOTAMTranslation
type : CodeNOTAMTranslationType
language : CodeLanguageType
simpleText : Character2Type
formattedText : XHTMLType

Where the feature is related to the event as the following schema shows:

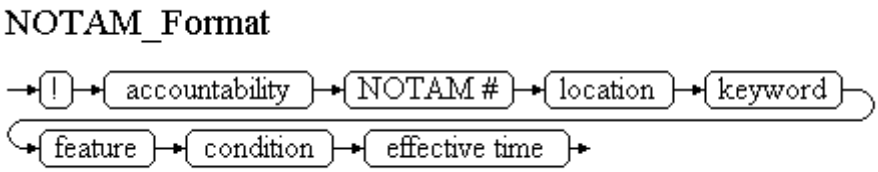
Figure 3



1.5 Purpose of Event Scenarios

The scenarios detailed in the chapters below describe the NOTAM condition that can be originated as the responsibility of Operational Control Centers (OCCs) Personnel. Each event scenario is linked to a feature from the baseline data. The purpose of this documentation is to capture the rules that are specific to each category of OCC Originated NOTAM. This includes capturing the digital translations of each piece of the required NOTAM information, defining the applicable business rules (template, policy, and digital encoding) and providing the translation from AIXM to supported text formats: FAA Legacy, ICAO, and Plain Text.

The general format of a D-NOTAM distributed by the FAA is shown below followed by two real examples of distributed NOTAMs:



Examples-
!ABI 03/012 ABI COM EFAS OUTLET 122.0 OTS
!DCA 07/211 DCA RWY RWY 19 REIL OTS WEF 0901251400-0901260100

1.6 Scope

The scenarios contained in this document include NOTAM conditions that are commonly reported by OCCs. The NOTAM entry system for creating digital NOTAMs requires the definition of several key components that are described below in the order that they will appear in the NOTAM scenario documentation.

First, the NOTAM condition is identified with a short description followed by a flow diagram that depicts the required format of the reported NOTAM. The information provided in these flow diagrams covers the information provided in the keyword, feature, and condition segments of the schema above. The flowchart for each scenario does not include the accountability, NOTAM number, or location identifier that would precede the NOTAM scenario. The flowcharts also do not depict the effective time for each NOTAM scenario. Because every NOTAM must have this information it is assumed that this information is present and is not shown in the figures to avoid redundancy. The ordering of the information elements contained in the flow diagram for each scenario is dictated first by policy and then by subject matter experts review and a review of historical NOTAMs. The documentation also provides a short sampling of historical NOTAMs that fall into the condition category.

The next section contains the information for mapping the identified NOTAM condition into AIXM 5.1 digital format. In this section, information is provided for the transformation of each element of the NOTAM into AIXM 5.1 compliant digital format. Objects that are required for FAA issued NOTAMs that do not currently have a representation in AIXM 5.1 are highlighted in blue. This identifies the extensions created in the UML Model to accommodate this information in a digital format. Additionally, this section provides a translation of the information contained in the digital format to FAA, ICAO and Plain Text. The FAA and ICAO translations will have the standardized and approved NOTAM contractions, if applicable, where as the Plain Text will provide the plain language translation. When mapping the digital NOTAM into ICAO format, a QCode for the condition must be provided. The QCode and Series are identified in the following section and are generally linked to the status of the NOTAM condition, although there are exceptions. This information is provided such that the NOTAM entry system will be able to translate the NOTAM format from digital to FAA, ICAO, plain text and graphical formats.

Business rules (template, policy, and data encoding) are also determined for each NOTAM scenario to guarantee that the NOTAM created by FNS conforms to current FAA policy. The template business rules specify the rules associated with what information is required in the template and which information is optional and conforms to the flow diagram provided at the beginning of the individual

scenario. Policy business rules are provided, if applicable, and identify the policies that dictate the issuance of NOTAMs specific to those conditions. Additionally, encoding business rules for creating the AIXM 5.1 digital message are provided. A sample AIXM 5.1 compliant digital message is provided for each NOTAM condition scenario, along with the identified extensions.

Lastly, translation templates to FAA, ICAO, and Plain Language are provided using the digital data elements defined in the documentation. Additional analysis and solutions to potential policy related issues are presented when needed.

1.7 References

The relevant documentation used for this analysis includes:

- Order JO 7930.2M, Notices to Airmen (NOTAM)
- Order JO 7930.2M CHG 1, Notices to Airmen (NOTAM)
- Order JO 7340.2B, Contractions
- CFR 14 Part 139, Certification of Airports
- Aeronautical Information Manual, Official Guide to Basic Flight Information and ATC Procedures (Change 1 2008)
- International Civil Aviation Organization (ICAO) Doc 8126 Aeronautical Information Services Manual (Sixth Edition 2003)
- ICAO Annex 15 to the Convention on International Civil Aviation, Aeronautical Information Services (Thirteeth Edition 2010)
- ICAO Doc 8400 Procedures for Air Navigation Services, ICAO Abbreviations and Codes (Seventh Edition 2007)
- EUROCONTROL Guidelines, Operating Procedures for AIS Dynamic Data (OPADD) (Edition 3.0 2009)
- US NOTAMs Repository Database (for examples of current NOTAMs)
- Guidelines for the use of GML in AIXM 5.1 (v 0.1) (2010)
- Proposed practices for the use of XLink and XPointer in AIXM 5.1, AIXM Proposal (v 0.3) (2010)
- Open Geospatial Consortium Inc: Requirements for Aviation Metadata Discussion Paper (Discussion Paper 2010)
- Open Geospatial Consortium Inc: Guidance on the Aviation Metadata Profile (Discussion Paper 2010)
- AIXM 5 Feature Identification and Reference: use of xlink:href and UUID
- AIXM 5.1 Business Rules
- AIXM Forum

2 Accountability (in Metadata)

The accountable organization for the NOTAM. This information appears in two locations in the Metadata because, because there is a point of contact (the USNOF) and the accountable organization.

2.1 AIXM Mapping and Translation

2.1.1 Scenario Details

TABLE 2.1

Attribute	Value
Description	Accountable Organization
Feature Type Id	Metadata
Feature Xpath	messageMetadata
Standard	ISO 19115

2.1.2 Accountable Organization [*gmd:organisationName*]

Description: The name of the accountable organization for the orignator/point of contact.

Source: Assigned by the user account.

TABLE 2.2
Accountable Organization

Attribute	Value
AIXM Path (UML)	MD_Metadata (feature)/ contact (element)
AIXM Element Xpath	gmd:MD_Metadata/ gmd:contact/ gmd:CI_ResponsibleParty/ gmd:organisationName/ gco:CharacterString
Type	CharacterString
AIXM Path (UML)	MD_Metadata (feature)/ MD_Identification (abstract)/ pointOfContact (element)
AIXM Element Xpath	gmd:MD_Metadata/ gmd:identificationInfo/ gmd:MD-DataIdentification/ gmd:pointOfContact/ gmd:CI_ResponsibleParty/ gmd:organisationName/ gco:CharacterString
Type	CharacterString

2.1.3 Contact Information [*gmd:voice*]

Description: The contact information for the orignator/point of contact.

Source: Assigned by the user account.

TABLE 2.3
Contact Information

Attribute	Value
AIXM Path (UML)	MD_Metadata (feature)/ contact (element)
AIXM Element Xpath	gmd:MD_Metadata/ gmd:contact/ gmd:CI_ResponsibleParty/ gmd:contactInfo/ gmd:CI_Contact/ gmd:phone/ gmd:CI_Telephone/ gmd:voice/ gco:CharacterString
Type	CharacterString
AIXM Path (UML)	MD_Metadata (feature)/ MD_Identification (abstract)/ pointOfContact (element)

AIXM Element Xpath	gmd:MD_Metadata/ gmd:identificationInfo/ gmd:MD-DataIdentification/ gmd:pointOfContact/ gmd:CI_ResponsibleParty/ gmd:contactInfo/ gmd:CI_Contact/ gmd:phone/ CI_Telephone/ gmd:voice/ gco:CharacterString
Type	CharacterString

2.1.4 Contact Information [*gmd:voice*]

Description: The contact information for the orignator/point of contact.

Source: Assigned by the user account.

TABLE 2.4
Contact Information

Attribute	Value	
AIXM Path (UML)	MD_Metadata (feature)/ contact (element)	
AIXM Element Xpath	gmd:MD_Metadata/ gmd:contact/ gmd:CI_ResponsibleParty/ gmd:role/ gmd:CI_RoleCode [codeList="../ISO_19139_Schemas/resources/codeList.xml#CI_RoleCode" codeListValue="pointOfContact">pointOfContact</gmd:CI_RoleCode]	
Type	String	
	Defined:	pointOfContact
AIXM Path (UML)	MD_Metadata (feature)/ MD_Identification (abstract)/ pointOfContact (element)	
AIXM Element Xpath	gmd:MD_Metadata/ gmd:identificationInfo/ gmd:MD-DataIdentification/ gmd:role/ gmd:CI_RoleCode [codeList="../ISO_19139_Schemas/resources/codeList.xml#CI_RoleCode" codeListValue="**originator**">]	
Type	String	
	Defined:	originator

2.2 Sample AIXM Message

```
<?xml version="1.0" encoding="UTF-8"?>
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1
./AIXM_Features.xsd http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd "
gml:id="FNS-Message" xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message"
xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns="http://www.aixm.aero/schema/5.1" xmlns:gts="http://www.isotc211.org/2005/gts"
xmlns:srv="http://www.isotc211.org/2005/srv">
<messageMetadata>
  <gmd:MD_Metadata>
    <gmd:contact>
      <gmd:CI_ResponsibleParty>
        <gmd:organisationName>
          <gco:CharacterString>USNOF</gco:CharacterString>
        </gmd:organisationName>
        <gmd:contactInfo>
          <gmd:CI_Contact>
            <gmd:phone>
              <gmd:CI_Telephone>
                <gmd:voice>
                  <gco:CharacterString>+18888766826</gco:CharacterString>
                </gmd:voice>
              </gmd:CI_Telephone>
```

```
            </gmd:phone>
          </gmd:CI_Contact>
        </gmd:contactInfo>
        <gmd:role>
          <gmd:CI_RoleCode codeList="../ISO_19139_Schemas/resources/codeList.xml#CI_RoleCode"
codeListValue="pointOfContact">pointOfContact</gmd:CI_RoleCode>
        </gmd:role>
      </gmd:CI_ResponsibleParty>
    </gmd:contact>
…
    <gmd:identificationInfo>
      <gmd:MD_DataIdentification>
        <gmd:pointOfContact>
          <gmd:CI_ResponsibleParty>
            <gmd:organisationName>
              <gco:CharacterString>ACY</gco:CharacterString>
            </gmd:organisationName>
            <gmd:contactInfo>
              <gmd:CI_Contact>
                <gmd:phone>
                  <gmd:CI_Telephone>
                    <gmd:voice>
                      <gco:CharacterString>+12025807400</gco:CharacterString>
                    </gmd:voice>
                  </gmd:CI_Telephone>
                </gmd:phone>
              </gmd:CI_Contact>
            </gmd:contactInfo>
            <gmd:role>
              <gmd:CI_RoleCode codeList="../ISO_19139_Schemas/resources/codeList.xml#CI_RoleCode"
codeListValue="originator">originator</gmd:CI_RoleCode>
            </gmd:role>
          </gmd:CI_ResponsibleParty>
        </gmd:pointOfContact>
…
      </gmd:MD_DataIdentification>
    </gmd:identificationInfo>
  </gmd:MD_Metadata>
</messageMetadata>
<notamMessage:hasMember>
…
</notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```

3 NOTAM Information (Number)

The NOTAM number assigned by the USNS.

3.1 AIXM Mapping and Translation

3.1.1 Scenario Details

TABLE 3.1

Attribute	Value
Description	NOTAM Number
Maps to Keyword	AD, APRON, OBST, RWY, TWY, SVC
Feature Type Id	Event
Feature Xpath	aixm:Event
AIXM Mapping Diagrams	AIXM Event Schema (for digital NOTAMs)

3.1.2 NOTAM Number [*number*]

Description: A number assigned by the USNS to a published NOTAM.

Source: Assigned by USNS (required for distribution).

TABLE 3.2
NOTAM Number

Attribute	Value
AIXM Path (UML)	Event (feature)/ NOTAM (object)/ number (attribute)
AIXM Element Xpath	Event/ timeSlice/ EventTimeSlice [interpretation: BASELINE]/ textNOTAM/ NOTAM/ number
Type	NoNumberType

3.1.3 Year [*year*]

Description: The year the NOTAM is published.

Source: Assigned by NOTAM Entry Application (required for distribution).

TABLE 3.3
Publication Year

Attribute	Value
AIXM Path (UML)	Event (feature)/ NOTAM (object)/ year (attribute)
AIXM Element Xpath	Event/ timeSlice/ EventTimeSlice [interpretation: BASELINE]/ textNOTAM/ NOTAM/ year
Type	DateYearType

3.1.4 Series [*series*] (FUTURE Policy)

Description: A series letter assigned by the USNS to a published NOTAM.

Source: Assigned by USNS (required for distribution).

TABLE 3.4
Series

Attribute	Value
AIXM Path (UML)	Event (feature)/ NOTAM (object)/ series (attribute)
AIXM Element Xpath	Event/ timeSlice/ EventTimeSlice [interpretation: BASELINE]/ textNOTAM/ NOTAM/ series
Type	AlphaType

3.1.5 QCode [*selectionCode*] (FUTURE Policy)

Description: The QCode, as defined by the sections below

Source: Determined by NOTAM Entry Application (required for distribution).

TABLE 3.5
QCode

Attribute	Value
AIXM Path (UML)	Event (feature)/ NOTAM (object)/ selectionCode (attribute)
AIXM Element Xpath	Event/ timeSlice/ EventTimeSlice [interpretation: BASELINE]/ textNOTAM/ NOTAM/ selectionCode
Type	AlphaType

3.1.6 Traffic [*traffic*] (FUTURE Policy)

Description: The traffic, as defined by the sections below

Source: Determined by NOTAM Entry Application (required for distribution).

TABLE 3.6
Traffic

Attribute	Value
AIXM Path (UML)	Event (feature)/ NOTAM (object)/ traffic (attribute)
AIXM Element Xpath	Event/ timeSlice/ EventTimeSlice [interpretation: BASELINE]/ textNOTAM/ NOTAM/ traffic
Type	AlphaType

3.1.7 Purpose [*purpose*] (FUTURE Policy)

Description: The purpose, as defined by the sections below

Source: Determined by NOTAM Entry Application (required for distribution).

TABLE 3.7
Purpose

Attribute	Value
AIXM Path (UML)	Event (feature)/ NOTAM (object)/ purpose (attribute)
AIXM Element Xpath	Event/ timeSlice/ EventTimeSlice [interpretation: BASELINE]/ textNOTAM/ NOTAM/ purpose
Type	AlphaType

3.1.8 Scope [*scope*] (FUTURE Policy)

Description: The scope, as defined by the sections below

Source: Determined by NOTAM Entry Application (required for distribution).

TABLE 3.8
Scope

Attribute	Value
AIXM Path (UML)	Event (feature)/ NOTAM (object)/ scope (attribute)
AIXM Element Xpath	Event/ timeSlice/ EventTimeSlice [interpretation: BASELINE]/ textNOTAM/ NOTAM/ scope
Type	AlphaType

3.1.9 Coordinates [*coordinate*] (FUTURE Policy)

Description: The coordinates of the hazard, Airport ARP.

Source: Baseline data (required for distribution).

TABLE 3.9
Coordinates

Attribute	Value
AIXM Path (UML)	Event (feature)/ NOTAM (object)/ coordinates (attribute)
AIXM Element Xpath	Event/ timeSlice/ EventTimeSlice [interpretation: BASELINE]/ textNOTAM/ NOTAM/ coordinates
Type	AlphaNumericType

3.1.10 Radius of Influence [*radius*] (FUTURE Policy)

Description: The radius of influence.

Source: Determined by NOTAM Entry Application, (required for distribution).

TABLE 3.10
Radius of Influence

Attribute	Value
AIXM Path (UML)	Event (feature)/ NOTAM (object)/ radius (attribute)
AIXM Element Xpath	Event/ timeSlice/ EventTimeSlice [interpretation: BASELINE]/ textNOTAM/ NOTAM/ radius
Type	NoNumberType

3.2 Business Rules

3.2.1 Data Encoding Business Rules

a. All information should be intered as BASELINE.

b. The times defined in the text NOTAM must match those in the digital message.

3.3 Sample AIXM Message


```
<message:hasMember>
  <event:Event gml:id="e01">
    <event:timeSlice>
      <event:EventTimeSlice gml:id="e01-1">
        <gml:validTime>
          <gml:TimePeriod gml:id="e01-2">
            <gml:beginPosition>2008-12-22T00:00:00</gml:beginPosition>
            <gml:endPosition>2008-12-22T01:00:00</gml:endPosition>
          </gml:TimePeriod>
        </gml:validTime>
        <aixm:interpretation>BASELINE</aixm:interpretation>
        <aixm:sequenceNumber>1</aixm:sequenceNumber>
        <aixm:featureLifetime>
          <gml:TimePeriod gml:id="e01-3">
            <gml:beginPosition>2008-12-22T00:00:00</gml:beginPosition>
            <gml:endPosition>2008-12-22T01:00:00</gml:endPosition>
          </gml:TimePeriod>
        </aixm:featureLifetime>
        <event:encoding>DIGITAL</event:encoding>
        <event:textNOTAM>
          <event:NOTAM gml:id="e01-4">
            <event:series>A</event:series>
            <event:number>0667</event:number>
            <event:year>2008</event:year>
            <event:type>N</event:type>
            <event:issued>2008-12-22T00:00:00</event:issued>
            <event:selectionCode>QFALT</event:selectionCode>
            <event:traffic>ALL</event:traffic>
            <event:purpose>NBO</event:purpose>
            <event:scope>A</event:scope>
            <event:radius>999</event:radius>
            <event:effectiveEnd>2008-12-22T01:00:00</event:effectiveEnd>
            <event:text>ACY AD CLSD DUE TO SNOW</event:text>
            <event:publisherNOF xlink:href="#UNIT01"/>
            <event:concernedAirportHeliport xlink:href="urn:faa:gov:nasr:74efb6ba-a52a-46c0-a16b-03860d356882"/>
            <event:translation>
              <event:NOTAMTranslation gml:id="NT01">
                <event:type>LOCAL_FORMAT</event:type>
              </event:NOTAMTranslation>
            </event:translation>
          </event:NOTAM>
        </event:textNOTAM>
        <event:update xlink:href="urn:faa:gov:nasr:74efb6ba-a52a-46c0-a16b-03860d356882"/>
      </event:EventTimeSlice>
    </event:timeSlice>
  </event:Event>
</message:hasMember>
```

4 Affected Location By Bounding Box (in Metadata)

A bounding box can be defined around the affected location contained in the digital NOTAM message. This information will assist in search of available aviation data. The box should be defined with westbound and eastbound longitudes, and southbound and northbound latitudes in decimal degrees with a precision of a minimum of two significant figures.
[Source: OWS-6, INSPIRE IR (4.1), Annex 15 (Chapter 10)]

4.1 Sample AIXM Message

```
<gmd:extent>
  <gmd:EX_Extent>
    <gmd:geographicElement>
      <gmd:EX_GeographicBoundingBox>
        <gmd:westBoundLongitude>
          <gco:Decimal>-74.70</gco:Decimal>
        </gmd:westBoundLongitude>
        <gmd:eastBoundLongitude>
          <gco:Decimal>-74.53</gco:Decimal>
        </gmd:eastBoundLongitude>
        <gmd:southBoundLatitude>
          <gco:Decimal>39.40</gco:Decimal>
        </gmd:southBoundLatitude>
        <gmd:northBoundLatitude>
          <gco:Decimal>39.48</gco:Decimal>
        </gmd:northBoundLatitude>
      </gmd:EX_GeographicBoundingBox>
    </gmd:geographicElement>
  </gmd:EX_Extent>
</gmd:extent>
```

5 Affected Location (in AIXM)

Provides the affected location information of the NOTAM.

Airport

5.1 AIXM Mapping and Translation

5.1.1 Details

TABLE 5.1

Attribute	Value
Description	Affected Location
Maps to Keyword	AD, APRON, OBST, RWY, TWY, SVC
Feature Type Id	AirportHeliport
Feature Xpath	aixm:AirportHeliport
AIXM Mapping Diagrams	AirportHeliport

5.1.2 Designator [*designator*] – Aerodrome

Description: A coded designator for an Aerodrome/Heliport.

The rules according to which this identifier should be formed are as follows:

a. If the AD/HP has an ICAO four-letter location indicator, then this one will become the CODE_ID for the Aerodrome/Heliport;

b. If the AD/HP does not have an ICAO four-letter location indicator, but it has an IATA three letter code, then this one will become the CODE_ID for the Aerodrome/Heliport;

c. If the AD/HP has neither an ICAO four-letter location indicator nor an IATA three letter code, then an artificial generated code will be used. This will contain a group of letters and a number. The group of letters could be the two-letter code of the State responsible for the Aerodrome/Heliport, and the number could be an integer between 0001 and 9999.

Source: User-selected from baseline data (required).

TABLE 5.2
Aerodrome FAA designator

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – designator (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ designator
AIXM Mapping	Class: AirportHeliport
Type	CodeAirportHeliportDesignatorType
Min length	3
Max length	6
Pattern	([A-Z]|\d)*

5.1.3 ICAO Designator [*ICAOType*] – Aerodrome

Description: The four-letter ICAO location indicator of the aerodrome/heliport, as listed in ICAO DOC 7910.

Source: User-selected from baseline data – translated from FAA designator.

TABLE 5.3
Aerodrome ICAO designator

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – locationIndicatorICAO (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ locationIndicatorICAO
AIXM Mapping	Class: AirportHeliport
Type	locationIndicatorICAO
Min length	4
Max length	4
Pattern	[A-Z]*

5.1.4 Name [*name*] – Aerodrome

Description: The primary official name of an aerodrome as designated by an appropriate authority.

Source: User-selected from baseline data – translated from FAA designator.

TABLE 5.4
Official Aerodrome Name

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – name (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ name
AIXM Mapping	Class: AirportHeliport
Type	CodeNameType
Min length	1
Max length	60
Pattern	[A-Z]*

5.1.5 Location [*location*]

Description: The affected location (added to the text NOTAM wrapper)

Source: Baseline data. (Required).

TABLE 5.5
Location

Attribute	Value
AIXM Path (UML)	Event (feature)/ NOTAM (object)/ location (attribute)
AIXM Element Xpath	Event/ timeSlice/ EventTimeSlice [interpretation: BASELINE]/ textNOTAM/ NOTAM/ location
Type	AlphaType

5.2 Business Rules

5.2.1 Data Encoding Business Rules

For entering *designator*, *name*, and *controlType* use a TimeSlice of type SNAPSHOT.

5.3 Sample AIXM Message


```
<notamMessage:hasMember>
  <AirportHeliport gml:id="ACY">
    <gml:identifier codeSpace="uuid">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <AirportHeliportTimeSlice gml:id="ACY_TS01">
        <gml:validTime>
        <gml:TimeInstant gml:id="ACY_TI01">
          <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
        </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <designator>ACY</designator>
        <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
        <locationIndicatorICAO>KACY</locationIndicatorICAO>
        <ARP>
          <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP01">
            <gml:pos>39.27 -74.34</gml:pos>
          </ElevatedPoint>
        </ARP>
      </AirportHeliportTimeSlice>
    </timeSlice>
  </AirportHeliport>
</notamMessage:hasMember>
```


Airspace

5.4 AIXM Mapping and Translation

5.4.1 Details

TABLE 5.6

Attribute	Value
Description	Affected Location
Maps to Keyword	COM, SVC
Feature Type Id	Airspace
Feature Xpath	aixm:Aispace
AIXM Mapping Diagrams	Airspace/Airspace Feature

5.4.2 Airspace Designator [*designator*]

Description: The Airspace about which the information is provided.

Source: User-selected from baseline data (required).

TABLE 5.7
Airspace designator

Attribute	Value
AIXM Path (UML)	Airspace (feature) – designator (attribute)
AIXM Element Xpath	Airspace/ timeSlice/ AirspaceTimeSlice [interpretation SNAPSHOT]/ designator
AIXM Mapping	Class: Airspace
Type	CodeAirspaceDesignatorType
Min length	1
Max length	10
Pattern	([A-Z]|[0-9]|[, !"&#$%'\(\)*\+\-\./:;<=>\?@\[\\\]\^ |\{\}])*

5.4.3 Name [*name*] – Airspace

Description: The name given to an airspace by a responsible authority.

Source: User-selected from baseline data – translated from FAA designator.

TABLE 5.8
Official Airspace Name

Attribute	Value
AIXM Path (UML)	Airspace (feature) – name (attribute)
AIXM Element Xpath	Airspace/ timeSlice/ AirspaceTimeSlice [interpretation SNAPSHOT]/ name
AIXM Mapping	Class: Airspace
Type	CodeNameType
Min length	1
Max length	60
Pattern	[A-Z]*

5.4.4 Control Type [*controlType*]

Description: The primary organization type in terms of civil or miliatry, providing air traffic services within a designated airspace.

Source: User-selected from baseline

TABLE 5.9
Control Type

Attribute	Value		
AIXM Path (UML)	Airspace (feature) – controlType (attribute)		
AIXM Element XPath	Airspace/ timeSlice/ AirspaceTimeSlice [interpretation SNAPSHOT]/ controlType		
AIXM Mapping	Class: Airspace		
Enumeration	CodeMilitaryOperationsType		
	AIXM	**Translations**	
	CIVIL	ICAO	---
		FAA	---
		Plain Text	---

5.5 Business Rules

5.5.1 Data Encoding Business Rules

For entering *designator*, *locationICAO*, *name*, and *ARP* use a TimeSlice of type SNAPSHOT.

5.6 Sample AIXM Message


```
  <Airspace gml:id="ZHU">
    <gml:identifier codeSpace="uuid">a82b3fc9-4aa4-4e67-8def-aaea1ac555j</gml:identifier>
    <timeSlice>
      <AirspaceTimeSlice gml:id="ZHU_TS01">
        <gml:validTime>
          <gml:TimeInstant gml:id="ZHU_TI01">
            <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
          </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <designator>ZHU</designator>
        <name>HOUSTON CENTER</name>
        <controlType>CIVIL</controlType>
      </AirspaceTimeSlice>
    </timeSlice>
  </Airspace>
</notamMessage:hasMember>
```

6 NOTAM Effective Times

Provides the effective times of the NOTAM. Based in AIXM 5.1 Temporality Model.

6.1 AIXM Mapping and Translation

6.1.1 Details

TABLE 6.1

Attribute	Value
Description	Effective times
Maps to Keyword	AD, APRON, OBST, RWY, TWY, SVC
Feature Type Id	ALL
Feature Xpath	
AIXM Mapping Diagrams	GML – decimal

6.1.2 SNAPSHOT (TimeInstant)

Description: The time instant of a given snapshot of baseline data

Source: Determined at the time of digital capture.

TABLE 6.2
Interpretation: SNAPSHOT

Attribute	Value
AIXM Element Xpath	gml:ValidTime/ gml:TimeInstant/ gml:timePosition
Type	TimePositionUnion (ISO 19108)
Pattern	YYYY-MM-DDTHH:MM:SS

```
<gml:validTime>
  <gml:TimeInstant gml:id="TWY01_TS01_TI01">
    <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
  </gml:TimeInstant>
</gml:validTime>
```

6.1.3 TEMPDELTA (TimePeriod)

Description: The effective time of a temporary change.

Source: User-entered (required).

TABLE 6.3
Interpretation: TEMPDELTA

Attribute	Value
AIXM Element Xpath	gml:ValidTime/ gml:TimePeriod/ gml:beginPosition gml:ValidTime/ gml:TimePeriod/ gml:endPosition
Type	TimePositionUnion (ISO 19108)
Pattern	YYYY-MM-DDTHH:MM:SS

201004070900 – 201004091500

```
<gml:validTime>
  <gml:TimePeriod gml:id="TWY02_TS01_TP01">
    <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
    <gml:endPosition>2010-04-09T15:00:00</gml:endPosition>
  </gml:TimePeriod>
```

```
</gml:validTime>
```

6.1.4 PERMDELTA

Description: The effective time of a permanent change on an existing feature (90 days or longer between start and end time).

Source: User-entered (required).

TABLE 6.4
Interpretation: PERMDELTA

Attribute	Value	
AIXM Element Xpath	gml:ValidTime/ gml:TimePeriod/ gml:beginPosition gml:ValidTime/ gml:TimePeriod/ gml:endPosition	
Type	TimePositionUnion (ISO 19108)	
Pattern for	YYYY-MM-DDTHH:MM:SS	
Pattern for indeterminatePosition	unknown	…
	after, before, now	YYYY-MM-DDTHH:MM:SS

201004070900 – 201009091500

```
<gml:validTime>
  <gml:TimePeriod gml:id="TWY02_TS01_TP01">
    <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
    <gml:endPosition>2010-09-09T15:00:00</gml:endPosition>
  </gml:TimePeriod>
</gml:validTime>
```

201004070900 – PERM

```
<gml:validTime>
  <gml:TimePeriod gml:id="TWY02_TS01_TP01">
    <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
    <gml:endPosition indeterminatePosition="unknown"/>
  </gml:TimePeriod>
</gml:validTime>
```

6.1.5 BASELINE/BASELINE with End of Life

Description: The effective time of a baseline condition (new feature).

Source: User-entered (required).

TABLE 6.5
Interpretation: BASELINE

Attribute	Value	
AIXM Element Xpath	gml:ValidTime/ gml:TimePeriod/ gml:beginPosition gml:ValidTime/ gml:TimePeriod/ gml:endPosition	
Type	TimePositionUnion (ISO 19108)	
Pattern for	YYYY-MM-DDTHH:MM:SS	
Pattern for indeterminatePosition	unknown	…
	after, before, now	YYYY-MM-DDTHH:MM:SS

201004070900 – PERM

```
<gml:validTime>
  <gml:TimePeriod gml:id="TWY02_TS01_TP01">
    <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
    <gml:endPosition indeterminatePosition="unknown"/>
  </gml:TimePeriod>
</gml:validTime>
```

201004070900 – 201004191500 (example: Temporary Obstacle)

```
<gml:validTime>
  <gml:TimePeriod gml:id="TWY02_TS01_TP01">
    <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
    <gml:endPosition 2010-04-19T15:00:00"/>
  </gml:TimePeriod>
</gml:validTime>
```

6.1.6 Estimated (EST) Times

According to Annex 15, Appendix 6, any NOTAM which includes an EST shall be cancelled or replaced before the date-time specified in item C). However, for events that include a gml:endPosition element with a value for the "indeterminatePosition" attribute, FNS or USNS will require an action from the originators.

Description: The effective time of a temporary condition.

Source: User-entered (required).

TABLE 6.6
Estimated End Times

Attribute	Value	
AIXM Element Xpath	gml:ValidTime/ gml:TimePeriod/ gml:beginPosition gml:ValidTime/ gml:TimePeriod/ gml:endPosition	
Type	TimePositionUnion (ISO 19108)	
Pattern	YYYY-MM-DDTHH:MM:SS	
Pattern for Estimated End Time	unknown	YYYY-MM-DDTHH:MM:SS
	after, before, now	YYYY-MM-DDTHH:MM:SS
Source	Data Encoding Rules	

201004070900 – 201006091500EST

```
<gml:validTime>
  <gml:TimePeriod gml:id="TWY02_TS01_TP01">
    <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
    <gml:endPosition indeterminatePosition="unknown"/>2010-06-09T15:00:00</gml:endPosition>
  </gml:TimePeriod>
</gml:validTime>
```

6.2 Business Rules

6.2.1 Template Business Rules

a. The start date/time must be at or after the current date/time.

b. The end date/time must be after the start date/time.

6.2.2 Policy Business Rules

a. The NOTAM shall not be published if the start time is more than 72 hours in the future.

b. The day begins at 0000 and ends at 2359

c. All start and end times are entered in Coordinated Universal Time (UTC)

d. The start and end times are stated in 10 digits (year, month, day, hour, minute)

e. Do not use sunrise (SR) or sunset (SS)

6.2.3 Data Encoding Business Rules

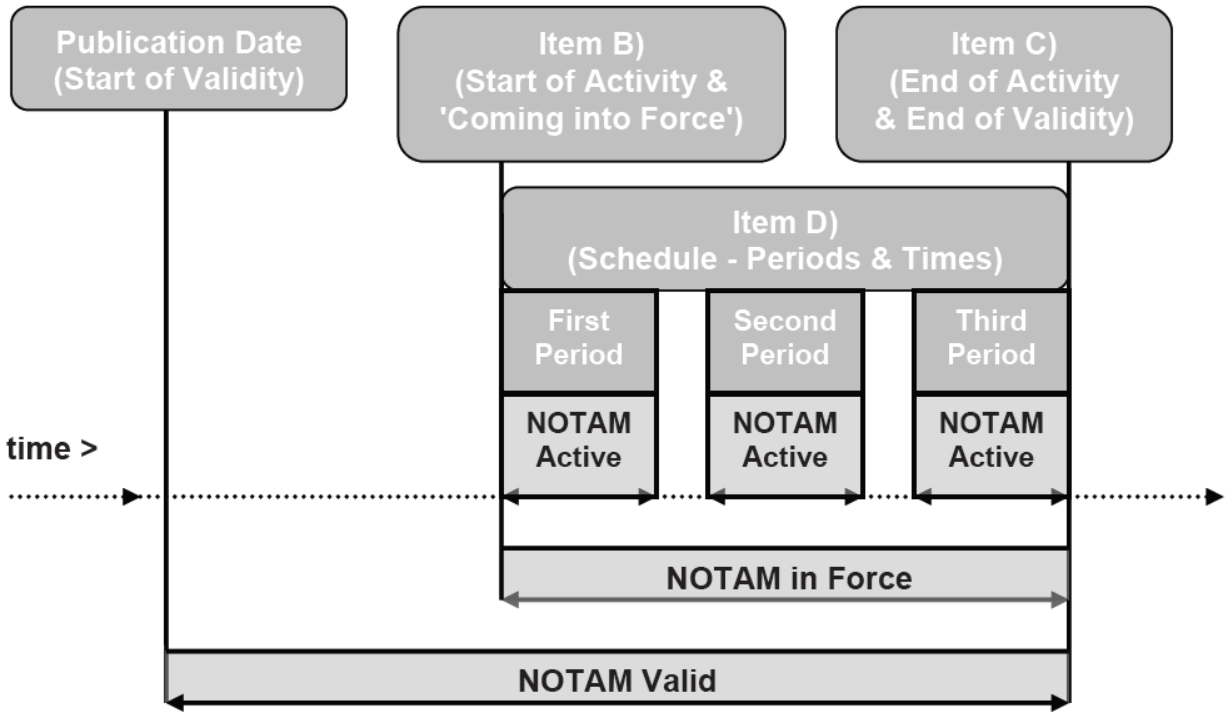
a. The beginPosition and endPosition for the TEMPDELTA of each feature should correspond to the NOTAM activity times.

b. The timePosition for the SNAPSHOT of each feature should correspond to the beginPosition.

7 NOTAMs with a Schedule

Guidelines for the day/time schedule for an intermittent NOTAM. Relationship between the time-related expressions shown in Figure 4.

Figure 4



from OPADD

7.1 AIXM Mapping and Translation

7.1.1 Details

TABLE 7.1

Attribute	Value
Description	Properties with Schedule
Maps to Keyword:	AD, APRON, OBST, RWY, TWY
AIXM Mapping Diagram	PropetiesWithSchedule
NOTAM lifespan	
Start ASAP	No

Description: The effective time of a condition/activity that repeats.

Source: User-entered (optional).

TABLE 7.2
Schedules

Attribute	Value	
Aerodrome		
AIXM Path (UML)	AirportHeliport/ AirportHeliportAvailability/ PropertiesWithSchedule (object)/ Timesheet (object)	
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation TEMPDELTA]/ availability/ AirportHeliportAvailability/ timeInterval/ Timesheet/	
Apron		
AIXM Path (UML)	AirportHeliport/ ApronAreaAvailability/ PropertiesWithSchedule (object)/ Timesheet (object)	
AIXM Element Xpath	Apron/ timeSlice/ ApronTimeSlice [interpretation TEMPDELTA]/ availability/ ApronAreaAvailability/ timeInterval/ Timesheet/	
Obstacle		
AIXM Path (UML)	Obstacle/ Verical Structures/ VerticalStructureLightingStatus/ PropertiesWithSchedule (object)/ Timesheet (object) Obstacle/ Verical Structures/ VericalStructurePart/ PropertiesWithSchedule (object)/ Timesheet (object)	
AIXM Element Xpath	VerticalStructure/ timeSlice/ VerticalStructureTimeSlice/ [interpretation TEMPDELTA]/ lightingAvailability/ VerticalStructureLightingStatus/ timeInterval/Timesheet/ VerticalStructure/ timeSlice/ VerticalStructureTimeSlice/ [interpretation SNAPSHOT]/ part/ VerticalStructurePart/ timeInterval/Timesheet/	
Runway		
AIXM Path (UML)	AirportHeliport/ ManoeuvringAreaAvailability/ PropertiesWithSchedule (object)/ Timesheet (object)	
AIXM Element Xpath	Runway/ timeSlice/ RunwayTimeSlice [interpretation TEMPDELTA]/ availability/ ManoeuvringAreaAvailability/ timeInterval/Timesheet/	
Taxiway		
AIXM Path (UML)	AirportHeliport/ ManoeuvringAreaAvailability/ PropertiesWithSchedule (object)/ Timesheet (object)	
AIXM Element Xpath	Taxiway/ timeSlice/ TaxiwayTimeSlice [interpretation TEMPDELTA]/ availability/ ManoeuvringAreaAvailability/ timeInterval/Timesheet/	
AIXM Mapping	Class: Timesheet	
Enumeration	StartDate	DateMonthDayType
	EndDate	DateMonthDayType
	Day	CodeDayType
	startTime	TimeType
	endTime	TimeType
	timeReference	CodeTimeReferenceType
	daylightSavingAdjust	CodeYesNoType

7.2 Business Rules

7.2.1 Template Business Rules

General

a. The start date/time must be at or after the current date/time.

b. The end date/time must be after the start date/time.

Rules to prevent overlapping schedules

c. Each day of the week (Monday, Tuesday, etc.) can be used a maximum of one time in the schedule

d. If the user selects “Daily” then no other days of the week (Monday, Tuesday, etc.), or “Weekdays”, or “Weekends” can be selected.

e. If the user selects “Weekdays” or “Weekends”, then no other days of the week (Monday, Tuesday, etc.) or “Daily” can be selected.

Rules related to the period of validity

f. The start and end dates/times for the schedule must be within the period of validity (effective time)

g. A period of validity greater than 24 hours is required

h. A period of validity greater than 24 hours, but less than 48 hours requires the option of “Daily” only.

i. A period of validity greater than or equal to 48 hours requires more than one day listed in the schedule (Daily, Weekends, MON/TUE, WED/SUN, etc.).

j. A period of validity greater than or equal to five days is required for the use of “Weekdays”.

Rules to format NOTAM text correctly

k. If the schedule applies to the same time period for everyday during the period of validity, the NOTAM text should read: !ACY XX/XXX ACY RWY 04/22 PAEW CONSTRUCTION ADJ 0800-1700 DLY WEF 1009210800-1009271700

l. If the schedule applies to the same time period for Monday through Friday only, the NOTAM text should be consolidated to read: !ACY XX/XXX ACY RWY 04/22 PAEW CONSTRUCTION ADJ 0800-1700 WKDAYS WEF 1009200800-1009241700

m. If the schedule applies to the same time period for Saturday and Sunday only, the NOTAM text should be consolidated to read: !ACY XX/XXX ACY RWY 04/22 PAEW CONSTRUCTION ADJ 0800-1700 WKENDS WEF 1009250800-1009261700

n. If the schedule applies to the same time period for multiple days, but not every day during the period of validity, then the NOTAM text should be consolidated to read: !ACY XX/XXX ACY RWY 04/22 PAEW CONSTRUCTION ADJ 0800-1700 MON/TUE/WED/SAT/SUN WEF 1009200800-1009271700

7.2.2 Policy Business Rules

a. The day begins at 0000 and ends at 2359

b. All start and end times are entered in Coordinated Universal Time (UTC)

c. The term “WKEND” means Saturday and Sunday

d. The term “WKDAYS” means Monday through Friday

7.2.3 Data Encoding Business Rules

a. The timeInterval (schedule) should appear in the TimeSlice TEMPDELTA.

b. The timeReference for all NOTAMs should be UTC.

c. For timeIntervals that are effective daily, then one time interval is needed with the element day = ANY.

d. For timeIntervals that are effective for only specific days, a new timeInterval is needed for each effective day.

e. The element daylightSavingsAdjust should accurately reflect the regional observance of daylight savings time.

7.3 Sample AIXM Message

0900-1500 DLY

```
<timeInterval>
  <Timesheet gml:id="TimeSheet_01">
    <timeReference>UTC</timeReference>
    <startDate>07-04</startDate>
    <endDate>15-04</endDate>
    <day>ANY</day>
    <startTime>09:00</startTime>
    <endTime>15:00</endTime>
    <daylightSavingAdjust>YES</daylightSavingAdjust>
  </Timesheet>
</timeInterval>
```

0900-1500 MON/WED/FRI

```
<timeInterval>
  <Timesheet gml:id="TimeSheet_01">
    <timeReference>UTC</timeReference>
    <startDate>07-04</startDate>
    <endDate>15-04</endDate>
    <day>MON</day>
    <startTime>09:00</startTime>
    <endTime>15:00</endTime>
    <daylightSavingAdjust>YES</daylightSavingAdjust>
  </Timesheet>
</timeInterval>
<timeInterval>
  <Timesheet gml:id="TimeSheet_02">
    <timeReference>UTC</timeReference>
    <startDate>07-04</startDate>
    <endDate>15-04</endDate>
    <day>WED</day>
    <startTime>09:00</startTime>
    <endTime>15:00</endTime>
    <daylightSavingAdjust>YES</daylightSavingAdjust>
  </Timesheet>
</timeInterval>
<timeInterval>
  <Timesheet gml:id="TimeSheet_03">
    <timeReference>UTC</timeReference>
    <startDate>07-04</startDate>
    <endDate>15-04</endDate>
    <day>FRI</day>
    <startTime>09:00</startTime>
    <endTime>15:00</endTime>
    <daylightSavingAdjust>YES</daylightSavingAdjust>
  </Timesheet>
</timeInterval>
```

7.4 Additional Analysis

A schedule with “2200-0800 MON” implies 2200 on Monday through 0800 Tuesday and is acceptable.

8 Prior Permission

8.1 AIXM Mapping and Translation

8.1.1 Example NOTAMs with Prior Permission Requirements

1. !GXY 12/012 GXY RWY 9/27 CLSD EXC 15 MIN PPR 122.8/970-336-3010 WEF 0912021259
2. !BGR 12/009 OWK RWY 3/21 CLSD EXC 10 MIN PPR 122.8 WEF 0912031800 0912032100
3. !UKT 12/003 UKT AD CLSD EXC VFR DALGT AND WITH 24 HR PPR 215-538-3055 TIL 0912051200
4. !EKN 02/012 4G7 SVC FUEL UNAVBL EXC 30 MIN PPR 304-363-1468
5. !PASY 03/005 SYA NAV ILS OTS EXCP 30 MIN PPR TIL 1003050300
6. ! AOO 29D AD CLSD EXC PPR 0330-1430 MON-FRI*

Source: US NOTAM Repository, JO 7930.2M*

8.1.2 Details

TABLE 8.1

Attribute	Value
Description	Properties with Schedule
Maps to Keyword:	AD, APRON, RWY, TWY
AIXM Mapping Diagram	AirportHeliportAvailability (see Object UsageCondition)
NOTAM lifespan	
Start ASAP	No

Description: Describes whether prior permission is needed.

Source: User-entered (optional).

TABLE 8.2
Prior Permission

Attribute	Value
Aerodrome	
AIXM Path (UML)	AirportHeliport (feature)/ AirportHeliportAvailability (object)/ AirportHeliportUsage (object)/ priorpermission (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation TEMPDELTA]/ availability/ AirportHeliportAvailability/ usage/ AirportHeliportUsage/ priorPermission
Apron	
AIXM Path (UML)	Apron (feature)/ ApronAreaAvailability (object)/ ApronAreaUsage (object)/ UsageCondition (object)/ priorpermission (attribute)
AIXM Element Xpath	Apron/ timeSlice/ ApronTimeSlice [interpretation TEMPDELTA]/ availability/ ApronAreaAvailability/ usage/ ApronAreaUsage/ priorPermission
Runway	
AIXM Path (UML)	Runway (feature)/ ManoeuvringAreaAvailability (object)/ ManoeuvringAreaUsage (object)/ priorPermission (attribute)
AIXM Element Xpath	Runway/ timeSlice/ RunwayTimeSlice [interpretation TEMPDELTA]/ availability/ ManoeuvringAreaAvailability/ usage/ ManoeuvringAreaUsage/ priorPermission

Taxiway		
AIXM Path (UML)	Taxiway (feature)/ ManoeuvringAreaAvailability (object)/ ManoeuvringAreaUsage (object)/ priorPermission (attribute)	
AIXM Element Xpath	Taxiway/ timeSlice/ TaxiwayTimeSlice [interpretation TEMPDELTA]/ availability/ ManoeuvringAreaAvailability/ usage/ ManoeuvringAreaUsage/ priorPermission	
AIXM Mapping	Class: UsageCondition	
Enumeration	ValDurationType	
	UomDurationType	HR
		MIN
AIXM Path (UML)	Contact (object)	
AIXM Element Xpath	Contact/ ContactInformation/ phoneFax/ TelephoneContact/ voice	
AIXM Mapping	Class: ContactInformation	

8.2 Sample AIXM Message

EXC 4 HR PPR

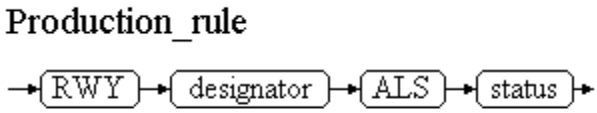
```
<usage xsi:nil="true">
  <AirportHeliport/ApronArea/ManoeuvringAreaUsage gml:id="Usage01">
    <priorPermission uom="HR">4</priorPermission>
    <contact>
      <ContactInformation gml:id="ContactInfo_01">
        <phoneFax>
          <TelephoneContact gml:id="TelephoneContact_01">
            <voice>2025807400</voice>
          </TelephoneContact>
        </phoneFax>
      </ContactInformation>
    </contact>
  </AirportHeliport/ApronArea/ManoeuvringAreaUsage>
</usage>
```

Lighted Aids

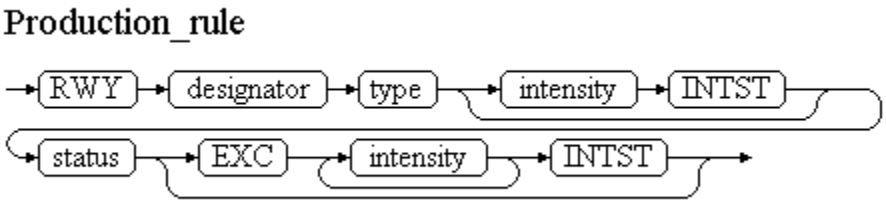
9 Runway – Approach Lighting System Status

This scenario is used to specify the status of the lighting system provided for a landing and take-off direction of a runway. NOTAMs should only be issued for lighting aids you are responsible for controlling or monitoring (FAA Order JO 7930.2, para 5-2-1a). The ALS/SFL/RAIL Lights Status maps to Runway Direction.

For ALS



For SFL/RAIL



9.1 Example NOTAMs

1. !CAE 08/059 CAE RWY 5 RAIL OTS EXC LOW INTENSITY
2. !ENW 09/015 ENW RWY 7L RAIL OTS EXC HI INTST CONT WEF 0909170059
3. !HKS 01/020 HKS RWY 16 RAIL OTS
4. !HLG 02/007 HLG RWY 3 SFL OTS
5. !ANB EUF RWY 18 ALS OTS
6. !RIC 09/048 RIC RWY 34 ALS UNMNT

Source: US NOTAM Repository, FAA JO 7930.2

9.2 AIXM Mapping and Translation

9.2.1 Scenario Details

TABLE 9.1

Attribute	Value
Description	Specify status of sequence flashing lights
Maps to Keyword:	Runway Direction
Feature Type Id	AirportHeliport/ Lighting/ Pilot Controlled Lighting/ ApproachLightingSystem
Feature Xpath	aixm:ApproachLightingSystem
AIXM Mapping	RunwayDirection
NOTAM lifespan	
Start ASAP	Yes

9.2.2 Designator [*designator*] – Runway Direction

Description: The full textual designator of the landing and take-off direction.
Examples: 27, 35L, 01R.

Source: User-selected from baseline data (required).

TABLE 9.2
Runway Direction Designator

Attribute	Value
AIXM Path (UML)	RunwayDirection(feature)/ designator (attribute)
AIXM Element XPath	RunwayDirection/ timeSlice/ RunwayDirectionTimeSlice [interpretation:SNAPSHOT]/ designator
AIXM Mapping	Class: RunwayDirection
Min length	1
Max length	16
Enumeration	TextDesignatorType

9.2.3 Runway Element [*extent*]

Description: An AIXM elevated surface derived from [gml:point], which extends Surface with properties that represent the vertical position.

Source: User-selected from baseline data (optional).

TABLE 9.3
Runway Geometry

Attribute	Value
AIXM Path (UML)	TaxiwayElement (feature)/ ElevatedSurface (object)
AIXM Element XPath	RunwayElement/ timeSlice/ RunwayElementTimeSlice [interpretation SNAPSHOT]/ extent/ ElevatedSurface/gml:patches/ gml:polygonPatch/ gml:exterior/ gml:LinearRing/ gml:pos
AIXM Mapping	ElevatedSurface
Datatype	GML – decimal

9.2.4 Type [*type*]

Description: The type of approach lighting system (ALS, SFL, RAIL).

Source: User-selected (required).

TABLE 9.4
Runway Approach Lighting Type

Attribute	Value		
AIXM Path (UML)	ApproachLightingSystem (feature)/ type (attribute)		
AIXM Element XPath	ApproachLightingSystem/ timeSlice/ ApproachLightingSystemTimeSlice [interpretation:SNAPSHOT]/ type		
AIXM Mapping	Class: ApproachLightingSystem		
Enumeration	CodeApproachLightingType		
	AIXM	**Translations**	
	OTHER:ALS	ICAO	ALS
		FAA	ALS
		Plain Text	Approach Lighting System
	OTHER:SFL	ICAO	SEQUENCED FLG LGT
		FAA	SFL

		Plain Text	Sequence Flashing Lights
	OTHER:RAIL	ICAO	RAI LGT
		FAA	RAIL
		Plain Text	Runway Alignment Indicator Lights (RAIL)

9.2.5 SFL [*sequencedFlashing*]

Description: A code indicating whether sequenced flashing is available.

Source: From baseline data (required).

TABLE 9.5
Sequenced Flashing Lights

Attribute	Value		
AIXM Path (UML)	ApproachLightingSystem (feature)/ type (attribute)		
AIXM Element XPath	ApproachLightingSystem/ timeSlice/ ApproachLightingSystemTimeSlice [interpretation:SNAPSHOT]/ sequencedFlashing		
AIXM Mapping	Class: ApproachLightingSystem		
Enumeration	CodeYesNoType		
	YES	ICAO	…
		FAA	…
		Plain Text	…

9.2.6 RAIL [*alignmentIndicator*]

Description: A code indicating whther a runway alignment indicator is available for the approach lighting system.

Source: From baseline data (required).

TABLE 9.6
Alignment Indicator Lights

Attribute	Value		
AIXM Path (UML)	ApproachLightingSystem (feature)/ type (attribute)		
AIXM Element XPath	ApproachLightingSystem/ timeSlice/ ApproachLightingSystemTimeSlice [interpretation:SNAPSHOT]/ alignmentIndicator		
AIXM Mapping	Class: ApproachLightingSystem		
Enumeration	CodeYesNoType		
	YES	ICAO	…
		FAA	…
		Plain Text	…

9.2.7 Intensity [intensity]

Description: The intensity of the light.

Source: User-selected (optional).

TABLE 9.7
Light Intensity

Attribute	Value
AIXM Path (UML)	GroundLightSystem (feature)/ intensity (attribute)
AIXM Element XPath	ApproachLightingSystem/ timeSlice/ ApproachLightingSystemTimeSlice [interpretation:TEMPDELTA]/ intensity

AIXM Mapping	Class: ApproachLightingSystem		
Enumeration	CodeLightIntensityType		
	AIXM	**Translations**	
	LIL	ICAO	LOW
		FAA	LOW
		Plain Text	Low
	LIM	ICAO	MEDIUM
		FAA	MED
		Plain Text	Medium
	LIH	ICAO	HIGH
		FAA	HIGH
		Plain Text	High

9.2.8 Status [operationalStatus]

Description: An indication of the operational status of the SFL/RAIL.

Source: User-selected (required).

TABLE 9.8
Approach Lighting Operational Status

Attribute	Value		
AIXM Path (UML)	GroundLightSystem (feature)/ GroundLightingAvailability (object) operationalStatus (attribute)		
AIXM Element XPath	ApproachLightingSystem/ timeSlice/ ApproachLightingSystemTimeSlice [interpretation:TEMPDELTA]/ availability/ GroundLightingAvailability/ operationalStatus		
AIXM Mapping	Class: GroundLightingAvailability		
Enumeration	CodeStatusOperationsType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of service
	OTHER:UNMONITORED	ICAO	UNMONITORED
		FAA	UNMNT
		Plain Text	unmonitored
	OTHER:COMMISSIONED	ICAO	INSTALLED (INSTL)
		FAA	CMSN
		Plain Text	Commissioned
	OTHER:DECOMMISSIONED	ICAO	COMPLETELY WITHDRAWN
		FAA	DCMSN
		Plain Text	Decommissioned

9.3 QCodes

TABLE 9.9
QCodes for ALS

AIXM Code ALS	QCode	
UNSERVICEABLE	**Series**	**A**
	QCode	QLAXX
	Scope	A
	Traffic	IV
	Purpose	NBO
OTHER:UNMONITORED	**Series**	**A**
	QCode	QLAXX
	Scope	A
	Traffic	IV

	Purpose	NBO

TABLE 9.10
QCodes for SFL

AIXM Code SFL	QCode	
ALL	**Series**	**A**
UNSERVICEABLE	QCode	QLFXX (SLF OTS)
	Scope	A
	Traffic	IV
	Purpose	NBO
OTHER:UNMONITORED	QCode	QLFXX (SLF OTS)
	Scope	A
	Traffic	IV
	Purpose	NBO
OTHER:COMMISSIONED	QCode	QLFCS (SFL installed)
	Scope	A
	Traffic	IV
	Purpose	NBO
OTHER:DECOMMISSIONED	QCode	QLFAW (SFL completely withdrawn)
	Scope	A
	Traffic	IV
	Purpose	NBO

TABLE 9.11
QCodes for RAIL

AIXM Code RAIL	QCode	
ALL	**Series**	**A**
UNSERVICEABLE	QCode	QLJXX (RAIL OTS)
	Scope	A
	Traffic	IV
	Purpose	M
OTHER:UNMONITORED	QCode	QLJXX (RAIL OTS)
	Scope	A
	Traffic	IV
	Purpose	M
OTHER:COMMISSIONED	QCode	QLJCS (RAIL installed)
	Scope	A
	Traffic	IV
	Purpose	M
OTHER:DECOMMISSIONED	QCode	QLJAW (RAIL completely withdrawn)
	Scope	A
	Traffic	IV
	Purpose	M

9.4 Business Rules

9.4.1 Template Business Rules

a. When *designator* equal to null, then "Specify a runway."

b. When *type* equal to null, then "Select a type of sequence flashing light."

c. When *status* equal to null, then "Select a status for the light system."

d. Each *intensity* value should only be used ONCE in the NOTAM. For example, EXC MED MED MED INTST or !ACY XX/XXX ACY RWY 04 RAIL HIGH INTST OTS EXC HIGH INTST WEF 1003082308-1003091200 should not be allowed.

e. For type = ALS, Commissioned and Decommissioned are not accepted status values.

f. For type = ALS, *intensity* is not valid field.

9.4.2 Policy Business Rules (from FAA Order JO 7930.2, paragraph 5-2-1a)

Only originate NOTAMs for lighting aids you are responsible for controlling or monitoring.

Unless the Airport owns and maintains the equipment, the responsibility of these NOTAMs lies with the OCC.

Approach light systems (ALS) – When commissioning approach light systems, indicate the exact type of system; e.g.,MALSR, etc. Once commissioned and published, approach light systems need only be shown as ALS.

9.4.3 Data Encoding Business Rules

a. For entering *designator*, *type*, and either *alignmentIndicator* or *sequencedFlashing*, use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

b. For *type* equals OTHER:SFL, then *sequencedFlashing* equals YES.

c. For *type* equals OTHER:RAIL, then *alignmentIndicator* equals YES.

d. For entering *intensityLevel* and *operationalStatus*, use a TimeSlice of type TEMPDELTA.

e. If multiple *intensityLevel*s are affected, then add each under a unique timeslice.

f. If an *intensityLevel* is listed as an exception, then the other *intensityLevel*s should be issued in the AIXM based message as UNSERVICEABLE.

g. For entering *operationalStatus* COMMISSIONED use a Timeslice of type BASELINE and for *operationalStatus* DECOMMISSIONED use a TimeSlice of type PERMDELTA.

h. An xlink:href is required, should point to the associated Runway, and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

i. The associated Runway should have interpretation SNAPSHOT and contain the designator; an xlink:href is required, should point to the associated AirportHeliport, and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

9.5 Sample AIXM Message

Sample NOTAM Message: RWY 04 ALS OTS


```
<?xml version="1.0" encoding="UTF-8"?>
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1
./AIXM_Features.xsd http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd"
gml:id="FNS-Message" xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message"
xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns="http://www.aixm.aero/schema/5.1">
<notamMessage:hasMember>
  <ApproachLightingSystem gml:id="ALS01">
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
```

```
      <timeSlice>
        <ApproachLightingSystemTimeSlice gml:id="ALS01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="ALS01_TS01_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <type>OTHER:ALS</type>
          <servedRunwayDirection xlink:href="#RWYDIR01"/>
        </ApproachLightingSystemTimeSlice>
      </timeSlice>
      <timeSlice>
        <ApproachLightingSystemTimeSlice gml:id="ALS01_TS02">
          <gml:validTime>
          <gml:TimePeriod gml:id="ALS01_TS02_TP01">
            <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
            <gml:endPosition>2010-04-20T09:00:00</gml:endPosition>
          </gml:TimePeriod>
        </gml:validTime>
        <interpretation>TEMPDELTA</interpretation>
        <sequenceNumber>14</sequenceNumber>
        <availability>
          <GroundLightingAvailability gml:id="GLS02">
            <operationalStatus>UNSERVICEABLE</operationalStatus>
          </GroundLightingAvailability>
        </availability>
        </ApproachLightingSystemTimeSlice>
      </timeSlice>
    </ApproachLightingSystem>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <RunwayDirection gml:id="RWYDIR01">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
        <RunwayDirectionTimeSlice gml:id="RWYDIR01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="RWYDIR01_TS01_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>04</designator>
          <usedRunway xlink:href="#RWY01"/>
          <startingElement xlink:href="#RE01"/>
        </RunwayDirectionTimeSlice>
      </timeSlice>
    </RunwayDirection>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <RunwayElement gml:id="RE01">
      <timeSlice>
        <RunwayElementTimeSlice gml:id="RE01_TS01">
          <gml:validTime>
              <gml:TimeInstant gml:id="RE_TI01">
                <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
              </gml:TimeInstant>
            </gml:validTime>
```

```
            <interpretation>SNAPSHOT</interpretation>
            <associatedRunway xlink:href="#RWY01"/>
            <extent>
            <ElevatedSurface gml:id="ES01" srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2">
              <gml:patches>
                <gml:PolygonPatch>
                  <gml:exterior>
                    <gml:LinearRing>
                      <gml:posList>39.2704 -74.3430 39.2707 -74.3424 39.2705 -74.3421 39.2702
-74.3421 39.2704 -74.3430</gml:posList>
                    </gml:LinearRing>
                  </gml:exterior>
                </gml:PolygonPatch>
              </gml:patches>
            </ElevatedSurface>
            </extent>
        </RunwayElementTimeSlice>
      </timeSlice>
    </RunwayElement>
</notamMessage:hasMember>
<notamMessage:hasMember>
<Runway gml:id="RWY01">
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
  <timeSlice>
    <RunwayTimeSlice gml:id="RWY01_TS01">
      <gml:validTime>
        <gml:TimeInstant gml:id="RWY01_TS01_TI01">
          <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
        </gml:TimeInstant>
      </gml:validTime>
      <interpretation>SNAPSHOT</interpretation>
      <designator>04/22</designator>
      <associatedAirportHeliport xlink:href="#ACY"/>
    </RunwayTimeSlice>
  </timeSlice>
</Runway>
</notamMessage:hasMember>
<notamMessage:hasMember>
  <AirportHeliport gml:id="ACY">
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <AirportHeliportTimeSlice gml:id="ACY_TS01">
        <gml:validTime>
        <gml:TimeInstant gml:id="ACY_TI01">
          <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
        </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <designator>ACY</designator>
        <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
        <locationIndicatorICAO>KACY</locationIndicatorICAO>
        <ARP>
          <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP01">
            <gml:pos>39.27 -74.34</gml:pos>
          </ElevatedPoint>
        </ARP>
      </AirportHeliportTimeSlice>
    </timeSlice>
```

```
  </AirportHeliport>
</notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```


Sample NOTAM Message: RWY 04 RAIL OTS EXC HIGH INTST


```
<?xml version="1.0" encoding="UTF-8"?>
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1
./AIXM_Features.xsd http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd"
gml:id="FNS-Message" xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message"
xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns="http://www.aixm.aero/schema/5.1">
<notamMessage:hasMember>
  <ApproachLightingSystem gml:id="ALS01">
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <ApproachLightingSystemTimeSlice gml:id="ALS01_TS01">
        <gml:validTime>
          <gml:TimeInstant gml:id="ALS01_TS01_TI01">
            <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
          </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <type>OTHER:RAIL</type>
        <alignmentIndicator>YES</alignmentIndicator>
        <servedRunwayDirection xlink:href="#RWYDIR01"/>
      </ApproachLightingSystemTimeSlice>
    </timeSlice>
    <timeSlice>
      <ApproachLightingSystemTimeSlice gml:id="ALS01_TS02">
        <gml:validTime>
        <gml:TimePeriod gml:id="ALS01_TS02_TP01">
          <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
          <gml:endPosition>2010-04-20T09:00:00</gml:endPosition>
        </gml:TimePeriod>
      </gml:validTime>
      <interpretation>TEMPDELTA</interpretation>
      <sequenceNumber>14</sequenceNumber>
      <intensityLevel>LIL</intensityLevel>
      <availability>
        <GroundLightingAvailability gml:id="GLS02">
          <operationalStatus>UNSERVICEABLE</operationalStatus>
        </GroundLightingAvailability>
      </availability>
      </ApproachLightingSystemTimeSlice>
    </timeSlice>
    <timeSlice>
      <ApproachLightingSystemTimeSlice gml:id="ALS01_TS03">
        <gml:validTime>
        <gml:TimePeriod gml:id="ALS01_TS03_TP01">
          <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
          <gml:endPosition>2010-04-20T09:00:00</gml:endPosition>
        </gml:TimePeriod>
      </gml:validTime>
      <interpretation>TEMPDELTA</interpretation>
      <sequenceNumber>14</sequenceNumber>
      <intensityLevel>LIM</intensityLevel>
```

```
        <availability>
          <GroundLightingAvailability gml:id="GLS02">
            <operationalStatus>UNSERVICEABLE</operationalStatus>
          </GroundLightingAvailability>
        </availability>
        </ApproachLightingSystemTimeSlice>
      </timeSlice>
    </ApproachLightingSystem>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <RunwayDirection gml:id="RWYDIR01">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
        <RunwayDirectionTimeSlice gml:id="RWYDIR01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="RWYDIR01_TS01_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>04</designator>
          <usedRunway xlink:href="#RWY01"/>
          <startingElement xlink:href="#RE01"/>
        </RunwayDirectionTimeSlice>
      </timeSlice>
    </RunwayDirection>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <RunwayElement gml:id="RE01">
      <timeSlice>
        <RunwayElementTimeSlice gml:id="RE01_TS01">
          <gml:validTime>
              <gml:TimeInstant gml:id="RE_TI01">
                <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
              </gml:TimeInstant>
            </gml:validTime>
            <interpretation>SNAPSHOT</interpretation>
            <associatedRunway xlink:href="#RWY01"/>
            <extent>
            <ElevatedSurface gml:id="ES01" srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2">
              <gml:patches>
                <gml:PolygonPatch>
                  <gml:exterior>
                    <gml:LinearRing>
                      <gml:posList>39.2704 -74.3430 39.2707 -74.3424 39.2705 -74.3421 39.2702
-74.3421 39.2704 -74.3430</gml:posList>
                    </gml:LinearRing>
                  </gml:exterior>
                </gml:PolygonPatch>
              </gml:patches>
            </ElevatedSurface>
            </extent>
        </RunwayElementTimeSlice>
      </timeSlice>
    </RunwayElement>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
  <Runway gml:id="RWY01">
```

```
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
  <timeSlice>
    <RunwayTimeSlice gml:id="RWY01_TS01">
      <gml:validTime>
        <gml:TimeInstant gml:id="RWY01_TS01_TI01">
          <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
        </gml:TimeInstant>
      </gml:validTime>
      <interpretation>SNAPSHOT</interpretation>
      <designator>04/22</designator>
      <associatedAirportHeliport xlink:href="#ACY"/>
    </RunwayTimeSlice>
  </timeSlice>
</Runway>
</notamMessage:hasMember>
<notamMessage:hasMember>
  <AirportHeliport gml:id="ACY">
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <AirportHeliportTimeSlice gml:id="ACY_TS01">
        <gml:validTime>
        <gml:TimeInstant gml:id="ACY_TI01">
          <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
        </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <designator>ACY</designator>
        <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
        <locationIndicatorICAO>KACY</locationIndicatorICAO>
        <ARP>
          <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP01">
            <gml:pos>39.27 -74.34</gml:pos>
          </ElevatedPoint>
        </ARP>
      </AirportHeliportTimeSlice>
    </timeSlice>
  </AirportHeliport>
</notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```


9.6 Translation Templates

9.6.1 FAA

RWY *designator type* [*intensity* **INTST**] *operationalStatus* [**EXC** *intensity1 intensity2* **INTST**] **WEF**

9.6.2 ICAO E Line

RWY *designator type* [*intensity* **INTST**] *operationalStatus* [**EXC** *intensity1 intensity2* **INTST**] **WEF**

9.6.3 Plain Language

Affected Airport: *affectedAirport*

NOTAM Number: XX/XXX

Effective Time Frame
Valid From: *startDate*
Valid To: *endDate*

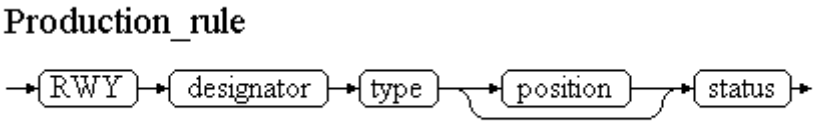
Affected Surface: *designator*
Lighting System: *type*
Intensity Level(s) Affected: *intensity*|**ALL**
Status: *operationalStatus*

9.7 Additional Analysis

According to Susan Gardner, ALS NOTAMs are the repsonisbility of Tech Ops and not the airport.

10 Runway – Visual Approach Lighting Systems (PAPI/VASI)

Specify the status of the visual approach lighting system for a specific runway direction.



10.1 Example NOTAMs

1.!MCN 01/206 MAC RWY 10 VASI LEFT SIDE OTS
2.!MTN 06/017 MTN RWY 33 PVASI OTS
3.!CHA 01/002 CHA RWY 15 PAPI OTS

Source: US NOTAM Repository

10.2 AIXM Mapping and Translation

10.2.1 Scenario Details

TBL 10.1

Attribute	Value
Description	Specify the status of the visual approach lighting system for a specific runway direction
Maps to Keyword:	RunwayDirection
Feature Type Id	AirportHeliport/ Runway/ RunwayDirection
Feature Path	aixm:VisualGlideSlopeIndicator
AIXM Mapping Diagram	Runway Direction
NOTAM lifespan	
Start ASAP	No

10.2.2 Designator [*designator*] – Runway Direction

Description: The full textual designator of the landing and take-off direction.
Examples: 27, 35L, 01R.

Source: User-selected from baseline data (required).

TABLE 10.2
Runway Direction Designator

Attribute	Value
AIXM Path (UML)	RunwayDirection(feature)/ designator (attribute)
AIXM Element XPath	RunwayDirection/ timeSlice/ RunwayDirectionTimeSlice [interpretation:SNAPSHOT]/ designator
AIXM Mapping	Class: RunwayDirection
Min length	1
Max length	16
Enumeration	TextDesignatorType

10.2.3 Type [*type*]

Description: A code indicating the type of the visual approach slope indicator system. For example, VASIS, A-VASIS, PAPI, A-PAPI

Source: User-selected (required).

TBL 10.3
Visual Slope Indicator Type

Attribute	Value		
AIXM Path (UML)	VisualGlideSlopeIndicator (feature) / type (attribute)		
AIXM Element XPath	VisualGlideSlopeIndicator/ timeSlice/ VisualGlideSlopeIndicatorTimeSlice [interpretation:SNAPSHOT]/ type		
AIXM Mapping	Class: VisualGlideSlopeIndicator		
Enumeration	CodeVASISType		
	AIXM	**Translations**	
	VASIS	ICAO	VASIS
		FAA	VASI
		Plain Text	VASI
	PAPI	ICAO	PVASI
		FAA	PVASI
		Plain Text	PVASI
	PVASI	ICAO	PAPI
		FAA	PAPI
		Plain Text	PAPI

10.2.4 Position [*position*]

Description: A code describing a position, relative to the centreline, of the visual approach slope indicator for a FATO/RWY direction.

Source: User-selected (optional).

TBL 10.4
Visual Slope Indicator Position

Attribute	Value		
AIXM Path (UML)	VisualGlideSlopeIndicator (feature) / position (attribute)		
AIXM Element XPath	VisualGlideSlopeIndicator/ timeSlice/ VisualGlideSlopeIndicatorTimeSlice [interpretation:SNAPSHOT]/ position		
AIXM Mapping	Class: VisualGlideSlopeIndicator		
Enumeration	CodeSideType		
	AIXM	**Translations**	
	LEFT	ICAO	LEFT SIDE
		FAA	LEFT SIDE
		Plain Text	Left Side
	RIGHT	ICAO	RIGHT SIDE
		FAA	RIGHT SIDE
		Plain Text	Right Side

10.2.5 Status [operationalStatus]

Description: The status of the visual range reading equipment.

Source: User-selected (required).

TBL 10.5
Operational Status

Attribute	Value		
AIXM Path (UML)	VisualGlideSlopeIndicator (feature) / availability (object) / operationalStatus (attribute)		
AIXM Element XPath	VisualGlideSlope/ timeSlice/ VisualGlideSlopeIndicatorTimeSlice [interpretation:TEMPDELTA]/ availability/ GroundLightingAvailiability/ operationalStatus		
AIXM Mapping	Class: GroundLightingAvailability		
Enumeration	CodeStatusOperationsType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of service
	OTHER:COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned
	OTHER:DECOMMISSIONED	ICAO	DECOMMISSIONED
		FAA	DCMSN
		Plain Text	Decommissioned

10.3 QCodes

TBL 10.6
QCodes for Visual Glide Slope

AIXM Code	QCode	
ALL	**Series**	**A**
VASIS	QCode	QLV--
PAPI	QCode	QLP--
PVASI	QCode	QLV--
UNSERVICEABLE	QCode	Q--AS
	Scope	A
	Traffic	IV
	Purpose	BO
OTHER:COMMISSIONED	QCode	Q--CS
	Scope	A
	Traffic	IV
	Purpose	BO
OTHER:DECOMMISSIONED	QCode	Q--AW
	Scope	A
	Traffic	IV
	Purpose	BO

10.4 Business Rules

10.4.1 Template Business Rules

a. When *designator* equal to null, then "Specify a runway."

b. When *type* equal to null, then "Select a type of system."

c. When status equal to null, then “Select an operational status.”

d. The informational element *position* is optional.

10.4.2 Policy Business Rules

None.

10.4.3 Data Encoding Business Rules

a. The element types *designator* and *type* are required and must use a TimeSlice of type SNAPSHOT.

b. The element type *position* is optional and must use a TimeSlice of type SNAPSHOT.

c. The element type *operationalStatus* is required and must use a TimeSlice of type TEMPDELTA.

d. The timePosition for the SNAPSHOT should correspond to the beginPosition.

e. The beginPosition and endPosition for the TEMPDELTA should correspond to the NOTAM activity times.

f. An xlink:href is required, should point to the associated Runway, and must use a TimeSlice of type SNAPSHOT.

g. The associated Runway should have interpretation SNAPSHOT and contain the designator; an xlink:href is required, should point to the associated AirportHeliport, and must use a TimeSlice of type SNAPSHOT.

h. The associated AirportHeliport should have interpretation SNAPSHOT and contain the FAA and ICAO designators.

10.5 Sample AIXM Message

Sample Message: RWY 04 PAPI OTS


```xml
<?xml version="1.0" encoding="UTF-8"?>
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1
./AIXM_Features.xsd http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd"
gml:id="FNS-Message" xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message"
xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns="http://www.aixm.aero/schema/5.1">
<notamMessage:hasMember>
  <VisualGlideSlopeIndicator gml:id="VGSI01">
    <timeSlice>
      <VisualGlideSlopeIndicatorTimeSlice gml:id="VGSI01_TS01">
        <gml:validTime></gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <type>PAPI</type>
        <runwayDirection xlink:href="#RWYDIR01"/>
```

```
        </VisualGlideSlopeIndicatorTimeSlice>
      </timeSlice>
      <timeSlice>
        <VisualGlideSlopeIndicatorTimeSlice gml:id="VGSI01_TS02">
          <gml:validTime></gml:validTime>
          <interpretation>TEMPDELTA</interpretation>
          <sequenceNumber>19</sequenceNumber>
          <availability>
            <GroundLightingAvailability gml:id="GLA01">
              <operationalStatus>UNSERVICEABLE</operationalStatus>
            </GroundLightingAvailability>
          </availability>
        </VisualGlideSlopeIndicatorTimeSlice>
      </timeSlice>
    </VisualGlideSlopeIndicator>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <RunwayDirection gml:id="RWYDIR01">
      <timeSlice>
        <RunwayDirectionTimeSlice gml:id="RWYDIR01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="RWYDIR01_TS01_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>04</designator>
          <usedRunway xlink:href="#RWY01"/>
        </RunwayDirectionTimeSlice>
      </timeSlice>
    </RunwayDirection>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
  <Runway gml:id="RWY01">
    <timeSlice>
      <RunwayTimeSlice gml:id="RWY01_TS01">
        <gml:validTime>
          <gml:TimeInstant gml:id="RWY01_TS01_TI01">
            <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
          </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <designator>04/22</designator>
        <associatedAirportHeliport xlink:href="#ACY"/>
      </RunwayTimeSlice>
    </timeSlice>
  </Runway>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <AirportHeliport gml:id="ACY">
      <timeSlice>
        <AirportHeliportTimeSlice gml:id="ACY_TS01">
          <gml:validTime>
          <gml:TimeInstant gml:id="ACY_TI01">
            <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
          </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
```

```
        <designator>ACY</designator>
        <locationIndicatorICAO>KACY</locationIndicatorICAO>
      </AirportHeliportTimeSlice>
    </timeSlice>
  </AirportHeliport>
</notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```


10.6 Translation Templates

10.6.1 FAA

RWY *designator type* [*position*] *status* **WEF**

10.6.2 ICAO E Line

RWY *designator type* [*position*] *status* **WEF**

10.6.3 Plain Language

Affected Airport: *affectedAirport*

NOTAM Number: XX/XXX

Effective Time Frame
Valid From: *startDate*
Valid To: *endDate*

Affected Runway: *designator*

Type: *type*

[Position: *position***]**

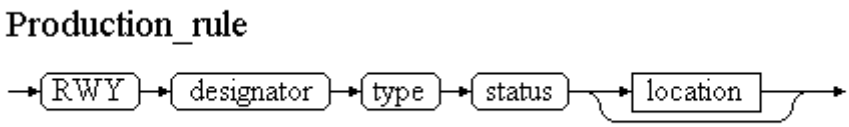
Status: *status*

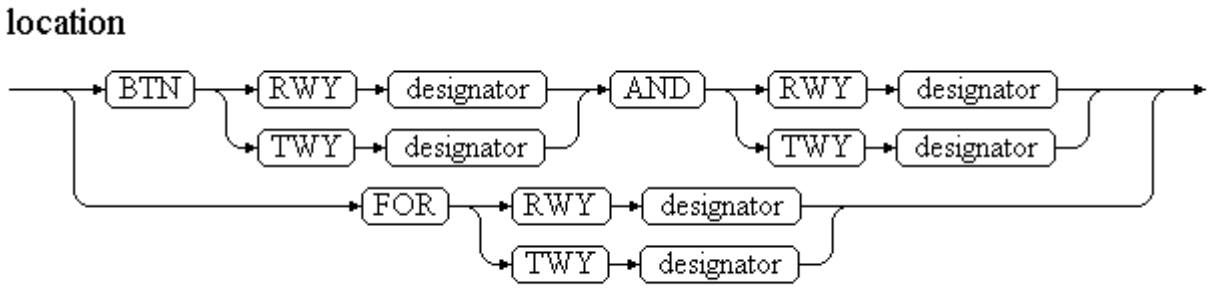
10.7 Additional Analysis

This equipment is generally the responsibility of Tech Ops. Airport Operations may not issue these NOTAMs unless the Airport owns the equipment or unless there is an LOA in place.

11 Runway – Ground Lighting Status

This scenario is used to specify the status of the lighting system provided for a landing and take-off direction of a runway.





11.1 Example NOTAMs

1. !FAI 12/521 51Z RWY 2/20 MIRL CMSN WEF 0812120100
2. !DFW 03/249 DFW RWY 18L/36R RWSL OTS

Source: US NOTAM Repository

11.2 AIXM Mapping and Translation

11.2.1 Scenario Details

TABLE 11.1

Attribute	Value
Description	Specify status of the lighting system provided for a landing and take-off direction of a runway
Maps to Keyword:	Runway
Feature Type Id	AirportHeliport/ Lighting/ Surface Lighting Elements
Feature XPath	aixm:RunwayDirectionLightSystem
AIXM Mapping	Runway SurfaceLightingElements
NOTAM lifespan	
Start ASAP	YES

11.2.2 Designator [*designator*] – Runway Direction

Description: The full textual designator of the landing and take-off direction.
Examples: 27, 35L, 01R.

Source: User-selected from baseline data (required).

TABLE 11.2
Runway Direction Designator

Attribute	Value
AIXM Path (UML)	RunwayDirection(feature)/ designator (attribute)
AIXM Element XPath	RunwayDirection/ timeSlice/ RunwayDirectionTimeSlice [interpretation:SNAPSHOT]/ designator
AIXM Mapping	Class: RunwayDirection
Min length	1
Max length	16
Enumeration	TextDesignatorType

11.2.3 Designator [*designator*] – Runway

Description: The full textual designator of the landing and take-off direction.
Example: 09/27, 02R/20L, RWY 1.

Source: User-selected from baseline data (required).

TABLE 11.3
Runway Designator

Attribute	Value
AIXM Path (UML)	Runway (feature) /designator (attribute)
AIXM Element X Path	Runway/ timeSlice/ RunwayTimeSlice [interpretation:SNAPSHOT]/ designator
AIXM Mapping	Class: Runway
Min length	1
Max length	16
Enumeration	TextDesignatorType

11.2.4 Runway Element [*extent*]

Description: An AIXM elevated surface derived from [gml:point], which extends Surface with properties that represent the vertical position.

Source: User-selected from baseline data (optional).

TABLE 11.4
Runway Geometry

Attribute	Value
AIXM Path (UML)	RunwayElement (feature)/ ElevatedSurface (object)
AIXM Element XPath	RunwayElement/ timeSlice/ RunwayElementTimeSlice [interpretation SNAPSHOT]/ extent/ ElevatedSurface/gml:patches/ gml:polygonPatch/ gml:exterior/ gml:LinearRing/ gml:pos
AIXM Mapping	ElevatedSurface
Datatype	GML – decimal

11.2.5 Type [*lightType*]

Description: The type of runway light

Source: User-selected (required)

TABLE 11.5
Runway Ground Light Type

Attribute	Value		
AIXM Path (UML)	AIXM Application Schemas /AIM/ AIM Features/ Airfield/ Runway Direction Light System / Runway Direction Light System/ RunwayDirectionLightSystemExtension/ lightType		
AIXM Element XPath	RunwayDirectionLightSystem/ timeSlice/ RunwayDirectionLightSystemTimeSlice [interpretation:SNAPSHOT]/ extension/ lightType		
AIXM Mapping	Class: RunwayDirectionLightSystem		
Enumeration	AIMExtension: CodeLightingType		
	AIXM	**Translations**	
	RCLL	ICAO	RCLL
		FAA	RCLL
		Plain Text	Runway centerline lighting
	EDGE	ICAO	RWY LGTS
		FAA	RWY LGTS
		Plain Text	Runway edge lights
	LIRL	ICAO	LOW INTST RWY LGT
		FAA	LIRL
		Plain Text	Low intensity runway lights
	MIRL	ICAO	MEDIUM INTST RWY LGT
		FAA	MIRL
		Plain Text	Medium intensity runway lights
	HIRL	ICAO	HIGH INTST RWY LGT
		FAA	HIRL
		Plain Text	High intensity runway lights
	RWY_INT	ICAO	RWY GUARD
		FAA	RWY GUARD
		Plain Text	runway guard
	OTHER:STOP_BAR	ICAO	STOP BAR LGTS
		FAA	STOP BAR LGTS
		Plain Text	Stop Bar Lights
	OTHER:ELV_GUARD*	ICAO	ELEVATED GUARD
		FAA	ELEVATED GUARD
	Airport Specific (FAI)	Plain Text	Elevated Guard

11.2.6 Status [operationalStatus]

Description: An indication of the operational status of the lighting system.

Source: User-selected (required).

TABLE 11.6
Runway Ground Light Operational Status

Attribute	Value
AIXM Path (UML)	GroundLightSystem (feature)/ GroundLightingAvailability (object)/ operationalStatus (attribute)
AIXM Element XPath	RunwayDirectionLightSystem/ timeSlice/ RunwayDirectionLightSystemTimeSlice [interpretation:TEMPDELTA]/ availability/ GroundLightingAvailability/ operationalStatus
AIXM Mapping	GroundLightingAvailability

Enumeration	CodeStatusOperationsType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of service
	OTHER:COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned
	OTHER:DECOMMISSIONED	ICAO	DECOMMISSIONED
		FAA	DCMSN
		Plain Text	Decommissioned
	DOWNGRADED*	ICAO	For segment, see above. For the rest, see below.
		FAA	
		Plain Text	
AIXM Path (UML)	GroundLightSystem (feature)/ GroundLightingAvailability (object)/ annotation		
AIXM Element XPath	RunwayDirectionLightSystem/ timeSlice/ RunwayDirectionLightSystemTimeSlice [interpretation:TEMPDELTA]/ availability/ GroundLightingAvailability/ annotation/ Note/ translatedNote/ LinguisticNote/ note		
AIXM Mapping	Class: Note, LinguisticNote		
Min length	1		
Max length	10000		
Description	propertyName	operationalStatus	
	purpose	DESCRIPTION	
Enumeration	TextNoteType		
	NON_STANDARD	ICAO	NONSTD
		FAA	NONSTD
		Plain Text	Non Standard

11.2.7 Location Description: [*note*]

Description: The text in a note.

Source: User-selected (optional).

TABLE 11.7
Location

Attribute	Value		
AIXM Path (UML)	Runway (feature)/ annotation (object)/ note		
AIXM Element XPath	Runway/ timeSlice/ RunwayTimeSlice [interpretation TEMPDELTA]/ annotation/ Note/ translatedNote/ LinguisticNote/ note		
AIXM Mapping	Class: Note, LinguisticNote		
Min length	1		
Max length	10000		
Description	propertyName	operationalStatus	
	purpose	DESCRIPTION	
Enumeration	TextNoteType		
	AIXM	**Translations**	
	Full Taxiway	ICAO	BETWEEN <designator1> and <designator2>
		FAA	BTN <designator1> and <designator2>
		Plain Text	Between <designator1> and

			<designator2>
	Full Taxiway	ICAO	AT TWY *<designator>*
		FAA	AT TWY *<designator>*
		Plain Text	at Taxiway *<designator>*
	Full Runway	ICAO	AT RWY *<designator>*
		FAA	AT RWY *<designator>*
		Plain Text	At Runway *<designator>*

11.3 QCodes

TABLE 11.8
QCodes (2nd and 3rd letter) Runway Ground Lighting Status

AIXM Code	Translations	
RCLL	QCode (second & third)	QLC-- (runway centre line lights …)
EDGE	QCode (second & third)	QLE-- (runway edge lights…)
LIRL	QCode (second & third)	QLL-- (low intensity runway lights…)
MIRL	QCode (second & third)	QLM-- (medium intensity runway lights…)
HIRL	QCode (second & third)	QLH-- (high intensity runway lights…)
RWY GUARD/ ELEV GUARD	QCode (second and third)	QXX--

TABLE 11.9 QCodes
(4th and 5th letter) Runway Ground Lighting Status

AIXM Code	Translations	
ALL	**Series**	**A**
UNSERVICEABLE	ICAO	OUT OF SERVICE
	FAA	OTS
	Plain Text	Out of service
	QCode (fourth & fifth)	Q—AS (…OTS)
	Scope	A
	Traffic	IV
	Purpose	NBO
NON_STD	ICAO	NON STD
	FAA	NON STD
	Plain Text	Non Standard
	QCode (fourth & fifth)	Q—XX
	Scope	A
	Traffic	IV
	Puporse	NBO
COMMISSIONED	ICAO	INSTALLED (INSTL)
	FAA	CMSN
	Plain Text	Commissioned

	QCode (fourth & fifth)	Q--CS (…installed)
	Scope	A
	Traffic	IV
	Purpose	NBO
DECOMMISSIONED	ICAO	COMPLETELY WITHDRAWN
	FAA	DCMSN
	Plain Text	Decommissioned
	QCode (fourth & fifth)	Q--AW (…completely withdrawn)
	Scope	A
	Traffic	IV
	Purpose	NBO

11.4 Business Rules

11.4.1 Template Business Rules

a. When *designator* equal to null, then "Specify a runway."

b. When *type* equal to null, then "Select a type of runway lighting system."

c. When *status* equal to null, then "Select a status for the light system."

d. When *status* equal to CMSND and *type* equal to EDGE, then "When commissioning a runway edge light system, select the exact type of runway edge light system (LIRL, MIRL, HIRL)."

11.4.2 Policy Business Rules (from FAA Order JO 7930.2, chapter 5, section 2)

a. Only originate NOTAMs for lighting aids you are responsible for controlling or monitoring (para 5-2-1a).

b. When commissioning runway edge light systems, indicate the exact type of system; e.g., LIRL, MIRL, HIRL, etc. Once commissioned and published, runway edge lights shall only be shown as RWY LGTS (para 5-2-2d4).

11.4.3 Data Encoding Business Rules

a. The elements of type *designator*, *type*, and either *alignmentIndicator* or *sequencedFlashing* are required and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

b. The element type *operationalStatus* is required and must use a TimeSlice of type TEMPDELTA.

c. For entering *operationalStatus* COMMISSIONED use a Timeslice of type BASELINE and for *operationalStatus* DECOMMISSIONED use a TimeSlice of type PERMDELTA.

d. An xlink:href is required, should point to the associated Runway, and must use a TimeSlice of type SNAPSHOT.

e. The associated Runway should have interpretation SNAPSHOT and contain the designator;an xlink:href is required, should point to the associated AirportHeliport, and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

11.5 Sample AIXM Message

Sample NOTAM Message: RWY 04/22 RCLL OTS


```
<?xml version="1.0" encoding="UTF-8"?>
<notamMessage:AIXMBasicMessage xsi:schemaLocation=http://www.aixm.aero/schema/5.1
./AIXM_Features.xsd http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd
gml:id="FNS-Message" xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message"
xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns="http://www.aixm.aero/schema/5.1">
<notamMessage:hasMember>
  <RunwayDirectionLightSystem gml:id="RWYDIRLGTSYS01">
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <RunwayDirectionLightSystemTimeSlice gml:id="RWYDIRLGTSYS01_TS01">
        <gml:validTime>
          <gml:TimeInstant gml:id="RWYDIRLGTSYS01_TS01_TI01">
            <gml:timePosition></gml:timePosition>
          </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <extension>
          <aim:RunwayDirectionLightSystemExtension>
            <aim:lightType>RCLL</aim:lightType>
          </aim: RunwayDirectionLightSystemExtension>
        </extension>
        <associatedRunwayDirection xlink:href="#RWYDIR01"/>
      </RunwayDirectionLightSystemTimeSlice>
    </timeSlice>
    <timeSlice>
      <RunwayDirectionLightSystemTimeSlice gml:id="RWYDIRLGTSYS01_TS02">
        <gml:validTime>
          <gml:TimePeriod gml:id="RWYDIRLGTSYS01_TS02_TP01">
            <gml:beginPosition></gml:beginPosition>
            <gml:endPosition></gml:endPosition>
          </gml:TimePeriod>
        </gml:validTime>
        <interpretation>TEMPDELTA</interpretation>
        <sequenceNumber>16</sequenceNumber>
        <availability>
          <GroundLightingAvailability gml:id="GLA01">
            <operationalStatus>UNSERVICEABLE</operationalStatus>
          </GroundLightingAvailability>
        </availability>
      </RunwayDirectionLightSystemTimeSlice>
    </timeSlice>
  </RunwayDirectionLightSystem>
</notamMessage:hasMember>
<notamMessage:hasMember>
  <RunwayDirectionLightSystem gml:id="RWYDIRLGTSYS02">
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <RunwayDirectionLightSystemTimeSlice gml:id="RWYDIRLGTSYS02_TS01">
        <gml:validTime>
          <gml:TimeInstant gml:id="RWYDIRLGTSYS02_TS01_TI01">
            <gml:timePosition></gml:timePosition>
          </gml:TimeInstant>
```

```
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <extension>
            <aim:RunwayDirectionLightSystemExtension>
              <aim:lightType>RCLL</aim:lightType>
            </aim: RunwayDirectionLightSystemExtension>
          </extension>
          <associatedRunwayDirection xlink:href="#RWYDIR02"/>
        </RunwayDirectionLightSystemTimeSlice>
      </timeSlice>
      <timeSlice>
        <RunwayDirectionLightSystemTimeSlice gml:id="RWYDIRLGTSYS02_TS02">
          <gml:validTime>
            <gml:TimePeriod gml:id="RWYDIRLGTSYS02_TS02_TP01">
              <gml:beginPosition></gml:beginPosition>
              <gml:endPosition></gml:endPosition>
            </gml:TimePeriod>
          </gml:validTime>
          <interpretation>TEMPDELTA</interpretation>
          <sequenceNumber>16</sequenceNumber>
          <availability>
            <GroundLightingAvailability gml:id="GLA02">
              <operationalStatus>UNSERVICEABLE</operationalStatus>
            </GroundLightingAvailability>
          </availability>
        </RunwayDirectionLightSystemTimeSlice>
      </timeSlice>
    </RunwayDirectionLightSystem>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <RunwayDirection gml:id="RWYDIR01">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
        <RunwayDirectionTimeSlice gml:id="RWYDIR01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="RWYDIR01_TS01_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>04</designator>
          <usedRunway xlink:href="#RWY01"/>
        </RunwayDirectionTimeSlice>
      </timeSlice>
    </RunwayDirection>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <RunwayDirection gml:id="RWYDIR01">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
        <RunwayDirectionTimeSlice gml:id="RWYDIR01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="RWYDIR01_TS01_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>22</designator>
```

```
        <usedRunway xlink:href="#RWY01"/>
        <startingElement xlink:href="#RE01"/>
      </RunwayDirectionTimeSlice>
    </timeSlice>
  </RunwayDirection>
</notamMessage:hasMember>
<notamMessage:hasMember>
  <RunwayElement gml:id="RE01">
    <timeSlice>
      <RunwayElementTimeSlice gml:id="RE01_TS01">
        <gml:validTime>
            <gml:TimeInstant gml:id="RE_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <associatedRunway xlink:href="#RWY01"/>
          <extent>
          <ElevatedSurface gml:id="ES01" srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2">
            <gml:patches>
              <gml:PolygonPatch>
                <gml:exterior>
                  <gml:LinearRing>
                    <gml:posList>39.2704 -74.3430 39.2707 -74.3424 39.2705 -74.3421 39.2702
-74.3421 39.2704 -74.3430</gml:posList>
                  </gml:LinearRing>
                </gml:exterior>
              </gml:PolygonPatch>
            </gml:patches>
          </ElevatedSurface>
          </extent>
      </RunwayElementTimeSlice>
    </timeSlice>
  </RunwayElement>
</notamMessage:hasMember>
<notamMessage:hasMember>
<Runway gml:id="RWY01">
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
  <timeSlice>
    <RunwayTimeSlice gml:id="RWY01_TS01">
      <gml:validTime>
        <gml:TimeInstant gml:id="RWY01_TS01_TI01">
          <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
        </gml:TimeInstant>
      </gml:validTime>
      <interpretation>SNAPSHOT</interpretation>
      <designator>04/22</designator>
      <associatedAirportHeliport xlink:href="#ACY"/>
    </RunwayTimeSlice>
  </timeSlice>
</Runway>
</notamMessage:hasMember>
<notamMessage:hasMember>
  <AirportHeliport gml:id="ACY">
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <AirportHeliportTimeSlice gml:id="ACY_TS01">
        <gml:validTime>
```

```
        <gml:TimeInstant gml:id="ACY_TI01">
          <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
        </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <designator>ACY</designator>
        <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
        <locationIndicatorICAO>KACY</locationIndicatorICAO>
        <ARP>
          <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP01">
            <gml:pos>39.27 -74.34</gml:pos>
          </ElevatedPoint>
        </ARP>
      </AirportHeliportTimeSlice>
    </timeSlice>
  </AirportHeliport>
</notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```


11.6 Translation Templates

11.6.1 FAA

RWY *designator type operationalStatus* **WEF**

11.6.2 ICAO E Line

RWY *designator type operationalStatus* **WEF**

11.6.3 Plain Language

Affected Airport: *affectedAirport*

NOTAM Number: XX/XXX

Effective Time Frame
Valid From: *startDate*
Valid To: *endDate*

Affected Surface: *designator*

Lighting System: *type*

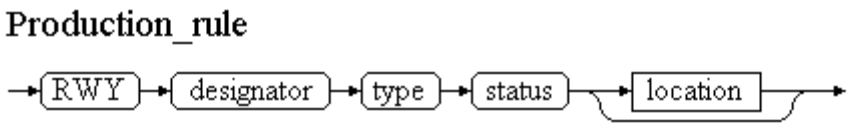
Status: *operationalStatus*

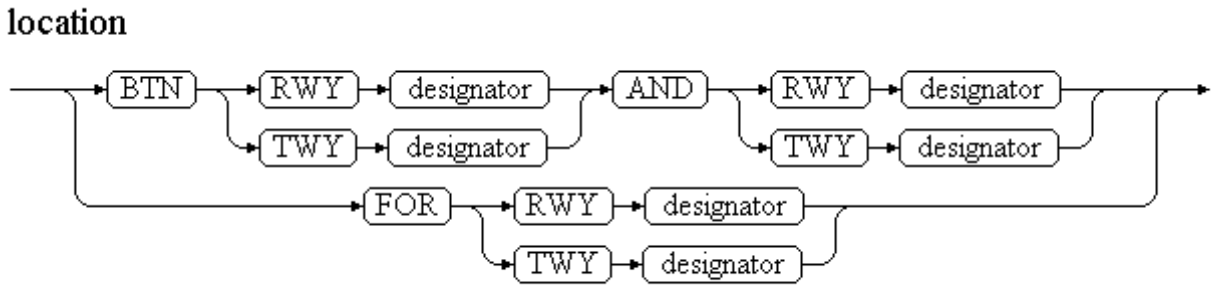
11.7 Additional Analysis

None.

12 Runway Direction – Ground Lighting Status

This scenario is used to specify the status of the lighting system provided for a landing and take-off direction of a runway.





12.1 Example NOTAMs

1. !ORD 05/097 ORD RWY 28 TDZ MARKINGS REMOVED TIL 0910011100
2. !DEN 08/328 DEN RWY 8/26 RLLS AT TWY M, R9, R8 OTS TS
3. !MKC 04/017 MKC RWY 1 RLLS OTS

Source: US NOTAM Repository

12.2 AIXM Mapping and Translation

12.2.1 Scenario Details

TABLE 12.1

Attribute	Value
Description	Specify status of the lighting system provided for a landing and take-off direction of a runway
Maps to Keyword:	Runway Direction
Feature Type Id	AirportHeliport/ Lighting/ Surface Lighting Elements
Feature XPath	aixm:RunwayDirectionLightSystem
AIXM Mapping	RunwayDirection SurfaceLightingElements
NOTAM lifespan	
Start ASAP	YES

12.2.2 Designator [*designator*] – Runway Direction

Description: The full textual designator of the landing and take-off direction.
Examples: 27, 35L, 01R.

Source: User-selected from baseline data (required).

TABLE 12.2
Runway Direction Designator

Attribute	Value
AIXM Path (UML)	RunwayDirection(feature)/ designator (attribute)
AIXM Element XPath	RunwayDirection/ timeSlice/ RunwayDirectionTimeSlice [interpretation:SNAPSHOT]/ designator
AIXM Mapping	Class: RunwayDirection
Min length	1
Max length	16
Enumeration	TextDesignatorType

12.2.3 Designator [*designator*] – Runway

Description: The full textual designator of the landing and take-off direction.
Example: 09/27, 02R/20L, RWY 1.

Source: User-selected from baseline data (required).

TABLE 12.3
Runway Designator

Attribute	Value
AIXM Path (UML)	Runway (feature) /designator (attribute)
AIXM Element X Path	Runway/ timeSlice/ RunwayTimeSlice [interpretation:SNAPSHOT]/ designator
AIXM Mapping	Class: Runway
Min length	1
Max length	16
Enumeration	TextDesignatorType

12.2.4 Runway Element [*extent*]

Description: An AIXM elevated surface derived from [gml:point], which extends Surface with properties that represent the vertical position.

Source: User-selected from baseline data (optional).

TABLE 12.4
Runway Geometry

Attribute	Value
AIXM Path (UML)	RunwayElement (feature)/ ElevatedSurface (object)
AIXM Element XPath	RunwayElement/ timeSlice/ RunwayElementTimeSlice [interpretation SNAPSHOT]/ extent/ ElevatedSurface/gml:patches/ gml:polygonPatch/ gml:exterior/ gml:LinearRing/ gml:pos
AIXM Mapping	ElevatedSurface
Datatype	GML – decimal

12.2.5 Type [*lightType*]

Description: The type of runway light

Source: User-selected (required)

TABLE 12.5
Runway Ground Light Type

Attribute	Value		
AIXM Path (UML)	AIXM Application Schemas /AIM/ AIM Features/ Airfield/ Runway Direction Light System / Runway Direction Light System/ RunwayDirectionLightSystemExtension/ lightType		
AIXM Element XPath	RunwayDirectionLightSystem/ timeSlice/ RunwayDirectionLightSystemTimeSlice [interpretation:SNAPSHOT]/ extension/ lightType		
AIXM Mapping	Class: RunwayDirectionLightSystem		
Enumeration	AIMExtension: CodeLightingType		
	AIXM	**Translations**	
	TDZL	ICAO	RTZL
		FAA	TDZ LGTS
		Plain Text	Touchdown zone lights
	THR	ICAO	THR LGT
		FAA	THR LGTS
		Plain Text	Threshold lights
	TLOF	ICAO	LEAD OFF LGTS
		FAA	LEAD OFF LGTS
		Plain Text	Taxiway centerline lead-off lights
	LEAD_ON	ICAO	LEAD ON LGTS
		FAA	LEAD ON LGTS
		Plain Text	Taxiway centerline lead-on lights
	LAHSO	ICAO	LAHSO LGTS
		FAA	LAHSO LGTS
		Plain Text	Land and hold short operations lights
	FAROS	ICAO	FAROS LGTS
		FAA	FAROS LGTS
		Plain Text	Final approach runway occupancy signal
	RLLS	ICAO	RLLS
		FAA	RLLS
		Plain Text	Runway lead-in light system
	RWSL	ICAO	RWSL
		FAA	RWSL
		Plain Text	Runways status light
	REL	ICAO	REL
		FAA	REL
		Plain Text	Runway entrance lights
	THL	ICAO	THL
		FAA	THL
		Plain Text	Takeoff hold lights

12.2.6 Status [operationalStatus]

Description: An indication of the operational status of the lighting system.

Source: User-selected (required).

TABLE 12.6
Runway Ground Light Operational Status

Attribute	Value		
AIXM Path (UML)	GroundLightSystem (feature)/ GroundLightingAvailability (object)/ operationalStatus (attribute)		
AIXM Element XPath	RunwayDirectionLightSystem/ timeSlice/ RunwayDirectionLightSystemTimeSlice [interpretation:TEMPDELTA]/ availability/ GroundLightingAvailability/ operationalStatus		
AIXM Mapping	GroundLightingAvailability		
Enumeration	CodeStatusOperationsType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of service
	OTHER:COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned
	OTHER:DECOMMISSIONED	ICAO	DECOMMISSIONED
		FAA	DCMSN
		Plain Text	Decommissioned
	DOWNGRADED*	ICAO	For segment, see above. For the rest, see below.
		FAA	
		Plain Text	
AIXM Path (UML)	GroundLightSystem (feature)/ GroundLightingAvailability (object)/ annotation		
AIXM Element XPath	RunwayDirectionLightSystem/ timeSlice/ RunwayDirectionLightSystemTimeSlice [interpretation:TEMPDELTA]/ availability/ GroundLightingAvailability/ annotation/ Note/ translatedNote/ LinguisticNote/ note		
AIXM Mapping	Class: Note, LinguisticNote		
Min length	1		
Max length	10000		
Description	propertyName	operationalStatus	
	purpose	DESCRIPTION	
Enumeration	TextNoteType		
	NON_STANDARD	ICAO	NONSTD
		FAA	NONSTD
		Plain Text	Non Standard

12.2.7 Location Description: [*note*]

Description: The text in a note.

Source: User-selected (optional).

TABLE 12.7
Location

Attribute	Value		
AIXM Path (UML)	RunwayDirection (feature)/ annotation (object)/ note		
AIXM Element XPath	RunwayDirection/ timeSlice/ RunwayDirectionTimeSlice [interpretation TEMPDELTA]/ annotation/ Note/ translatedNote/ LinguisticNote/ note		
AIXM Mapping	Class: Note, LinguisticNote		
Min length	1		
Max length	10000		
Description	propertyName	operationalStatus	
	purpose	DESCRIPTION	
Enumeration	TextNoteType		
	AIXM	**Translations**	
	Full Taxiway	ICAO	BETWEEN <designator1> and <designator2>
		FAA	BTN <designator1> and <designator2>
		Plain Text	Between <designator1> and <designator2>
	Full Taxiway	ICAO	AT TWY <*designator*>
		FAA	AT TWY <*designator*>
		Plain Text	at Taxiway <*designator*>
	Full Runway	ICAO	AT RWY <*designator*>
		FAA	AT RWY <*designator*>
		Plain Text	At Runway <*designator*>

12.3 QCodes

TABLE 12.8
QCodes (2nd and 3rd letter) Runway Ground Lighting Status

AIXM Code	Translations	
TDZL	QCode (second & third)	QLZ-- (runway touchdown zone lights…)
THR	QCode (second & third)	QLT-- (threshold lights…)
TLOF	QCode (second & third)	QXX-- (plain language…)
LEAD_ON	QCode (second & third)	QXX-- (plain language…)
LAHSO	QCode (second & third)	QLA-- (plain language…)
FAROS	QCode (second & third)	QLA-- (plain language…)
RLLS	QCode (second & third)	QLA-- (plain language…)
RWSL	QCode (second	QLA-- (plain language…)

	& third)	
REL	QCode (second & third)	QLA-- (plain language…)
THL	QCode (second & third)	QXX-- (plain language…)

TABLE 12.9
QCodes (4th and 5th letter) Runway Ground Lighting Status

AIXM Code	Translations	
ALL	**Series**	**A**
UNSERVICEABLE	ICAO	OUT OF SERVICE
	FAA	OTS
	Plain Text	Out of service
	QCode (fourth & fifth)	Q--AS (…OTS)
	Scope	A
	Traffic	IV
	Purpose	NBO
NON_STD	ICAO	NONSTD
	FAA	NONSTD
	Plain Text	Non Standard
	QCode (fourth & fifth)	Q--XX
	Scope	A
	Traffic	IV
	Puporse	NBO
COMMISSIONED	ICAO	INSTALLED (INSTL)
	FAA	CMSN
	Plain Text	Commissioned
	QCode (fourth & fifth)	Q--CS (…installed)
	Scope	A
	Traffic	IV
	Purpose	NBO
DECOMMISSIONED	ICAO	COMPLETELY WITHDRAWN
	FAA	DCMSN
	Plain Text	Decommissioned
	QCode (fourth & fifth)	Q--AW (…completely withdrawn)
	Scope	A
	Traffic	IV
	Purpose	NBO

12.4 Business Rules

12.4.1 Template Business Rules

a. When *designator* equal to null, then "Specify a runway."

b. When *type* equal to null, then "Select a type of runway lighting system."

c. When *status* equal to null, then "Select a status for the light system."

d. When *status* equal to CMSND and *type* equal to EDGE, then "When commissioning a runway edge light system, select the exact type of runway edge light system (LIRL, MIRL, HIRL)."

12.4.2 Policy Business Rules (from FAA Order JO 7930.2, chapter 5, section 2)

a. Only originate NOTAMs for lighting aids you are responsible for controlling or monitoring (para 5-2-1a).

b. When commissioning runway edge light systems, indicate the exact type of system; e.g., LIRL, MIRL, HIRL, etc. Once commissioned and published, runway edge lights shall only be shown as RWY LGTS (para 5-2-2d4).

12.4.3 Data Encoding Business Rules

a. The elements of type *designator*, *type*, and either *alignmentIndicator* or *sequencedFlashing* are required and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

b. The element type *operationalStatus* is required and must use a TimeSlice of type TEMPDELTA.

c. For entering *operationalStatus* COMMISSIONED use a Timeslice of type BASELINE and for *operationalStatus* DECOMMISSIONED use a TimeSlice of type PERMDELTA.An xlink:href is required, should point to the associated Runway, and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

d. The associated Runway should have interpretation SNAPSHOT and contain the designator;an xlink:href is required, should point to the associated AirportHeliport, and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

12.5 Sample AIXM Message

Sample NOTAM Message: RWY 04 TDZ OTS


```xml
<?xml version="1.0" encoding="UTF-8"?>
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1
./AIXM_Features.xsd http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd"
gml:id="FNS-Message" xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message"
xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns="http://www.aixm.aero/schema/5.1">
<notamMessage:hasMember>
  <RunwayDirectionLightSystem gml:id="RWYDIRLGTSYS01">
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <RunwayDirectionLightSystemTimeSlice gml:id="RWYDIRLGTSYS01_TS01">
        <gml:validTime>
          <gml:TimeInstant gml:id="RWYDIRLGTSYS01_TS01_TI01">
```

```
            <gml:timePosition></gml:timePosition>
          </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <extension>
          <aim:RunwayDirectionLightSystemExtension>
            <aim:lightType>TDZL</aim:lightType>
          </aim: RunwayDirectionLightSystemExtension>
        </extension>
        <associatedRunwayDirection xlink:href="#RWYDIR01"/>
      </RunwayDirectionLightSystemTimeSlice>
    </timeSlice>
    <timeSlice>
      <RunwayDirectionLightSystemTimeSlice gml:id="RWYDIRLGTSYS01_TS02">
        <gml:validTime>
          <gml:TimePeriod gml:id="RWYDIRLGTSYS01_TS02_TP01">
            <gml:beginPosition></gml:beginPosition>
            <gml:endPosition></gml:endPosition>
          </gml:TimePeriod>
        </gml:validTime>
        <interpretation>TEMPDELTA</interpretation>
        <sequenceNumber>16</sequenceNumber>
        <availability>
          <GroundLightingAvailability gml:id="GLA01">
            <operationalStatus>UNSERVICEABLE</operationalStatus>
          </GroundLightingAvailability>
        </availability>
      </RunwayDirectionLightSystemTimeSlice>
    </timeSlice>
  </RunwayDirectionLightSystem>
</notamMessage:hasMember>
<notamMessage:hasMember>
  <RunwayDirection gml:id="RWYDIR01">
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <RunwayDirectionTimeSlice gml:id="RWYDIR01_TS01">
        <gml:validTime>
          <gml:TimeInstant gml:id="RWYDIR01_TS01_TI01">
            <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
          </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <designator>04</designator>
        <usedRunway xlink:href="#RWY01"/>
        <startingElement xlink:href="#RE01"/>
      </RunwayDirectionTimeSlice>
    </timeSlice>
  </RunwayDirection>
</notamMessage:hasMember>
<notamMessage:hasMember>
  <RunwayElement gml:id="RE01">
    <timeSlice>
      <RunwayElementTimeSlice gml:id="RE01_TS01">
        <gml:validTime>
            <gml:TimeInstant gml:id="RE_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
```

```
            <interpretation>SNAPSHOT</interpretation>
            <associatedRunway xlink:href="#RWY01"/>
            <extent>
            <ElevatedSurface gml:id="ES01" srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2">
              <gml:patches>
                <gml:PolygonPatch>
                  <gml:exterior>
                    <gml:LinearRing>
                      <gml:posList>39.2704 -74.3430 39.2707 -74.3424 39.2705 -74.3421 39.2702  -74.3421 39.2704
-74.3430</gml:posList>
                    </gml:LinearRing>
                  </gml:exterior>
                </gml:PolygonPatch>
              </gml:patches>
            </ElevatedSurface>
            </extent>
        </RunwayElementTimeSlice>
      </timeSlice>
    </RunwayElement>
</notamMessage:hasMember>
<notamMessage:hasMember>
<Runway gml:id="RWY01">
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
  <timeSlice>
    <RunwayTimeSlice gml:id="RWY01_TS01">
      <gml:validTime>
        <gml:TimeInstant gml:id="RWY01_TS01_TI01">
          <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
        </gml:TimeInstant>
      </gml:validTime>
      <interpretation>SNAPSHOT</interpretation>
      <designator>04/22</designator>
      <associatedAirportHeliport xlink:href="#ACY"/>
    </RunwayTimeSlice>
  </timeSlice>
</Runway>
</notamMessage:hasMember>
<notamMessage:hasMember>
  <AirportHeliport gml:id="ACY">
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <AirportHeliportTimeSlice gml:id="ACY_TS01">
        <gml:validTime>
        <gml:TimeInstant gml:id="ACY_TI01">
          <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
        </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <designator>ACY</designator>
        <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
        <locationIndicatorICAO>KACY</locationIndicatorICAO>
        <ARP>
          <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP01">
            <gml:pos>39.27 -74.34</gml:pos>
          </ElevatedPoint>
        </ARP>
      </AirportHeliportTimeSlice>
    </timeSlice>
```

```
  </AirportHeliport>
</notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```


12.6 Translation Templates

12.6.1 FAA

RWY *designator type operationalStatus* **WEF**

12.6.2 ICAO E Line

RWY *designator type operationalStatus* **WEF**

12.6.3 Plain Language

Affected Airport: *affectedAirport*

NOTAM Number: XX/XXX

Effective Time Frame
Valid From: *startDate*
Valid To: *endDate*

Affected Surface: *designator*

Lighting System: *type*

Status: *operationalStatus*

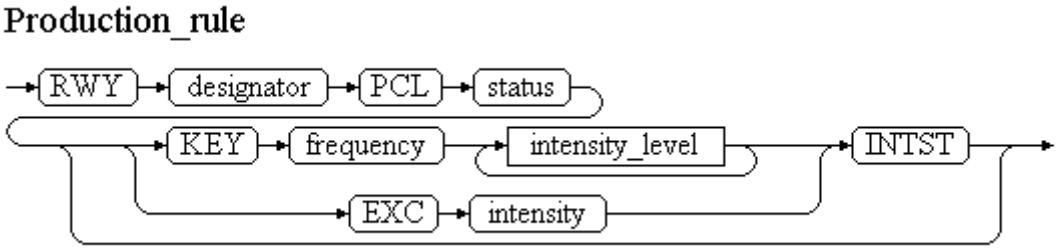
12.7 Additional Analysis

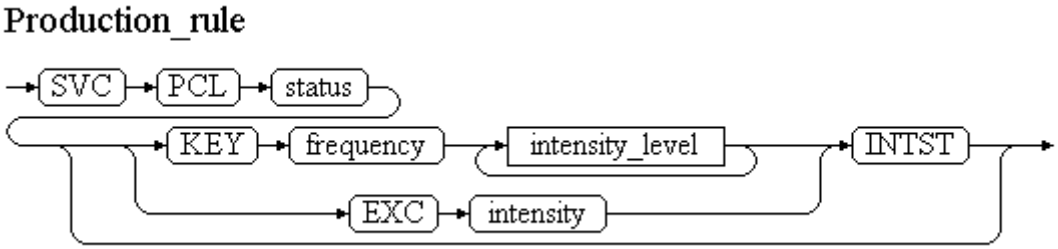
None.

13 Runway – Pilot Controlled Lighting (PCL) Status

Specify the status (commission, decommission, or out of service) for Pilot Controlled Lighting (PCL). The PCL Status maps to Runway and Runway Direction.

The Pilot Controlled Lighting (PCL) NOTAM scenarios can either have a keyword of "RWY" or "SVC." If the NOTAM is for one specific runway at an airport, then use the keyword "RWY" plus the designator of the specific RWY in question. If the NOTAM refers to an entire airport's runways, then use the keyword "SVC." The easiest way to deal with this situation is not clear in terms of developing the FNS entry tool. For example, should the PCL scenarios be listed under both Runways and Services? Will an airport employee know to submit a NOTAM with the keyword "SVC" if the PCL is out of service for all the runways? One potential solution is to list PCL scenarios under Runways, but allow the user to select all runways in the list. When the user selects all the runways, then the software will know to automatically change the keyword (and thus the formatting) to "SVC." This might be a situation where getting some feedback from the users of the FNS entry tool would be particularly helpful in determining what is more intuitive to them.





13.1 Example NOTAMs

1. !ANB 05/091 ASN RWY LGTS PCL CMSND KEY 122.8 7 TIMES HIGH/5 TIMES MED/3 TIMES LOW INTST
2. !ANB 08/440 8A1 RWY LGTS PCL CMSND KEY 122.8 7 TIMES HIGH/5 TIMES MED/3 TIMES LOW INTST 2300-1300 DLY

3. !ANB EUF RWY 18/36 RWY LGTS PCL OTS
[FAA Order 7930.2, para 5-2-2d9 Example #2]

4.!BDR 01/207 BDR RWY 11/29 RWY LGTS PCL OTS EXC MED INTST
[US NOTAMs Repository]

13.2 AIXM Mapping and Translation

13.2.1 Scenario Details

TABLE 13.1

Attribute	Value
Description	Specify status for PCL.
Maps to Keyword:	Runway
Feature Type Id	AirportHeliport/ Lighting/ Pilot Controlled Lighting
Feature Xpath	aixm:PilotControlledLighting
AIXM Mapping Diagram	Pilot Controlled Lighting Runway
NOTAM lifespan	
Start ASAP	No

13.2.2 Standard FAA [*type*]

Description: The type of pilot controlled lighting service – standard or non-standard.

Source: Baseline data (required).

TABLE 13.2
FAA Standard

Attribute	Value	
AIXM Path (UML)	PilotControlledLighting/ type	
AIXM Element X Path	PilotControlledLighting/ timeSlice/ PilotControlledLightingTimeSlice [interpretation SNAPSHOT]/ type	
AIXM Mapping	Class: PilotControlledLighting	
Enumeration	CodePilotControlledLightingType	
	STANDARD_FAA	

13.2.3 Designator [*designator*] – Runway Direction

Description: The full textual designator of the landing and take-off direction.
Examples: 27, 35L, 01R.

Source: User-selected from baseline data (required).

TABLE 13.3
Runway Direction Designator

Attribute	Value
AIXM Path (UML)	RunwayDirection(feature)/ designator (attribute)
AIXM Element XPath	RunwayDirection/ timeSlice/ RunwayDirectionTimeSlice [interpretation:SNAPSHOT]/ designator
AIXM Mapping	Class: RunwayDirection
Min length	1
Max length	16

Enumeration	TextDesignatorType

13.2.4 Designator [*designator*] – Runway

Description: The full textual designator of the landing and take-off direction.
Example: 09/27, 02R/20L, RWY 1.

Source: User-selected from baseline data (required).

TABLE 13.4
Runway Designator

Attribute	Value
AIXM Path (UML)	Runway (feature) /designator (attribute)
AIXM Element X Path	Runway/ timeSlice/ RunwayTimeSlice [interpretation:SNAPSHOT]/ designator
AIXM Mapping	Class: Runway
Min length	1
Max length	16
Enumeration	TextDesignatorType

13.2.5 Runway Element [*extent*]

Description: An AIXM elevated surface derived from [gml:point], which extends Surface with properties that represent the vertical position.

Source: User-selected from baseline data (optional).

TABLE 13.5
Runway Geometry

Attribute	Value
AIXM Path (UML)	TaxiwayElement (feature)/ ElevatedSurface (object)
AIXM Element XPath	RunwayElement/ timeSlice/ RunwayElementTimeSlice [interpretation SNAPSHOT]/ extent/ ElevatedSurface/gml:patches/ gml:polygonPatch/ gml:exterior/ gml:LinearRing/ gml:pos
AIXM Mapping	ElevatedSurface
Datatype	GML – decimal

13.2.6 Frequency [radioFrequency]

Description: The radio frequency to be used by the pilot for the activation of the system.

Source: User-entered (optional).

TABLE 13.6
Radio/Key Frequency

Attribute	Value
AIXM Path (UML)	PilotControlledLighting/ radioFrequency
AIXM Element X Path	PilotControlledLighting/ timeSlice/ PilotControlledLightingTimeSlice [interpretation TEMPDELTA]/ radioFrequency
AIXM Mapping	Class: PilotControlledLighting
Datatype	ValFrequencyType
Type	Decimal

Min inclusive	0	
Units of Measure	UomFrequencyType	
	ICAO/FAA	MHZ

13.2.7 Clicks [*clicksLow*]

Description: The number of clicks on the microphone required for activation of the lights at low intensity.

Source: User-entered (optional).

TABLE 13.7
Clicks Low/Medium/High

Attribute	Value
AIXM Path (UML)	PilotControlledLighting/ LightActivation/ clicks
AIXM Element X Path	PilotControlledLighting/ timeSlice/ PilotControlledLightingTimeSlice [interpretation TEMPDELTA]/ controlledLightIntensity/ LightActivation/ clicks
AIXM Mapping	Class: LightActivation
Datatype	NoNumberType
Type	Decimal
Pattern	[0-9]{1,4}

13.2.8 Clicks [clicksMedium]

Description: The number of clicks on the microphone required for activation of the lights at medium intensity.

Source: User-entered (optional).

See TABLE 13.7 for AIXM mapping.

13.2.9 Clicks [clicksHigh]

Description: The number of clicks on the microphone required for activation of the lights at high intensity.

Source: User-entered (optional).

See TABLE 13.7 for AIXM mapping.

13.2.10 Intensity [intensityLevel]

Description: Code for indicating the relative light intensity.

Source: Correlates with user entered clicks

TABLE 13.8
Light Intensity Level Low/Medium/High

Attribute	Value
AIXM Path (UML)	PilotControlledLighting/ LightActivation/ intensityLevel
AIXM Element X Path	PilotControlledLighting/ timeSlice/ PilotControlledLightingTimeSlice [interpretation TEMPDELTA]/ controlledLightIntensity/ LightActivation/ intensityLevel
AIXM Mapping	Class: LightActivation

Enumeration	CodeLightIntensityType		
	AIXM	**Translations**	
	LIL- light intensity low	ICAO	LOW
		FAA	LOW
		Plain Text	Low
	LIM- light intensity medium	ICAO	MEDIUM
		FAA	MED
		Plain Text	Medium
	LIH- light intensity high	ICAO	HIGH
		FAA	HIGH
		Plain Text	High

13.2.11 Status [operationalStatus]

Description: An indication of the operational status of the system.
Source: User-selected (required).

TABLE 13.9
PCL Operational Status

Attribute	Value		
AIXM Path (UML)	PilotControlledLighting (feature)/ GroundLightSystem/ GroundLightingAvailability/ operationalStatus (attribute)		
AIXM Element X Path	PilotControlledLighting/ timeSlice/ PilotControlledLightingTimeSlice [interpretation TEMPDELTA]/ availability/ GroundLightingAvailability/ operationalStatus		
AIXM Mapping	Class: GroundLightingAvailability		
Enumeration	CodeStatusOperationsType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of service
	OTHER:DECOMMISSIONED	ICAO	DECOMMISIONED
		FAA	DCMSN
		Plain Text	Decommissioned
	OTHER:COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned

13.3 QCodes

TABLE 13.10
QCodes for PCL Status

AIXM Code	QCode	
ALL	**Series**	**A**
UNSERVICEABLE	QCode	QLKAS
	Scope	A
	Traffic	IV
	Purpose	NBO
DECOMMISSIONED	QCode	QLKAW
	Scope	A
	Traffic	IV
	Purpose	NBO
COMMISSIONED	QCode	QLKCS
	Scope	A

	Traffic	IV
	Purpose	NBO

13.4 Business Rules

13.4.1 Template Business Rules

a. When *operationalStatus* equals null, then "Specify a status."

b. When *operationalStatus* equals "COMISSIONED" and *radioFrequency* equals null, then "Enter a frequency."

c. When *operationalStatus* equals "COMISSIONED" and *clicksHigh* equals null, then "Enter the number of clicks required for activation of high intensity lighting."

d. When *operationalStatus* equals "COMISSIONED" and *clicksMedium* equals null, then "Enter the number of clicks required for activation of medium intensity lighting."

e. When *operationalStatus* equals "COMISSIONED" and *clicksLow* equals null, then "Enter the number of clicks required for activation of low intensity lighting."

f. When *operationalStatus* equals "DECOMMISSIONED" and baseline status equal to "DECOMMISSIONED," then "System has already been DECOMMISSIONED."

g. When *operationalStatus* equals "COMMISSIONED" and baseline status equal to "COMMISSIONED," then "System has already been commissioned."

h. When *radioFrequency* less than or equal to 0, then "Specify a key that is greater then 0."

i. When *clicksHigh* less than or equal to 0, then "The number of clicks for high intensity must be greater then 0."

j. When *clicksMedium* less than or equal to 0, then "The number of clicks for medium intensity must be greater then 0."

k. When *clicksLow* less than or equal to 0, then "The number of clicks for low intensity must be greater then 0."

l. When a number for *clicksHigh* is entered and not equal to 7, then issue a warning, but allow the user to proceed.

m. When a number for *clicksMedium* is entered and not equal to 5, then issue a warning, but allow the user to proceed.

n. When a number for *clicksLow* is entered and not equal to 3, then issue a warning, but allow the user to proceed.

o. When *radioFrequency* is entered, the user should not be able to enter EXC *intensity*.

p. The field for *radioFrequency* must equal a numerical value between 100.00 and 140.00 with up to (but not required) two decimal places.

13.4.2 Policy Business Rules

a. If the NOTAM is reporting the condition for one specific runway, use the keyword "RWY," followed by the RWY designator.

b. If the NOTAM is referring to all the runways at an airport, then use the keyword "SVC."

Unless the Airport owns and maintains the equipment, the responsibility of these NOTAMs lies with the OCC.

13.4.3 Data Encoding Business Rules

a. For entering *operationalStatus* COMMISSIONED use a Timeslice of type BASELINE and for *operationalStatus* DECOMMISSIONED use a TimeSlice of type PERMDELTA.

b. The element of type *operationalStatus* equal toUNSERVICEABLE must use a TimeSlice of type TEMPDELTA.

c. For mapping to an entire runway, the PCL status should be linked to both runway directions.

d. For ALL Runways, then map the message to all RunwayDirection features for the airport.

e. An xlink:href is required, should point to the associated GroundLightingSystem, and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

f. An xlink:href is required, should point to the associated RunwayDirection, and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

g. An xlink:href is required, should point to the associated Runway, and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

h. The associated Runway should have interpretation SNAPSHOT and contain the designator; an xlink:href is required, should point to the associated AirportHeliport, and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

13.5 Sample AIXM Message


```xml
<?xml version="1.0" encoding="UTF-8"?>
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1
./AIXM_Features.xsd http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd"
gml:id="FNS-Message" xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message"
xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns="http://www.aixm.aero/schema/5.1">
<notamMessage:hasMember>
  <PilotControlledLighting gml:id="PCL01">
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <PilotControlledLightingTimeSlice gml:id="PCL01_TS01">
        <gml:validTime>
          <gml:TimePeriod gml:id="PCL01_TS01_TP01">
            <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </gml:validTime>
        <interpretation>PERMDELTA</interpretation>
        <sequenceNumber>1</sequenceNumber>
        <type>STANDARD_FAA</type>
        <radioFrequency uom="MHZ">122.3</radioFrequency>
        <controlledLightIntensity>
          <LightActivation gml:id="HIGH">
            <clicks>7</clicks>
            <intensityLevel>LIH</intensityLevel>
          </LightActivation>
        </controlledLightIntensity>
        <controlledLightIntensity>
```

```
            <LightActivation gml:id="MEDIUM">
              <clicks>5</clicks>
              <intensityLevel>LIM</intensityLevel>
            </LightActivation>
          </controlledLightIntensity>
          <controlledLightIntensity>
            <LightActivation gml:id="LOW">
              <clicks>3</clicks>
              <intensityLevel>LIL</intensityLevel>
            </LightActivation>
          </controlledLightIntensity>
          <activatedGroundLighting xlink:href="#GLS01"/>
          <activatedGroundLighting xlink:href="#GLS02"/>
        </PilotControlledLightingTimeSlice>
      </timeSlice>
    </PilotControlledLighting>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <RunwayDirectionLightSystem gml:id="GLS01">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
        <RunwayDirectionLightSystemTimeSlice gml:id="GLS01_TS01">
          <gml:validTime></gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <associatedRunwayDirection xlink:href="#RWYDIR01"/>
        </RunwayDirectionLightSystemTimeSlice>
      </timeSlice>
    </RunwayDirectionLightSystem>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <RunwayDirectionLightSystem gml:id="GLS02">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
        <RunwayDirectionLightSystemTimeSlice gml:id="GLS02_TS01">
          <gml:validTime></gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <associatedRunwayDirection xlink:href="#RWYDIR02"/>
        </RunwayDirectionLightSystemTimeSlice>
      </timeSlice>
    </RunwayDirectionLightSystem>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <RunwayDirection gml:id="RWYDIR01">
      <timeSlice>
        <RunwayDirectionTimeSlice gml:id="RWYDIR01_TS01">
          <gml:validTime></gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>04</designator>
          <usedRunway xlink:href="#RWY01"/>
          <startingElement xlink:href="#RE01"/>
        </RunwayDirectionTimeSlice>
      </timeSlice>
    </RunwayDirection>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <RunwayDirection gml:id="RWYDIR02">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
```

```
        <RunwayDirectionTimeSlice gml:id="RWYDIR02_TS01">
          <gml:validTime></gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>22</designator>
          <usedRunway xlink:href="#RWY01"/>
        </RunwayDirectionTimeSlice>
      </timeSlice>
    </RunwayDirection>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <RunwayElement gml:id="RE01">
      <timeSlice>
        <RunwayElementTimeSlice gml:id="RE01_TS01">
          <gml:validTime>
              <gml:TimeInstant gml:id="RE_TI01">
                <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
              </gml:TimeInstant>
            </gml:validTime>
            <interpretation>SNAPSHOT</interpretation>
            <associatedRunway xlink:href="#RWY01"/>
            <extent>
            <ElevatedSurface gml:id="ES01" srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2">
              <gml:patches>
                <gml:PolygonPatch>
                  <gml:exterior>
                    <gml:LinearRing>
                      <gml:posList>39.2704 -74.3430 39.2707 -74.3424 39.2705 -74.3421 39.2702
-74.3421 39.2704 -74.3430</gml:posList>
                    </gml:LinearRing>
                  </gml:exterior>
                </gml:PolygonPatch>
              </gml:patches>
            </ElevatedSurface>
            </extent>
        </RunwayElementTimeSlice>
      </timeSlice>
    </RunwayElement>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <Runway gml:id="RWY01">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
        <RunwayTimeSlice gml:id="RWY01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="RWY01_TS01_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>04/22</designator>
          <associatedAirportHeliport xlink:href="#ACY"/>
        </RunwayTimeSlice>
      </timeSlice>
    </Runway>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <AirportHeliport gml:id="ACY">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
```

```
    <timeSlice>
      <AirportHeliportTimeSlice gml:id="ACY_TS01">
        <gml:validTime>
          <gml:TimeInstant gml:id="ACY_TI01">
            <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
          </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <designator>ACY</designator>
        <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
        <locationIndicatorICAO>KACY</locationIndicatorICAO>
        <ARP>
          <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP01">
            <gml:pos>39.27 -74.34</gml:pos>
          </ElevatedPoint>
        </ARP>
      </AirportHeliportTimeSlice>
    </timeSlice>
  </AirportHeliport>
</notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```


13.6 Translation Templates

13.6.1 FAA

RWY *designator* **RWY LGTS PCL** *status* **[KEY** *radioFrequency clicksHigh* **TIMES HIGH /** *clicksMedium* **TIMES MED/** *clicksLow* **TIMES LOW INTST] [EXC** *intensity* **INTST]**

SVC PCL *status* **[KEY** *radioFrequency clicksHigh* **TIMES HIGH /** *clicksMedium* **TIMES MED/** *clicksLow* **TIMES LOW INTST] [EXC** *intensity* **INTST]**

13.6.2 ICAO E Line

RWY *designator* **RWY LGTS PCL** *status* **[KEY** *radioFrequency clicksHigh* **TIMES HIGH /** *clicksMedium* **TIMES MEDIUM/** *clicksLow* **TIMES LOW INTST] [EXC** *intensity* **INTST]**

SVC PCL *status* **[KEY** *radioFrequency clicksHigh* **TIMES HIGH /** *clicksMedium* **TIMES MED/** *clicksLow* **TIMES LOW INTST] [EXC** *intensity* **INTST]**

13.6.3 Plain Language

Accountable Airport: *accountableFacility*

NOTAM Number: XX/XXX

Affected Airport: *affectedFacility*

Effective Time Frame
Valid From: *startDate*
Valid To: *endDate*

Pilot Controlled Lighting

Affected Runway: **RWY** *designator* [ALL]

Status: *status*

Key: *radioFrequency*

Number of clicks for high intensity: *clicksHigh*

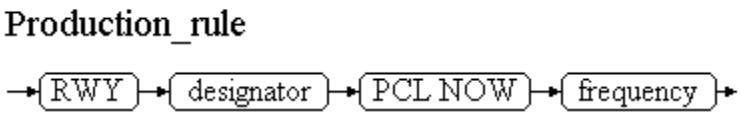
Number of clicks for medium intensity: *clicksMedium*
Number of clicks for low intensity: *clicksLow*

13.7 Additional Analysis

None.

14 Runway - Pilot Controlled Lighting (PCL) Frequency Change

The PCL NOTAM scenarios can either have a keyword of "RWY" or "SVC." If the NOTAM is for one specific runway at an airport, then use the keyword "RWY" plus the designator of the specific RWY in question. If the NOTAM refers to an entire airport's runways, then use the keyword "SVC." The easiest way to deal with this situation is not clear in terms of developing the FNS entry tool. For example, should the PCL scenarios be listed under both Runways and Services? Will an airport employee know to submit a NOTAM with the keyword "SVC" if the PCL is out of service for all the runways? One potential solution is to list PCL scenarios under Runways, but allow the user to select all runways in the list. When the user selects all the runways, then the software will know to automatically change the keyword (and thus the formatting) to "SVC." This might be a situation where getting some feedback from the users of the FNS entry tool would be particularly helpful in determining what is more intuitive to them.



14.1 Example NOTAMs

1. !ANB EUF RWY LGTS PCL NOW 122.8
2. !SBY SBY SVC PCL NOW 122.8
   [FAA Order 7930.2, para 5-2-2d9 Example #4]

Source: US NOTAM Repository

14.2 AIXM Mapping and Translation

14.2.1 Scenario Details

TABLE 14.1

Attribute	Value
Description	Change frequency for PCL
Maps to Keyword:	Runway
Feature Type Id	AirportHeliport/ Lighting/ Pilot Controlled Lighting
Feature XPath	aixm:PilotControlledLighting
AIXM Mapping Diagram	Pilot Controlled Lighting Runway
NOTAM lifespan	
Start ASAP	

14.2.2 Standard FAA [*type*]

Description: The type of pilot controlled lighting service – standard or non-standard.

Source: Baseline data (required)

TABLE 14.2
FAA Standard

Attribute	Value
AIXM Path (UML)	PilotControlledLighting/ type
AIXM Element X Path	PilotControlledLighting/ timeSlice/ PilotControlledLightingTimeSlice [interpretation: SNAPSHOT]/ type
AIXM Mapping	Class: PilotControlledLighting
Enumeration	CodePilotControlledLightingType
	STANDARD_FAA

14.2.3 Designator [*designator*] – Runway Direction

Description: The full textual designator of the landing and take-off direction.
Examples: 27, 35L, 01R.

Source: User-selected from baseline data (required).

TABLE 14.3
Runway Direction Designator

Attribute	Value
AIXM Path (UML)	RunwayDirection(feature)/ designator (attribute)
AIXM Element XPath	RunwayDirection/ timeSlice/ RunwayDirectionTimeSlice [interpretation:SNAPSHOT]/ designator
AIXM Mapping	Class: RunwayDirection
Min length	1
Max length	16
Enumeration	TextDesignatorType

14.2.4 Designator [*designator*] – Runway

Description: The full textual designator of the landing and take-off direction.
Example: 09/27, 02R/20L, RWY 1.

Source: User-selected from baseline data (required).

TABLE 14.4
Runway Designator

Attribute	Value
AIXM Path (UML)	Runway (feature) /designator (attribute)
AIXM Element X Path	Runway/ timeSlice/ RunwayTimeSlice [interpretation:SNAPSHOT]/ designator
AIXM Mapping	Class: Runway
Min length	1
Max length	16
Enumeration	TextDesignatorType

14.2.5 Runway Element [*extent*]

Description: An AIXM elevated surface derived from [gml:point], which extends Surface with properties that represent the vertical position.

Source: User-selected from baseline data (optional).

TABLE 14.5
Runway Geometry

Attribute	Value
AIXM Path (UML)	TaxiwayElement (feature)/ ElevatedSurface (object)
AIXM Element XPath	RunwayElement/ timeSlice/ RunwayElementTimeSlice [interpretation SNAPSHOT]/ extent/ ElevatedSurface/gml:patches/ gml:polygonPatch/ gml:exterior/ gml:LinearRing/ gml:pos
AIXM Mapping	ElevatedSurface
Datatype	GML – decimal

14.2.6 Frequency [radioFrequency]

Description: The radio frequency to be used by the pilot for the activation of the system.

Source: Baseline data.

TABLE 14.6
Radio/Key Frequency (Baseline)

Attribute	Value	
AIXM Path (UML)	PilotControlledLighting/ radioFrequency	
AIXM Element X Path	PilotControlledLighting/ timeSlice/ PilotControlledLightingTimeSlice [interpretation SNAPSHOT]/ radioFrequency	
AIXM Mapping	Class: PilotControlledLighting	
Datatype	ValFrequencyType	
Type	Decimal	
Min inclusive	0	
Units of Measure	UomFrequencyType	
	ICAO/FAA	MHZ

14.2.7 Frequency [radioFrequency]

Description: The radio frequency to be used by the pilot for the activation of the system.

Source: User-entered (required).

TABLE 14.7
Radio/Key Frequency (New Value)

Attribute	Value
AIXM Path (UML)	PilotControlledLighting/ radioFrequency
AIXM Element X Path	PilotControlledLighting/ timeSlice/ PilotControlledLightingTimeSlice [interpretation TEMPDELTA]/ radioFrequency
AIXM Mapping	Class: PilotControlledLighting
Datatype	ValFrequencyType

Type	Decimal	
Min inclusive	0	
Units of Measure	UomFrequencyType	
	ICAO/FAA	MHZ

14.3 QCodes

TABLE 14.8
QCode for PCL Frequency Change

AIXM Code	QCode	
PCL Frequency Change	**Series**	**A**
	QCode	QLKXX
	Scope	A
	Traffic	IV
	Purpose	NBO

14.4 Business Rules

14.4.1 Template Business Rules

a. When *radioFrequency* equals null then "Specify a key."

b. When *radioFrequency* equals baselineValue then "Specify a key that is different from the baseline value"

c. When *radioFrequency* less than or equal to 0 then "Specify a key that is greater then 0."

d. The field for *radioFrequency* must equal a numerical value between 100.00 and 140.00, with up to (but not required) two decimal places.

14.4.2 Policy Business Rules

a. If the NOTAM is reporting the condition for one runway, use the keyword RWY, followed by the RWY designator.

b. If the NOTAM is referring to all the runways at an airport, then use the keyword SVC.

Unless the Airport owns and maintains the equipment, the responsibility of these NOTAMs lies with the OCC.

14.4.3 Data Encoding Business Rules

a. The element of type *operationalStatus* is required and must use a TimeSlice of type PERMDELTA, if the duration is 90 days or greater (EST) or a TimeSlice of type TEMPDELTA, if the duration is less than 90 days.

b. For mapping to an entire runway, the PCL status should be linked to both runway directions.

c. For ALL Runways, then map the message to all RunwayDirection features for the airport.

d. An xlink:href is required and should point to the associated GroundLightingSystem and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

e. An xlink:href is required and should point to the associated RunwayDirection and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

f. An xlink:href is required and should point to the associated Runway, and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

g. The associated Runway should have interpretation SNAPSHOT and contain the designator; an xlink:href is required, should point to the associated AirportHeliport, and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

14.5 Sample AIXM Message


```
<?xml version="1.0" encoding="UTF-8"?>
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1
./AIXM_Features.xsd http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd"
gml:id="FNS-Message" xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message"
xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns="http://www.aixm.aero/schema/5.1">
<notamMessage:hasMember>
  <PilotControlledLighting gml:id="PCL01">
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <PilotControlledLightingTimeSlice gml:id="PCL01_TS01">
        <gml:validTime>
          <gml:TimeInstant gml:id="PCL01_TS01_TI01">
            <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
          </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <type>STANDARD_FAA</type>
        <radioFrequency uom="MHZ">120.2</radioFrequency>
      </PilotControlledLightingTimeSlice>
    </timeSlice>
    <timeSlice>
      <PilotControlledLightingTimeSlice gml:id="PCL01_TS02">
        <gml:validTime>
          <gml:TimePeriod gml:id="PCL01_TS02_TP01">
            <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </gml:validTime>
        <interpretation>PERMDELTA</interpretation>
        <sequenceNumber>1</sequenceNumber>
        <type>STANDARD_FAA</type>
        <radioFrequency uom="MHZ">122.3</radioFrequency>
        <activatedGroundLighting xlink:href="#GLS01"/>
        <activatedGroundLighting xlink:href="#GLS02"/>
      </PilotControlledLightingTimeSlice>
    </timeSlice>
  </PilotControlledLighting>
</notamMessage:hasMember>
<notamMessage:hasMember>
  <RunwayDirectionLightSystem gml:id="GLS01">
    <timeSlice>
      <RunwayDirectionLightSystemTimeSlice gml:id="GLS01_TS01">
        <gml:validTime></gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <associatedRunwayDirection xlink:href="#RWYDIR01"/>
      </RunwayDirectionLightSystemTimeSlice>
    </timeSlice>
  </RunwayDirectionLightSystem>
</notamMessage:hasMember>
```

```
<notamMessage:hasMember>
  <RunwayDirectionLightSystem gml:id="GLS02">
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <RunwayDirectionLightSystemTimeSlice gml:id="GLS02_TS01">
        <gml:validTime></gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <associatedRunwayDirection xlink:href="#RWYDIR02"/>
      </RunwayDirectionLightSystemTimeSlice>
    </timeSlice>
  </RunwayDirectionLightSystem>
</notamMessage:hasMember>
<notamMessage:hasMember>
  <RunwayDirection gml:id="RWYDIR01">
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <RunwayDirectionTimeSlice gml:id="RWYDIR01_TS01">
        <gml:validTime></gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <designator>04</designator>
        <usedRunway xlink:href="#RWY01"/>
        <startingElement xlink:href="#RE01"/>
      </RunwayDirectionTimeSlice>
    </timeSlice>
  </RunwayDirection>
</notamMessage:hasMember>
<notamMessage:hasMember>
  <RunwayDirection gml:id="RWYDIR02">
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <RunwayDirectionTimeSlice gml:id="RWYDIR02_TS01">
        <gml:validTime></gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <designator>22</designator>
        <usedRunway xlink:href="#RWY01"/>
      </RunwayDirectionTimeSlice>
    </timeSlice>
  </RunwayDirection>
</notamMessage:hasMember>
<notamMessage:hasMember>
  <RunwayElement gml:id="RE01">
    <timeSlice>
      <RunwayElementTimeSlice gml:id="RE01_TS01">
        <gml:validTime>
            <gml:TimeInstant gml:id="RE_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <associatedRunway xlink:href="#RWY01"/>
          <extent>
          <ElevatedSurface gml:id="ES01" srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2">
            <gml:patches>
              <gml:PolygonPatch>
                <gml:exterior>
                  <gml:LinearRing>
                    <gml:posList>39.2704 -74.3430 39.2707 -74.3424 39.2705 -74.3421 39.2702
-74.3421 39.2704 -74.3430</gml:posList>
```

```
                    </gml:LinearRing>
                  </gml:exterior>
                </gml:PolygonPatch>
              </gml:patches>
            </ElevatedSurface>
            </extent>
        </RunwayElementTimeSlice>
      </timeSlice>
    </RunwayElement>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <Runway gml:id="RWY01">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
        <RunwayTimeSlice gml:id="RWY01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="RWY01_TS01_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>04/22</designator>
          <associatedAirportHeliport xlink:href="#ACY"/>
        </RunwayTimeSlice>
      </timeSlice>
    </Runway>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <AirportHeliport gml:id="ACY">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
        <AirportHeliportTimeSlice gml:id="ACY_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="ACY_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>ACY</designator>
          <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
          <locationIndicatorICAO>KACY</locationIndicatorICAO>
          <ARP>
            <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP01">
              <gml:pos>39.27 -74.34</gml:pos>
            </ElevatedPoint>
          </ARP>
        </AirportHeliportTimeSlice>
      </timeSlice>
    </AirportHeliport>
  </notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```

14.6 Translation Templates

14.6.1 FAA

RWY *designator* **RWY LGTS PCL NOW** *radiofrequency*

SVC PCL NOW *radiofrequency*

14.6.2 ICAO E Line

RWY *designator* **RWY LGTS PCL NOW** *radiofrequency*

SVC PCL NOW *radiofrequency*

14.6.3 Plain Language

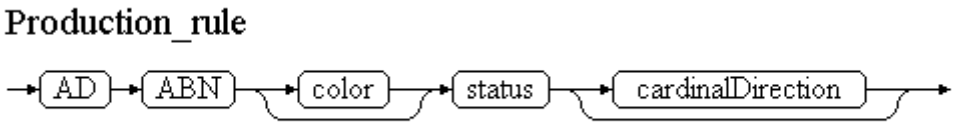
Accountable Airport: *accountableFacility*
NOTAM Number: XX/XXX
Affected Airport: *affectedFacility*
Effective Time Frame
Valid From: *startDate*
Valid To: *endDate*
Pilot Controlled Lighting
Affected Runway: **RWY** *designator* [ALL]
New Key: *radioFrequency*

14.7 Additional Analysis

None.

15 Aerodrome – Beacon Status

Specifies the operational status of an Aerodrome beacon.



15.1 Example NOTAMs

1. !MIV 05/075 7N7 AD ABN OTS
2. !BRW 02/019 BRW AD ABN ON CONT
3. !GRB 12/349 HXF AD ABN NOT ROTATING
4. !ISP 11/092 ISP AD ABN OBSTRUCTED 185-202 DEGREES
5. !ABY 02/008 ABY AD ABN INTMT

Source: US NOTAM Repository.

15.2 AIXM Mapping and Translation

15.2.1 Scenario Details

TABLE 15.1

Attribute	Value
Description	Status change to airport beacon lights
Maps to Keyword:	AD
Feature Type Id	Navaid Points/ Visual Navigation/ AeronauticalGroundLight
Feature Xpath	aixm:AeronauticalGroundLight
AIXM Mapping Diagram	Visual Navigation
NOTAM lifespan	
Start ASAP	Yes

15.2.2 ABN [*type*]

Description: Indicates the type of beacon.

Source: Assumed when event specification is selected (required).

TABLE 15.2
Aerodrome Beacon (ABN)

Attribute	Value		
AIXM Path (UML)	AeronauticalGroundLight (feature)/ type (attribute)		
AIXM Element Xpath	AeronauticalGroundLight/ timeSlice/ AeronauticalGroundLightTimeSlice [interpretation:SNAPSHOT]/ type		
AIXM Mapping	Class: GroundLightingType		
Enumeration	CodeGroundLightingType		
	AIXM	**Translations**	
	ABN	ICAO	ABN
		FAA	ABN
		Plain Text	Airport beacon

15.2.3 Color [*colour*]

Description: The color of the beacon light.

Source: User-selected (optional).

TABLE 15.3
Aerodrome Beacon Light Color

Attribute	Value		
AIXM Path (UML)	AeronauticalGroundLight (feature) /colour (attribute)		
AIXM Element X Path	AeronauticalGroundLight/ timeSlice/ AeronauticalGroundLightTimeSlice [interpretation:TEMPDELTA]/ colour		
AIXM Mapping	Class: AeronauticalGroundLight		
Enumeration	CodeColourType		
	AIXM	**Translations**	
	YELLOW	ICAO	YELLOW
		FAA	YELLOW
		Plain Text	Yellow
	RED	ICAO	RED
		FAA	RED
		Plain Text	Red
	GREEN	ICAO	GREEN
		FAA	GREEN
		Plain Text	Green
	WHITE	ICAO	WHITE
		FAA	WHITE
		Plain Text	White

15.2.4 Location [*location*]

Description: The location of the beacon/light.

Source: Baseline data (required).

TABLE 15.4
Location

Attribute	Value
AIXM Path (UML)	AeronauticalGroundLight (feature) /location (attribute)
AIXM Element X Path	AeronauticalGroundLight/ timeSlice/ AeronauticalGroundLightTimeSlice [interpretation:TEMPDELTA]/ location/ elevatedPoint/ gml:pos
AIXM Mapping	Class: AeronauticalGroundLight
Datatype	GML – decimal

15.2.5 Status [*operationalStatus*]

Description: The operational status of the light.

Source: User-selected (required).

TABLE 15.5
Aerodrome Beacon Operational Status

Attribute	Value		
AIXM Path (UML)	AIXM Application Schemas /AIM/ AIM Features/ Navaid Points/ VisualNavigation/ AeronauticalGroundLIght (extension)/ operationalStatus (attribute)		
AIXM Element X Path	AeronauticalGroundLight/ timeSlice/ AeronauticalGroundLightTimeSlice [interpretation:TEMPDELTA]/ aim:extension/ operationalStatus		
AIXM Mapping	Class: AIM Extension AeronauticalGroundLight		
Enumeration	CodeStatusOperationsType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of service
	ON_CONTINUOUSLY	ICAO	ON CONTINUOUS
		FAA	ON CONT
		Plain Text	On continuously
	NOT_ROTATING	ICAO	NOT ROTATING
		FAA	NOT ROTATING
		Plain Text	Not Rotating
	INTERMITTANT	ICAO	INTERMITTANT
		FAA	INTMT
		Plain Text	Intermittant
	OBSCURED	ICAO	OBSCURED
		FAA	OBSC
		Plain Text	Obscured

15.2.6 Cardinal Direction [warning*Direction*]

Description: Eight points of the compass used to indicate the direction of the warning area.

Source: User-selected (optional and only with Status = OBSCURED).

TABLE 15.6
Warning Direction (note)

Attribute	Value		
AIXM Path (UML)	AeronauticalGroundLight (feature) /note (attribute)		
AIXM Element Xpath	AeronauticalGroundLight/ timeSlice/ AeronauticalGroundLightTimeSlice [interpretation:TEMPDELTA]/ annotation/ Note/ translatedNote/ LinguisticNote/ note		
AIXM Mapping	Class: Note, LinguisticNote		
Min length	1		
Max length	10000		
Description	propertyName	operationalStatus	
	purpose	DESCRIPTION	
Enumeration	TextNoteType		
	AIXM	**Translations**	
	N SIDE	ICAO	N SIDE
		FAA	N SIDE
		Plain Text	North Side
	NE SIDE	ICAO	NE SIDE
		FAA	NE SIDE
		Plain Text	Northeast Side
	E SIDE	ICAO	E SIDE

		FAA	E SIDE
		Plain Text	East Side
	SE SIDE	ICAO	SE SIDE
		FAA	SE SIDE
		Plain Text	Southeast Side
	S SIDE	ICAO	S SIDE
		FAA	S SIDE
		Plain Text	South Side
	SW SIDE	ICAO	SW SIDE
		FAA	SW SIDE
		Plain Text	Southwest Side
	W SIDE	ICAO	W SIDE
		FAA	W SIDE
		Plain Text	West Side
	NW SIDE	ICAO	NW SIDE
		FAA	NW SIDE
		Plain Text	Northwest Side

15.3 QCodes

TABLE 15.7
QCodes for Aerodrome Beacon Status

AIXM Code	**QCode**	
ALL	**Series**	**A**
UNSERVICEABLE	QCode	QLBAS
	Scope	A
	Traffic	V
	Purpose	M
ON_CONTINUOUSLY	QCode	QLBXX
	Scope	A
	Traffic	V
	Purpose	M
NOT_ROTATING	QCode	QLBXX
	Scope	A
	Traffic	V
	Purpose	M
INTERMITTANT	QCode	QLBXX
	Scope	A
	Traffic	V
	Purpose	M
OBSCURED	QCode	QLBXX
	Scope	A
	Traffic	V
	Purpose	M

15.4 Business Rules

15.4.1 Template Business Rules

a. If *designator* equals null, then "Select a designator."

b. When status equals null, then "Select a status."

c. When status equals OBSCURED, then "cardinalDirection" may entered but is not required.

15.4.2 Policy Business Rules

None.

15.4.3 Data Encoding Business Rules

a. The element *type* is required and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

b. An xlink:href is required and should point to the associated AirportHeliport and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

c. The element *colour* is optional and when specified must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA. If *colour* is not entered by the user, then remove this line from the AIXM message.

d. For entering *operationalStatus* use TimeSlice of type TEMPDELTA. Specification of *operationalStatus* is required.

15.5 Sample AIXM Message

Sample NOTAM Message: AD ABN GREEN LGTS OTS


```xml
<?xml version="1.0" encoding="UTF-8"?>
<fns:FNSMessage gml:id="ID_1" xsi:schemaLocation="http://www.faa.gov/aim/fns/1.0 FNS_Messages.xsd"
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:fns="http://www.faa.gov/aim/fns/1.0"
xmlns:gml="http://www.opengis.net/gml/3.2" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns="http://www.aixm.aero/schema/5.1">
  <fns:hasMember>
  <AeronauticalGroundLight gml:id="AGL_01">
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <AeronauticalGroundLightTimeSlice gml:id="AGL_TS01">
        <gml:validTime>
        <gml:TimeInstant gml:id="AGL_TS01_TI01">
          <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
        </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <type>ABN</type>
        <colour>GREEN</colour>
        <aerodromeBeacon xlink:href="#ACY"/>
        <location>
          <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP01">
            <gml:pos>36 -115</gml:pos>
          </ElevatedPoint>
        </location>
      </AeronauticalGroundLightTimeSlice>
    </timeSlice>
    <timeSlice>
      <AeronauticalGroundLightTimeSlice gml:id="AGL_TS02">
        <gml:validTime>
          <gml:TimePeriod gml:id="AGL_TS02_TP01">
            <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
            <gml:endPosition>2010-04-10T19:00:00</gml:endPosition>
          </gml:TimePeriod>
        </gml:validTime>
        <interpretation>TEMPDELTA</interpretation>
```

```
        <sequenceNumber>15</sequenceNumber>
        <extension>
          <aim:AeronauticalGroundLightExtension>
            <aim:operationalStatus >UNSERVICEABLE</aim:operationalStatus>
          </aim:AeronauticalGroundLightExtension>
        </extension>
      </AeronauticalGroundLightTimeSlice>
    </timeSlice>
  </AeronauticalGroundLight>
</fns:hasMember>
<fns:hasMember>
  <AirportHeliport gml:id="ACY">
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <AirportHeliportTimeSlice gml:id="ACY_TS01">
        <gml:validTime>
        <gml:TimeInstant gml:id="ACY_TI01">
          <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
        </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <designator>ACY</designator>
        <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
        <locationIndicatorICAO>KACY</locationIndicatorICAO>
        <ARP>
          <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP01">
            <gml:pos>39.27 -74.34</gml:pos>
          </ElevatedPoint>
        </ARP>
      </AirportHeliportTimeSlice>
    </timeSlice>
  </AirportHeliport>
</fns:hasMember>
```


15.6 Translation Templates

15.6.1 FAA

AD ABN [*colour***]** *operationalStatus*

15.6.2 ICAO E Line

AD ABN [*colour***]** *operationalStatus*

15.6.3 Plain Language

Affected Airport: *affectedAirport*

NOTAM Number: XX/XXX

Effective Time Frame
Valid From: *startDate*
Valid To: *endDate*

Airport Beacon
Status: **[***colour***]** *operationalStatus*

15.7 Additional Analysis

A search of the NOTAM database from the past year revealed that the majority (~1900) of the NOTAMs regarding ABN were of the type 'ABN OTS'. The other 64 NOTAMs related to ABN NOTAMs (64) were of the type ABN ON CONT, ABN WHITE/GREEN/YELLOW/etc. OTS, and CIVIL OTS.

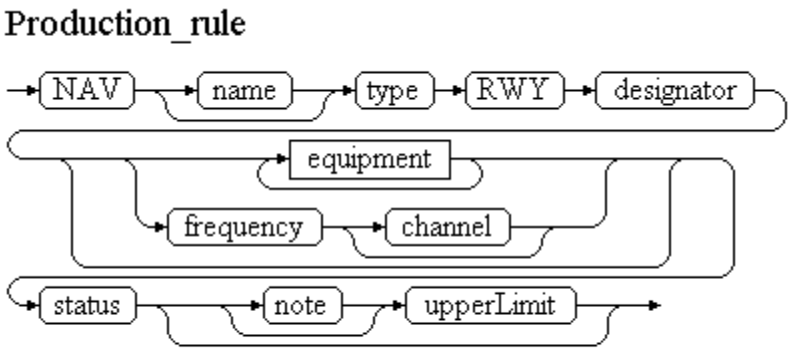
Qcodes need to be revisited. For status Normal/Operations, the Qcode options are Q–AO for operational, Q–AL for operative (or reoperative subject to previously published limitations/conditions), and Q–AK for resumed normal operations. Depending on whether a NOTAM is issued for the status becoming reoperational, this could change.

According to the Aeronautical Information Manual, Chapter 2, the Airport Beacon only contains the following light colors: yellow, white, green, and red.

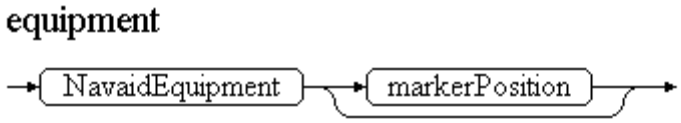
Navaid Equipment

16 Navaid – ILS Status

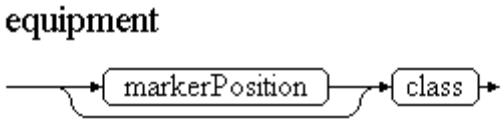
Specifies the operational status of an Instrument Landing System (ILS) Navigational Aid (Navaid). Although the change in operational status of a Navaid can result in a change in Procedure and Routes, this will be treated in a separate scenario.



ILS Navaid Equipment (Glideslope (GP), Localizer (LOC), and Distance Measuring Equipment (DME)). The element *markerPosition* only applies to the feature Localizer.



ILS Navaid Equipment (Outer Marker (OM), Middle Marker (MM), Inner Marker (IM), Locator at the Outer Marker (LO), and Fan Markers associated with ILS (FAN MKR)). The element *markerPosition* applies to the feature Localizer.



16.1 Example NOTAMs

16.1.1 Current Policy

Suspension of category/categories of ILS due to abnormal status

1.!ATL ATL NAV RWY 8L ILS CAT 2 NA
2.!ATL ATL NAV RWY 8L ILS CAT 2/3 NA WEF 0711251600-07111251900

Category 2 and/or 3 approaches are automatically cancelled or not authorized when a NOTAM has been issued for any component needed for the approaches (including the following examples). These components are: outer marker (OM), middle marker (MM). inner marker (IM), glide slope (GP), localizer (LOC), locator at the outer marker (LO), distance measuring equipment (DME), and other lighting systems detailed under Lighted Aids (Chapters 9-15).

3.!DCA DCA NAV RWY 18 ILS LLZ OTS
4.!ANB EUF NAV RWY 18 ILS GP UNUSBL BLW 768
5.!ANB EUF NAV RWY 36 ILS GP UNUSBL CPD APCH BLW 1240 (Issued by Flight Inspection, but will become OCC responsibility with the new FNS policy)

Equipment can also be commissioned or decommissioned within the National Airspace System (NAS).

6. !SHV SHV NAV RWY 32 ILS 110.3 CMSN
7. !SHV SHV NAV RWY 5 ILS DCMSN

From the US NOTAM Repository

8. !LNK 11/018 LNK NAV RWY 18 ILS LLZ UNUSBL FROM CAT 1 DA TO TD POINT (2-3 airports)
9. !DCU 11/012 DCU NAV RWY 18 ILS COMMISSIONING DELAYED

Simplified directional facility (SDF) and Localizer type directional aid (LDA)

10. !BKW I07 NAV RWY 4 SDF OTS
11. !DCA DCA NAV RWY 18 LDA OTS

Source: US NOTAM Repository, JO 7930.2M 5-3-6b, JO 7930.2M 5-3-7e

16.1.2 Future FNS Policy

1. !ATL ATL NAV ILS RWY 8L CAT 2 NA
2. !ATL ATL NAV ILS RWY 8L CAT 2/3 NA WEF 0711251600-07111251900
3. !DCA DCA NAV ILS RWY 18 LOC OTS
4. !ANB EUF NAV ILS RWY 18 GP UNUSBL BLW 768
5. !ANB EUF NAV ILS RWY 36 GP UNUSBL CPD APCH BLW 1240
6. !SHV SHV NAV ILS RWY 32 110.3 CMSN
7. !SHV SHV NAV ILS RWY 5 DCMSN
8. !LNK 11/018 LNK NAV ILS RWY 18 LOC UNUSBL FROM CAT 1 DA TO TD POINT
9. !DCU 11/012 DCU NAV ILS RWY 18 COMMISSIONING DELAYED
10. !BKW I07 NAV SDF RWY 4 OTS
11. !DCA DCA NAV LDA RWY 18 OTS

16.2 AIXM Mapping and Translation

16.2.1 Scenario Details

TABLE 16.1

Attribute	Value
Description	Status change to Instrument Landing System (ILS)
Maps to Keyword:	NAV
Feature Type Id	Navaid Points/ Navaids/ Navaid
Feature Xpath	aixm:Navaid
AIXM Mapping Diagram	Navaid NavaidEquipment

NOTAM lifespan	
Start ASAP	No

16.2.2 Instrument Landing System Type [*type*]

Description: The type of navaid service such as ILS, MLS, VORTAC, VOR/DME, etc.

Source: User-selected from baseline data (required).

TABLE 16.2
Navaid Type

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ type (attribute)		
AIXM Element Xpath	Navaid/ timeSlice/ NavaidTimeSlice [interpretation: SNAPSHOT]/ type		
AIXM Mapping	Class: Navaid		
Enumeration	CodeNavaidServiceType		
	AIXM	**Translations**	
	ILS	ICAO	ILS
		FAA	ILS
		Plain Text	Instrument Landing System (ILS)
	ILS_DME	ICAO	ILS
		FAA	ILS
		Plain Text	Instrument Landing System (ILS)
	ILS_LOC	ICAO	ILS
		FAA	ILS
		Plain Text	Instrument Landing System (ILS)
	SDF	ICAO	SIMPLIFIED DIRECTIONAL FACILITY
		FAA	SDF
		Plain Text	Simplified Directional Facility (SDF)
	OTHER:LDA	ICAO	LOCALIZER TYPE DIRECTIONAL AID
		FAA	LDA
		Plain Text	Localizer type directional aid (LDA)

16.2.3 Name [*name*]

Description: The long name given to the composite navaid.

Source: User-selected from baseline data (only with Navaid *type* equal to OTHER:LDA).

TABLE 16.3
Navaid Name

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ name (attribute)
AIXM Element XPath	Navaid/ timeSlice/ NavaidTimeSlice [interpretation: SNAPSHOT]/ name
AIXM Mapping	Class: Navaid

Min length	1
Max length	60
Enumeration	TextNameType

16.2.4 Designator [*designator*] – Runway Direction

Description: The full textual designator of the landing and take-off direction.
Examples: 27, 35L, 01R.

Source: User-selected from baseline data (required).

TABLE 16.4
Runway Direction Designator

Attribute	Value
AIXM Path (UML)	RunwayDirection(feature)/ designator (attribute)
AIXM Element XPath	RunwayDirection/ timeSlice/ RunwayDirectionTimeSlice [interpretation:SNAPSHOT]/ designator
AIXM Mapping	Class: RunwayDirection
Min length	1
Max length	16
Enumeration	TextDesignatorType

16.2.5 Designator [*designator*] – Runway

Description: The full textual designator of the landing and take-off direction.
Example: 09/27, 02R/20L, RWY 1.

Source: User-selected from baseline data (required).

TABLE 16.5
Runway Designator

Attribute	***Value***
AIXM Path (UML)	***Runway (feature) /designator (attribute)***
AIXM Element Xpath	***Runway/ timeSlice/ RunwayTimeSlice [interpretation:SNAPSHOT]/ designator***
AIXM Mapping	***Class: Runway***
Min length	***1***
Max length	***16***
Enumeration	***TextDesignatorType***

16.2.6 Designator [*designator*] – Aerodrome

Description: A coded designator for an Aerodrome/Heliport.

a. The rules for providing the affected aerodrome information are provided in Chapter 5 – Affected Location (in AIXM).

Source: User-selected from baseline data (required).

TABLE 16.6
Aerodrome FAA designator

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – designator (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ designator
AIXM Mapping	Class: AirportHeliport

Type	CodeAirportHeliportDesignatorType
Min length	3
Max length	6
Pattern	([A-Z]|\d)*

16.2.7 ILS Location [*location*]

Description: An AIXM elevated surface derived from [gml:point], which extends Surface with properties that represent the vertical position.

Source: User-selected from baseline data (required).

TABLE 16.7
ILS Location

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ location (object)
AIXM Element Xpath	Navaid/ timeSlice/ NavaidTimeSlice [interpretation: SNAPSHOT]/ location/ ElevatedPoint/ gml:pos
AIXM Mapping	ElevatedSurface
Datatype	GML – decimal

16.2.8 ILS Operational Status [*operationalStatus*]

Description: Indicates the operational status of the navaid.

Source: User-selected (required)

TABLE 16.8
Operational Status

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ NavaidOperationalStatus (object)/ operationalStatus (attribute)		
AIXM Element Xpath	Navaid/ timeSlice/ NavaidTimeSlice [interpretation: TEMPDELTA]/ availability/ NavaidOperationalStatus/ operationalStatus		
AIXM Mapping	Class: NavaidOperationalStatus		
Enumeration	CodeStatusNavaidType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of Service
	PARTIAL	ICAO	…
		FAA	…
		Plain Text	…
	OTHER:CAT2_APPROACH _NOT_ AUTH	ICAO	CAT 2 NOT AUTH
		FAA	CAT 2 NA
		Plain Text	Category 2 Instrument Approach Not Authorized
	OTHER:CAT3_APPROACH _NOT_ AUTH	ICAO	CAT 3 NOT AUTH
		FAA	CAT 3 NA
		Plain Text	Category 3 Instrument Approach Not Authorized
	OTHER:CAT2_3_APPROAC H _NOT_ AUTH	ICAO	CAT 2/3 NOT AUTH
		FAA	CAT 2/3 NA
		Plain Text	Category 2 and Category 3 Instrument Approach Not Authorized
	OTHER:UNMONITORED	ICAO	UNMONITORED

		FAA	UNMONITORED
		Plain Text	Unmonitored
	OTHER:DO_NOT_USE	ICAO	UNUSABLE
		FAA	UNUSBL
		Plain Text	Unusable
	OPERATIONAL	ICAO	RTS
		FAA	RTS
		Plain Text	Return to Service
	OTHER: COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned
	OTHER: DECOMMISSIONED	ICAO	DECOMMISSIONED
		FAA	DCMSN
		Plain Text	Decommissioned

ILS Navaid Equiment

16.2.9 Glidepath Navaid Equipment [*Glidepath*]

Description: Indicates the specific Navaid Equipment.

Source: User-selected (optional).

TABLE 16.9
Glidepath Navaid Equipment

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ NavaidEquipment (feature)/ NavaidEquipment (feature)/ Glidepath (feature)		
AIXM Element XPath	Glidepath/ timeSlice/ GlidepathTimeSlice		
xlink:href	Navaid/ timeSlice/ NavaidTimeSlice/ navaidEquipment/ NavaidComponent/ theNavaidEquipment RadioFrequencyArea/ timeSlice/ RadioFrequencyAreaTimeSlice/ equipment_navaidEquipment		
AIXM Mapping	Class: Glidepath		
Enumeration	Glidepath	ICAO	GP
		FAA	GP
		Plain Text	Glide slope

16.2.10 Glidepath Operational Status [*operationalStatus*]

Description: Indicates the operational status of the navaid.

Source: User-selected (optional, required if Glidepath Equipment is selected)

TABLE 16.10
Glidepath Operational Status

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ NavaidOperationalStatus (object)/ operationalStatus (attribute)		
AIXM Element Xpath	Glidepath/ timeSlice/ GlidepathTimeSlice [interpretation: TEMPDELTA]/ availability/ NavaidOperationalStatus/ operationalStatus		
AIXM Mapping	Class: NavaidOperationalStatus		
Enumeration	CodeStatusNavaidType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of Service
	OTHER:DO_NOT_USE	ICAO	UNUSABLE
		FAA	UNUSBL
		Plain Text	Unusable
	OTHER:UNMONITORED	ICAO	UNMONITORED
		FAA	UNMONITORED
		Plain Text	Unmonitored
	OPERATIONAL	ICAO	RTS
		FAA	RTS
		Plain Text	Return to Service
	OTHER: COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned
	OTHER: DECOMMISSIONED	ICAO	DECOMMISSIONED
		FAA	DCMSN
		Plain Text	Decommissioned

16.2.11 Glidepath Frequency [*frequency*]

Description: The frequency value of the Instrument Landing System (ILS) equipment.

Source: User-entered (optional)/ User-selected from baseline data (optional).

TABLE 16.11
Frequency

Attribute	***Value***	
AIXM Path (UML)	***Navaid Points/ Navaids/ NavaidEquipment (feature)/ Glidepath (feature)/ frequency (attribute)***	
AIXM Element Xpath	***Glidepath/ timeSlice/ GlidepathTimeSlice [interpretation: SNAPSHOT]/ frequency***	
AIXM Mapping	***Class: Glidepath***	
Datatype	***ValFrequencyType***	
Type	***Decimal***	
Min inclusive	***0***	
Units of Measure	***UomFrequencyType***	
	ICAO/FAA	***MHZ***

16.2.12 Glidepath Location [*location*]

Description: An AIXM elevated surface derived from [gml:point], which extends Surface with properties that represent the vertical position.

Source: User-selected from baseline data (optional, required if Glidepath Equipment is selected).

TABLE 16.12
Glidepath Location

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ location (object)
AIXM Element Xpath	Glidepath/ timeSlice/ GlidepathTimeSlice [interpretation: SNAPSHOT]/ location/ ElevatedPoint/ gml:pos
AIXM Mapping	ElevatedSurface
Datatype	GML – decimal

16.2.13 Localizer Navaid Equipment [*Localizer*]

Description: Indicates the specific Navaid Equipment.

Source: User-selected (optional).

TABLE 16.13
Localizer Navaid Equipment

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid Equipment/ NavaidEquipment (feature)/ Localizer (feature)		
AIXM Element XPath	Localizer/ timeSlice/ LocalizerTimeSlice		
xlink:href	Navaid/ timeSlice/ NavaidTimeSlice/ navaidEquipment/ NavaidComponent/ theNavaidEquipment RadioFrequencyArea/ timeSlice/ RadioFrequencyAreaTimeSlice/ equipment_navaidEquipment		
AIXM Mapping	Class: Localizer		
Enumeration	Localizer	ICAO	LOC
		FAA	LOC

		Plain Text	Localizer

16.2.14 Localizer Location [*markerPosition*]

Description: Indicates the location of the localizer.

Source: User-selected (optional).

TABLE 16.14
Localizer Marker Position

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ NavaidComponent (object)/ markerPosition (attribute)		
AIXM Element Xpath	Navaid/ timeSlice/ NavaidTimeSlice [interpretation: SNAPSHOT]/ navaidEquipment/ NavaidComponent/ markerPosition		
AIXM Mapping	Class: NavaidComponent		
Enumeration	CodePositionInILSType		
	AIXM	**Translations**	
	BACKCOURSE	ICAO	BACKCOURSE
		FAA	BC
		Plain Text	Backcourse (BC)

16.2.15 Localizer Operational Status [*operationalStatus*]

Description: Indicates the operational status of the navaid.

Source: User-selected (optional, required if Localizer Equipment is selected)

TABLE 16.15
Localizer Operational Status

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ NavaidOperationalStatus (object)/ operationalStatus (attribute)		
AIXM Element Xpath	Localizer/ timeSlice/ LocalizerTimeSlice [interpretation: TEMPDELTA]/ availability/ NavaidOperationalStatus/ operationalStatus		
AIXM Mapping	Class: NavaidOperationalStatus		
Enumeration	CodeStatusNavaidType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of Service
	OTHER:DO_NOT_USE	ICAO	UNUSABLE
		FAA	UNUSBL
		Plain Text	Unusable
	OTHER:UNMONITORED	ICAO	UNMONITORED
		FAA	UNMONITORED
		Plain Text	Unmonitored
	OPERATIONAL	ICAO	RTS
		FAA	RTS
		Plain Text	Return to Service
	OTHER: COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned
	OTHER:	ICAO	DECOMMISSIONED

	DECOMMISSIONED	FAA	DCMSN
		Plain Text	Decommissioned

16.2.16 Localizer Frequency [*frequency*]

Description: The frequency value of the Instrument Landing System (ILS) equipment.

Source: User-entered (optional)/ User-selected from baseline data (optional).

TABLE 16.16
Frequency

Attribute	***Value***	
AIXM Path (UML)	***Navaid Points/ Navaids/ NavaidEquipment (feature)/ Localizer (feature)/ frequency (attribute)***	
AIXM Element Xpath	***Localizer/ timeSlice/ LocalizerTimeSlice [interpretation: SNAPSHOT]/ frequency***	
AIXM Mapping	***Class: Localizer***	
Datatype	***ValFrequencyType***	
Type	***Decimal***	
Min inclusive	***0***	
Units of Measure	***UomFrequencyType***	
	ICAO/FAA	***MHZ***

16.2.17 Localizer Location [*location*]

Description: An AIXM elevated surface derived from [gml:point], which extends Surface with properties that represent the vertical position.

Source: User-selected from baseline data (optional, required if Localizer Equipment is selected).

TABLE 16.17
Localizer Location

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ location (object)
AIXM Element Xpath	Localizer/ timeSlice/ LocalizerTimeSlice [interpretation: SNAPSHOT]/ location/ ElevatedPoint/ gml:pos
AIXM Mapping	ElevatedSurface
Datatype	GML – decimal

16.2.18 DME Navaid Equipment [*DME*]

Description: Indicates the specific Navaid Equipment.

Source: User-selected (optional).

TABLE 16.18
DME Navaid Equipment

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid Equipment/ NavaidEquipment (feature)/ DME (feature)
AIXM Element XPath	DME/ timeSlice/ DMETimeSlice
xlink:href	Navaid/ timeSlice/ NavaidTimeSlice/ navaidEquipment/ NavaidComponent/ theNavaidEquipment RadioFrequencyArea/ timeSlice/ RadioFrequencyAreaTimeSlice/ equipment_navaidEquipment

AIXM Mapping	Class: DME		
Enumeration	DME	ICAO	DME
		FAA	DME
		Plain Text	Distance Measuring Equipment (DME)

16.2.19 DME Operational Status [*operationalStatus*]

Description: Indicates the operational status of the navaid.

Source: User-selected (optional, required if DME Equipment is selected)

TABLE 16.19
DME Operational Status

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ NavaidOperationalStatus (object)/ operationalStatus (attribute)		
AIXM Element Xpath	DME/ timeSlice/ DMETimeSlice [interpretation: TEMPDELTA]/ availability/ NavaidOperationalStatus/ operationalStatus		
AIXM Mapping	Class: NavaidOperationalStatus		
Enumeration	CodeStatusNavaidType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of Service
	OTHER:DO_NOT_USE	ICAO	UNUSABLE
		FAA	UNUSBL
		Plain Text	Unusable
	OTHER:UNMONITORED	ICAO	UNMONITORED
		FAA	UNMONITORED
		Plain Text	Unmonitored
	OPERATIONAL	ICAO	RTS
		FAA	RTS
		Plain Text	Return to Service
	OTHER: COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned
	OTHER: DECOMMISSIONED	ICAO	DECOMMISSIONED
		FAA	DCMSN
		Plain Text	Decommissioned

16.2.20 DME Channel [*channel*]

Description: The frequency value of the Instrument Landing System (ILS) equipment.

Source: User-entered (optional)/ User-selected from baseline data (optional).

TABLE 16.20
DME Channel

Attribute	Value	
AIXM Path (UML)	Navaid Points/ Navaids/ NavaidEquipment (feature)/ DME (feature)/ channel (attribute)	
AIXM Element Xpath	DME/ timeSlice/ DMETimeSlice [interpretation: SNAPSHOT]/ channel	
AIXM Mapping	Class: DME	
Enumeration	CodeDMEChannelType	
	AIXM	**Translations**

	1X – 126Y	ICAO	CH<*AIXM value*>
		FAA	CH<*AIXM value*>
		Plain Text	DME Channel <*AIXM value*>

16.2.21 DME Location [*location*]

Description: An AIXM elevated surface derived from [gml:point], which extends Surface with properties that represent the vertical position.

Source: User-selected from baseline data (optional, required if DME Equipment is selected).

TABLE 16.21
DME Location

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ location (object)
AIXM Element Xpath	DME/ timeSlice/ DMETimeSlice [interpretation: SNAPSHOT]/ location/ ElevatedPoint/ gml:pos
AIXM Mapping	ElevatedSurface
Datatype	GML – decimal

16.2.22 Marker Beacon Navaid Equipment [*MarkerBeacon*]

Description: Indicates the specific Navaid Equipment.

Source: User-selected (optional).

TABLE 16.22
Marker Beacon Navaid Equipment

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid Equipment/ NavaidEquipment (feature)/ MarkerBeacon (feature)
AIXM Element XPath	MarkerBeacon/ timeSlice/ MarkerBeaconTimeSlice
xlink:href	Navaid/ timeSlice/ NavaidTimeSlice/ navaidEquipment/ NavaidComponent/ theNavaidEquipment RadioFrequencyArea/ timeSlice/ RadioFrequencyAreaTimeSlice/ equipment_navaidEquipment
AIXM Mapping	Class: MarkerBeacon

16.2.23 Marker Beacon Type [*markerPosition*]

Description: Indicates the location and type of Marker Beacon.

Source: User-selected (optional, required if MarkerBeacon Equipment is selected).

TABLE 16.23
Marker Position

Attribute	Value	
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ NavaidComponent (object)/ markerPosition (attribute)	
AIXM Element Xpath	Navaid/ timeSlice/ NavaidTimeSlice [interpretation: SNAPSHOT]/ navaidEquipment/ NavaidComponent/ markerPosition	
AIXM Mapping	Class: NavaidComponent	
Enumeration	CodePositionInILSType	
	AIXM	**Translations**

	OUTER	ICAO	OM
		FAA	OM
		Plain Text	Outer Marker (OM)
	MIDDLE	ICAO	MM
		FAA	MM
		Plain Text	Middle Marker (MM)
	INNER	ICAO	IM
		FAA	IM
		Plain Text	Inner Marker (IM)
AIXM Path (UML)	Navaid Points/ Navaids/ NavaidEquipment (feature)/ MarkerBeacon (feature)/ class (attribute)		
AIXM Element Xpath	MarkerBeacon/ timeSlice/ MarkerBeaconTimeSlice [interpretation: SNAPSHOT]/ class		
AIXM Mapping	Class: MarkerBeacon		
Enumeration	CodeMarkerBeaconSignalType		
	AIXM	**Translations**	
	FAN (associated with markerPosition)	ICAO	---
		FAA	---
		Plain Text	---
	LOW_PWR_FAN (associated with OUTER markerPosition)	ICAO	LO
		FAA	LO
		Plain Text	Locator Outer Marker (LO)
	LOW_PWR_FAN (associated with MIDDLE markerPosition)	ICAO	LM
		FAA	LM
		Plain Text	Locator Middle Marker (LM)
	FAN (not associated with markerPosition)	ICAO	FAN MKR
		FAA	FAN MKR
		Plain Text	Fan Markers

16.2.24 Position Marker Operational Status [*operationalStatus*]

Description: Indicates the operational status of the navaid.

Source: User-selected (optional, required if MarkerBeacon Equipment is selected).

TABLE 16.24
Marker Beacon Operational Status

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ NavaidOperationalStatus (object)/ operationalStatus (attribute)		
AIXM Element Xpath	MarkerBeacon/ timeSlice/ MarkerBeaconTimeSlice [interpretation: TEMPDELTA]/ availability/ NavaidOperationalStatus/ operationalStatus		
AIXM Mapping	Class: NavaidOperationalStatus		
Enumeration	CodeStatusNavaidType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of Service
	OTHER: COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned
	OTHER: COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN

		Plain Text	Commissioned
	OTHER: DECOMMISSIONED	ICAO	DECOMMISSIONED
		FAA	DCMSN
		Plain Text	Decommissioned

16.2.25 Position Marker Frequency [*frequency*]

Description: The frequency value of the Instrument Landing System (ILS) equipment.

Source: User-entered (optional)/ User-selected from baseline data (optional).

TABLE 16.25
Frequency

Attribute	***Value***	
AIXM Path (UML)	***Navaid Points/ Navaids/ NavaidEquipment (feature)/ MarkerBeacon (feature)/ frequency (attribute)***	
AIXM Element Xpath	***MarkerBeacon/ timeSlice/ MarkerBeaconTimeSlice [interpretation: SNAPSHOT]/ frequency***	
AIXM Mapping	***Class: MarkerBeacon***	
Datatype	***ValFrequencyType***	
Type	***Decimal***	
Min inclusive	***0***	
Units of Measure	***UomFrequencyType***	
	ICAO/FAA	***MHZ***

16.2.26 Position Marker Location [*location*]

Description: An AIXM elevated surface derived from [gml:point], which extends Surface with properties that represent the vertical position.

Source: User-selected from baseline data (optional, required if MarkerBeacon Equipment is selected).

TABLE 16.26
Marker Beacon Location

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ location (object)
AIXM Element Xpath	MarkerBeacon/ timeSlice/ MarkerBeaconTimeSlice [interpretation: SNAPSHOT]/ location/ ElevatedPoint/ gml:pos
AIXM Mapping	ElevatedSurface
Datatype	GML – decimal

Affected Area/Approach/Altitude

16.2.27 Status Affected Area [*annotation*]

Description: Descriptive location information to clarify the operation status OTHER:DO_NOT_USE (UNUSABLE).

Source: User-selected (optional).

TABLE 16.27
User-entered affected area

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ NavaidOperationalStatus

	(object)/ annotation (object)/ note (attribute)
AIXM Element Xpath	-MarkerBeacon/ timeSlice/ MarkerBeaconTimeSlice [interpretation TEMPDELTA]/ annotation// Note/ translatedNote/ LinguisticNote/ note -DME/ timeSlice/ DMETimeSlice [interpretation TEMPDELTA]/ annotation/ Note/ translatedNote/ LinguisticNote/ note -Localizer/ timeSlice/ LocalizerTimeSlice [interpretation TEMPDELTA]/ annotation/ Note/ translatedNote/ LinguisticNote/ note -Glidepath/ timeSlice/ GlidepathTimeSlice [interpretation TEMPDELTA]/ annotation/ Note/ translatedNote/ LinguisticNote/ note -Navaid/ timeSlice/ NavaidTimeSlice [interpretation TEMPDELTA]/ annotation/ Note/ translatedNote/ LinguisticNote/ note
AIXM Mapping	Class: Note, LinguisticNote
Min length	1
Max length	10000
Description	propertyName: operationalStatus purpose: REMARK
Enumeration	TextNoteType Format: FROM <*ListValue1*> TO <*ListValue2*>

AIXM	Translations	
DECISION ALTITUDE	ICAO	CATEGORY 1 DA
	FAA	CAT 1 DA
	Plain Text	Category 1 Decision Altitude (DA)
DECISION HEIGHT	ICAO	CATEGORY 1 DH
	FAA	CAT 1 DH
	Plain Text	Category 1 Decision Height (DH)
MIDDLE MARKER	ICAO	MM
	FAA	MM
	Plain Text	Middle Marker (MM)
TOUCHDOWN	ICAO	TDZ
	FAA	TDZ
	Plain Text	Touch Down Zone

16.2.28 FUTURE POLICY: Status Affected Approach/Altitude [*annotation/upperLimit*]

Description: Descriptive approach/altitude information to clarify the operation status OTHER:DO_NOT_USE (UNUSABLE).

Source: User-selected (optional).

TABLE 16.28
Affected Approach/Altitude

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ NavaidOperationalStatus (object)/ annotation (object)/ note (attribute)
AIXM Element Xpath	-MarkerBeacon/ timeSlice/ MarkerBeaconTimeSlice [interpretation TEMPDELTA]/ annotation/ Note/ translatedNote/ LinguisticNote/ note -DME/ timeSlice/ DMETimeSlice [interpretation TEMPDELTA]/ annotation// Note/ translatedNote/ LinguisticNote/ note -Localizer/ timeSlice/ LocalizerTimeSlice [interpretation TEMPDELTA]/ annotation/ Note/ translatedNote/ LinguisticNote/ note

	-Glidepath/ timeSlice/ GlidepathTimeSlice [interpretation TEMPDELTA]/ annotation/ Note/ translatedNote/ LinguisticNote/ note -Navaid/ timeSlice/ NavaidTimeSlice [interpretation TEMPDELTA]/ annotation/ Note/ translatedNote/ LinguisticNote/ note		
AIXM Mapping	Class: Note, LinguisticNote		
Min length	1		
Max length	10000		
Description	propertyName	operationalStatus	
	purpose	REMARK	
Enumeration	TextNoteType		
	Format: *ListValue1* (optional)		
	AIXM	**Translations**	
	UNUSABLE FOR COUPLED APPROACH	ICAO	COUPLED APCH
		FAA	CPD APCH
		Plain Text	Coupled Approach
Affected Area BELOW (BLW) upperLimit			
AIXM Path (UML)	Navaid Points/ Navaids/ NavaidLimitation/ RadioFrequencyArea (feature)/ CircleSector (object)/ upperLimit (attribute)		
AIXM Element Xpath	RadioFrequencyArea/ timeSlice/ RadioFrequencyAreaTimeSlice/ sector/ CircleSector/ upperLimit		
AIXM Mapping	Class: CircleSector		
Enumeration	ValDistanceVerticalType		
	UomDistanceVerticalType	FT	
AIXM Path (UML)	Navaid Points/ Navaids/ NavaidLimitation/ RadioFrequencyArea (feature)/ CircleSector (object)/ upperLimitReference (attribute)		
AIXM Element Xpath	RadioFrequencyArea/ timeSlice/ RadioFrequencyAreaTimeSlice/ sector/ CircleSector/ upperLimitReference		
AIXM Mapping	Class: CircleSector		
Enumeration	CodeVerticalReferenceType	SFC	

16.3 QCodes

TABLE 16.29 QCodes for ILS Status

AIXM Code	**QCode**	
ALL	**Series**	**N**
2nd and 3rd Letter		
ILS	QCode	QIL--
	Scope	A
	Traffic	I
	Purpose	NBO
Glidepath	QCode	QIG--
	Scope	A
	Traffic	I
	Purpose	NBO
Localizer	QCode	QIL--
	Scope	A
	Traffic	I
	Purpose	NBO
DME (ILS/DME)	QCode	QID--
	Scope	A
	Traffic	I
	Purpose	NBO
INNER MARKER BEACON	QCode	QII--

	Scope	A
	Traffic	I
	Purpose	B
MIDDLE MARKER BEACON	QCode	QIM--
	Scope	A
	Traffic	I
	Purpose	BO
OUTER MARKER BEACON	QCode	QIO--
	Scope	A
	Traffic	I
	Purpose	BO
LOCATOR, OUTER	QCode	QIX--
	Scope	A
	Traffic	I
	Purpose	BO
LOCATOR, MIDDLE	QCode	QIY--
	Scope	A
	Traffic	I
	Purpose	BO
FAN MARKER	QCode	QNF--
	Scope	AE
	Traffic	IV
	Purpose	M
SDF (Simplified directional facility)	QCode	QXX--
	Scope	I
	Traffic	NBO
	Purpose	A
LDA (Localizer type directional aid)	QCode	QXX--
	Scope	A
	Traffic	I
	Purpose	NBO
ILS CATEGORY 2 NOT AUTHORIZED	QCode	QITXX
	Scope	A
	Traffic	I
	Purpose	NBO
ILS CATEGORY 3 NOT AUTHORIZED	QCode	QIUXX
	Scope	A
	Traffic	I
	Purpose	NBO
ILS CATEGORY 2/3 NOT AUTHORIZED	QCode	QXXXX
	Scope	A
	Traffic	I
	Purpose	NBO
4th and 5th Letter		
OUT OF SERVICE	QCode	Q--AS
UNUSABLE	QCode	Q--XX
UNMONITORED	QCode	Q--XX
COMMISSIONED	QCode	Q--CS
DECOMMISSIONED	QCode	Q--AW

16.4 Business Rules

16.4.1 Template Business Rules

a. If Runway Direction *designator* equals null, then "Select a Runway designator."

b. When *operationalStatus* is equal to null, then "Select a status."

c. For *operationalStatus* equal to OTHER:CAT2_APPROACH _NOT_ AUTH (NA), OTHER:CAT2_3_APPROACH _NOT_ AUTH (NA), or OTHER:CAT3_APPROACH _NOT_ AUTH (NA), the referenced Approach Category must not be greater than the Approach Category referenced in the baseline data (baseline data dependent).

d. For MarkerBeacon, the *operationalStatus* must equal UNSERVICEABLE, OTHER:COMMISSIONED or OTHER:DECOMMISSIONED.

e. When NavaidEquipment *operationalStatus* is equal to OTHER:DO_NOT_USE (UNUSABLE), then the Status Affected Area [or the Status Affected Approach/Altitude (future policy)] may be entered.

f. The same NavaidEquipment cannot be selected more than one time per NOTAM.

g. The attribute *frequency* must be a number between 100.00 and 350.00 MHz and should only be selected with the *operationalStatus* is equal to OTHER:COMMISSIONED. Only one significant figure (decimal place) is required.

h. The attribute *channel* must be an alphanumeric value between 1X and 126Y and should only be selected with the *operationalStatus* is equal to OTHER:COMMISSIONED.

i. When commissioning a new ILS, the frequency quoted for the ILS should be the Localizer frequency.

j. If Navaid *type* is equal to ILS, then the Navaid Equipment can be Glidepath, Localizer, and Marker Beacon.

k. If Navaid *type* is equal to ILS_DME, then the Navaid Equipment can be Glidepath, Localizer, DME, and Marker Beacon.

l. If Navaid *type* is equal to OTHER:LDA, then the Navaid Equipment can be DME, Localizer, and Glidepath.

m. If Navaid *type* is equal to SDF, then no Navaid Equipment or *frequency/channel* should be specified.

n. If Navaid *type* is equal to SDF or OTHER:LDA, the the *operationalStatus* can only be equal to UNSERVICEABLE, OTHER:UNMONITORED, OPERATIONAL, OTHER:COMMISSIONED, or OTHER:DECOMMISSIONED. No additional information should be provided by the user.

o. If for Navaid *type* equal to ILS, Glidepath, Localizer, and Marker Beacons all have the same *operationalStatus*, then the NOTAM should not include the Navaid Equipment and only apply the *operationalStatus* to the Navaid Service.

p. If for Navaid *type* equal to ILS_DME, Glidepath, Localizer, and DME all have the same *operationalStatus*, then the NOTAM should not include the Navaid Equipment and only apply the *operationalStatus* to the Navaid Service.

q. If for Navaid *type* equal to LDA, Localizer and DME have the same *operationalStatus*, then the NOTAM should not include the Navaid Equipment and only apply the *operationalStatus* to the Navaid Service.

r. The Navaid *name* can only be associated with Navaid *type* equal to OTHER:LDA.

16.4.2 Policy Business Rules

a. Category 2 and/or 3 approaches are automatically cancelled or not authorized when a NOTAM has been issued for any component needed for the approaches. A NOTAM: ILS RWY X CAT 2 NA is not necessary. The following systems are: OM, MM, IM, GP, LOC, LO, DME, ALS, SFL/RAIL, TDZL, RCLL, RWY LGTS, RVRT, RVRM, and RVRR.

b. Suspension of category(ies) of operation that will result in the NOTAM: ILS RWY X CAT 2 NA, are detailed below:

(1) One of the localizer transmitters is inoperative

(2) Localizer far field monitor is inoperative

(3) Failure of one monitor in a dual channel localizer or glidepath monitor system

(4) Localizer/Glidepath operating on battery standby power source when main power source has failed.

(5) ALS standby power source inoperative

(6) SFL/RAIL standby power source inoperative

(7) TDZL/RCLL standby power source inoperative

(8) RWY LGTS standby power source inoperative

(9) More than 10% of touchdown zone lights, runway centerling lights, runway edge lights, and taxiway lights are not functioning

c. A reason for the suspension of operation is not necessary.

16.4.3 Data Encoding Business Rules

a. The element *type* under the feature Navaid is required and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

b. For entering *operationalStatus* of the Navaid Service, use TimeSlice of type TEMPDELTA. Specification of *operationalStatus* is required.

c. If the *operationalStatus* is equal to OTHER:COMMISSIONED, use a TimeSlice of type BASELINE.

d. If the *operationalStatus* is equal to OTHER:COMMISSIONED, include all of the NavaidEquipment information that is being commissioned in the digital message.

e. If the *operationalStatus* is equal to OTHER:DECOMMISSIONED, use a TimeSlice of type PERMDELTA.

f. NavaidEquipment should only be referenced in the NOTAM for *type* equal to ILS or ILS_DME.

g. For every NavaidEquipment referenced in the NOTAM, an xlink:href is required within the feature Navaid to point to the specific equipment. Multiple NavaidEquipment features may be associated with one Navaid service.

h. If the *operationalStatus* of one or multiple NavaidEquipment is changed, use TimeSlice of type TEMPDELTA and the value for *operationalStatus* of Navaid is specified as PARTIAL, also using a TimeSlice of type TEMPDELTA.

i. For every NavaidEquipment, the *operationalStatus* of the NavaidEquipment is required and must use TimeSlice of type TEMPDELTA.

j. The *location* of the Navaid Service and NavaidEquipment referenced in the NOTAM is required, baseline data permitting, and must use a TimeSlice of type SNAPSHOT unless the NavaidEquipment is referenced by UUID in a TimeSlice of type TEMPDELTA.

k. The *frequency* or *channel* of the NavaidEquipment is optional and should only appear in the NOTAM when the *operationalStatus* is equal to OTHER:COMMISSIONED.

l. For NavaidEquipment MarkerBeacon, Outer Marker (OM), Middle Marker (MM), and Inner Marker (IM) must have the *markerPosition* (OUTER, MIDDLE, INNER) specified under the feature Navaid/ NavaidComponent and must use a TimeSlice of type SNAPSHOT unless the NavaidEquipment is referenced by UUID in a TimeSlice of type TEMPDELTA. The MarkerBeacon element *class* should be FAN and must use a TimeSlice of type SNAPSHOT unless the NavaidEquipment is referenced by UUID in a TimeSlice of type TEMPDELTA.

m. For NavaidEquipment Marker Beacon, Outer Marker (LO) and Fan Markers associated with the ILS, the marker position (detailed above) should not be specified and the MarkerBeacon element *class* should be LOW_PWR_FAN or FAN, respectively.

n. An xlink:href is required and should point to the used Runway Direction and the associated AirportHeliport and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

16.5 Sample AIXM Message

Sample NOTAM Message: ILS RWY 31 UNMON


```xml
<?xml version="1.0" encoding="UTF-8"?>
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1 ./AIXM_Features.xsd
http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd" gml:id="FNS-Message"
xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message" xmlns:aixm="http://www.aixm.aero/schema/5.1"
xmlns:gco="http://www.isotc211.org/2005/gco" xmlns:gmd="http://www.isotc211.org/2005/gmd"
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:event="http://www.aixm.aero/schema/5.1/event" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns="http://www.aixm.aero/schema/5.1">
  <notamMessage:hasMember>
  <Navaid gml:id="NAV01">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <NavaidTimeSlice gml:id="NAV01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="NAV01_TS01_TI01">
              <gml:timePosition>2010-10-06T09:42:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <type>ILS</type>
        <location>
          <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP01">
            <gml:pos>39.14 -74.87</gml:pos>
          </ElevatedPoint>
        </location>
        <runwayDirection xlink:href="#RWYDIR01"/>
        <servedAirport xlink:href="#ACY01"/>
      </NavaidTimeSlice>
    </timeSlice>
    <timeSlice>
      <NavaidTimeSlice gml:id="NAV01_TS02">
        <gml:validTime>
```

```
          <gml:TimePeriod gml:id="NAV01_TS02_TP01">
            <gml:beginPosition>2010-10-07T07:00:00</gml:beginPosition>
            <gml:endPosition>2010-10-07T14:00:00</gml:endPosition>
          </gml:TimePeriod>
        </gml:validTime>
        <interpretation>TEMPDELTA</interpretation>
        <sequenceNumber>3</sequenceNumber>
        <availability>
          <NavaidOperationalStatus gml:id="NOS01">
            <operationalStatus>OTHER:UNMONITORED</operationalStatus>
          </NavaidOperationalStatus>
        </availability>
      </NavaidTimeSlice>
    </timeSlice>
  </Navaid>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <RunwayDirection gml:id="RWYDIR02">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
        <RunwayDirectionTimeSlice gml:id="RWYDIR02_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="RWYDIR02_TS01_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>31</designator>
          <usedRunway xlink:href="#RWY01"/>
        </RunwayDirectionTimeSlice>
      </timeSlice>
    </RunwayDirection>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <Runway gml:id="RWY01">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
        <RunwayTimeSlice gml:id="RWY01_TS01">
          <gml:validTime></gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>13/31</designator>
          <associatedAirportHeliport xlink:href="#ACY"/>
        </RunwayTimeSlice>
      </timeSlice>
    </Runway>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <AirportHeliport gml:id="ACY">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
        <AirportHeliportTimeSlice gml:id="ACY_TS01">
          <gml:validTime>
          <gml:TimeInstant gml:id="ACY_TI01">
            <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
          </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>ACY</designator>
```

```
            <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
            <locationIndicatorICAO>KACY</locationIndicatorICAO>
            <ARP>
              <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP02">
                <gml:pos>39.27 -74.34</gml:pos>
              </ElevatedPoint>
            </ARP>
          </AirportHeliportTimeSlice>
        </timeSlice>
      </AirportHeliport>
    </notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```


Sample NOTAM Message: ILS RWY 13 GP/LOC OTS


```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2008 (http://www.altova.com) by Jocelyn Cox, CNA in support of FAA -->
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1 ./AIXM_Features.xsd
http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd" gml:id="FNS-Message"
xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message" xmlns:aixm="http://www.aixm.aero/schema/5.1"
xmlns:gco="http://www.isotc211.org/2005/gco" xmlns:gmd="http://www.isotc211.org/2005/gmd"
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:event="http://www.aixm.aero/schema/5.1/event" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns="http://www.aixm.aero/schema/5.1">
  <notamMessage:hasMember>
  <Navaid gml:id="NAV01">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <NavaidTimeSlice gml:id="NAV01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="NAV01_TS01_TI01">
              <gml:timePosition>2010-09-05T09:42:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <type>ILS</type>
        <navaidEquipment>
          <NavaidComponent gml:id="NC01">
            <theNavaidEquipment xlink:href="#GP01"/>
          </NavaidComponent>
        </navaidEquipment>
        <navaidEquipment>
          <NavaidComponent gml:id="NC02">
            <theNavaidEquipment xlink:href="#LOC01"/>
          </NavaidComponent>
        </navaidEquipment>
        <runwayDirection xlink:href="#RWYDIR01"/>
        <servedAirport xlink:href="#ACY01"/>
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    </timeSlice>
    <timeSlice>
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        <gml:validTime>
          <gml:TimePeriod gml:id="NAV01_TS02_TP01">
            <gml:beginPosition>2010-09-06T08:30:00</gml:beginPosition>
            <gml:endPosition>2010-09-07T06:58:00</gml:endPosition>
          </gml:TimePeriod>
        </gml:validTime>
        <interpretation>TEMPDELTA</interpretation>
```

```
        <sequenceNumber>3</sequenceNumber>
        <availability>
          <NavaidOperationalStatus gml:id="NAV00">
            <operationalStatus>PARTIAL</operationalStatus>
          </NavaidOperationalStatus>
        </availability>
      </NavaidTimeSlice>
    </timeSlice>
  </Navaid>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
  <Glidepath gml:id="GP01">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <GlidepathTimeSlice gml:id="GP01_TS01">
        <gml:validTime>
          <gml:TimeInstant gml:id="GP01_TS01_TI01">
            <gml:timePosition>2010-09-05T09:42:00</gml:timePosition>
          </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <location>
          <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP01">
            <gml:pos>39.27 -74.34</gml:pos>
          </ElevatedPoint>
        </location>
      </GlidepathTimeSlice>
    </timeSlice>
    <timeSlice>
      <GlidepathTimeSlice gml:id="GP01_TS02">
          <gml:validTime>
            <gml:TimePeriod gml:id="GP01_TS02_TP01">
              <gml:beginPosition>2010-09-06T08:30:00</gml:beginPosition>
              <gml:endPosition>2010-09-07T06:58:00</gml:endPosition>
            </gml:TimePeriod>
          </gml:validTime>
        <interpretation>TEMPDELTA</interpretation>
        <sequenceNumber>3</sequenceNumber>
        <availability>
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            <operationalStatus>UNSERVICEABLE</operationalStatus>
          </NavaidOperationalStatus>
        </availability>
      </GlidepathTimeSlice>
    </timeSlice>
  </Glidepath>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <Localizer gml:id="LOC01">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
        <LocalizerTimeSlice gml:id="LOC01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="LOC01_TS01_TI01">
              <gml:timePosition>2010-09-05T09:42:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
```

```
          <location>
            <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP02">
              <gml:pos>39.24 -74.36</gml:pos>
            </ElevatedPoint>
        </location>
        </LocalizerTimeSlice>
      </timeSlice>
      <timeSlice>
        <LocalizerTimeSlice gml:id="LOC01_TS02">
          <gml:validTime>
            <gml:TimePeriod gml:id="LOC01_TS02_TP01">
              <gml:beginPosition>2010-09-06T08:30:00</gml:beginPosition>
              <gml:endPosition>2010-09-07T06:58:00</gml:endPosition>
            </gml:TimePeriod>
          </gml:validTime>
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          <sequenceNumber>5</sequenceNumber>
          <availability>
            <NavaidOperationalStatus gml:id="NOS02">
              <operationalStatus>UNSERVICEABLE</operationalStatus>
            </NavaidOperationalStatus>
          </availability>
        </LocalizerTimeSlice>
      </timeSlice>
    </Localizer>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <RunwayDirection gml:id="RWYDIR02">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
        <RunwayDirectionTimeSlice gml:id="RWYDIR02_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="RWYDIR02_TS01_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>13</designator>
          <usedRunway xlink:href="#RWY01"/>
        </RunwayDirectionTimeSlice>
      </timeSlice>
    </RunwayDirection>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <Runway gml:id="RWY01">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
        <RunwayTimeSlice gml:id="RWY01_TS01">
          <gml:validTime></gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>13/31</designator>
          <associatedAirportHeliport xlink:href="#ACY"/>
        </RunwayTimeSlice>
      </timeSlice>
    </Runway>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <AirportHeliport gml:id="ACY">
```

```
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
        <AirportHeliportTimeSlice gml:id="ACY_TS01">
          <gml:validTime>
          <gml:TimeInstant gml:id="ACY_TI01">
            <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
          </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>ACY</designator>
          <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
          <locationIndicatorICAO>KACY</locationIndicatorICAO>
          <ARP>
            <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP02">
              <gml:pos>39.27 -74.34</gml:pos>
            </ElevatedPoint>
          </ARP>
        </AirportHeliportTimeSlice>
      </timeSlice>
    </AirportHeliport>
  </notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```


16.6 Translation Templates

16.6.1 FAA

NAV *type* **RWY** *designator* **[***frequency***][/CH***channel***] [***equipment***] [/***equipment/equipment***]** *operationalStatus* **[***annotation***] [BLW** *upperLimit***]**

16.6.2 ICAO E Line

NAV *type* **RWY** *designator* **[***frequency***][/CH***channel***] [***equipment***] [/***equipment/equipment***]** *operationalStatus* **[***annotation***] [BLW** *upperLimit***]**

16.6.3 Plain Language

Affected Airport: *affectedAirport*

NOTAM Number: XX/XXX

Effective Time Frame
Valid From: *startDate*
Valid To: *endDate*

Navaid: *type* **Runway** *designator*
[[Frequency][/Channel]: [*frequency***][/CH***channel***]]**
[Navaid Equipment: *equipment* **[/***equipment/equipment***]]**
Status: *operationalStatus*

16.7 Additional Analysis

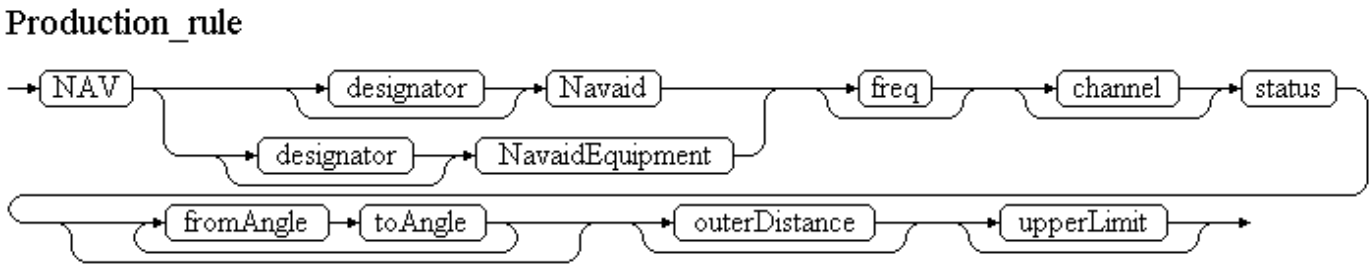
SME review with Gary Prock and Dave Zimmers indicated that using the ICAO contraction for Channel (CH) would be appropriate.

The contraction SDF appears in AIXM, which would indicate that it is recognized internationally, however, it does not appear in the ICAO Abbreviations and Codes Doc 8400 (7th Edition). The usage is

listed as GEN in FAA Order JO 7340.2B. For now, the ICAO translation is spelled out. (Side note: there are only 10 NOTAMs of this type from Decemer 2009 to December 2010).

17 Navaid – Navaid Status

Specifies the operational status of Navigational Aid Services (Navaid). Although the change in operational status of a Navaid can result in a change in Procedure and Routes, this will be treated in a separate scenario.



17.1 Example NOTAMs

17.1.1 Current Policy

Navaid Service (all components of the NAVAID)

1. !DCA LDN NAV VOR UNMNT
2. !SAV SAV NAV VOR UNUSBL 010-030 BYD 35 BLW 10000
3. !FMN FMN NAV VOR UNUSBL 090-180/270-360 BYD 25 BLW 5000
4. !GSO GSO NAV VORTAC OTS
5. !GSO GSO NAV VORTAC 116.2/CHAN 109 CMSN

Navaid Equipment (only part of the NAVAID)

6. !OJC OJC NAV DME OTS
7. !GSO GSO NAV TACAN AZM OTS
8. !GSO GSO NAV VOR OTS
9. !ILN ILN NAV MXQ VOR OT
10. !DAY XUB NAV VOR OTS

Source: US NOTAM Repository, JO 7930.2M 5-3-5c, JO 7930.2M 5-3-7d, i, j, k

17.1.2 Future FNS Policy

To be determined.

17.2 AIXM Mapping and Translation

17.2.1 Scenario Details

TABLE 17.1

Attribute	Value
Description	Status change to Navigational Aid System

Maps to Keyword:	NAV
Feature Type Id	Navaid Points/ Navaids/ Navaid
Feature Xpath	aixm:Navaid
AIXM Mapping Diagram	Navaid NavaidEquipment
NOTAM lifespan	
Start ASAP	No

17.2.2 Navaid Service [*type*]

Description: The type of navaid service such as ILS, MLS, VORTAC, VOR/DME, etc.

Source: User-selected from baseline data (required).

TABLE 17.2
Navaid Type

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ type (attribute)		
AIXM Element Xpath	Navaid/ timeSlice/ NavaidTimeSlice [interpretation: SNAPSHOT]/ type		
AIXM Mapping	Class: Navaid		
Enumeration	CodeNavaidServiceType		
	AIXM	**Translations**	
	VOR	ICAO	VOR
		FAA	VOR
		Plain Text	VHF Omni-directional Radio Range (VOR)
	DME	ICAO	DME
		FAA	DME
		Plain Text	Distance Measuring Equipment (DME)
	TACAN	ICAO	TACAN
		FAA	TACAN
		Plain Text	Tactical Air Navigation Beacon (TACAN)
	VORTAC	ICAO	VORTAC
		FAA	VORTAC
		Plain Text	Collocated VOR and TACAN
	VOR_DME	ICAO	VOR/DME
		FAA	VOR/DME
		Plain Text	Collocated VOR and DME

17.2.3 Navaid Service Designator [*designator*]

Description: The coded designator given to the Navaid system.

Source: User-selected from baseline data (optional).

TABLE 17.3
Navaid Designator

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ designator (attribute)
AIXM Element XPath	Navaid/ timeSlice/ NavaidTimeSlice [interpretation: SNAPSHOT]/ designator
AIXM Mapping	Class: Navaid
Min length	1
Max length	4
Enumeration	CodeNavaidDesignatorType

17.2.4 Name [*name*]

Description: The long name given to the composite navaid.

Source: User-selected from baseline data (optional).

TABLE 17.4
Navaid Name

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ name (attribute)
AIXM Element XPath	Navaid/ timeSlice/ NavaidTimeSlice [interpretation: SNAPSHOT]/ name
AIXM Mapping	Class: Navaid
Min length	1
Max length	60
Enumeration	TextNameType

17.2.5 Designator [*designator*] – Aerodrome

Description: A coded designator for an Aerodrome/Heliport.

The rules for providing the affected aerodrome information are provided in Chapter 5 – Affected Location (in AIXM).

Source: User-selected from baseline data (required).

TABLE 17.5
Aerodrome FAA designator

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – designator (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ designator
AIXM Mapping	Class: AirportHeliport
Type	CodeAirportHeliportDesignatorType
Min length	3
Max length	6
Pattern	([A-Z]|\d)*

17.2.6 Navaid Service Collocated Location [*location*]

Description: An AIXM elevated surface derived from [gml:point], which extends Surface with properties that represent the vertical position.

Source: User-selected from baseline data (required).

TABLE 17.6
Collocated Location

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ location (object)
AIXM Element Xpath	Navaid/ timeSlice/ NavaidTimeSlice [interpretation: SNAPSHOT]/ location/ ElevatedPoint/ gml:pos
AIXM Mapping	ElevatedSurface
Datatype	GML – decimal

17.2.7 Navaid Service Operational Status [*operationalStatus*]

Description: Indicates the operational status of the navaid.

Source: User-selected (required)

TABLE 17.7
Navaid Service Operational Status

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ NavaidOperationalStatus (object)/ operationalStatus (attribute)		
AIXM Element Xpath	Navaid/ timeSlice/ NavaidTimeSlice [interpretation: TEMPDELTA]/ availability/ NavaidOperationalStatus/ operationalStatus		
AIXM Mapping	Class: NavaidOperationalStatus		
Enumeration	CodeStatusNavaidType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of Service
	PARTIAL	ICAO	…
		FAA	…
		Plain Text	…
	OTHER:DO_NOT_USE	ICAO	UNUSABLE
		FAA	UNUSBL
		Plain Text	Unusable
	OTHER:UNMONITORED	ICAO	UNMONITORED
		FAA	UNMONITORED
		Plain Text	Unmonitored
	OPERATIONAL	ICAO	RTS
		FAA	RTS
		Plain Text	Return to Service
	OTHER: COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned
	OTHER: DECOMMISSIONED	ICAO	DECOMMISSIONED
		FAA	DCMSN
		Plain Text	Decommissioned

Navaid Equiment

17.2.8 VOR Navaid Equipment [*VOR*]

Description: Indicates the specific Navaid Equipment.

Source: User-selected (optional).

TABLE 17.8
VOR Navaid Equipment

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid Equipment/ NavaidEquipment (feature)/ VOR (feature)
AIXM Element XPath	VOR/ timeSlice/ VORTimeSlice
xlink:href	Navaid/ timeSlice/ NavaidTimeSlice/ navaidEquipment/ NavaidComponent/ theNavaidEquipment RadioFrequencyArea/ timeSlice/ RadioFrequencyAreaTimeSlice/ equipment_navaidEquipment

AIXM Mapping	Class: VOR

17.2.9 VOR Navaid Equipment [*type*]

Description: A code indicating the type of VOR, e.g. conventional VOR or Doppler VOR.

Source: User-selected from baseline data (optional, required if VOR Equipment is selected).

TABLE 17.9
VOR Type

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid Equipment/ NavaidEquipment (feature)/ VOR (feature)/ type (attribute)		
AIXM Element Xpath	VOR/ timeSlice/ VORTimeSlice [interpretation: SNAPSHOT]/ type		
AIXM Mapping	Class: VOR		
Enumeration	CodeVORType		
	AIXM	**Translations**	
	VOR	ICAO	VOR
		FAA	VOR
		Plain Text	VHF Omni-directional Radio Range (VOR)
	VOT	ICAO	VOT
		FAA	VOT
		Plain Text	VOR test facility
	OTHER:TVOR	ICAO	VOR
		FAA	VOR
		Plain Text	Terminal VHF Omni-directional Radio Range (VOR)

17.2.10 VOR Operational Status [*operationalStatus*]

Description: Indicates the operational status of the navaid.

Source: User-selected (optional, required if VOR Equipment is selected)

TABLE 17.10
VOR Operational Status

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ NavaidOperationalStatus (object)/ operationalStatus (attribute)		
AIXM Element Xpath	VOR/ timeSlice/ VORTimeSlice [interpretation: TEMPDELTA]/ availability/ NavaidOperationalStatus/ operationalStatus		
AIXM Mapping	Class: NavaidOperationalStatus		
Enumeration	CodeStatusNavaidType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of Service
	OTHER:DO_NOT_USE	ICAO	UNUSABLE
		FAA	UNUSBL
		Plain Text	Unusable
	OTHER:UNMONITORED	ICAO	UNMONITORED
		FAA	UNMONITORED
		Plain Text	Unmonitored
	OPERATIONAL	ICAO	RTS
		FAA	RTS

		Plain Text	Return to Service
	OTHER: COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned
	OTHER: DECOMMISSIONED	ICAO	DECOMMISSIONED
		FAA	DCMSN
		Plain Text	Decommissioned

17.2.11 VOR Frequency [*frequency*]

Description: The frequency value of the VOR Navaid equipment.

Source: User-entered (optional)/ User-selected from baseline data (optional).

TABLE 17.11
Frequency

Attribute	***Value***	
AIXM Path (UML)	***Navaid Points/ Navaids/ NavaidEquipment (feature)/ VOR (feature)/ frequency (attribute)***	
AIXM Element Xpath	***VOR/ timeSlice/ VORTimeSlice [interpretation: SNAPSHOT]/ frequency***	
AIXM Mapping	***Class: VOR***	
Datatype	***ValFrequencyType***	
Type	***Decimal***	
Min inclusive	***0***	
Units of Measure	***UomFrequencyType***	
	ICAO/FAA	***MHZ***

17.2.12 DME Navaid Equipment [*DME*]

Description: Indicates the specific Navaid Equipment.

Source: User-selected (optional).

TABLE 17.12
DME Navaid Equipment

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid Equipment/ NavaidEquipment (feature)/ DME (feature)
AIXM Element XPath	DME/ timeSlice/ DMETimeSlice
xlink:href	Navaid/ timeSlice/ NavaidTimeSlice/ navaidEquipment/ NavaidComponent/ theNavaidEquipment RadioFrequencyArea/ timeSlice/ RadioFrequencyAreaTimeSlice/ equipment_navaidEquipment
AIXM Mapping	Class: DME

17.2.13 DME Operational Status [*operationalStatus*]

Description: Indicates the operational status of the navaid.

Source: User-selected (optional, required if DME Equipment is selected).

TABLE 17.13
DME Operational Status

Attribute	Value

AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ NavaidOperationalStatus (object)/ operationalStatus (attribute)		
AIXM Element Xpath	DME/ timeSlice/ DMETimeSlice [interpretation: TEMPDELTA]/ availability/ NavaidOperationalStatus/ operationalStatus		
AIXM Mapping	Class: NavaidOperationalStatus		
Enumeration	CodeStatusNavaidType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of Service
	OTHER:DO_NOT_USE	ICAO	UNUSABLE
		FAA	UNUSBL
		Plain Text	Unusable
	OTHER:UNMONITORED	ICAO	UNMONITORED
		FAA	UNMONITORED
		Plain Text	Unmonitored
	OPERATIONAL	ICAO	RTS
		FAA	RTS
		Plain Text	Return to Service
	OTHER: COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned
	OTHER: DECOMMISSIONED	ICAO	DECOMMISSIONED
		FAA	DCMSN
		Plain Text	Decommissioned

17.2.14 DME Channel [*channel*]

Description: The frequency value of the Instrument Landing System (ILS) equipment.

Source: User-entered (optional)/ User-selected from baseline data (optional).

TABLE 17.14
DME Channel

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ NavaidEquipment (feature)/ DME (feature)/ channel (attribute)		
AIXM Element Xpath	DME/ timeSlice/ DMETimeSlice [interpretation: SNAPSHOT]/ channel		
AIXM Mapping	Class: DME		
Enumeration	CodeDMEChannelType		
	AIXM	**Translations**	
	1X – 126Y	ICAO	CH<*AIXM value*>
		FAA	CH<*AIXM value*>
		Plain Text	DME Channel <*AIXM value*>

17.2.15 DME Location [*location*]

Description: An AIXM elevated surface derived from [gml:point], which extends Surface with properties that represent the vertical position.

Source: User-selected from baseline data (optional, required if DME Equipment is selected).

TABLE 17.15
DME Location

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ location (object)
AIXM Element Xpath	DME/ timeSlice/ DMETimeSlice [interpretation: SNAPSHOT]/ location/ ElevatedPoint/ gml:pos
AIXM Mapping	ElevatedSurface
Datatype	GML – decimal

17.2.16 TACAN Navaid Equipment [*TACAN*]

Description: Indicates the specific Navaid Equipment.

Source: User-selected (optional).

TABLE 17.16
TACAN Navaid Equipment

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid Equipment/ NavaidEquipment (feature)/ TACAN (feature)
AIXM Element XPath	TACAN/ timeSlice/ TACANTimeSlice
xlink:href	Navaid/ timeSlice/ NavaidTimeSlice/ navaidEquipment/ NavaidComponent/ theNavaidEquipment RadioFrequencyArea/ timeSlice/ RadioFrequencyAreaTimeSlice/ equipment_navaidEquipment
AIXM Mapping	Class: TACAN

17.2.17 TACAN Operational Status [*operationalStatus*]

Description: Indicates the operational status of the navaid.

Source: User-selected (optional, required if TACAN Equipment is selected)

TABLE 17.17
TACAN Operational Status

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ NavaidOperationalStatus (object)/ operationalStatus (attribute)		
AIXM Element Xpath	TACAN/ timeSlice/ TACANTimeSlice [interpretation: TEMPDELTA]/ availability/ NavaidOperationalStatus/ operationalStatus		
AIXM Mapping	Class: NavaidOperationalStatus		
Enumeration	CodeStatusNavaidType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of Service
	OTHER:DO_NOT_USE	ICAO	UNUSABLE
		FAA	UNUSBL
		Plain Text	Unusable
	OTHER:UNMONITORED	ICAO	UNMONITORED
		FAA	UNMONITORED
		Plain Text	Unmonitored
	OPERATIONAL	ICAO	RTS
		FAA	RTS

		Plain Text	Return to Service
	OTHER: COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned
	OTHER: DECOMMISSIONED	ICAO	DECOMMISSIONED
		FAA	DCMSN
		Plain Text	Decommissioned

17.2.18 TACAN Channel [*channel*]

Description: The frequency value of the Instrument Landing System (ILS) equipment.

Source: User-entered (optional)/ User-selected from baseline data (optional).

TABLE 17.18
TACAN Channel

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ NavaidEquipment (feature)/ TACAN (feature)/ channel (attribute)		
AIXM Element Xpath	TACAN/ timeSlice/ TACANTimeSlice [interpretation: SNAPSHOT]/ channel		
AIXM Mapping	Class: TACAN		
Enumeration	CodeTACANChannelType		
	AIXM	**Translations**	
	1X – 126Y	ICAO	CH<*AIXM value*>
		FAA	CH<*AIXM value*>
		Plain Text	TACAN Channel <*AIXM value*>

17.2.19 Azimuth Navaid Equipment [*Azimuth*]

Description: Indicates the specific Navaid Equipment.

Source: User-selected (optional).

TABLE 17.19
Azimuth Navaid Equipment

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid Equipment/ NavaidEquipment (feature)/ Azimuth (feature)
AIXM Element XPath	Azimuth/ timeSlice/ AzimuthTimeSlice
xlink:href	Navaid/ timeSlice/ NavaidTimeSlice/ navaidEquipment/ NavaidComponent/ theNavaidEquipment RadioFrequencyArea/ timeSlice/ RadioFrequencyAreaTimeSlice/ equipment_navaidEquipment
AIXM Mapping	Class: Azimuth
Enumeration	TACAN AZM

17.2.20 Azimuth Operational Status [*operationalStatus*]

Description: Indicates the operational status of the navaid.

Source: User-selected (optional, required if Azimuth Equipment is selected).

TABLE 17.20
Azimuth Operational Status

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ NavaidOperationalStatus (object)/ operationalStatus (attribute)		
AIXM Element Xpath	Azimuth/ timeSlice/ AzimuthTimeSlice [interpretation: TEMPDELTA]/ availability/ NavaidOperationalStatus/ operationalStatus		
AIXM Mapping	Class: NavaidOperationalStatus		
Enumeration	CodeStatusNavaidType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of Service
	OTHER:DO_NOT_USE	ICAO	UNUSABLE
		FAA	UNUSBL
		Plain Text	Unusable
	OTHER:UNMONITORED	ICAO	UNMONITORED
		FAA	UNMONITORED
		Plain Text	Unmonitored
	OPERATIONAL	ICAO	RTS
		FAA	RTS
		Plain Text	Return to Service
	OTHER: COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned
	OTHER: DECOMMISSIONED	ICAO	DECOMMISSIONED
		FAA	DCMSN
		Plain Text	Decommissioned

Affected Area

17.2.21 Start Angle [*fromAngle*]

Description: Beginning of angle.

Source: User-selected (optional with Status = OTHER:DO_NOT_USE).

TABLE 17.21
Status Limitations Start Angle

AIXM Path (UML)	Navaid Points/ Navaids/ NavaidLimitation/ RadioFrequencyArea (feature)/ CircleSector (object)/ startAngle (attribute)
AIXM Element Xpath	RadioFrequencyArea/ timeSlice/ RadioFrequencyAreaTimeSlice/ sector/ CircleSector/ fromAngle
AIXM Mapping	Class: CircleSector
Enumeration	ValBearingType

17.2.22 End Angle [*toAngle*]

Description: End of angle.

Source: User-selected (optional with Status = OTHER:DO_NOT_USE).

TABLE 17.22
Status Limitations End Angle

AIXM Path (UML)	Navaid Points/ Navaids/ NavaidLimitation/ RadioFrequencyArea (feature)/ CircleSector (object)/ endAngle (attribute)
AIXM Element Xpath	RadioFrequencyArea/ timeSlice/ RadioFrequencyAreaTimeSlice/ sector/ CircleSector/ toAngle
AIXM Mapping	Class: CircleSector
Enumeration	ValBearingType

17.2.23 Direction of Arc [*arcDirection*]

Description: Direction indicating clock-wise or counter-clockwise.

Source: Pre-determined as clockwise.

TABLE 17.23
Status Limitations Arc Direction

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ NavaidLimitation/ RadioFrequencyArea (feature)/ CircleSector (object)/ arcDirection (attribute)		
AIXM Element Xpath	RadioFrequencyArea/ timeSlice/ RadioFrequencyAreaTimeSlice/ sector/ CircleSector/ arcDirection		
AIXM Mapping	Class: CircleSector		
Enumeration	CodeBearingType		
	AIXM	**Translations**	
	CWA	ICAO	---
		FAA	---
		Plain Text	---

17.2.24 Type of Angle [*angleType*]

Description: A code indicating the type of angle, magnetic, bearing, VOR Radial.

Source: Pre-determined as VOR radial.

TABLE 17.24
Status Limitations Angle Type

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ NavaidLimitation/ RadioFrequencyArea (feature)/ CircleSector (object)/ endAngle (attribute)		
AIXM Element Xpath	RadioFrequencyArea/ timeSlice/ RadioFrequencyAreaTimeSlice/ sector/ CircleSector/ endAngle		
AIXM Mapping	Class: CircleSector		
Enumeration	CodeBearingType		
	AIXM	**Translations**	
	RDL	ICAO	---
		FAA	---
		Plain Text	---

17.2.25 Beyond [outerDistance]

Description: Angle sector volume, outer limit.

Source: User-selected (optional with Status = OTHER:DO_NOT_USE).

TABLE 17.25
Status Limitations End Angle

AIXM Path (UML)	Navaid Points/ Navaids/ NavaidLimitation/ RadioFrequencyArea (feature)/ CircleSector (object)/ outerDistance (attribute)	
AIXM Element Xpath	RadioFrequencyArea/ timeSlice/ RadioFrequencyAreaTimeSlice/ sector/ CircleSector/ outerDistance	
AIXM Mapping	Class: CircleSector	
Enumeration	ValDistanceType	
	UomDistanceType	NM

17.2.26 Below [upperLimit]

Description: The uppermost altitude or limit included in the sector.

Source: User-selected (optional with Status = OTHER:DO_NOT_USE).

TABLE 17.26
Status Limitations Below

AIXM Path (UML)	Navaid Points/ Navaids/ NavaidLimitation/ RadioFrequencyArea (feature)/ CircleSector (object)/ upperLimit (attribute)	
AIXM Element Xpath	RadioFrequencyArea/ timeSlice/ RadioFrequencyAreaTimeSlice/ sector/ CircleSector/ upperLimit	
AIXM Mapping	Class: CircleSector	
Enumeration	ValDistanceVerticalType	
	UomDistanceVerticalType	FT
AIXM Path (UML)	Navaid Points/ Navaids/ NavaidLimitation/ RadioFrequencyArea (feature)/ CircleSector (object)/ upperLimitReference (attribute)	
AIXM Element Xpath	RadioFrequencyArea/ timeSlice/ RadioFrequencyAreaTimeSlice/ sector/ CircleSector/ upperLimitReference	
AIXM Mapping	Class: CircleSector	
Enumeration	CodeVerticalReferenceType	SFC

17.3 QCodes

TABLE 17.27
QCodes for Navaid Service/Equipment Status

AIXM Code	**QCode**	
ALL	**Series**	**N**
2nd and 3rd Letter		
VOR (part of VOR/DME)	QCode	QNM--
	Scope	AE
	Traffic	IV
	Purpose	BO
DME (part of VOR/DME)	QCode	QNM--
	Scope	AE
	Traffic	IV
	Purpose	BO
VOR/DME	QCode	QNM--
	Scope	AE
	Traffic	IV
	Purpose	BO
VOR (part of VORTAC)	QCode	QNT--
	Scope	AE
	Traffic	IV
	Purpose	BO

DME (part of VORTAC)	QCode	QNT--
	Scope	AE
	Traffic	IV
	Purpose	BO
TACAN (part of VORTAC)	QCode	QNT--
	Scope	AE
	Traffic	IV
	Purpose	BO
VORTAC	QCode	QNT--
	Scope	AE
	Traffic	IV
	Purpose	BO
VOR	QCode	QNV--
	Scope	AE
	Traffic	IV
	Purpose	BO
DME	QCode	QND--
	Scope	AE
	Traffic	IV
	Purpose	BO
TACAN	QCode	QNN--
	Scope	AE
	Traffic	IV
	Purpose	BO
4th and 5th Letter		
OUT OF SERVICE	QCode	Q--AS
FALSE INDICATIONS	QCode	Q--XX
UNUSABLE	QCode	Q--XX
UNMONITORED	QCode	Q--XX
COMMISSIONED	QCode	Q--CS
DECOMMISSIONED	QCode	Q--AW

17.4 Business Rules

17.4.1 Template Business Rules

a. If Navaid *designator* is required for VORs only when the VOR serves one airport and is not associated with the airway structure. If *designator* is equal to null, then "Select a designator."

b. When the *operationalStatus* of the entire Navaid Service is the subject of the NOTAM, then the specific Navaid Equipment should not be specified in the NOTAM.

c. When the *operationalStatus* of the available Navaid Equipment associated with the service is specified, there should be no reference of the Navaid Service in the NOTAM. This is only valid for one piece of equipment

d. If the *operationalStatus* is specified for multiple Navaid Equipment associated with the Navaid Service, the text NOTAM should be for the whole Navaid Service with no reference to the individual equipment.

e. When *operationalStatus* is equal to null, then "Select a status."

f. When *operationalStatus* is equal to OTHER:DO_NOT_USE (UNUSABLE), then the Start Angle and End Angle, outerDistance, and upperLimit may be entered. One of these designations is required for the *operationalStatus* is equal to OTHER:DO_NOT_USE. All may be entered.

g. The same NavaidEquipment cannot be selected more than one time per NOTAM.

h. The attribute *frequency* must be a number between 100.00 and 350.00 MHz and should only be selected with the *operationalStatus* is equal to OTHER:COMMISSIONED. Only one significant figure (decimal place) is required.

i. The attribute *channel* must be an alphanumeric value between 1X and 126Y and should only be selected with the *operationalStatus* is equal to OTHER:COMMISSIONED.

j. When commissioning a new VORTAC, the channel quoted for the Navaid Service should be the TACAN frequency.

k. The Navaid Service of *type* VOR, has the following NavaidEquipment: VOR, with the available *types*: VOR/ VOT/ TVOR.

l. The Navaid Service of *type* DME, has the following NavaidEquipment: DME, with no *type* specified.

m. The Navaid Service of *type* TACAN, has the following NavaidEquipment: Azimuth and DME, with no *type* specified. When the DME portion fails or is removed from service, the TACAN automatically becomes inoperative (Navaid Service will have the same status as the DME).

n. The Navaid Service of *type* VORTAC, has the following NavaidEquipment: VOR, TACAN, and DME, with no *type* specified. When the DME portion of a VORTAC fails or is removed from service, the TACAN automatically becomes inoperative (TACAN will have the same status as the DME).

o. The Navaid Service of *type* VOR_DME, has the following NavaidEquipment: VOR and DME, with no *type* specified.

17.4.2 Policy Business Rules

a. The dissemination of commissioning, decommissioning, outages, or unmonitored status of NAVAIDs that are part of the NAS should be done by NOTAM.

b. Restrictions to NAVAIDs are normally published by segment; e.g., 020-055 degree radials (described clock-wise). There should never be two NOTAMs on the same Navaid Equipment – the NOTAM shall be cancelled and re-published with the new information.

c. TVORs serving one airport, and not associated with airway structure, shall have NOTAMs issued using the associated airport identifier as the affected facility.

d. TVORs serving more than one airport, or associated with the airway structure, shall have NOTAMs issued using the TVOR identifier as the affected facility.

17.4.3 Data Encoding Business Rules

a. The element *type* for the feature Navaid is required and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

b. For entering *operationalStatus* of the Navaid Service, use TimeSlice of type TEMPDELTA. Specification of *operationalStatus* is required. When *operationalStatus* is equal to OTHER:DO_NOT_USE (UNUSABLE), then the Start Angle and End Angle, outerDistance, and upperLimit may be entered. One of these designations is required for the *operationalStatus* is equal to OTHER:DO_NOT_USE. All may be entered.

c. If the *operationalStatus* is equal to OTHER:COMMISSIONED, use a TimeSlice of type BASELINE.

d. If the *operationalStatus* is equal to OTHER:DECOMMISSIONED, use a TimeSlice of type PERMDELTA.

e. For every NavaidEquipment referenced in the NOTAM, an xlink:href is required within the feature Navaid to point to the specific equipment. Multiple NavaidEquipment features may be associated with one Navaid service.

f. If a Navaid Service has a single NavaidEquipment and the NavaidEquipment has an *operationalStatus*, then the Navaid Service should have the same *operationalStatus*.

g. If the *operationalStatus* of one or multiple NavaidEquipment is changed for a Navaid Service that has multiple pieces of equipment associated with the service, use TimeSlice of type TEMPDELTA and the value for *operationalStatus* of Navaid is specified as PARTIAL, also using a TimeSlice of type TEMPDELTA.

h. If the *operationalStatus* is equal to UNSERVICEABLE for one NavaidEquipment associated with the Navaid Service which changes the service (ex: VOR/DME – where the NavaidEquipment DME is UNSERVICEABLE, leaving the Navaid Service as VOR), the Navaid Service *type* should be changed to the remaining Navaid Service using a TimeSlice of type TEMPDELTA.

(1) The Navaid Service of *type* VOR, has the following NavaidEquipment: VOR, with the available *types*: VOR/ VOT/ TVOR. There is only one NavaidEquipment associated with the Navaid Service.

(2) The Navaid Service of *type* DME, has the following NavaidEquipment: DME, with no *type* specified. There is only one NavaidEquipment associated with the Navaid Service.

(3) The Navaid Service of *type* TACAN, has the following NavaidEquipment: Azimuth and DME, with no *type* specified. When the DME portion fails or is removed from service, the TACAN automatically becomes inoperative (Navaid Service will have the same status as the DME). If the Azimuth has the *operationalService* of UNSERVICEABLE, the Navaid Service will have the *type* equal to DME and must use TimeSlice of type TEMPDELTA. If the DME has the *operationalService* of UNSERVICEABLE, the Navaid Service will have the *type* equal to TACAN and must use TimeSlice of type TEMPDELTA.

(4) The Navaid Service of *type* VORTAC, has the following NavaidEquipment: VOR, TACAN, and DME, with no *type* specified. When the DME portion of a VORTAC fails or is removed from service, the TACAN automatically becomes inoperative (TACAN will have the same status as the DME). If the TACAN or DME have the *operationalStatus* of UNSERVICEABLE, the Navaid Service will have *type* equal to VOR and must use TimeSlice of type TEMPDELTA. If the VOR has the *operationalService* of UNSERVICEABLE, the Navaid Service will have the *type* equal to TACAN and must use TimeSlice of type TEMPDELTA.

(5) The Navaid Service of *type* VOR_DME, has the following NavaidEquipment: VOR and DME, with no *type* specified. If the VOR has the *operationalService* of UNSERVICEABLE, the Navaid Service will have the *type* equal to DME and must use TimeSlice of type TEMPDELTA. If the DME has the *operationalService* of UNSERVICEABLE, the Navaid Service will have the *type* equal to VOR and must use TimeSlice of type TEMPDELTA.

i. For every NavaidEquipment, the *operationalStatus* of the NavaidEquipment is required and must use TimeSlice of type TEMPDELTA.

j. The *location* of the Navaid Service and NavaidEquipment referenced in the NOTAM is required, baseline data permitting, and must use a TimeSlice of type SNAPSHOT unless the NavaidEquipment is referenced by UUID in a TimeSlice of type TEMPDELTA.

k. The *frequency* or *channel* of the NavaidEquipment is optional and should only appear in the NOTAM when the *operationalStatus* is equal to OTHER:COMMISSIONED.

l. An xlink:href is required and should point to the associated AirportHeliport and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

17.5 Sample AIXM Message

Sample NOTAM Message: NAV TACAN OTS (Part of VORTAC)


```xml
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2008 (http://www.altova.com) by Jocelyn Cox, CNA in support of FAA -->
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1 ./AIXM_Features.xsd
http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd" gml:id="FNS-Message"
xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message" xmlns:aixm="http://www.aixm.aero/schema/5.1"
xmlns:gco="http://www.isotc211.org/2005/gco" xmlns:gmd="http://www.isotc211.org/2005/gmd"
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:event="http://www.aixm.aero/schema/5.1/event" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns="http://www.aixm.aero/schema/5.1">
  <notamMessage:hasMember>
  <Navaid gml:id="NAV01">
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <NavaidTimeSlice gml:id="NAV01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="NAV01_TS01_TI01">
              <gml:timePosition>2010-09-05T09:42:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <type>VORTAC</type>
        <navaidEquipment>
          <NavaidComponent gml:id="NC01">
            <theNavaidEquipment xlink:href="#TACAN01"/>
          </NavaidComponent>
        </navaidEquipment>
        <servedAirport xlink:href="#ACY01"/>
      </NavaidTimeSlice>
    </timeSlice>
    <timeSlice>
      <NavaidTimeSlice gml:id="NAV01_TS02">
        <gml:validTime>
          <gml:TimePeriod gml:id="NAV01_TS02_TP01">
            <gml:beginPosition>2010-09-06T08:30:00</gml:beginPosition>
            <gml:endPosition>2010-09-07T06:58:00</gml:endPosition>
          </gml:TimePeriod>
        </gml:validTime>
        <interpretation>TEMPDELTA</interpretation>
        <sequenceNumber>3</sequenceNumber>
        <type>VOR</type>
        <availability>
          <NavaidOperationalStatus gml:id="NOS01">
            <operationalStatus>PARTIAL</operationalStatus>
          </NavaidOperationalStatus>
        </availability>
```

```
      </NavaidTimeSlice>
    </timeSlice>
  </Navaid>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
  <TACAN gml:id="TACAN01">
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <TACANTimeSlice gml:id="TACAN01_TS01">
        <gml:validTime>
          <gml:TimeInstant gml:id="TACAN01_TS01_TI01">
            <gml:timePosition>2010-09-05T09:42:00</gml:timePosition>
          </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <location>
          <ElevatedPoint gml:id="EP01">
            <gml:pos>38.03 -118.0102</gml:pos>
          </ElevatedPoint>
        </location>
      </TACANTimeSlice>
    </timeSlice>
    <timeSlice>
      <TACANTimeSlice gml:id="TACAN01_TS02">
        <gml:validTime>
          <gml:TimePeriod gml:id="TACAN01_TS02_TP01">
            <gml:beginPosition>2010-09-06T08:30:00</gml:beginPosition>
            <gml:endPosition>2010-09-07T06:58:00</gml:endPosition>
          </gml:TimePeriod>
        </gml:validTime>
        <interpretation>TEMPDELTA</interpretation>
        <sequenceNumber>4</sequenceNumber>
        <availability>
          <NavaidOperationalStatus gml:id="NOS02">
            <operationalStatus>UNSERVICEABLE</operationalStatus>
          </NavaidOperationalStatus>
        </availability>
      </TACANTimeSlice>
    </timeSlice>
  </TACAN>
  </notamMessage:hasMember>
  < notamMessage:hasMember>
    <AirportHeliport gml:id="ACY">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
        <AirportHeliportTimeSlice gml:id="ACY_TS01">
          <gml:validTime>
          <gml:TimeInstant gml:id="ACY_TI01">
            <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
          </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>ACY</designator>
          <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
          <locationIndicatorICAO>KACY</locationIndicatorICAO>
          <ARP>
            <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP02">
              <gml:pos>39.27 -74.34</gml:pos>
```

```
            </ElevatedPoint>
          </ARP>
        </AirportHeliportTimeSlice>
      </timeSlice>
    </AirportHeliport>
  </ notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```


Sample NOTAM Message: NAV VOR UNUSBL 010-030 BYD 35 BLW 10000


```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2008 (http://www.altova.com) by Jocelyn Cox, CNA in support of FAA -->
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1 ./AIXM_Features.xsd
http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd" gml:id="FNS-Message"
xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message" xmlns:aixm="http://www.aixm.aero/schema/5.1"
xmlns:gco="http://www.isotc211.org/2005/gco" xmlns:gmd="http://www.isotc211.org/2005/gmd"
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:event="http://www.aixm.aero/schema/5.1/event" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns="http://www.aixm.aero/schema/5.1">
  <notamMessage:hasMember>
  <Navaid gml:id="NAV01">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <NavaidTimeSlice gml:id="NAV01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="NAV01_TS01_TI01">
              <gml:timePosition>2010-09-05T09:42:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <type>VOR</type>
        <location>
          <ElevatedPoint gml:id="EP01">
            <gml:pos>38.03 -118.0102</gml:pos>
          </ElevatedPoint>
        </location>
        <servedAirport xlink:href="#ACY01"/>
      </NavaidTimeSlice>
    </timeSlice>
    <timeSlice>
      <NavaidTimeSlice gml:id="NAV01_TS02">
        <gml:validTime>
          <gml:TimePeriod gml:id="NAV01_TS02_TP01">
            <gml:beginPosition>2010-09-06T08:30:00</gml:beginPosition>
            <gml:endPosition>2010-09-07T06:58:00</gml:endPosition>
          </gml:TimePeriod>
        </gml:validTime>
        <interpretation>TEMPDELTA</interpretation>
        <sequenceNumber>3</sequenceNumber>
        <availability>
          <NavaidOperationalStatus gml:id="NAV00">
            <operationalStatus>OTHER:DO_NOT_USE</operationalStatus>
          </NavaidOperationalStatus>
        </availability>
      </NavaidTimeSlice>
    </timeSlice>
  </Navaid>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
```

```
    <RadioFrequencyArea gml:id="RFA01">
      <timeSlice>
        <RadioFrequencyAreaTimeSlice gml:id="RFA01_TS01">
        <gml:validTime>
          <gml:TimePeriod gml:id="RFA01_TS02_TP01">
            <gml:beginPosition>2010-09-06T08:30:00</gml:beginPosition>
            <gml:endPosition>2010-09-07T06:58:00</gml:endPosition>
          </gml:TimePeriod>
        </gml:validTime>
        <interpretation>TEMPDELTA</interpretation>
        <sequenceNumber>1</sequenceNumber>
        <sector>
          <CircleSector gml:id="CS01">
            <arcDirection>CWA</arcDirection>
            <fromAngle>010</fromAngle>
            <toAngle>030</toAngle>
            <outerDistance uom="NM">35</outerDistance>
            <upperLimit uom="FT">10000</upperLimit>
            <upperLimitReference>SFC</upperLimitReference>
          </CircleSector>
        </sector>
        </RadioFrequencyAreaTimeSlice>
      </timeSlice>
    </RadioFrequencyArea>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <AirportHeliport gml:id="ACY">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
        <AirportHeliportTimeSlice gml:id="ACY_TS01">
          <gml:validTime>
          <gml:TimeInstant gml:id="ACY_TI01">
            <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
          </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>ACY</designator>
          <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
          <locationIndicatorICAO>KACY</locationIndicatorICAO>
          <ARP>
            <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP03">
              <gml:pos>39.27 -74.34</gml:pos>
            </ElevatedPoint>
          </ARP>
        </AirportHeliportTimeSlice>
      </timeSlice>
    </AirportHeliport>
  </notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```


17.6 Translation Templates

17.6.1 FAA

NAV [*designator***] [***type***] [***NavaidEquipment***] [***frequency***][/CH***channel***]** *operationalStatus* **[***fromAngle toAngle***] [/***fromAngle toAngle***] [BYD** *outerDistance***] [BLW** *upperLimit***]**

17.6.2 ICAO E Line

NAV [*designator***] [***type***] [***NavaidEquipment***] [***frequency***][/CH***channel***]** *operationalStatus* **[***fromAngle toAngle***] [/***fromAngle toAngle***] [BYD** *outerDistance***] [BLW** *upperLimit***]**

17.6.3 Plain Language

Affected Airport: *affectedAirport*

NOTAM Number: XX/XXX

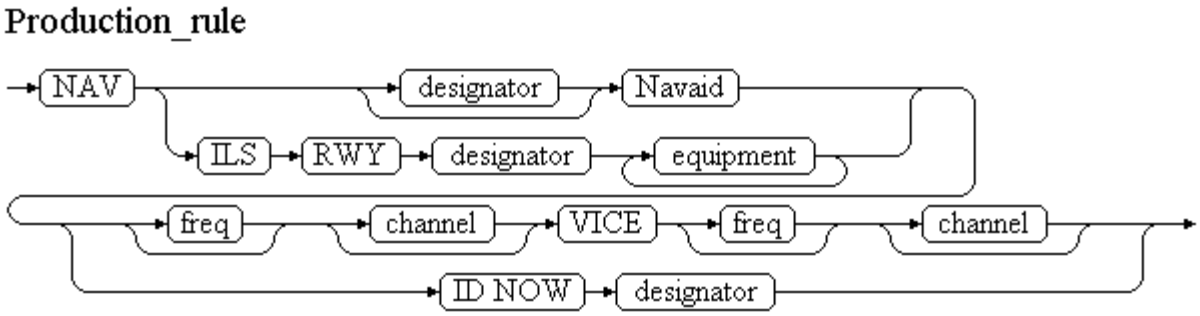
Effective Time Frame
Valid From: *startDate*
Valid To: *endDate*

Navaid [*designator***] [***type***] [***NavaidEquipment***]**
Status: *operationalStatus*
[Usage Limitation: [*fromAngle toAngle***] [/***fromAngle toAngle***] [Beyond** *outerDistance***] [Below** *upperLimit***]]**
[[Frequency][/Channel]: [*frequency***][/CH***channel***]]**

17.7 Additional Analysis

18 Navaid – Navaid Properties Change

Specifies the properties that have changed for Navigational Aid Services (Navaid) or Navigational Aid Equipment.



18.1 Example NOTAMs

18.1.1 Current Policy

Navaid Identification Change

1. !IND IND NAV VORTAC ID NOW VHP
2. !RIL 11/002 RIL NAV VOR/DME ID NOW RGA WEF 1011180901
3. !GAG 03/002 GAG NAV VORTAC ID NOW MMB

Navaid Frequency Change

4. !FCM 04/006 FCM NAV VOR/DME 117.7 CH 124 VICE 111.8 CH 55
5. !FLL 11/050 FLL NAV DME CH.112 VICE CH.91 WEF 10112415

Source: US NOTAM Repository, JO 7930.2M 5-3-7m

18.1.2 Future FNS Policy

To be determined.

18.2 AIXM Mapping and Translation

18.2.1 Scenario Details

TABLE 18.1

Attribute	Value
Description	ID or frequency/channel change to Navigational Aid System
Maps to Keyword:	NAV
Feature Type Id	Navaid Points/ Navaids/ Navaid
Feature Xpath	aixm:Navaid
AIXM Mapping Diagram	Navaid NavaidEquipment
NOTAM lifespan	
Start ASAP	No

18.2.2 Navaid Service [*type*]

Description: The type of navaid service such as ILS, MLS, VORTAC, VOR/DME, etc.

Source: User-selected from baseline data (required).

TABLE 18.2
Navaid Type

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ type (attribute)		
AIXM Element Xpath	Navaid/ timeSlice/ NavaidTimeSlice [interpretation: SNAPSHOT]/ type		
AIXM Mapping	Class: Navaid		
Enumeration	CodeNavaidServiceType		
	AIXM	**Translations**	
	VOR	ICAO	VOR
		FAA	VOR
		Plain Text	VHF Omni-directional Radio Range (VOR)
	DME	ICAO	DME
		FAA	DME
		Plain Text	Distance Measuring Equipment (DME)
	TACAN	ICAO	TACAN
		FAA	TACAN
		Plain Text	Tactical Air Navigation Beacon (TACAN)
	VORTAC	ICAO	VORTAC
		FAA	VORTAC
		Plain Text	Collocated VOR and TACAN
	VOR_DME	ICAO	VOR/DME
		FAA	VOR/DME
		Plain Text	Collocated VOR and DME
	ILS	ICAO	ILS
		FAA	ILS
		Plain Text	Instrument Landing System (ILS)
	ILS_DME	ICAO	ILS
		FAA	ILS
		Plain Text	Instrument Landing System (ILS)

18.2.3 Navaid Service Designator [*designator*]

Description: The coded designator given to the Navaid system.

Source: User-selected from baseline data (optional).

TABLE 18.3
Navaid Designator

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ designator (attribute)
AIXM Element XPath	Navaid/ timeSlice/ NavaidTimeSlice [interpretation: SNAPSHOT]/ designator
AIXM Mapping	Class: Navaid

Min length	1
Max length	4
Enumeration	CodeNavaidDesignatorType

18.2.4 Name [*name*]

Description: The long name given to the composite navaid.

Source: User-selected from baseline data (optional).

TABLE 18.4
Navaid Name

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ name (attribute)
AIXM Element XPath	Navaid/ timeSlice/ NavaidTimeSlice [interpretation: SNAPSHOT]/ name
AIXM Mapping	Class: Navaid
Min length	1
Max length	60
Enumeration	TextNameType

18.2.5 Designator [*designator*] – Runway Direction

Description: The full textual designator of the landing and take-off direction.
Examples: 27, 35L, 01R.

Source: User-selected from baseline data (required).

TABLE 18.5
Runway Direction Designator

Attribute	Value
AIXM Path (UML)	RunwayDirection(feature)/ designator (attribute)
AIXM Element XPath	RunwayDirection/ timeSlice/ RunwayDirectionTimeSlice [interpretation:SNAPSHOT]/ designator
AIXM Mapping	Class: RunwayDirection
Min length	1
Max length	16
Enumeration	TextDesignatorType

18.2.6 Designator [*designator*] – Runway

Description: The full textual designator of the landing and take-off direction.
Example: 09/27, 02R/20L, RWY 1.

Source: User-selected from baseline data (required).

TABLE 18.6
Runway Designator

Attribute	***Value***
AIXM Path (UML)	***Runway (feature) /designator (attribute)***
AIXM Element Xpath	***Runway/ timeSlice/ RunwayTimeSlice [interpretation:SNAPSHOT]/ designator***
AIXM Mapping	***Class: Runway***
Min length	***1***
Max length	***16***
Enumeration	***TextDesignatorType***

18.2.7 Designator [*designator*] – Aerodrome

Description: A coded designator for an Aerodrome/Heliport.

The rules for providing the affected aerodrome information are provided in Chapter 5 – Affected Location (in AIXM).

Source: User-selected from baseline data (required).

TABLE 18.7
Aerodrome FAA designator

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – designator (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ designator
AIXM Mapping	Class: AirportHeliport
Type	CodeAirportHeliportDesignatorType
Min length	3
Max length	6
Pattern	([A-Z]|\d)*

18.2.8 Navaid Service Collocated Location [*location*]

Description: An AIXM elevated surface derived from [gml:point], which extends Surface with properties that represent the vertical position.

Source: User-selected from baseline data (required).

TABLE 18.8
Collocated Location

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ location (object)
AIXM Element Xpath	Navaid/ timeSlice/ NavaidTimeSlice [interpretation: SNAPSHOT]/ location/ ElevatedPoint/ gml:pos
AIXM Mapping	ElevatedSurface
Datatype	GML – decimal

Navaid Equiment

18.2.9 VOR Navaid Equipment [*VOR*]

Description: Indicates the specific Navaid Equipment.

Source: User-selected (optional).

TABLE 18.9
VOR Navaid Equipment

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid Equipment/ NavaidEquipment (feature)/ VOR (feature)
AIXM Element XPath	VOR/ timeSlice/ VORTimeSlice
xlink:href	Navaid/ timeSlice/ NavaidTimeSlice/ navaidEquipment/ NavaidComponent/ theNavaidEquipment RadioFrequencyArea/ timeSlice/ RadioFrequencyAreaTimeSlice/ equipment_navaidEquipment
AIXM Mapping	Class: VOR

18.2.10 VOR Navaid Equipment [*type*]

Description: A code indicating the type of VOR, e.g. conventional VOR or Doppler VOR.
Source: User-selected from baseline data (optional, required if VOR Equipment is selected).

TABLE 18.10
VOR Type

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid Equipment/ NavaidEquipment (feature)/ VOR (feature)/ type (attribute)		
AIXM Element Xpath	VOR/ timeSlice/ VORTimeSlice / type		
AIXM Mapping	Class: VOR		
Enumeration	CodeVORType		
	AIXM	**Translations**	
	VOR	ICAO	VOR
		FAA	VOR
		Plain Text	VHF Omni-directional Radio Range (VOR)
	VOT	ICAO	VOT
		FAA	VOT
		Plain Text	VOR test facility
	OTHER:TVOR	ICAO	VOR
		FAA	VOR
		Plain Text	Terminal VHF Omni-directional Radio Range (VOR)

18.2.11 VOR Frequency [*frequency*]

Description: The frequency value of the VOR Navaid equipment.

Source: User-entered (optional)/ User-selected from baseline data (optional).

TABLE 18.11
Frequency

Attribute	*Value*	
AIXM Path (UML)	***Navaid Points/ Navaids/ NavaidEquipment (feature)/ VOR (feature)/ frequency (attribute)***	
AIXM Element Xpath	***VOR/ timeSlice/ VORTimeSlice [interpretation: SNAPSHOT]/ frequency***	
AIXM Mapping	***Class: VOR***	
Datatype	***ValFrequencyType***	
Type	***Decimal***	
Min inclusive	***0***	
Units of Measure	***UomFrequencyType***	
	ICAO/FAA	***MHZ***

18.2.12 DME Navaid Equipment [*DME*]

Description: Indicates the specific Navaid Equipment.

Source: User-selected (optional).

TABLE 18.12
DME Navaid Equipment

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid Equipment/ NavaidEquipment (feature)/ DME (feature)
AIXM Element XPath	DME/ timeSlice/ DMETimeSlice
xlink:href	Navaid/ timeSlice/ NavaidTimeSlice/ navaidEquipment/ NavaidComponent/ theNavaidEquipment RadioFrequencyArea/ timeSlice/ RadioFrequencyAreaTimeSlice/ equipment_navaidEquipment
AIXM Mapping	Class: DME

18.2.13 DME Channel [*channel*]

Description: The frequency value of the Instrument Landing System (ILS) equipment.

Source: User-entered (optional)/ User-selected from baseline data (optional).

TABLE 18.13
DME Channel

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ NavaidEquipment (feature)/ DME (feature)/ channel (attribute)		
AIXM Element Xpath	DME/ timeSlice/ DMETimeSlice [interpretation: SNAPSHOT]/ channel		
AIXM Mapping	Class: DME		
Enumeration	CodeDMEChannelType		
	AIXM	**Translations**	
	1X – 126Y	ICAO	CH<*AIXM value*>
		FAA	CH<*AIXM value*>
		Plain Text	DME Channel <*AIXM value*>

18.2.14 TACAN Navaid Equipment [*TACAN*]

Description: Indicates the specific Navaid Equipment.

Source: User-selected (optional).

TABLE 18.14
TACAN Navaid Equipment

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid Equipment/ NavaidEquipment (feature)/ TACAN (feature)
AIXM Element XPath	TACAN/ timeSlice/ TACANTimeSlice
xlink:href	Navaid/ timeSlice/ NavaidTimeSlice/ navaidEquipment/ NavaidComponent/ theNavaidEquipment RadioFrequencyArea/ timeSlice/ RadioFrequencyAreaTimeSlice/ equipment_navaidEquipment
AIXM Mapping	Class: TACAN

18.2.15 TACAN Channel [*channel*]

Description: The frequency value of the Instrument Landing System (ILS) equipment.

Source: User-entered (optional)/ User-selected from baseline data (optional).

TABLE 18.15
TACAN Channel

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ NavaidEquipment (feature)/ TACAN (feature)/ channel (attribute)		
AIXM Element Xpath	TACAN/ timeSlice/ TACANTimeSlice [interpretation: SNAPSHOT]/ channel		
AIXM Mapping	Class: TACAN		
Enumeration	CodeTACANChannelType		
	AIXM	**Translations**	
	1X – 126Y	ICAO	CH<*AIXM value*>
		FAA	CH<*AIXM value*>
		Plain Text	TACAN Channel <*AIXM value*>

18.2.16 Azimuth Navaid Equipment [*Azimuth*]

Description: Indicates the specific Navaid Equipment.

Source: User-selected (optional).

TABLE 18.16
Azimuth Navaid Equipment

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid Equipment/ NavaidEquipment (feature)/ Azimuth (feature)
AIXM Element XPath	Azimuth/ timeSlice/ AzimuthTimeSlice
xlink:href	Navaid/ timeSlice/ NavaidTimeSlice/ navaidEquipment/ NavaidComponent/ theNavaidEquipment RadioFrequencyArea/ timeSlice/ RadioFrequencyAreaTimeSlice/ equipment_navaidEquipment
AIXM Mapping	Class: Azimuth
Enumeration	TACAN AZM

18.2.17 Glidepath Navaid Equipment [*Glidepath*]

Description: Indicates the specific Navaid Equipment.

Source: User-selected (optional).

TABLE 18.17
Glidepath Navaid Equipment

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ NavaidEquipment (feature)/ Glidepath (feature)		
AIXM Element XPath	Glidepath/ timeSlice/ GlidepathTimeSlice		
xlink:href	Navaid/ timeSlice/ NavaidTimeSlice/ navaidEquipment/ NavaidComponent/ theNavaidEquipment RadioFrequencyArea/ timeSlice/ RadioFrequencyAreaTimeSlice/ equipment_navaidEquipment		
AIXM Mapping	Class: Glidepath		
Enumeration	Glidepath	ICAO	GP
		FAA	GP
		Plain Text	Glide slope

18.2.18 Glidepath Frequency [*frequency*]

Description: The frequency value of the Instrument Landing System (ILS) equipment.

Source: User-entered (optional)/ User-selected from baseline data (optional).

TABLE 18.18
Frequency

Attribute	***Value***	
AIXM Path (UML)	***Navaid Points/ Navaids/ NavaidEquipment (feature)/ Glidepath (feature)/ frequency (attribute)***	
AIXM Element Xpath	***Glidepath/ timeSlice/ GlidepathTimeSlice [interpretation: SNAPSHOT]/ frequency***	
AIXM Mapping	***Class: Glidepath***	
Datatype	***ValFrequencyType***	
Type	***Decimal***	
Min inclusive	***0***	
Units of Measure	***UomFrequencyType***	
	ICAO/FAA	***MHZ***

18.2.19 Glidepath Location [*location*]

Description: An AIXM elevated surface derived from [gml:point], which extends Surface with properties that represent the vertical position.

Source: User-selected from baseline data (optional, required if Glidepath Equipment is selected).

TABLE 18.19
Glidepath Location

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ location (object)
AIXM Element Xpath	Glidepath/ timeSlice/ GlidepathTimeSlice [interpretation: SNAPSHOT]/ location/ ElevatedPoint/ gml:pos
AIXM Mapping	ElevatedSurface
Datatype	GML – decimal

18.2.20 Localizer Navaid Equipment [*Localizer*]

Description: Indicates the specific Navaid Equipment.

Source: User-selected (optional).

TABLE 18.20
Localizer Navaid Equipment

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid Equipment/ NavaidEquipment (feature)/ Localizer (feature)		
AIXM Element XPath	Localizer/ timeSlice/ LocalizerTimeSlice		
xlink:href	Navaid/ timeSlice/ NavaidTimeSlice/ navaidEquipment/ NavaidComponent/ theNavaidEquipment RadioFrequencyArea/ timeSlice/ RadioFrequencyAreaTimeSlice/ equipment_navaidEquipment		
AIXM Mapping	Class: Localizer		
Enumeration	Localizer	ICAO	LOC
		FAA	LOC

		Plain Text	Localizer

18.2.21 Localizer Location [*markerPosition*]

Description: Indicates the location of the localizer.

Source: User-selected (optional).

TABLE 18.21
Localizer Marker Position

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ NavaidComponent (object)/ markerPosition (attribute)		
AIXM Element Xpath	Navaid/ timeSlice/ NavaidTimeSlice [interpretation: SNAPSHOT]/ navaidEquipment/ NavaidComponent/ markerPosition		
AIXM Mapping	Class: NavaidComponent		
Enumeration	CodePositionInILSType		
	AIXM	**Translations**	
	BACKCOURSE	ICAO	BACKCOURSE
		FAA	BC
		Plain Text	Backcourse (BC)

18.2.22 Localizer Frequency [*frequency*]

Description: The frequency value of the Instrument Landing System (ILS) equipment.

Source: User-entered (optional)/ User-selected from baseline data (optional).

TABLE 18.22
Frequency

Attribute	*Value*	
AIXM Path (UML)	***Navaid Points/ Navaids/ NavaidEquipment (feature)/ Localizer (feature)/ frequency (attribute)***	
AIXM Element Xpath	***Localizer/ timeSlice/ LocalizerTimeSlice [interpretation: TEMPDELTA]/ frequency***	
AIXM Mapping	***Class: Localizer***	
Datatype	***ValFrequencyType***	
Type	***Decimal***	
Min inclusive	***0***	
Units of Measure	***UomFrequencyType***	
	ICAO/FAA	***MHZ***

18.2.23 Localizer Location [*location*]

Description: An AIXM elevated surface derived from [gml:point], which extends Surface with properties that represent the vertical position.

Source: User-selected from baseline data (optional, required if Localizer Equipment is selected).

TABLE 18.23
Localizer Location

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ location (object)
AIXM Element Xpath	Localizer/ timeSlice/ LocalizerTimeSlice [interpretation:

	SNAPSHOT]/ location/ ElevatedPoint/ gml:pos
AIXM Mapping	ElevatedSurface
Datatype	GML – decimal

18.3 QCodes

TABLE 18.24
QCodes for Navaid Service/Equipment Status

AIXM Code	QCode	
ALL	**Series**	**N**
VOR (part of VOR/DME)	QCode	QNMCI
	Scope	AE
	Traffic	IV
	Purpose	BO
DME (part of VOR/DME)	QCode	QNMCI
	Scope	AE
	Traffic	IV
	Purpose	BO
VOR/DME	QCode	QNMCI
	Scope	AE
	Traffic	IV
	Purpose	BO
VOR (part of VORTAC)	QCode	QNTCI
	Scope	AE
	Traffic	IV
	Purpose	BO
DME (part of VORTAC)	QCode	QNTCI
	Scope	AE
	Traffic	IV
	Purpose	BO
TACAN (part of VORTAC)	QCode	QNTCI
	Scope	AE
	Traffic	IV
	Purpose	BO
VORTAC	QCode	QNTCI
	Scope	AE
	Traffic	IV
	Purpose	BO
VOR	QCode	QNVCI
	Scope	AE
	Traffic	IV
	Purpose	BO
DME	QCode	QNDCI
	Scope	AE
	Traffic	IV
	Purpose	BO
TACAN	QCode	QNNCI
	Scope	AE
	Traffic	IV
	Purpose	BO
ILS Glidepath	QCode	QIGCI
	Scope	A
	Traffic	I
	Purpose	NBO
ILS Localizer	QCode	QILCI
	Scope	A
	Traffic	I

	Purpose	NBO
ILS DME (ILS/DME)	QCode	QIDCI
	Scope	A
	Traffic	I
	Purpose	NBO

18.4 Business Rules

18.4.1 Template Business Rules

a. The attribute *frequency* must be a number between 100.00 and 350.00 MHz. Only one significant figure (decimal place) is required.

b. The attribute *channel* must be an alphanumeric value between 1X and 126Y.

c. The Navaid Service of *type* VOR, has the following NavaidEquipment: VOR, with the available *types*: VOR/ VOT/ TVOR. If selected, a new *frequency* or *designator* must be entered.

d. The Navaid Service of *type* DME, has the following NavaidEquipment: DME, with no *type* specified. If selected, a new *channel* or *designator* must be entered.

e. The Navaid Service of *type* TACAN, has the following NavaidEquipment: Azimuth and DME, with no *type* specified. If selected, a new *channel* or *designator* must be entered.

f. The Navaid Service of *type* VORTAC, has the following NavaidEquipment: VOR, TACAN, and DME, with no *type* specified. If selected, either a new *designator* must be entered for the Navaid Service or a new *frequency* must be entered for the VOR and a new *channel* must be entered for the DME and/or TACAN.

g. The Navaid Service of *type* VOR_DME, has the following NavaidEquipment: VOR and DME, with no *type* specified. If selected, either a new *designator* must be entered for the Navaid Service or a new *frequency* must be entered for the VOR and a new *channel* must be entered for the DME.

h. The Navaid Service of *type* ILS and ILS_DME, has the following NavaidEquipment: Glidepath, Localizer, and DME. If selected, a new *frequency* must be entered for the Glidepath and/or the Localizer and a new *channel* must be entered for the DME. A new *designator* may not be entered.

i. At a minimum, one full field (either the frequency/channel or the designator) must be entered to submit the NOTAM.

j. The *frequencies* and *channels* of Navaid Equipment allowing for the automatic prepopulation of the NOTAM once one field is entered.

18.4.2 Policy Business Rules

a. The new frequency/channel pair appears in the NOTAM text before the frequency/channel pair being replaced.

b. When the NOTAM is cancelled, the FSS shall notify the USNOF to have the old identifier deleted from the NOTAM tables.

18.4.3 Data Encoding Business Rules

a. The element *type* for the feature Navaid is required and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type PERMDELTA.

b. For every NavaidEquipment referenced in the NOTAM, an xlink:href is required within the feature Navaid to point to the specific equipment. Multiple NavaidEquipment features may be associated with one Navaid service.

c. If the *designator* of the Navaid Service is changed, then the xlink:href to the Navaid Equipment is not required.

d. If the *frequency/channel* of the Navaid Service components is changed, the the xlink:href to the Navaid Equipment is required (even if the Navaid Service only has one type of equipment, ex: DME, VOR).

e. The *location* of the Navaid Service and NavaidEquipment referenced in the NOTAM is required, baseline data permitting, and must use a TimeSlice of type SNAPSHOT unless the NavaidEquipment is referenced by UUID in a TimeSlice of type PERMDELTA.

f. An xlink:href is required and should point to the associated AirportHeliport and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type PERMDELTA.

18.5 Sample AIXM Message

Sample NOTAM Message: NAV VOR/DME 117.7 CH 124 VICE 111.8 CH 55


```xml
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2008 (http://www.altova.com) by Jocelyn Cox, CNA in support of FAA -->
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1
./AIXM_Features.xsd http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd"
gml:id="FNS-Message" xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message"
xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:event="http://www.aixm.aero/schema/5.1/event"
xmlns:gml="http://www.opengis.net/gml/3.2" xmlns="http://www.aixm.aero/schema/5.1">
  <notamMessage:hasMember>
  <Navaid gml:id="NAV01">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <NavaidTimeSlice gml:id="NAV01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="NAV01_TS01_TI01">
              <gml:timePosition>2010-09-05T09:42:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <type>VOR_DME</type>
        <navaidEquipment>
          <NavaidComponent gml:id="NC01">
            <theNavaidEquipment xlink:href="#VOR01"/>
          </NavaidComponent>
        </navaidEquipment>
        <navaidEquipment>
          <NavaidComponent gml:id="NC02">
            <theNavaidEquipment xlink:href="#DME01"/>
          </NavaidComponent>
        </navaidEquipment>
        <location>
          <ElevatedPoint gml:id="EP01">
            <gml:pos>38.03 -118.0102</gml:pos>
          </ElevatedPoint>
        </location>
```

```
        <servedAirport xlink:href="#ACY01"/>
      </NavaidTimeSlice>
    </timeSlice>
  </Navaid>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <VOR gml:id="VOR01">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
        <VORTimeSlice gml:id="VOR01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="VOR01_TS01_TI01">
              <gml:timePosition>2010-09-05T09:42:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <frequency uom="MHZ">117.7</frequency>
        </VORTimeSlice>
      </timeSlice>
      <timeSlice>
        <VORTimeSlice gml:id="VOR01_TS02">
          <gml:validTime>
            <gml:TimePeriod gml:id="VOR01_TS02_TP01">
              <gml:beginPosition>2010-09-06T08:30:00</gml:beginPosition>
              <gml:endPosition>2010-09-07T06:58:00</gml:endPosition>
            </gml:TimePeriod>
          </gml:validTime>
          <interpretation>PERMDELTA</interpretation>
          <frequency uom="MHZ">111.8</frequency>
        </VORTimeSlice>
      </timeSlice>
    </VOR>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <DME gml:id="DME01">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
        <DMETimeSlice gml:id="DME01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="DME01_TS01_TI01">
              <gml:timePosition>2010-09-05T09:42:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <channel>55X</channel>
        </DMETimeSlice>
      </timeSlice>
      <timeSlice>
        <DMETimeSlice gml:id="DME01_TS02">
          <gml:validTime>
            <gml:TimePeriod gml:id="DME01_TS02_TP01">
              <gml:beginPosition>2010-09-06T08:30:00</gml:beginPosition>
              <gml:endPosition>2010-09-07T06:58:00</gml:endPosition>
            </gml:TimePeriod>
          </gml:validTime>
          <interpretation>PERMDELTA</interpretation>
          <channel>124X</channel>
        </DMETimeSlice>
```

```
      </timeSlice>
    </DME>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <AirportHeliport gml:id="ACY">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
        <AirportHeliportTimeSlice gml:id="ACY_TS01">
          <gml:validTime>
          <gml:TimeInstant gml:id="ACY_TI01">
            <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
          </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>ACY</designator>
          <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
          <locationIndicatorICAO>KACY</locationIndicatorICAO>
          <ARP>
            <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP02">
              <gml:pos>39.27 -74.34</gml:pos>
            </ElevatedPoint>
          </ARP>
        </AirportHeliportTimeSlice>
      </timeSlice>
    </AirportHeliport>
  </notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```


18.6 Translation Templates

18.6.1 FAA

NAV [ILS RWY *designator equipment* **(**/*equipment/equipment***)] [**_NavaidService_**]**
[[_frequency_(PERMDELTA)**][/CH**_channel_(PERMDELTA)**] VICE**
[_frequency_(SNAPSHOT)**][/CH**_channel_(SNAPSHOT)**]] [ID NOW** *designator*(PERMDELTA)**]**

18.6.2 ICAO E Line

NAV [ILS RWY *designator equipment* **(**/*equipment/equipment***)] [**_NavaidService_**]**
[[_frequency_(PERMDELTA)**][/CH**_channel_(PERMDELTA)**] VICE**
[_frequency_(SNAPSHOT)**][/CH**_channel_(SNAPSHOT)**]] [ID NOW** *designator*(PERMDELTA)**]**

18.6.3 Plain Language

Affected Airport: *affectedAirport*

NOTAM Number: XX/XXX

Effective Time Frame
Valid From: *startDate*
Valid To: *endDate*

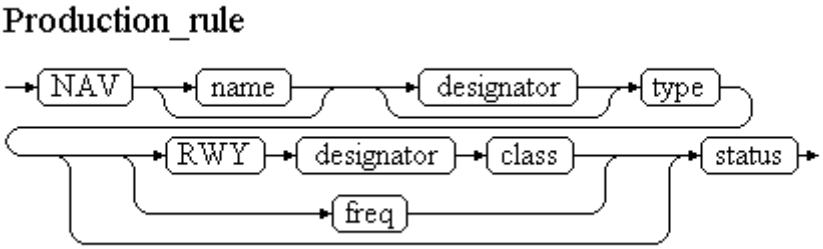
Navaid [ILS RWY *designator equipment* **(**/*equipment/equipment***)] [**_NavaidService_**]**
[Identification Change: **Identifier Now** *designator*(PERMDELTA)**]**
[Frequency Change: *equipment* Now *frequency*(PERMDELTA) (Was *frequency*(SNAPSHOT))**]**
[Channel Change: *equipment* Now *channel*(PERMDELTA) (Was *channel*(SNAPSHOT))**]**

18.7 Additional Analysis

There were 9 NOTAMs of this type issued between December 2009 and December 2010. This case is also documented in the 7930.2.

19 Navaid – NDB Status

Specifies the operational status of a non-directional (radio) beacon (NDB) Navigational Aid (Navaid). Although the change in operational status of a Navaid can result in a change in Procedure and Routes, this will be treated in a separate scenario.



19.1 Example NOTAMs

19.1.1 Current Policy

Terminal NDBs

1. !DCA DCA NAV GTN NDB OTS
2. !SUS SUS NAV RWY 8R SNOOP NDB/ILS LO OTS

If a NDB serves more than one airport, the location ID is the three letter identifier of the NDB.

3. !MIV PNJ NAV NDB OTS
4. !FLV FLV NAV HUGGY NDB OTS WEF 0710241300-0710241700
5. !MCI MCI NAV RWY 9 HUGGY NDB/ILS LO OTS WEF 0710241300-0710241700

Source: US NOTAM Repository, JO 7930.2M

19.1.2 Future FNS Policy

1. !DCA DCA NAV GTN NDB OTS
2. !SUS SUS NAV SNOOP NDB/ILS RWY 8R LO OTS
3. !MIV PNJ NAV NDB OTS
4. !FLV FLV NAV HUGGY NDB OTS WEF 0710241300-0710241700
5. !MCI MCI NAV HUGGY NDB/ILS RWY 9 LO OTS WEF 0710241300-0710241700

19.2 AIXM Mapping and Translation

19.2.1 Scenario Details

TABLE 19.1

Attribute	Value
Description	Status change to non-directional (radio) beacon (NDB)
Maps to Keyword:	NAV
Feature Type Id	Navaid Points/ Navaids/ Navaid
Feature Xpath	aixm:Navaid
AIXM Mapping Diagram	Navaid

	NavaidEquipment
NOTAM lifespan	
Start ASAP	No

19.2.2 NDB [*type*]

Description: The type of navaid service such as ILS, MLS, VORTAC, VOR/DME, etc.

Source: User-selected from baseline data (required).

TABLE 19.2
Navaid Type

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ type (attribute)		
AIXM Element Xpath	Navaid/ timeSlice/ NavaidTimeSlice [interpretation: SNAPSHOT]/ type		
AIXM Mapping	Class: Navaid		
Enumeration	CodeNavaidServiceType		
	AIXM	**Translations**	
	NDB	ICAO	NDB
		FAA	NDB
		Plain Text	non-directional radio beacon (NDB)
	NDB_DME	ICAO	NDB
		FAA	NDB
		Plain Text	non-directional radio beacon (NDB)
	NDB_MKR	ICAO	NDB/ILS
		FAA	NDB/ILS
		Plain Text	non-directional radio beacon (NDB)/ Instrument Landing System (ILS) Outer Locator

19.2.3 Navaid Service Designator [*designator*]

Description: The coded designator given to the Navaid system.

Source: User-selected from baseline data (optional).

TABLE 19.3
Navaid Designator

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ designator (attribute)
AIXM Element XPath	Navaid/ timeSlice/ NavaidTimeSlice [interpretation: SNAPSHOT]/ designator
AIXM Mapping	Class: Navaid
Min length	1
Max length	4
Enumeration	CodeNavaidDesignatorType

19.2.4 Name [*name*]

Description: The long name given to the composite navaid.

Source: User-selected from baseline data (only for NDB/ILS LO collocated system).

TABLE 19.4
Navaid Name

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ name (attribute)
AIXM Element XPath	Navaid/ timeSlice/ NavaidTimeSlice [interpretation: SNAPSHOT]/ name
AIXM Mapping	Class: Navaid
Min length	1
Max length	60
Enumeration	TextNameType

19.2.5 Designator [*designator*] – Runway Direction

Description: The full textual designator of the landing and take-off direction.
Examples: 27, 35L, 01R.

Source: User-selected from baseline data (required).

TABLE 19.5
Runway Direction Designator

Attribute	Value
AIXM Path (UML)	RunwayDirection(feature)/ designator (attribute)
AIXM Element XPath	RunwayDirection/ timeSlice/ RunwayDirectionTimeSlice [interpretation:SNAPSHOT]/ designator
AIXM Mapping	Class: RunwayDirection
Min length	1
Max length	16
Enumeration	TextDesignatorType

19.2.6 Designator [*designator*] – Runway

Description: The full textual designator of the landing and take-off direction.
Example: 09/27, 02R/20L, RWY 1.

Source: User-selected from baseline data (required).

TABLE 19.6
Runway Designator

Attribute	***Value***
AIXM Path (UML)	***Runway (feature) /designator (attribute)***
AIXM Element Xpath	***Runway/ timeSlice/ RunwayTimeSlice [interpretation:SNAPSHOT]/ designator***
AIXM Mapping	***Class: Runway***
Min length	***1***
Max length	***16***
Enumeration	***TextDesignatorType***

19.2.7 Designator [*designator*] – Aerodrome

Description: A coded designator for an Aerodrome/Heliport.

The rules for providing the affected aerodrome information are provided in Chapter 5 – Affected Location (in AIXM).

Source: User-selected from baseline data (required).

TABLE 19.7
Aerodrome FAA designator

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – designator (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ designator
AIXM Mapping	Class: AirportHeliport
Type	CodeAirportHeliportDesignatorType
Min length	3
Max length	6
Pattern	([A-Z]|\d)*

19.2.8 NDB Frequency [*frequency*]

Description: The frequency value of the non-directional (radio) beacon (NDB) equipment.

Source: User-entered (optional)/ User-selected from baseline data (optional).

TABLE 19.8
Frequency

Attribute	***Value***	
AIXM Path (UML)	***Navaid Points/ Navaids/ NavaidEquipment (feature)/ NDB (feature)/ frequency (attribute)***	
AIXM Element Xpath	***NDB/ timeSlice/ NDBTimeSlice [interpretation: SNAPSHOT]/ frequency***	
AIXM Mapping	***Class: NDB***	
Datatype	***ValFrequencyType***	
Type	***Decimal***	
Min inclusive	***0***	
Units of Measure	***UomFrequencyType***	
	ICAO/FAA	***MHZ***

19.2.9 NDB/ILS LO Collocated Location [*location*]

Description: An AIXM elevated surface derived from [gml:point], which extends Surface with properties that represent the vertical position.

Source: User-selected from baseline data (required).

TABLE 19.9
ILS Location

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ location (object)
AIXM Element Xpath	Navaid/ timeSlice/ NavaidTimeSlice [interpretation: SNAPSHOT]/ location/ ElevatedPoint/ gml:pos
AIXM Mapping	ElevatedSurface
Datatype	GML – decimal

19.2.10 NDB Operational Status [*operationalStatus*]

Description: Indicates the operational status of the navaid.

Source: User-selected (required)

TABLE 19.10
Operational Status

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ NavaidOperationalStatus (object)/ operationalStatus (attribute)		
AIXM Element Xpath	Navaid/ timeSlice/ NavaidTimeSlice [interpretation: TEMPDELTA]/ availability/ NavaidOperationalStatus/ operationalStatus		
AIXM Mapping	Class: NavaidOperationalStatus		
Enumeration	CodeStatusNavaidType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of Service
	PARTIAL	ICAO	…
		FAA	…
		Plain Text	…
	OTHER:UNMONITORED	ICAO	UNMONITORED
		FAA	UNMONITORED
		Plain Text	Unmonitored
	OPERATIONAL	ICAO	RTS
		FAA	RTS
		Plain Text	Return to Service
	OTHER: COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned
	OTHER: DECOMMISSIONED	ICAO	DECOMMISSIONED
		FAA	DCMSN
		Plain Text	Decommissioned

NDB Navaid Equiment

19.2.11 NDB Navaid Equipment [*NDB*]

Description: Indicates the specific Navaid Equipment.

Source: User-selected (optional).

TABLE 19.11
NDB Navaid Equipment

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ NavaidEquipment (feature)/ Glidepath (feature)		
AIXM Element XPath	NDB/ timeSlice/ NDBTimeSlice		
xlink:href	Navaid/ timeSlice/ NavaidTimeSlice/ navaidEquipment/ NavaidComponent/ theNavaidEquipment RadioFrequencyArea/ timeSlice/ RadioFrequencyAreaTimeSlice/ equipment_navaidEquipment		
AIXM Mapping	Class: NDB		
Enumeration	NDB	ICAO	NDB
		FAA	NDB
		Plain Text	non-directional (radio) beacon (NDB) equipment

19.2.12 NDB Operational Status [*operationalStatus*]

Description: Indicates the operational status of the navaid.

Source: User-selected (optional, required if NDB Equipment is selected)

TABLE 19.12
NDB Operational Status

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ NavaidOperationalStatus (object)/ operationalStatus (attribute)		
AIXM Element Xpath	NDB/ timeSlice/ NDBTimeSlice [interpretation: TEMPDELTA]/ availability/ NavaidOperationalStatus/ operationalStatus		
AIXM Mapping	Class: NavaidOperationalStatus		
Enumeration	CodeStatusNavaidType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of Service
	OTHER:DO_NOT_USE	ICAO	UNUSABLE
		FAA	UNUSBL
		Plain Text	Unusable
	OTHER:UNMONITORED	ICAO	UNMONITORED
		FAA	UNMONITORED
		Plain Text	Unmonitored
	OPERATIONAL	ICAO	RTS
		FAA	RTS
		Plain Text	Return to Service
	OTHER: COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned
	OTHER: DECOMMISSIONED	ICAO	DECOMMISSIONED
		FAA	DCMSN
		Plain Text	Decommissioned

19.2.13 NDB Frequency [*frequency*]

Description: The frequency value of the non-directional (radio) beacon (NDB) equipment equipment.

Source: User-entered (optional)/ User-selected from baseline data (optional).

TABLE 19.13
Frequency

Attribute	***Value***	
AIXM Path (UML)	***Navaid Points/ Navaids/ NavaidEquipment (feature)/ NDB (feature)/ frequency (attribute)***	
AIXM Element Xpath	***NDB/ timeSlice/ NDBTimeSlice [interpretation: SNAPSHOT]/ frequency***	
AIXM Mapping	***Class: Glidepath***	
Datatype	***ValFrequencyType***	
Type	***Decimal***	
Min inclusive	***0***	
Units of Measure	***UomFrequencyType***	
	ICAO/FAA	***MHZ***

19.2.14 DME Navaid Equipment [*DME*]

Description: Indicates the specific Navaid Equipment.

Source: User-selected (optional).

TABLE 19.14
DME Navaid Equipment

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid Equipment/ NavaidEquipment (feature)/ DME (feature)		
AIXM Element XPath	DME/ timeSlice/ DMETimeSlice		
xlink:href	Navaid/ timeSlice/ NavaidTimeSlice/ navaidEquipment/ NavaidComponent/ theNavaidEquipment RadioFrequencyArea/ timeSlice/ RadioFrequencyAreaTimeSlice/ equipment_navaidEquipment		
AIXM Mapping	Class: DME		
Enumeration	DME	ICAO	DME
		FAA	DME
		Plain Text	Distance Measuring Equipment (DME)

19.2.15 DME Operational Status [*operationalStatus*]

Description: Indicates the operational status of the navaid.

Source: User-selected (optional, required if DME Equipment is selected)

TABLE 19.15
DME Operational Status

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ NavaidOperationalStatus (object)/ operationalStatus (attribute)		
AIXM Element Xpath	DME/ timeSlice/ DMETimeSlice [interpretation: TEMPDELTA]/ availability/ NavaidOperationalStatus/ operationalStatus		
AIXM Mapping	Class: NavaidOperationalStatus		
Enumeration	CodeStatusNavaidType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of Service
	OTHER:DO_NOT_USE	ICAO	UNUSABLE
		FAA	UNUSBL
		Plain Text	Unusable
	OTHER:UNMONITORED	ICAO	UNMONITORED
		FAA	UNMONITORED
		Plain Text	Unmonitored
	OPERATIONAL	ICAO	RTS
		FAA	RTS
		Plain Text	Return to Service
	OTHER: COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned
	OTHER: DECOMMISSIONED	ICAO	DECOMMISSIONED
		FAA	DCMSN
		Plain Text	Decommissioned

19.2.16 DME Channel [*channel*]

Description: The frequency value of the Instrument Landing System (ILS) equipment.

Source: User-entered (optional)/ User-selected from baseline data (optional).

TABLE 19.16
DME Channel

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ NavaidEquipment (feature)/ DME (feature)/ channel (attribute)		
AIXM Element Xpath	DME/ timeSlice/ DMETimeSlice [interpretation: SNAPSHOT]/ channel		
AIXM Mapping	Class: DME		
Enumeration	CodeDMEChannelType		
	AIXM	**Translations**	
	1X – 126Y	ICAO	CH<*AIXM value*>
		FAA	CH<*AIXM value*>
		Plain Text	DME Channel <*AIXM value*>

19.2.17 Marker Beacon Navaid Equipment [*MarkerBeacon*]

Description: Indicates the specific Navaid Equipment.

Source: User-selected (optional).

TABLE 19.17
Marker Beacon Navaid Equipment

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid Equipment/ NavaidEquipment (feature)/ MarkerBeacon (feature)
AIXM Element XPath	MarkerBeacon/ timeSlice/ MarkerBeaconTimeSlice
xlink:href	Navaid/ timeSlice/ NavaidTimeSlice/ navaidEquipment/ NavaidComponent/ theNavaidEquipment RadioFrequencyArea/ timeSlice/ RadioFrequencyAreaTimeSlice/ equipment_navaidEquipment
AIXM Mapping	Class: MarkerBeacon

19.2.18 Marker Beacon Type [*markerPosition*]

Description: Indicates the location and type of Marker Beacon.

Source: User-selected (optional, required if MarkerBeacon Equipment is selected).

TABLE 19.18
Marker Position

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ NavaidComponent (object)/ markerPosition (attribute)		
AIXM Element Xpath	Navaid/ timeSlice/ NavaidTimeSlice [interpretation: SNAPSHOT]/ navaidEquipment/ NavaidComponent/ markerPosition		
AIXM Mapping	Class: NavaidComponent		
Enumeration	CodePositionInILSType		
	AIXM	**Translations**	
	OUTER	ICAO	---
		FAA	---

		Plain Text	---
	MIDDLE	ICAO	---
		FAA	---
		Plain Text	---
AIXM Path (UML)	Navaid Points/ Navaids/ NavaidEquipment (feature)/ MarkerBeacon (feature)/ class (attribute)		
AIXM Element Xpath	MarkerBeacon/ timeSlice/ MarkerBeaconTimeSlice [interpretation: SNAPSHOT]/ class		
AIXM Mapping	Class: MarkerBeacon		
Enumeration	CodeMarkerBeaconSignalType		
	AIXM	**Translations**	
	LOW_PWR_FAN (associated with OUTER markerPosition)	ICAO	LO
		FAA	LO
		Plain Text	Locator Outer Marker (LO)
	LOW_PWR_FAN (associated with MIDDLE markerPosition)	ICAO	LM
		FAA	LM
		Plain Text	Locator Middle Marker (LM)
	FAN (not associated with markerPosition)	ICAO	FAN MKR
		FAA	FAN MKR
		Plain Text	Fan Markers

19.2.19 Position Marker Operational Status [*operationalStatus*]

Description: Indicates the operational status of the navaid.

Source: User-selected (optional, required if MarkerBeacon Equipment is selected).

TABLE 19.19
Marker Beacon Operational Status

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ NavaidOperationalStatus (object)/ operationalStatus (attribute)		
AIXM Element Xpath	MarkerBeacon/ timeSlice/ MarkerBeaconTimeSlice [interpretation: TEMPDELTA]/ availability/ NavaidOperationalStatus/ operationalStatus		
AIXM Mapping	Class: NavaidOperationalStatus		
Enumeration	CodeStatusNavaidType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of Service
	OTHER: COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned
	OTHER: COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned
	OTHER: DECOMMISSIONED	ICAO	DECOMMISSIONED
		FAA	DCMSN
		Plain Text	Decommissioned

19.2.20 Position Marker Frequency [*frequency*]

Description: The frequency value of the Instrument Landing System (ILS) equipment.

Source: User-entered (optional)/ User-selected from baseline data (optional).

TABLE 19.20
Frequency

Attribute	***Value***	
AIXM Path (UML)	***Navaid Points/ Navaids/ NavaidEquipment (feature)/ MarkerBeacon (feature)/ frequency (attribute)***	
AIXM Element Xpath	***MarkerBeacon/ timeSlice/ MarkerBeaconTimeSlice [interpretation: SNAPSHOT]/ frequency***	
AIXM Mapping	***Class: MarkerBeacon***	
Datatype	***ValFrequencyType***	
Type	***Decimal***	
Min inclusive	***0***	
Units of Measure	***UomFrequencyType***	
	ICAO/FAA	***MHZ***

19.3 QCodes

TABLE 19.21
QCodes for NDB Status

AIXM Code	**QCode**	
ALL	**Series**	**N**
2nd and 3rd Letter		
NDB	QCode	QNB--
	Scope	A
	Traffic	IV
	Purpose	BO
4th and 5th Letter		
OUT OF SERVICE	QCode	Q--AS
UNUSABLE	QCode	Q--XX
UNMONITORED	QCode	Q--XX
COMMISSIONED	QCode	Q--CS
DECOMMISSIONED	QCode	Q--AW

19.4 Business Rules

19.4.1 Template Business Rules

a. If Runway Direction *designator* equals null and the equipment is a NDB/ILS LO, then "Select a Runway designator."

b. The Navaid *designator* for Navaid Equipment of *type* NDB or *type* NDB_DME serving only one airport should have the airport as the Location ID and the Navaid *designator* should appear before the equipment.

c. Navaid Equipment of *type* NDB_MKR will have a five letter *name*, exept for NDB_MKR located in Alaska, which will have a three letter *name*.

d. When *operationalStatus* is equal to null, then "Select a status."

e. The same NavaidEquipment cannot be selected more than one time per NOTAM.

f. The attribute *frequency* must be a number between 100.00 and 350.00 MHz and should only be selected with the *operationalStatus* is equal to OTHER:COMMISSIONED. Only one significant figure (decimal place) is required.

g. The attribute *channel* must be an alphanumeric value between 1X and 126Y and should only be selected with the *operationalStatus* is equal to OTHER:COMMISSIONED.

h. If Navaid *type* is equal to NDB, then the Navaid Equipment can be NDB.

i. If Navaid *type* is equal to NDB_DME, then the Navaid Equipment can be NDB and DME.

j. If Navaid *type* is equal to NDB_MKR, then the Navaid Equipment can be NDB, DME and Marker Beacon.

k. If for Navaid *type* equal to NDB_MKR, NDB and Marker Beacons both have the same *operationalStatus*, then the NOTAM should not include the Navaid Equipment and only apply the *operationalStatus* to the Navaid Service.

l. If for Navaid *type* equal to NDB_DME, NDB and DME all have the same *operationalStatus*, then the NOTAM should not include the Navaid Equipment and only apply the *operationalStatus* to the Navaid Service.

m. For NDB/ILS LO Navaid Equipment where the NDB serves more than one airport, a separate NOTAM should be generated for each affected facility. The facility that uses the ILS LO portion of the Navaid Service should have the Runway *designator*, the Navaid Service five letter *name*, the Navaid Service type and the Navaid Equipment ILS LO displayed in the NOTAM. The facility that only uses the NDB portion of the Navaid Service should only have the Navaid Service five letter *name* and Navaid Service *type* displayed in the NOTAM.

19.4.2 Policy Business Rules

a. Terminal NDBs. Those NDBs located on or serving only that airort shall have NOTAMs issued using the associated airport as the affected facility.

b. If an NDB serves more than one airport, issue a NOTAM using the identifier of the NDB as the affected facility.

c. Collocated NDB/LOs are assigned a five-letter name (except in Alaska). All other NDBs are assigned three letter identifiers.

d. NDB/LO serving more than on airport shall be issued under the three-letter identifier of each airport that it serves.

19.4.3 Data Encoding Business Rules

a. The element *type* under the feature Navaid is required and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

b. For entering *operationalStatus* of the Navaid Service, use TimeSlice of type TEMPDELTA. Specification of *operationalStatus* is required. When *operationalStatus* is equal to OTHER:DO_NOT_USE (UNUSABLE), then the Start Angle and End Angle, outerDistance, and upperLimit may be entered. One of these designations is required for the *operationalStatus* is equal to OTHER:DO_NOT_USE. All may be entered.

c. If the *operationalStatus* is equal to OTHER:COMMISSIONED, use a TimeSlice of type BASELINE.

d. If the *operationalStatus* is equal to OTHER:COMMISSIONED, include all of the NavaidEquipment information that is being commissioned in the digital message.

e. If the *operationalStatus* is equal to OTHER:DECOMMISSIONED, use a TimeSlice of type PERMDELTA.

f. NavaidEquipment should only be referenced in the NOTAM for *type* equal to NDB, NDB_DME, or NDB_MKR.

g. For every NavaidEquipment referenced in the NOTAM, an xlink:href is required within the feature Navaid to point to the specific equipment. Multiple NavaidEquipment features may be associated with one Navaid service.

h. If the *operationalStatus* of one or multiple NavaidEquipment is changed, use TimeSlice of type TEMPDELTA and the value for *operationalStatus* of Navaid is specified as PARTIAL, also using a TimeSlice of type TEMPDELTA.

i. For every NavaidEquipment, the *operationalStatus* of the NavaidEquipment is required and must use TimeSlice of type TEMPDELTA.

j. The *location* of the Navaid Service referenced in the NOTAM is required, baseline data permitting, and must use a TimeSlice of type SNAPSHOT unless the NavaidEquipment is referenced by UUID in a TimeSlice of type TEMPDELTA.

k. The *frequency* or *channel* of the NavaidEquipment is optional and should only appear in the NOTAM when the *operationalStatus* is equal to OTHER:COMMISSIONED.

l. For NavaidEquipment MarkerBeacon, Outer Marker (OM) and Middle Marker (MM) must have the *markerPosition* (OUTER and MIDDLE) specified under the feature Navaid/ NavaidComponent and must use a TimeSlice of type SNAPSHOT unless the NavaidEquipment is referenced by UUID in a TimeSlice of type TEMPDELTA. The MarkerBeacon element *class* should be FAN and must use a TimeSlice of type SNAPSHOT unless the NavaidEquipment is referenced by UUID in a TimeSlice of type TEMPDELTA.

m. For NavaidEquipment Marker Beacon, Outer Marker (LO), Middle Marker (LM) and Marker Fan (MKR FAN) markers associated with the NDB, the marker position (detailed above) should not be specified and the MarkerBeacon element *class* should be LOW_PWR_FAN or FAN, respectively.

n. An xlink:href is required and should point to the used Runway Direction and the associated AirportHeliport and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

19.5 Sample AIXM Message

Sample NOTAM Message: PNJ NAV NDB OTS

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2008 (http://www.altova.com) by Jocelyn Cox, CNA in support of FAA -->
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1 ./AIXM_Features.xsd
http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd" gml:id="FNS-Message"
xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message" xmlns:aixm="http://www.aixm.aero/schema/5.1"
xmlns:gco="http://www.isotc211.org/2005/gco" xmlns:gmd="http://www.isotc211.org/2005/gmd"
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:event="http://www.aixm.aero/schema/5.1/event" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns="http://www.aixm.aero/schema/5.1">
  <notamMessage:hasMember>
  <Navaid gml:id="NAV01">
  <gml:identifier codeSpace="uuid">8cfaa30b-4d00-4dc6-be18-d8420bf77ac5</gml:identifier>
```

```
    <timeSlice>
      <NavaidTimeSlice gml:id="NAV01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="NAV01_TS01_TI01">
              <gml:timePosition>2010-09-05T09:42:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <type>NDB</type>
        <designator>PNJ</designator>
        <navaidEquipment>
          <NavaidComponent gml:id="NC01">
            <theNavaidEquipment xlink:href="urn:uuid:a82b3fc9-4aa4-4e67-8def-aaea1ac593j"/><!--NDB-->
          </NavaidComponent>
        </navaidEquipment>
        <location>
          <ElevatedPoint gml:id="EP01">
            <gml:pos>38.03 -118.0102</gml:pos>
          </ElevatedPoint>
        </location>
        <servedAirport xlink:href="urn:uuid:a82b3fc9-4aa4-4e67-8def-aaea1ac595j"/><!--ACY-->
        <servedAirport xlink:href="urn:uuid:a82b3fc9-4aa4-4e67-8def-aaea1ac596j"/><!--TEB-->
      </NavaidTimeSlice>
    </timeSlice>
    <timeSlice>
      <NavaidTimeSlice gml:id="NAV01_TS02">
        <gml:validTime>
          <gml:TimePeriod gml:id="NAV01_TS02_TP01">
            <gml:beginPosition>2010-09-05T09:42:00</gml:beginPosition>
            <gml:endPosition>2010-09-08T012:00:00</gml:endPosition>
          </gml:TimePeriod>
        </gml:validTime>
        <interpretation>TEMPDELTA</interpretation>
        <sequenceNumber>15</sequenceNumber>
        <availability>
          <NavaidOperationalStatus gml:id="NOS01">
            <operationalStatus>UNSERVICEABLE</operationalStatus>
          </NavaidOperationalStatus>
        </availability>
      </NavaidTimeSlice>
    </timeSlice>
  </Navaid>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <AirportHeliport gml:id="ACY">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
        <AirportHeliportTimeSlice gml:id="ACY_TS01">
          <gml:validTime>
          <gml:TimeInstant gml:id="ACY_TI01">
            <gml:timePosition>2010-09-05T09:42:00</gml:timePosition>
          </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>ACY</designator>
          <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
          <locationIndicatorICAO>KACY</locationIndicatorICAO>
          <ARP>
```

```
            <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP02">
              <gml:pos>39.27 -74.34</gml:pos>
            </ElevatedPoint>
          </ARP>
        </AirportHeliportTimeSlice>
      </timeSlice>
    </AirportHeliport>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <AirportHeliport gml:id="TEB">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac596j</gml:identifier>
      <timeSlice>
        <AirportHeliportTimeSlice gml:id="TEB_TS01">
          <gml:validTime>
          <gml:TimeInstant gml:id="TEB_TI01">
            <gml:timePosition>2010-09-05T09:42:00</gml:timePosition>
          </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>TEB</designator>
          <name>TETERBORO AIRPORT</name>
          <locationIndicatorICAO>KTEB</locationIndicatorICAO>
          <ARP>
            <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP03">
              <gml:pos>40.8501014  -74.0608361</gml:pos>
            </ElevatedPoint>
          </ARP>
        </AirportHeliportTimeSlice>
      </timeSlice>
    </AirportHeliport>
  </notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```


Sample NOTAM Message: PNJ NAV NDB OTS


```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2008 (http://www.altova.com) by Jocelyn Cox, CNA in support of FAA -->
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1 ./AIXM_Features.xsd
http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd" gml:id="FNS-Message"
xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message" xmlns:aixm="http://www.aixm.aero/schema/5.1"
xmlns:gco="http://www.isotc211.org/2005/gco" xmlns:gmd="http://www.isotc211.org/2005/gmd"
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:event="http://www.aixm.aero/schema/5.1/event" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns="http://www.aixm.aero/schema/5.1">
  <notamMessage:hasMember>
  <Navaid gml:id="NAV01">
  <gml:identifier codeSpace="UUID">8cfaa30b-4d00-4dc6-be18-d8420bf77ac5</gml:identifier>
    <timeSlice>
      <NavaidTimeSlice gml:id="NAV01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="NAV01_TS01_TI01">
              <gml:timePosition>2010-09-05T09:42:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <type>NDB_MKR</type>
        <name>HUGGY</name>
        <navaidEquipment>
          <NavaidComponent gml:id="NC01">
```

```
            <markerPosition>OUTER</markerPosition>
            <theNavaidEquipment xlink:href="urn:uuid:a82b3fc9-4aa4-4e67-8def-aaea1ac593j"/><!--ILS LO-->
          </NavaidComponent>
        </navaidEquipment>
        <navaidEquipment>
          <NavaidComponent gml:id="NC02">
            <theNavaidEquipment xlink:href="urn:uuid:a82b3fc9-4aa4-4e67-8def-aaea1ac594j"/><!--NDB-->
          </NavaidComponent>
        </navaidEquipment>
        <location>
          <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP01">
            <gml:pos>39.84 -74.50</gml:pos>
          </ElevatedPoint>
        </location>
        <runwayDirection xlink:href="urn:uuid:a82b3fc9-4aa4-4e67-8def-aaea1ac597j"/><!-- Runway 9 at ACY-->
        <servedAirport xlink:href="urn:uuid:a82b3fc9-4aa4-4e67-8def-aaea1ac595j"/><!--MCI-->
        <servedAirport xlink:href="urn:uuid:a82b3fc9-4aa4-4e67-8def-aaea1ac596j"/><!--FLV-->
      </NavaidTimeSlice>
    </timeSlice>
    <timeSlice>
      <NavaidTimeSlice gml:id="NAV01_TS02">
        <gml:validTime>
          <gml:TimePeriod gml:id="NAV01_TS02_TP01">
            <gml:beginPosition>2010-09-06T09:00:00</gml:beginPosition>
            <gml:endPosition>2010-09-08T019:00:00</gml:endPosition>
          </gml:TimePeriod>
        </gml:validTime>
        <interpretation>TEMPDELTA</interpretation>
        <sequenceNumber>15</sequenceNumber>
        <availability>
          <NavaidOperationalStatus gml:id="NOS_01">
            <operationalStatus>UNSERVICEABLE</operationalStatus>
          </NavaidOperationalStatus>
        </availability>
      </NavaidTimeSlice>
    </timeSlice>
  </Navaid>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <RunwayDirection gml:id="RWYDIR01">
    <gml:identifier codeSpace="uuid">a82b3fc9-4aa4-4e67-8def-aaea1ac597j</gml:identifier>
      <timeSlice>
        <RunwayDirectionTimeSlice gml:id="RWYDIR01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="RWYDIR01_TS01_TI01">
              <gml:timePosition>2010-09-05T09:42:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>9</designator>
          <usedRunway xlink:href="urn:uuid:a82b3fc9-4aa4-4e67-8def-aaea1ac695j"/>
        </RunwayDirectionTimeSlice>
      </timeSlice>
    </RunwayDirection>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <Runway gml:id="RWY01">
    <gml:identifier codeSpace="uuid">a82b3fc9-4aa4-4e67-8def-aaea1ac695j</gml:identifier>
```

```
      <timeSlice>
        <RunwayTimeSlice gml:id="RWY01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="RWY01_TS01_TI01">
              <gml:timePosition>2010-09-05T09:42:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>9/27</designator>
          <associatedAirportHeliport xlink:href="urn:uuid:a82b3fc9-4aa4-4e67-8def-aaea1ac595j"/>
        </RunwayTimeSlice>
      </timeSlice>
    </Runway>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <AirportHeliport gml:id="AD01">
    <gml:identifier codeSpace="UUID">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
        <AirportHeliportTimeSlice gml:id="AD01_TS01">
          <gml:validTime>
          <gml:TimeInstant gml:id="AD01_TI01">
            <gml:timePosition>2010-09-05T09:42:00</gml:timePosition>
          </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>MCI</designator>
          <name>KANSAS CITY INTERNATIONAL AIRPORT</name>
          <locationIndicatorICAO>KMCI</locationIndicatorICAO>
          <ARP>
            <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP03">
              <gml:pos>39.27 -74.34</gml:pos>
            </ElevatedPoint>
          </ARP>
        </AirportHeliportTimeSlice>
      </timeSlice>
    </AirportHeliport>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <AirportHeliport gml:id="AD02">
    <gml:identifier codeSpace="UUID">a82b3fc9-4aa4-4e67-8def-aaea1ac596j</gml:identifier>
      <timeSlice>
        <AirportHeliportTimeSlice gml:id="AD02_TS01">
          <gml:validTime>
          <gml:TimeInstant gml:id="AD02_TI01">
            <gml:timePosition>2010-09-05T09:42:00</gml:timePosition>
          </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>FLV</designator>
          <name>FORT LEAVENWORTH SHERMAN AAF</name>
          <locationIndicatorICAO>KFLV</locationIndicatorICAO>
          <ARP>
            <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP04">
              <gml:pos>38.27 -75.34</gml:pos>
            </ElevatedPoint>
          </ARP>
        </AirportHeliportTimeSlice>
      </timeSlice>
```

```
    </AirportHeliport>
  </notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```

19.6 Translation Templates

19.6.1 FAA

NAV [*designator***] [***name***]** *type* **[RWY** *designator class***] [***frequency***][/CH***channel***]** *operationalStatus*

19.6.2 ICAO E Line

NAV [*designator***] [***name***]** *type* **[RWY** *designator class***] [***frequency***][/CH***channel***]** *operationalStatus*

19.6.3 Plain Language

Affected Airport: *affectedAirport*

NOTAM Number: XX/XXX

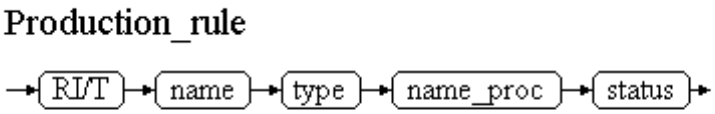
Effective Time Frame
Valid From: *startDate*
Valid To: *endDate*

Navaid: [*designator***] [***name***]** *type* **[RWY** *designator class***]**
[[Frequency][/Channel]: [*frequency***][/CH***channel***]]**
Status: *operationalStatus*

19.7 Additional Analysis

20 FDC – Glide Slope Changes Due to Snow

The OCC is responsible for issuing the FDC formatted NOTAM relating snow/ice on the Glideslope equipment to a change in procedure.



20.1 Example NOTAMs

20.1.1 Current Policy

OCCs are also responsible for the following FDC NOTAM.

1. ! FDC x/xxxx (airport id) FI/T (name of the airport as shown on the approach plate) ILS RWY (nbr) AMDT (nbr)... DUE TO EFFECTS OF SNOW ON GLIDE SLOPE. MINIMUMS TEMPORARILY RAISED TO LOCALIZER ONLY FOR (all category, or list the appropriate category or categories of aircraft) AIRCRAFT. GLIDE SLOPE REMAINS IN SERVICE; HOWEVER, ANGLE MAY BE DIFFERENT THAN PUBLISHED.
2. ! FDC 9/4454 PQI FI/T PRESQUE ISLE/NORTHERN MAINE REGIONAL ARPT AT PRESQUE ISLE, PRESQUE, ISLE, ME. ILS RWY 1, AMDT 6... DUE TO EFFECTS OF SNOW ON THE GLIDE SLOPE MINIMUMS TEMPORARILY RAISED TO LOCALIZER ONLY FOR D CATEGORY AIRCRAFT. GLIDE SLOPE REMAINS IN SERVICE. HOWEVER, ANGLE MAY BE DIFFERENT THAN PUBLISHED.
3. !FDC 9/6455 DLH FI/T DULUTH INTL, MN ILS RWY 27, AMDT 8D.... DUE TO EFFECTS OF SNOW ON THE GLIDE SLOPE MINIMUMS TEMPORARILY RAISED TO LOCALIZER ONLY FOR ALL CATEGORY AIRCRAFT. GLIDE SLOPE REMAINS IN SERVICE. HOWEVER, ANGLE MAY BE DIFFERENT THAN PUBLISHED.
4. !FDC 0/0141 BTV FI/T BURLINGTON INTL, BURLINGTON, VT. ILS RWY 15, AMDT 23B ...DUE TO EFFECTS OF SNOW ON THE GLIDE SLOPE MINIMUMS TEMPORARILY RAISED TO LOCALIZER ONLY FOR D CATAGORYAIRCRAFT. GLIDE SLOPE REMAINS IN SERVICE. HOWEVER, ANGLE MAY BE DIFFERENT THAN PUBLISHED.
5. ! FDC 9/5658 IAD FI/T WASHINGTON DULLES INTERNATIONAL, CHANTILLY, VA ILS RWY 1L, AMDT 1.... DUE TO EFFECTS OF SNOW ON THE GLIDE SLOPE MINIMUMS TEMPORARILY RAISED TO LOCALIZER ONLY FOR D CATEGORY AIRCRAFT. CAT 2/3 NOT AVAILABLE. GLIDE SLOPE REMAINS IN SERVICE. HOWEVER, ANGLE MAY BE DIFFERENT THAN PUBLISHED.
6. !FDC 9/5661 IAD FI/T WASHINGTON DULLES INTERNATIONAL, CHANTILLY, VA ILS RWY 12, AMDT 9.... DUE TO EFFECTS OF SNOW ON THE GLIDE SLOPE MINIMUMS TEMPORARILY RAISED TO LOCALIZER ONLY FOR D CATEGORY AIRCRAFT. CAT 1 NOT AVAILABLE. GLIDE SLOPE REMAINS IN SERVICE. HOWEVER, ANGLE MAY BE DIFFERENT THAN PUBLISHED.
7. !FDC 0/4702 BWI FI/T BALTIMORE-WASHINGTON INTL THURGOOD MARSHALL, BALTIMORE, MD.

ILS OR LOC RWY 10, AMDT 19...
ILS OR LOC RWY 28, AMDT 16...
ILS OR LOC RWY 15L, AMDT 1...
ILS OR LOC RWY 33L, AMDT 10...
DUE TO EFFECTS OF SNOW ON THE GLIDE SLOPE MINIMUMS TEMPORARILY RAISED TO LOCALIZER ONLY FOR ALL CATEGORY AIRCRAFT. GLIDE SLOPE REMAINS IN SERVICE. HOWEVER, ANGLE MAY BE DIFFERENT THAN PUBLISHED.

Source: 7930.2 7-1-6, US NOTAM Repository

20.2 AIXM Mapping and Translation

20.2.1 Scenario Details

TABLE 20.1

Attribute	Value
Description	Status change to Instrument Landing System (ILS)
Maps to Keyword:	NAV
Feature Type Id	Navaid Points/ Navaids/ Navaid
Feature Xpath	aixm:Navaid
AIXM Mapping Diagram	Navaid NavaidEquipment
NOTAM lifespan	
Start ASAP	No

20.2.2 Instrument Landing System Type [*type*]

Description: The type of navaid service such as ILS, MLS, VORTAC, VOR/DME, etc.
Source: User-selected from baseline data (required).

TABLE 20.2
Navaid Type

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ type (attribute)		
AIXM Element Xpath	Navaid/ timeSlice/ NavaidTimeSlice [interpretation: SNAPSHOT/TEMPDELTA]/ type		
AIXM Mapping	Class: Navaid		
Enumeration	CodeNavaidServiceType		
	AIXM	**Translations**	
	ILS	ICAO	ILS
		FAA	ILS
		Plain Text	Instrument Landing System (ILS)
	ILS_DME	ICAO	ILS
		FAA	ILS
		Plain Text	Instrument Landing System (ILS)
	ILS_LOC	ICAO	ILS
		FAA	ILS
		Plain Text	Instrument Landing System (ILS)
	LOC	ICAO	ILS
		FAA	ILS
		Plain Text	Instrument Landing

			System (ILS)

20.2.3 Instrument Approach Procedure Approach Type [*approachType*]

Description: A name describing the type of radio navigational aid/system

Source: User-selected from baseline data (required).

TABLE 20.3
Instrument Approach Procedure Type

Attribute	Value		
AIXM Path (UML)	Procedure/ Approach / Approach Procedure/ InstrumentApproachProcedure (feature)/ approachType (attribute)		
AIXM Element Xpath	InstrumentApproachProcedure/ timeSlice/ InstrumentApproachProcdureTimeSlice [interpretation: SNAPSHOT/TEMPDELTA]/ type		
AIXM Mapping	Class: InstrumentApproachProcedure		
Enumeration	approachType		
	AIXM	**Translations**	
	ILS	ICAO	ILS
		FAA	ILS
		Plain Text	Instrument Landing System (ILS)
	ILS_DME	ICAO	ILS
		FAA	ILS
		Plain Text	Instrument Landing System (ILS)
	ILS_LOC	ICAO	ILS
		FAA	ILS
		Plain Text	Instrument Landing System (ILS)
	LOC	ICAO	ILS
		FAA	ILS
		Plain Text	Instrument Landing System (ILS)

20.2.4 Name [*name*]

Description: The name of the instrument procedure.

Source: User-selected from baseline data

TABLE 20.4
Approach Procedure Name

Attribute	Value
AIXM Path (UML)	Procedure/ Approach / Approach Procedure/ InstrumentApproachProcedure (feature)/ name (attribute)
AIXM Element XPath	InstrumentApproachProcedure/ timeSlice/ InstrumentApproachProcdureTimeSlice [interpretation: SNAPSHOT]/ name
AIXM Mapping	Class: InstrumentApproachProcedure
Min length	1
Max length	60
Enumeration	TextNameType
	AMDT *<number>*

20.2.5 Procedure Update [*annotation*]

Description: Update to a Procedure.

Source: User-selected (optional).

TABLE 20.5
User entered affected area

Attribute	Value		
AIXM Path (UML)	Procedure/ Approach / Approach Procedure/ InstrumentApproachProcedure (feature)/ annotation (object)/ note (attribute)		
AIXM Element Xpath	InstrumentApproachProcedure/ timeSlice/ InstrumentApproachProcdureTimeSlice [interpretation: TEMPDELTA]/ annotation/ Note/ translatedNote/ LinguisticNote/ note		
AIXM Mapping	Class: Note, LinguisticNote		
Min length	1		
Max length	10000		
Description	propertyName	approachType	
	purpose	REMARK	
Enumeration	TextNoteType		
	Format: DUE TO EFFECTS OF SNOW ON THE GLIDE SLOPE MINIMUMS TEMPORARILY RAISED TO LOCALIZER ONLY FOR ***<value from below>*** AIRCRAFT. GLIDE SLOPE REMAINS IN SERVICE. HOWEVER, ANGLE MAY BE DIFFERENT THAN PUBLISHED		
	AIXM	**Translations**	
	D CATEGORY	ICAO	D CATEGORY
		FAA	D CATEGORY
		Plain Text	D Category
	ALL CATEGORY	ICAO	ALL CATEGORY
		FAA	ALL CATEGORY
		Plain Text	All Category

20.2.6 Designator [*designator*] – Runway Direction

Description: The full textual designator of the landing and take-off direction.
Examples: 27, 35L, 01R.

Source: User-selected from baseline data (required).

TABLE 20.6
Runway Direction Designator

Attribute	Value
AIXM Path (UML)	RunwayDirection(feature)/ designator (attribute)
AIXM Element XPath	RunwayDirection/ timeSlice/ RunwayDirectionTimeSlice [interpretation:SNAPSHOT]/ designator
AIXM Mapping	Class: RunwayDirection
Min length	1
Max length	16
Enumeration	TextDesignatorType

20.2.7 Designator [*designator*] – Runway

Description: The full textual designator of the landing and take-off direction.
Example: 09/27, 02R/20L, RWY 1.

Source: User-selected from baseline data (required).

TABLE 20.7
Runway Designator

Attribute	***Value***
AIXM Path (UML)	***Runway (feature) /designator (attribute)***
AIXM Element Xpath	***Runway/ timeSlice/ RunwayTimeSlice [interpretation:SNAPSHOT]/ designator***
AIXM Mapping	***Class: Runway***
Min length	***1***
Max length	***16***
Enumeration	***TextDesignatorType***

20.2.8 Designator [*designator*] – Aerodrome

Description: A coded designator for an Aerodrome/Heliport.

The rules for providing the affected aerodrome information are provided in Chapter 5 – Affected Location (in AIXM).

Source: User-selected from baseline data (required).

TABLE 20.8
Aerodrome FAA designator

Attribute	**Value**
AIXM Path (UML)	AirportHeliport (feature) – designator (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ designator
AIXM Mapping	Class: AirportHeliport
Type	CodeAirportHeliportDesignatorType
Min length	3
Max length	6
Pattern	([A-Z]|\d)*

20.2.9 ILS Location [*location*]

Description: An AIXM elevated surface derived from [gml:point], which extends Surface with properties that represent the vertical position.

Source: User-selected from baseline data (required).

TABLE 20.9
ILS Location

Attribute	**Value**
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ location (object)
AIXM Element Xpath	Navaid/ timeSlice/ NavaidTimeSlice [interpretation: SNAPSHOT]/ location/ ElevatedPoint/ gml:pos
AIXM Mapping	ElevatedSurface
Datatype	GML – decimal

20.2.10 ILS Operational Status [*operationalStatus*]

Description: Indicates the operational status of the navaid.

Source: User-selected (required)

TABLE 20.10
Operational Status

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ NavaidOperationalStatus (object)/ operationalStatus (attribute)		
AIXM Element Xpath	Navaid/ timeSlice/ NavaidTimeSlice [interpretation: TEMPDELTA]/ availability/ NavaidOperationalStatus/ operationalStatus		
AIXM Mapping	Class: NavaidOperationalStatus		
Enumeration	CodeStatusNavaidType		
	AIXM	**Translations**	
	PARTIAL	ICAO	---
		FAA	---
		Plain Text	---

20.2.11 Instrument Landing System Update [*annotation*]

Description: Update to a Procedure.

Source: User-selected (optional).

TABLE 20.11
User entered affected area

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ NavaidOperationalStatus (object)/ annotation (object)/ note (attribute)		
AIXM Element Xpath	Navaid/ timeSlice/ NavaidTimeSlice [interpretation: TEMPDELTA]/ annotation/ Note/ translatedNote/ LinguisticNote/ note		
AIXM Mapping	Class: Note, LinguisticNote		
Min length	1		
Max length	10000		
Description	propertyName	operationalStatus	
	purpose	REMARK	
Enumeration	TextNoteType		
	Format: DUE TO EFFECTS OF SNOW ON THE GLIDE SLOPE MINIMUMS TEMPORARILY RAISED TO LOCALIZER ONLY FOR ***<value from below>*** AIRCRAFT. GLIDE SLOPE REMAINS IN SERVICE. HOWEVER, ANGLE MAY BE DIFFERENT THAN PUBLISHED		
	AIXM	**Translations**	
	D CATEGORY	ICAO	D CATEGORY
		FAA	D CATEGORY
		Plain Text	D Category
	ALL CATEGORY	ICAO	ALL CATEGORY
		FAA	ALL CATEGORY
		Plain Text	All Category

ILS Navaid Equiment

20.2.12 Glidepath Navaid Equipment [*Glidepath*]

Description: Indicates the specific Navaid Equipment.

Source: User-selected (optional).

TABLE 20.12
Glidepath Navaid Equipment

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ NavaidEquipment (feature)/ Glidepath (feature)		
AIXM Element XPath	Glidepath/ timeSlice/ GlidepathTimeSlice		
AIXM Mapping	Class: Glidepath		
Enumeration	Glidepath	ICAO	GP
		FAA	GP
		Plain Text	Glide slope

20.2.13 Glidepath Operational Status [*operationalStatus*]

Description: Indicates the operational status of the navaid.

Source: User-selected (optional, required if Glidepath Equipment is selected)

TABLE 20.13
Glidepath Operational Status

Attribute	Value		
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ NavaidOperationalStatus (object)/ operationalStatus (attribute)		
AIXM Element Xpath	Glidepath/ timeSlice/ GlidepathTimeSlice [interpretation: TEMPDELTA]/ availability/ NavaidOperationalStatus/ operationalStatus		
AIXM Mapping	Class: NavaidOperationalStatus		
Enumeration	CodeStatusNavaidType		
	AIXM	**Translations**	
	CONDITIONAL	ICAO	---
		FAA	---
		Plain Text	---

20.2.14 Glidepath Location [*location*]

Description: An AIXM elevated surface derived from [gml:point], which extends Surface with properties that represent the vertical position.

Source: User-selected from baseline data (optional, required if Glidepath Equipment is selected).

TABLE 20.14
Glidepath Location

Attribute	Value
AIXM Path (UML)	Navaid Points/ Navaids/ Navaid (feature)/ location (object)
AIXM Element Xpath	Glidepath/ timeSlice/ GlidepathTimeSlice [interpretation: SNAPSHOT]/ location/ ElevatedPoint/ gml:pos
AIXM Mapping	ElevatedSurface
Datatype	GML – decimal

20.3 QCodes

TABLE 20.15
QCodes for FDC Glideslope NOTAM

AIXM Code	QCode	
ALL	**Series**	**N**
2nd and 3rd Letter		
ILS	QCode	XX
	Scope	AE
	Traffic	I
	Purpose	NBO
4th and 5th Letter		
OUT OF SERVICE	QCode	Q--XX

20.4 Business Rules

20.4.1 Template Business Rules

a. If Runway Direction *designator* equals null, then "Select a Runway designator."

b. When *category* is equal to null, then "Select affected category of aircraft."

c. When *name* for AirportHeliport is equal to null, then "Select the affected airport."

d. When *name* for InstrumentApproachProcedure is equal to null, then "Select the affected procedure."

e. The translation of *type* does not change, regardless of the Instrument Landing System equipment.

20.4.2 Policy Business Rules

a. Snow and ice accumulation in the vicinity of glide slope antennas may affect facility performance to the extent that restrictions to the ILS landing minimums must be imposed. Technical operations SMO personnel at the glide slope location are required to initiate FDC NOTAM action to implement such restrictions through the USNOF.

b. Technical operations SMO personnel shal monitor snow conditions to determine when conditions permit the removal of the landing minimum restrictions. At such time, following the same procedures as for FDC NOTAM issuance, the technical operations SMO personnel shall initiate action to issue a new FDC NOTAM.

20.4.3 Data Encoding Business Rules

a. The element *type* under the feature Navaid is required and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

b. For entering *operationalStatus* of the Navaid Service, use TimeSlice of type TEMPDELTA. Specification of *operationalStatus* is required.

c. For every NavaidEquipment referenced in the NOTAM, an xlink:href is required within the feature Navaid to point to the specific equipment. Multiple NavaidEquipment features may be associated with one Navaid service.

d. For every NavaidEquipment, the *operationalStatus* of the NavaidEquipment is required and must use TimeSlice of type TEMPDELTA.

e. The *location* of the Navaid Service and NavaidEquipment referenced in the NOTAM is required, baseline data permitting, and must use a TimeSlice of type SNAPSHOT unless the NavaidEquipment is referenced by UUID in a TimeSlice of type TEMPDELTA.

f. An xlink:href is required and should point to the used Runway Direction and the associated AirportHeliport and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

20.5 Sample AIXM Message

Sample NOTAM Message: !FDC X/XXXX ACY FI/T ATLANTIC CITY INTERNATIONAL, EGG HARBOR, NJ ILS RWY 13, AMDT 14.... DUE TO EFFECTS OF SNOW ON THE GLIDE SLOPE MINIMUMS TEMPORARILY RAISED TO LOCALIZER ONLY FOR D CATEGORY AIRCRAFT. GLIDE SLOPE REMAINS IN SERVICE. HOWEVER, ANGLE MAY BE DIFFERENT THAN PUBLISHED


```xml
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2008 (http://www.altova.com) by Jocelyn Cox, CNA in support of FAA -->
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1 ./AIXM_Features.xsd
http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd" gml:id="FNS-Message"
xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message" xmlns:aixm="http://www.aixm.aero/schema/5.1"
xmlns:gco="http://www.isotc211.org/2005/gco" xmlns:gmd="http://www.isotc211.org/2005/gmd"
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:event="http://www.aixm.aero/schema/5.1/event" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns="http://www.aixm.aero/schema/5.1">
  <notamMessage:hasMember>
    <InstrumentApproachProcedure gml:id="IAP01">
      <timeSlice>
        <InstrumentApproachProcedureTimeSlice gml:id="IAP01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="IAP01_TS01_TI01">
              <gml:timePosition>2010-10-06T09:42:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <name>AMDT 14</name>
          <airportHeliport  xlink:href="urn:uuid:a82b3fc9-4aa4-4e67-8def-aaea1ac595j"/><!--ACY-->
          <guidanceFacility_navaid xlink:href="urn:uuid:a82b3fc9-4aa4-4e67-8def-aaea1ac237j"/><!--Navaid-->
          <approachType>ILS</approachType>
        </InstrumentApproachProcedureTimeSlice>
      </timeSlice>
      <timeSlice>
        <InstrumentApproachProcedureTimeSlice gml:id="IAP01_TS01_TP01">
          <gml:validTime>
            <gml:TimePeriod gml:id="IAP0101_TS02_TP01">
              <gml:beginPosition>2010-10-07T07:00:00</gml:beginPosition>
              <gml:endPosition>2010-10-07T14:00:00</gml:endPosition>
            </gml:TimePeriod>
          </gml:validTime>
          <interpretation>TEMPDELTA</interpretation>
          <annotation>
            <Note gml:id="NOTE01">
              <propertyName>approachType</propertyName>
              <purpose>WARNING</purpose>
              <translatedNote>
                <LinguisticNote gml:id="LN01">
```

```
                <note>DUE TO EFFECTS OF SNOW ON THE GLIDE SLOPE MINIMUMS TEMPORARILY RAISED
TO LOCALIZER ONLY FOR <category> AIRCRAFT. GLIDE SLOPE REMAINS IN SERVICE. HOWEVER, ANGLE
MAY BE DIFFERENT THAN PUBLISHED</note>
                  </LinguisticNote>
                </translatedNote>
              </Note>
            </annotation>
            <approachType>LOC</approachType>
          </InstrumentApproachProcedureTimeSlice>
        </timeSlice>
      </InstrumentApproachProcedure>
    </notamMessage:hasMember>
    <notamMessage:hasMember>
    <Navaid gml:id="NAV01">
      <gml:identifier codeSpace="uuid">a82b3fc9-4aa4-4e67-8def-aaea1ac237j</gml:identifier>
      <timeSlice>
        <NavaidTimeSlice gml:id="NAV01_TS01">
            <gml:validTime>
              <gml:TimeInstant gml:id="NAV01_TS01_TI01">
                <gml:timePosition>2010-10-06T09:42:00</gml:timePosition>
              </gml:TimeInstant>
            </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <type>ILS</type>
          <navaidEquipment>
            <NavaidComponent gml:id="NC01">
              <theNavaidEquipment xlink:href="urn:uuid:a82b3fc9-4aa4-4e67-8def-aaea1ac547j"/><!--GP-->
            </NavaidComponent>
          </navaidEquipment>
          <location>
            <ElevatedPoint gml:id="EP01">
              <gml:pos>38.03 -118.0102</gml:pos>
            </ElevatedPoint>
          </location>
          <runwayDirection xlink:href="urn:uuid:a82b3fc9-4aa4-4e67-8def-aaea1ac597j"/><!-- RWY13 at ACY-->
          <servedAirport xlink:href="urn:uuid:a82b3fc9-4aa4-4e67-8def-aaea1ac595j"/><!--ACY-->
        </NavaidTimeSlice>
      </timeSlice>
      <timeSlice>
        <NavaidTimeSlice gml:id="NAV01_TS02">
          <gml:validTime>
            <gml:TimePeriod gml:id="NAV01_TS02_TP01">
              <gml:beginPosition>2010-10-07T07:00:00</gml:beginPosition>
              <gml:endPosition>2010-10-07T14:00:00</gml:endPosition>
            </gml:TimePeriod>
          </gml:validTime>
          <interpretation>TEMPDELTA</interpretation>
          <sequenceNumber>3</sequenceNumber>
          <type>LOC</type>
          <availability>
            <NavaidOperationalStatus gml:id="NOS01">
              <operationalStatus>PARTIAL</operationalStatus>
            </NavaidOperationalStatus>
          </availability>
          <annotation>
            <Note gml:id="NOTE02">
              <propertyName>operationalStatus</propertyName>
              <purpose>WARNING</purpose>
```

```
            <translatedNote>
              <LinguisticNote gml:id="LN02">
                <note>DUE TO EFFECTS OF SNOW ON THE GLIDE SLOPE MINIMUMS TEMPORARILY RAISED TO
LOCALIZER ONLY FOR <category> AIRCRAFT. GLIDE SLOPE REMAINS IN SERVICE. HOWEVER, ANGLE MAY
BE DIFFERENT THAN PUBLISHED</note>
              </LinguisticNote>
            </translatedNote>
          </Note>
        </annotation>
      </NavaidTimeSlice>
    </timeSlice>
  </Navaid>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
  <Glidepath gml:id="GP01">
  <gml:identifier codeSpace="uuid">a82b3fc9-4aa4-4e67-8def-aaea1ac547j</gml:identifier>
    <timeSlice>
      <GlidepathTimeSlice gml:id="GP01_TS01">
        <gml:validTime>
          <gml:TimeInstant gml:id="GP01_TS01_TI01">
            <gml:timePosition>2010-10-06T09:42:00</gml:timePosition>
          </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <location>
          <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP02">
            <gml:pos>39.27 -74.34</gml:pos>
          </ElevatedPoint>
        </location>
      </GlidepathTimeSlice>
    </timeSlice>
    <timeSlice>
      <GlidepathTimeSlice gml:id="GP01_TS02">
          <gml:validTime>
            <gml:TimePeriod gml:id="GP01_TS02_TP01">
              <gml:beginPosition>2010-10-07T07:00:00</gml:beginPosition>
            <gml:endPosition>2010-10-07T14:00:00</gml:endPosition>
            </gml:TimePeriod>
          </gml:validTime>
        <interpretation>TEMPDELTA</interpretation>
        <sequenceNumber>3</sequenceNumber>
        <availability>
          <NavaidOperationalStatus gml:id="NOS02">
            <operationalStatus>CONDITIONAL</operationalStatus>
          </NavaidOperationalStatus>
        </availability>
      </GlidepathTimeSlice>
    </timeSlice>
  </Glidepath>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <RunwayDirection gml:id="RWYDIR01">
    <gml:identifier codeSpace="uuid">a82b3fc9-4aa4-4e67-8def-aaea1ac597j</gml:identifier>
      <timeSlice>
        <RunwayDirectionTimeSlice gml:id="RWYDIR01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="RWYDIR01_TS01_TI01">
              <gml:timePosition>2010-10-06T09:42:00</gml:timePosition>
```

```
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>13</designator>
          <usedRunway xlink:href="a82b3fc9-4aa4-4e67-8def-aaea1ac695j"/>
        </RunwayDirectionTimeSlice>
      </timeSlice>
    </RunwayDirection>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <Runway gml:id="RWY01">
    <gml:identifier codeSpace="uuid">a82b3fc9-4aa4-4e67-8def-aaea1ac695j</gml:identifier>
      <timeSlice>
        <RunwayTimeSlice gml:id="RWY01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="RWY01_TS01_TI01">
              <gml:timePosition>2010-10-06T09:42:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>13/31</designator>
          <associatedAirportHeliport xlink:href="urn:uuid:a82b3fc9-4aa4-4e67-8def-aaea1ac595j"/>
        </RunwayTimeSlice>
      </timeSlice>
    </Runway>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <AirportHeliport gml:id="ACY">
      <gml:identifier codeSpace="uuid">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
        <AirportHeliportTimeSlice gml:id="ACY_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="ACY_TI01">
              <gml:timePosition>2010-10-06T09:42:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>ACY</designator>
          <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
          <locationIndicatorICAO>KACY</locationIndicatorICAO>
          <ARP>
            <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP03">
              <gml:pos>39.27 -74.34</gml:pos>
            </ElevatedPoint>
          </ARP>
        </AirportHeliportTimeSlice>
      </timeSlice>
    </AirportHeliport>
  </notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```

20.6 Translation Templates

20.6.1 FAA

FI/T *name (AirportHeliport) type* **RWY** *designator, name (InstrumentApproachProcedure)***…** *note*

20.6.2 ICAO E Line

FI/T *name (AirportHeliport) type* **RWY** *designator, name (InstrumentApproachProcedure)***…** *note*

20.6.3 Plain Language

Affected Airport: *affectedAirport*

NOTAM Number: XX/XXX

Effective Time Frame
Valid From: *startDate*
Valid To: *endDate*

FDC NOTAM Flight Inspection Temporary (FI/T)

Affected Navaid: *type* **Runway** *designator*
Navaid Equipment: *equipment*
Procedure: *name* (InstrumentApproachProcedure)
FDC NOTAM Information: DUE TO EFFECTS OF SNOW ON THE GLIDE SLOPE MINIMUMS TEMPORARILY RAISED TO LOCALIZER ONLY FOR ***<note>*** AIRCRAFT. GLIDE SLOPE REMAINS IN SERVICE. HOWEVER, ANGLE MAY BE DIFFERENT THAN PUBLISHED

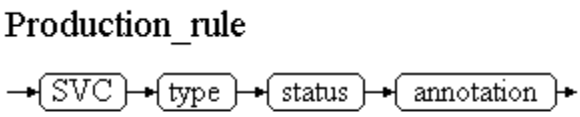
20.7 Additional Analysis

The FDC NOTAMs will likely change significantly with the new FNS policy. It is likely that this scenario will change dramatically and should probably not be implemented in the near-term.

Weather Services

21 Weather Service – Automated Weather Services Status

Specify the operational status or unreliable/inaccurate elements of automated weather service or service frequency.



21.1 Example NOTAMs

1. !TKA 09/004 TKA SVC ASOS CEIL UNREL
2. !MRI 03/103 MRI SVC ASOS CIG NOT AVBL
3. !LRD 12/010 LRD SVC AWSS CIG/VIS OTS
4. !DAN DAN SVC AWOS-3 ALSTG NOT AVBL*
5. !KLG 09/001 KLG SVC AWSS 119.025 OTS WEF 1009081730-1009082230
6. !MIE 09/003 MIE SVC ASOS 114.4 OTS
7. !LOZ LOZ SVC ASOS 119.075 RTS
8. !STL 04/004 STL SVC LLWAS OTS WEF 1004021200-1004021900
9. !DTW 01/224 DTW SVC TDWR OTS WEF 1001261230-1001261930
10. !MDT 01/037 MDT SVC WSP OTS WEF 1001281215-1001281415
11. !IAD IAD SVC LLWAS OTS*
12. !BWI BWI SVC TDWR OTS*
13. ! DAN DAN SVC AWOS-3 CMSN 120.3/202-426-8000*

Source: US NOTAM Repository
***Source**: FAA Order JO 7930.2

21.2 AIXM Mapping and Translation

21.2.1 Scenario Details

TABLE 21.1

Attribute	Value
Description	Specify a change in automated weather services frequency or weather service measurements for the entire airport.
Maps to Keyword	SVC
Feature Type Id	Service/InformationServices
Feature Path	aixm:InformationService
AIXM Mapping Diagram	Service/Information Services
NOTAM lifespan	
Start ASAP	No

21.2.2 Designator [designator] – Aerodrome

Description: A coded designator for an Aerodrome/Heliport.

The rules for providing the affected aerodrome information are provided in Chapter 5 – Affected Location (in AIXM).

Source: User-selected from baseline data (required).

TABLE 21.2
Aerodrome FAA designator

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – designator (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ designator
AIXM Mapping	Class: AirportHeliport
Type	CodeAirportHeliportDesignatorType
Min length	3
Max length	6
Pattern	([A-Z]|\d)*

21.2.3 Name [name]

Description: The name of an automated weather services system.
Example: MONUMENT HILL AWOS-3.

Source: User-selected from baseline data (optional).

TABLE 21.3
Name of Automated Weather System

Attribute	Value
AIXM Path (UML)	Service/ Information Services/ InformationService(feature)/ name(attribute)
AIXM Element XPath	InformationService/ timeSlice/ InformationServiceTimeSlice [interpretation:SNAPSHOT]/ name
AIXM Mapping	Class: InformationService
Min length	1
Max length	60
Enumeration	TextNameType

21.2.4 Type [type]

Description: The type of automated weather services.
Examples: AWOS, AWSS, ASOS, AWIS.

Source: User-selected from baseline data (required).

TABLE 21.4
Automated Weather System Type

Attribute	Value
AIXM Path (UML)	Service/ Information Services/ InformationService(feature)/ type(attribute)
AIXM Element XPath	InformationService/ timeSlice/ InformationServiceTimeSlice [interpretation:SNAPSHOT]/ type
AIXM Mapping	Class: InformationService

Enumeration	CodeServiceInformationType		
	AIXM	**Translations**	
	ASOS	ICAO	AUTOMATED SURFACE OBSERVING SYSTEM
		FAA	ASOS
		Plain Text	Automated Surface Observing System
	OTHER: AWIS	ICAO	AUTOMATED WEATHER INFORMATION SYSTEM
		FAA	AWIS
		Plain Text	Automated Weather Information System
	AWOS	ICAO	AUTOMATIC WEATHER OBSERVING AND REPORTING SYSTEM
		FAA	AWOS
		Plain Text	AutomatIC Weather Observing/Reporting System
	OTHER: AWOS-3	ICAO	AUTOMATED WEATHER OBSERVING AND REPORTING SYSTEM 3
		FAA	AWOS-3
		Plain Text	Automated Weather Observing/Reporting System 3
	OTHER: AWSS	ICAO	AUTOMATED WEATHER SENSOR SYSTEM
		FAA	AWSS
		Plain Text	Automated Weather Sensor System
	OTHER: LAWRS	ICAO	LIMITED AVIATION WEATHER REPORTING STATION
		FAA	LAWRS
		Plain Text	Limited Aviation Weather Reporting Station
	OTHER:LLWAS	ICAO	LOW LEVEL WINDSHEAR ALERT SYSTEM
		FAA	LLWAS
		Plain Text	Low Level Windshear Alert System
	OTHER:TDWR	ICAO	TERMINAL DOPPLER WEATHER RADAR
		FAA	TDWR
		Plain Text	Terminal Doppler Weather Radar
	OTHER:WSP	ICAO	WEATHER SYSTEMS PROCESSOR
		FAA	WSP
		Plain Text	Weather Systems Processor
	OTHER:WX_REP	ICAO	WX REPORT
		FAA	WX REP
		Plain Text	Weather Report

21.2.5 Weather Service Frequency [frequency]

Description: Specify the operational frequency of automated weather services.

Source: User-selected from baseline data (optional).

TABLE 21.5
Weather Service Frequency

Attribute	***Value***	
AIXM Path (UML)	***Service/ Communication Channel/ RadioCommunicationChannel (feature)/ frequencyTransmission (attribute)***	
AIXM Element Xpath	***RadioCommunicationChannel/ timeSlice/ RadioCommunicationChannelTimeSlice [interpretation:SNAPSHOT]/ frequencyTransmission***	
AIXM Mapping	***Class: RadioCommunicationChannel***	
Datatype	***ValFrequencyType***	
Type	***Decimal***	
Min inclusive	***0***	
Units of Measure	***UomFrequencyType***	
	ICAO/FAA	***MHZ***

21.2.6 Weather Service Frequency Status [operationalStatus]

Description: The operational status of the transmission frequency of automated weather systems at an airport.

Source: User-selected (required with frequency).

TABLE 21.6
Weather Service Frequency Operational Status

Attribute	**Value**		
AIXM Path (UML)	Service/ Communication Channel/ RadioCommunicationChannel (feature)/ RadioCommunciationOperationalStatus(object)/ operationalStatus(attribute)		
AIXM Element Xpath	RadioCommunicationChannel/ timeSlice/ RadioCommunicationChannelTimeSlice [interpretation:SNAPSHOT]/ availability/ RadioCommunicationOperationalStatus/ operationalStatus		
AIXM Mapping	Class: RadioCommunicationOperationalStatus		
Enumeration	CodeStatusServiceType		
	AIXM	**Translations**	
	OTHER: NOT AVAILABLE	ICAO	UNAVAILABLE
		FAA	UNAVBL
		Plain Text	Unavailable
	OTHER: UNMONITORED	ICAO	UNMONITORED
		FAA	UNMONITORED
		Plain Text	Unmonitored
	OTHER: UNRELIABLE	ICAO	UNREL
		FAA	UNREL
		Plain Text	Unreliable
	NORMAL	ICAO	RTS
		FAA	RTS
		Plain Text	Return to Service
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS

		Plain Text	Out of service
	OTHER: COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned
	OTHER: DECOMMISSIONED	ICAO	DECOMMISSIONED
		FAA	DCMSN
		Plain Text	Decommissioned

21.2.7 Information Service Status [operationalStatus]

Description: Specify the operational status of automated weather system measurements at an airport. *Examples*: Temperature, wind, and altitude measurements are out of service.

Source: User-selected operational status and user-selected annotation (optional, required if frequency is equal to null).

TABLE 21.7
Information Service Operational Status

Attribute	Value		
AIXM Path (UML)	Service/ Information Services/ InformationService(feature)/ ServiceOperationalStatus (object)/ operationalStatus(attribute)		
AIXM Element Xpath	InformationService/ timeSlice/ InformationServiceTimeSlice [interpretation TEMPDELTA]/ availability/ ServiceOperationalStatus/ operationalStatus		
AIXM Mapping	Class: ServiceOperationalStatus		
Enumeration	CodeStatusServiceType		
	AIXM	**Translations**	
	UNSERVICEABLE (See Annotation Options)	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of service
	NORMAL	ICAO	RTS
		FAA	RTS
		Plain Text	Return to Service
	OTHER: COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned
	OTHER: DECOMMISSIONED	ICAO	DECOMMISSIONED
		FAA	DCMSN
		Plain Text	Decommissioned
	LIMITED (See Annotation Options)	ICAO	(See Below)
		FAA	
		Plain Text	
UNSERVICEABLE/ LIMITED Annotation	Service/ Information Services/ InformationService(feature)/ annotation (object)/ note(attribute)		
	InformationService/ timeSlice/ InformationServiceTimeSlice [interpretation TEMPDELTA]/ annotation/ Note/ translatedNote/ LinguisticNote/ note		
AIXM Mapping	Class: Note, LinguisticNote		
Min length	1		
Max length	10000		
Description	propertyName	operationalStatus	
	purpose	REMARK	

Enumeration	TextNoteType		
	Format: [Weather Measurement] [/Weather Measurement/Weather Measurement/Weather Measurement] [operationalStatus]		
	AIXM	**Translations**	
	Weather Measurement		
	ALTIMETER	ICAO	ALTIMETER SETTING
		FAA	ALSTG
		Plain Text	Altimeter Setting
	ALTITUDE	ICAO	ALT
		FAA	ALT
		Plain Text	Altitude
	CEILING	ICAO	CEILING
		FAA	CIG
		Plain Text	Ceiling
	DEW POINT	ICAO	DP
		FAA	DP
		Plain Text	Dewpoint Temperature
	DENSITY	ICAO	DENSITY
		FAA	DENSITY
		Plain Text	Density
	PRECIPITATION	ICAO	PRECIPITATION
		FAA	PCPN
		Plain Text	Precipitation
	TEMPERATURE	ICAO	T
		FAA	T
		Plain Text	Temperature
	THUNDERSTORM	ICAO	TS
		FAA	TS
		Plain Text	Thunderstorm Indicator
	VISIBILITY	ICAO	VIS
		FAA	VIS
		Plain Text	Visibility
	WEATHER	ICAO	WX
		FAA	WX
		Plain Text	Weather
	WIND	ICAO	WIND
		FAA	WND
		Plain Text	Wind
	WIND SPEED	ICAO	WSPD
		FAA	WND SPD
		Plain Text	Wind Speed
	WIND DIRECTION	ICAO	WDI
		FAA	WND DIR
		Plain Text	Wind Direction
	Status		
	UNRELIABLE	ICAO	UNREL
		FAA	UNREL
		Plain Text	Unreliable
	UNMONITORED	ICAO	UNMONITORED
		FAA	UNMONITORED
		Plain Text	Unmonitored
	NOT AVAILABLE	ICAO	UNAVAILABLE
		FAA	UNAVBL
		Plain Text	Unavailable

21.2.8 Annotation [note]

Description: A brief additional description of the information change.
Example: Indicated phone line to automated weather system or indicate change in phone line (123-456-7890 VICE 123-456-7899).

Source: User-entered formatted free text (optional, only with *operationalStatus* equal to OTHER:COMMISSIONED).

TABLE 21.8
Phone Number Annotation

Attribute	Value	
AIXM Path (UML)	InformationService/ RadioCommunicationChannel (feature)/ Note	
AIXM Element XPath	RadioCommunicationChannel/ timeSlice/ RadioCommunicationTimeSliceTimeSlice [interpretation SNAPSHOT/PERMDELTA]/ annotation/ Note/ translatedNote/ LinguisticNote/ note	
AIXM Mapping	Class: Note, LinguisticNote	
Min length	1	
Max length	10000	
Description	propertyName	frequencyTransmission
	purpose	REMARK
Enumeration	TextNoteType	
	Format 10 digit telephone number	
	/ xxx-xxx-xxxx	

21.3 QCodes

TABLE 21.9
QCodes for Automated Weather Service Status

AIXM Code	QCode	
ALL	**Series**	**A**
LIMITED	QCode	QFMXX
	Scope	A
	Traffic	IV
	Purpose	BO
UNSERVICEABLE	QCode	QFMAU
	Scope	A
	Traffic	IV
	Purpose	BO
NORMAL	QCode	QFMAK
	Scope	A
	Traffic	---
	Purpose	---
OTHER:COMMISSIONED	QCode	QFMCS
	Scope	A
	Traffic	IV
	Purpose	BO
OTHER:DECOMMISSIONED	QCode	QFMXX
	Scope	A
	Traffic	IV
	Purpose	BO

21.4 Business Rules

21.4.1 Template Business Rules

a. If *designator* equals null, then "Select a designator."

b. The value for *name* is optional.

c. If *type* equal null, then "Select a weather system."

d. For *type* equal to OTHER: LLWAS, OTHER:TDWR, OTHER:WSP, and OTHER:WX_REP, the Information Service *operationalStatus* should only be equal to UNSERVICEABLE. These Information Services should also not be related to the Radio Communication Service. Only one *type* can be selected.

e. If *frequency* is selected, then the values for Information Service *operationalStatus* are not applicable and, if selected, should result in an error.

f. The attribute *frequency* must be a number between 100.00 and 350.00 MHz. Only one significant figure (decimal place) is required.

g. If *frequency* is equal to null, then the values for Information Service *operationalStatus* are valid options.

h. When *operationalStatus* equals null, then "Select a status."

i. For Information Service *operationalStatus*, the user shall be able to select multiple Weather Measurements to appear before the Status.

j. The same Weather Measurement cannot be selected more than one time per NOTAM.

k. One of the annotation texts “UNRELIABLE,” “UNMONITORED” or “NOT AVAILABLE” are required if *operationalStatus* equals LIMITED.

21.4.2 Policy Business Rules

a. An ASOS/AWOS NOTAM reporting unreliable/inaccurate elements (i.e. ceiling, visibility, wind, temperature, dew point, altimeter setting) indicates those elements are unreliable and/or inaccurate.

b. When commissioning or decommissioning an automated weather system which has a frequency/telephone number, include that information in the NOTAM (FAA Order JO 7930.2).

c. LLWAS and TDWR NOTAMs are to be issued if a system failure renders the service unusable. NOTAMs are not to be issued on the failure of individual system components, i.e. remote sensors (FAA Order JO 7930.2).

21.4.3 Data Encoding Business Rules

a. The element *type* for the feature InformationService is required and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

b. If the *operationalStatus* is equal to OTHER:COMMISSIONED, use a TimeSlice of type BASELINE.

c. If the *operationalStatus* is equal to OTHER:COMMISSIONED, include all of the NavaidEquipment information that is being commissioned in the digital message.

d. If the *operationalStatus* is equal to OTHER:DECOMMISSIONED, use a TimeSlice of type PERMDELTA.

e. If the *frequency* is referenced in the NOTAM selection, then the feature RadioCommunicationChannel must be captured in the digital message with an xlink:href from the InformationService feature calling the RadioCommunicationService.

f. An xlink:href is required and should point to the associated AirportHeliport and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

21.5 Sample AIXM Messages

SVC ELK MOUNTAIN AWOS T/DP UNREL


```xml
<?xml version="1.0" encoding="UTF-8"?>
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1
./AIXM_Features.xsd http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd"
gml:id="FNS-Message" xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message"
xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:event="http://www.aixm.aero/schema/5.1/event"
xmlns:gml="http://www.opengis.net/gml/3.2" xmlns="http://www.aixm.aero/schema/5.1">
<notamMessage:hasMember>
  <InformationService gml:id="IS01">
      <gml:identifier codeSpace="uuid">8cfaa30b-4d00-4dc6-be18-d8420bf77ac5</gml:identifier>
    <timeSlice>
      <InformationServiceTimeSlice gml:id="IS01_TS01">
        <gml:validTime>
          <gml:TimeInstant gml:id="IS01_TS01_TI01">
            <gml:timePosition>2008-12-27T23:00:00</gml:timePosition>
          </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <name>ELK MOUNTAIN</name>
        <type >AWOS</type>
        <clientAirport xlink:href="urn:uuid:a82b3fc9-4aa4-4e67-8def-aaea1ac595j"/>
      </InformationServiceTimeSlice>
    </timeSlice>
    <timeSlice>
      <InformationServiceTimeSlice gml:id="IS01_TS02">
        <gml:validTime>
          <gml:TimePeriod gml:id="IS01_TS02_TP01">
            <gml:beginPosition>2008-12-28T00:08:00</gml:beginPosition>
            <gml:endPosition>2008-12-30T23:30:00</gml:endPosition>
          </gml:TimePeriod>
        </gml:validTime>
        <interpretation>TEMPDELTA</interpretation>
        <sequenceNumber>2</sequenceNumber>
        <availability >
          <ServiceOperationalStatus gml:id="IS01_TS02_TP02_SOS01">
            <operationalStatus>LIMITED</operationalStatus>
          </ServiceOperationalStatus>
        </availability>
        <annotation>
          <Note gml:id="IS01_TS02_AN01">
            <translatedNote>
              <LinguisticNote gml:id="IS01_TS02_AN01_LN01">
                <note>T/DP UNREL</note>
              </LinguisticNote>
            </translatedNote>
          </Note>
```

```
          </annotation>
        </InformationServiceTimeSlice>
      </timeSlice>
    </InformationService>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
      <AirportHeliport gml:id="ACY">
        <gml:identifier codeSpace="uuid">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
        <timeSlice>
          <AirportHeliportTimeSlice gml:id="ACY_TS01">
            <gml:validTime>
              <gml:TimeInstant gml:id="ACY_TI01">
                <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
              </gml:TimeInstant>
            </gml:validTime>
            <interpretation>SNAPSHOT</interpretation>
            <designator>ACY</designator>
            <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
            <locationIndicatorICAO>KACY</locationIndicatorICAO>
            <ARP>
              <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP01">
                <gml:pos>39.27 -74.34</gml:pos>
              </ElevatedPoint>
            </ARP>
          </AirportHeliportTimeSlice>
        </timeSlice>
      </AirportHeliport>
  </notamMessage:hasMember>
  </notamMessage:AIXMBasicMessage>
```


SVC ASOS 110.1 OTS


```
<?xml version="1.0" encoding="UTF-8"?>
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1
./AIXM_Features.xsd http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd"
gml:id="FNS-Message" xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message"
xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:event="http://www.aixm.aero/schema/5.1/event"
xmlns:gml="http://www.opengis.net/gml/3.2" xmlns="http://www.aixm.aero/schema/5.1">
  <notamMessage:hasMember>
  <InformationService gml:id="IS01">
  <gml:identifier codeSpace="uuid">8cfaa30b-4d00-4dc6-be18-d8420bf77ac5</gml:identifier>
    <timeSlice>
      <InformationServiceTimeSlice gml:id="IS01_TS01">
        <gml:validTime>
          <gml:TimeInstant gml:id="IS01_TS01_TI01">
            <gml:timePosition>2008-12-27T23:00:00</gml:timePosition>
          </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <radioCommunication xlink:href="urn:uuid:8cfaa30b-4d00-4dc6-be18-d8420bf77ac4"/>
        <type >ASOS</type>
        <clientAirport xlink:href="urn:uuid:a82b3fc9-4aa4-4e67-8def-aaea1ac595j"/>
      </InformationServiceTimeSlice>
    </timeSlice>
    <timeSlice>
      <InformationServiceTimeSlice gml:id="IS01_TS02">
        <gml:validTime>
```

```
            <gml:TimePeriod gml:id="IS01_TS02_TP01">
              <gml:beginPosition>2008-12-27T23:00:00</gml:beginPosition>
              <gml:endPosition>2008-12-31T23:00:00</gml:endPosition>
            </gml:TimePeriod>
          </gml:validTime>
          <interpretation>TEMPDELTA</interpretation>
          <sequenceNumber>2</sequenceNumber>
          <availability>
            <ServiceOperationalStatus gml:id="SOS01">
              <operationalStatus>LIMITED</operationalStatus>
            </ServiceOperationalStatus>
          </availability>
        </InformationServiceTimeSlice>
      </timeSlice>
    </InformationService>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <RadioCommunicationChannel gml:id="RCC01">
    <gml:identifier codeSpace="uuid">8cfaa30b-4d00-4dc6-be18-d8420bf77ac4</gml:identifier>
      <timeSlice>
        <RadioCommunicationChannelTimeSlice gml:id="RCC01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="RCC01_TS01_TI01">
              <gml:timePosition>2008-12-27T23:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <frequencyTransmission uom="MHZ">110.1</frequencyTransmission>
        </RadioCommunicationChannelTimeSlice>
      </timeSlice>
      <timeSlice>
        <RadioCommunicationChannelTimeSlice gml:id="RCC01_TS02">
          <gml:validTime>
            <gml:TimePeriod gml:id="RCC01_TS02_TP01">
              <gml:beginPosition>2008-12-27T23:00:00</gml:beginPosition>
              <gml:endPosition>2008-12-31T23:00:00</gml:endPosition>
            </gml:TimePeriod>
          </gml:validTime>
          <interpretation>TEMPDELTA</interpretation>
          <sequenceNumber>2</sequenceNumber>
          <availability>
            <RadioCommunicationOperationalStatus gml:id="RCC01_TS02_OS01">
              <operationalStatus>UNSERVICEABLE</operationalStatus>
            </RadioCommunicationOperationalStatus>
          </availability>
        </RadioCommunicationChannelTimeSlice>
      </timeSlice>
    </RadioCommunicationChannel>
    </notamMessage:hasMember>
    <notamMessage:hasMember>
      <AirportHeliport gml:id="ACY">
      <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
        <timeSlice>
          <AirportHeliportTimeSlice gml:id="ACY_TS01">
            <gml:validTime>
            <gml:TimeInstant gml:id="ACY_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
```

```
            </gml:validTime>
            <interpretation>SNAPSHOT</interpretation>
            <designator>ACY</designator>
            <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
            <locationIndicatorICAO>KACY</locationIndicatorICAO>
            <ARP>
              <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP01">
                <gml:pos>39.27 -74.34</gml:pos>
              </ElevatedPoint>
            </ARP>
          </AirportHeliportTimeSlice>
        </timeSlice>
      </AirportHeliport>
    </notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```


21.6 Translation Templates

21.6.1 FAA

SVC **[***name***]** *type* **[***frequencyTransmission***]** *operationalStatus* **[***note***]**

21.6.2 ICAO E Line

SVC **[***name***]** *type* **[***frequencyTransmission***]** *operationalStatus* **[***note***]**

21.6.3 Plain Language

Accountable Facility: *accountableFacility*

Affected Airport: *affectedAirport*

NOTAM Number: XX/XXX

Effective Time Frame
Valid From: *startDate*
Valid To: *endDate*

Affected Service: [*name*] *type*

[Frequency]: [*frequencyTransmission***]**

Status: *operationalStatus*

Additional Information: **[***note***]**

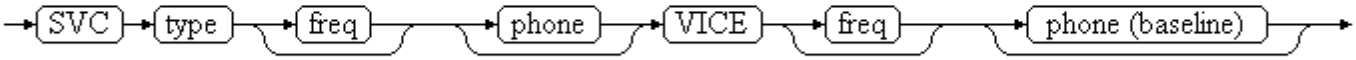
21.7 Additional Analysis

Weather Systems Processor (WSP) service is affected by primary and secondary surveillance radar (TAR and SSR). When a radar outage occurs, WSP service is affected and the two services may be identified in one NOTAM. This requires and AIXM extension that allows Surveillance and Information Service classes to be mapped to one another. Without this extension, two NOTAMs must be issued one indicating WSP OTS and the second indicating TAR, ASR, and/or SSR OTS.

22 Weather Service – Automated Weather Services Properties Change

Specify the change in frequency or phone line information of an automated weather service.

Production_rule



22.1 Example NOTAMs

1. !LAN 01/277 8D4 SVC AWOS 132.95 VICE 122.8
2. !XVG 05/001 XVG SVC AWOS-3 118.275 VICE 392
3. !BTI 08/013 BTI SVC AWOS-3 PHONE NUMBER 907-640-2124 VICE 907-610-2124

Source: US NOTAM Repository

22.2 AIXM Mapping and Translation

22.2.1 Scenario Details

TABLE 22.1

Attribute	Value
Description	Specify a change in the operational frequency or phone line of automated weather services for an entire airport.
Maps to Keyword:	SVC
Feature Type Id	Service/InformationServices
Feature Xpath	aixm:InformationService
AIXM Mapping Diagram	Service/Information Services
NOTAM lifespan	
Start ASAP	No

22.2.2 Designator [designator] – Aerodrome

Description: A coded designator for an Aerodrome/Heliport.

The rules for providing the affected aerodrome information are provided in Chapter 5 – Affected Location (in AIXM).

Source: User-selected from baseline data (required).

TABLE 22.2
Aerodrome FAA designator

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – designator (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ designator
AIXM Mapping	Class: AirportHeliport
Type	CodeAirportHeliportDesignatorType

Min length	3
Max length	6
Pattern	([A-Z]|\d)*

22.2.3 Name [name]

Description: The name of an automated weather services system.
Example: MONUMENT HILL AWOS-3.

Source: User-selected from baseline data (optional).

TABLE 22.3
Name of Automated Weather System

Attribute	Value
AIXM Path (UML)	Service/ Information Services/ InformationService(feature)/ name(attribute)
AIXM Element XPath	InformationService/ timeSlice/ InformationServiceTimeSlice [interpretation:SNAPSHOT]/ name
AIXM Mapping	Class: InformationService
Min length	1
Max length	60
Enumeration	TextNameType

22.2.4 Type [type]

Description: The type of automated weather services.
Examples: AWOS, AWSS, ASOS, AWIS.

Source: User-selected from baseline data (required).

TABLE 22.4
Type of Automated Weather System

Attribute	Value		
AIXM Path (UML)	Service/ Information Services/ InformationService(feature)/ type(attribute)		
AIXM Element XPath	InformationService/ timeSlice/ InformationServiceTimeSlice [interpretation:SNAPSHOT]/ type		
AIXM Mapping	Class: InformationService		
Enumeration	CodeServiceInformationType		
	AIXM	**Translations**	
	ASOS	ICAO	AUTOMATED SURFACE OBSERVING SYSTEM
		FAA	ASOS
		Plain Text	Automated Surface Observing System
	OTHER: AWIS	ICAO	AUTOMATED WEATHER INFORMATION SYSTEM
		FAA	AWIS
		Plain Text	Automated Weather Information System
	AWOS	ICAO	AUTOMATIC WEATHER OBSERVING AND REPORTING SYSTEM
		FAA	AWOS
		Plain Text	AutomatIC Weather Observing/Reporting System
	OTHER: AWOS-3	ICAO	AUTOMATED WEATHER

			OBSERVING AND REPORTING SYSTEM 3
		FAA	AWOS-3
		Plain Text	Automated Weather Observing/Reporting System 3
	OTHER: AWSS	ICAO	Automated Weather Sensor System
		FAA	AWSS
		Plain Text	Automated Weather Sensor System

22.2.5 Weather Service Frequency [frequency]

Description: Specify the operational frequency of automated weather services.

Source: User-selected from baseline data (optional).

TABLE 22.5
Weather Service Frequency

Attribute	***Value***	
AIXM Path (UML)	***Service/ Communication Channel/ RadioCommunicationChannel (feature)/ frequencyTransmission (attribute)***	
AIXM Element Xpath	***RadioCommunicationChannel/ timeSlice/ RadioCommunicationChannelTimeSlice [interpretation:SNAPSHOT]/ frequencyTransmission***	
AIXM Mapping	***Class: RadioCommunicationChannel***	
Datatype	***ValFrequencyType***	
Type	***Decimal***	
Min inclusive	***0***	
Units of Measure	***UomFrequencyType***	
	ICAO/FAA	***MHZ***

22.2.6 Annotation [note]

Description: A brief additional description of the information change. Example: Indicated phone line to automated weather system or indicate change in phone line (123-456-7890 VICE 123-456-7899).

Source: User-entered formatted free text (optional).

TABLE 22.6
Phone Number Annotation

Attribute	**Value**	
AIXM Path (UML)	InformationService/ RadioCommunicationChannel (feature)/ Note	
AIXM Element XPath	RadioCommunicationChannel/ timeSlice/ RadioCommunicationTimeSliceTimeSlice [interpretation SNAPSHOT/PERMDELTA]/ annotation/ Note/ translatedNote/ LinguisticNote/ note	
AIXM Mapping	Class: Note, LinguisticNote	
Min length	1	
Max length	10000	
Description	propertyName	frequencyTransmission
	purpose	REMARK
Enumeration	TextNoteType	
	Format 10 digit telephone number	

	PHONE NUMBER xxx-xxx-xxxx VICE xxx-xxx-xxxx

22.3 QCodes

TABLE 22.7
QCodes Property Change

AIXM Code	QCode	
ALL	**Series**	**A**
PROPERTY CHANGE	QCode	QFMXX
	Scope	A
	Traffic	IV
	Purpose	BO

22.4 Business Rules

22.4.1 Template Business Rules

a. If *designator* equals null, then "Select a designator."

b. If *type* equals null, then "Select a weather system."

c. If *frequency (baseline)* equals null, then “Select a frequency.”

d. A value for *frequency (baseline)* is optional if only changing phone information, otherwise it is required.

e. A value for *frequency (new)* is optional.

f. Either a new *frequency* or a new *note* (phone number) is required.

22.4.2 Policy Business Rules

None.

22.4.3 Data Encoding Business Rules

a. The element type for the feature InformationService is required and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type PERMDELTA.

b. If the frequency of the InformationService (RadioCommunicationChannel) is changed, the new frequency should be stored in a TimeSlice of type PERMDELTA.

c. An xlink:href is required and should point to the associated AirportHeliport and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type PERMDELTA.

d. An xlink:href is required and should point to the associated RadioCommunicationChannel and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type PERMDELTA.

22.5 Sample AIXM Messages

ACY SVC ASOS 134.225 VICE 111.15


```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2008 (http://www.altova.com) by Marina Chumakov, CNA in support of FAA -->
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1
./AIXM_Features.xsd http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd"
gml:id="FNS-Message" xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message"
```

```
xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:event="http://www.aixm.aero/schema/5.1/event"
xmlns:gml="http://www.opengis.net/gml/3.2" xmlns="http://www.aixm.aero/schema/5.1">
<notamMessage:hasMember>
  <InformationService gml:id="IS01">
  <gml:identifier codeSpace="uuid">8cfaa30b-4d00-4dc6-be18-d8420bf77ac5</gml:identifier>
    <timeSlice>
      <InformationServiceTimeSlice gml:id="IS01_TS01">
        <gml:validTime>
          <gml:TimeInstant gml:id="IS01_TS01_TI01">
            <gml:timePosition>2010-09-05T09:42:00</gml:timePosition>
          </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <radioCommunication xlink:href="urn:uuid:8cfaa30b-4d00-4dc6-be18-d8420bf77ac4"/>
        <type>ASOS</type>
        <clientAirport xlink:href="urn:uuid:a82b3fc9-4aa4-4e67-8def-aaea1ac595j"/>
      </InformationServiceTimeSlice>
    </timeSlice>
  </InformationService>
</notamMessage:hasMember>
<notamMessage:hasMember>
  <RadioCommunicationChannel gml:id="RCC01">
  <gml:identifier codeSpace="uuid">8cfaa30b-4d00-4dc6-be18-d8420bf77ac4</gml:identifier>
    <timeSlice>
      <RadioCommunicationChannelTimeSlice gml:id="RCC01_TS01">
        <gml:validTime>
          <gml:TimeInstant gml:id="RCC01_TS01_TI01">
            <gml:timePosition>2010-09-05T09:42:00</gml:timePosition>
          </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <frequencyTransmission uom="MHZ">111.15</frequencyTransmission>
      </RadioCommunicationChannelTimeSlice>
    </timeSlice>
    <timeSlice>
      <RadioCommunicationChannelTimeSlice gml:id="RCC01_TS02">
        <gml:validTime>
          <gml:TimePeriod gml:id="RCC01_TS02_TP01">
            <gml:beginPosition>2010-09-05T09:42:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </gml:validTime>
        <interpretation>PERMDELTA</interpretation>
        <sequenceNumber>3</sequenceNumber>
        <frequencyTransmission uom="MHZ">134.225</frequencyTransmission>
      </RadioCommunicationChannelTimeSlice>
    </timeSlice>
  </RadioCommunicationChannel>
</notamMessage:hasMember>
  <notamMessage:hasMember>
    <AirportHeliport gml:id="ACY">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
        <AirportHeliportTimeSlice gml:id="ACY_TS01">
          <gml:validTime>
          <gml:TimeInstant gml:id="ACY_TI01">
```

```
            <gml:timePosition>2010-09-05T09:42:00</gml:timePosition>
          </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>ACY</designator>
          <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
          <locationIndicatorICAO>KACY</locationIndicatorICAO>
          <ARP>
            <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP01">
              <gml:pos>39.27 -74.34</gml:pos>
            </ElevatedPoint>
          </ARP>
        </AirportHeliportTimeSlice>
      </timeSlice>
    </AirportHeliport>
  </notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```


22.6 Translation Templates

22.6.1 FAA

designator **SVC [***name*] *type* [*frequencyTransmissionNew* VICE] [*frequencyTransmissionBaseline*] [note]

22.6.2 ICAO E Line

designator **SVC [***name*] *type* [*frequencyTransmissionNew* VICE] [*frequencyTransmissionBaseline*] [note]

22.6.3 Plain Language

Accountable Facility: *accountableFacility*

Affected Airport: *affectedAirport*

NOTAM Number: XX/XXX

Effective Time Frame
Valid From: *startDate*
Valid To: *endDate*

Affected Service: [name] *type*

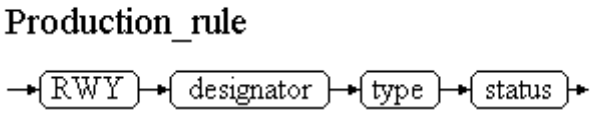
[Frequency Change: *equipment* Now *frequency*(PERMDELTA) (Was *frequency*(SNAPSHOT))**]**
[Phone Number Change: [note]**]**

22.7 Additional Analysis

None.

23 Runway – Runway Visual Range Status

Specify the status of the RVR of a runway.



23.1 Example NOTAMs

1. !BWI BWI SVC RWY 10 RVRR OTS
2. !BWI BWI SVC RWY 28 RVR OTS

Source: US NOTAM Repository

23.2 Future NOTAMs

*But FUTURE:

1.AIR XX/XXX AIR RWY 04 RVR OTS

2.AIR XX/XXX AIR RWY 04 RVRR OTS

23.3 AIXM Mapping and Translation

23.3.1 Scenario Details

TABLE 23.1

Attribute	Value
Description	Specify a the status of the runway RVR
Maps to Keyword:	RunwayDirection
Feature Type Id	AirportHeliport/ Runway/ RunwayVisualRange
Feature XPath	aixm:RunwayVisualRange
AIXM Mapping Diagram	Runway Visual Range
NOTAM lifespan	
Start ASAP	No

23.3.2 Designator [*designator*] – Runway Direction

Description: The full textual designator of the landing and take-off direction.
Examples: 27, 35L, 01R.

Source: User-selected from baseline data (required).

TABLE 23.2
Runway Direction Designator

Attribute	Value
AIXM Path (UML)	RunwayDirection(feature)/ designator (attribute)
AIXM Element XPath	RunwayDirection/ timeSlice/ RunwayDirectionTimeSlice [interpretation:SNAPSHOT]/ designator
AIXM Mapping	Class: RunwayDirection
Min length	1
Max length	16

Enumeration	TextDesignatorType

23.3.3 Runway Element [*extent*]

Description: An AIXM elevated surface derived from [gml:point], which extends Surface with properties that represent the vertical position.

Source: User-selected from baseline data (optional).

TABLE 23.3
Runway Geometry

Attribute	Value
AIXM Path (UML)	RunwayElement (feature)/ ElevatedSurface (object)
AIXM Element XPath	RunwayElement/ timeSlice/ RunwayElementTimeSlice [interpretation SNAPSHOT]/ extent/ ElevatedSurface/gml:patches/ gml:polygonPatch/ gml:exterior/ gml:LinearRing/ gml:pos
AIXM Mapping	ElevatedSurface
Datatype	GML – decimal

23.3.4 Type [readingPosition]

Description: The type of visual range reading (touchdown, middle, etc).

Source: User-selected (required).

TABLE 23.4
RVR Reading Position

Attribute	Value		
AIXM Path (UML)	RunwayVisualRange (feature) / readingPosition (attribute)		
AIXM Element XPath	RunwayVisualRange/ timeSlice/ RunwayVisualRangeTimeSlice [interpretation:SNAPSHOT]/ readingPosition		
AIXM Mapping	Class: RunwayVisualRange		
Enumeration	CodeRVRReadingType		
	AIXM	**Translations**	
	TDZ	ICAO	RVR END
		FAA	RVRT
		Plain Text	RVR Touch Down
	MID	ICAO	RVR MID
		FAA	RVRM
		Plain Text	RVR Middle of Runway
	TO	ICAO	RVR END
		FAA	RVRR
		Plain Text	RVR Take Off/Roll Out
	OTHER:ALL	ICAO	RVR
		FAA	RVR
		Plain Text	RVR All

23.3.5 Status [operationalStatus]

Description: The status of the visual range reading equipment.

Source: Assumed when event specification is selected.

TABLE 23.5
RVR Operational Status

Attribute	Value		
AIXM Path (UML)	AIXM Application Schemas /AIM/ AIM Features/ Airfield/ RunwayVisualRange (extension)/ operationalStatus		
AIXM Element XPath	RunwayVisualRange/ timeSlice/ RunwayVisualRangeTimeSlice [interpretation:SNAPSHOT]/ extension/ operationalStatus		
AIXMMapping	Class: AIM Extension RunwayVisualRange		
Enumeration	CodeStatusOperationsType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of service

23.4 QCodes

TABLE 23.6
QCode for RVR Status

AIXM Code	QCode	
RVR OTS	**Series**	**A**
	QCode	QFMXX
	Scope	A
	Traffic	IV
	Purpose	BO

23.5 Business Rules

23.5.1 Template Business Rules

a. When *designator* equal to null, then "Select a designator."

b. When *operationalStatus* equal to null, then "Select a status."

c. When *readingPosition* equal to null, then "Select a type."

23.5.2 Policy Business Rules

a. Unless the Airport owns and maintains the equipment, the responsibility of these NOTAMs lies with the OCC.

23.5.3 Data Encoding Business Rules

a. The element types *designator* and *readingPosition* are required and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

b. The element type *operationalStatus* is required and must use a TimeSlice of type TEMPDELTA.

c. An xlink:href is required and should point to the associated RunwayDirection and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

23.6 Sample AIXM Message

Sample NOTAM: RWY 04 RVRM OTS

```
<?xml version="1.0" encoding="UTF-8"?>
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1
./AIXM_Features.xsd http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd"
```

```
gml:id="FNS-Message" xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message"
xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns="http://www.aixm.aero/schema/5.1">
<notamMessage:hasMember>
  <RunwayVisualRange gml:id="RVR01">
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <RunwayVisualRangeTimeSlice gml:id="RVR01_TS01">
        <gml:validTime>
          <gml:TimeInstant gml:id="RVR01_TS01_TI01">
            <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
          </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <readingPosition>MID</readingPosition>
        <associatedRunwayDirection xlink:href="#RWYDIR01"/>
      </RunwayVisualRangeTimeSlice>
    </timeSlice>
    <timeSlice>
      <RunwayVisualRangeTimeSlice gml:id="RVR01_TS02">
      <gml:validTime>
        <gml:TimePeriod gml:id="RVR01_TS02_TP01">
          <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
          <gml:endPosition>2010-04-20T09:00:00</gml:endPosition>
        </gml:TimePeriod>
      </gml:validTime>
      <interpretation>TEMPDELTA</interpretation>
      <sequenceNumber>14</sequenceNumber>\
      <extension>
        <aim:RunwayVisualRangeExtension>
          <aim:operationalStatus>UNSERVICEABLE</aim:operationalStatus>
        </aim:RunwayVisualRangeExtension>
      </extension>
      </RunwayVisualRangeTimeSlice>
    </timeSlice>
  </RunwayVisualRange>
</notamMessage:hasMember>
<notamMessage:hasMember>
  <RunwayDirection gml:id="RWYDIR01">
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <RunwayDirectionTimeSlice gml:id="RWYDIR01_TS01">
        <gml:validTime>
          <gml:TimeInstant gml:id="RWYDIR01_TS01_TI01">
            <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
          </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <designator>04</designator>
        <usedRunway xlink:href="#RWY01"/>
        <startingElement xlink:href="#RE01"/>
      </RunwayDirectionTimeSlice>
    </timeSlice>
  </RunwayDirection>
</notamMessage:hasMember>
<notamMessage:hasMember>
```

```
  <RunwayElement gml:id="RE01">
    <timeSlice>
      <RunwayElementTimeSlice gml:id="RE01_TS01">
        <gml:validTime>
            <gml:TimeInstant gml:id="RE_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <associatedRunway xlink:href="#RWY01"/>
          <extent>
          <ElevatedSurface gml:id="ES01" srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2">
            <gml:patches>
              <gml:PolygonPatch>
                <gml:exterior>
                  <gml:LinearRing>
                    <gml:posList>39.2704 -74.3430 39.2707 -74.3424 39.2705 -74.3421 39.2702
-74.3421 39.2704 -74.3430</gml:posList>
                  </gml:LinearRing>
                </gml:exterior>
              </gml:PolygonPatch>
            </gml:patches>
          </ElevatedSurface>
          </extent>
      </RunwayElementTimeSlice>
    </timeSlice>
  </RunwayElement>
</notamMessage:hasMember>
<notamMessage:hasMember>
<Runway gml:id="RWY01">
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
  <timeSlice>
    <RunwayTimeSlice gml:id="RWY01_TS01">
      <gml:validTime>
        <gml:TimeInstant gml:id="RWY01_TS01_TI01">
          <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
        </gml:TimeInstant>
      </gml:validTime>
      <interpretation>SNAPSHOT</interpretation>
      <designator>04/22</designator>
      <associatedAirportHeliport xlink:href="#ACY"/>
    </RunwayTimeSlice>
  </timeSlice>
</Runway>
</notamMessage:hasMember>
<notamMessage:hasMember>
  <AirportHeliport gml:id="ACY">
  <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
    <timeSlice>
      <AirportHeliportTimeSlice gml:id="ACY_TS01">
        <gml:validTime>
          <gml:TimeInstant gml:id="ACY_TI01">
            <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
          </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <designator>ACY</designator>
        <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
```

```
        <locationIndicatorICAO>KACY</locationIndicatorICAO>
        <ARP>
          <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP01">
            <gml:pos>39.27 -74.34</gml:pos>
          </ElevatedPoint>
        </ARP>
      </AirportHeliportTimeSlice>
    </timeSlice>
  </AirportHeliport>
</notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```


23.7 Translation Templates

23.7.1 FAA

RWY *designator readingposition operationalStatus* **WEF**

23.7.2 ICAO E Line

RWY *designator readingposition operationalStatus* **WEF**

23.7.3 Plain Language

Affected Airport: *affectedAirport*

NOTAM Number: XX/XXX

Effective Time Frame
Valid From: *startDate*
Valid To: *endDate*

Runway: *designator*

RVR: *readingPosition*

Status: *operationalStatus*

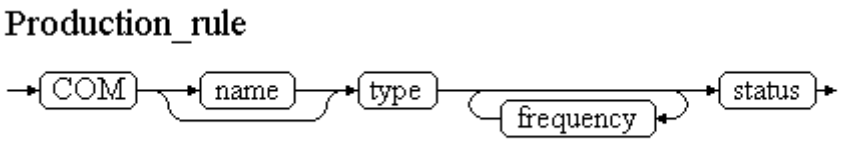
23.8 Additional Analysis

This equipment is generally the responsibility of Tech Ops. Airport Operations may not issue these NOTAMs unless the Airport owns the equipment or unless there is an LOA in place.
Denver may have a new RVR – RVR FAR END. This should only appear in the drop down for airports that do have such a system.

Communication Services

24 Communications – Communications Outlet Status

Specify the status of a communication outlet (commissioned, decommissioned, unavailable, or out of service) for which your facility has monitor responsibility. Only issue a NOTAM when an outage occurs or when a scheduled shutdown is expected to be longer than 1 hour.



24.1 Example NOTAMs

5. !ABI 03/012 ABI COM EFAS OUTLET 122.0 OTS
6. !BUF 11/014 BUF COM RCO 122.2 OTS
7. !JBR 12/243 ORK COM RTR 121.6/257.625/319.25 OTS
8. !TMB 09/001 TMB COM LAA OTS
9. !ABQ 03/060 ABQ COM 4ML (WEST MESA) EFAS OUTLET 127.625 OTS

24.2 AIXM Mapping and Translation

24.2.1 Scenario Details

TABLE 24.1

Attribute	Value
Description	Specify status for communications outlet.
Maps to Keyword:	Communications
Feature Type Id	AirportHeliport/ AirTrafficControlService/
Feature Xpath	aixm:AirTrafficControlService
AIXM Mapping Diagram	AirTrafficControlService
NOTAM lifespan	
Start ASAP	No

24.2.2 Designator [*designator*] – Aerodrome

Description: A coded designator for an Aerodrome/Heliport.

The rules according to which this identifier should be formed are as follows:

a. If the AD/HP has an ICAO four-letter location indicator, then this one will become the CODE_ID for the Aerodrome/Heliport;

b. If the AD/HP does not have an ICAO four-letter location indicator, but it has an IATA three letter code, then this one will become the CODE_ID for the Aerodrome/Heliport;

c. If the AD/HP has neither an ICAO four-letter location indicator nor an IATA three letter code, then an artificial generated code will be used. This will contain a group of letters and a number. The group of letters could be the two-letter code of the State responsible for the Aerodrome/Heliport, and the number could be an integer between 0001 and 9999.

Source: User-selected from baseline data (required).

TABLE 24.2
Aerodrome FAA designator

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – designator (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ designator
AIXM Mapping	Class: AirportHeliport
Type	CodeAirportHeliportDesignatorType
Min length	3
Max length	6
Pattern	([A-Z]|\d)*

Description: The four-letter ICAO location indicator of the aerodrome/heliport, as listed in ICAO DOC 7910.

Source: User-selected from baseline data – translated from FAA designator.

TABLE 24.3
Aerodrome ICAO designator

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – locationIndicatorICAO (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ locationIndicatorICAO
AIXM Mapping	Class: AirportHeliport
Type	CodeICAOType
Min length	4
Max length	4
Pattern	[A-Z]*

Description: The primary official name of an aerodrome as designated by an appropriate authroisty.

Source: User-selected from baseline data – translated from FAA designator.

TABLE 24.4
Official Aerodrome Name

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – name (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ name
AIXM Mapping	Class: AirportHeliport
Type	CodeNameType
Min length	1
Max length	60
Pattern	[A-Z]*

24.2.3 Outlet Name [*name*]

Description: A free text name by which the communications outlet is identified.

Source: User-selected from baseline data (optional, data source: A/FD).

TABLE 24.5
Outlet Name

Attribute	***Value***
AIXM Path (UML)	***AirTrafficControlService/ name***
AIXM Element X Path	***AirTrafficControlService/ timeSlice/ AirTrafficControlServiceTimeSlice [interpretation SNAPSHOT]/ name***
AIXM Mapping	***Class: AirTrafficControlService***
Min length	***1***
Max length	***60***
Enumeration	***TextNameType***

24.2.4 Service Type [*type*]

Description: The type of Air Traffic Control Service provided.

Source: User-selected from baseline data (required).

TABLE 24.6
Service Type

Attribute	**Value**		
AIXM Path (UML)	AirTrafficControlService/type		
AIXM Element XPath	AirTrafficControlService/ timeSlice/ AirTrafficControlServiceTimeSlice [interpretation SNAPSHOT]/ type		
AIXM Mapping	Class: AirTrafficControlService		
Enumeration	CodeServiceATCType		
	AIXM	**Translations**	
	EFAS	ICAO	EN-ROUTE FLIGHT ADVISORY SERVICE OUTLET
		FAA	EFAS OUTLET
		Plain Text	En-Route Flight Advisory Service outlet
	OTHER:RTR	ICAO	Remote transmitter/receiver
		FAA	RTR
		Plain Text	Remote transmitter/receiver
	OTHER:RCO	ICAO	REMOTE COMMUNICATION OUTLET
		FAA	RCO
		Plain Text	Remote communication outlet
	OTHER:LAA	ICAO	LOCAL AIRPORT ADVISORY
		FAA	LAA
		Plain Text	Local airport advisory

24.2.5 Radio Frequency [*frequencyTransmission/frequencyReception*]

Description: The radio frequency for transmission/reception.

Source: User-selected from baseline data (if available).

TABLE 24.7
Radio Frequency

Attribute	***Value***	
AIXM Path (UML)	***AirTrafficControlService/ RadioCommunicationChannel/ frequencyTransmission*** ***AirTrafficControlService/ RadioCommunicationChannel/ frequencyReception***	
AIXM Element X Path	***RadioCommunicationChannel/ timeSlice/ RadioCommunicationChannelTimeSlice [interpretation SNAPSHOT]/ frequencyTransmission*** ***RadioCommunicationChannel/ timeSlice/ RadioCommunicationChannelTimeSlice [interpretation SNAPSHOT]/ frequencyReception***	
AIXM Mapping	***Class: RadioCommunicationChannel***	
Datatype	***ValFrequencyType***	
Type	***Decimal***	
Min inclusive	***0***	
Units of Measure	***UomFrequencyType***	
	ICAO/FAA	***MHZ***

24.2.6 Status [*operationalStatus*]

Description: An indication of the operational status of the service. If at least one frequency is available update the operational status of the affected frequency(ies) only.

Source: User-selected (required).

TABLE 24.8
Operational Status of the Service

Attribute	Value		
AIXM Path (UML)	AirTrafficControlService/ ServiceOperationalStatus/ operationalStatus		
AIXM Element X Path	AirTrafficControlService/ timeslice/ AirTrafficControlServiceTimeSlice [interpretation TEMPDELTA]/ availability/ ServiceOperationalStatus/ operationalStatus		
AIXM Mapping	Class: ServiceOperationalStatus		
Enumeration	CodeStatusServiceType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of service
	OTHER:DECOMMISSIONED	ICAO	DECOMMISIONED
		FAA	DCMSN
		Plain Text	Decommissioned
	OTHER:COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned
	OTHER:UNAVAILABLE	ICAO	UNAVAILABLE
		FAA	UNABVL
		Plain Text	Unavailable

Description: An indication of the operational status of the affected frequency, assuming there is at lease one still operating. If all frequencies are out of service, then update the status of the service.
Source: User-selected (required).

TABLE 24.9
Operational Status for the Frequency

Attribute	Value		
AIXM Path (UML)	AirTrafficControlService/ RadioCommunicationChannel/ RadioCommunicationOperationalStatus/ operationalStatus		
AIXM Element X Path	RadioCommunicationChannel/ timeSlice/ RadioCommunicationChannelTimeSlice [interpretation TEMPDELTA]/ RadioCommunicationOperationalStatus/ operationalStatus		
AIXM Mapping	Class: RadioCommunicationOperationalStatus		
Enumeration	CodeStatusServiceType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of service
	OTHER:DECOMMISSIONED	ICAO	DECOMMISIONED
		FAA	DCMSN
		Plain Text	Decommissioned
	OTHER:COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned
	OTHER:UNAVAILABLE	ICAO	UNAVAILABLE
		FAA	UNABVL
		Plain Text	Unavailable

24.3 QCodes

TABLE 24.10
QCodes for Communications Outlet Status

AIXM Code	QCode	
ALL	**Series**	**C**
UNSERVICEABLE	QCode	QCAAS
	Scope	AE
	Traffic	IV
	Purpose	B
DECOMMISSIONED	QCode	QCAAW
	Scope	AE
	Traffic	IV
	Purpose	B
COMMISSIONED	QCode	QCACS
	Scope	AE
	Traffic	IV
	Purpose	B
UNAVAILABLE	QCode	QCAXX
	Scope	AE
	Traffic	IV
	Purpose	B

24.4 Business Rules

24.4.1 Template Business Rules

a. When *type* equals null, then "Specify a type of communications outlet."

b. When *operationalStatus* equals null, then "Specify a status."

c. When *operationalStatus* equals "COMISSIONED" and *frequencyTransmission/frequencyReception* equals null, then "Enter a frequency."

d. When *operationalStatus* equals "DECOMMISSIONED" and baseline status equal to "DECOMMISSIONED," then "System has already been DECOMMISSIONED."

e. When *operationalStatus* equals "COMMISSIONED" and baseline status equal to "COMMISSIONED," then "System has already been commissioned."

f. When *operationalStatus* equals "UNAVAILABLE" and baseline status equal to "UNAVAILABLE," then "System is already unavailable."

g. When *operationalStatus* equals "UNSERVICEABLE" and baseline status equal to "UNSERVICEABLE," then "System is already out of service."

h. When *frequency* less than or equal to 0, then "Specify a key that is greater then 0."

i. The field for *frequencyTransmission/frequencyReception* must equal a numerical value between 100.000 and 400.000 with up to (but not required) three decimal places.

24.4.2 Policy Business Rules

a. Only issue a NOTAM when an outage occurs or when a scheduled shutdown is expected to be longer than 1 hour.

b. If several frequencies are out, but one is still operating, issue the out of service frequencies in one NOTAM.

c. All published ATC frequencies and all communication frequencies will be issued with the affected frequency when out of service.

24.4.3 Data Encoding Business Rules

a. The element of type *operationalStatus* equal to COMMISSIONED or DECOMMISSIONED must use a TimeSlice of type PERMDELTA.

b. The element of type *operationalStatus* equal to UNSERVICEABLE or UNAVAILABLE must use a TimeSlice of type TEMPDELTA.

c. The associated AirTrafficControlService should have interpretation SNAPSHOT; an xlink:href is required, should point to the associated AirportHeliport, and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

24.5 Sample AIXM Message

Sample NOTAM Message: COM RCO 122.6 OTS

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2008 (http://www.altova.com) by Jennifer Bewley, CNA in support of FAA -->
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1
./AIXM_Features.xsd http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd"
```

```
gml:id="FNS-Message" xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message"
xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:event="http://www.aixm.aero/schema/5.1/event"
xmlns:gml="http://www.opengis.net/gml/3.2" xmlns="http://www.aixm.aero/schema/5.1">
  <notamMessage:hasMember>
    <AirTrafficControlService gml:id="ATCS01">
      <timeSlice>
        <AirTrafficControlServiceTimeSlice gml:id="ATCS01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="ATCS01_TS01_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <radioCommunication xlink:href="#RCC01"/>
          <type>OTHER:RCO</type>
          <clientAirport xlink:href="#ACY"/>
        </AirTrafficControlServiceTimeSlice>
      </timeSlice>
      <timeSlice>
        <AirTrafficControlServiceTimeSlice gml:id="ATCS01_TS02">
          <gml:validTime>
            <gml:TimePeriod gml:id="ATCS01_TS02_TP01">
              <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
              <gml:endPosition>2010-04-07T10:00:00</gml:endPosition>
            </gml:TimePeriod>
          </gml:validTime>
          <interpretation>TEMPDELTA</interpretation>
          <sequenceNumber>2</sequenceNumber>
          <availability>
            <ServiceOperationalStatus gml:id="SOS_01">
              <operationalStatus>NORMAL</operationalStatus>
            </ServiceOperationalStatus>
          </availability>
        </AirTrafficControlServiceTimeSlice>
      </timeSlice>
    </AirTrafficControlService>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <RadioCommunicationChannel gml:id="RCC01">
      <timeSlice>
        <RadioCommunicationChannelTimeSlice gml:id="RCC01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="RCC01_TS01_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <frequencyTransmission uom="MHZ">122.6</frequencyTransmission>
        </RadioCommunicationChannelTimeSlice>
      </timeSlice>
      <timeSlice>
        <RadioCommunicationChannelTimeSlice gml:id="RCC01_TS02">
          <gml:validTime>
            <gml:TimePeriod gml:id="RCC01_TS02_TP01">
              <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
              <gml:endPosition>2010-04-07T10:00:00</gml:endPosition>
```

```
            </gml:TimePeriod>
          </gml:validTime>
          <interpretation>TEMPDELTA</interpretation>
          <sequenceNumber>2</sequenceNumber>
          <availability>
            <RadioCommunicationOperationalStatus gml:id="RCOS01">
              <operationalStatus>UNSERVICEABLE</operationalStatus>
            </RadioCommunicationOperationalStatus>
          </availability>
        </RadioCommunicationChannelTimeSlice>
      </timeSlice>
    </RadioCommunicationChannel>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <AirportHeliport gml:id="ACY">
      <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-
aaea1ac595j</gml:identifier>
      <timeSlice>
        <AirportHeliportTimeSlice gml:id="ACY_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="ACY_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>ACY</designator>
          <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
          <locationIndicatorICAO>KACY</locationIndicatorICAO>
          <ARP>
            <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP03">
              <gml:pos>39.27 -74.34</gml:pos>
            </ElevatedPoint>
          </ARP>
        </AirportHeliportTimeSlice>
      </timeSlice>
    </AirportHeliport>
  </notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```


Sample NOTAM Message: COM RTR OTS


```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2008 (http://www.altova.com) by Jennifer Bewley, CNA in support of FAA -->
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1
./AIXM_Features.xsd http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd"
gml:id="FNS-Message" xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message"
xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:event="http://www.aixm.aero/schema/5.1/event"
xmlns:gml="http://www.opengis.net/gml/3.2" xmlns="http://www.aixm.aero/schema/5.1">
  <notamMessage:hasMember>
    <AirTrafficControlService gml:id="ATCS01">
      <timeSlice>
        <AirTrafficControlServiceTimeSlice gml:id="ATCS01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="ATCS01_TS01_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
```

```
            </gml:validTime>
            <interpretation>SNAPSHOT</interpretation>
            <radioCommunication xlink:href="#RCC01"/>
            <type>OTHER:RTR</type>
            <clientAirport xlink:href="#ACY"/>
          </AirTrafficControlServiceTimeSlice>
        </timeSlice>
        <timeSlice>
          <AirTrafficControlServiceTimeSlice gml:id="ATCS01_TS02">
            <gml:validTime>
              <gml:TimePeriod gml:id="ATCS01_TS02_TP01">
                <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
                <gml:endPosition>2010-04-07T10:00:00</gml:endPosition>
              </gml:TimePeriod>
            </gml:validTime>
            <interpretation>TEMPDELTA</interpretation>
            <sequenceNumber>2</sequenceNumber>
            <availability>
              <ServiceOperationalStatus gml:id="SOS_01">
                <operationalStatus>UNSERVICEABLE</operationalStatus>
              </ServiceOperationalStatus>
            </availability>
          </AirTrafficControlServiceTimeSlice>
        </timeSlice>
      </AirTrafficControlService>
    </notamMessage:hasMember>
    <notamMessage:hasMember>
      <AirportHeliport gml:id="ACY">
        <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-
aaea1ac595j</gml:identifier>
        <timeSlice>
          <AirportHeliportTimeSlice gml:id="ACY_TS01">
            <gml:validTime>
              <gml:TimeInstant gml:id="ACY_TI01">
                <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
              </gml:TimeInstant>
            </gml:validTime>
            <interpretation>SNAPSHOT</interpretation>
            <designator>ACY</designator>
            <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
            <locationIndicatorICAO>KACY</locationIndicatorICAO>
            <ARP>
              <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP03">
                <gml:pos>39.27 -74.34</gml:pos>
              </ElevatedPoint>
            </ARP>
          </AirportHeliportTimeSlice>
        </timeSlice>
      </AirportHeliport>
    </notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```


24.6 Translation Templates

24.6.1 FAA

COM [*name*] *type* [*frequency/…/frequency*] *status*

24.6.2 ICAO E Line

COM [*name*] *type* [*frequency/…/frequency*] *status*

24.6.3 Plain Language

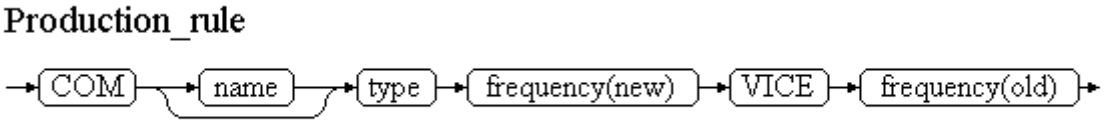
Accountable Airport: *accountableFacility*
NOTAM Number: XX/XXX
Affected Airport: *affectedFacility*
Effective Time Frame
Valid From: *startDate*
Valid To: *endDate*
Communications Outlet
Outlet ID: *name*
Type of Outlet: *type*
Frequency(ies) affected: **ALL |** *frequency,…, frequency*
Status: *status*

24.7 Additional Analysis

None.

25 Communications – Communications Outlet Frequency Change

Specify a frequency change for a communication outlet for which your facility has monitor responsibility.



25.1 Example NOTAMs

1. !JAX 01/055 JAX COM RCO 124.4 VICE 118.3
2. !DFW 12/209 DFW COM RTR 291.725 VICE 282.275

25.2 AIXM Mapping and Translation

25.2.1 Scenario Details

TABLE 25.1

Attribute	Value
Description	Specify a frequency change for a communications outlet.
Maps to Keyword:	Communications
Feature Type Id	AirportHeliport/ AirTrafficControlService/
Feature Xpath	aixm:AirTrafficControlService
AIXM Mapping Diagram	AirTrafficControlService
NOTAM lifespan	
Start ASAP	No

25.2.2 Designator [*designator*] – Aerodrome

Description: A coded designator for an Aerodrome/Heliport.

The rules according to which this identifier should be formed are as follows:

a. If the AD/HP has an ICAO four-letter location indicator, then this one will become the CODE_ID for the Aerodrome/Heliport;

b. If the AD/HP does not have an ICAO four-letter location indicator, but it has an IATA three letter code, then this one will become the CODE_ID for the Aerodrome/Heliport;

c. If the AD/HP has neither an ICAO four-letter location indicator nor an IATA three letter code, then an artificial generated code will be used. This will contain a group of letters and a number. The group of letters could be the two-letter code of the State responsible for the Aerodrome/Heliport, and the number could be an integer between 0001 and 9999.

Source: User-selected from baseline data (required).

TABLE 25.2
Aerodrome FAA designator

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – designator (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ designator
AIXM Mapping	Class: AirportHeliport
Type	CodeAirportHeliportDesignatorType
Min length	3
Max length	6
Pattern	([A-Z]|\d)*

Description: The four-letter ICAO location indicator of the aerodrome/heliport, as listed in ICAO DOC 7910.

Source: User-selected from baseline data – translated from FAA designator.

TABLE 25.3
Aerodrome ICAO designator

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – locationIndicatorICAO (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ locationIndicatorICAO
AIXM Mapping	Class: AirportHeliport
Type	CodeICAOType
Min length	4
Max length	4
Pattern	[A-Z]*

Description: The primary official name of an aerodrome as designated by an appropriate authroisty.

Source: User-selected from baseline data – translated from FAA designator.

TABLE 25.4 Official Aerodrome Name

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – name (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ name
AIXM Mapping	Class: AirportHeliport
Type	CodeNameType
Min length	1
Max length	60
Pattern	[A-Z]*

25.2.3 Outlet Name [*name*]

Description: A free text name by which the communications outlet is identified.

Source: User-selected from baseline data (optional, data source: A/FD).

TABLE 25.5
Outlet Name

Attribute	***Value***
AIXM Path (UML)	***AirTrafficControlService/ name***
AIXM Element X Path	***AirTrafficControlService/ timeSlice/ AirTrafficControlServiceTimeSlice [interpretation SNAPSHOT]/ name***
AIXM Mapping	***Class: AirTrafficControlService***
Min length	***1***
Max length	***60***
Enumeration	***TextNameType***

25.2.4 Service Type [*type*]

Description: The type of Air Traffic Control Service provided.

Source: User-selected from baseline data (required).

TABLE 25.6
Service Type

Attribute	**Value**		
AIXM Path (UML)	AirTrafficControlService/type		
AIXM Element XPath	AirTrafficControlService/ timeSlice/ AirTrafficControlServiceTimeSlice [interpretation SNAPSHOT]/ type		
AIXM Mapping	Class: AirTrafficControlService		
Enumeration	CodeServiceATCType		
	AIXM	**Translations**	
	EFAS	ICAO	EN-ROUTE FLIGHT ADVISORY SERVICE OUTLET
		FAA	EFAS OUTLET
		Plain Text	En-Route Flight Advisory Service outlet
	OTHER:RTR	ICAO	Remote transmitter/receiver
		FAA	RTR
		Plain Text	Remote transmitter/receiver
	OTHER:RCO	ICAO	REMOTE COMMUNICATION OUTLET
		FAA	RCO
		Plain Text	Remote communication outlet
	OTHER:LAA	ICAO	LOCAL AIRPORT ADVISORY
		FAA	LAA
		Plain Text	Local airport advisory

25.2.5 Old Radio Frequency [*frequencyTransmission*]

Description: The radio frequency for transmission.

Source: User-selected from baseline data (if available).

TABLE 25.7
Old Radio Frequency

Attribute	***Value***
AIXM Path (UML)	***AirTrafficControlService/ RadioCommunicationChannel/ frequencyTransmission***
AIXM Element X Path	***RadioCommunicationChannel/ timeSlice/ RadioCommunicationChannelTimeSlice [interpretation SNAPSHOT]/ frequencyTransmission***

AIXM Mapping	***Class: RadioCommunicationChannel***	
Datatype	***ValFrequencyType***	
Type	***Decimal***	
Min inclusive	***0***	
Units of Measure	***UomFrequencyType***	
	ICAO/FAA	***MHZ***

25.2.6 New Radio Frequency [*frequencyTransmission*]

Description: The new radio frequency for transmission.

Source: User-defined.

TABLE 25.8
New Radio Frequency

Attribute	***Value***	
AIXM Path (UML)	***AirTrafficControlService/ RadioCommunicationChannel/ frequencyTransmission***	
AIXM Element X Path	***RadioCommunicationChannel/ timeSlice/ RadioCommunicationChannelTimeSlice [interpretation PERMDELTA]/ frequencyTransmission***	
AIXM Mapping	***Class: RadioCommunicationChannel***	
Datatype	***ValFrequencyType***	
Type	***Decimal***	
Min inclusive	***0***	
Units of Measure	***UomFrequencyType***	
	ICAO/FAA	***MHZ***

25.3 QCodes

TABLE 25.9
QCodes for Communications Outlet Frequency Change

AIXM Code	**QCode**	
ALL	**Series**	**C**
Operating frequency changed to…	QCode	QCACF
	Scope	A
	Traffic	IV
	Purpose	B

25.4 Business Rules

25.4.1 Template Business Rules

a. When *type* equals null, then "Specify a type of communications outlet."

b. When *frequencyTransmission(new)* equals *frequencyTransmission(old)*, then "Specify a new frequency."

c. When *frequencyTransmission(new)* equals null then "Enter the new frequency."

d. When *frequencyTransmission(old)* equals null then "Enter the old frequency."

e. When *frequencyTransmission(new)* less than or equal to 0, then "Specify a frequency that is greater then 0."

f. When *frequencyTransmission(old)* less than or equal to 0, then "Specify a frequency that is greater then 0."

g. The field for *frequencyTransmission(old)* must equal a numerical value between 100.000 and 400.000 with up to (but not required) three decimal places.

h. The field for *frequencyTransmission(old)* must equal a numerical value between 100.000 and 400.000 with up to (but not required) three decimal places.

25.4.2 Policy Business Rules

25.4.3 Data Encoding Business Rules

a. The element of type *frequencyTransmission(new)* must use a TimeSlice of type PERMDELTA.

b. The associated AirTrafficControlService should have interpretation SNAPSHOT; an xlink:href is required, should point to the associated AirportHeliport, and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

25.5 Sample AIXM Message

Sample NOTAM Message: COM RTR 291.725 VICE 282.275


```xml
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2008 (http://www.altova.com) by Jennifer Bewley, CNA in support of FAA -->
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1
./AIXM_Features.xsd http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd"
gml:id="FNS-Message" xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message"
xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:event="http://www.aixm.aero/schema/5.1/event"
xmlns:gml="http://www.opengis.net/gml/3.2" xmlns="http://www.aixm.aero/schema/5.1">
  <notamMessage:hasMember>
    <AirTrafficControlService gml:id="ATCS01">
      <timeSlice>
        <AirTrafficControlServiceTimeSlice gml:id="ATCS01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="ATCS01_TS01_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <radioCommunication xlink:href="#RCC01"/>
          <type>OTHER:RTR</type>
          <clientAirport xlink:href="#ACY"/>
        </AirTrafficControlServiceTimeSlice>
      </timeSlice>
      <timeSlice>
        <AirTrafficControlServiceTimeSlice gml:id="ATCS01_TS02">
          <gml:validTime>
            <gml:TimePeriod gml:id="ATCS01_TS02_TP01">
              <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
              <gml:endPosition>2010-04-07T10:00:00</gml:endPosition>
            </gml:TimePeriod>
          </gml:validTime>
          <interpretation>TEMPDELTA</interpretation>
          <sequenceNumber>2</sequenceNumber>
```

```
            <availability>
              <ServiceOperationalStatus gml:id="SOS_01">
                <operationalStatus>NORMAL</operationalStatus>
              </ServiceOperationalStatus>
            </availability>
          </AirTrafficControlServiceTimeSlice>
        </timeSlice>
      </AirTrafficControlService>
    </notamMessage:hasMember>
    <notamMessage:hasMember>
      <RadioCommunicationChannel gml:id="RCC01">
        <timeSlice>
          <RadioCommunicationChannelTimeSlice gml:id="RCC01_TS01">
            <gml:validTime>
              <gml:TimeInstant gml:id="RCC01_TS01_TI01">
                <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
              </gml:TimeInstant>
            </gml:validTime>
            <interpretation>SNAPSHOT</interpretation>
            <frequencyTransmission uom="MHZ">291.725</frequencyTransmission>
          </RadioCommunicationChannelTimeSlice>
        </timeSlice>
        <timeSlice>
          <RadioCommunicationChannelTimeSlice gml:id="RCC01_TS02">
            <gml:validTime>
              <gml:TimePeriod gml:id="RCC01_TS02_TP01">
                <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
                <gml:endPosition indeterminatePosition="unknown"></gml:endPosition>
              </gml:TimePeriod>
            </gml:validTime>
            <interpretation>PERMDELTA</interpretation>
            <frequencyTransmission uom="MHZ">282.275</frequencyTransmission>
          </RadioCommunicationChannelTimeSlice>
        </timeSlice>
      </RadioCommunicationChannel>
    </notamMessage:hasMember>
    <notamMessage:hasMember>
      <AirportHeliport gml:id="ACY">
        <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-
aaea1ac595j</gml:identifier>
        <timeSlice>
          <AirportHeliportTimeSlice gml:id="ACY_TS01">
            <gml:validTime>
              <gml:TimeInstant gml:id="ACY_TI01">
                <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
              </gml:TimeInstant>
            </gml:validTime>
            <interpretation>SNAPSHOT</interpretation>
            <designator>ACY</designator>
            <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
            <locationIndicatorICAO>KACY</locationIndicatorICAO>
            <ARP>
              <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP03">
                <gml:pos>39.27 -74.34</gml:pos>
              </ElevatedPoint>
            </ARP>
          </AirportHeliportTimeSlice>
        </timeSlice>
```

```
    </AirportHeliport>
  </notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```


25.6 Translation Templates

25.6.1 FAA

COM [*name*] **type** *frequencyTransmission(new)* **VICE** *frequencyTransmission(old)*

25.6.2 ICAO E Line

COM [*name*] *type frequencyTransmission(new)* **VICE** *frequencyTransmission(old)*

25.6.3 Plain Language

Accountable Airport: *accountableFacility*

NOTAM Number: XX/XXX

Affected Airport: *affectedFacility*

Effective Time Frame
Valid From: *startDate*
Valid To: *endDate*

Communications Outlet Frequency Change

Outlet ID: *name*

Type of Outlet: *type*

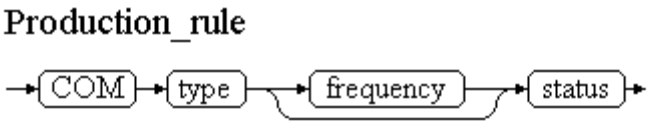
Use frequency *frequencyTransmission(new)* **instead of** *frequencyTransmission(old)*

25.7 Additional Analysis

None.

26 Communications – VOR Voice Outlet Status

Specify the status of a communication outlet (commissioned, decommissioned, unavailable, or out of service) for which your facility has monitor responsibility. Only issue a NOTAM when an outage occurs or when a scheduled shutdown is expected to be longer than 1 hour.



26.1 Example NOTAMs

1. !MKL 12/169 GHM COM VOR VOICE OTS
2. !OTG 05/011 OTG COM VOR VOICE 122.1 OTS
3. !LNY 06/003 LNY COM VOR VOICE 122.5 CMSND

26.2 AIXM Mapping and Translation

26.2.1 Scenario Details

TABLE 26.1

Attribute	Value
Description	Specify status for the VOR Voice.
Maps to Keyword:	Communications
Feature Type Id	AirportHeliport/ InformationService/
Feature Xpath	aixm:InformationService
AIXM Mapping Diagram	Information Service
NOTAM lifespan	
Start ASAP	No

26.2.2 Designator [*designator*] – Aerodrome

Description: A coded designator for an Aerodrome/Heliport.

The rules according to which this identifier should be formed are as follows:

a. If the AD/HP has an ICAO four-letter location indicator, then this one will become the CODE_ID for the Aerodrome/Heliport;

b. If the AD/HP does not have an ICAO four-letter location indicator, but it has an IATA three letter code, then this one will become the CODE_ID for the Aerodrome/Heliport;

c. If the AD/HP has neither an ICAO four-letter location indicator nor an IATA three letter code, then an artificial generated code will be used. This will contain a group of letters and a number. The group of letters could be the two-letter code of the State responsible for the Aerodrome/Heliport, and the number could be an integer between 0001 and 9999.

Source: User-selected from baseline data (required).

TABLE 26.2
Aerodrome FAA designator

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – designator (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ designator
AIXM Mapping	Class: AirportHeliport
Type	CodeAirportHeliportDesignatorType
Min length	3
Max length	6
Pattern	([A-Z]|\d)*

Description: The four-letter ICAO location indicator of the aerodrome/heliport, as listed in ICAO DOC 7910.

Source: User-selected from baseline data – translated from FAA designator.

TABLE 26.3
Aerodrome ICAO designator

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – locationIndicatorICAO (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ locationIndicatorICAO
AIXM Mapping	Class: AirportHeliport
Type	CodeICAOType
Min length	4
Max length	4
Pattern	[A-Z]*

Description: The primary official name of an aerodrome as designated by an appropriate authroisty.

Source: User-selected from baseline data – translated from FAA designator.

TABLE 26.4
Official Aerodrome Name

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – name (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ name
AIXM Mapping	Class: AirportHeliport
Type	CodeNameType
Min length	1
Max length	60
Pattern	[A-Z]*

26.2.3 Service Type [*type*]

Description: The type of Information Service provided.

Source: User-selected from baseline data (required).

TABLE 26.5
Service Type

Attribute	Value		
AIXM Path (UML)	InformationService/type		
AIXM Element XPath	InformationService/ timeSlice/ InformationServiceTimeSlice [interpretation SNAPSHOT]/ type		
AIXM Mapping	Class: InformationService		
Enumeration	CodeServiceInformationType		
	AIXM	**Translations**	
	OTHER:VOR_VOICE	ICAO	VOR VOICE
		FAA	VOR VOICE
		Plain Text	VOR voice

26.2.4 Radio Frequency [*frequency*]

Description: The radio frequency for transmission/reception.

Source: User-selected from baseline data (if available).

TABLE 26.6
Radio Frequency

Attribute	***Value***	
AIXM Path (UML)	***InformationService/ VOR/ frequency***	
AIXM Element X Path	***VOR/ timeSlice/ VORTimeSlice [interpretation SNAPSHOT]/ frequency***	
AIXM Mapping	***Class: VOR***	
Datatype	***ValFrequencyType***	
Type	***Decimal***	
Min inclusive	***0***	
Units of Measure	***UomFrequencyType***	
	ICAO/FAA	***MHZ***

26.2.5 Status [*operationalStatus*]

Description: An indication of the operational status of the system.

Source: User-selected (required).

TABLE 26.7
Operational Status

Attribute	Value		
AIXM Path (UML)	InformationService/ ServiceOperationalStatus/ operationalStatus		
AIXM Element X Path	InformationService/ timeslice/ InformationServiceTimeSlice [interpretation TEMPDELTA]/ availability/ ServiceOperationalStatus/ operationalStatus		
AIXM Mapping	Class: ServiceOperationalStatus		
Enumeration	CodeStatusServiceType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of service
	OTHER:DECOMMISSIONED	ICAO	DECOMMISIONED
		FAA	DCMSN
		Plain Text	Decommissioned
	OTHER:COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN

		Plain Text	Commissioned

26.3 QCodes

TABLE 26.8
QCodes for VOR Voice Status

AIXM Code	QCode	
ALL	**Series**	**C**
UNSERVICEABLE	QCode	QCAAS
	Scope	AE
	Traffic	IV
	Purpose	B
DECOMMISSIONED	QCode	QCAAW
	Scope	AE
	Traffic	IV
	Purpose	B
COMMISSIONED	QCode	QCACS
	Scope	AE
	Traffic	IV
	Purpose	B

26.4 Business Rules

26.4.1 Template Business Rules

a. When *type* equals null, then "Specify a type of communications outlet."

b. When *operationalStatus* equals null, then "Specify a status."

c. When *operationalStatus* equals "COMISSIONED" and *frequency* equals null, then "Enter a frequency."

d. When *operationalStatus* equals "DECOMMISSIONED" and baseline status equal to "DECOMMISSIONED," then "System has already been DECOMMISSIONED."

e. When *operationalStatus* equals "COMMISSIONED" and baseline status equal to "COMMISSIONED," then "System has already been commissioned."

f. When *operationalStatus* equals "UNSERVICEABLE" and baseline status equal to "UNSERVICEABLE," then "System is already out of service."

g. When *frequency* less than or equal to 0, then "Specify a frequency that is greater then 0."

h. The field for *frequency* must equal a numerical value between 100.000 and 400.000 with up to (but not required) three decimal places.

26.4.2 Policy Business Rules

a. Only issue a NOTAM when an outage occurs or when a scheduled shutdown is expected to be longer than 1 hour.

26.4.3 Data Encoding Business Rules

a. The element of type *operationalStatus* equal to COMMISSIONED or DECOMMISSIONED must use a TimeSlice of type PERMDELTA.

b. The element of type *operationalStatus* equal to COMMISSIONED or DECOMMISSIONED should point to the associated VOR and associated frequency and must use a TimeSlice of type SNAPSHOT (if the VOR already exits) or BASELINE (if the VOR has the element of type *operationalStatus* equal to COMMISSIONED).

c. The element of type *operationalStatus* equal to UNSERVICEABLE must use a TimeSlice of type TEMPDELTA.

d. An xlink:href is required, should point to the associated VOR, and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

e. The associated InformationService should have interpretation SNAPSHOT; an xlink:href is required, should point to the associated AirportHeliport, and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

26.5 Sample AIXM Message

Sample NOTAM Message: COM VOR VOICE 122.1 OTS


```xml
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2008 (http://www.altova.com) by Jennifer Bewley, CNA in support of FAA -->
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1
./AIXM_Features.xsd http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd"
gml:id="FNS-Message" xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message"
xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:event="http://www.aixm.aero/schema/5.1/event"
xmlns:gml="http://www.opengis.net/gml/3.2" xmlns="http://www.aixm.aero/schema/5.1">
  <notamMessage:hasMember>
    <InformationService gml:id="IS01">
      <timeSlice>
        <InformationServiceTimeSlice gml:id="IS01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="IS01_TS01_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <type>OTHER:VOR_VOICE</type>
          <navaidBroadcast xlink:href="#MXQ"/>
          <clientAirport xlink:href="#ACY"/>
        </InformationServiceTimeSlice>
      </timeSlice>
      <timeSlice>
        <InformationServiceTimeSlice gml:id="IS01_TS02">
          <gml:validTime>
            <gml:TimePeriod gml:id="IS01_TS02_TP01">
              <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
              <gml:endPosition>2010-04-07T10:00:00</gml:endPosition>
            </gml:TimePeriod>
          </gml:validTime>
          <interpretation>TEMPDELTA</interpretation>
          <sequenceNumber>2</sequenceNumber>
          <availability>
            <ServiceOperationalStatus gml:id="SOS_01">
              <operationalStatus>UNSERVICEABLE</operationalStatus>
            </ServiceOperationalStatus>
          </availability>
```

```
        </InformationServiceTimeSlice>
      </timeSlice>
      <timeSlice>
        <InformationServiceTimeSlice gml:id="IS01_TS03">
          <gml:validTime>
          <gml:TimeInstant gml:id="IS01_TS03_TI01">
            <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
          </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <annotation>
            <Note gml:id="NOTE_01">
              <propertyName>operationalStatus</propertyName>
              <purpose>DESCRIPTION</purpose>
              <translatedNote>
                <LinguisticNote gml:id="ln01">
                  <note>122.1</note>
                </LinguisticNote>
              </translatedNote>
            </Note>
          </annotation>
        </InformationServiceTimeSlice>
      </timeSlice>
    </InformationService>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <AirportHeliport gml:id="ACY">
      <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-
aaea1ac595j</gml:identifier>
      <timeSlice>
        <AirportHeliportTimeSlice gml:id="ACY_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="ACY_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>ACY</designator>
          <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
          <locationIndicatorICAO>KACY</locationIndicatorICAO>
          <ARP>
            <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP03">
              <gml:pos>39.27 -74.34</gml:pos>
            </ElevatedPoint>
          </ARP>
        </AirportHeliportTimeSlice>
      </timeSlice>
    </AirportHeliport>
  </notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```


Sample NOTAM Message: COM VOR VOICE 122.1 CMSND


```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2008 (http://www.altova.com) by Jennifer Bewley, CNA in support of FAA -->
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1
./AIXM_Features.xsd http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd"
gml:id="FNS-Message" xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message"
```

```
xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:event="http://www.aixm.aero/schema/5.1/event"
xmlns:gml="http://www.opengis.net/gml/3.2" xmlns="http://www.aixm.aero/schema/5.1">
  <notamMessage:hasMember>
    <InformationService gml:id="IS01">
      <timeSlice>
        <InformationServiceTimeSlice gml:id="IS01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="IS01_TS01_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <type>OTHER:VOR_VOICE</type>
          <navaidBroadcast xlink:href="#MXQ"/>
          <clientAirport xlink:href="#ACY"/>
        </InformationServiceTimeSlice>
      </timeSlice>
      <timeSlice>
        <InformationServiceTimeSlice gml:id="IS01_TS02">
          <gml:validTime>
            <gml:TimePeriod gml:id="IS01_TS02_TP01">
              <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
              <gml:endPosition indeterminatePosition="unknown"></gml:endPosition>
            </gml:TimePeriod>
          </gml:validTime>
          <interpretation>TEMPDELTA</interpretation>
          <sequenceNumber>2</sequenceNumber>
          <availability>
            <ServiceOperationalStatus gml:id="SOS_01">
              <operationalStatus>OTHER:COMMISSIONED</operationalStatus>
            </ServiceOperationalStatus>
          </availability>
        </InformationServiceTimeSlice>
      </timeSlice>
    </InformationService>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <VOR gml:id="MXQ">
      <timeSlice>
        <VORTimeSlice gml:id="VOR01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="VOR01_TS01_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <frequency uom="MHZ">122.1</frequency>
        </VORTimeSlice>
      </timeSlice>
    </VOR>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <AirportHeliport gml:id="ACY">
      <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-
aaea1ac595j</gml:identifier>
      <timeSlice>
```

```
        <AirportHeliportTimeSlice gml:id="ACY_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="ACY_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>ACY</designator>
          <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
          <locationIndicatorICAO>KACY</locationIndicatorICAO>
          <ARP>
            <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP03">
              <gml:pos>39.27 -74.34</gml:pos>
            </ElevatedPoint>
          </ARP>
        </AirportHeliportTimeSlice>
      </timeSlice>
    </AirportHeliport>
  </notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```


26.6 Translation Templates

26.6.1 FAA

COM *type* [*frequency*] *status*

26.6.2 ICAO E Line

COM *type* [*frequency*] *status*

26.6.3 Plain Language

Accountable Airport: *accountableFacility*

NOTAM Number: XX/XXX

Affected Airport: *affectedFacility*

Effective Time Frame
Valid From: *startDate*
Valid To: *endDate*

Communications Outlet

Type of Outlet: *type*

Frequency affected: **ALL |** *frequency*

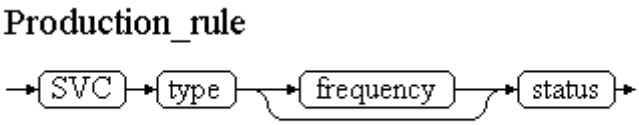
Status: *status*

26.7 Additional Analysis

None.

27 Service – HIWAS Status

Specify the status of the HIWAS (Hazardous In flight Weather Advisory Service) outlet (commissioned, decommissioned, unavailable, or out of service) for which your facility has monitor responsibility.



27.1 Example NOTAMs

1. !MHK 11/004 MHK SVC HIWAS OUTLET OTS
2. !ELN 06/016 ELN SVC HIWAS OUTLET UNREL
3. !LNY 06/003 LNY SVC HIWAS OUTLET 122.0 CMSND

27.2 AIXM Mapping and Translation

27.2.1 Scenario Details

TABLE 27.1

Attribute	Value
Description	Specify status for the HIWAS.
Maps to Keyword:	Service
Feature Type Id	AirportHeliport/ InformationService/
Feature Xpath	aixm:InformationService
AIXM Mapping Diagram	Information Service
NOTAM lifespan	
Start ASAP	No

27.2.2 Designator [*designator*] – Aerodrome

Description: A coded designator for an Aerodrome/Heliport.

The rules according to which this identifier should be formed are as follows:

a. If the AD/HP has an ICAO four-letter location indicator, then this one will become the CODE_ID for the Aerodrome/Heliport;

b. If the AD/HP does not have an ICAO four-letter location indicator, but it has an IATA three letter code, then this one will become the CODE_ID for the Aerodrome/Heliport;

c. If the AD/HP has neither an ICAO four-letter location indicator nor an IATA three letter code, then an artificial generated code will be used. This will contain a group of letters and a number. The group of letters could be the two-letter code of the State responsible for the Aerodrome/Heliport, and the number could be an integer between 0001 and 9999.

Source: User-selected from baseline data (required).

TABLE 27.2
Aerodrome FAA designator

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – designator (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ designator
AIXM Mapping	Class: AirportHeliport
Type	CodeAirportHeliportDesignatorType
Min length	3
Max length	6
Pattern	([A-Z]|\d)*

Description: The four-letter ICAO location indicator of the aerodrome/heliport, as listed in ICAO DOC 7910.

Source: User-selected from baseline data – translated from FAA designator.

TABLE 27.3
Aerodrome ICAO designator

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – locationIndicatorICAO (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ locationIndicatorICAO
AIXM Mapping	Class: AirportHeliport
Type	CodeICAOType
Min length	4
Max length	4
Pattern	[A-Z]*

Description: The primary official name of an aerodrome as designated by an appropriate authroisty.

Source: User-selected from baseline data – translated from FAA designator.

TABLE 27.4
Official Aerodrome Name

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – name (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ name
AIXM Mapping	Class: AirportHeliport
Type	CodeNameType
Min length	1
Max length	60
Pattern	[A-Z]*

27.2.3 Service Type [*type*]

Description: The type of Information Service provided.

Source: User-selected from baseline data (required).

TABLE 27.5
Service Type

Attribute	Value		
AIXM Path (UML)	InformationService/type		
AIXM Element XPath	InformationService/ timeSlice/ InformationServiceTimeSlice [interpretation SNAPSHOT]/ type		
AIXM Mapping	Class: InformationService		
Enumeration	CodeServiceInformationType		
	AIXM	**Translations**	
	OTHER:HIWAS	ICAO	HAZARDOUS IN FLIGHT WEATHER ADVISORY SERVICE
		FAA	HIWAS OUTLET
		Plain Text	Hazardous In flight Weather Advisory Service (HIWAS) outlet

27.2.4 Radio Frequency [*frequency*]

Description: The radio frequency for transmission/reception.

Source: User-selected from baseline data (if available).

TABLE 27.6
Radio Frequency

Attribute	***Value***	
AIXM Path (UML)	***InformationService/ VOR/ frequency***	
AIXM Element X Path	***VOR/ timeSlice/ VORTimeSlice [interpretation SNAPSHOT]/ frequency***	
AIXM Mapping	***Class: VOR***	
Datatype	***ValFrequencyType***	
Type	***Decimal***	
Min inclusive	***0***	
Units of Measure	***UomFrequencyType***	
	ICAO/FAA	***MHZ***

27.2.5 Status [*operationalStatus*]

Description: An indication of the operational status of the system.
Source: User-selected (required).

TABLE 27.7
Operational Status

Attribute	Value		
AIXM Path (UML)	InformationService/ ServiceOperationalStatus/ operationalStatus		
AIXM Element X Path	InformationService/ timeslice/ InformationServiceTimeSlice [interpretation TEMPDELTA]/ availability/ ServiceOperationalStatus/ operationalStatus		
AIXM Mapping	Class: ServiceOperationalStatus		
Enumeration	CodeStatusServiceType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of service
	OTHER:DECOMMISSIONED	ICAO	DECOMMISIONED
		FAA	DCMSN

		Plain Text	Decommissioned
	OTHER:COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned
	OTHER:UNRELIABLE	ICAO	UNREL
		FAA	UNREL
		Plain Text	Unreliable
	OTHER:UNAVAILABLE	ICAO	UNAVAILABLE
		FAA	UNABVL
		Plain Text	Unavailable
	OTHER:UNMONITORED	ICAO	UNMONITORED
		FAA	UNMONITORED
		Plain Text	Unmonitored

27.3 QCodes

TABLE 27.8
QCodes for HIWAS Status

AIXM Code	**QCode**	
ALL	**Series**	**C**
UNSERVICEABLE	QCode	QCAAS
	Scope	AE
	Traffic	IV
	Purpose	B
DECOMMISSIONED	QCode	QCAAW
	Scope	AE
	Traffic	IV
	Purpose	B
COMMISSIONED	QCode	QCACS
	Scope	AE
	Traffic	IV
	Purpose	B
UNRELIABLE	QCode	QCAXX
	Scope	AE
	Traffic	IV
	Purpose	B
UNAVAILABLE	QCode	QCAXX
	Scope	AE
	Traffic	IV
	Purpose	B
UNMONITORED	QCode	QCAXX
	Scope	AE
	Traffic	IV
	Purpose	B

27.4 Business Rules

27.4.1 Template Business Rules

a. When *type* equals null, then "Specify a type of information service outlet."

b. When *operationalStatus* equals null, then "Specify a status."

c. When *operationalStatus* equals "COMISSIONED" and *frequency* equals null, then "Enter a frequency."

d. When *operationalStatus* equals "DECOMMISSIONED" and baseline status equal to "DECOMMISSIONED," then "System has already been DECOMMISSIONED."

e. When *operationalStatus* equals "COMMISSIONED" and baseline status equal to "COMMISSIONED," then "System has already been commissioned."

f. When *operationalStatus* equals "UNSERVICEABLE" and baseline status equal to "UNSERVICEABLE," then "System is already out of service."

g. When *operationalStatus* equals "UNAVAILABLE" and baseline status equal to “UNAVAILABLE," then "System is already unavailable."

h. When *operationalStatus* equals "UNMONITORED" and baseline status equal to "UNMONITORED," then "System is already unmonitored."

i. When *operationalStatus* equals "UNRELIABLE" and baseline status equal to "UNRELIABLE," then "System is already unreliable."

j. When *frequency* less than or equal to 0, then "Specify a frequency that is greater then 0."

k. The field for *frequency* must equal a numerical value between 100.000 and 400.000 with up to (but not required) three decimal places.

27.4.2 Policy Business Rules

27.4.3 Data Encoding Business Rules

a. The element of type *operationalStatus* equal to COMMISSIONED or DECOMMISSIONED must use a TimeSlice of type PERMDELTA.

b. The element of type *operationalStatus* equal to COMMISSIONED or DECOMMISSIONED should point to the associated VOR and associated frequency and must use a TimeSlice of type SNAPSHOT (if the VOR already exits) or BASELINE (if the VOR has the element of type *operationalStatus* equal to COMMISSIONED).

c. The element of type *operationalStatus* equal to UNSERVICEABLE must use a TimeSlice of type TEMPDELTA.

d. An xlink:href is required, should point to the associated VOR, and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

e. The associated InformationService should have interpretation SNAPSHOT; an xlink:href is required, should point to the associated AirportHeliport, and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

27.5 Sample AIXM Message

Sample NOTAM Message: SVC HIWAS OUTLET UNREL

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2008 (http://www.altova.com) by Jennifer Bewley, CNA in support of FAA -->
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1
./AIXM_Features.xsd http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd"
```

```
gml:id="FNS-Message" xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message"
xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:event="http://www.aixm.aero/schema/5.1/event"
xmlns:gml="http://www.opengis.net/gml/3.2" xmlns="http://www.aixm.aero/schema/5.1">
  <notamMessage:hasMember>
    <InformationService gml:id="IS01">
      <timeSlice>
        <InformationServiceTimeSlice gml:id="IS01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="IS01_TS01_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <type>OTHER:HIWAS</type>
          <navaidBroadcast xlink:href="#MXQ"/>
          <clientAirport xlink:href="#ACY"/>
        </InformationServiceTimeSlice>
      </timeSlice>
      <timeSlice>
        <InformationServiceTimeSlice gml:id="IS01_TS02">
          <gml:validTime>
            <gml:TimePeriod gml:id="IS01_TS02_TP01">
              <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
              <gml:endPosition>2010-04-07T10:00:00</gml:endPosition>
            </gml:TimePeriod>
          </gml:validTime>
          <interpretation>TEMPDELTA</interpretation>
          <sequenceNumber>2</sequenceNumber>
          <availability>
            <ServiceOperationalStatus gml:id="SOS_01">
              <operationalStatus>OTHER:UNRELIABLE</operationalStatus>
            </ServiceOperationalStatus>
          </availability>
        </InformationServiceTimeSlice>
      </timeSlice>
    </InformationService>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <AirportHeliport gml:id="ACY">
      <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-
aaea1ac595j</gml:identifier>
      <timeSlice>
        <AirportHeliportTimeSlice gml:id="ACY_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="ACY_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>ACY</designator>
          <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
          <locationIndicatorICAO>KACY</locationIndicatorICAO>
          <ARP>
            <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP03">
              <gml:pos>39.27 -74.34</gml:pos>
            </ElevatedPoint>
```

```
            </ARP>
          </AirportHeliportTimeSlice>
        </timeSlice>
      </AirportHeliport>
    </notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```


Sample NOTAM Message: SVC HIWAS OUTLET 122.0 CMSND


```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2008 (http://www.altova.com) by Jennifer Bewley, CNA in support of FAA -->
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1
./AIXM_Features.xsd http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd"
gml:id="FNS-Message" xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message"
xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:event="http://www.aixm.aero/schema/5.1/event"
xmlns:gml="http://www.opengis.net/gml/3.2" xmlns="http://www.aixm.aero/schema/5.1">
  <notamMessage:hasMember>
    <InformationService gml:id="IS01">
      <timeSlice>
        <InformationServiceTimeSlice gml:id="IS01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="IS01_TS01_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <type>OTHER:HIWAS</type>
          <navaidBroadcast xlink:href="#MXQ"/>
          <clientAirport xlink:href="#ACY"/>
        </InformationServiceTimeSlice>
      </timeSlice>
      <timeSlice>
        <InformationServiceTimeSlice gml:id="IS01_TS02">
          <gml:validTime>
            <gml:TimePeriod gml:id="IS01_TS02_TP01">
              <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
              <gml:endPosition indeterminatePosition="unknown"></gml:endPosition>
            </gml:TimePeriod>
          </gml:validTime>
          <interpretation>TEMPDELTA</interpretation>
          <sequenceNumber>2</sequenceNumber>
          <availability>
            <ServiceOperationalStatus gml:id="SOS_01">
              <operationalStatus>OTHER:COMMISSIONED</operationalStatus>
            </ServiceOperationalStatus>
          </availability>
        </InformationServiceTimeSlice>
      </timeSlice>
    </InformationService>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <VOR gml:id="MXQ">
      <timeSlice>
        <VORTimeSlice gml:id="VOR01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="VOR01_TS01_TI01">
```

```
            <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
          </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <frequency uom="MHZ">122.0</frequency>
      </VORTimeSlice>
    </timeSlice>
  </VOR>
</notamMessage:hasMember>
<notamMessage:hasMember>
  <AirportHeliport gml:id="ACY">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-
aaea1ac595j</gml:identifier>
    <timeSlice>
      <AirportHeliportTimeSlice gml:id="ACY_TS01">
        <gml:validTime>
          <gml:TimeInstant gml:id="ACY_TI01">
            <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
          </gml:TimeInstant>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <designator>ACY</designator>
        <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
        <locationIndicatorICAO>KACY</locationIndicatorICAO>
        <ARP>
          <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP03">
            <gml:pos>39.27 -74.34</gml:pos>
          </ElevatedPoint>
        </ARP>
      </AirportHeliportTimeSlice>
    </timeSlice>
  </AirportHeliport>
</notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```


27.6 Translation Templates

27.6.1 FAA

SVC *type* [*frequency*] *status*

27.6.2 ICAO E Line

SVC *type* [*frequency*] *status*

27.6.3 Plain Language

Accountable Airport: *accountableFacility*

NOTAM Number: XX/XXX

Affected Airport: *affectedFacility*

Effective Time Frame
Valid From: *startDate*
Valid To: *endDate*

Communications Outlet

Type of Outlet: *type*

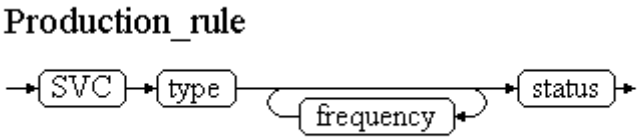
Frequency affected: *frequency*
Status: *status*

27.7 Additional Analysis

None.

28 Service – ATIS Status

Specify the status of the Automatic Terminal Information Service (ATIS) (commissioned, decommissioned, unavailable, unreliable, or out of service) for which your facility has monitor responsibility.



28.1 Example NOTAMs

1. !LOU 08/166 LOU SVC ATIS 112.2 DCMSN
2. !TOL 04/007 TOL SVC ATIS 271.3/118.750 OTS
3. !CMA 05/006 CMA SVC ATIS OTS

28.2 AIXM Mapping and Translation

28.2.1 Scenario Details

TABLE 28.1

Attribute	Value
Description	Specify status for the ATIS.
Maps to Keyword:	Service
Feature Type Id	AirportHeliport/ InformationService/
Feature Xpath	aixm:InformationService
AIXM Mapping Diagram	Information Service
NOTAM lifespan	
Start ASAP	No

28.2.2 Designator [*designator*] – Aerodrome

Description: A coded designator for an Aerodrome/Heliport.

The rules according to which this identifier should be formed are as follows:

a. If the AD/HP has an ICAO four-letter location indicator, then this one will become the CODE_ID for the Aerodrome/Heliport;

b. If the AD/HP does not have an ICAO four-letter location indicator, but it has an IATA three letter code, then this one will become the CODE_ID for the Aerodrome/Heliport;

c. If the AD/HP has neither an ICAO four-letter location indicator nor an IATA three letter code, then an artificial generated code will be used. This will contain a group of letters and a number. The group of letters could be the two-letter code of the State responsible for the Aerodrome/Heliport, and the number could be an integer between 0001 and 9999.

Source: User-selected from baseline data (required).

TABLE 28.2
Aerodrome FAA designator

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – designator (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ designator
AIXM Mapping	Class: AirportHeliport
Type	CodeAirportHeliportDesignatorType
Min length	3
Max length	6
Pattern	([A-Z]|\d)*

Description: The four-letter ICAO location indicator of the aerodrome/heliport, as listed in ICAO DOC 7910.

Source: User-selected from baseline data – translated from FAA designator.

TABLE 28.3
Aerodrome ICAO designator

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – locationIndicatorICAO (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ locationIndicatorICAO
AIXM Mapping	Class: AirportHeliport
Type	CodeICAOType
Min length	4
Max length	4
Pattern	[A-Z]*

Description: The primary official name of an aerodrome as designated by an appropriate authroisty.

Source: User-selected from baseline data – translated from FAA designator.

TABLE 28.4
Official Aerodrome Name

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – name (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ name
AIXM Mapping	Class: AirportHeliport
Type	CodeNameType
Min length	1
Max length	60
Pattern	[A-Z]*

28.2.3 Service Type [*type*]

Description: The type of Information Service provided.

Source: User-selected from baseline data (required).

TABLE 28.5
Service Type

Attribute	Value		
AIXM Path (UML)	InformationService/type		
AIXM Element XPath	InformationService/ timeSlice/ InformationServiceTimeSlice [interpretation SNAPSHOT]/ type		
AIXM Mapping	Class: InformationService		
Enumeration	CodeServiceInformationType		
	AIXM	**Translations**	
	ATIS	ICAO	ATIS
		FAA	ATIS
		Plain Text	Automatic Terminal Information Service (ATIS)

28.2.4 Radio Frequency [*frequencyTransmission*]

Description: The radio frequency for transmission.
Source: User-selected from baseline data (if available).

TABLE 28.6
Radio Frequency

Attribute	*Value*	
AIXM Path (UML)	***InformationService/ RTR/ RadioCommunicationChannel/ frequencyTransmission***	
AIXM Element X Path	***RadioCommunicationChannel/ timeSlice/ RadioCommunicationChannelTimeSlice [interpretation SNAPSHOT]/ frequencyTransmission***	
AIXM Mapping	***Class: RadioCommunicationChannel***	
Datatype	***ValFrequencyType***	
Type	***Decimal***	
Min inclusive	***0***	
Units of Measure	***UomFrequencyType***	
	ICAO/FAA	***MHZ***

28.2.5 Status [*operationalStatus*]

Description: An indication of the operational status of the system. If at least one frequency is available update the operational status of the affected frequency(ies) only.

Source: User-selected (required).

TABLE 28.7
Operational Status

Attribute	Value		
AIXM Path (UML)	InformationService/ ServiceOperationalStatus/ operationalStatus		
AIXM Element X Path	InformationService/ timeslice/ InformationServiceTimeSlice [interpretation TEMPDELTA]/ availability/ ServiceOperationalStatus/ operationalStatus		
AIXM Mapping	Class: ServiceOperationalStatus		
Enumeration	CodeStatusServiceType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS

		Plain Text	Out of service
	OTHER:DECOMMISSIONED	ICAO	DECOMMISIONED
		FAA	DCMSN
		Plain Text	Decommissioned
	OTHER:COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned

Description: An indication of the operational status of the affected frequency, assuming there is at lease one still operating. If all frequencies are out of service, then update the status of the service.

Source: User-selected (required).

TABLE 28.8
Operational Status for the Frequency

Attribute	Value		
AIXM Path (UML)	InformationService/ RadioCommunicationChannel/ RadioCommunicationOperationalStatus/ operationalStatus		
AIXM Element X Path	RadioCommunicationChannel/ RadioCommunicationChannelTimeSlice [interpretation TEMPDELTA] /RadioCommunicationOperationalStatus/ operationalStatus		
AIXM Mapping	Class: RadioCommunicationOperationalStatus		
Enumeration	CodeStatusServiceType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of service
	OTHER:DECOMMISSIONED	ICAO	DECOMMISIONED
		FAA	DCMSN
		Plain Text	Decommissioned
	OTHER:COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned

28.3 QCodes

TABLE 28.9
QCodes for ATIS Status

AIXM Code	QCode	
ALL	**Series**	**C**
UNSERVICEABLE	QCode	QCAAS
	Scope	AE
	Traffic	IV
	Purpose	B
DECOMMISSIONED	QCode	QCAAW
	Scope	AE
	Traffic	IV
	Purpose	B
COMMISSIONED	QCode	QCACS
	Scope	AE
	Traffic	IV
	Purpose	B

28.4 Business Rules

28.4.1 Template Business Rules

a. When *type* equals null, then "Specify a type of information service outlet."

b. When *operationalStatus* equals null, then "Specify a status."

c. When *operationalStatus* equals "COMISSIONED" and *frequencyTransmission* equals null, then "Enter a frequency."

d. When *operationalStatus* equals "DECOMMISSIONED" and baseline status equal to "DECOMMISSIONED," then "System has already been DECOMMISSIONED."

e. When *operationalStatus* equals "COMMISSIONED" and baseline status equal to "COMMISSIONED," then "System has already been commissioned."

f. When *operationalStatus* equals "UNSERVICEABLE" and baseline status equal to "UNSERVICEABLE," then "System is already out of service."

g. When *frequencyTransmission* less than or equal to 0, then "Specify a frequency that is greater then 0."

h. The field for *frequencyTransmission* must equal a numerical value between 100.000 and 400.000 with up to (but not required) three decimal places.

28.4.2 Policy Business Rules

a. If several frequencies are out, but one is still operating, issue the out of service frequencies in one NOTAM.

28.4.3 Data Encoding Business Rules

a. The element of type *operationalStatus* equal to COMMISSIONED or DECOMMISSIONED must use a TimeSlice of type PERMDELTA.

b. The element of type *operationalStatus* equal to COMMISSIONED or DECOMMISSIONED should point to the associated RTR and associated frequency and must use a TimeSlice of type SNAPSHOT (if the RTR already exits) or BASELINE (if the RTR has the element of type *operationalStatus* equal to COMMISSIONED).

c. The element of type *operationalStatus* equal to UNSERVICEABLE must use a TimeSlice of type TEMPDELTA.

d. An xlink:href is required, and should point to the associated RTR, and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

e. The associated InformationService should have interpretation SNAPSHOT; an xlink:href is required, should point to the associated AirportHeliport, and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

28.5 Sample AIXM Message

Sample NOTAM Message: SVC ATIS OTS


```xml
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2008 (http://www.altova.com) by Jennifer Bewley, CNA in support of FAA -->
<notamMessage:AIXMBasicMessage xsi:schemaLocation=http://www.aixm.aero/schema/5.1
./AIXM_Features.xsd http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd
gml:id="FNS-Message" xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message"
xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:event="http://www.aixm.aero/schema/5.1/event"
xmlns:gml="http://www.opengis.net/gml/3.2" xmlns="http://www.aixm.aero/schema/5.1">
  <notamMessage:hasMember>
    <InformationService gml:id="IS01">
      <timeSlice>
        <InformationServiceTimeSlice gml:id="IS01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="IS01_TS01_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <type>ATIS</type>
          <navaidBroadcast xlink:href="#MXQ"/>
          <clientAirport xlink:href="#ACY"/>
        </InformationServiceTimeSlice>
      </timeSlice>
      <timeSlice>
        <InformationServiceTimeSlice gml:id="IS01_TS02">
          <gml:validTime>
            <gml:TimePeriod gml:id="IS01_TS02_TP01">
              <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
              <gml:endPosition>2010-04-07T10:00:00</gml:endPosition>
            </gml:TimePeriod>
          </gml:validTime>
          <interpretation>TEMPDELTA</interpretation>
          <sequenceNumber>2</sequenceNumber>
          <availability>
            <ServiceOperationalStatus gml:id="SOS_01">
              <operationalStatus>UNSERVICEABLE</operationalStatus>
            </ServiceOperationalStatus>
          </availability>
        </InformationServiceTimeSlice>
      </timeSlice>
    </InformationService>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <AirportHeliport gml:id="ACY">
      <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-
aaea1ac595j</gml:identifier>
      <timeSlice>
        <AirportHeliportTimeSlice gml:id="ACY_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="ACY_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
```

```
            <designator>ACY</designator>
            <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
            <locationIndicatorICAO>KACY</locationIndicatorICAO>
            <ARP>
              <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP03">
                <gml:pos>39.27 -74.34</gml:pos>
              </ElevatedPoint>
            </ARP>
          </AirportHeliportTimeSlice>
        </timeSlice>
      </AirportHeliport>
    </notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```


Sample NOTAM Message: SVC ATIS 122.6 OTS (Frequency 122.6 MHz is out of service but the service is available on other frequencies)


```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2008 (http://www.altova.com) by Jennifer Bewley, CNA in support of FAA -->
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1
./AIXM_Features.xsd http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd"
gml:id="FNS-Message" xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message"
xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:event="http://www.aixm.aero/schema/5.1/event"
xmlns:gml="http://www.opengis.net/gml/3.2" xmlns="http://www.aixm.aero/schema/5.1">
  <notamMessage:hasMember>
    <InformationService gml:id="IS01">
      <timeSlice>
        <InformationServiceTimeSlice gml:id="IS01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="IS01_TS01_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <type>ATIS</type>
          <communicationBroadcast xlink:href="#RTR"/>
          <clientAirport xlink:href="#ACY"/>
        </InformationServiceTimeSlice>
      </timeSlice>
      <timeSlice>
        <InformationServiceTimeSlice gml:id="IS01_TS02">
          <gml:validTime>
            <gml:TimePeriod gml:id="IS01_TS02_TP01">
              <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
              <gml:endPosition>2010-04-07T10:00:00</gml:endPosition>
            </gml:TimePeriod>
          </gml:validTime>
          <interpretation>TEMPDELTA</interpretation>
          <sequenceNumber>2</sequenceNumber>
          <availability>
            <ServiceOperationalStatus gml:id="SOS_01">
              <operationalStatus>NORMAL</operationalStatus>
            </ServiceOperationalStatus>
          </availability>
        </InformationServiceTimeSlice>
      </timeSlice>
```

```
    </InformationService>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <RadioCommunicationChannel gml:id="RCC01">
      <timeSlice>
        <RadioCommunicationChannelTimeSlice gml:id="RCC01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="RCC01_TS01_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <frequencyTransmission uom="MHZ">122.6</frequencyTransmission>
        </RadioCommunicationChannelTimeSlice>
      </timeSlice>
      <timeSlice>
        <RadioCommunicationChannelTimeSlice gml:id="RCC01_TS02">
          <gml:validTime>
            <gml:TimePeriod gml:id="RCC01_TS02_TP01">
              <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
              <gml:endPosition>2010-04-07T10:00:00</gml:endPosition>
            </gml:TimePeriod>
          </gml:validTime>
          <interpretation>TEMPDELTA</interpretation>
          <sequenceNumber>2</sequenceNumber>
          <availability>
            <RadioCommunicationOperationalStatus gml:id="RCOS01">
              <operationalStatus>UNSERVICEABLE</operationalStatus>
            </RadioCommunicationOperationalStatus>
          </availability>
        </RadioCommunicationChannelTimeSlice>
      </timeSlice>
    </RadioCommunicationChannel>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <AirportHeliport gml:id="ACY">
      <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-
aaea1ac595j</gml:identifier>
      <timeSlice>
        <AirportHeliportTimeSlice gml:id="ACY_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="ACY_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>ACY</designator>
          <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
          <locationIndicatorICAO>KACY</locationIndicatorICAO>
          <ARP>
            <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP03">
              <gml:pos>39.27 -74.34</gml:pos>
            </ElevatedPoint>
          </ARP>
        </AirportHeliportTimeSlice>
      </timeSlice>
    </AirportHeliport>
  </notamMessage:hasMember>
```

</notamMessage:AIXMBasicMessage>

28.6 Translation Templates

28.6.1 FAA

SVC *type* [*frequency*] *status*

28.6.2 ICAO E Line

SVC *type* [*frequency*] *status*

28.6.3 Plain Language

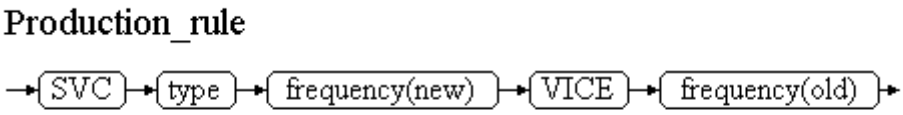
Accountable Airport: *accountableFacility*
NOTAM Number: XX/XXX
Affected Airport: *affectedFacility*
Effective Time Frame
Valid From: *startDate*
Valid To: *endDate*
Communications Outlet
Type of Outlet: *type*
Frequency affected: *frequency,…, frequency*
Status: *status*

28.7 Additional Analysis

None.

29 Service – ATIS Frequency Change

Specify a frequency change for an Automatic Terminal Information Service (ATIS) frequency for which your facility has monitor responsibility.



29.1 Example NOTAMs

1. !TEB 05/037 TEB SVC ATIS 132.85 VICE 132.025

29.2 AIXM Mapping and Translation

29.2.1 Scenario Details

TABLE 29.1

Attribute	Value
Description	Specify a frequency change for an information service outlet.
Maps to Keyword:	Service
Feature Type Id	AirportHeliport/ InformationService/
Feature Xpath	aixm:InformationService
AIXM Mapping Diagram	Information Service
NOTAM lifespan	
Start ASAP	No

29.2.2 Designator [*designator*] – Aerodrome

Description: A coded designator for an Aerodrome/Heliport.

The rules according to which this identifier should be formed are as follows:

a. If the AD/HP has an ICAO four-letter location indicator, then this one will become the CODE_ID for the Aerodrome/Heliport;

b. If the AD/HP does not have an ICAO four-letter location indicator, but it has an IATA three letter code, then this one will become the CODE_ID for the Aerodrome/Heliport;

c. If the AD/HP has neither an ICAO four-letter location indicator nor an IATA three letter code, then an artificial generated code will be used. This will contain a group of letters and a number. The group of letters could be the two-letter code of the State responsible for the Aerodrome/Heliport, and the number could be an integer between 0001 and 9999.

Source: User-selected from baseline data (required).

TABLE 29.2
Aerodrome FAA designator

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – designator (attribute)

AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ designator
AIXM Mapping	Class: AirportHeliport
Type	CodeAirportHeliportDesignatorType
Min length	3
Max length	6
Pattern	([A-Z]|\d)*

Description: The four-letter ICAO location indicator of the aerodrome/heliport, as listed in ICAO DOC 7910.

Source: User-selected from baseline data – translated from FAA designator.

TABLE 29.3
Aerodrome ICAO designator

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – locationIndicatorICAO (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ locationIndicatorICAO
AIXM Mapping	Class: AirportHeliport
Type	CodeICAOType
Min length	4
Max length	4
Pattern	[A-Z]*

Description: The primary official name of an aerodrome as designated by an appropriate authroisty.

Source: User-selected from baseline data – translated from FAA designator.

TABLE 29.4
Official Aerodrome Name

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – name (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ name
AIXM Mapping	Class: AirportHeliport
Type	CodeNameType
Min length	1
Max length	60
Pattern	[A-Z]*

29.2.3 Service Type [*type*]

Description: The type of Information Service provided.

Source: User-selected from baseline data (required).

TABLE 29.5
Service Type

Attribute	Value		
AIXM Path (UML)	InformationService/type		
AIXM Element XPath	InformationService/ timeSlice/ InformationServiceTimeSlice [interpretation SNAPSHOT]/ type		
AIXM Mapping	Class: InformationService		
Enumeration	CodeServiceInformationType		
	AIXM	**Translations**	
	ATIS	ICAO	ATIS

		FAA	ATIS
		Plain Text	Automatic Terminal Information Service (ATIS)

29.2.4 Old Radio Frequency [*frequencyTransmission*]

Description: The radio frequency for transmission.

Source: User-selected from baseline data (if available).

TABLE 29.6
Old Radio Frequency

Attribute	***Value***	
AIXM Path (UML)	***InformationService/ RadioCommunicationChannel/ frequencyTransmission***	
AIXM Element X Path	***RadioCommunicationChannel/ timeSlice/ RadioCommunicationChannelTimeSlice [interpretation SNAPSHOT]/ frequencyTransmission***	
AIXM Mapping	***Class: RadioCommunicationChannel***	
Datatype	***ValFrequencyType***	
Type	***Decimal***	
Min inclusive	***0***	
Units of Measure	***UomFrequencyType***	
	ICAO/FAA	***MHZ***

29.2.5 New Radio Frequency [*frequencyTransmission*]

Description: The new radio frequency for transmission.

Source: User- defined.

TABLE 29.7
New Radio Frequency

Attribute	***Value***	
AIXM Path (UML)	***InformationService/ RadioCommunicationChannel/ frequencyTransmission***	
AIXM Element X Path	***RadioCommunicationChannel/ timeSlice/ RadioCommunicationChannelTimeSlice [interpretation PERMDELTA]/ frequencyTransmission***	
AIXM Mapping	***Class: RadioCommunicationChannel***	
Datatype	***ValFrequencyType***	
Type	***Decimal***	
Min inclusive	***0***	
Units of Measure	***UomFrequencyType***	
	ICAO/FAA	***MHZ***

29.3 QCodes

TABLE 29.8
QCodes for Communications Outlet Frequency Change

AIXM Code	**QCode**	
ALL	**Series**	**C**
Operating frequency changed to…	QCode	QCACF
	Scope	A
	Traffic	IV

	Purpose	B

29.4 Business Rules

29.4.1 Template Business Rules

a. When *type* equals null, then "Specify a type of communications outlet."

b. When *frequencyTransmission(new)* equals *frequencyTransmission(old)*, then "Specify a new frequency."

c. When *frequencyTransmission(new)* equals null then "Enter the new frequency."

d. When *frequencyTransmission(old)* equals null then "Enter the old frequency."

e. When *frequencyTransmission(new)* less than or equal to 0, then "Specify a frequency that is greater then 0."

f. When *frequencyTransmission(old)* less than or equal to 0, then "Specify a frequency that is greater then 0."

g. The field for *frequencyTransmission(old)* must equal a numerical value between 100.000 and 400.000 with up to (but not required) three decimal places.

h. The field for *frequencyTransmission(old)* must equal a numerical value between 100.000 and 400.000 with up to (but not required) three decimal places.

29.4.2 Policy Business Rules

29.4.3 Data Encoding Business Rules

a. The element of type *frequencyTransmission(new)* must use a TimeSlice of type PERMDELTA.

b. The associated InformationService should have interpretation SNAPSHOT; an xlink:href is required, should point to the associated AirportHeliport, and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

29.5 Sample AIXM Message

Sample NOTAM Message: SVC ATIS 291.725 VICE 282.275


```xml
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2008 (http://www.altova.com) by Jennifer Bewley, CNA in support of FAA -->
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1
./AIXM_Features.xsd http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd"
gml:id="FNS-Message" xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message"
xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:event="http://www.aixm.aero/schema/5.1/event"
xmlns:gml="http://www.opengis.net/gml/3.2" xmlns="http://www.aixm.aero/schema/5.1">
  <notamMessage:hasMember>
    <InformationService gml:id="IS01">
      <timeSlice>
        <InformationServiceTimeSlice gml:id="IS01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="IS01_TS01_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
```

```
            </gml:validTime>
            <interpretation>SNAPSHOT</interpretation>
            <radioCommunication xlink:href="#RCC01"/>
            <type>ATIS</type>
            <clientAirport xlink:href="#ACY"/>
          </AirTrafficControlServiceTimeSlice>
        </timeSlice>
        <timeSlice>
          <InformationServiceTimeSlice gml:id="IS01_TS02">
            <gml:validTime>
              <gml:TimePeriod gml:id="ATCS01_TS02_TP01">
                <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
                <gml:endPosition>2010-04-07T10:00:00</gml:endPosition>
              </gml:TimePeriod>
            </gml:validTime>
            <interpretation>TEMPDELTA</interpretation>
            <sequenceNumber>2</sequenceNumber>
            <availability>
              <ServiceOperationalStatus gml:id="SOS_01">
                <operationalStatus>NORMAL</operationalStatus>
              </ServiceOperationalStatus>
            </availability>
          </InformationServiceTimeSlice>
        </timeSlice>
      </InformationService>
    </notamMessage:hasMember>
    <notamMessage:hasMember>
      <RadioCommunicationChannel gml:id="RCC01">
        <timeSlice>
          <RadioCommunicationChannelTimeSlice gml:id="RCC01_TS01">
            <gml:validTime>
              <gml:TimeInstant gml:id="RCC01_TS01_TI01">
                <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
              </gml:TimeInstant>
            </gml:validTime>
            <interpretation>SNAPSHOT</interpretation>
            <frequencyTransmission uom="MHZ">291.725</frequencyTransmission>
          </RadioCommunicationChannelTimeSlice>
        </timeSlice>
        <timeSlice>
          <RadioCommunicationChannelTimeSlice gml:id="RCC01_TS02">
            <gml:validTime>
              <gml:TimePeriod gml:id="RCC01_TS02_TP01">
                <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
                <gml:endPosition indeterminatePosition="unknown"></gml:endPosition>
              </gml:TimePeriod>
            </gml:validTime>
            <interpretation>PERMDELTA</interpretation>
            <frequencyTransmission uom="MHZ">282.275</frequencyTransmission>
          </RadioCommunicationChannelTimeSlice>
        </timeSlice>
      </RadioCommunicationChannel>
    </notamMessage:hasMember>
    <notamMessage:hasMember>
      <AirportHeliport gml:id="ACY">
        <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-
aaea1ac595j</gml:identifier>
        <timeSlice>
```

```
        <AirportHeliportTimeSlice gml:id="ACY_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="ACY_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>ACY</designator>
          <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
          <locationIndicatorICAO>KACY</locationIndicatorICAO>
          <ARP>
            <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP03">
              <gml:pos>39.27 -74.34</gml:pos>
            </ElevatedPoint>
          </ARP>
        </AirportHeliportTimeSlice>
      </timeSlice>
    </AirportHeliport>
  </notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```


29.6 Translation Templates

29.6.1 FAA

SVC [*name*] **type** *frequency(new)* **VICE** *frequency(old)*

29.6.2 ICAO E Line

SVC [*name*] *type frequency(new)* **VICE** *frequency(old)*

29.6.3 Plain Language

Accountable Airport: *accountableFacility*

NOTAM Number: XX/XXX

Affected Airport: *affectedFacility*

Effective Time Frame
Valid From: *startDate*
Valid To: *endDate*

Information Service Outlet Frequency Change

Type of Outlet: *type*

Use frequency *frequency(new)* **instead of** *frequency(old)*

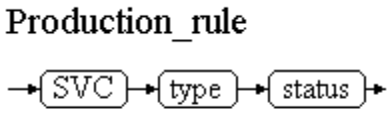
29.7 Additional Analysis

None.

!SDF 12/015 SDF SVC TRAFFIC INFORMATION SERVICE BROADCAST OTS WEF 0912091200-0912091600

30 Service – Automatic Dependant Surveillance Broadcast (ADS-B) Services Status

Specify the status of the Traffic Information Service Broadcast or the Flight Information Service Broadcast (commissioned, decommissioned, out of service, unreliable) for which your facility has monitor responsibility.



30.1 Example NOTAMs

1. !SDF 12/015 SDF SVC TRAFFIC INFORMATION SERVICE BROADCAST OTS
2. !PHL PHL SVC TRAFFIC INFORMATION SERVICE BROADCAST NOT AVBL

30.2 AIXM Mapping and Translation

30.2.1 Scenario Details

TABLE 30.1

Attribute	Value
Description	Specify status for the Traffic Information Service Broadcast.
Maps to Keyword:	Service
Feature Type Id	AirportHeliport/ InformationService/
Feature Xpath	aixm:InformationService
AIXM Mapping Diagram	Information Service
NOTAM lifespan	
Start ASAP	No

30.2.2 Airspace Designator [*designator*]

Description: The Airspace about which the information is provided.

Source: User-selected from baseline data (required).

TABLE 30.2
Airspace designator

Attribute	Value
AIXM Path (UML)	Airspace (feature) – designator (attribute)
AIXM Element Xpath	Airspace/ timeSlice/ AirspaceTimeSlice [interpretation SNAPSHOT]/ designator
AIXM Mapping	Class: Airspace
Type	CodeAirspaceDesignatorType
Min length	1
Max length	10
Pattern	([A-Z]|[0-9]|[, !"&#$%'\(\)*\+\-\./:;<=>\?@\[\\\]\^_|\{\}])*

30.2.3 Service Type [*type*]

Description: The type of Information Service provided.

Source: User-selected from baseline data (required).

TABLE 30.3
Service Type

Attribute	Value		
AIXM Path (UML)	InformationService/type		
AIXM Element XPath	InformationService/ timeSlice/ InformationServiceTimeSlice [interpretation SNAPSHOT]/ type		
AIXM Mapping	Class: InformationService		
Enumeration	CodeServiceInformationType		
	AIXM	**Translations**	
	OTHER:TISB	ICAO	TRAFFIC INFORMATION SERVICE BROADCAST
		FAA	TRAFFIC INFORMATION SERVICE BROADCAST
		Plain Text	Traffic Information Service Broadcast
	OTHER:FISB	ICAO	FLIGHT INFORMATION SERVICE BROADCAST
		FAA	FLIGHT INFORMATION SERVICE BROADCAST
		Plain Text	Flight Information Service Broadcast

30.2.4 Status [*operationalStatus*]

Description: An indication of the operational status of the system.

Source: User-selected (required).

TABLE 30.4
Operational Status

Attribute	Value		
AIXM Path (UML)	InformationService/ ServiceOperationalStatus/ operationalStatus		
AIXM Element X Path	InformationService/ timeslice/ InformationServiceTimeSlice [interpretation TEMPDELTA]/ availability/ ServiceOperationalStatus/ operationalStatus		
AIXM Mapping	Class: ServiceOperationalStatus		
Enumeration	CodeStatusServiceType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of service
	OTHER:DECOMMISSIONED	ICAO	DECOMMISIONED
		FAA	DCMSN
		Plain Text	Decommissioned
	OTHER:COMMISSIONED	ICAO	COMMISSIONED
		FAA	CMSN
		Plain Text	Commissioned
	OTHER:NOT_AVAILABLE	ICAO	NOT AVAILABLE
		FAA	NOT ABVL
		Plain Text	Not available
	OTHER:UNRELIABLE	ICAO	UNREL
		FAA	UNREL

		Plain Text	Unreliable

30.3 QCodes

TABLE 30.5
QCodes for Traffic and Flight Information Service Status

AIXM Code	QCode	
ALL	**Series**	**C**
UNSERVICEABLE	QCode	QXXXX
	Scope	A
	Traffic	IV
	Purpose	B
DECOMMISSIONED	QCode	QXXXX
	Scope	A
	Traffic	IV
	Purpose	B
COMMISSIONED	QCode	QXXXX
	Scope	A
	Traffic	IV
	Purpose	B
NOT AVAILABLE	QCode	QXXXX
	Scope	A
	Traffic	IV
	Purpose	B
UNRELIABLE	QCode	QXXXX
	Scope	A
	Traffic	IV
	Purpose	B

30.4 Business Rules

30.4.1 Template Business Rules

a. When *type* equals null, then "Specify a type of information service outlet."

b. When *operationalStatus* equals null, then "Specify a status."

c. When *operationalStatus* equals "DECOMMISSIONED" and baseline status equal to "DECOMMISSIONED," then "System has already been DECOMMISSIONED."

d. When *operationalStatus* equals "COMMISSIONED" and baseline status equal to "COMMISSIONED," then "System has already been commissioned."

e. When *operationalStatus* equals "UNSERVICEABLE" and baseline status equal to "UNSERVICEABLE," then "System is already out of service."

f. When *operationalStatus* equals "NOT_AVIALABLE" and baseline status equal to "NOT_AVAILABLE," then "System is already unavailable."

g. When *operationalStatus* equals "UNRELIABLE" and baseline status equal to "UNRELIABLE," then "System is already unreliable."

30.4.2 Policy Business Rules (proposed future policy)

a. ADS-B services are comprised of the Flight Information Service-Broadcast (FIS-B) and the Traffic Information Service Broadcast (TIS-B).

b. When an ADS-B service is unreliable, the service condition must be NOTAMed as UNREL.

c. When the service is not available, as result of a service volume network being out of service, the service condition will be NOTAMed as NOT AVBL.

d. The location designator used for the NOTAM must be the 3-letter aerodrome or ARTCC designator of the associated service volume.

30.4.3 Data Encoding Business Rules

a. The element of type *operationalStatus* equal to COMMISSIONED or DECOMMISSIONED must use a TimeSlice of type PERMDELTA.

b. The element of type *operationalStatus* equal to UNRELIABLE, UNSERVICEABLE or NOT_AVAILABLE must use a TimeSlice of type TEMPDELTA.

c. The associated InformationService should have interpretation SNAPSHOT; an xlink:href is required, should point to the associated Airspace, and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

30.5 Sample AIXM Message

Sample NOTAM Message: ZHU SVC TISB OTS


```xml
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2008 (http://www.altova.com) by Jennifer Bewley, CNA in support of FAA -->
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1
./AIXM_Features.xsd http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd"
gml:id="FNS-Message" xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message"
xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:event="http://www.aixm.aero/schema/5.1/event"
xmlns:gml="http://www.opengis.net/gml/3.2" xmlns="http://www.aixm.aero/schema/5.1">
  <notamMessage:hasMember>
    <InformationService gml:id="IS01">
      <timeSlice>
        <InformationServiceTimeSlice gml:id="IS01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="IS01_TS01_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <type>OTHER:TISB</type>
          <clientAirspace xlink:href="#ZHU"/>
        </InformationServiceTimeSlice>
      </timeSlice>
      <timeSlice>
        <InformationServiceTimeSlice gml:id="IS01_TS02">
          <gml:validTime>
            <gml:TimePeriod gml:id="IS01_TS02_TP01">
              <gml:beginPosition>2010-04-07T09:00:00</gml:beginPosition>
              <gml:endPosition>2010-04-07T10:00:00</gml:endPosition>
            </gml:TimePeriod>
          </gml:validTime>
          <interpretation>TEMPDELTA</interpretation>
          <sequenceNumber>2</sequenceNumber>
          <availability>
```

```
            <ServiceOperationalStatus gml:id="SOS_01">
              <operationalStatus>UNSERVICEABLE</operationalStatus>
            </ServiceOperationalStatus>
          </availability>
        </InformationServiceTimeSlice>
      </timeSlice>
    </InformationService>
  </notamMessage:hasMember>
  <notamMessage:hasMember>
    <Airspace gml:id="ZHU">
      <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-
aaea1ac595j</gml:identifier>
      <timeSlice>
        <AirspaceTimeSlice gml:id="ZHU_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="ZHU_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>ZHU</designator>
          <name>HOUSTON CENTER</name>
          <controlType>CIVIL</controlType>
        </AirspaceTimeSlice>
      </timeSlice>
    </Airspace>
  </notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```


30.6 Translation Templates

30.6.1 FAA

SVC *type status*

30.6.2 ICAO E Line

SVC *type status*

30.6.3 Plain Language

Accountable Center: *accountableFacility*

NOTAM Number: XX/XXX

Affected Airspace: *affectedFacility*

Effective Time Frame
Valid From: *startDate*
Valid To: *endDate*

Type of Service: *type*

Status: *status*

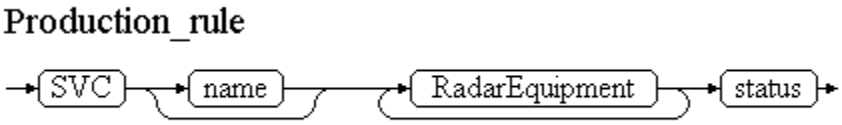
30.7 Additional Analysis

None.

Radar System Services

31 Radar – Radar System Status

Specify the operational status of a radar system.



31.1 Example NOTAMs

1. !OAK 08/182 ZOA SVC MCCLELLAN ASR OTS WEF 1008231620-1008231720
2. !ACK 11/017 ACK SVC ASR/SSR WEF 0911161300-0911162100
3. !IAD IAD SVC TAR/SSR OTS*
4. ! DTW 07/110 DTW SVC PRM OTS
5. !STL 08/122 STL SVC PRM OTS WEF 1008102145-1008102240
6. !SFO 01/017 SFO SVC PRM APCHS UNAVBL
7. ! SAN 02/100 SAN SVC ASDE OTS 0730-1330 DLY WEF 1002230730-1002241330

***Source**: FAA Order JO 7930.2
Source: US NOTAM Repository

31.2 AIXM Mapping and Translation

31.2.1 Scenario Details

TABLE 31.1

Attribute	Value
Description	Specify a change in radar status for the entire airport.
Maps to Keyword	SVC
Feature Type Id	Surveillance/Surveillance Equipment
Feature Xpath	RadarSystem/ RadarEquipment/ aixm:PrimarySurveillanceRadar RadarSystem/ RadarEquipment/ aixm:SecondarySurveillanceRadar RadarSystem/ RadarEquipment/ aixm:SurfaceRunwayMonitoring
AIXM Mapping Diagram	Surveillance/ Surveillance System Surveillance/ Surveillance Equipment
NOTAM lifespan	
Start ASAP	No

31.2.2 Designator [designator] – Aerodrome

Description: A coded designator for an Aerodrome/Heliport.

The rules for providing the affected aerodrome information are provided in Chapter 5 – Affected Location (in AIXM).

Source: User-selected from baseline data (required).

TABLE 31.2
Aerodrome FAA designator

Attribute	Value
AIXM Path (UML)	AirportHeliport (feature) – designator (attribute)
AIXM Element Xpath	AirportHeliport/ timeSlice/ AirportHeliportTimeSlice [interpretation SNAPSHOT]/ designator
AIXM Mapping	Class: AirportHeliport
Type	CodeAirportHeliportDesignatorType
Min length	3
Max length	6
Pattern	([A-Z]|\d)*

31.2.3 Radar System Name [name]

Description: The surveillance equipment name. Example: MCCLELLAN ASR.
Source: User-selected from baseline data (optional).

TABLE 31.3
Radar System Name

Attribute	Value
AIXM Path (UML)	Surveillance/ Surveillance System/ RadarSystem (feature)/ name(attribute)
AIXM Element XPath	RadarSystem/ timeSlice/ RadarSystemTimeSlice [interpretation SNAPSHOT]/ name
AIXM Mapping	Class: RadarSystem
Min length	1
Max length	60
Enumeration	TextNameType

31.2.4 Radar System Collocated Location [location]

Description: An AIXM elevated surface derived from [gml:point], which extends Surface with properties that represent the vertical position.

Source: User-selected from baseline data (required).

TABLE 31.4
Radar Location

Attribute	Value
AIXM Path (UML)	Surveillance/ Surveillance System/ RadarSystem (feature)/ location (object)
AIXM Element Xpath	RadarSystem/ timeSlice/ RadarSystemTimeSlice [interpretation: SNAPSHOT]/ location/ ElevatedPoint/ gml:pos
AIXM Mapping	ElevatedSurface
Datatype	GML – decimal

31.2.5 Radar System Operational Status [operationalStatus]

Description: Indicates the operational status of the Radar System.

Source: User-selected (required)

TABLE 31.5
Radar System Operational Status

Attribute	Value		
AIXM Path (UML)	Surveillance/ Surveillance System/ RadarSystem (feature)/ RadarOperationalStatus (object)/ operationalStatus (attribute)		
AIXM Element Xpath	RadarSystem/ timeSlice/ RadarSystemTimeSlice [interpretation: TEMPDELTA]/ availability/ radarOperationStatus/ operationalStatus		
AIXM Mapping	Class: RadarOperationalStatus		
Enumeration	CodeStatusRadarType		
	AIXM	Translations	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of Service
	PARTIAL	ICAO	…
		FAA	…
		Plain Text	…

Radar Equipment

31.2.6 Primary Surveillance Radar Type [type]

Description: The primary radar equipment type. Example: TAR, ARSR, ASR.

Source: User-selected from baseline data (optional if Secondary Surveillance selected).

TABLE 31.6
Primary Surveillance Radar

Attribute	Value		
AIXM Path (UML)	Surveillance/ Surveillance Equipment/ RadarEquipment (feature)/ SurveillanceRadar (feature)/ PrimarySurveillanceRadar(feature)/ type(attribute)		
AIXM Element XPath	PrimarySurveillanceRadar / timeSlice/ PrimarySurveillanceRadarTimeSlice/ [interpretation SNAPSHOT]/ type		
AIXM Mapping	Class: PrimarySurveillanceRadar		
Enumeration	CodePrimaryRadarType		
	AIXM	**Translations**	
	ASR	ICAO	AIRPORT SURVEILLANCE RADAR
		FAA	ASR
		Plain Text	Airport Surveillance Radar
	OTHER: TAR	ICAO	TAR
		FAA	TAR
		Plain Text	Terminal Area Surveillance Radar

31.2.7 Primary Surveillance Radar Status [operationalStatus]

Description: The operational status of the primary radar system.

Source: User-selected (required).

TABLE 31.7
Primary Surveillance Radar Status

Attribute	Value		
AIXM Path (UML)	Surveillance/ Surveillance Equipment/ RadarEquipment (feature)/ RadarOperationalStatus (object)/ operationalStatus (attribute)		
AIXM Element Xpath	PrimarySurveillanceRadar / timeSlice/ PrimarySurveillanceRadarTimeSlice/ [interpretation: TEMPDELTA]/ availability/ radarOperationStatus/ operationalStatus		
AIXM Mapping	Class: RadarOperationalStatus		
Enumeration	CodeStatusRadarType		
	AIXM	**Translations**	
	UNMONITORED	ICAO	UNMONITORED
		FAA	UNMONITORED
		Plain Text	Unmonitored
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of service

31.2.8 Primary Surveillance Radar Location [location]

Description: An AIXM elevated surface derived from [gml:point], which extends Surface with properties that represent the vertical position.

Source: User-selected from baseline data (optional, required if Primary Surveillance Radar Equipment is selected).

TABLE 31.8
Primary Surveillance Radar Location

Attribute	Value
AIXM Path (UML)	Surveillance/ Surveillance System/ RadarEquipment (feature)/ location (object)
AIXM Element Xpath	PrimarySurveillanceRadar / timeSlice/ PrimarySurveillanceRadarTimeSlice/ [interpretation: SNAPSHOT]/ location/ ElevatedPoint/ gml:pos
AIXM Mapping	ElevatedSurface
Datatype	GML – decimal

31.2.9 Secondary Surveillance Radar Equipment

Description: The secondary surveillance radar system.

Source: User-selected from baseline data (optional if Primary Surveillance Radar selected).

TABLE 31.9
Secondary Surveillance Radar

Attribute	Value
AIXM Path (UML)	Surveillance/ Surveillance Equipment/ RadarEquipment (feature)/ SurveillanceRadar (feature)/ SecondarySurveillanceRadar(feature)
AIXM Element XPath	SecondarySurveillanceRadar / timeSlice/ SecondarySurveillanceRadarTimeSlice
Xlink:href	RadarSystem/ timeSlice/ RadarSystemTimeslice [interpretation:SNAPSHOT]/ radarEquipment/ RadarComponent/ theRadarEquipment
AIXM Mapping	Class: SecondarySurveillanceRadar

Enumeration	AIXM	Translations	
	SSR	ICAO	SSR
		FAA	SSR
		Plain Text	Secondary Surveillance Radar

31.2.10 Secondary Surveillance Radar Status [operationalStatus]

Description: The operational status of the terminal radar system.

Source: User-selected (required).

TABLE 31.10
Secondary SurveilaanceRadar Status

Attribute	Value		
AIXM Path (UML)	Surveillance/ Surveillance Equipment/ RadarEquipment (feature)/ RadarOperationalStatus (object)/ operationalStatus (attribute)		
AIXM Element Xpath	SecondarySurveillanceRadar / timeSlice/ SecondarySurveillanceRadarTimeSlice/ [interpretation: TEMPDELTA]/ availability/ RadarOperationalStatus/ operationalStatus		
AIXM Mapping	Class: RadarOperationalStatus		
Enumeration	CodeStatusRadarType		
	AIXM	Translations	
	UNMONITORED	ICAO	UNMONITORED
		FAA	UNMONITORED
		Plain Text	Unmonitored
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of service

31.2.11 Secondary Surveillance Radar Location [location]

Description: An AIXM elevated surface derived from [gml:point], which extends Surface with properties that represent the vertical position.

Source: User-selected from baseline data (optional, required if Secondary Surveillance Radar Equipment is selected).

TABLE 31.11
Secondary Surveillance Radar Location

Attribute	Value
AIXM Path (UML)	Surveillance/ Surveillance System/ RadarEquipment (feature)/ location (object)
AIXM Element Xpath	SecondarySurveillanceRadar / timeSlice/ SecondarySurveillanceRadarTimeSlice/ [interpretation: SNAPSHOT]/ location/ ElevatedPoint/ gml:pos
AIXM Mapping	ElevatedSurface
Datatype	GML – decimal

31.2.12 Surface Runway Radar Monitoring Equipment [type]

Description: The precision approach radar equipment type.
Example: PRM.

Source: User-selected from baseline data (optional).

TABLE 31.12
Surface Runway Monitor

Attribute	Value		
AIXM Path (UML)	Surveillance/ Surveillance System/ RadarEquipment (feature)/ SurfaceRunwayMonitor(feature)/ type(attribute)		
AIXM Element XPath	SurfaceRunwayMonitor/ timeSlice/ SurfaceRunwayMonitorTimeSlice/ [interpretation SNAPSHOT]/ type		
AIXM Mapping	Class: SurfaceRunwayMonitoring		
Enumeration	CodeSRMType		
	AIXM	**Translations**	
	OTHER:ASDE	ICAO	AIRPORT SURFACE DETECTION EQUIPMENT
		FAA	ASDE
		Plain Text	Airport Surface Detection Equipment
	OTHER:PRM	ICAO	PRECISION RUNWAY MONITOR
		FAA	PRECISION RUNWAY MONITOR
		Plain Text	Precision Runway Monitor

31.2.13 Surface Runway Radar Monitoring Status [operationalStatus]

Description: The operational status of the terminal radar system.

Source: User-selected (required).

TABLE 31.13
Secondary SurveilaanceRadar Status

Attribute	Value		
AIXM Path (UML)	Surveillance/ Surveillance System/ RadarEquipment (feature)/ SurfaceRunwayMonitor(feature)/ RadarOperationalStatus (object)/ operationalStatus (attribute)		
AIXM Element Xpath	SurfaceRunwayMonitor/ timeSlice/ SurfaceRunwayMonitorTimeSlice / [interpretation: TEMPDELTA]/ availability/ radarOperationStatus/ operationalStatus		
AIXM Mapping	Class: RadarOperationalStatus		
Enumeration	CodeStatusRadarType		
	AIXM	**Translations**	
	UNSERVICEABLE	ICAO	OUT OF SERVICE
		FAA	OTS
		Plain Text	Out of service

31.2.14 Surface Runway Radar Monitoring Location [location]

Description: An AIXM elevated surface derived from [gml:point], which extends Surface with properties that represent the vertical position.

Source: User-selected from baseline data (optional, required if Secondary Surveillance Radar Equipment is selected).

TABLE 31.14
Secondary Surveillance Radar Location

Attribute	Value
AIXM Path (UML)	Surveillance/ Surveillance System/ RadarEquipment (feature)/

	location (object)
AIXM Element Xpath	SurfaceRunwayMonitor/ timeSlice/ SurfaceRunwayMonitorTimeSlice / [interpretation: SNAPSHOT]/ location/ ElevatedPoint/ gml:pos
AIXM Mapping	ElevatedSurface
Datatype	GML – decimal

31.3 QCodes

TABLE 31.15
Surveillance Radar QCodes

AIXM Code	QCode	
ALL	**Series**	**N**
ASR	QCode	QXXAS
	Scope	A
	Traffic	I
	Purpose	B
SSR	QCode	QCSAS
	Scope	E
	Traffic	I
	Purpose	B
OTHER:TAR	QCode	QCTAS
	Scope	AE
	Traffic	I
	Purpose	B
ASDE	QCode	QXXAS
	Scope	A
	Traffic	I
	Purpose	B
PRM	QCode	QXXAS
	Scope	A
	Traffic	I
	Purpose	B

31.4 Business Rules

31.4.1 Template Business Rules

a. If *designator* equals null, then “Select a designator.”

b. The field for *name* is optional.

c. If Primary Radar *type* equals null and if *secondaryRadar* is not indicated, then “Select a Radar System.”

d. Primary/Secondary Radar Equipment should not be selected with Surface Runway Monitor Equipment.

e. If *operationalStatus* equal null, then “Select a status.”

f. The user shall be able to select multiple Primary Radar *type* values.

g. The same RadarEquipment cannot be selected more than one time per NOTAM.

31.4.2 Policy Business Rules

a. The time period of radar status change must be more than 30 minutes.

b. The contraction “RADAR SVC” shall not be used.

c. When describing radar service, do not use the model number.

d. Identifiers used for the issuance of NOTAMs for terminal facilities shall be the identified affected location.

Source: FAA Order JO 7930.2.

31.4.3 Data Encoding Business Rules

a. For entering *operationalStatus* of the Radar System, use TimeSlice of type TEMPDELTA. Specification of *operationalStatus* is required.

b. If the *operationalStatus* is equal to OTHER:COMMISSIONED, use a TimeSlice of type BASELINE.

c. If the *operationalStatus* is equal to OTHER:COMMISSIONED, include all of the RadarEquipment information that is being commissioned in the digital message.

d. If the *operationalStatus* is equal to OTHER:DECOMMISSIONED, use a TimeSlice of type PERMDELTA.

e. For every RadarEquipment referenced in the NOTAM, an xlink:href is required within the feature RadarSystem to point to the specific equipment. Multiple RadarEquipment features may be associated with one Radar System.

f. If the *operationalStatus* of one or multiple RadarEquipment is changed, use TimeSlice of type TEMPDELTA. The value for *operationalStatus* of the RadarSystem should be specified as PARTIAL, also using a TimeSlice of type TEMPDELTA. If all RadarEquipment associated with the Radar System have the same *operationalStatus*, then the *operationalStatus* of the RadarSystem should not be equal to PARTIAL but equal to the *operationalStatus* of all Radar Equipment.

g. For every RadarEquipment, the *operationalStatus* of the RadarEquipment is required and must use TimeSlice of type TEMPDELTA.

h. The *location* of the Radar Service and RadarEquipment referenced in the NOTAM is required, baseline data permitting, and must use a TimeSlice of type SNAPSHOT unless the NavaidEquipment is referenced by UUID in a TimeSlice of type TEMPDELTA.

i. An xlink:href is required and should point to the associated AirportHeliport and must use a TimeSlice of type SNAPSHOT or identified by UUID in a TimeSlice of type TEMPDELTA.

31.5 Sample AIXM Messages

SVC ASR/SSR OTS


```
<?xml version="1.0" encoding="UTF-8"?>
<message:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1 ./AIXM_Features.xsd
http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd" gml:id="FNS-Message"
xmlns:message="http://www.aixm.aero/schema/5.1/message" xmlns:aixm="http://www.aixm.aero/schema/5.1"
xmlns:gco="http://www.isotc211.org/2005/gco" xmlns:gmd="http://www.isotc211.org/2005/gmd"
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:event="http://www.aixm.aero/schema/5.1/event" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns="http://www.aixm.aero/schema/5.1" xmlns:gts="http://www.isotc211.org/2005/gts"
xmlns:srv="http://www.isotc211.org/2005/srv">
<message:hasMember>
  <RadarSystem gml:id="RS01">
  <gml:identifier codeSpace="uuid">8cfaa30b-4d00-4dc6-be18-d8420bf77ac5</gml:identifier>
```

```
    <timeSlice>
      <RadarSystemTimeSlice gml:id="RS01_TS01">
        <gml:validTime>
            <gml:TimeInstant gml:id="RS01_TS01_TI01">
              <gml:timePosition>2010-09-05T23:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <location>
          <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP00">
            <gml:pos>37.23 -75.67</gml:pos>
          </ElevatedPoint>
        </location>
        <radarEquipment>
          <RadarComponent gml:id="RC01">
            <theRadarEquipment xlink:href=" urn:uuid:a82b3fc9-4aa4-4e67-8def-aaea1ac593j "/>
          </RadarComponent>
        </radarEquipment>
        <radarEquipment>
          <RadarComponent gml:id="RC02">
            <theRadarEquipment xlink:href=" urn:uuid:a82b3fc9-4aa4-4e67-8def-aaea1ac594j "/>
          </RadarComponent>
        </radarEquipment>
        <airportHeliport xlink:href=" urn:uuid:a82b3fc9-4aa4-4e67-8def-aaea1ac595j "/>
      </RadarSystemTimeSlice>
    </timeSlice>
    <timeSlice>
      <RadarSystemTimeSlice gml:id="RS01_TS02">
        <gml:validTime>
          <gml:TimePeriod gml:id="RS01_TS01_TP02">
            <gml:beginPosition>2010-09-06T08:30:00</gml:beginPosition>
            <gml:endPosition>2010-09-09T06:58:00</gml:endPosition>
          </gml:TimePeriod>
          </gml:validTime>
        <interpretation>TEMPDELTA</interpretation>
        <sequenceNumber>2</sequenceNumber>
        <availability >
          <ServiceOperationalStatus gml:id="RS01_TS02_TP02_SOS01">
            <operationalStatus>UNSERVICEABLE</operationalStatus>
          </ServiceOperationalStatus>
        </availability>
      </RadarSystemTimeSlice>
    </timeSlice>
  </RadarSystem>
</message:hasMember>
<message:hasMember>
  <PrimarySurveillanceRadar gml:id="RE01">
  <gml:identifier codeSpace="uuid">a82b3fc9-4aa4-4e67-8def-aaea1ac593j</gml:identifier>
    <timeSlice>
      <PrimarySurveillanceRadarTimeSlice gml:id="PSR01_TS01">
        <gml:validTime>
            <gml:TimeInstant gml:id="PSR01_TS01_TI01">
              <gml:timePosition>2010-09-05T23:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <location>
          <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP01">
```

```
            <gml:pos>37.23 -75.67</gml:pos>
          </ElevatedPoint>
        </location>
        <type>ASR</type>
      </PrimarySurveillanceRadarTimeSlice>
    </timeSlice>
    <timeSlice>
      <PrimarySurveillanceRadarTimeSlice gml:id="PSR01_TS02">
        <gml:validTime>
          <gml:TimePeriod gml:id="PSR01_TS01_TP02">
            <gml:beginPosition>2010-09-06T08:30:00</gml:beginPosition>
            <gml:endPosition>2010-09-09T06:58:00</gml:endPosition>
          </gml:TimePeriod>
        </gml:validTime>
        <interpretation>TEMPDELTA</interpretation>
        <sequenceNumber>12</sequenceNumber>
        <availability >
          <ServiceOperationalStatus gml:id=" SOS02">
            <operationalStatus>UNSERVICEABLE</operationalStatus>
          </ServiceOperationalStatus>
        </availability>
      </PrimarySurveillanceRadarTimeSlice>
    </timeSlice>
  </PrimarySurveillanceRadar>
</message:hasMember>
<message:hasMember>
  <SecondarySurveillanceRadar gml:id="RE02">
  <gml:identifier codeSpace="uuid">a82b3fc9-4aa4-4e67-8def-aaea1ac594j</gml:identifier>
    <timeSlice>
      <SecondarySurveillanceRadarTimeSlice gml:id="SSR01_TS01">
        <gml:validTime>
          <gml:TimePeriod gml:id="SSR01_TS01_TP01">
            <gml:beginPosition>2010-09-06T08:30:00</gml:beginPosition>
            <gml:endPosition>2010-09-09T06:58:00</gml:endPosition>
          </gml:TimePeriod>
        </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <location>
          <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP02">
            <gml:pos>37.77 -75.42</gml:pos>
          </ElevatedPoint>
        </location>
      </SecondarySurveillanceRadarTimeSlice>
    </timeSlice>
    <timeSlice>
      <SecondarySurveillanceRadarTimeSlice gml:id="SSR01_TS02">
        <gml:validTime>
          <gml:TimePeriod gml:id="SSR01_TS02_TP01">
            <gml:beginPosition>2010-09-06T08:30:00</gml:beginPosition>
            <gml:endPosition>2010-09-09T06:58:00</gml:endPosition>
          </gml:TimePeriod>
        </gml:validTime>
        <interpretation>TEMPDELTA</interpretation>
        <sequenceNumber>12</sequenceNumber>
        <availability >
          <ServiceOperationalStatus gml:id=" SOS03">
            <operationalStatus>UNSERVICEABLE</operationalStatus>
          </ServiceOperationalStatus>
```

```
            </availability>
        </SecondarySurveillanceRadarTimeSlice>
      </timeSlice>
    </SecondarySurveillanceRadar>
</message:hasMember>
<message:hasMember>
      <AirportHeliport gml:id="ACY">
        <gml:identifier codeSpace="uuid">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
        <timeSlice>
          <AirportHeliportTimeSlice gml:id="ACY_TS01">
            <gml:validTime>
              <gml:TimeInstant gml:id="ACY_TI01">
                <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
              </gml:TimeInstant>
            </gml:validTime>
            <interpretation>SNAPSHOT</interpretation>
            <designator>ACY</designator>
            <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
            <locationIndicatorICAO>KACY</locationIndicatorICAO>
            <ARP>
              <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP03">
                <gml:pos>39.27 -74.34</gml:pos>
              </ElevatedPoint>
            </ARP>
          </AirportHeliportTimeSlice>
        </timeSlice>
      </AirportHeliport>
</message:hasMember>
</message:AIXMBasicMessage>
```


SVC PRECISION RUNWAY MONITOR OTS 1009060830-1009090658


```
<?xml version="1.0" encoding="UTF-8"?>
<message:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1 ./AIXM_Features.xsd
http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd" gml:id="FNS-Message"
xmlns:message="http://www.aixm.aero/schema/5.1/message" xmlns:aixm="http://www.aixm.aero/schema/5.1"
xmlns:gco="http://www.isotc211.org/2005/gco" xmlns:gmd="http://www.isotc211.org/2005/gmd"
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:event="http://www.aixm.aero/schema/5.1/event" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns="http://www.aixm.aero/schema/5.1" xmlns:gts="http://www.isotc211.org/2005/gts"
xmlns:srv="http://www.isotc211.org/2005/srv">
<message:hasMember>
  <RadarSystem gml:id="RS01">
  <gml:identifier codeSpace="uuid">8cfaa30b-4d00-4dc6-be18-d8420bf77ac5</gml:identifier>
    <timeSlice>
      <RadarSystemTimeSlice gml:id="RS01_TS01">
        <gml:validTime>
            <gml:TimeInstant gml:id="RS01_TS01_TI01">
              <gml:timePosition>2010-09-05T23:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
        <interpretation>SNAPSHOT</interpretation>
        <location>
          <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP00">
            <gml:pos>37.23 -75.67</gml:pos>
          </ElevatedPoint>
        </location>
        <radarEquipment>
          <RadarComponent gml:id="RC01">
```

```
            <theRadarEquipment xlink:href=" urn:uuid:a82b3fc9-4aa4-4e67-8def-aaea1ac593j "/>
          </RadarComponent>
        </radarEquipment>
        <airportHeliport xlink:href=" urn:uuid:a82b3fc9-4aa4-4e67-8def-aaea1ac595j "/>
      </RadarSystemTimeSlice>
    </timeSlice>
    <timeSlice>
      <RadarSystemTimeSlice gml:id="RS01_TS02">
        <gml:validTime>
          <gml:TimePeriod gml:id="RS01_TS01_TP02">
            <gml:beginPosition>2010-09-06T08:30:00</gml:beginPosition>
            <gml:endPosition>2010-09-09T06:58:00</gml:endPosition>
          </gml:TimePeriod>
          </gml:validTime>
        <interpretation>TEMPDELTA</interpretation>
        <sequenceNumber>12</sequenceNumber>
        <availability >
          <ServiceOperationalStatus gml:id=" SOS01">
            <operationalStatus>UNSERVICEABLE</operationalStatus>
          </ServiceOperationalStatus>
        </availability>
      </RadarSystemTimeSlice>
    </timeSlice>
  </RadarSystem>
</message:hasMember>
<message:hasMember>
  <SurfaceRunwayMonitor gml:id="SRM01">
    <timeSlice>
      <SurfaceRunwayMonitorTimeSlice gml:id="SRM01_TS01">
        <gml:validTime>
            <gml:TimeInstant gml:id="PSR01_TS01_TI01">
              <gml:timePosition>2010-09-05T23:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
        <interpretation>TEMPDELTA</interpretation>
        <sequenceNumber>12</sequenceNumber>
        <type>PRM</type>
      </SurfaceRunwayMonitorTimeSlice>
    </timeSlice>
    <timeSlice>
      <SurfaceRunwayMonitorTimeSlice gml:id="SRM01_TS02">
        <gml:validTime>
          <gml:TimePeriod gml:id="SRM01_TS02_TP02">
            <gml:beginPosition>2010-09-06T08:30:00</gml:beginPosition>
            <gml:endPosition>2010-09-09T06:58:00</gml:endPosition>
          </gml:TimePeriod>
          </gml:validTime>
        <interpretation>TEMPDELTA</interpretation>
        <sequenceNumber>12</sequenceNumber>
        <availability >
          <ServiceOperationalStatus gml:id=" SOS02">
            <operationalStatus>UNSERVICEABLE</operationalStatus>
          </ServiceOperationalStatus>
        </availability>
      </SurfaceRunwayMonitorTimeSlice>
    </timeSlice>
  </SurfaceRunwayMonitor>
</message:hasMember>
```

```
<message:hasMember>
    <AirportHeliport gml:id="ACY">
      <gml:identifier codeSpace="uuid">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
      <timeSlice>
        <AirportHeliportTimeSlice gml:id="ACY_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="ACY_TI01">
              <gml:timePosition>2010-04-07T09:00:00</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>ACY</designator>
          <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
          <locationIndicatorICAO>KACY</locationIndicatorICAO>
          <ARP>
            <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP03">
              <gml:pos>39.27 -74.34</gml:pos>
            </ElevatedPoint>
          </ARP>
        </AirportHeliportTimeSlice>
      </timeSlice>
    </AirportHeliport>
</message:hasMember>
</message:AIXMBasicMessage>
```


31.6 Translation Templates

31.6.1 FAA

designator SVC [*name*] [*type*]/[SSR] *status*

31.6.2 ICAO E Line

designator SVC [*name*] [*type*]/[SSR] *status*

31.6.3 Plain Text

Accountable Facility: *accountableFacility*

Affected Airport: *designator*

NOTAM Number: XX/XXX

Effective Time Frame
Valid From: *startDate*
Valid To: *endDate*

Service: [*name*] [*type*]/[SSR] *status*

31.7 Additional Analysis

The AIXM 5.1 class Surveillance/Surveillance Equipment requires an extension that can link (object) ServiceOperationalStatus to (feature)RadarSystem in order to digitally encode the operational status of any radar system. The attribute CodePrimaryRadarType of feature PrimarySurveillanceRadar should be modified to include Terminal Airport Surveillance Radar (TAR).

The AIXM 5.1 class Surveillance/Surveillance Equipment requires an extension that can link (object) ServiceOperationalStatus to (feature)RadarSystem in order to digitally encode the operational status of any radar system. A new feature should be created to describe the type of service equipment that

addresses surface runway monitoring equipment such as Precision Runway Monitor and Airport Surface Detection Equipment. Currently, these two equipment systems do not fit into the AIXM 5.1 schema. An extension should include SurfaceRunwayMonitor (feature), name (attribute), type (attribute), note (annotation) and should have associations with (feature) ServiceOperationalStatus that contains the (attribute) operationalStatus. Prior to the Surface Runway Monitor extension, the ASDE and PRM can be mapped as PrimarySurveillanceRadar type OTHER.

Appendix 1 AIXM Reference

32 AIXM General Digital Encoding Business Rules

32.1 General Business Rules

An initial set of business rules for the Aeronautical Information Exchange Model (AIXM) version 5.1 is captured in an Excel report which has the following structure:

- Input source (ex: AIXM Model)
- Textual description
- AIXM Class associated with the business rule
- Category associated with the rule (minimal data rule, consistency, plausibility)
- Checking Level (error, warning)
- Name of the targeted AIXM classes and properties included
- Schematron code is provided (when available)

The provided Excel report also includes a macro which can generate a valid Schematron file (XML file) with all the selected rules. Directions on how to use the Schematron file can be found on the Eurocontrol Website.

32.2 Feature Identification and Reference (XLink and UUIDs)

The Aeronautical Information Exchange Model is a GML 3.2 application schema. The AIXM 5.1 schema uses the XLink schema bundled with GML 3.2 to represent the link between two features.

32.2.1 References within a message

In the case of the digital NOTAM messages, the AIXM 5.1 message will contain all or most of the referenced features in the message. When applicable, the Universally Unique Identifier (UUID) associated with the referenced AIXM feature should be included in the message. The UUID is a 128-bit number that should be unique and universal.

Each AIXM feature is identified through the use of the identifier property. In the AIXM Temporality Concept, the identifier property is the only time-invariant property and is therefore not captured within the timeSlice.

The current thinking, which can be found on the AIXM forum, is that the xlink:href should reference the UUID, if possible.

```
<Runway gml:id="RWY01">
<gml:identifier codeSpace="uuid">a82b3fc9-4aa4-4e67-8def-aaea1ac593j</gml:identifier>
  <timeSlice>
    <RunwayTimeSlice gml:id="RWY01_TS01">
      <gml:validTime>
        <gml:TimeInstant gml:id="RWYDIR01_TS01_TI01">
          <gml:timePosition>2010-11-30T15:32:41</gml:timePosition>
        </gml:TimeInstant>
      </gml:validTime>
      <interpretation>SNAPSHOT</interpretation>
      <designator>13/31</designator>
      <associatedAirportHeliport xlink:href="urn:uuid:a82b3fc9-4aa4-4e67-8def-aaea1ac595j"/>
    </RunwayTimeSlice>
  </timeSlice>
</Runway>
```

…

```
    <AirportHeliport gml:id="ACY">
      <gml:identifier codeSpace="uuid">a82b3fc9-4aa4-4e67-8def-aaea1ac595j</gml:identifier>
…
</AirportHeliport>
```

However, when a UUID is not available for the feature, then the xlink:href should reference the gml:id and include a leading hash.

```
    <Runway gml:id="RWY01">
    <gml:identifier codeSpace="urn:us:gov:dot:faa:aim">a82b3fc9-4aa4-4e67-8def-aaea1ac593j</gml:identifier>
      <timeSlice>
        <RunwayTimeSlice gml:id="RWY01_TS01">
          <gml:validTime>
            <gml:TimeInstant gml:id="RWYDIR01_TS01_TI01">
              <gml:timePosition>2010-11-30T15:32:41</gml:timePosition>
            </gml:TimeInstant>
          </gml:validTime>
          <interpretation>SNAPSHOT</interpretation>
          <designator>13/31</designator>
          <associatedAirportHeliport xlink:href="#ACY"/>
        </RunwayTimeSlice>
      </timeSlice>
    </Runway>
…
    <AirportHeliport gml:id="ACY">
      <timeSlice>

…
</AirportHeliport>
```

The uniform resource name (URN) are unlike URLs as they cannot be inherently resolved to find the resource. It is then the responsibility of the user to resolve the reference. The URN should be based on the UUID for the referenced feature, although it is viable to use natural keys instead, if the UUID does not exist or is not available.

32.3 Geographical Markup Language (GML) – Defining Geometries

The Aeronautical Information Exchange Model (AIXM) uses the Geographical Markup Language (GML) version 3.2 for encoding positional and shape aeronautical data, such as airspace, runways, etc. The ISO 19107 spatial schema contains an extensive list of geometries, geometric properties and operations, many of which are unnecessary. Therefore, a common use of the concept should be applied. Here, the preliminary discussion is described, although, it should be understood that this is not final and is subject to change.

In GML, the geodetic datus is specified by reference to a Coordinate Reference System (CRS). The CRS reference is critical for the correct encoding and processing of geographical data contained in a digital NOTAM message. The reference indicates the geodetic reference datum as well as the order of the values (latitude/longitude) and the convention used for measuring angles. It is generally recommended that the EPSG:4326 CRS is used by AIXM 5.1 data sets, which corresponds to the WGS-84 reference datum imposed by ICAO.

When applied to the encoding of a surface in AIXM:

```
        <ElevatedSurface gml:id="ES01" srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2">
          <gml:patches>
            <gml:PolygonPatch>
```

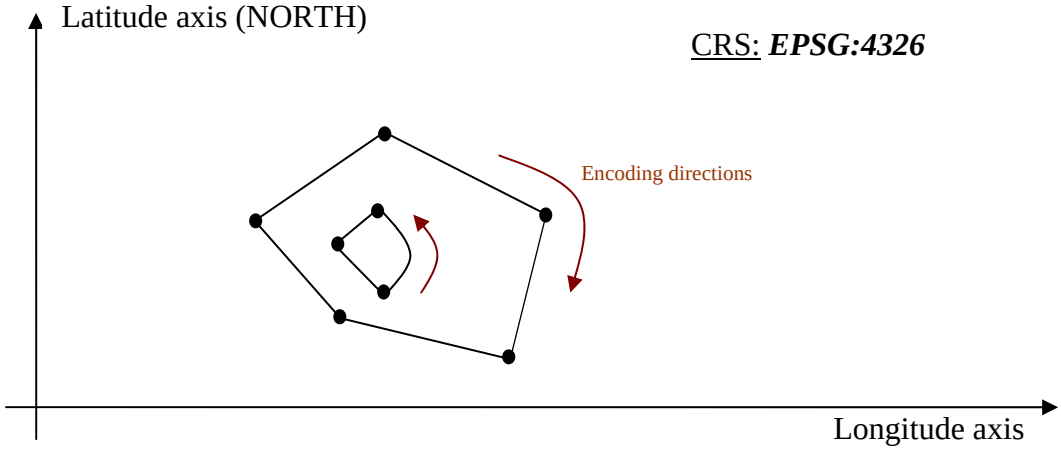
```
            <gml:exterior>
              <gml:LinearRing>
                <gml:posList>39.2704 -74.3430 39.2707 -74.3424 39.2705 -74.3421 39.2702
-74.3421 39.2704 -74.3430</gml:posList>
              </gml:LinearRing>
            </gml:exterior>
          </gml:PolygonPatch>
        </gml:patches>
      </ElevatedSurface>
```

or a point:

```
      <ElevatedPoint gml:id="EP02" srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2">
        <gml:pos>39.27 -74.34</gml:pos>
      </ElevatedPoint>
```

The first and last latitude/longitude pair in a gml:posList of series of gml:pos must be equal, which is mandatory for a closed surface in GML. Also, the same space separator is used between both latitude and longitude values and also between the latitude/longitude pairs. Additionally, the srsDiminsion should be defined as 2, for a 2D CRS, such as EPSG:4326.

The GML Specification does not indicate in which direction surfaces are described (clockwise or counter-clockwise). There is an established practice in computer graphics for 'geographic' CRSs, the outside perimeter is encoded clockwise. Additionally, an inside perimeter would be encoded counter-clockwise. Therefore, it is recommended that the use of the EPSG:4326 CRS in the Aeronautical Information Domain should follow this practice.



The following is proposed for a defined circle geometry (from Obstruction example):

```
<surfaceExtent>
  <ElevatedSurface gml:id="ES01" srsName="urn:ogc:def:crs:OGC:1.3:CRS84">
    <gml:patches>
      <gml:PolygonPatch>
        <gml:exterior>
          <gml:Ring>
            <gml:curveMember>
              <gml:Curve gml:id="CURVE01">
                <gml:segments>
                  <gml:CircleByCenterPoint numArc="1">
                    <gml:pos>38 -118</gml:pos>
                    <gml:radius uom="NM">0.5</gml:radius>
                  </gml:CircleByCenterPoint>
                </gml:segments>
```

```
                    </gml:Curve>
                  </gml:curveMember>
                </gml:Ring>
              </gml:exterior>
            </gml:PolygonPatch>
          </gml:patches>
        </ElevatedSurface>
      </surfaceExtent>
```

In this example, the center of the circle is defined, as is the radius and units.

33 Metadata Message

The following sample of a metadata message is the minimal amount of information that is necessary to capture in the metadata message preceeding the features captured in the digital NOTAM. The metadata message contains the accountable organization, the bounding box (location), a time-stamp for each action (creation, publication, and revision, when applicable), the language (which, for the FAA is default English), and whether the NOTAM shall be publically distributed.

Sample Metadata Message:
Accountable Organization: ACY (contact number 202 580 7400)
Creation Time/Date: 02 April 2010 14:53 (12 seconds)
Publication Time/Date: 02 April 2010 14:53 (14 seconds)
Revision Time/Date: 07 April 2010 09:34 (42 seconds)
Bounding Box around ACY Airport: 39.48 -74.70 to 39.40 -74.58
Language: English
Public Access (Public or Restricted): Public


```xml
<?xml version="1.0" encoding="UTF-8"?>
<notamMessage:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1
./AIXM_Features.xsd http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd "
gml:id="FNS-Message" xmlns:notamMessage="http://www.aixm.aero/schema/5.1/message"
xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns="http://www.aixm.aero/schema/5.1" xmlns:gts="http://www.isotc211.org/2005/gts"
xmlns:srv="http://www.isotc211.org/2005/srv">
<messageMetadata>
  <gmd:MD_Metadata>
    <gmd:contact>
      <gmd:CI_ResponsibleParty>
        <gmd:organisationName>
          <gco:CharacterString>ACY</gco:CharacterString>
        </gmd:organisationName>
        <gmd:contactInfo>
          <gmd:CI_Contact>
            <gmd:phone>
              <gmd:CI_Telephone>
                <gmd:voice>
                  <gco:CharacterString>+12025807400</gco:CharacterString>
                </gmd:voice>
              </gmd:CI_Telephone>
            </gmd:phone>
          </gmd:CI_Contact>
        </gmd:contactInfo>
        <gmd:role>
          <gmd:CI_RoleCode codeList="../ISO_19139_Schemas/resources/codeList.xml#CI_RoleCode"
codeListValue="pointOfContact">pointOfContact</gmd:CI_RoleCode>
        </gmd:role>
      </gmd:CI_ResponsibleParty>
    </gmd:contact>
    <gmd:dateStamp>
      <gco:DateTime>2010-04-07T09:34:42</gco:DateTime>
    </gmd:dateStamp>
    <gmd:identificationInfo>
      <gmd:MD_DataIdentification>
        <gmd:citation>
          <gmd:CI_Citation>
```

```
            <gmd:title>
              <gco:CharacterString>NOTAM</gco:CharacterString>
            </gmd:title>
            <gmd:date>
              <gmd:CI_Date>
                <gmd:date>
                  <gco:DateTime>2010-04-02T14:53:12</gco:DateTime>
                </gmd:date>
                <gmd:dateType>
                  <gmd:CI_DateTypeCode
codeList="../ISO_19139_Schemas/resources/codeList.xml#CI_DateTypeCode"
codeListValue="creation">creation</gmd:CI_DateTypeCode>
                </gmd:dateType>
              </gmd:CI_Date>
            </gmd:date>
            <gmd:date>
              <gmd:CI_Date>
                <gmd:date>
                  <gco:DateTime>2010-04-02T14:53:14</gco:DateTime>
                </gmd:date>
                <gmd:dateType>
                  <gmd:CI_DateTypeCode
codeList="../ISO_19139_Schemas/resources/codeList.xml#CI_DateTypeCode"
codeListValue="publication">publication</gmd:CI_DateTypeCode>
                </gmd:dateType>
              </gmd:CI_Date>
            </gmd:date>
            <gmd:date>
              <gmd:CI_Date>
                <gmd:date>
                  <gco:DateTime>2010-04-07T09:34:42</gco:DateTime>
                </gmd:date>
                <gmd:dateType>
                  <gmd:CI_DateTypeCode
codeList="../ISO_19139_Schemas/resources/codeList.xml#CI_DateTypeCode"
codeListValue="revision">revision</gmd:CI_DateTypeCode>
                </gmd:dateType>
              </gmd:CI_Date>
            </gmd:date>
          </gmd:CI_Citation>
        </gmd:citation>
        <gmd:abstract>
          <gco:CharacterString>Updates to the following Airport: EBBR, EBBT</gco:CharacterString>
        </gmd:abstract>
        <gmd:pointOfContact>
          <gmd:CI_ResponsibleParty>
            <gmd:organisationName>
              <gco:CharacterString>ACY</gco:CharacterString>
            </gmd:organisationName>
            <gmd:contactInfo>
              <gmd:CI_Contact>
                <gmd:phone>
                  <gmd:CI_Telephone>
                    <gmd:voice>
                      <gco:CharacterString>+12025807400</gco:CharacterString>
                    </gmd:voice>
                  </gmd:CI_Telephone>
                </gmd:phone>
```

```
            </gmd:CI_Contact>
          </gmd:contactInfo>
          <gmd:role>
            <gmd:CI_RoleCode codeList="../ISO_19139_Schemas/resources/codeList.xml#CI_RoleCode"
codeListValue="originator">originator</gmd:CI_RoleCode>
          </gmd:role>
        </gmd:CI_ResponsibleParty>
      </gmd:pointOfContact>
      <gmd:resourceConstraints>
        <gmd:MD_SecurityConstraints>
          <gmd:classification>
            <gmd:MD_ClassificationCode codeList="./resources/codeList.xml#MD_ClassificationCode"
codeListValue="public">public</gmd:MD_ClassificationCode>
          </gmd:classification>
        </gmd:MD_SecurityConstraints>
      </gmd:resourceConstraints>
      <gmd:language>
        <gmd:LanguageCode codeList="./resources/codeList.xml#LanguageCode"
codeListValue="eng">eng</gmd:LanguageCode>
      </gmd:language>
      <gmd:extent>
        <gmd:EX_Extent>
          <gmd:geographicElement>
            <gmd:EX_GeographicBoundingBox>
              <gmd:westBoundLongitude>
                <gco:Decimal>-74.70</gco:Decimal>
              </gmd:westBoundLongitude>
              <gmd:eastBoundLongitude>
                <gco:Decimal>-74.53</gco:Decimal>
              </gmd:eastBoundLongitude>
              <gmd:southBoundLatitude>
                <gco:Decimal>39.40</gco:Decimal>
              </gmd:southBoundLatitude>
              <gmd:northBoundLatitude>
                <gco:Decimal>39.48</gco:Decimal>
              </gmd:northBoundLatitude>
            </gmd:EX_GeographicBoundingBox>
          </gmd:geographicElement>
        </gmd:EX_Extent>
      </gmd:extent>
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
</gmd:MD_Metadata>
</messageMetadata>
<notamMessage:hasMember>
…
</notamMessage:hasMember>
</notamMessage:AIXMBasicMessage>
```

34 Complete AIXM Digital NOTAM Message

Below is a sample AIXM Digital NOTAM Message using a draft Event Schema. Included in the message is the metadata in additional to all relevant NOTAM information.

!ACY 667 ACY RWY CLSD EXC EMERG ACFT 0900 – 1300 DLY 201012010900 – 201012151300


```xml
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2008 (http://www.altova.com) by Jocelyn Cox, CNA in support of FAA -->
<message:AIXMBasicMessage xsi:schemaLocation="http://www.aixm.aero/schema/5.1 ./AIXM_Features.xsd
http://www.aixm.aero/schema/5.1/message ./message/AIXM_BasicMessage.xsd" gml:id="FNS-Message"
xmlns:message="http://www.aixm.aero/schema/5.1/message" xmlns:aixm="http://www.aixm.aero/schema/5.1"
xmlns:gco="http://www.isotc211.org/2005/gco" xmlns:gmd="http://www.isotc211.org/2005/gmd"
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:event="http://www.aixm.aero/schema/5.1/event" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns="http://www.aixm.aero/schema/5.1" xmlns:gts="http://www.isotc211.org/2005/gts"
xmlns:srv="http://www.isotc211.org/2005/srv">
  <messageMetadata>
    <gmd:MD_Metadata>
      <gmd:contact>
        <gmd:CI_ResponsibleParty>
          <gmd:organisationName>
            <gco:CharacterString>ACY</gco:CharacterString>
          </gmd:organisationName>
          <gmd:contactInfo>
            <gmd:CI_Contact>
              <gmd:phone>
                <gmd:CI_Telephone>
                  <gmd:voice>
                    <gco:CharacterString>+12025807400</gco:CharacterString>
                  </gmd:voice>
                </gmd:CI_Telephone>
              </gmd:phone>
            </gmd:CI_Contact>
          </gmd:contactInfo>
          <gmd:role>
            <gmd:CI_RoleCode codeList="../ISO_19139_Schemas/resources/codeList.xml#CI_RoleCode"
codeListValue="pointOfContact">pointOfContact</gmd:CI_RoleCode>
          </gmd:role>
        </gmd:CI_ResponsibleParty>
      </gmd:contact>
      <gmd:dateStamp>
        <gco:DateTime>2010-11-30T15:32:43</gco:DateTime>
      </gmd:dateStamp>
      <gmd:identificationInfo>
        <gmd:MD_DataIdentification>
          <gmd:citation>
            <gmd:CI_Citation>
              <gmd:title>
                <gco:CharacterString>NOTAM</gco:CharacterString>
              </gmd:title>
              <gmd:date>
                <gmd:CI_Date>
                  <gmd:date>
                    <gco:DateTime>2010-11-30T15:32:41</gco:DateTime>
                  </gmd:date>
                  <gmd:dateType>
```

```
                <gmd:CI_DateTypeCode codeList="../ISO_19139_Schemas/resources/codeList.xml#CI_DateTypeCode"
codeListValue="creation">creation</gmd:CI_DateTypeCode>
              </gmd:dateType>
            </gmd:CI_Date>
          </gmd:date>
          <gmd:date>
            <gmd:CI_Date>
              <gmd:date>
                <gco:DateTime>2010-11-30T15:32:43</gco:DateTime>
              </gmd:date>
              <gmd:dateType>
                <gmd:CI_DateTypeCode codeList="../ISO_19139_Schemas/resources/codeList.xml#CI_DateTypeCode"
codeListValue="publication">publication</gmd:CI_DateTypeCode>
              </gmd:dateType>
            </gmd:CI_Date>
          </gmd:date>
        </gmd:CI_Citation>
      </gmd:citation>
      <gmd:abstract>
        <gco:CharacterString>Updates to the following Airport: ACY</gco:CharacterString>
      </gmd:abstract>
      <gmd:pointOfContact>
        <gmd:CI_ResponsibleParty>
          <gmd:organisationName>
            <gco:CharacterString>ACY</gco:CharacterString>
          </gmd:organisationName>
          <gmd:contactInfo>
            <gmd:CI_Contact>
              <gmd:phone>
                <gmd:CI_Telephone>
                  <gmd:voice>
                    <gco:CharacterString>+12025807400</gco:CharacterString>
                  </gmd:voice>
                </gmd:CI_Telephone>
              </gmd:phone>
            </gmd:CI_Contact>
          </gmd:contactInfo>
          <gmd:role>
            <gmd:CI_RoleCode codeList="../ISO_19139_Schemas/resources/codeList.xml#CI_RoleCode"
codeListValue="originator">originator</gmd:CI_RoleCode>
          </gmd:role>
        </gmd:CI_ResponsibleParty>
      </gmd:pointOfContact>
      <gmd:resourceConstraints>
        <gmd:MD_SecurityConstraints>
          <gmd:classification>
            <gmd:MD_ClassificationCode codeList="./resources/codeList.xml#MD_ClassificationCode"
codeListValue="public">public</gmd:MD_ClassificationCode>
          </gmd:classification>
        </gmd:MD_SecurityConstraints>
      </gmd:resourceConstraints>
      <gmd:language>
        <gmd:LanguageCode codeList="./resources/codeList.xml#LanguageCode"
codeListValue="eng">eng</gmd:LanguageCode>
      </gmd:language>
      <gmd:extent>
        <gmd:EX_Extent>
          <gmd:geographicElement>
```

```
                <gmd:EX_GeographicBoundingBox>
                  <gmd:westBoundLongitude>
                    <gco:Decimal>-74.70</gco:Decimal>
                  </gmd:westBoundLongitude>
                  <gmd:eastBoundLongitude>
                    <gco:Decimal>-74.53</gco:Decimal>
                  </gmd:eastBoundLongitude>
                  <gmd:southBoundLatitude>
                    <gco:Decimal>39.40</gco:Decimal>
                  </gmd:southBoundLatitude>
                  <gmd:northBoundLatitude>
                    <gco:Decimal>39.48</gco:Decimal>
                  </gmd:northBoundLatitude>
                </gmd:EX_GeographicBoundingBox>
              </gmd:geographicElement>
            </gmd:EX_Extent>
          </gmd:extent>
        </gmd:MD_DataIdentification>
      </gmd:identificationInfo>
    </gmd:MD_Metadata>
  </messageMetadata>
  <message:hasMember>
    <event:Event gml:id="EVENT01">
      <event:timeSlice>
        <event:EventTimeSlice gml:id="EVENT01_TS01">
          <gml:validTime>
            <gml:TimePeriod gml:id="e01-2">
              <gml:beginPosition>2010-12-01T09:00:00</gml:beginPosition>
              <gml:endPosition>2010-12-15T13:00:00</gml:endPosition>
            </gml:TimePeriod>
          </gml:validTime>
          <aixm:interpretation>BASELINE</aixm:interpretation>
          <aixm:sequenceNumber>1</aixm:sequenceNumber>
          <aixm:featureLifetime>
            <gml:TimePeriod gml:id="FLT01_TP01">
              <gml:beginPosition>2010-12-01T09:00:00</gml:beginPosition>
              <gml:endPosition>2010-12-15T13:00:00</gml:endPosition>
            </gml:TimePeriod>
          </aixm:featureLifetime>
          <event:encoding>DIGITAL</event:encoding>
          <event:textNOTAM>
            <event:NOTAM gml:id="EVENT01_TEXT">
              <event:series>A</event:series>
              <event:number>0667</event:number>
              <event:year>2010</event:year>
              <event:type>N</event:type>
              <event:issued>2010-11-30T15:32:43</event:issued>
              <event:selectionCode>QMRLT</event:selectionCode>
              <event:traffic>ALL</event:traffic>
              <event:purpose>NBO</event:purpose>
              <event:scope>A</event:scope>
              <event:coordinates>3945N7461W</event:coordinates>
              <event:radius>005</event:radius>
              <event:effectiveStart>1012010900</event:effectiveStart>
              <event:effectiveEnd>1012151300</event:effectiveEnd>
              <event:schedule>0900 - 1300 DLY</event:schedule>
              <event:text>RWY 13/31 CLSD EXC EMERG ACFT</event:text>
            </event:NOTAM>
```

```
            </event:textNOTAM>
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    <message:hasMember>
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              </gml:TimeInstant>
            </gml:validTime>
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            <designator>13</designator>
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        </timeSlice>
        <timeSlice>
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                        </flight>
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                        </FlightCharacteristic>
                      </flight>
                    </ConditionCombination>
                  </selection>
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```

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        </availability>
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        <gml:validTime>
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          </gml:TimeInstant>
        </gml:validTime>
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        <designator>13/31</designator>
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      </RunwayTimeSlice>
    </timeSlice>
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</message:hasMember>
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        <designator>ACY</designator>
        <name>ATLANTIC CITY INTERNATIONAL AIRPORT</name>
        <locationIndicatorICAO>KACY</locationIndicatorICAO>
        <ARP>
          <ElevatedPoint srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2" gml:id="EP01">
            <gml:pos>39.27 -74.34</gml:pos>
          </ElevatedPoint>
        </ARP>
      </AirportHeliportTimeSlice>
    </timeSlice>
  </AirportHeliport>
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</message:AIXMBasicMessage>
```

Appendix 2 EBNF Diagrams

35 EBNF Diagrams

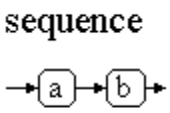
The data used to composed the NOTAM text is presented in the form of a "Template", using EBNF (Extended Backus Naur Form). This document includes graphical representations of the EBNF rules, as described below. The EBNF raw files are available in the next chapter (EBNF Sources).

NOTE-
The graphical representation of the EBNF rules was created with the free EBNF Visualizer 1.1.

35.1 EBNF Rules

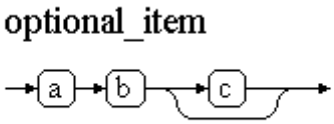
35.1.1 Sequence

A terminal symbol is any string. In this example ‘a’ and ‘b’ are two terminal symbols that are required items in the rule.

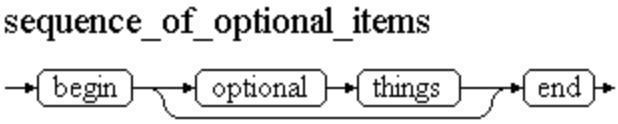


35.1.2 Optional Item

In this example item ‘c’ is an optional item denoted by the bypass line. The item ‘c’ may occur once or not at all in the rule.

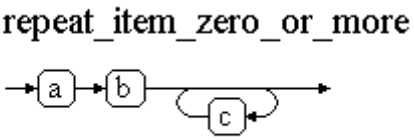


It is also possible to express a sequence of optional items as depicted in the example below.

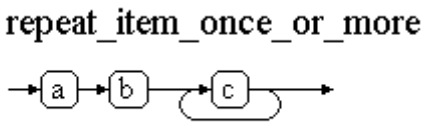


35.1.3 Iterations

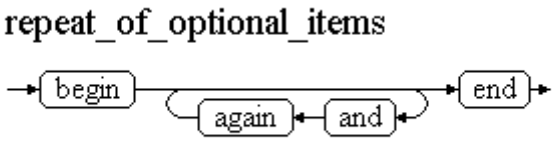
The item ‘c’ can occur from zero to infinite times.



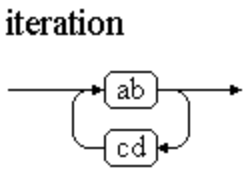
In this example item ‘c’ can occur one to infinite times.



It is also possible to have an iteration of a sequence from zero to infinite times.

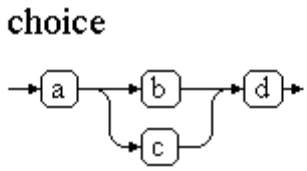


The rule below depicts the iteration between item ‘ab’ and item ‘cd’.

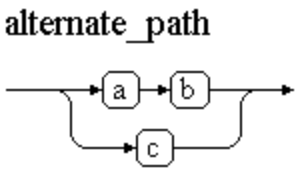


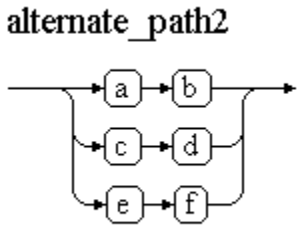
35.1.4 Choice

This rule depicts a choice between two items. Only one path will be used in a scenario at any given time.



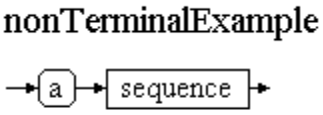
This rule can also be combined with a sequence to provide alternate paths of multiple items.





35.1.5 Non-Terminal Symbol

While a terminal symbol is depicted by a rounded box, a non-terminal symbol is represented by a box with square edges. A non-terminal symbol cannot be expressed explicitly. In the example below, ‘sequence’ is a non-terminal item expressed by the first rule of this appendix.



35.2 Example EBNF Sources

sequence= a b.
optional_item = a b [c].
repeat_item_zero_or_more= a b {c}.
repeat_item_once_or_more= a b c {c}.
sequence_of_optional_items= begin [optional things] end.
repeat_of_optional_items = begin {and again} end.
choice= a (b|c) d.
alternate_path= a b | c.
alternate_path2= a b | c d | e f.
iteration= ab {cd ab}.
nonTerminalExample= a sequence.

36 EBNF Sources

36.1 Lighted Aids

36.1.1 Runway – Approach Lighting System Status

Production_rule = "RWY" "designator" "ALS" "status".

36.1.2 Runway – Visual Approach Lighting System (PAPI/VASI)

Production_rule = "RWY" "designator" "type" ["position"] "status" .

36.1.3 Runway – Ground Lighting Status

Production_rule = "RWY" "designator" "type" "status" ["location"].
location = ("BTN" ("RWY""designator"|"TWY""designator") "AND"
("RWY""designator"|"TWY""designator"))\n
|("FOR" ("RWY""designator"|"TWY""designator")).

36.1.4 Runway Direction – Ground Lighting Status

Production_rule = "RWY" "designator" "type" "status" ["location"].
location = ("BTN" ("RWY""designator"|"TWY""designator") "AND"
("RWY""designator"|"TWY""designator"))\n
|("FOR" ("RWY""designator"|"TWY""designator")).

36.1.5 Runway – Pilot Controlled Lighting Status

intensity_level = clicks TIMES intensity.
Production_rule = RWY designator PCL status\n
[((KEY frequency intensity_level {intensity_level})|(EXC intensity)) INTST].

36.1.6 Runway – Pilot Controlled Lighting Frequency Change

Production_rule = RWY designator "PCL NOW" frequency.

36.1.7 Aerodrome – Beacon Status

Production_rule = "AD" "ABN" ["color"] "status" ["cardinalDirection"].

36.2 Navaid Equipment

36.2.1 Navaid – ILS Status

Production_rule = "NAV" [name] type RWY designator\n

([(equipment {equipment})|(frequency [channel])])\n
status ([([note]) upperLimit]).
equipment = (NavaidEquipment [markerPosition])|([markerPosition] class).

36.2.2 Navaid – Navaid Status

Production_rule = NAV (([designator] Navaid)|([designator] NavaidEquipment)) [freq] [channel] status\n
([(fromAngle toAngle) {fromAngle toAngle}]) [outerDistance] [upperLimit].

36.2.3 Navaid – Navaid Properties Change

Production_rule = NAV (([designator] Navaid)|(ILS RWY designator (equipment {equipment})))\n
(([freq] [channel] VICE [freq] [channel])|("ID NOW" designator)).

36.2.4 Navaid – NDB Status

Production_rule = NAV [name] [designator] type\n
[(RWY designator class)|freq] status.

36.2.5 FDC – Glide Slope Changes Due to Snow

Production_rule = "RI/T" name type name_proc status.

36.3 Weather Services

36.3.1 Weather Service – Automated Weather Services Status

Production_rule = SVC type status annotation.

36.3.2 Weather Service – Automated Weather Services Properties Change

Production_rule = SVC type [freq] [phone] VICE [freq] ["phone (baseline)"].

36.3.3 Runway – Runway Visual range Status

Production_rule = "RWY" "designator" "type" "status".

36.4 Communication Services

36.4.1 Communications – Communications Outlet Status

Production_rule = "COM" ["name"] "type" {frequency} status.

36.4.2 Communications – Communications Outlet Frequency Change

Production_rule = "COM" ["name"] "type" "frequency(new)" "VICE" "frequency(old)".

36.4.3 Communications – VOR Voice Outlet Status

Production_rule = "COM" "type" [frequency] status.

36.4.4 Service – HIWAS Status

Production_rule = "SVC" "type" [frequency] status.

36.4.5 Service – ATIS Status

Production_rule = "SVC" "type" {frequency} status.

36.4.6 Service – ATIS Frequency Change

Production_rule = "SVC" "type" "frequency(new)" VICE "frequency(old)".

36.4.7 Service – Traffic and Flight Information Service Broadcasts Status

Production_rule = "SVC" "type" status.

36.5 Radar System Services

36.5.1 Radar – Radar System Status

Production_rule = SVC [name] RadarEquipment {RadarEquipment} status.

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