

# ARINC 424 NDB

Draft 4 of Supplement 23  
Proposal

Location: Virtual Meeting  
October 4-7, 2021

## MOVE COMMUNICATION SECTORS TO CONTINUATION RECORDS

V.0

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### SUMMARY

Garmin is proposing to move the airport/heliport communication sector data out of the primary extension and into its own sectorization continuation record.

## MOVE COMMUNICATION SECTORS TO CONTINUATION RECORDS

### 1.0 INTRODUCTION/ BACKGROUND

Currently, the communication sector data is in the Airport Communication Primary and Primary extension and is limited to 3 sectors.

#### 4.1.14 Airport Communications Records (PV)

##### 4.1.14.1 Airport Communications Primary Records

Column	Field Name (Length)	Reference
1	Record Type (1)	5.2
2 thru 4	Customer/Area Code (3)	5.3
5	Section Code (1)	5.4
6	Blank (Spacing) (1)	
7 thru 10	Airport Identifier (4)	5.6
11 thru 12	ICAO Code (2)	5.14
13	Subsection Code (1)	5.5
14 thru 15	Blank (Spacing) (2)	
16 thru 19	Communication Class (4)	5.283
20 thru 21	Sequence Number (2)	5.12
22	Continuation Number (1)	5.16
23 thru 25	Communication Types (3)	5.101
26 thru 32	Transmit Frequency (7)	5.103
33 thru 39	Receive Frequency (7)	5.103
40	Frequency Units (1)	5.104
41	Radar Units (1)	5.102
42	H24 Indicator (1)	5.181
43 thru 67	Call Signs (25)	5.105
68	Multi-Sector Indicator (1)	5.286
69 thru 74	Sectorization (6)	5.183
75 thru 78	Sector Facility (4)	5.185
79 thru 80	ICAO (2)	5.14
81	Section Code (1)	5.4
82	Subsection Code (1)	5.5
83	Altitude Description Code (1)	5.29
84 thru 86	Communication Altitude 1 (3)	5.184
87 thru 89	Communication Altitude 2 (3)	5.184
90	Distance Description Code (1)	5.187
91 thru 92	Communication Distance (2)	5.188
93 thru 101	Transmitter Latitude (9)	5.36
102 thru 111	Transmitter Longitude (10)	5.37
112 thru 114	Service Indicator (3)	5.106
115	Modulation (1)	5.198
116	Signal Emission (2)	5.199
117	<b>Time Code</b>	<b>5.131</b>
118	<b>NOTAM</b>	<b>5.132</b>
119 thru 123	Blank (Spacing) (5)	
124 thru 128	File Record No. (5)	5.31
129 thru 132	Cycle Date (4)	5.32

Figure 1: Airport Communication Primary

MOVE COMMUNICATION SECTORS TO CONTINUATION RECORDS

4.1.14.2 Airport Communications Primary Extension Continuation Records

Column	Field Name (Length)	Reference
1 thru 21	Fields as on Primary Records	
22	Continuation Record No. (1)	5.16
23	Application Type (1) E—Primary Record Extension	5.91
24 thru 27	Remote Facility (4)	5.200
28 thru 29	ICAO (2)	5.14
30	Section (1)	5.4
31	Subsection (1)	5.5
32 thru 36	Transmitter Site Mag Var (5)	5.39
37 thru 41	Transmitter Site Elevation (5)	5.92
42 thru 47	Additional Sectorization 1 (6)	5.183
48	Additional Sectorization 1 Altitude Description (1)	5.29
49 thru 51	Additional Sectorization 1 Altitude 1 (3)	5.184
52 thru 54	Additional Sectorization 1 Altitude 2 (3)	5.184
55 thru 60	Additional Sectorization 2 (6)	5.183
61	Additional Sectorization 2 Altitude Description (1)	5.29
62 thru 64	Additional Sectorization 2 Altitude 1 (3)	5.184
65 thru 67	Additional Sectorization 2 Altitude 2 (3)	5.184
68 thru 123	Blank (Spacing) (56)	
124 thru 128	File Record No. (5)	5.31
129 thru 132	Cycle Date (4)	5.32

Grey: Sector Primary Data  
Green: Sector [0-2] Data

Figure 2: Airport Communication Primary Extension

While this works for most communication sectors, there are some examples of source with more than 3 sectors. For example, the Phoenix (KPHX) airport’s chart supplement has the 126.8 frequency with 4 sectors.

COMMUNICATIONS: D-ATIS 127.575  
RCO 122.2 (PRESCOTT RADIO)  
® APP/DEP CON 124.1 (119°-138° 7500’-14,500’) (192°-263° 7500’-12,500’) 119.2 (319°-057° 7500’ and abv) 120.7 (319°-057° blo 7500’) 123.7 (119°-138° blo 7500’) (139°-191° blo 8500’) 124.9 (058°-118° blo 10,500’) 126.8 (058°-118° 10,500’ and abv) (119°-138° abv 14,500’) (139°-191° 8500’ and above) (192°-263° abv 12,500’) 128.65 (340°-079° abv 5,500’) 126.375  
TOWER 118.7 (Rwy 08-26) 120.9 (Rwy 07R-25L and Rwy 07L-25R) GND CON 119.75 (North) 132.55 (South)  
CLNC DEL 118.1  
CPDLC (LOGON KUSA)  
PDC

Figure 3: KPHX Example 126.80

2.0 DISCUSSION and/or ACTION

Garmin proposes to move the sectorization data out of the airport communication primary and primary extension records and add them to their own extension.

MOVE COMMUNICATION SECTORS TO CONTINUATION RECORDS

**3.0 Legacy ARINC 424 changes as depicted (Track Changes is Helpful)**

3.1 Update Chapter 4, Table 4.1.14.1:

- 3.1.1 Move Sectorization (cols 69-74) to new Sectorization extension
- 3.1.2 Move Sector Facility, ICAO, Section Code & Subsection Code (cols 75-82) to new Sectorization extension
- 3.1.3 Move Altitude Description Code, Communication Altitude 1 & Communication Altitude 2 (cols 83-89) to new Sectorization extension
- 3.1.4 Move Distance Description Code & Communication Distance (cols 90-92) to new Sectorization extension
- 3.1.5 Move Primary Extension fields to the Primary:
  - 3.1.5.1 Remote Facility, ICAO, Section & Subsection (cols 24-31)
  - 3.1.5.2 Transmitter Site Mag Var (cols 32-36)
  - 3.1.5.3 Transmitter Site Elevation (cols 37-41)

**4.1.14.1 Airport Communications Primary Records**

Column	Field Name (Length)	Reference
1	Record Type (1)	5.2
2 thru 4	Customer/Area Code (3)	5.3
5	Section Code (1)	5.4
6	Blank (Spacing) (1)	
7 thru 10	Airport Identifier (4)	5.6
11 thru 12	ICAO Code (2)	5.14
13	Subsection Code (1)	5.5
14 thru 15	Blank (Spacing) (2)	
16 thru 19	Communication Class (4)	5.283
20 thru 21	Sequence Number (2)	5.12
22	Continuation Number (1)	5.16
23 thru 25	Communication Types (3)	5.101
26 thru 32	Transmit Frequency (7)	5.103
33 thru 39	Receive Frequency (7)	5.103
40	Frequency Units (1)	5.104
41	Radar Units (1)	5.102
42	H24 Indicator (1)	5.181
43 thru 67	Call Signs (25)	5.105
68	Multi-Sector Indicator (1)	5.286
<b>69 thru 72</b>	<b>Remote Facility (4)</b>	<b>5.200</b>
<b>73 thru 74</b>	<b>Remote Facility ICAO (2)</b>	<b>5.14</b>
<b>75</b>	<b>Remote Facility Section</b>	<b>5.4</b>
<b>76</b>	<b>Remote Facility Subsection</b>	<b>5.5</b>
<b>77 thru 82</b>	<b>Blank (Spacing) (6)</b>	
<b>83 thru 87</b>	<b>Transmitter Site Mag Var (5)</b>	<b>5.39</b>
<b>88 thru 92</b>	<b>Transmitter Site Elevation (5)</b>	<b>5.92</b>
<del>69 thru 74</del>	<del>Sectorization (6)</del>	<del>5.183</del>
<del>75 thru 78</del>	<del>Sector Facility (4)</del>	<del>5.185</del>
<del>79 thru 80</del>	<del>ICAO (2)</del>	<del>5.14</del>

MOVE COMMUNICATION SECTORS TO CONTINUATION RECORDS

Column	Field Name (Length)	Reference
<del>81</del>	<del>Section Code (1)</del>	<del>5.4</del>
<del>82</del>	<del>Subsection Code (1)</del>	<del>5.5</del>
<del>83</del>	<del>Altitude Description Code (1)</del>	<del>5.29</del>
<del>84 thru 86</del>	<del>Communication Altitude 1 (3)</del>	<del>5.184</del>
<del>87 thru 89</del>	<del>Communication Altitude 2 (3)</del>	<del>5.184</del>
<del>90</del>	<del>Distance Description Code (1)</del>	<del>5.187</del>
<del>91 thru 92</del>	<del>Communication Distance (2)</del>	<del>5.188</del>
93 thru 101	Transmitter Latitude (9)	5.36
102 thru 111	Transmitter Longitude (10)	5.37
112 thru 114	Service Indicator (3)	5.106
115	Modulation (1)	5.198
116	Signal Emission (2)	5.199
<b>117</b>	<b>Time Code</b>	<b>5.131</b>
<b>118</b>	<b>NOTAM</b>	<b>5.132</b>
<b>119 thru 123</b>	<b>Blank (Spacing) (5)</b>	
124 thru 128	File Record No. (5)	5.31
129 thru 132	Cycle Date (4)	5.32

3.2 Delete Chapter 4, Table 4.1.14.2, Primary Extension Continuation Records

**4.1.14.2 Airport Communications Primary Extension Continuation Records**

**Deleted in Supplement 23**

Column	Field Name (Length)	Reference
1 thru 21	Fields as on Primary Records	
22	Continuation Record No. (1)	5.18
23	Application Type (1) <b>E—Primary Record Extension</b>	5.91
24 thru 27	Remote Facility (4)	5.200
28 thru 29	ICAO (2)	5.14
30	Section (1)	5.4
31	Subsection (1)	5.5
32 thru 36	Transmitter Site Mag Var (5)	5.39
37 thru 41	Transmitter Site Elevation (5)	5.92
42 thru 47	Additional Sectorization 1 (6)	5.183
48	Additional Sectorization 1 Altitude Description (1)	5.29
49 thru 51	Additional Sectorization 1 Altitude 1 (3)	5.184
52 thru 54	Additional Sectorization 1 Altitude 2 (3)	5.184
55 thru 60	Additional Sectorization 2 (6)	5.183
61	Additional Sectorization 2 Altitude Description (1)	5.29
62 thru 64	Additional Sectorization 2 Altitude 1 (3)	5.184
65 thru 67	Additional Sectorization 2 Altitude 2 (3)	5.184
<b>68 thru 123</b>	<b>Blank (Spacing) (56)</b>	
124 thru 128	File Record No. (5)	5.31
129 thru 132	Cycle Date (4)	5.32

3.3 Add new Chapter 4, Table 4.1.14.6, Sectorization Extension Continuation Records

**4.1.14.1 Airport Communications Sectorization Continuation Records**

Column	Field Name (Length)	Reference
1 thru 21	Fields as on Primary Records	5.2

MOVE COMMUNICATION SECTORS TO CONTINUATION RECORDS

Column	Field Name (Length)	Reference
22	Continuation Number (1)	5.16
23	Application Type (1) F - Sectorization Continuation	5.91
24 thru 27	Sector Facility (4)	5.185
28 thru 29	Sector Facility ICAO (2)	5.14
30	Sector Facility Section Code (1)	5.4
31	Sector Facility Subsection Code (1)	5.5
32	Distance Description Code (1)	5.187
33 thru 34	Communication Distance (2)	5.188
35 thru 40	Sector 1 Sectorization (6)	5.183
41	Sector 1 Altitude Description (1)	5.29
42 thru 44	Sector 1 Altitude 1 (3)	5.184
45 thru 47	Sector 1 Altitude 2 (3)	5.184
48 thru 53	Sector 2 Sectorization (6)	5.183
54	Sector 2 Altitude Description (1)	5.29
55 thru 57	Sector 2 Altitude 1 (3)	5.184
58 thru 60	Sector 2 Altitude 2 (3)	5.184
61 thru 66	Sector 3 Sectorization (6)	5.183
67	Sector 3 Altitude Description (1)	5.29
68 thru 70	Sector 3 Altitude 1 (3)	5.184
71 thru 73	Sector 3 Altitude 2 (3)	5.184
74 thru 79	Sector 4 Sectorization (6)	5.183
80	Sector 4 Altitude Description (1)	5.29
81 thru 83	Sector 4 Altitude 1 (3)	5.184
84 thru 86	Sector 4 Altitude 2 (3)	5.184
87 thru 123	Blank (Spacing) (37)	
124 thru 128	File Record No. (5)	5.31
129 thru 132	Cycle Date (4)	5.32

3.4 Update Chapter 4, Table 4.2.5.1:

- 3.4.1 Move Sectorization (cols 69-74) to new Sectorization extension
- 3.4.2 Move Sector Facility, ICAO, Section Code & Subsection Code (cols 75-82) to new Sectorization extension
- 3.4.3 Move Altitude Description Code, Communication Altitude 1 & Communication Altitude 2 (cols 83-89) to new Sectorization extension
- 3.4.4 Move Distance Description Code & Communication Distance (cols 90-92) to new Sectorization extension
- 3.4.5 Move Primary Extension fields to the Primary:
  - 3.4.5.1 Remote Facility, ICAO, Section & Subsection (cols 24-31)
  - 3.4.5.2 Transmitter Site Mag Var (cols 32-36)
  - 3.4.5.3 Transmitter Site Elevation (cols 37-41)

**4.2.5.1 Heliport Communications Primary Records**

Column	Field Name (Length)	Reference
1	Record Type (1)	5.2

MOVE COMMUNICATION SECTORS TO CONTINUATION RECORDS

Column	Field Name (Length)	Reference
2 thru 4	Customer/Area Code (3)	5.3
5	Section Code (1)	5.4
6	Blank (Spacing) (1)	
7 thru 10	Heliport Identifier (4)	5.6
11 thru 12	ICAO Code (2)	5.14
13	Subsection Code (1)	5.5
14 thru 15	Blank (Spacing) (2)	
16 thru 19	Communication Class (4)	5.283
20 thru 21	Sequence Number (2)	5.12
22	Continuation Number (1)	5.16
23 thru 25	Communication Types (3)	5.101
26 thru 32	Transmit Frequency (7)	5.103
33 thru 39	Receive Frequency (7)	5.103
40	Frequency Units (1)	5.104
41	Radar Units (1)	5.102
42	H24 Indicator (1)	5.181
43 thru 67	Call Signs (25)	5.105
68	Multi-Sector Indicator (1)	5.286
<b>69 thru 72</b>	<b>Remote Facility (4)</b>	<b>5.200</b>
<b>73 thru 74</b>	<b>Remote Facility ICAO (2)</b>	<b>5.14</b>
<b>75</b>	<b>Remote Facility Section</b>	<b>5.4</b>
<b>76</b>	<b>Remote Facility Subsection</b>	<b>5.5</b>
<b>77 thru 82</b>	<b>Blank (Spacing) (6)</b>	
<b>83 thru 87</b>	<b>Transmitter Site Mag Var (5)</b>	<b>5.39</b>
<b>88 thru 92</b>	<b>Transmitter Site Elevation (5)</b>	<b>5.92</b>
<del>69 thru 74</del>	<del>Sectorization (6)</del>	<del>5.183</del>
<del>75 thru 78</del>	<del>Sector Facility (4)</del>	<del>5.185</del>
<del>79 thru 80</del>	<del>ICAO (2)</del>	<del>5.14</del>
<del>81</del>	<del>Section Code (1)</del>	<del>5.4</del>
<del>82</del>	<del>Subsection Code (1)</del>	<del>5.5</del>
<del>83</del>	<del>Altitude Description Code (1)</del>	<del>5.29</del>
<del>84 thru 86</del>	<del>Communication Altitude 1 (3)</del>	<del>5.184</del>
<del>87 thru 89</del>	<del>Communication Altitude 2 (3)</del>	<del>5.184</del>
<del>90</del>	<del>Distance Description Code (1)</del>	<del>5.187</del>
<del>91 thru 92</del>	<del>Communication Distance (2)</del>	<del>5.188</del>
93 thru 101	Transmitter Latitude (9)	5.36
102 thru 111	Transmitter Longitude (10)	5.37
112 thru 114	Service Indicator (3)	5.106
115	Modulation (1)	5.198
116	Signal Emission (2)	5.199
<b>117</b>	<b>Time Code</b>	<b>5.131</b>
<b>118</b>	<b>NOTAM</b>	<b>5.132</b>
<b>119 thru 123</b>	<b>Blank (Spacing) (5)</b>	
124 thru 128	File Record No. (5)	5.31
129 thru 132	Cycle Date (4)	5.32

3.5 Delete Chapter 4, Table 4.2.5.2, Primary Extension Continuation Records

**4.2.5.2 Heliport Communications Primary Extension Continuation Records**



MOVE COMMUNICATION SECTORS TO CONTINUATION RECORDS

Deleted in Supplement 23

Column	Field Name (Length)	Reference
1 thru 21	Fields as on Primary Records	
22	Continuation Record No. (1)	5.16
23	Application Type (1) <b>E—Primary Record Extension</b>	5.91
24 thru 27	Remote Facility (4)	5.200
28 thru 29	ICAO (2)	5.14
30	Section (1)	5.4
31	Subsection (1)	5.5
32 thru 36	Transmitter Site Mag Var (5)	5.39
37 thru 41	Transmitter Site Elevation (5)	5.92
42 thru 47	Additional Sectorization 1 (6)	5.183
48	Additional Sectorization 1 Altitude Description (1)	5.29
49 thru 51	Additional Sectorization 1 Altitude 1 (3)	5.184
52 thru 54	Additional Sectorization 1 Altitude 2 (3)	5.184
55 thru 60	Additional Sectorization 2 (6)	5.183
61	Additional Sectorization 2 Altitude Description (1)	5.29
62 thru 64	Additional Sectorization 2 Altitude 1 (3)	5.184
65 thru 67	Additional Sectorization 2 Altitude 2 (3)	5.184
68 thru 123	Blank (Spacing) (56)	
124 thru 128	File Record No. (5)	5.31
129 thru 132	Cycle Date (4)	5.32

3.6 Add new Chapter 4, Table 4.2.5.6, Sectorization Extension Continuation Records

**4.2.5.6 Heliport Communications Sectorization Continuation Records**

Column	Field Name (Length)	Reference
1 thru 21	Fields as on Primary Records	5.2
22	Continuation Number (1)	5.16
23	Application Type (1) F - Sectorization Continuation	5.91
24 thru 27	Sector Facility (4)	5.185
28 thru 29	Sector Facility ICAO (2)	5.14
30	Sector Facility Section Code (1)	5.4
31	Sector Facility Subsection Code (1)	5.5
32	Distance Description Code (1)	5.187
33 thru 34	Communication Distance (2)	5.188
35 thru 40	Sector 1 Sectorization (6)	5.183
41	Sector 1 Altitude Description (1)	5.29
42 thru 44	Sector 1 Altitude 1 (3)	5.184
45 thru 47	Sector 1 Altitude 2 (3)	5.184
48 thru 53	Sector 2 Sectorization (6)	5.183
54	Sector 2 Altitude Description (1)	5.29
55 thru 57	Sector 2 Altitude 1 (3)	5.184
58 thru 60	Sector 2 Altitude 2 (3)	5.184
61 thru 66	Sector 3 Sectorization (6)	5.183
67	Sector 3 Altitude Description (1)	5.29
68 thru 70	Sector 3 Altitude 1 (3)	5.184
71 thru 73	Sector 3 Altitude 2 (3)	5.184
74 thru 79	Sector 4 Sectorization (6)	5.183



MOVE COMMUNICATION SECTORS TO CONTINUATION RECORDS

Column	Field Name (Length)	Reference
80	Sector 4 Altitude Description (1)	5.29
81 thru 83	Sector 4 Altitude 1 (3)	5.184
84 thru 86	Sector 4 Altitude 2 (3)	5.184
87 thru 123	Blank (Spacing) (37)	
124 thru 128	File Record No. (5)	5.31
129 thru 132	Cycle Date (4)	5.32

3.7 Update Chapter 5, Field Definition 5.91:

- 3.7.1 Move values “T” and “U” to be alphabetical order
- 3.7.2 Add new “F” for the communication sectorization continuation

**5.91 Continuation Record Application Type (APPL)**

Definition/Description: This field indicates specific application of this continuation record.

Source/Content: The field will contain one of the following type codes:

Field Content	Description
A	A standard ARINC 424 Continuation containing Notes or other formatted data not covered by a define Continuation
C	Controlling Agency Continuation
E	Primary Record Extension
<b>F</b>	<b>Communication Sectorization Continuation</b>
L	VHF Navaid/TACAN Only Navaid Limitation Continuation
N	A Sector Narrative Continuation
<del>T</del>	<del>A Time of Operations Continuation, formatted time data</del>
<del>U</del>	<del>A Time of Operations Continuation Narrative time data</del>
P	A Flight Planning Application Continuation
S	Simulation Application Continuation
<b>T</b>	<b>A Time of Operations Continuation, formatted time data</b>
<b>U</b>	<b>A Time of Operations Continuation Narrative time data</b>
W	An Airport or Heliport Procedure Data Continuation
<b>X</b>	<b>Airport SID/STAR/Approach Name Continuation</b>

Used On: Continuation Records  
 Length: 4 characters  
 Character Type: Numeric

3.8 Update Chapter 5, Field Definition 5.92:

- 3.8.1 Change Used On to show to be the Arpt & Hlpt Communication Primary
- 3.8.2 Clean up the rest of the Used On listings

**5.92 Facility Elevation (FAC ELEV)**

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Used On: **Airport & Heliport ~~ILS-Localizer~~ Marker, Airway Marker, ~~Primary Records~~ Enroute, / Airport,**

## MOVE COMMUNICATION SECTORS TO CONTINUATION RECORDS

~~/and Heliport Primary Extension Continuation~~  
~~Records Communications, VHF~~  
~~Nav aids and /NDB/TACAN-Only~~ Nav aids Simulation  
Continuation Records  
Length: 5 characters  
Character Type: Alpha/numeric  
Examples: 00530, -0014

### 4.0 XML ARINC 424 changes as depicted (Track Changes is Helpful)

- Jira Ticket: [ARINC-273](#)
- Git Feature Branch: [feature/ARINC-273-move-communication-sectors-to-continuation-records](#)
- Summary of changes:

#### 4.1 Update Communication.xsd:

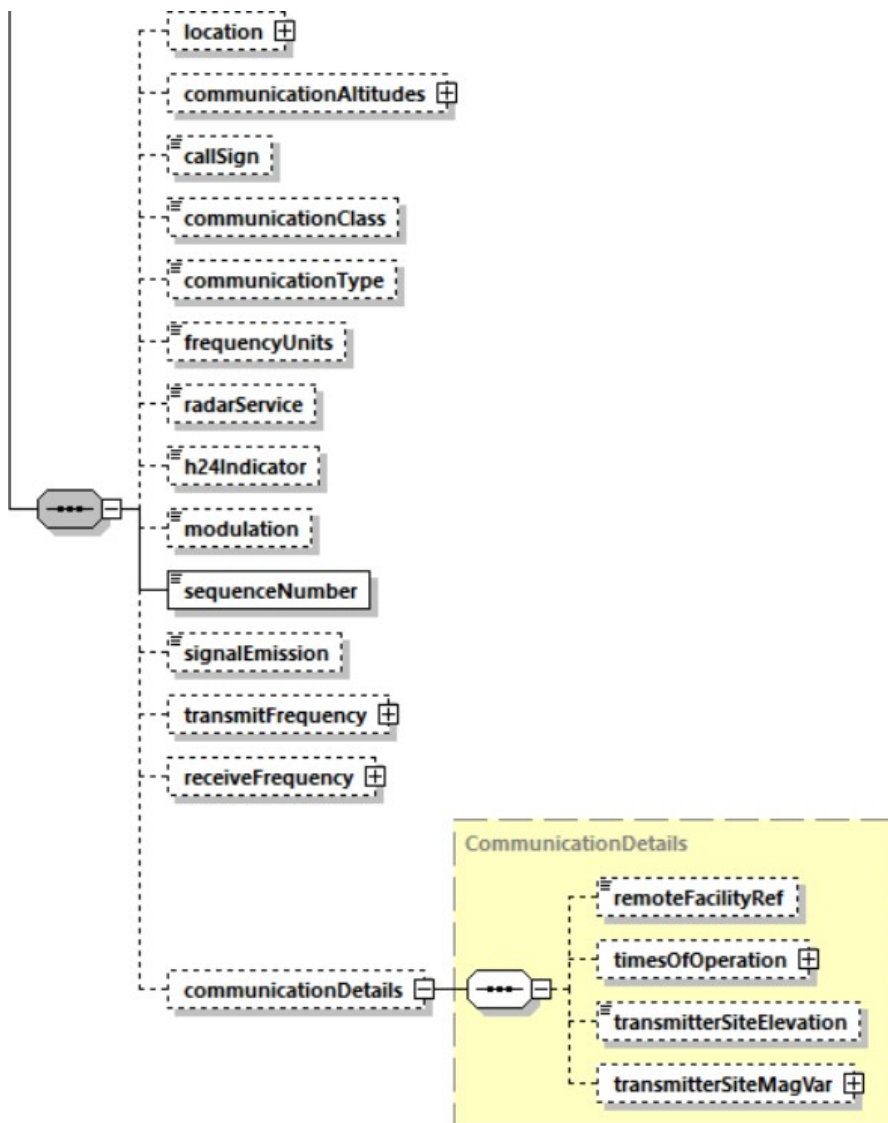
- 4.1.1 Delete communicationDetails (since fields will be moved)
- 4.1.2 Move the following elements from the CommunicationDetails complexType to Communication:
  - 4.1.2.1 remoteFacilityRef
  - 4.1.2.2 timesOfOperation
  - 4.1.2.3 transmitterSiteElevation
  - 4.1.2.4 transmitterSiteMagVar
- 4.1.3 Move the following elements from PortCommunication to DataTypes.xsd:
  - 4.1.3.1 communicationDistance
  - 4.1.3.2 distanceDescription
  - 4.1.3.3 sectorFacilityRef
- 4.1.4 Delete additionalSectorization (will be merged into sectorization)
- 4.1.5 Delete CommunicationDetails complexType (fields moved to Communication)

#### 4.2 Update DataTypes.xsd:

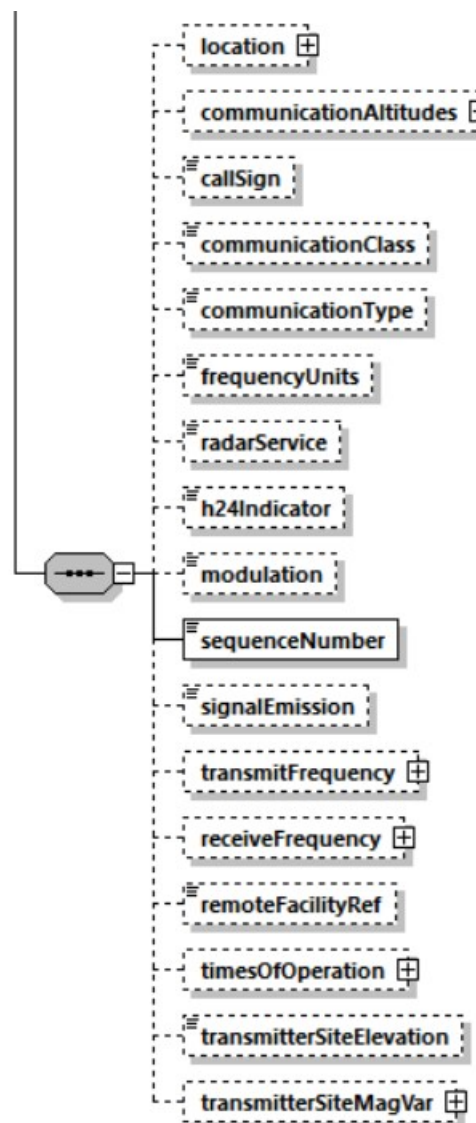
- 4.2.1 Renamed "Sectorization" to "CommunicationSectorization"
- 4.2.2 Add sectorAltitude to CommunicationSectorization as 0 to 2
- 4.2.3 Add new Sectorization complexType.
  - 4.2.3.1 Move the following elements from PortCommunication to the Sectorization:
    - 4.2.3.1.1 communicationDistance
    - 4.2.3.1.2 distanceDescription
    - 4.2.3.1.3 sectorFacilityRef
  - 4.2.3.2 Add communicationSector as 0 to 4

MOVE COMMUNICATION SECTORS TO CONTINUATION RECORDS

Old XSD view of Communications:

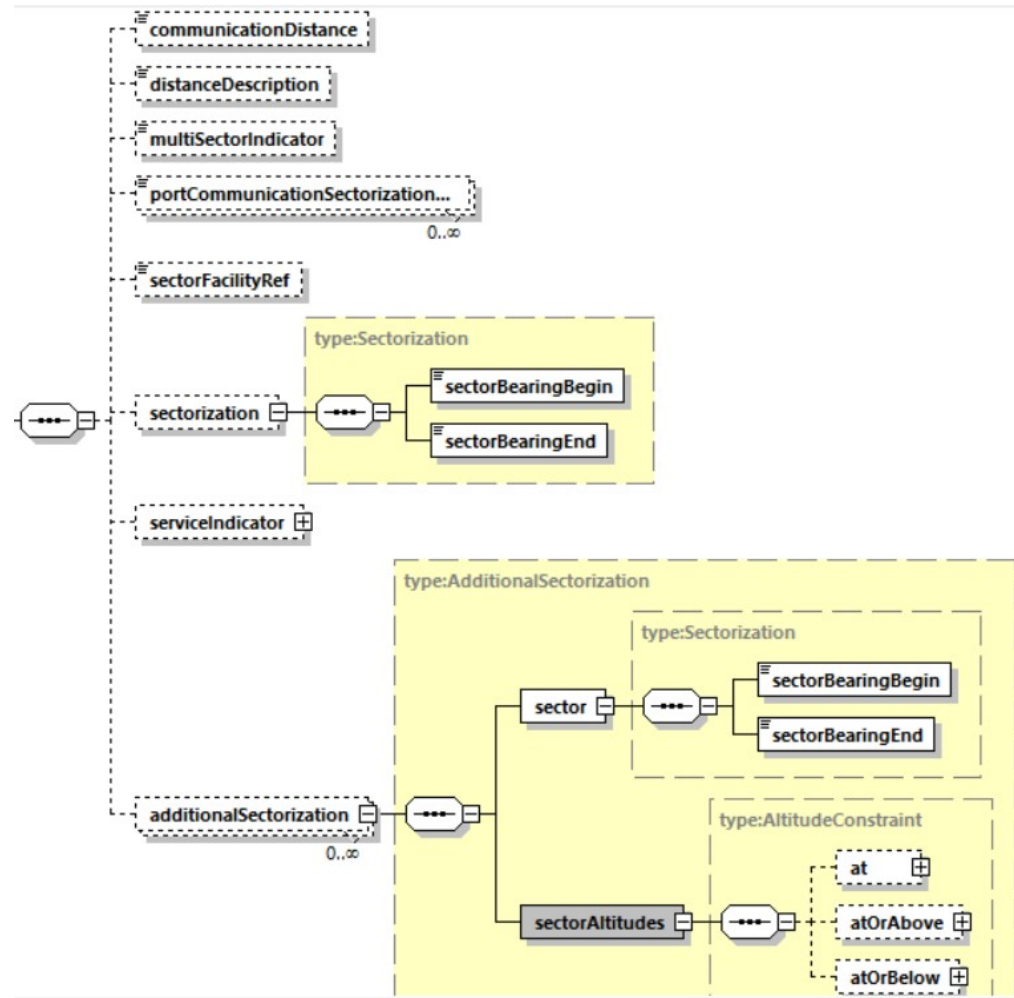


New XSD view of Communications:



MOVE COMMUNICATION SECTORS TO CONTINUATION RECORDS

Old XSD View of PortCommunication:



New XSD View of PortCommunication:

