



**Task Team on Aviation XML
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**TT-AvXML-3/Doc(26)
Agenda Item 6.3**

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Policy for encoding nil-reason codes

Requirement

The situation occasionally arises where property values for inclusion in TAF, METAR/SPECI or SIGMET reports are unavailable. There are manifold reasons for this occurrence; examples include:

- data is missing (e.g. due to transmission error);
- sensor was broken;
- record value was above (or below) the calibrated range of the sensor;
- operational procedure prevented the value being observed;
- etc.

The reason for the missing property values, the so called ‘**nil-reason**’, is often useful metadata in its own right – for example, reporting that the value of wind speed is greater than the calibrated limit of the anemometer is very useful information indeed!

Rather than simply missing out the property from the report, the nil-reason should be included.

Where nominal values are reported (e.g. sea state or runway deposit type), the permitted range of values is drawn from a controlled list (as specified by the relevant «CodeList» class). The appropriate term drawn from the code-table is specified using an **xlink:href** attribute plus, optionally, an informative human-readable label using the **xlink:title** attribute. For example: reporting the runway surface deposit as “Damp”

```
<iwxxm:depositType xlink:href="http://codes.wmo.int/bufr4/flagrep/0-20-086/1"
  xlink:title="Damp"/>
```

In the majority of cases the controlled lists are code-tables defined within WMO No. 306. Typically, these code-tables include a “missing value” term – for example BUFR code-table 0-20-086 “Runway deposits” term #15 states “Missing or not reported (e.g. due to runway clearance in progress)”.

It is possible to report a nil-reason for such a property using xlink syntax as used above; for example:

```
<iwxxm:depositType xlink:href="http://codes.wmo.int/bufr4/deflag/0-20-086/15"
  xlink:title="Missing or not reported"/>
```

Without resolving the **xlink:href** it is impossible to determine if the value reported derives from a successfully executed measurement or whether it is a nil-reason.

To simplify processing of reports, it is important that nil-reason codes and nominal values are able to be distinguished without needing to resolve an external reference.

Proposal

Where a nil-reason is reported for a quantitative value property (e.g. air temperature)

1. the XML attribute **xsi:nil="true"** shall be declared;
2. the unit of measure shall be specified as "not applicable"; **uom="N/A"**; and
3. the relevant nil-reason code shall be provided (see <http://codes.wmo.int/common/nil>).

For example:

```
<iwxxm:airTemperature uom="N/A" xsi:nil="true"
  nilReason="http://www.opengis.net/def/nil/OGC/0/missing"/>
```

Where a nil-reason is reported for a nominal value property (e.g. runway deposit)

1. the XML attribute **xsi:nil="true"** shall be declared; and
2. the relevant nil-reason code shall be provided.

For example:

```
<iwxxm:depositType xsi:nil="true"
  nilReason="http://codes.wmo.int/bufr4/deflag/0-20-086/15"/>
```

In most cases, the nil-reason shall be drawn from the code-table associated with the property. However, it is permissible to use nil-reasons from <http://codes.wmo.int/common/nil> where appropriate.

Recommended Text

Where a nil-reason is reported for a quantitative value property (e.g. air temperature)

1. the XML attribute **xsi:nil="true"** shall be declared;
2. the unit of measure shall be specified as "not applicable"; **uom="N/A"**; and
3. the relevant nil-reason code shall be provided (see <http://codes.wmo.int/common/nil>).

Where a nil-reason is reported for a nominal value property (e.g. runway deposit)

1. the XML attribute **xsi:nil="true"** shall be declared; and

2. the relevant nil-reason code shall be provided; the nil-reason may be drawn from the code-table associated with the property or from <http://codes.wmo.int/common/nil> as appropriate.
