## A.2 Conformance classes – Logical Model

### A.2.1 Conformance class: 8.2 GeoSciML Core Abstract

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| **Conformance Class** | /conf/gsml4-core | |
| **Requirements** | /req/gsml4-core | |
| **Dependency** | Urn:iso:dis:iso:19156:clause:A.1.1 | |
| **Test** | **/conf/gsml4-core/uml-entity-name** | |
| **Requirement** | /req/gsml4-core/uml-entity-name |
| **Test purpose** | Ensure that the names used in the target implementation matches the names in the logical model |
| **Test method** | Visual inspection that, when possible, name used in the target implementation matches the names in the logical model. |
| **Test type** |  |
| **Test** | **/conf/gsml4-core/uml-cardinality** | |
| **Requirement** | /req/gsml4-core/uml-cardinality |
| **Test purpose** | Ensure that the cardinalities of the properties are the same as the logical model |
| **Test method** | Visually inspect the target implementation and validate that all properties have the same cardinality as the one expressed in the logical model. |
| **Test type** |  |
| **Test** | **/conf/gsml4-core/uml-abstract** | |
| **Requirement** | /req/gsml4-core/uml-abstract |
| **Test purpose** | Ensure that target implementation does not allow materialisation of abstract classes |
| **Test method** | Visually inspect the target implementation and validate that no classifiers (Feature, Type or Datatype) marked as abstract can be materialised. |
| **Test type** | Capability |
| **Test** | **/conf/gsml4-core/uml-polymorphism** | |
| **Requirement** | /req/gsml4-core/uml-polymorphism |
| **Test purpose** | Ensure that target implementation has mechanisms to allow type substitutions for property values. |
| **Test method** | Visually check the target implementation for properties that have value types at the head of substitution group also accept subtypes as valid values |
| **Test type** | Capability |
| **Test** | **/conf/gsml4-core/quantities-uom** | |
| **Requirement** | /req/gsml4-core/quantities-uom |
| **Test purpose** | Ensure that quantities have a governed units of measure |
| **Test method** | Visually check that the target implementation has a mechanism to enforce a unit of measure from a governed source. |
| **Test type** | Capability |
| **Test** | **/conf/gsml4-core/codelist** | |
| **Requirement** | /req/gsml4-core/codelist |
| **Test purpose** | Ensure that vocabulary are governed |
| **Test method** | Visually check that the target implementation has a mechanism to enforce a vocabulary from a governed source |
| **Test type** | Capability |

### A.2.1 Conformance class: Portrayal Abstract Class

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| **Conformance Class** | /conf/gsml4-portrayal | |
| **Requirements** | /req/gsml4-portrayal | |
| **Dependency** | /conf/gsml4-core | |
| **Test** | /conf/gsml4-portrayal/geomtype | |
| **Requirement** | /req/gsml4-portrayal/geomtype |
| **Test purpose** | Ensure that the target implementation only allow a single geometry per instance |
| **Test method** | Visual inspection that the target implementation has a mechanism to limit a single geometry per instance |
| **Test type** |  |
| **Test** | **/conf/gsml4-portrayal/string** | |
| **Requirement** | /req/gsml4-portrayal/string |
| **Test purpose** | Ensure that human readable string are allowed in all properties of type CharacterString |
| **Test method** | Visual inspection that the target implementation does not prevent human readable string (by ensuring that property data types are used) |
| **Test type** |  |
| **Test** | **/conf/gsml4-portrayal/formal-syntax** | |
| **Requirement** | /req/gsml4-portrayal/formal-syntax |
| **Test purpose** | Ensure that string can use formal syntax |
| **Test method** | Visual inspection that the target implementation can accommodate a documented formal syntax that will allow parsing of the content. |
| **Test type** |  |
| **Test** | **/conf/gsml4-portrayal/datetime** | |
| **Requirement** | /req/gsml4-portrayal/datetime |
| **Test purpose** | Ensure that all representation of date and time uses ISO8601 |
| **Test method** | Visual inspection that the target implementation has mechanism or rules to enforce the usage of ISO8601 date and time |
| **Test type** |  |
| **Test** | **/conf/gsml4-portrayal/uri** | |
| **Requirement** | /req/gsml4-portrayal/uri |
| **Test purpose** | Ensure that all properties ending in URI contain a URI |
| **Test method** | Check that the target implementation enforce the content to RFC 3986 |
| **Test type** |  |
| **Test** | **/conf/gsml4-portrayal/**user-defined | |
| **Requirement** | /req/gsml4-portrayal/user-defined |
| **Test purpose** | Ensure that user defined properties conform to GML Simple Feature Level 0 |
| **Test method** | Check that the target implementation enforce user defined properties to be conform to GML Simple Feature Level 0 |
| **Test type** |  |
| **Test** | **/conf/gsml4-portrayal/**geologicunitview-identifier-unique | |
| **Requirement** | /req/gsml4-portrayal/geologicunitview-identifier-unique |
| **Test purpose** | Ensure that the identifier is unique for the dataset |
| **Test method** | Check that the target implementation implement a unique key constrain or mechanism to ensure that identifier property is unique. |
| **Test type** |  |
| **Test** | **/conf/gsml4-portrayal/**geologicunitview-representativeLithology | |
| **Requirement** | /req/gsml4-portrayal/geologicunitview-representativeLithology |
| **Test purpose** | Ensure that the geologic unit view representative lithology come from a controlled vocabulary |
| **Test method** | Check that the target implementation implements a mechanism to ensure that the term comes from a controlled vocabulary |
| **Test type** |  |
| **Test** | **/conf/gsml4-portrayal/**geologicunitview-representativeAge | |
| **Requirement** | /req/gsml4-portrayal/geologicunitview-representativeAge |
| **Test purpose** | Ensure that the geologic unit view representative age come from a controlled vocabulary |
| **Test method** | Check that the target implementation implements a mechanism to ensure that the term comes from a controlled vocabulary |
| **Test type** |  |
| **Test** | **/conf/gsml4-portrayal/**geologicunitview-representativeOlderAge | |
| **Requirement** | /req/gsml4-portrayal/geologicunitview-representativeOlderAge |
| **Test purpose** | Ensure that the geologic unit view representative older age come from a controlled vocabulary |
| **Test method** | Check that the target implementation implements a mechanism to ensure that the term comes from a controlled vocabulary |
| **Test type** |  |
| **Test** | **/conf/gsml4-portrayal/**geologicunitview-representativeYoungerAge | |
| **Requirement** | /req/gsml4-portrayal/geologicunitview-representativeYoungerAge |
| **Test purpose** | Ensure that the geologic unit view representative older age come from a controlled vocabulary |
| **Test method** | Check that the target implementation implements a mechanism to ensure that the term comes from a controlled vocabulary |
| **Test type** |  |
| **Test** | **/conf/gsml4-portrayal/**boreholeview-elevationSrs | |
| **Requirement** | /req/gsml4-portrayal/boreholeview-elevationSrs |
| **Test purpose** | Ensure that the elevation is using a valid SRS |
| **Test method** | Check that the target implementation implements a proper CRS reference to a EPSG vertical datum |
| **Test type** |  |
| **Test** | **/conf/gsml4-portrayal/**contactview-contacttype | |
| **Requirement** | /req/gsml4-portrayal/contactview-contacttype |
| **Test purpose** | Ensure that the contact’s contact type come from a controlled vocabulary |
| **Test method** | Check that the target implementation implements mechanism to ensure that the term comes from a controlled vocabulary. |
| **Test type** |  |
| **Test** | **/conf/gsml4-portrayal/**siteobservationview-symbolRotation | |
| **Requirement** | /req/gsml4-portrayal/siteobservationview-symbolRotation |
| **Test purpose** | Ensure that the symbol rotation is the range [0,360[ |
| **Test method** | Check that the target implementation implements mechanism to ensure that the rotation is in the range [0,360[ |
| **Test type** |  |

### A.2.1 Conformance class: GeoSciML Basic Logical Model

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| **Conformance Class** | /conf/gsml4-basic | |
| **Requirements** | /req/gsml4-basic | |
| **Dependency** | /conf/gsml4-core | |
| **Test** | /conf/gsml4-basic/geologicfeature-purpose | |
| **Requirement** | /req/gsml4-basic/geologicfeature-purpose |
| **Test purpose** | Ensure that the target implementation enforces the purpose property to be restricted to the values provided in Table 2 (instance, typicalNorm, definingNorm) |
| **Test method** | Visual inspection that the target implementation has a mechanism to limit the property value to those provided in Table 2 |
| **Test type** |  |
| **Test** | /conf/gsml4-basic/geologicfeature-history | |
| **Requirement** | /req/gsml4-basic/geologicfeature-history |
| **Test purpose** | Ensure that the age of a GeologicFeature is described using the geologicHistory property only and through a GeologicRelation to a GeologicEvent |
| **Test method** | Visual inspection that the target implementation has a mechanism to prevent the usage of a GeologicRelation to a GeologicEvent to describe the age of the GeologicFeature |
| **Test type** |  |
| **Test** | /conf/gsml4-basic/compositonPart-proportion | |
| **Requirement** | /req/gsml4-basic/compositonPart-proportion |
| **Test purpose** | Ensure that proportion are expressed relative to a whole |
| **Test method** | Visual inspection that the target implementation has a mechanism that restriction the Quantity unit of measure to be relative to a whole (like %) |
| **Test type** |  |
| **Test** | /conf/gsml4-basic/geologicevent-non-null | |
| **Requirement** | /req/gsml4-basic/geologicevent-non-null |
| **Test purpose** | Ensure that a GeologicEvent instance has either a olderAgeNamedAge or youngerNamedAge as a non-null value |
| **Test method** | Visual inspection that the target implementation has a mechanism to prevent a GeologicEvent to have both olderAgeNamedAge or youngerNamedAge equals to null. |
| **Test type** |  |
| **Test** | /conf/gsml4-basic/plane-pol-dip-az-not-null | |
| **Requirement** | /req/gsml4-basic/plane-pol-dip-az-not-null |
| **Test purpose** | Ensure that a GSML\_PlanarOrientation instance has either polarity, azimuth or dip as a non-null value |
| **Test method** | Visual inspection that the target implementation has a mechanism to prevent a GSML\_PlanarOrientation to have all polarity, azimuth or dip equal to null. |
| **Test type** |  |
| **Test** | /conf/gsml4-basic/plane-pol-dip-az-range | |
| **Requirement** | /req/gsml4-basic/plane-pol-dip-az-range |
| **Test purpose** | Ensure that the GSML\_PlanarOrientation azimuth is a real value in the range [0,360[ |
| **Test method** | Visual inspection that the target implementation has a mechanism to constrain a GSML\_PlanarOrientation azimuth in the range [0,360[ |
| **Test type** |  |
| **Test** | /conf/gsml4-basic/plane-dip-degree | |
| **Requirement** | /req/gsml4-basic/plane-dip-degree |
| **Test purpose** | Ensure that the GSML\_PlanarOrientation dip report the angle of a structure from the horizontal as a positive value. |
| **Test method** | Visual inspection that the target implementation has proper documentation on how to map dip measurement to the target implementation. |
| **Test type** |  |
| **Test** | /conf/gsml4-basic/plane-dip-range | |
| **Requirement** | /req/gsml4-basic/plane-dip-range |
| **Test purpose** | Ensure that the GSML\_PlanarOrientation dip is a real value in the range [0,90[ |
| **Test method** | Visual inspection that the target implementation has a mechanism to constrain a GSML\_PlanarOrientation dip in the range [0,90[ |
| **Test type** |  |
| **Test** | /conf/gsml4-basic/linear-trend-plunge-not-null | |
| **Requirement** | /req/gsml4-basic/linear-trend-plunge-not-null |
| **Test purpose** | Ensure that a GSML\_LinearOrientation instance has either trend or plunge as a non-null value |
| **Test method** | Visual inspection that the target implementation has a mechanism to prevent a GSML\_LinearOrientation to have both trend and plunge equals to null. |
| **Test type** |  |
| **Test** | /conf/gsml4-basic/linear-plunge-range | |
| **Requirement** | /req/gsml4-basic/linear-plunge-range |
| **Test purpose** | Ensure that a GSML\_LinearOrientation plunge is a value in the range [0,360[ |
| **Test method** | Visual inspection that the target implementation has a mechanism to constrain a GSML\_LinearOrientation plunge in the range [0,360[ |
| **Test type** |  |
| **Test** | /conf/gsml4-basic/linear-trend-degree | |
| **Requirement** | /req/gsml4-basic/linear-trend-degree |
| **Test purpose** | Ensure that a GSML\_LinearOrientation trend is expressed in degree from the geographical north |
| **Test method** | Visual inspection that the target implementation has documentation regarding how to express trend |
| **Test type** |  |
| **Test** | /conf/gsml4-basic/linear-az-range | |
| **Requirement** | /req/gsml4-basic/linear-az-range |
| **Test purpose** | Ensure that a GSML\_LinearOrientation azimuth is a real value in the range [0,360[ |
| **Test method** | Visual inspection that the target implementation has a mechanism to constrain a GSML\_LinearOrientation trend in the range [0,360[ |
| **Test type** |  |
| **Test** | /conf/gsml4-basic/quantity\_range\_order | |
| **Requirement** | /req/gsml4-basic/quantity\_range\_order |
| **Test purpose** | Ensure that a GSML\_QuantityRange lowerValue is less or equal to upperValue |
| **Test method** | Visual inspection that the target implementation has a mechanism to constain lowerValue to be less or equal to upperValue. |
| **Test type** |  |
| **Test** | /conf/gsml4-basic/quantity-range-repeat | |
| **Requirement** | /req/gsml4-basic/quantity-range-repeat |
| **Test purpose** | Ensure that a GSML\_QuantityRange lowerValue and upperValue matches the quantities in the “value” property |
| **Test method** | Visual inspection that the target implementation has a mechanism to constain lowerValue to match value[0] and upperValue to match value[1] |
| **Test type** |  |

### A.2.1 Conformance class: GeoSciML Extension Logical Model

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| **Conformance Class** | /conf/gsml4-extension | |
| **Requirements** | /req/gsml4-extension | |
| **Dependency** | /conf/gsml4-basic | |
| **Test** | /conf/gsml4-extension/geologicfeature-history | |
| **Requirement** | /req/gsml4-extension/geologicfeature-history |
| **Test purpose** | Ensure that the target implementation restricts GeologicEvent describing the age of GeologicUnit to geologicHistory property |
| **Test method** | Visual inspection that the target implementation has a mechanism to limit GeologicEvent describing age of GeologicFeature to geologicHistory. |
| **Test type** |  |
| **Test** | /conf/gsml4-extension/particle-shape | |
| **Requirement** | /req/gsml4-extension/particle-shape |
| **Test purpose** | Ensure that the target implementation restricts ParticleGeometryDescription particle-shape property to contain a value that is appropriate for the kind of compound material |
| **Test method** | Visual inspection that the target implementation has documentation or mechanism to constrain the values. |
| **Test type** |  |
| **Test** | /conf/gsml4-extension/contact-chronoboundary | |
| **Requirement** | /req/gsml4-extension/contact-chronoboundary |
| **Test purpose** | Ensure that the target implementation restricts ContactDescription::correlatesWith value to an instance of GeochronologicBondary only when ContactDescription::contactType is ChronostratigraphicBoundary |
| **Test method** | Visual inspection that the target implementation has a mechanism to constrain the value of correlatesWith |
| **Test type** |  |
| **Test** | /conf/gsml4-extension/contact-boundary | |
| **Requirement** | /req/gsml4-extension/contact-boundary |
| **Test purpose** | Ensure that the target implementation restricts the number of GeologicRelation to GeologicUnit, representing the two units that share a contact, to 2 and only 2 |
| **Test method** | Visual inspection that the target implementation has a mechanism to constrain the number GeologicRelation to 2 when the target feature is a GeologicUnit and the role is “contact” |
| **Test type** |  |
| **Test** | /conf/gsml4-extension/slipComponents-slip | |
| **Requirement** | /req/gsml4-extension/slipComponents-slip |
| **Test purpose** | Ensure that the target implementation constrains either heave, horizontalSlip or throw properties of SlipComponent to bear a non-null value |
| **Test method** | Visual inspection that the target implementation has a mechanism to enforce at least one of heave, horizontalSlip or throw to have a non-null value. |
| **Test type** |  |

### A.2.1 Conformance class: GeoSciML Time-Scale Logical Model

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| **Conformance Class** | /conf/gsml4-timescale | |
| **Requirements** | /req/gsml4-timescale | |
| **Dependency** | /conf/gsml4-basic | |
| **Test** | /conf/gsml4-timescale/member-timeordinalera | |
| **Requirement** | /req/gsml4-timescale/member-timeordinalera |
| **Test purpose** | Ensure that the target implementation restricts |
| **Test method** | Visual inspection that the target implementation has a mechanism |
| **Test type** |  |
| **Test** | /conf/gsml4-timescale/group-timeordinalera | |
| **Requirement** | /req/gsml4-timescale/group-timeordinalera |
| **Test purpose** | Ensure that the target implementation restricts |
| **Test method** | Visual inspection that the target implementation has a mechanism |
| **Test type** |  |

### A.2.1 Conformance class: GeoSciML Borehole Logical Model

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| **Conformance Class** | /conf/gsml4-borehole | |
| **Requirements** | /req/gsml4-borehole | |
| **Dependency** | /conf/gsml4-basic | |
| **Dependency** | (add depency to O&M conf classes) | |
| **Test** | /conf/gsml4-borehole/uom-boreholeDiameter | |
| **Requirement** | /req/gsml4-borehole/uom-boreholeDiameter |
| **Test purpose** | Ensure that the target implementation enforces the presence of a non-null units of measurement for DillingDetails::boreholeDiameter |
| **Test method** | Visual inspection that the target implementation has a mechanism to ensure that DillingDetails::boreholeDiameter is not null. |
| **Test type** |  |
| **Test** | /conf/gsml4-borehole/uom-intervalBegin | |
| **Requirement** | /req/gsml4-borehole/uom-intervalBegin |
| **Test purpose** | Ensure that the target implementation enforces the presence of a non-null units of measurement for DillingDetails::intervalBegin |
| **Test method** | Visual inspection that the target implementation has a mechanism to ensure that DillingDetails::intervalBegin is not null. |
| **Test type** |  |
| **Test** | /conf/gsml4-borehole/value-intervalBegin | |
| **Requirement** | /req/gsml4-borehole/value-intervalBegin |
| **Test purpose** | Ensure that the target implementation enforces the DillingDetails::intervalBegin value is less or equal to DillingDetails::intervalEnd |
| **Test method** | Visual inspection that the target implementation has a mechanism to ensure that DillingDetails::intervalBegin is less or equal to . DillingDetails::intervalEnd |
| **Test type** |  |
| **Test** | /conf/gsml4-borehole/uom-intervalEnd | |
| **Requirement** | /req/gsml4-borehole/uom-intervalEnd |
| **Test purpose** | Ensure that the target implementation enforces the presence of a non-null units of measurement for DillingDetails::intervalEnd |
| **Test method** | Visual inspection that the target implementation has a mechanism to ensure that DillingDetails::intervalEnd is not null. |
| **Test type** |  |
| **Test** | /conf/gsml4-borehole/drill-interval-1D | |
| **Requirement** | /req/gsml4-borehole/drill-interval-1D |
| **Test purpose** | Ensure that the target implementation enforces the presence a 1D geometry for DrillingDetail::interval |
| **Test method** | Visual inspection that the target implementation has a mechanism to ensure DrillingDetail::interval is a 1D geometry |
| **Test type** |  |
| **Test** | /conf/gsml4-borehole/drill-interval-1D-CRS | |
| **Requirement** | /req/gsml4-borehole/drill-interval-1D-CRS |
| **Test purpose** | Ensure that the target implementation enforces DillingDetails::intervalEnd geometries CRS to be a valid vertical datum |
| **Test method** | Visual inspection that the target implementation has a mechanism to ensure that DillingDetails::intervalEnd datum is a valid vertical datum. |
| **Test type** |  |
| **Test** | /conf/gsml4-borehole/ value-intervalBegin | |
| **Requirement** | /req/gsml4-borehole/ value-intervalBegin |
| **Test purpose** | Ensure that the target implementation enforces the DillingDetails::intervalBegin value is less or equal to DillingDetails::intervalEnd |
| **Test method** | Visual inspection that the target implementation has a mechanism to ensure that DillingDetails::intervalBegin is less or equal to . DillingDetails::intervalEnd |
| **Test type** |  |
| **Test** | /conf/gsml4-borehole/uom-intervalEnd | |
| **Requirement** | /req/gsml4-borehole/uom-intervalEnd |
| **Test purpose** | Ensure that the target implementation enforces the presence of a non-null units of measurement for DillingDetails::intervalEnd |
| **Test method** | Visual inspection that the target implementation has a mechanism to ensure that DillingDetails::intervalEnd is not null. |
| **Test type** |  |
| **Test** | /conf/gsml4-borehole/value-mappedIntervalBegin | |
| **Requirement** | /req/gsml4-borehole/value-mappedIntervalBegin |
| **Test purpose** | Ensure that the target implementation enforces the BoreholeInterval::mappedIntervalBegin value is less or equal to BoreholeInterval::mappedIntervalEnd |
| **Test method** | Visual inspection that the target implementation has a mechanism to ensure that BoreholeInterval::mappedIntervalBegin is less or equal to BoreholeInterval::mappedIntervalEnd |
| **Test type** |  |
| **Test** | /conf/gsml4-borehole/uom-mappedIntervalEnd | |
| **Requirement** | /req/gsml4-borehole/uom-mappedIntervalEnd |
| **Test purpose** | Ensure that the target implementation enforces the presence of a non-null units of measurement for BoreholeInterval::mappedIntervalEnd |
| **Test method** | Visual inspection that the target implementation has a mechanism to ensure that BoreholeInterval::mappedIntervalEnd is not null. |
| **Test type** |  |
| **Test** | /conf/gsml4-borehole/interval-1D | |
| **Requirement** | /req/gsml4-borehole/interval-1D |
| **Test purpose** | Ensure that the target implementation enforces the presence a GM\_LineString geometry composed of a pair of 1D coordinates for BoreholeInterval::shape |
| **Test method** | Visual inspection that the target implementation has a mechanism to ensure BoreholeInterface::shape is a GM\_LineString composed of a pair of 1D coordinates. |
| **Test type** |  |
| **Test** | /conf/gsml4-borehole/interval-1D-SRS | |
| **Requirement** | /req/gsml4-borehole/interval-1D-SRS |
| **Test purpose** | Ensure that the target implementation constrain the CRS to a relevant vertical datum |
| **Test method** | Visual inspection to check that the target implementation has a mechanism to constrain the CRS to a 1D vertical datum. |
| **Test type** |  |
| **Test** | /conf/gsml4-borehole/borehole-position-null | |
| **Requirement** | /req/gsml4-borehole/borehole-position-null |
| **Test purpose** | Ensure that the target implementation enforce a OGC nil when there are no GM\_Point available |
| **Test method** | Visual inspection to check that the target implementation has a mechanism to contrain either a GM\_Point or a OGC nil marker. |
| **Test type** |  |
| **Test** | /conf/gsml4-borehole/borehole-elevation-dim | |
| **Requirement** | /req/gsml4-borehole/borehole-elevation-dim |
| **Test purpose** | Ensure that the target implementation enforces that the OriginPosition::elevation has a dimension of 1 |
| **Test method** | Visual inspection to check that the target implementation has a mechanism to constrain OriginiPosition::elevation coordinate to have a single dimension |
| **Test type** |  |
| **Test** | /conf/gsml4-borehole/borehole-elevation-CRS | |
| **Requirement** | /req/gsml4-borehole/borehole-elevation-CRS |
| **Test purpose** | Ensure that the target implementation enforces the Origine::elevation geometry CRS to be a valid 1D vertical datum |
| **Test method** | Visual inspection to check that the target implementation has a mechanism to constrain OriginiPosition::elevation CRS to a value in the range EPSG:5600 to EPSG:5799 |
| **Test type** |  |
| **Test** | /conf/gsml4-borehole/borehole-pos | |
| **Requirement** | /req/gsml4-borehole/borehole-pos |
| **Test purpose** | Ensure that a position along a borehole is represented as a pair of values |
| **Test method** | Verify that the target implementation has a mechanism to enforce an interval to be encoded with 2 and only 2 coordinates. |
| **Test type** |  |

### A.2.1 Conformance class: GeoSciML Lab Analysis Logical Model

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| **Conformance Class** | /conf/gsml4-lab-analysis | |
| **Requirements** | /req/gsml4-lab-analysis | |
| **Dependency** | /conf/gsml4-basic | |
| **Dependency** | (add depency to O&M conf classes) | |
| **Test** | /conf/ gsml4-lab-analysis/sampledFeature | |
| **Requirement** | /req/gsml4-lab-analysis/sampledFeature |
| **Test purpose** | Ensure that the SF\_SamplingFeature::sampledFeature is not an instance of SF\_SamplingFeature |
| **Test method** | Verify that the target implementation has a mechanism to prevent sampledFeature target to be an instance of SF\_SamplingFeature or any of its subtypes. |
| **Test type** |  |
| **Test** | /conf/ gsml4-lab-analysis/accuracy-measure | |
| **Requirement** | /req/gsml4-lab-analysis/accuracy-measure |
| **Test purpose** | Ensure that DQ\_Element::nameOfMeasure and ::result are not null |
| **Test method** | Verify that the target implementation has a mechanism to enforce a non-null value for DQ\_Element::nameOfMeasure and DQ\_Element::result |
| **Test type** |  |
| **Test** | /conf/ gsml4-lab-analysis/image-url | |
| **Requirement** | /req/gsml4-lab-analysis/image-url |
| **Test purpose** |  |
| **Test method** |  |
| **Test type** |  |
| **Test** | /conf/ gsml4-lab-analysis/image-process | |
| **Requirement** | /req/gsml4-lab-analysis/image-process |
| **Test purpose** | Ensure that the identifier of Image is a HTTP URI referencing an online image |
| **Test method** | Verify that the target implementation has a mechanism to check if the ifdentifier is a HTTP URI and it resolves to a common file format (image/jpeg, image/png,image/gif, etc.) |
| **Test type** |  |

### A.2.1 Conformance class: GeoSciML XML Encoding Abstract Core

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| --- | --- | --- |
| **Conformance Class** | /conf/gsml4xsd | |
| **Requirements** | /req/gsml4xsd | |
| **Dependency** | (add depency to O&MXML conf classes) | |
| **Test** | /conf/gsml4xsd/xsd | |
| **Requirement** | /req/gsml4xsd/xsd |
| **Test purpose** | Ensure that GeoSciML XML documents are valid |
| **Test method** | Perform a XSD validation on a XML instance document. Test succeeds if the validation does not report any error. |
| **Test type** |  |
| **Test** | /conf/gsml4xsd/sch | |
| **Requirement** | /req/gsml4xsd/sch |
| **Test purpose** | Ensure that encoding rules defined in the specification are met |
| **Test method** | Perform a schematron validation on the XML instance. Test succeeds if the validation does not report any failed rules. |
| **Test type** |  |
| **Test** | /conf/gsml4xsd/byref | |
| **Requirement** | /req/gsml4xsd/byref |
| **Test purpose** | Ensure that xlink:href contains a resolvable reference |
| **Test method** | If Absolute URI, Test the URI on the web. If the URI does not resolve or return a 4xx error, the test fails.  If anchor (#term), check the instance if a gml:id contain the value of the anchor. (xlink:href=”#term” shall match gml:id=”term”) |
| **Test type** |  |
| **Test** | /conf/gsml4xsd/codelist | |
| **Requirement** | /req/gsml4xsd/codelist |
| **Test purpose** | Ensure that vocabulary xlink:href contain an absolute http URI and this URL resolves to relevant content |
| **Test method** | Test the URI on the web. If the URI does not resolve or return a 4xx error, the test fails. |
| **Test type** |  |
| **Test** | /conf/gsml4xsd/iso8601-time | |
| **Requirement** | /req/gsml4xsd/iso8601-time |
| **Test purpose** | Ensure that all date and time are formatted as ISO8601 |
| **Test method** | Although XSD can validate elements that are specifically defined as type xsd:date, other date and time can occur in the text. A visual inspection of the instance shall be used to validate date and time. |
| **Test type** |  |
| **Test** | /conf/gsml4xsd/time-zone | |
| **Requirement** | /req/gsml4xsd/time-zone |
| **Test purpose** | Ensure that time zone are expressed explicitly |
| **Test method** | Visually inspect instance to validate the presence of time zone indicators. |
| **Test type** |  |

### A.2.1 Conformance class: GeoSciML Portrayal XML Encoding

|  |  |  |
| --- | --- | --- |
| **Conformance Class** | /conf/gsml4xsd-portrayal | |
| **Requirements** | /req/gsml4xsd-portrayal | |
| **Dependency** | OGC 05-033r9 : Annex A | |
| **Test** | /conf/gsml4xsd-portrayal/SF-1 | |
| **Requirement** | /req/gsml4xsd-portrayal/SF-1 |
| **Test purpose** | Ensure that XML instance is compliant to OGC Simple Feature SF-1 |
| **Test method** | Perform the test in OGC 05-033r9 Annex A |
| **Test type** |  |
| **Test** | /conf/gsml4xsd-portrayal/SF-1-simpletype | |
| **Requirement** | /req/gsml4xsd-portrayal/SF-1-simpletype |
| **Test purpose** | **Ensure that user defined types are compliant to SF-1** |
| **Test method** | Perform the test in OGC 05-033r9, Annex A.8 |
| **Test type** |  |

### A.2.1 Conformance class: GeoSciML Portrayal XML Encoding for GML 3.1

|  |  |  |
| --- | --- | --- |
| **Conformance Class** | /conf/gsml4xsd-portrayal-31 | |
| **Requirements** | /req/gsml4xsd-portrayal-31 | |
| **Dependency** | /req/gsml4xsd-portrayal | |
| **Test** | /conf/gsml4xsd-portrayal-31/xsd | |
| **Requirement** | /req/gsml4xsd-portrayal-31/xsd |
| **Test purpose** | Ensure that GeoSciML Portrayal XML documents are valid |
| **Test method** | Perform a XSD validation on a XML instance document. Test succeeds if the validation does not report any error. |
| **Test type** |  |
| **Test** | /conf/gsml4xsd-portrayal-31/sch | |
| **Requirement** | /req/gsml4xsd-portrayal-31/sch |
| **Test purpose** | Ensure that encoding rules defined in the specification are met |
| **Test method** | Perform a schematron validation on the XML instance. Test succeeds if the validation does not report any failed rules. |
| **Test type** |  |

### A.2.1 Conformance class: GeoSciML Basic XML Encoding

|  |  |  |
| --- | --- | --- |
| **Conformance Class** | /conf/gsml4xsd-basic | |
| **Requirements** | /req/gsml4xsd-basic | |
| **Dependency** | /conf/gsml4xsd/core | |
| **Dependency** | (add depency to O&MXML conf classes) | |
| **Test** | /conf/gsml4xsd-basic/xsd | |
| **Requirement** | /req/gsml4xsd-basic/xsd |
| **Test purpose** | Ensure that GeoSciML Basic XML documents are valid |
| **Test method** | Perform a XSD validation on a XML instance document. Test succeeds if the validation does not report any error. |
| **Test type** |  |
| **Test** | /conf/gsml4xsd-basic/sch | |
| **Requirement** | /req/gsml4xsd-basic/sch |
| **Test purpose** | Ensure that encoding rules defined in the specification are met |
| **Test method** | Perform a schematron validation on the XML instance. Test succeeds if the validation does not report any failed rules. |
| **Test type** |  |

### A.2.1 Conformance class: GeoSciML Extension XML Encoding

|  |  |  |
| --- | --- | --- |
| **Conformance Class** | /conf/gsml4xsd-extension | |
| **Requirements** | /req/gsml4xsd-extension | |
| **Dependency** | /conf/gsml4xsd/core | |
| **Dependency** | (add depency to O&MXML conf classes) | |
| **Test** | /conf/gsml4xsd-extension/xsd | |
| **Requirement** | /req/gsml4xsd-extension/xsd |
| **Test purpose** | Ensure that GeoSciML Extension XML documents are valid |
| **Test method** | Perform a XSD validation on a XML instance document. Test succeeds if the validation does not report any error. |
| **Test type** |  |
| **Test** | /conf/gsml4xsd-extension/sch | |
| **Requirement** | /req/gsml4xsd-extension/sch |
| **Test purpose** | Ensure that encoding rules defined in the specification are met |
| **Test method** | Perform a schematron validation on the XML instance. Test succeeds if the validation does not report any failed rules. |
| **Test type** |  |

### A.2.1 Conformance class: GeoSciML Geologic Time XML Encoding

|  |  |  |
| --- | --- | --- |
| **Conformance Class** | /conf/gsml4xsd-geologictime | |
| **Requirements** | /req/gsml4xsd-geologictime | |
| **Dependency** | /conf/gsml4xsd/core | |
| **Dependency** | (add depency to O&MXML conf classes) | |
| **Test** | /conf/gsml4xsd-geologictime/xsd | |
| **Requirement** | /req/gsml4xsd-geologictime/xsd |
| **Test purpose** | Ensure that GeoSciML Geologic Time XML documents are valid |
| **Test method** | Perform a XSD validation on a XML instance document. Test succeeds if the validation does not report any error. |
| **Test type** |  |
| **Test** | /conf/gsml4xsd-geologictime/sch | |
| **Requirement** | /req/gsml4xsd-geologictime/sch |
| **Test purpose** | Ensure that encoding rules defined in the specification are met |
| **Test method** | Perform a schematron validation on the XML instance. Test succeeds if the validation does not report any failed rules. |
| **Test type** |  |

### A.2.1 Conformance class: GeoSciML Borehole XML Encoding

|  |  |  |
| --- | --- | --- |
| **Conformance Class** | /conf/gsml4xsd-borehole | |
| **Requirements** | /req/gsml4xsd-borehole | |
| **Dependency** | /conf/gsml4xsd/core | |
| **Dependency** | (add depency to O&MXML conf classes) | |
| **Test** | /conf/gsml4xsd-borehole/xsd | |
| **Requirement** | /req/gsml4xsd-borehole/xsd |
| **Test purpose** | Ensure that GeoSciML Borehole XML documents are valid |
| **Test method** | Perform a XSD validation on a XML instance document. Test succeeds if the validation does not report any error. |
| **Test type** |  |
| **Test** | /conf/gsml4xsd-borehole/sch | |
| **Requirement** | /req/gsml4xsd-borehole/sch |
| **Test purpose** | Ensure that encoding rules defined in the specification are met |
| **Test method** | Perform a schematron validation on the XML instance. Test succeeds if the validation does not report any failed rules. |
| **Test type** |  |

### A.2.1 Conformance class: GeoSciML Laboratory and Analysis XML Encoding

|  |  |  |
| --- | --- | --- |
| **Conformance Class** | /conf/gsml4xsd-lab | |
| **Requirements** | /req/gsml4xsd-lab | |
| **Dependency** | /conf/gsml4xsd/core | |
| **Dependency** | (add depency to O&MXML conf classes) | |
| **Test** | /conf/gsml4xsd-lab/xsd | |
| **Requirement** | /req/gsml4xsd-lab/xsd |
| **Test purpose** | Ensure that GeoSciML Laboratory and Analysis XML documents are valid |
| **Test method** | Perform a XSD validation on a XML instance document. Test succeeds if the validation does not report any error. |
| **Test type** |  |
| **Test** | /conf/gsml4xsd-lab/sch | |
| **Requirement** | /req/gsml4xsd-lab/sch |
| **Test purpose** | Ensure that encoding rules defined in the specification are met |
| **Test method** | Perform a schematron validation on the XML instance. Test succeeds if the validation does not report any failed rules. |
| **Test type** |  |

### A.2.1 Conformance class: GeoSciML Relative geometric position profile XML Encoding

|  |  |
| --- | --- |
| **Conformance Class** | /conf/gsml4xsd-geom-pos |
| **Requirements** | /req/gsml4xsd-geom-pos |
| **Dependency** | /conf/gsml4xsd-borehole |
| **Dependency** | (add depency to O&MXML conf classes) |

### A.2.1 Conformance class: GeoSciML Relative parametric position profile XML Encoding

|  |  |  |
| --- | --- | --- |
| **Conformance Class** | /conf/gsml4xsd-param-pos | |
| **Requirements** | /req/gsml4xsd-param-pos | |
| **Dependency** | /conf/gsml4xsd-borehole | |
| **Dependency** | (add depency to O&MXML conf classes) | |
| **Test** | /conf/gsml4xsd-param-pos/interval-param | |
| **Requirement** | /req/gsml4xsd-param-pos/interval-param |
| **Test purpose** |  |
| **Test method** |  |
| **Test type** |  |
| **Test** | /conf/gsml4xsd-param-pos/interval-range | |
| **Requirement** | /req/gsml4xsd-param-pos/interval-range |
| **Test purpose** |  |
| **Test method** |  |
| **Test type** |  |
| **Test** | /conf/gsml4xsd-param-pos/reference-geometry | |
| **Requirement** | /req/gsml4xsd-param-pos/reference-geometry |
| **Test purpose** |  |
| **Test method** |  |
| **Test type** |  |

### A.2.1 Conformance class: GeoSciML Relative parametric position profile XML Encoding

|  |  |  |
| --- | --- | --- |
| **Conformance Class** | /conf/gsml4xsd-linref-pos | |
| **Requirements** | /req/gsml4xsd-linref-pos | |
| **Dependency** | /conf/gsml4xsd-borehole | |
| **Dependency** | (add depency to O&MXML conf classes) | |
| **Test** | /conf/gsml4xsd-linref-pos/from | |
| **Requirement** | /req/gsml4xsd-linref-pos/from |
| **Test purpose** |  |
| **Test method** |  |
| **Test type** |  |
| **Test** | /conf/gsml4xsd-linref-pos/to | |
| **Requirement** | /req/gsml4xsd-linref-pos/to |
| **Test purpose** |  |
| **Test method** |  |
| **Test type** |  |
| **Test** | /conf/gsml4xsd-param-pos/reference-geometry | |
| **Requirement** | /req/gsml4xsd-param-pos/reference-geometry |
| **Test purpose** |  |
| **Test method** |  |
| **Test type** |  |