# Validation comparisons

This document compares the validation tests for the VO-Paris, ESA and NCSA cone search validator and tries to suggest a common nomenclature that we might use in discussing the tests. For each site the tests run are described. Each test is labelled with a suggested standard label. In a number of cases a test at one site combines what is done at multiple tests in another site. At this point we try to always define the ‘standard’ tests at the finest granularity so that the combining test will show all of its components.

Some tests are run in specific contexts where the context is the kind of query that is made using the protocol. Three contexts are used here (not at all centers):

N: The normal context is in a query which is expected to generate at least one resulting row of output.

Z: The zero context is a query which is expected to generate 0 rows of output but not generate errors. For cone search queries this is typically done by specifying SR=0. Note however that the cone search protocol does not require that this return 0 rows. Specifically, the standard notes: *There may also be other sources outside the cone -- the service implementor may decide on the exact search criterion used internally to the service to select the sources.*

E: The error context is a query which is required to generate an error.

The same test may be run in multiple contexts. The context in which a test is run is given in parentheses in the test ID area. If no context is specified then the test is run in all contexts used at the given site.

Non requirements are showed in gray rather than black.

## VO Paris Cone Search

Tests are run in the Normal and Error contexts.

Inherited Tests:

**[G 2b] VOTable XML validation** VOTable must be valid against the **VOTable 1.0** schema.

Cone Search Specific Tests

**[CS 2.1a, CS 2.1b (N)] RESOURCE** The VOTable must contain exactly one RESOURCE which must contain exactly one TABLE.

**[CS 2.2.1a (N)] 2.2.1** The TABLE must contain exactly one FIELD with ucd='ID\_MAIN'.

**[CS 2.2.2a (N)] 2.2.2** The TABLE must contain exactly one FIELD with ucd='POS\_EQ\_RA\_MAIN'.

**[CS 2.2.3a (N)] 2.2.3** The TABLE must contain exactly one FIELD with ucd='POS\_EQ\_DEC\_MAIN'.

**[CS 2.3a, CS 2.3b (E)] 2.3** In case of service error, an error message must appear in a valid result VOTable with name “Error” either in a VOTABLE/INFO or RESOURCE/INFO or RESOURCE/PARAM or DEFINITIONS/PARAM.

## Should/Warnings

None

# NCSA Cone Search Validator Tests

Tests are run in the normal and error contexts.

## MUST/Errors

**[CS 2.1a] 2.1a** VOTable must contain only one RESOURCE.

**[CS 2.1b] 2.1b** The RESOURCE element must contain exactly one TABLE.

**[CS 2.2.1a (N)] 2.2.1a** The TABLE must contain exactly one FIELD with ucd='ID\_MAIN'.

**[CS 2.2.1b (N)] 2.2.1b** The ID\_MAIN column must have datatype='char'.

**[CS 2.2.1c (N)] 2.2.1c** The ID\_MAIN column must have a string-appropriate arraysize (recommend '\*').

**[CS 2.2.1d (N)] 2.2.1d** Values in the ID\_MAIN column must be unique.

**[CS 2.2.2a (N)] 2.2.2a** The TABLE must contain exactly one FIELD with ucd='POS\_EQ\_RA\_MAIN'.

**[CS 2.2.2b (N)] 2.2.2b** The POS\_EQ\_RA\_MAIN column must have datatype='double'.

**[CS 2.2.2c (N)] 2.2.2c** The POS\_EQ\_RA\_MAIN column must not provide arraysize (non-empty) attribute.

**[CS 2.2.3a (N)] 2.2.3a** The TABLE must contain exactly one FIELD with ucd='POS\_EQ\_DEC\_MAIN'.

**[CS 2.2.3b (N)] 2.2.3b** The POS\_EQ\_DEC\_MAIN column must have datatype='double'.

**[CS 2.2.3c (N)] 2.2.3c** The POS\_EQ\_DEC\_MAIN column must not provide arraysize (non-empty) attribute.

**[CS 2.2.4 (N)] 2.2.4a** VOTABLE can not contain both a PARAM and a FIELD with ucd='OBS\_ANG-SIZE'.

**[CS 2.3a (E)] 3a** Error message must appear in an INFO or PARAM with name='Error' in required location.

**[CS 2.3b (E)] 3b** Error response should only contain one PARAM.

### Errors thrown by the HEASARC testing framework:

Could not find a tester class for this service [indicates an error in HEASARC metadata regarding the service]

Could not find proper handler [indicates an error in HEASARC metadata regarding the services]

**[G 1, G 2a, G 2b]** Apparent communication error produced an exception inside the validator [indicates and error commicating with either the validtor service or the underlying cone search capability]

unknown error [Unhandled exception]

ESA Validation Tests

Tests are run in the Normal, Zero and Error contexts.

**[G 1]** INSERT INTO validation\_criterion(cap\_type, code, criterion\_type, weight, description) VALUES('cs:ConeSearch', '.on', 'REQUIREMENT', 1000, 'The service is ON');

**[G 2a]** INSERT INTO validation\_criterion(cap\_type, code, criterion\_type, weight, description) VALUES('cs:ConeSearch', '.zero.xml', 'REQUIREMENT', 100, 'The zero response is well-formed XML');

**[G 2b (Z)]** INSERT INTO validation\_criterion(cap\_type, code, criterion\_type, weight, description) VALUES('cs:ConeSearch', '.zero.xsd', 'EXTRA', 100, 'The zero response is XSD-valid XML');

**[G 2c (Z)]** INSERT INTO validation\_criterion(cap\_type, code, criterion\_type, weight, description) VALUES('cs:ConeSearch', '.zero.mime-legal', 'REQUIREMENT', 100, 'The MIME type of the zero response has a legal value (''text/xml'', ''text/xml;content=x-votable'' or ''text/xml;votable''');

**[G 2d (Z)]** INSERT INTO validation\_criterion(cap\_type, code, criterion\_type, weight, description) VALUES('cs:ConeSearch', '.zero.mime-should', 'RECOMMENDATION', 100, 'The MIME type of the zero response has the recommended value (''text/xml'')');

**[G 2e (Z)]** INSERT INTO validation\_criterion(cap\_type, code, criterion\_type, weight, description) VALUES('cs:ConeSearch', '.zero.mime-not-as-may', 'WARNING', 100, 'The MIME type of the zero response is not the optional value (''text/xml;content=x-votable'')');

**[G 2f (Z)]**INSERT INTO validation\_criterion(cap\_type, code, criterion\_type, weight, description) VALUES('cs:ConeSearch', '.zero.mime-not-as-borderline-may', 'RECOMMENDATION', 100, 'The MIME type of the zero response is not the strongly discouraged value (''text/xml;votable'')');

**[G 2a (N)]** INSERT INTO validation\_criterion(cap\_type, code, criterion\_type, weight, description) VALUES('cs:ConeSearch', '.effc.xml', 'REQUIREMENT', 100, 'The effective response is well-formed XML');

**[G 2b (N)]** INSERT INTO validation\_criterion(cap\_type, code, criterion\_type, weight, description) VALUES('cs:ConeSearch', '.effc.xsd', 'EXTRA', 100, 'The effective response is XSD-valid XML');

**[G 2c (N)]** INSERT INTO validation\_criterion(cap\_type, code, criterion\_type, weight, description) VALUES('cs:ConeSearch', '.effc.mime-legal', 'REQUIREMENT', 100, 'The MIME type of the effectie response has a legal value (''text/xml'', ''text/xml;content=x-votable'' or ''text/xml;votable''');

**[G 2d (N)]** INSERT INTO validation\_criterion(cap\_type, code, criterion\_type, weight, description) VALUES('cs:ConeSearch', '.effc.mime-should', 'RECOMMENDATION', 100, 'The MIME type of the effective response has the recommended value (''text/xml'')');

**[G 2e (N)]** INSERT INTO validation\_criterion(cap\_type, code, criterion\_type, weight, description) VALUES('cs:ConeSearch', '.effc.mime-not-as-may', 'WARNING', 100, 'The MIME type of the effective response is not the optional value (''text/xml;content=x-votable'')');

**[G 2f (N)]** INSERT INTO validation\_criterion(cap\_type, code, criterion\_type, weight, description) VALUES('cs:ConeSearch', '.effc.mime-not-as-borderline-may', 'RECOMMENDATION', 100, 'The MIME type of the effective response is not the strongly discouraged value (''text/xml;votable'')');

**[G 2h (Z)]** INSERT INTO validation\_criterion(cap\_type, code, criterion\_type, weight, description) VALUES('cs:ConeSearch', '2.2a-i', 'REQUIREMENT', 100, 'The service must respond with an XML document in the VOTable format [for the zero URL]');

**[G 2h (N)]** INSERT INTO validation\_criterion(cap\_type, code, criterion\_type, weight, description) VALUES('cs:ConeSearch', '2.2a-ii', 'REQUIREMENT', 100, 'The service must respond with an XML document in the VOTable format [for the effective URL]');

[Note that I am unclear if this is actually required by the standard. See note in the introduction. TAM]

**[CS 2.2a (Z)]** INSERT INTO validation\_criterion(cap\_type, code, criterion\_type, weight, description) VALUES('cs:ConeSearch', '2.2b-i', 'REQUIREMENT', 100, 'The zero response contains no data');

**[CS 2.2b (N)]** INSERT INTO validation\_criterion(cap\_type, code, criterion\_type, weight, description) VALUES('cs:ConeSearch', '2.2b-ii', 'REQUIREMENT', 100, 'The effective response has to contain some data');

**[CS 2.2.1a, CS 2.2.1b, CS 2.2.1c (Z,N)]** INSERT INTO validation\_criterion(cap\_type, code, criterion\_type, weight, description) VALUES('cs:ConeSearch', '2.2c-i', 'REQUIREMENT', 100, 'The VOTable MUST comply with these conditions: [...] Exactly one FIELD must have ucd=''ID\_MAIN'', with an array character type (fixed or variable length)');

**[CS 2.2.2a, CS2.2.2b, CS 2.2.2c (Z,N)]** INSERT INTO validation\_criterion(cap\_type, code, criterion\_type, weight, description) VALUES('cs:ConeSearch', '2.2c-ii', 'REQUIREMENT', 100, 'The VOTable MUST comply with these conditions: [...] Exactly one FIELD must have ucd=''POS\_EQ\_RA\_MAIN'', with type double');

**[CS 2.2.3a, CS2.2.3b, CS2.2.3c (Z,N)]** INSERT INTO validation\_criterion(cap\_type, code, criterion\_type, weight, description) VALUES('cs:ConeSearch', '2.2c-iii', 'REQUIREMENT', 100, 'The VOTable MUST comply with these conditions: [...] Exactly one FIELD must have ucd=''POS\_EQ\_DEC\_MAIN'', with type double');

[Note that I do not believe the following two requirements are actually in the standard – though they are certainly sensible. TAM]

**[CS 2.3c (Z)]** INSERT INTO validation\_criterion(cap\_type, code, criterion\_type, weight, description) VALUES('cs:ConeSearch', '2.3b-i', 'REQUIREMENT', 100, 'no INFO elements with @name=''Error'' should appear in the zero response');

**[CS 2.3c (N)]** INSERT INTO validation\_criterion(cap\_type, code, criterion\_type, weight, description) VALUES('cs:ConeSearch', '2.3b-ii', 'REQUIREMENT', 100, 'no INFO elements with @name=''Error'' should appear in the effective response');

**[CS 2.3a, CS 2.3b (E)]**INSERT INTO validation\_criterion(cap\_type, code, criterion\_type, weight, description) VALUES('cs:ConeSearch', '2.3b', 'REQUIREMENT', 100, 'In the case of error, the service MUST respond with a VOTable that contains a single PARAM element or a single INFO element with name=''Error'', where [a] corresponding value attribute [should be present]');