**Test Assertions for VVSG 1.0 Section 3.1.4**

**August 24, 2015**

**Requirement 3.1.4a**

**VVSG 1.0 Requirement 3.1.4a:** Consistent with election law, the voting system should support a process that does not introduce any bias for or against any of the selections to be made by the voter. In both visual and aural formats, contest choices shall be presented in an equivalent manner.

**Test Assertions**

**TA314a-1:** FOR all contest choices on a visual ballot, there SHALL be no discernible differences in visual presentation.

**TA314a-1-1:** FOR all contest choices on a visual ballot, there SHALL be no discernible differences in the visual presentation of font properties including, but not limited to, family, style (bold, italic, underline), and size.

**TA314a-1-2:** FOR all contest choices on a visual ballot, there SHALL be no discernible differences in the visual presentation of text properties including, but not limited to, word and letter spacing, vertical and horizontal alignment, indentation, line height, and white space handling.

**TA314a-1-3:** FOR all contest choices on a visual ballot, there SHALL be no discernible differences in the visual presentation of color.

**TA314a-1-4:** FOR all contest choices on a visual ballot, there SHALL be no discernible differences in the visual presentation of background.

**TA314a-1-5:** FOR all contest choices on a visual ballot, there SHALL be no discernible differences in the visual presentation of margins, borders, padding, and spacing.

**TA314a-2:** FOR all ballot selections within a review screen on a visual ballot, there SHALL be no discernible differences in visual presentation.

**TA314a-2-1:** FOR all ballot selections within a review screen on a visual ballot, there SHALL be no discernible differences in the visual presentation of font properties including, but not limited to, family, style (bold, italic, underline), and size.

**TA314a-2-2:** FOR all ballot selections within a review screen on a visual ballot, there SHALL be no discernible differences in the visual presentation of text properties including, but not limited to, word and letter spacing, vertical and horizontal alignment, indentation, line height, and white space handling.

**TA314a-2-3:** FOR all ballot selections within a review screen on a visual ballot, there SHALL be no discernible differences in the visual presentation of color.

**TA314a-2-4:** FOR all ballot selections within a review screen on a visual ballot, there SHALL be no discernible differences in the visual presentation of background.

**TA314a-2-5:** FOR all ballot selections within a review screen on a visual ballot, there SHALL be no discernible differences in the visual presentation of margins, borders, padding, and spacing.

**TA314a-3:** FOR all undervotes within a review screen on a visual ballot, there SHALL be no discernible differences in visual presentation.

**TA314a-4:** FOR all overvotes within a review screen on a visual ballot, there SHALL be no discernible differences in visual presentation.

**TA314a-5:** FOR all ballot selections within a visual voter verifiable audit record, there SHALL be no discernible differences in visual presentation.

**TA314a-5-1:** FOR all ballot selections within a visual voter verifiable audit record, there SHALL be no discernible differences in the visual presentation of font properties including, but not limited to, family, style (bold, italic, underline), and size.

**TA314a-5-2:** FOR all ballot selections within a visual voter verifiable audit record, there SHALL be no discernible differences in the visual presentation of text properties including, but not limited to, word and letter spacing, vertical and horizontal alignment, indentation, line height, and white space handling.

**TA314a-5-3:** FOR all ballot selections within a visual voter verifiable audit record, there SHALL be no discernible differences in the visual presentation of color.

**TA314a-5-4:** FOR all ballot selections within a visual voter verifiable audit record, there SHALL be no discernible differences in the visual presentation of background.

**TA314a-5-5:** FOR all ballot selections within a visual voter verifiable audit record, there SHALL be no discernible differences in the visual presentation of margins, borders, padding, and spacing.

**TA314a-6:** FOR all undervotes within a visual voter verifiable audit record, there SHALL be no discernible differences in visual presentation.

**TA314a-7:** FOR all overvotes within a visual voter verifiable audit record, there SHALL be no discernible differences in visual presentation.

**TA314a-8:** FOR all contest choices on an aural ballot, there SHALL be no discernible differences in aural presentation.

**TA314a-8-1:** FOR all contest choices on an aural ballot, there SHALL be no discernible differences in the aural presentation of the human speaker or synthetic voice.

**TA314a-8-2:** FOR all contest choices on an aural ballot, there SHALL be no discernible differences in the aural presentation of the voice characteristics including, but not limited to, speech rate, volume, pitch.

**TA314a-9:** FOR all ballot selections within a review screen on an aural ballot, there SHALL be no discernible differences in aural presentation.

**TA314a-9-1:** FOR all ballot selections within a review screen on an aural ballot, there SHALL be no discernible differences in the aural presentation of the human speaker or synthetic voice.

**TA314a-9-2:** FOR all ballot selections within a review screen on an aural ballot, there SHALL be no discernible differences in the aural presentation of the voice characteristics including, but not limited to, speech rate, volume, pitch.

**TA314a-10:** FOR all undervotes within a review screen on an aural ballot, there SHALL be no discernible differences in aural presentation.

**TA314a-11:** FOR all overvotes within a review screen on an aural ballot, there SHALL be no discernible differences in aural presentation.

**TA314a-12:** FOR all aural voter verifiable audit records, there SHALL be no discernible differences in aural presentation.

**TA314a-12-1:** FOR all aural voter verifiable audit records, there SHALL be no discernible differences in the aural presentation of the human speaker or synthetic voice.

**TA314a-12-2:** FOR all aural voter verifiable audit records, there SHALL be no discernible differences in the aural presentation of the voice characteristics including, but not limited to, speech rate, volume, pitch.

**TA314a-13:** FOR all undervotes within an aural voter verifiable audit record, there SHALL be no discernible differences in aural presentation.

**TA314a-14:** FOR all overvotes within an aural voter verifiable audit record, there SHALL be no discernible differences in aural presentation.

**Requirement 3.1.4b**

**VVSG 1.0 Requirement 3.1.4b:** The voting machine or related materials shall provide clear instructions and assistance to allow voters to successfully execute and cast their ballots independently.

**Note:** This is a high-level requirement that is fulfilled by the lower-level ones.

**Test Assertions**

None.

**Requirement 3.1.4b-i**

**VVSG 1.0 Requirement 3.1.4b-i:** Voting machines or related materials shall provide a means for the voter to get help at any time during the voting session.

**Test Assertions**

**TA314bi-1:** The voter SHALL be able to access help prior to making a selection.

**TA314bi-2:** The voter SHALL be able to access help after making a selection.

**TA314bi-3:** The voter SHALL be able to access help when reviewing ballot selections on review screens.

**TA314bi-4:** The voter SHALL be able to access help when ballot casting is available.

**TA314bi-5:** A DRE machine MAY provide help via a distinctive “help” button.

**TA314bi-6:** ANY voting equipment type MAY provide written instructions that are separate from the ballot.

**Requirement 3.1.4b-ii**

**VVSG 1.0 Requirement 3.1.4b-ii:** The voting machine shall provide instructions for all its valid operations.

**Test Assertions**

**TA314bii-1:** FOR a voting machine, correct instructions SHALL exist for all valid operations available to the voter.

**TA314bii-2:** FOR a voting machine, IF the functionality exists, THEN correct instructions SHALL exist for system activation and/or session initiation.

**TA314bii-3:** FOR a voting machine, correct instructions SHALL exist for changing a vote.

**TA314bii-4:** FOR a voting machine, IF the functionality exists, THEN correct instructions SHALL exist for adjustment of visual display characteristics.

**TA314bii-5:** FOR a voting machine, IF the functionality exists, THEN correct instructions SHALL exist for navigating back and forth through multiple pages.

**TA314bii-6:** FOR a voting machine, IF the functionality exists, THEN correct instructions SHALL exist for adjustment of audio characteristics.

**TA314bii-7:** FOR a voting machine, IF the functionality exists, THEN correct instructions SHALL exist for casting a straight party vote.

**TA314bii-8:** FOR a voting machine, IF the functionality exists, THEN correct instructions SHALL exist for writing in a candidate for office.

**TA314bii-9:** FOR a voting machine, IF the functionality exists, THEN correct instructions SHALL exist for use of other auxiliary devices, such as a magnifier for paper records.

**TA314bii-10:** FOR a voting machine, IF the functionality exists, THEN correct instructions SHALL exist for mechanisms for non-manual input.

**TA314bii-11:** FOR a voting machine, correct instructions SHALL exist for review of the ballot.

**TA314bii-12:** FOR a voting machine, correct instructions SHALL exist for final casting of the ballot.

**TA314bii-13:** FOR a voting machine, correct instructions SHALL exist for making a ballot selection.

**Requirement 3.1.4c**

**VVSG1.0 Requirement 3.1.4c:** The voting system shall provide the capability to design a ballot for maximum clarity and comprehension.

**Note:** This is a high-level requirement that is fulfilled by the lower-level ones.

**Test Assertions**

None.

**Requirement 3.1.4c-i**

**VVSG1.0 Requirement 3.1.4c-i:** The voting equipment should not visually present a single contest spread over two pages or two columns.

**Test Assertions**

**TA314ci-1:** FOR all contests on a visual ballot, unless prevented by physical limitations, the voting equipment SHALL keep the beginning of a contest and the end of a contest on the same page.

**TA314ci-2:** FOR all contests on a visual ballot, unless prevented by physical limitations, the voting equipment SHALL keep the beginning of a contest and the end of a contest on the same column.

**Requirement 3.1.4c-ii**

**VVSG1.0 Requirement 3.1.4c-ii:** The ballot shall clearly indicate the maximum number of candidates for which one can vote within a single contest.

**Test Assertions**

**TA314cii-1:** FOR all contests within a ballot, each contest SHALL indicate, in a manner explicitly associated with that particular contest, the maximum number of choices possible for that particular contest.

**Requirement 3.1.4c-iii**

**VVSG1.0 Requirement 3.1.4c-iii:** There shall be a consistent relationship between the name of a candidate and the mechanism used to vote for that candidate.

**Test Assertions**

**TA314ciii-1**: FOR all contests on a visual ballot, an equivalent design SHALL be applied for all choices within that particular contest on that ballot.

**TA314ciii-1-1**: FOR all contests on a visual ballot, IF a response field for a choice is located to the left of the name of that choice, THEN each response field for that contest SHOULD be located to the left of the related name of each choice for that particular contest.

**TA314ciii-1-2**: FOR all contests on a visual ballot, IF a response field for a choice is located to the right of the name of that choice, THEN each response field for that contest SHOULD be located to the right of the related name of each choice for that particular contest.

**TA314ciii-1-3**: FOR all contests on a visual ballot, IF a response field for a choice is located on the top of the name of that choice, THEN each response field for that contest SHOULD be located on the top of the related name of each choice for that particular contest.

**TA314ciii-1-4**: FOR all contests on a visual ballot, IF a response field for a choice is located on the bottom of the name of that choice, THEN each response field for that contest SHOULD be located on the bottom of the related name of each choice for that particular contest.

**TA314ciii-2**: FOR all contests on an aural ballot, an equivalent design SHALL be applied for all choices within that particular contest on that ballot.

**TA314ciii-2-1**: FOR all contests on an aural ballot, IF a response field for a choice is located "after" the name of that choice, THEN each response field for that contest SHOULD be located "after" the related name of each choice for that particular contest.

**Requirement 3.1.4d**

**VVSG1.0 Requirement 3.1.4d:** Warnings and alerts issued by the voting system should clearly state the nature of the problem and the set of responses available to the voter. The warning should clearly state whether the voter has performed or attempted an invalid operation or whether the voting equipment itself has malfunctioned in some way.

**Test Assertions**

**TA314d-1:** ALL alerts issued by the voting system SHOULD include the nature of the problem.

**TA314d-2:** ALL alerts issued by the voting system SHOULD include the responses available to the voter.

**TA314d-3:** ALL warnings issued by the voting system SHOULD include the nature of the problem.

**TA314d-4:** ALL warnings issued by the voting system SHOULD include the responses available to the voter.

**TA314d-5:** IF the voting equipment malfunctions, THEN a warning issued by the voting system related to this malfunction SHOULD include information pertaining to this malfunction.

**TA314d-6:** IF the voter attempts an invalid operation, THEN a warning issued by the voting system related to this attempt SHOULD include information pertaining to this attempt.

**TA314d-7:** IF the voter performs an invalid operation, THEN a warning issued by the voting system related to this performance SHOULD include information pertaining to this performance.

**Requirement 3.1.4e**

**VVSG1.0 Requirement 3.1.4e:** The use of color by the voting system should agree with common conventions: a) green, blue or white is used for general information or as a normal status indicator; b) amber or yellow is used to indicate warnings or a marginal status; c) red is used to indicate error conditions or a problem requiring immediate attention.

**Test Assertions**

**TA314e-1:** The voting system SHOULD present all general information to the voter in either green, blue or white colors.

**TA314e-2:** The voting system SHOULD present all normal status indicators to the voter in either green, blue or white colors.

**TA314e-3:** The voting system SHOULD present all warnings to the voter in either amber or yellow colors.

**TA314e-4:** The voting system SHOULD present all marginal status information to the voter in either amber or yellow colors.

**TA314e-5:** The voting system SHOULD present all error conditions to the voter in a red color.

**TA314e-6:** The voting system SHOULD present all problems requiring immediate attention to the voter in a red color.