**DICOM Correction Item**

<table>
<thead>
<tr>
<th>Correction Number</th>
<th>CP-993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Summary:</td>
<td>Specific Character Set in PPS N-SET</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of Modification</th>
<th>Name of Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modification</td>
<td>PS 3.4-2011</td>
</tr>
</tbody>
</table>

**Rationale for Correction:**

Specific Character Set is specified as “Not Allowed” in the PPS N-SET, but it should be allowed if an alternate character set is used, e.g., for Comments on the Performed Procedure Step (0040,0280).

The issue arises when data entry during the performance of a procedure step introduces data that is in a character set that was not specified at the time the instance was created. This can be prevented by:

1. Not creating the MPPS or GPPS until the procedure is complete. This can interfere with other uses of MPPS and GPPS.

2. Permitting the Specific Character Set to be modified, but with the constraint that any character set already defined shall be preserved. This does constrain character set usage. For example, if the character set selected is Unicode in UTF-8, then no other character set can be added. If the Specific Character Set (0008.0005) already contains an ISO 2022 character set, then Unicode cannot be added.

The behavior for N-SET needs to be clarified as part of choice 2. The rule from Part 7 is that the attributes are "used to modify" without specifying how. The rules for MPPS, GPPS in Part 4 are that the attributes are "set". This can be read as meaning that if Specific Character Set (0008.0005) is present, it replaces the old value. This leads to the risk that an N-SET could change Specific Character Set inappropriately. For instance, if an SCU sends and N-SET that includes an empty Specific Character Set, a simple "set" understanding would replace the Specific Character Set (0008,0005), perhaps resulting in an incorrect instance.

The two choices are:

- SCU must ensure that Specific Character Set (0008,0005) is correct for entire instance. This can be done by doing a union operation operation. That might lead the list to include extra character sets that are no longer in use, but this is not intrinsically harmful. It could be done by examining all of the string contents of all attributes and constructing the correct list of Specific Character Sets used.

- SCP must ensure correctness. This can be done by doing a union operation operation. That might lead the list to include extra character sets that are no longer in use, but this is not intrinsically harmful. It could be done by examining all of the string contents of all attributes and constructing the correct list of Specific Character Sets used. This approach preserves instance validity even when the N-SET value for Specific Character Set (0008,0005) are incorrect.

It's probably easiest to have the SCP perform a union and tolerate infrequent extra charactersets listed in this attribute. Either way, a statement is needed that makes it clear whether it is SCU or SCP that is responsible for preserving correctness.

**Sections of documents affected**

PS 3.4 Annex F Tables F.7.2-1 and F.11.2-1.

**Correction Wording:**
Modify Table F.7.2-1 in PS 3.4

Table F.7.2-1
MODALITY PERFORMED PROCEDURE STEP SOP CLASS N-CREATE, N-SET AND FINAL STATE Attributes

<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Tag</th>
<th>Req. Type N-CREATE (SCU/SCP)</th>
<th>Req. Type N-SET (SCU/SCP)</th>
<th>Requirement Type Final State (See Note 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific Character Set</td>
<td>(0008,0005)</td>
<td>1C/1C (Required if an extended or replacement character set is used)</td>
<td>Not allowed 1C/1C (required if an extended or replacement character set is used in an attribute that is set)</td>
<td></td>
</tr>
</tbody>
</table>

...  

Modify Section F.7.2.2.3

F.7.2.2.3 Service Class Provider

The N-SET operation allows the SCU to request that the SCP update selected Attribute values for a specific Modality Performed Procedure Step SOP Instance. This operation shall be invoked through the use of the DIMSE N-SET Service used in conjunction with the appropriate Modality Performed Procedure Step SOP Instance. The N-SET value for Specific Character Set (0008,0005) does not replace the previous value. The SCP shall appropriately modify its internal representation so that subsequent operations reflect the combination of the character sets in use by the attributes in this N-SET and those used by attributes that have not been modified.

Note: The SCP may need to convert the text for instance to the Unicode character set. If the SCP is not able to perform a necessary conversion it may return the Invalid Attribute value error code (0106H).

Modify Table F.11.2-1
### Table F.11.2-1

**GENERAL PURPOSE PERFORMED PROCEDURE STEP SOP CLASS N-CREATE, N-SET AND FINAL STATE ATTRIBUTES**

<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Tag</th>
<th>Req. Type N-CREATE (SCU/SCP)</th>
<th>Req. Type N-SET (SCU/SCP)</th>
<th>Requirement Type Final State (See Note 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific Character Set</td>
<td>(0008,0005)</td>
<td>1C/1C</td>
<td>Not allowed</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Required if an extended or replacement character set is used)</td>
<td>1C/1C (required if an extended or replacement character set is used in an attribute that is set)</td>
<td></td>
</tr>
</tbody>
</table>

...  

#### Modify Section F.11.2.2.3

**F.11.2.2.3  Service Class Provider**

The N-SET operation allows the SCU to request that the SCP update selected Attribute values for a specific General Purpose Performed Procedure Step SOP Instance. This operation shall be invoked through the use of the DIMSE N-SET Service used in conjunction with the appropriate General Purpose Performed Procedure Step SOP Instance. **The N-SET value for Specific Character Set (0008,0005) does not replace the previous value.** The SCP shall appropriately modify its internal representation so that subsequent operations reflect the combination of the character sets in use by the attributes in this N-SET and those used by attributes that have not been modified.

**Note:** The SCP may need to convert the text for instance to the Unicode character set. If the SCP is not able to perform a necessary conversion it may return the Invalid Attribute value error code (0106H).

#### Modify Section UUU.2.6.3 from Supplement 96

The SCP shall refuse N-SET requests on a COMPLETED or CANCELED UPS.

The SCP shall **merge** use the Specific Character Set (0008,0005) value to **appropriately modify its internal representation so that subsequent operations reflect the combination of the character sets in use by the attributes in this N-SET and those used by attributes that have not been modified** provided by the SCU with the existing value in the UPS instance.

The SCP shall return, via the N-SET response primitive, the N-SET Response Status Code applicable to the associated request as specified in Section UUU.2.6.4.