TS 18661 DR 15

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Reference Document: TS 18661-3

Subject: Characteristic macros for non-arithmetic formats

Summary

This DR addresses an issue related to DR 501 and IEC 60559 non-arithmetic interchange formats.

TS 18661-3 attempted to change the definition of **DECIMAL_DIG** so that it would apply to all supported IEC 60559 formats. DR 501 shows that this change is problematic. After several unsuccessful attempts at a suitable TC, WG 14 and the CFP group have agreed to obsolesce **DECIMAL_DIG** in favor of the *type*_**DECIMAL_DIG** macros.

The *type*_**DECIMAL_DIG** macros are helpful in using conversions between binary floating-point formats and decimal character sequences. TS 18661-3 specifies such conversions for non-arithmetic binary interchange formats, but neglects to include the macros for such formats.

Likewise, the *type*_**DIG** macros too are helpful in using conversions between binary floating-point formats and decimal character sequences, though TS 18661-3 does not specify them for non-arithmetic formats.

The suggested TC below extends the set of **FLT**N_**DECIMAL_DIG** and **FLT**N_**DIG** macros to include ones for IEC 60559 non-arithmetic binary interchange formats.

Suggested Technical Corrigendum

In TS 18661-3 5.3, in the text for 5.2.4.2.2#6c, after the list for supported types **_Float**N, insert:

> for IEC 60559 non-arithmetic binary interchange formats of width N:
>
> **FLT**N_**DECIMAL_DIG**   **FLT**N_**DIG**

In TS 18661-3 clause 7, in the text for 5.2.4.2.2a#1, change:

> The prefix **FLT**N_ indicates a binary interchange floating type of width N.

to:

> The prefix **FLT**N_ indicates a binary interchange floating type or a non-arithmetic binary interchange format of width N.

Change the last sentence of 5.2.4.2.2a#1 from:

> Conversely, for each such type that the implementation does not provide, **`<float.h>`** shall not define the associated macros in the following lists.

to:

> Conversely, for each such type that the implementation does not provide, **`<float.h>`** shall not define the associated macros in the following list, except, the implementation shall define the macros **FLT*N*_DECIMAL_DIG** and **FLT*N*_DIG** if it supports IEC 60559 non-arithmetic binary interchange formats of width N by providing the encoding-to-encoding conversion functions in **`<math.h>`** and the string-to-encoding and string-from-encoding functions in **`<stdlib.h>`**.