WG14 N2652

Title:	TS 18661-5 revision
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References:	N2120, N2121, N2122, N2123, N2407, N2421

TS 18661 specified a C language binding for IEC 60559:2008. It was developed and published as five parts. For discussion about inclusion in C23, parts 4 and 5 were divided into sub-parts that could be considered separately.

Part 1 – Binary floating-point arithmetic
Part 2 – Decimal floating-point arithmetic
Part 3 – Interchange and extended types
Part 4a – Supplementary functions – Mathematical functions
Part 4b – Supplementary functions – Reduction functions
Part 5a – Supplementary attributes – Evaluation formats
Part 5b – Supplementary attributes – Optimization controls
Part 5c – Supplementary attributes -- Reproducibility
Part 5d – Supplementary attributes – Alternate exception handling

Parts 1, 2 and 4a have been incorporated into draft C23 and the content of Part 3 is being added as an annex. As a related enhancement, C23 is being updated to be based on IEC 60559:2020. A planned TS revision will include Part 4b, together with new functions corresponding to the augmented arithmetic operations in IEC 60559:2020.

N2120 through N2123 suggested that Parts 5a-d, respectively, be included in C23. These were not approved by WG14. Later N2407 (and accompanying slide deck N2421) re-suggested Parts 5a-c for C23. This also was not approved by WG14.

CFP believes the specification in Part 5 provides a reasonable C binding for useful IEC 60559 functionality, and should be available to implementors in a useable form. The current TS 18661-5 is written as changes to C11 plus the changes in the previous 4 parts of TS 18661, for example

Changes to C11 + TS18661-1 + TS18661-2 + TS18661-3 + TS18661-4:

After 5.2.4.2.2a#3, insert:

…

Soon all these base documents will be obsolete. To preserve the specification in a usable form, this paper proposes that WG 14 develop a revision (to be drafted by the C FP group) that:

1. is rebased on C23; and

2. is written as a stand-alone specification of extensions to C, in the general style of an annex.

If WG 14 approves this work, we ask that the necessary request be submitted to the SC 22 plenary.