

**WG14 N2045**  
**Meeting notes**

**C Floating Point Study Group Teleconference**

2016-03-15  
9 AM PDT / 12 PM EDT

**Attendees:** Rajan, Jim, Fred, Mike, David, Ian, Blaine

**New agenda items:**

WG14 mailing paper N2016 on half float.

**Last meeting action items:**

Ian: Talk to Lawrence Crowl regarding proposing this IEEE-754: 2008 binding to C++ as well. - In process.

Ian: Update and check the items listed and flagged under Feature\_List\_Part\_1. - Not done.

All: Focused Review of part 5 once the updated draft comes out. - Done.

Jim: Part 5: p12: Line 14: Change to "supports reproducible results for decimal floating types." or something similar. - Done.

Jim: Part 5: Page 12, line 14; Page 13, line 3: Check the wording here to see if the standard does this (enumerate values and then later says it can have other values). - Done (no change).

Jim: Part 5: Page 5 line 9: occurrences -> occurrence - Done.

Jim: Part 5: Page 10: Line 25: semantic type\*s\* -> semantic type. May occur in other places in the document (Ex. Page 9, Line 22; Page 19, Line 23) - Done.

Jim: Part 1: Page 51: Line 3: Add a footnote to the 'l suffix' stating there are no functions with the 'f' suffix. - Done.

Rajan: Send the DR template to Jim for parts 1-4 issues to get them ready in time for the WG14 meeting. - Done.

Jim: Post updated versions of TS parts on the wiki. - Not done.

David: Note about our group work from the IEEE sent to Rajan/Fred - Not done.

**New action items:**

Jim: Possible Defects: Part 2: Change set 2 (feature macros and tgmth.h): Create a new DR paper for requiring the macro to be defined before tgmth.h inclusion.

Jim: Possible Defects: Part 1: Change set 1 (typos): Change to make it fetestexceptflag as the typo fix.

Rajan: Talk to David Keaton to get N2016 discussed when Mike is present (Monday).

**Next Meeting:**

April 26th, 2016, 12:00 EST, 9:00 PDT  
Same teleconference number.

**Discussion:**

IEEE 754 revision:

Making gradual progress.

Knock off about one item per meeting.

Haven't needed a vote yet.  
Agenda getting shorter as well.  
Discussion about future enhancements beyond this revision. Ex. add/sub instructions with rounding away from zero. Helps double double and reproducibility.  
Last time this discussion focused on the hardware, this time it will be software.

Arith23:

No change to plan known.

Wider WG14:

Item for LaTeX on the agenda in the next WG14 meeting.

Part 5: Various emails, documents submitted for the mailing (slides, TS):

Scheduled for WG14 on Monday (first day). Mike should be able to attend.

Hope to have it ready for ballot after this meeting after the final changes.

Chance to have the entire process done by 2017.

Parts 1-4:

DRs: <http://wiki.edg.com/pub/CFP/WebHome/DRs-20160310.pdf>

Changes to part 1:

Change set 1 (typos): OK. \*Jim: With change to make it 'fe'testexceptflag as the typo fix.

Change set 2 (narrower type):

Rajan/Fred: Clearer if we delete everything from "Page 40: ..." to "In 7.12.13a#1, ".

Jim: The position is there to put the footnote on page 40 to indicate the end of the section that is affected by the change.

This is for a change to the TS, not to the C standard. Deleting the text would make it inconsistent with other TS specified changes to C.

Perhaps add a paragraph in the summary "the suggested TC below adds the statement with a footnote to show what it says"?

Leave it as is for now.

Change set 3 (nonexistent case): OK.

Changes to part 2:

Change set 1 (typos): OK.

Change set 2 (feature macros and tgmth.h): Blaine: Is this implementable? Jim: We did it at HP by declaring the functions (not reincluding math.h) under a no math.h inclusion macro check.

It can be done by simple means but any other changes in math.h need to be handled if a reinclusion needs to be done.

Fred: Make the 'want' macros have to be declared before any std headers are included.

This would make it undefined behaviour otherwise.

Other options: Force reinclusion of math.h.

Would result in possible changes due to other macros declaring other functions (perhaps incompatibly).

K.3.1.1p4 seems to imply that we already have this under the existing C standard. Jim:

The requirement of a diagnostic addresses my usability concerns.

\*Jim: Create a new DR for this approach.

Changes to part 3:

Change set 1 (typos): OK.

Change set 2 (Error in function name): OK.

Change set 3 (Feature macro interactions): If you don't have the names exposed due to not defining the want macro, do you still get the extended function declarations? Yes.

Current specification says that.

You can have some functions without type generic macros for them (nextup for example).

Rajan: We could just say it is valid. No change needed to the TS. Use the DR process to answer the question.

Blaine: Classic case of DR to answer a question. Leave it as is (no change to the TS).

Half float (N2016):

Mike: No defined width and no defined arithmetic.

Makes it not portable/standardized.

They are also using a useful name slot (syntax).

Jim: Makes it useless for portability and may end up hurting it (in the paper they have different names already).

Mike: You can just do '#define ShortFloat <whatever>' and it would be just as useful.

\_Float16x type: Not in 754 or our TS. The issue is the differences that already exist for types like this.

\*Rajan: Talk to David Keaton to get this paper discussed when Mike is present (Monday).

The same name should not mean something completely different.

What should be proposed for the C standard:

Discuss next meeting.

Rajan Bhakta

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