

## IEEE Task P854

### Minutes, 7 June 1983

The radix-free floating-point working group of the Microprocessor Standards subcommittee of the IEEE Computer Society met from 7:00 p.m. to 8:45 p.m. at the Marriott--City Center in Denver, Colorado in conjunction with the SIAM National Meeting. Sixteen people were in attendance, of whom five were eligible to vote at the meeting. Subsequent to adjournment, Kahan presented a 45 minute tutorial on hardware implementations of P754 now or soon to be on the market.

Minutes from the 20 April meeting at Argonne were approved subject to a typographical error pointed out by Kahan (corrected prior to formal distribution).

The next meeting of P854 will be at Apple Computer in Cupertino during the week of July 18, on a date to be determined by Hough (subject to availability of key people we would like in attendance). It is our resolve to complete a draft to submit for public comment at that meeting.

Cody emphasized that mailings must get out in time for people to be informed about meetings well in advance. The chief culprits are Ris and Cody, both of whom promised renewed diligence. Hough suggested that both he and Apple would be most pleased to be free of distribution responsibilities. In keeping with previous responses to such suggestions, a profound silence ensued. The mailing now goes to about 130 people.

In anticipation of a postal ballot on the question of adopting a draft for public comment, Ris will provide at the next meeting a roster of eligible voters (at least two meetings of which one must be among the previous four).

Publicity. A "mini-symposium" held earlier in the day at the SIAM meeting attracted 65-70 attendees. Cody spoke on the thrusts of both P754 and P854 (Stevenson was unable to attend at the last minute), Hough motivated the careful attention given binary <-> decimal conversion in Coonen's place, and Kahan provided perspective on the difficulties which remain in making the benefits of P754 economically available, especially through programming languages.

The session proposed by Palmer for WesCon will still happen, but with shifts in personnel likely.

Taylor will talk about the ELXSI implementation at the Computer Arithmetic conference in Denmark June 20-22; this is not P854 instigated, but is warmly welcomed.

Publication Policy. Cody's letter to Jim Snyder (P854/83-3.3) had initially received a positive response, but the subsequent verbal reply was that the matter was out of Snyder's hands. The principal concern seems to be that "almost" finished publications may lead to premature implementations which may in turn lead to lawsuits. (N.B. Most implementations of P754 out and underway are to Draft 8.0 rather than 10.0, which makes this discussion relative to P754 absurd.) The present situation seems to be that approval will be required from Hecht, Smolin, Allison, and an ad hoc group not yet convened by Allison. Much confusion is due to a structural reorganization within IEEE. Cody will continue to pursue our concerns with the Microprocessor Society, and we will attempt to get Smolin to attend the next P854 meeting for a direct exchange of views.

Changes to Draft 0.8a. A few text formatting bugs were reported to Cody and are not recorded here.

Table 2 in Section 5.6 had not been completely updated from the previous meeting. The term "Pc" should read "Pe" and the note should read "Note: here Pe denotes the smallest precision permissible as extended support for the basic precision p (§3.3) and Em denotes max (Emax, -Emin)".

Section 6.2, fourth paragraph, third sentence, fourth word should read "effects" rather than "affects". Superfluous characters "is -0" at the end of Section 6.2 will be removed.

Appendix A, function (1) should read "abs (x) := copy sign (x, 1.0)" since the equality previously implied is of course false when x is NaN.

In the notes on page 16, in the line beginning " $\pm 3 \dots$ " should read "ln (lambda)" rather than "lambda". In the example section on that page, it should be pointed out that P754 falls 1 bit short of ideal in its extended precisions--Cody will draft appropriate wording.

In the first sentence of second paragraph of notes for Section 5.6, replace "necessary conditions to distinguish floating-point numbers with decimal strings" by "conditions necessary for decimal strings to distinguish floating-point numbers one from another."

For technical notes to Section 7.4, Cody will draft a paragraph or two based on Kahan's notes of 27 October 1982 (P754/82-7.6).

The draft so resulting will be numbered 0.9.

Programming Language Issues. At its July meeting, P854 is resolved to initiate consideration of an appendix to the draft standard which sets forth a uniform syntax and semantics for Fortran, Pascal, Basic, Ada, ... which will address rounding modes, flags, traps, etc.

At least Apple and Intel have established standard numeric environments--these will be presented by Kahan if not by their proponents, and presentations will be happily received along with considered discussion from any interested party.

It presently appears that the bulk of what is required can be implemented in a run-time package, and so language need be minimally affected, but a strong need exists to have a common set of names and associated meanings for the key operations required by the user.

Frederic N. Ris