These historic minutes are brought to you by Apple Computer, where we convened 2 December 1982 at 10:00 am.

First order of business was a report from J. Palmer about the forthcoming IEEE computer arithmetic conference in Denmark. He plans to talk about VLSI implementations of the proposed standard and G. Taylor will discuss high-speed implementations. D. Hough would like to resurrect, update, and present his "Computer" article about elementary functions. It was suggested that W. Kahan present "Why we need a standard..." although it was conceded that the paper is too long (35 typeset pages) for the conference proceedings. One alternative would be to prepare a tutorial booklet similar to what we presented in Ann Arbor in 1981, and distribute it independently for a nominal duplication charge. Kahan speculated that the conference organizers are unaware of the widespread interest in P754, and the prospect that they might attaract a much broader audience to the conference with the prospect of tutorial discussions of the proposal. He agreed to call T. Rao.

D. Stevenson then presented the results of the mail ballot. The underflow change passed 27 to 1 with 4 abstentions. Projective mode was given the boot 27 to 4 with 1 abstention.

J. Cody presented draft 9.4, incorporating the voted changes and several minor changes in style, some suggested by a seasoned editor at Argonne National Labs and some dictated by the IEEE Blue Book for standards. Subsequent discussion was based on this draft. In working out this draft two days earlier with Kahan and J. Coonen, Cody made up a list of items requiring subcommittee attention, which were the basis of subsequent discussions.

The major issue of the day was the language in section 3 that might seem to require implementations with unnormalized numbers in extended to treat those numbers in operations as though first normalized. This conflicts with their antiquated handling a la warning mode, and violates the spirit of the committee that implementations with warning mode as an option should not be made nonstandard. So we spent the rest of the morning ironing out the language of redundantly encoded numbers. Apple provided a festive buffet lunch.

Several committee members wished to discuss the "extended format widths" line in table 1. Now that the leading significant bit need not be explicit in extended, the minimum required lengths of single- and double-extended would seem to be 43 and 79, rather than the stated 44 and 80. When F. Ris brought this up once before it was soundly defeated. On further thought, it seems like a good idea. In fact, no one could (or would) repeat the arguments against the change. It was accepted unanimously.

Several small changes were made in section 5. Language was added to 5.1 to alert the reader that the arithmetic operations uttered in the definition of remainder are real, not computer, arithmetic. The sign of a square root was made unequivocal with a new sentence in section 5.2 and a rewording of the last paragraph in section 6.3. Finally, the last

sentence of section 5.3 was weakened to mention the inexact exception only, consistent with the rest of secton 5.

P. Faillace objected to the wording of the first sentence of section 7.1, which suggests that there is something invalid about a signaling NAN simply because the invalid operation is signaled to catch it. A proposed change was voted down.

Taylor brought up an implementation detail about remainder. He would like to let tiny numbers pass through untouched (presuming they are less than the divisor), but the new version of section 7.4 requires that denormalized numbers trigger underflow if that trap is enabled. This is a nuisance for him. No change was suggested.

The chair then stated a willingness to receive a motion to put draft 9.4, with amendments discussed at the meeting, forth to the next higher committee. Such a motion, to send the new draft 10.0 forth, was made and seconded; then it passed unanimously. Cody was to make the changes and distribute the draft in a mailing within the next few weeks. The meeting of the parent committee is 13 December 1982 at 6:30 pm in the San Jose Hilton; the public is invited.

Some discussion ensued about disseminating the draft. Once it is submitted, the IEEE copyrights it and then mails it for a nominal fee. Importantly, the IEEE will not publish it again, since it has already appeared in "Computer". Kahan suggested that we send it off the Roland Sweet, editor of the Signum newsletter. We might make the January issue. Several attendees voice concern that the committee warn the world that the draft has simplified dramatically since draft 8.0. Stevenson agreed to pursue this with the IEEE people. W. Buchholz suggested issuing a press release.

The future of the subcommittee is somewhat in question. Although the draft is out of our hands there remain many pressing language issues to be dealt with. Should 754 take them up? Only Kahan expressed great interest in doing so through 754, the chair was less enthused. It was suggested that Cody's 854 committee, with its somewhat broader scope, take the issues up.

An updated version of the test vectors, produced by Coonen and J. Thomas, will be available by the end of the year or so. Copies will be mailed to all original recipients. After that, they will be handled by an unspecified Berkeley staff member.

F. Ris asked that the last minutes be amended to note that he moved to outlaw implementations that distinguish quiet and signaling NANs with the sign bit, and that that motion was ruled out of order as a substantive change.

Jerome Coonen