6 March 1995

To: WG5 members
From: Miles Ellis – Acting Convenor
Subject: Electronic Distribution of WG5 Documents

1. Background

For many years there has been a conflict between the way in which members of WG5 (and X3J3) regularly use electronic means of communication instead of paper (both email and anonymous ftp) and the insistence by our parent bodies (JTC1 and SC22) that paper should be the common means of communication.

In recent months, however, that situation has begun to change quite dramatically and JTC1 recently came out with a somewhat controversial edict which not only appears to accept the reality of electronic document distribution, but ignores its own standards and, instead, bases its plans on the use of commercial products - namely Word and WordPerfect. We shall need to examine these emerging policies very carefully when considering Fortran 2000, but they need not directly affect the way in which the final Fortran 95 document is submitted.

At the same time, the question of making draft standards available over the Internet and/or World Wide Web is being discussed, with many WGs strongly arguing that this is the only way to work, and if this gives the ISO copyright people a hard time .....

In parallel with this, I have been nominated as Convenor of WG5, but am having to rely on the generosity of another organisation (NAG Ltd) to carry out the copying and distribution of papers.

Taking these two situations together, it seems to me that it is time to consider making a radical change in our methods of communication.

2. Some Possible Options

The first thing to be said is that the SC22 has no objection to any, or even all, documents being distributed electronically as long as no member of the WG is thereby placed at a disadvantage.

However, it would be unrealistic to assume that *every* member (and potential member) of WG5 can receive email, browse the World Wide Web, and download files from remote ftp servers. On the other hand, it is not unreasonable to assume that all members have access to computers! Furthermore, it is reasonable to assume that all WG5 members also have access to standard word-processing packages such as Microsoft Word and/or WordPerfect.

We should therefore examine the various options both in terms of how they affect the productivity of the Working Group, and of the economics of ensuring that the Working Group carries out its allotted task(s).

We can identify three main forms of document distribution:

1. Internet. All documents would be made available on a WG5 server, and members would be notified of their existence by email. The exact form of the server (anonymous ftp, www, etc) and the form in which the documents were stored (ASCII, Word, WordPerfect, PostScript, html, etc) would be determined by the membership of WG5.

2. Diskette. Following the latest JTC1 guidelines, all documents (both standing and otherwise) would be made available in either Microsoft Word or WordPerfect form for both PC and Macintosh, as required. The diskettes would be distributed by mail.

3. Paper. As at present, all documents would be distributed by mail, as required, in printed form on double-sided A4 paper.

The major advantage of method 1 (Internet) is its immediacy, since documents can be available as soon as they are ready. For example, the latest version of the draft Fortran 95 standard was completed by its editor, Richard Maine, on Thursday 2nd March (one day ahead of the deadline!), and was available on one of the X3J3 servers the same day. I received a printed copy by courier four days later, and it was sent for printing and distribution two days after that, a mere six days after it was completed. Nevertheless, it will probably be at least three weeks after the document was completed before the paper version reaches most members of WG5. When, as is often the case, we are working to tight deadlines the extra three weeks (or frequently very much more, since this particular operation was very carefully scheduled in advance to tie in with the WG5 distribution timetable) can make all the difference.

A second, and for many members equally important, advantage of method 1 is that it provides a machine-readable version of documents, which can be invaluable, for example, when preparing edits to accommodate either new features or corrections to existing ones.

One disadvantage of method 1 is that some members, although only a very small minority these days, may have difficulty downloading large files from remote servers. A second disadvantage is that some members may find it difficult to print large documents on their local printers. A related difficulty is that there have been some problems, for example, with printing PostScript documents formatted for US paper on the International Standard A4 paper used in most countries outside North America. However, this is a technical problem for which a fix is known, and with more experience there should be no problem in defining standards which it is known will cause no problems.

The major advantage of method 3 (paper) is that what is distributed is in human-readable form (although for some purposes, such as preparing edits, a machine-

readable form is of more use). The overwhelming disadvantage of this method of distribution is its cost and the time it takes to prepare, copy and distribute.

Method 2 (diskette) falls somewhere in the middle. It is not as immediate as using the Internet, but the production of the relatively small number of diskettes required can be carried out more quickly, and at massively less cost, than is the case with paper copies. Mailing costs are also much lower than for paper distribution, but it suffers from the same disadvantage as method 1 in requiring members to print their own paper copies, if they require them. On the other hand, since the diskette will be in a format chosen by the recipient, there should be no problems in printing any, or all, of the documents contained therein.

3. A Proposal for A New Document Distribution Policy

One of the most important aspects, I believe, of the move to electronic distribution is that it improves the efficiency of operation of an organisation. A particularly relevant example is the US Fortran Committee, X3J3.

During the much of the development of Fortran 90, a new version of the draft standard was created after each meeting and copies were printed and distributed to all X3J3 members (by Amoco, at their expense!). This meant that members had an up-to-date version of the primary working document for use at each meeting, but it did mean that this was not usually available until shortly before the meeting. Furthermore, preparation of any papers involving edits required a painstaking manual check of the lengthy document.

During the development of Fortran 95, on the other hand, the current draft, and all other X3J3 standing documents, has been available by anonymous ftp from the official X3J3 server operated by Kurt Hirchert at NCSA in Champaign, IL, and also from an additional server maintained by Richard Maine at NASA in Dryden, CA. This has meant that members of the committee always have immediate access to the latest version of the draft as soon as it is ready, and can prepare any proposals with the complete electronic form of the document, if they wish. Quite apart from making many activities easier, and cutting out the time and cost associated with the previous method of distribution, this greater use of electronic systems encourages more detailed technical discussions over email which, as a general rule, mean that many of the debates that used to take up full committee time can now be fully aired (and even resolved!) between meetings. This is very much in the spirit of the JTC1 Directives which state that JTC1 and its subsidiary bodies should work as much as possible by correspondence" [7.1] and that "the Convenor shall convene meetings of the WG if questions cannot be solved by correspondence" [7.2.3].

This greater use of electronic mail for resolution of issues also, of course, means that those members of WG5 who may find it difficult to attend meetings can have a full input into the decision-making process. In this connection it is worth quoting another part of the JTC1 Directives which states that "parent bodies [i.e. SC22 in our case] shall periodically review the performance of their WGs against the following criteria", one of which is as follows:

- Are the experts nominated by the NBs which agreed to participate in the development of the work item(s) continuing to participate in the work by attendance at meetings or submission of contributions, or both? ..... [2.6.1.4]

In this connection, it is also worth noting that *every* paper in the distribution being sent out prior to the Tokyo meeting, other than the draft standard itself, was sent to the Convenor by email.

I strongly believe, therefore, that the time is now right for WG5 to make the move to far greater use of electronic document distribution and discussion thereof. Essentially, my proposal is that the primary means of document dissemination should be the Internet, and that a WG5 server should be established for this purpose. For those members who cannot easily obtain documents in this way, a copy of the documents put on the WG5 server will be sent on diskette(s) in one of the JTC1-recommended formats. Finally, if a National Body requests it, a single paper copy of all documents will be sent to a nominated member, who will then be responsible for copying and distributing them to any members of that NB's members who cannot use any form of electronic distribution.

I would hope that this three-level structure will satisfy any problems that one or two members of WG5 might have with, for example, printing long documents, while the diskette copy should be acceptable in this day and age for anyone who has problems with downloading files from a remote server. In practice, I would expect that, possibly after a transition period, all members will find the move to a fully electronic distribution will cause little or no difficulty, and will improve the efficiency of the Working Group as a whole.

My proposal is, therefore, as follows:

1. A WG5 server shall be established at a site to be determined;

2. All WG5 Standing Documents shall be available on the WG5 server;

3. Prior to each meeting of WG5, and at such other times as are appropriate, the Convenor shall place all documents for distribution to WG5 members on the WG5 server;

4. All WG5 members shall be notified by email of any changes in the documents available on the WG5 server;

5. By prior arrangement, any member of WG5 will be sent a diskette (or diskettes) in one of the agreed formats containing the text of documents placed on the WG5 server as soon as possible after they have been placed there.

6. By prior arrangement, the Head of the Fortran committee of each National Body which participates in the work of WG5, or a nominated alternative, will be sent a paper copy of all documents placed on the WG5 server. He or

she will be responsible for producing and distributing any additional paper copies required for that National Body's members.

7. The formal announcement of meetings, the draft agenda, and the minutes of meetings will be distributed to all members in paper form.