MINUTES OF THE 1993 MEETING OF

SC22/WG5 (FORTRAN)

July 5-9, 1993

Berchtesgaden, Germany

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1 Opening of the Meeting

The meeting was opened by the convenor, Jeanne Martin.

2 Remarks from the Covenor

This is an auspicious year for Fortran. As a result of the strategic plan (standing document 4), Fortran is now more receptive to changes in technology. Our direction will be made clearer after this meeting.

3 Adoption of the Agenda N906

Motion: (Schonfelder/Reid) Adopt the agenda.
Action: Motion passed by unanimous consent.

4 Appointments

Drafting Committee
David Muxworthy, chair
Gerhard Schmitt
Hideo Wada
Wolfgang Walter
Jerry Wagener
Vice Chair: Bert Buckley
Secretary: Rich Kelble
Librarian: Annette Calkin

5 Approval of the Minutes of the Victoria Meeting (N847)

Reference: ISO/IEC JTC1/SC22/WG5 N847
ISO/IEC JTC1/SC22 N1271
Amendment: Maureen Hoffert presented a summary of HPF language design and progress based on her participation in the HPF consortium.
Motion: (Schonfelder/Muxworthy) Adopt the minutes as amended.
Action: Motion passed by unanimous consent.

6 National Activity Reports

The following National Activity Reports were presented:

Canada (N933): Bert Buckley
Fortran 90 is not yet a Canadian standard.
Germany (N914): Karl-Heinz Rotthauser
Japan: Hideo Wada
In March 93, the revised Japanese Fortran standard was completed (it is a translation of Fortran 90). It is expected that it will be published by the end of the year.
Netherlands (N912): Matthijs van Waveren
UK (N915): David Muxworthy
US (N911): Ivor Philips

The following National Activity Report was supplied later in the meeting:

Russia (N921): Alla Gorelik

7 Liaison Reports

Ad Hoc Group on Character Handling:
Reference: N910

WG20:
Ellis: WG20 is producing a technical report explaining what internationalization is and the impact on programming languages. This report was to be distributed to the WGs in May so that comments could be prepared for the SC22 Plenary in September. However, it did not make it.

Cross Language Questionnaire:
Martin: It was completed and submitted with the help of several people. If any of these standards is adopted, it will impact our future work. The questionnaires are still being

processed. The analysis is expected to be completed by the SC22 Plenary in September.

POSIX:

Len Moss has submitted a letter requesting that the work on a Fortran 90 binding to POSIX not be stopped.

IEEE subgroups have stopped producing language independent standards, i.e., they will be C based.

The subgroup has proposed that the work be stopped due to the greater volume of work as a C based standard and the lack of interest (3 people attended their last meeting).

8 Status of the Victoria Resolutions (N814)

Wagener: N913 contains the X3J3 responses to the Victoria resolutions. X3J3 had no resolutions for WG5. This document was created at X3J3 meeting 122 (August 1992) and has not been updated since. Note that V9 requested that X3J3 be the primary development body and that it operate under I project rules. X3 approved the I project by November 1992.

9 Varying Length Character Strings

N905 is the current revision based on comments from the informal letter ballot:

it is the second part of a two part standard
I/O procedure names have changed
I/O procedures have been simplified -- only one READ
added a SPLIT function to split a string

Form of the Document:

Martin: Releasing this as the second part of a two part standard will require changes in Fortran 95 to document the structure of the complete standard, i.e., the multiple parts.

Schonfelder: If this is a part of a multiple part standard or a separate standard doesn't make much difference in most areas.

Philips: What happens if we later add varying length string as a data type?

Ampt: Which way will get it out faster?

Schonfelder: Bob Follett did not see it as making a difference.

Wagener: Suggestions were made to change the procedure descriptions to the format of section 13 in Fortran 90. Why was this not done?

Schonfelder: The ballot did not indicate strong feelings for this.

Wagener: HPF did this with their document earlier this year.

Schonfelder: I understand the reasons for doing it, but the vote came out not to.

Adams: How this is documented is important as it is setting precedents.

Hirchert: I would prefer separate standards.

straw: Do you prefer a multipart standard or separate standards? (14-15-4)

straw: Do you object to a multipart standard or separate standards? (11-1-21)

Martin: It will go forward as a separate standard.

straw: Should the procedures be described as in section 13 of 1539? (20-6-6)

10 Fortran 90 Maintenance (N903)

Hirchert: Any changes to this document must be reflected back into X3J3/93-006.

Martin: In our ballot, items 13 and 98 were sent back to X3J3. X3J3 let 13 stand after reconsideration. There is a paper supporting this (N894) and Lawrie has a paper (email) with an opposing point of view. Kurt also had a comment on his ballot in support of the item 13 response.

Item 13:

Schonfelder: X3J3 intentionally voted this in.

Hirchert: The intent was to isolate interface blocks from their surrounding environment. However, the edits did not follow through on this.

Hoffert: John Reid had a paper in last summer's meeting and we had resolved this issue, but it was not forwarded to X3J3 as part of the maintenance work.

Schonfelder: The standard is not broken. It is technically consistent and there are people out there writing code.

Hirchert: Speaking for Janice Shepherd, there are compilers in the field that have implemented item 13.

Straw: Should item 13 be kept in N903? (8-18-5)

Wagener: If you fully declare the interface, then it doesn't matter what we do here. Most users will create interface blocks from the existing source. If the implicit environment varies for procedures that include the block, the user will be surprised and the bug will be hard to uncover.

Martin: What do we do with the items that are not edits? Publishing them at SC22 may not be appropriate.

Muxworthy: All we are required to do legally is publish them at SC22. That will make them available.

Hirchert: I will make them available via ftp if this is permitted.

11 Guidelines for Bindings to Fortran 90 (N889)

Muxworthy: This represents the results of applying the comments from last summer's meeting.

Martin: Any objections to making this available to SC22? Hearing none, it will be distributed to SC22 for publication.

Buckley: Thank you David for preparing this.

Ampt: Will this require SC22 action or is it information only?

answer: It is information only.

Bierman: This should be made available on the ftp server.

12 Preliminary Straw Votes on the Repository Items (N904, N917)

Pointer Initialization:

straw: Should we do something about this? (29-3-1)

straw: Should we do something in Fortran 95 or Fortran 2000? (17-9-7)

straw: Should pointers be always initially defined or optionally initially defined? (2-27-6)

straw: Should the default be defined or undefined? (9-13-11)

straw: Do we need a general mechanism to specify initial conditions for objects of derived type? (20-0-13)

Language Evolution

straw: Do we need to put things in the deleted features list? (27-1-3)

straw: Should anything be moved to the deleted list in 1995? (8-17-7)

straw: Should anything be moved to the deleted list in 2000? (27-3-5)

straw: Should we add anything to the obsolescent list for 1995? (26-3-3)

straws: Move to the obsolescent list?

computed GO TO?	(23-2-5)
statement functions?	(20-4-8)
DATA statements among executables?	(24-3-7)
Equivalence facilities?	(11-14-8)
ENTRY statement?	(23-4-5)
assumed character length functions?	(12-7-14)
fixed source form?	(14-14-6)
assumed size arrays?	(17-12-5)
pointer in storage associated contexts?	(21-2-6)
.EQ., .LT., etc. relational ops?	(2-18-13)

Exception Handling

Reid: [John presented the IFIP WG2.5 proposal (N908).]

straw: Do we need exception handling? (30-0-2)

straw: Do we need something in 1995 or 2000? (16-7-9)

straw: Do you prefer events, user defined conditions, or an enable block? (5-6-6-16)

Miscellaneous:

Controlling Pointer Array Bounds
Should we do something? (10-3-18)
Should it be done in 1995 or 2000? (6-4-20)

Namelist Comments
Should we do something? (23-2-8)
Should it be done in 1995 or 2000? (9-4-19)
Hirchert: If we do this it should be extended to list-directed I/O.

Conditional Compilation
Should we do something? (15-5-11)

Block Comments
Should we do something? (5-21-5)

CONSTANT Synonym for PARAMETER
Should we do something? (6-18-7)

Minimal and Exact Field Width Editing
Should we do something? (27-0-5)
Should it be done in 1995 or 2000? (19-7-5)

Solve the Problem Caused By Aliasing Type Definitions
Should we do something? (8-4-19)

Process Time From System Clock
Should we do something? (18-5-11)
Should it be done in 1995 or 2000? (20-5-9)

FORALL

straw: Should we implement FORALL? (32-0-1)

straw: Should we do it in 1995 or 2000? (27-0-6)

straw: Should we implement a statement, a construct, or both? (4-2-18-8)

Parameter for Derived Types

Reid: [John presented an example to illustrate the benefits of this feature.]

straw: Is this a problem to be solved? (33-0-1)

straw: Do you want at least kind parameters in 1995? (20-6-8)
Note that it is assumed that such a facility will be extensible to allow integer parameters.

straw: Do the entire implementation in 2000 and nothing in 1995? (8-15-11)

straw: Do the entire implementation in 1995? (10-15-9)

Miscellaneous:

Remove Irregularities
Should we do something? (1-22-11)

Allow ALLOCATABLE derived type components
Should we do something? (29-0-4)
Should it be done in 1995 or 2000? (10-7-15)

Derived Type I/O
Should we do something? (25-0-6)
Should it be done in 1995 or 2000? (0-25-7)

Object Oriented Programming
Should we do something? (27-0-4)
Should it be done in 1995 or 2000? (13-3-15)

Performance Directives
Should we do something? (5-14-11)

Command Line Arguments and Environment Variables
Should we do something? (10-7-14)
Should it be done in 1995 or 2000? (1-1-28)

Bit String Data Type
Should we do something? (18-2-12)
Should it be done in 1995 or 2000? (2-5-25)

Implicit Initialization of Structure Components
Should we do something? (20-1-9)
Should it be done in 1995 or 2000? (6-6-16)

Multithreaded Execution Facilities
Should we do something? (11-4-7)

13 HPF Presentation (N916)

note: X3J3's /parallel subgroup has been tracking HPF and X3H5. It has not followed MPI, which has apparently decided not to base their work on Fortran 90.

note: Vienna Fortran and others, such as, Fortran D, were used as a basis for HPF.

straws: Should the following HPF feature be include in the 1995 revision?

FORALL Construct	(21-2-6)
Elemental Functions	(11-3-15)
Pure Functions	(10-0-20)
Number_of_Processors Intrinsic	(13-2-15)
Processor_Shape Intrinsic	(4-3-21)
Ilen Intrinsic	(3-2-24)
Directive Syntax	(6-11-12)
Allow user defined functions in declarations	(6-4-21)
Functionality of the HPF Directives (syntax rather than directives)	(1-22-7)
Include as much as appropriate of HPF	(16-10-6)

14 Review of Annex A of the Strategic Plan (N869, N926)

comment: Much concern was expressed regarding the timetable especially in light of the number of items desired for the 1995 revision. Several suggestions were offered to help determine the requirements of the 1995 revision before 8/94 including another meeting, a letter ballot, and completing the requirements at this meeting.

Schonfelder: Remember that the 1995 revision is only to include the corrigenda and a small amount of additional work.

Philips: The delegations should caucus and put the items in priority order and the resulting priority lists should be merged.

Hirchert: Give everyone 10 points to apply to the features that they believe are most important.

Schmitt: Everyone should vote on the priority order. We are all attending as individual experts.

Hoffert: We can't change the management plan now.

Adams: We should remember that it takes at least 3 X3J3 meetings to get a feature in.

Ampt: In order to give enough time to X3J3 we should change the management plan.

Philips: X3J3 still expects to go to the public for requirements for the 1995 revision keeping in mind that only very little will make it into the 1995 revision.

Wagener: There are other issues that X3J3 is considering, e.g., integrating annex C through the document. Should we discuss this or will we just let X3J3 do things such as this as normal additional work?

Reid: We should be looking toward unified plans of new features to be included.

Hoffert: One of our goals is to be more responsive to changes in the computer field and we should choose items appropriately.

Ellis: Perhaps we should ask each person to name the one item that they feel should be in the 1995 revision.

Ampt: The vote should be based on importance and the time to be devoted to each item and we should allow up to 5 items.

Schonfelder: We need a coherent design. A small group should go away and work out a coherent plan.

straw: Should we determine the features using a point system or should we have a group go off and form a coherent plan? (10-16)

Buckley: We should set up 2 subgroups and they should come back with 2 plans each.

Martin: John Reid and Ivor Philips will head the 2 subgroups.

15 Priorities for the Development Body

Philips: We should have a WG5 letter ballot on the interpretations every 6 months instead of once a year.

Ellis: Would ISO publish corrigenda that often?

Ampt: We should look for a different process for handling the interpretations. Perhaps with more regular revisions the interpretations could be included in the next revision.

Lahey: Vendors implementing the standard need the interpretations now while they are doing their implementation.

Hirchert: Having a letter ballot every 6 months even if we publish only once a year would still be worthwhile.

Ampt: We should be delegating the interpretations work to a small group rather than taking up full committee time.

Hirchert: We can absolutely prioritize these items for the development body. However doing so might cause X3J3 to not do the second item until the first is complete.

Ellis: As others have said we can't determine this until we choose a plan.

Ampt: We should give guidance. We should ask that they not use full committee time to do interpretations.

Weaver: The resource can be increased by meeting more often or extending the meetings.

Hirchert: Lengthening the meeting or increasing their frequency does not seem to have any benefit from prior experience.

16 Establishment of a Repository of Requirements (N904)

Form of the Repository:

Martin: Does anyone have any suggestions for changes or improvements to the document?

Lahey: I would like to see space at the end of an item to record votes.

Weaver: I would like to see pro and con rationale but it should not include items such as schedule impact in the con.

Muenchhausen: A summary page should be added which lists the basic functionality of each item.

Ellis: All sections should be filled in.

Bierman: The items should list problems to be solved and not the solutions.

Ampt: The document should not be cast in concrete.

Reid: Who can change the titles? We shouldn't give the editor license to do so. It is a value judgment.

Lahey: Thanks to John Reid for doing the work.

Procedures:

Ampt: We shouldn't be accepting requirements from just anyone. They should all come through the member bodies.

Schmitt: The experts should be able to submit items themselves.

Ampt: We don't need to make it so formal. If someone submits a requirement directly, we should just accept it if it has merit. Otherwise, we should ask that it go through their member body.

Walter: We have never gotten swamped with requests and I don't see it happening now.

Reid: We should give the editor some guidance regarding combining things.

Hirchert: The editor could ask the submitter if their item could be combined with another.

Lahey: Items for which there are multiple choices, an initial entry should be made to track the history of the requirement instead of having a history field in each choice.

Schonfelder: The initial item could also represent our combined view of the requirement.

Shen: The editor could have a member review an item. Later if similar ones come in, that member could review them and combine them or list them individually. This person is the sponsor.

Reid: We shouldn't spend too much time on this document. We should keep to the current form and add a WG5 action field.

Martin: Couldn't this be part of the history field?

Reid: Yes.

Reid: Our plans should be developed as papers and these papers referenced in the history when the item is forwarded to a development body.

Lahey: Why don't we just ask John Reid what he is going to do based on this discussion.

Martin: We will leave this up to the editor to decide.

Buckley: If we have made John Reid the editor after having appointed Ivor Philips, we should vote on it.

Motion: (Schonfelder/van Waveren) Appoint John Reid as the editor of the repository. (8-6-16)

17 Requirements Selection Process (N918, N922, N923)

The subgroups presented their plans. Ivor's subgroup plan is in N923 and John Reid's subgroup plans are in N922. In addition, Tom Lahey presented his own plan that can be found in N918.

straws: Is the plan acceptable to you?

Ivor's subgroup plan	(17-11-4)
John's subgroup plan 1	(10-12-4)
John's subgroup plan 2	(18-8-6)
John's subgroup plan 3a	(10-14-9)
John's subgroup plan 3b	(16-7-8)
Tom's plan	(4-16-9)

Hoffert: Let's straw vote on whether HPF should be included.

Ampt: HPF should be a collateral standard. There is no need to include the language extensions in the 1995 revision.

Schonfelder: I do not support putting all of the HPF language extensions in the language.

Adams: If we are going to vote on HPF, we should decide on the full language vs. the subset.

straw: Should HPF programs conform to the Fortran 95 standard? (21-4-7)

Hopper: Should we take another look at Ivor's plan and extend it based on the previous vote?

Cohen: With or without HPF, Ivor's plan is too large.

Bierman: John's plan 2 actually did better than Ivor's plan and we should vote between them.

straw: Do you prefer Ivor's plan, John's plan 2, John's plan 3b, none of the above, or are you undecided? (3-12-10-5-3)

Schmitt: We are heading in the wrong direction. A small subgroup should go off to refine the plans and bring them back to the full group.

Hirchert: Perhaps we should take John's plan 2 and allow the development body to do those items of 3b that can be done within the schedule.

Hoffert: We need to have a general long term plan before we go off and fix some of the problems that we are trying to address.

straw: Should a preliminary set of requirements for Fortran 95 include John's plan 2 as at least a subset? (19-6-5)

18 Technical Subgroup Reports

HPF:

There are 3 parts to HPF: Language Constructs (FORALL statement, FORALL construct, pure functions, extensions to MAXLOC and MINLOC, 3 new intrinsics, and the EXTRINSIC prefix), Directives, and the HPF_LIBRARY module. Of the Language Constructs all but the 3 new intrinsics and the EXTRINSIC prefix would be useful to the entire Fortran community. The recommendation is to put the language constructs useful to the entire Fortran community into the 1995 revision and to put the rest of HPF into an auxiliary standard. This will allow 90% of HPF programs to conform to Fortran 95.

Schonfelder: This is an excellent compromise.

Bierman: We shouldn't do HPF's work for them, i.e., just put the language constructs in and don't create the collateral standard.

comment: There was some debate as to whether the intrinsics should be included in Fortran 95.

straw: Should we add the language constructs useful to the entire Fortran community in the 1995 revision? (29-0-2)

straw: Should we allow some form of user defined functions in declarations to solve the problem that caused HPF to create the 3 intrinsics? (9-1-20)

Exception Handling:

Cohen: Parts of the Fortran standard are in direct conflict with the IEEE arithmetic standard.

Bierman: There is a difference between conforming to the IEEE standard and supporting the IEEE standard. We could conform to the standard so that vendors could offer some level of support for the IEEE functionality.

Weaver: WG5 should request X3J3 to edit those parts of the standard which conflict with IEEE arithmetic and to provide specific directions regarding minus zero.

straw: Should we fix the standard so that it doesn't conflict with IEEE arithmetic? (26-0-8)

straw: Would WG5 like to see a set of intrinsics to support IEEE and similar hardware? (17-2-11)

summary: We should do this in the 1995 revision and do the enable constructs for the 2000 revision.

Pointer Initialization:

Wolfgang Walter presented some suggested syntax to give an idea of the desired functionality. The syntax is not a requirement. It is just an illustration. This illustrative syntax will be forwarded to X3J3.

19 Varying Length String Module

Weber: The removal of 2 arguments, set and maxlen, from the GET routine has reduced the functionality of the string module. In particular, the GET function can no longer read using non-advancing I/O.

Schonfelder: I have no objection to putting the set argument back.

Walter: The maxlen argument can change from one use of GET to the next with the same variable. This gives a truly varying string.

Buckley: Hearing the arguments of Christian and Wolfgang, I now support the inclusion of both set and maxlen.

Lahey: Can I put multiple strings in a record?

Schonfelder: Yes, using PUT, PUT, PUT, ...

Lahey: Can I read each of them back?

Schonfelder: Not directly. You do one GET and then separate the one string into the individual strings.

Bierman: Perhaps we should make strings an intrinsic type. It would solve all of the problems that we are having.

Schonfelder: I agree the it would help with the I/O, but that will be corrected when a derived type I/O facility is added. Other than the I/O, the functionality would not be aided by making it an intrinsic type.

straw: Should we reintroduce the set and maxlen parameters of the GET function in the Varying String Module as they were previously? (19-0-12)

straw: Should we reinstate set? (21-0-10)

straw: Should we reinstate maxlen? (16-1-13)

Schonfelder: I will reinstate them as they were before the last letter ballot.

Walter: I would like to thank Lawrie Schonfelder on behalf of DIN for all of his time and high quality work.

20 Resolutions (N930a)

Weaver: The technical corrigenda should have an annex containing all of the changed pages as many have requested.

Reid: I am in favor of this but it is quite different from the version being used by X3J3 as that one contains edits approved by X3J3 that are not yet approved by WG5. So it is a quite different document.

Hoffert: If we include this annex it should be typeset not handwritten.

Martin: I will include such an annex if someone provides it. However, I can not guarantee that ISO will publish it.

D3 (Defect Editor):

Bierman: Must the defect editor be a person or can it be a group, e.g., X3J3.

Weaver: If X3J3 is going to do the work and there is no work for WG5, why not specify the convenor as the defect editor?

D5 (WG5 Management Committee):

Buckley: Change "at least 2 months" to "at least 3 months".

D7 (Repository of Requirements for Fortran):

Hirchert: We should add N870 as the form of a requirement submittal.

D8 and D9 (Content of the 1995 Revision):

Muxworthy: These are alternatives and we will have to decide which way to go.

Wagener: The items in D9 do not represent the actions of this meeting thus far.

Martin: They are only place holders.

Wagener: The items to be researched are overwhelming and X3J3 probably cannot do all of them in a year.

Buckley: It is not expected that these all will be completed by next year. Those that can't be completed in a year obviously can not be included in the 1995 revision.

Hoffert: HPF should be included.

Lahey: Namelist comments should be namelist and list-directed comments.

Martin: This is the most important resolution coming out of this meeting and I prefer the form of D9, but the lists are not correct.

Buckley: I would like a straw vote on the concept of D9 noting that the items will be changed.

Reid: The items in D9 should contain references to the repository.

Martin: I would prefer 3 categories: definitely desired items, minor items that are not as important, and items that require further study.

Philips: I too would prefer 3 categories but I would separate corrigenda and edits into a category of their own.

Pollicini: This committee should specify the priority of the items in the second list.

Schmitt: Add a paragraph indicating willingness of other member bodies to do some of this work on a subcontract basis.

Adams: Any member body doing the subcontracting work for X3J3 should be sending a member to X3J3 meetings to ensure the integration of their feature into the document.

Philips: We should get a list of subcontracting volunteers and not make it a part of the resolution.

Schmitt: I agree

Walter: Why not keep both resolutions with D8 as an introduction to D9.

straw: Should the detail be in a separate paper or in the resolution? (6-19-3)

straw: Do you favor this multipart representation of the plan? (28-2-0)

Wagener: X3J3 can not do all of these things in a year and how does it impact out interpretations work?

Schonfelder: The intent here is to give X3J3 some direction so that they don't go off and work on other things.

Martin: We could ask others to study some of these areas as I too am concerned with the amount of work being given to X3J3.

Ellis: I see this as saying here are areas where people have expressed interest and we are asking X3J3 to investigate those areas and tell us next year which of these items can be in the 1995 revision.

Adams: WG5 should do the investigation of the items in the second list.

Hoffert: The output of the X3J3 work would be input to the development phase. Some of the work should be sent out to those who have expressed an interest in doing so. It gives us an opportunity to manage both short and long term work.

Morgan: Perhaps the resolution could be broken into 3 resolutions instead of one resolution with 3 parts.

D10:

straw: Do we need this resolution? (6-18-5)

D11:

Cohen: The last paragraph regarding Fortran 2000 should be struck for the same reasons as in D10.

Reid: We should not ask them to put development ahead of maintenance.

Pollicini: We should trust X3J3 to use their resources as appropriate.

Hirchert: I take this to say go ahead and do the edits but don't worry about wordsmithing the letter to the originator.

straw: Are you in favor of the first 2 paragraphs? (1-10-17)

D12 (Varying Length Character Strings):

straw: Should this be a separate standard with a different number? (10-15-4)

D13:

straw: Are you in favor of this resolution? (31-0-1)

21 Item 13 from the Defect Index

straw: Should item 13 from the defect index be included in the corrigenda? (12-10-9)

22 Revised Resolution D9

A proposed replacement for D9 was presented. It consisted of 3 parts:

items which will be part of the final requirements

desirable items for the 1995 revision

items that can not be decided and which require further analysis before determining their inclusion in the final set of requirements (X3J3 will be responsible for this further analysis)

23 Revision of the Strategic Plan

Martin: There are several minor changes. The revised plan will be available shortly.

24 Russian Requirements (N919)

Proposal N1:

straw: Are you in favor of this? (22-0-4)

straw: Should it be included in the 1995 revision or the 2000 revision? (3-3-18)

Proposal N2:

Weaver: This would invalidate current Fortran 90 programs.

straw: Are you in favor of this? (3-17-6)

Proposal N3:

straw: Are you in favor of this? (6-8-12)

Proposal N4:

Hoffert: X3H5 is working on this.

Ellis: From a requirement perspective it is irrelevant that X3H5 is working on it. We decided if it is a requirement and it is up to the development body to decide how it will be satisfied.

straw: Should explicit parallel processing constructs be added to the language sometime? (21-0-9)

straw: Should it be included in the 1995 revision or the 2000 revision? (1-6-21)

25 Resolutions (N930b)

D9 (Content of the 1995 Revision):

Ampt: The CPU time intrinsic should move from the middle list to the bottom list.

Hoffert: IEEE arithmetic compatibility should move from the middle list to the bottom list.

Morgan: Allocatable components in structures should stand on its own as it is not a minor change.

Ellis: IEEE compatibility should be moved to the third group as we don't have exactly what is desired.

Schonfelder: IEEE compatibility should be in the miscellaneous list as it is easy to do.

Reid: Bit data type should not be in this at all as it had very little support.

Schmitt: A summary of our thoughts should be provided to X3J3 along with the resolutions so that the information is not lost.

straw: Move CPU time from the second list to the third list? (17-2-5)

straw: Make allocatable components a separate item? (23-0-2)

straw: Change "IEEE compatibility" to "remove conflicts with IEEE arithmetic"? (25-0-1)

straw: Keep "remove conflicts with IEEE arithmetic" in the second list, move it to the miscellaneous items, or move it to the third list? (19-3-4-?)

straw: Delete "exception handling" and replace it with "support for IEEE and similar hardware" in the third list? (21-1-4)

Ampt: I want our desire for exception handling in the 2000 revision noted.

Bierman: Would stating so in the requirements document be sufficient?

Ampt: Yes.

Buckley: It is already done.

straw: Should the list mention the 3 HPF intrinsics explicitly? (6-9-14)

straw: Remove bit data type from the third list? (17-7-4)

Wagener: The individual document references, e.g., N904 and HPF, should not be listed with the individual items. There should be a general reference to N904 and N904 should contain the references to HPF.

Cohen: I would prefer to see all of the appropriate papers referenced in this resolution including HPF.

straw: Should we resurrect the resolution listing items for the 2000 revision? (9-5-13)

straw: Split the FORALL statement and the FORALL construct into 2 items? (15-8-7)

straw: Should there be a list of items that will probably be deferred to a future revision? (11-11-7)

straw: Should exception handling be put back in the third list? (17-7-4)

straw: Should bits be put back in the third list? (10-14-4)

D7:

Martin: All countries should be doing the requirements processing.

Schmitt: Requirements are submitted by member bodies or WG5.

D12b:

straw: Varying string should be part of a multipart standard? (15-6-4)

D14:

Ellis: Add a liaison to WG20 (internationalization).

straw: Do we need this resolution? (5-9-11)

D9 (Content of the 1995 Revision) -- Revised:

Reid: Add a list of items to be made obsolescent.

Schmitt: To do so, reference N917 as it is a record of our votes.

Ellis: There is no need to put this list in concrete until next year.

Cohen: We should at least put the reference in.

Martin: We will reference any paper generated at the meeting.

straw: Do you favor the new D9? (25-1-2)

26 Future Meetings

1994: Both the WG5 and the X3J3 meeting will be held in Edinburgh, Scotland. The WG5 will be held August 8 through 12 and the X3J3 meeting will be held August 15 through 19.

motion: (Buckley/Philips) Accept the offer of the BSI for the 1994 meeting.

action: Motion passed by unanimous consent.

1995 Spring: Japan has offered to host the meeting in Tokyo in May 1995.

27 Garbage Collection in Fortran 90

Wolfgang Walter presented a program illustrating the style which one would have to follow in order to do memory management with garbage collection. This shows what the user has to do.

Cohen: This problem is solved by N931, Allocatable Derived Type Components.

Wolfgang was asked to distribute this and 2 additional versions: one assuming that pointer initialization was in and the other assuming that allocatable components were in.

28 Adoption of the Berchtesgaden Resolutions

Where the votes are not unanimous, the details are given in N930b.

B1. Strategic Plan for Fortran Standardization

That WG5 adopts the updated Strategic Plan for Fortran Standardization specified in WG5-N926, which replaces WG5-N820a (WG5 Standing Document 4).

Unanimous Consent

B2. Content of Technical Corrigendum 1

That WG5 recommends item 13 of the Defect Index be included in the Technical Corrigendum 1 (WG5-N903), notwithstanding the result of the WG5 letter ballot.

Individual vote: 16-2-15 Country vote: 5- 0-3

B3. Technical Corrigendum 1

That WG5 establishes the following procedure for processing the Technical Corrigendum 1 (WG5-N903):

the WG5 convenor is to forward the document, and annexes, to the SC22 secretariat for processing as a JTC1 Technical Corrigendum;
to facilitate access by potential users, the document is to be made available via anonymous ftp from directory sc22wg5 on the NCSA file server (ftp.ncsa.uiuc.edu), and possibly other file servers.

Unanimous Consent

B4. Defect Report Index Availability

That WG5 establishes the following procedure for publicizing the Defect Report Index for Fortran (X3J3/93-006r):

the changes made in creating Technical Corrigendum 1 from the Index to be provided to the editor of the Index to be incorporated into the Index;
the WG5 convenor is to forward the document so edited to the SC22 secretariat to be circulated for information;
the document is to be made available on the NCSA file server, and possibly other file servers.

Unanimous Consent

B5. Appointment of Defect Editor

That WG5 requests that SC22 appoint the WG5 convenor as Defect Editor for Fortran (ISO/IEC 1539:1991).

Unanimous Consent

B6. Primary Development Body for Fortran

That WG5 expresses its pleasure that the US member body established an X3 I-project for further development of Fortran, in response to WG5 Victoria Resolution V9, and confirms that the primary development body for the 1995 revision of Fortran is X3J3.

Unanimous Consent

B7. Repository of Requirements for Fortran

That WG5 establishes a repository of suggested requirements as Standing Document 5. The repository consists of the contents of the draft repository (WG5-N904) with the addition of the requirements in WG5-N907 and WG5-N919. The Repository of Requirements will be made available on a file server.

To be entered in the repository, a suggested requirement must be submitted by a member body, or formal action of WG5, as a numbered WG5 document. Requirements should be submitted to the convenor, preferably electronically, in the form specified in WG5-N870. The status of an item in the repository can be changed only as the result of an action of WG5.

Unanimous Consent

B8. Priority of Maintenance and Development

That WG5, in view of the limited time available for development of the near-term revision of the Fortran standard, places higher priority on development work on the revision than on maintenance activities.

Individual vote: 28-2-2 Country vote: 7-0-1

B9. Content of the 1995 Revision

That WG5 confirms its intent, as stated in Victoria Resolution V9 and the Strategic Plan for Fortran Standardization, that the 1995 revision of Fortran will be a minor revision.

Accordingly, WG5 records its intent that the following items will be part of the final 1995 revision (consult WG5-SD5 for more detail on each item):

A1. corrigenda and modest editorial improvements
A2. FORALL statement
A3. FORALL construct
A4. PURE prefix on functions
A5. add DIM parameter to MAXLOC and MINLOC intrinsic functions

Further, that WG5 records its desire that the following items will be in the requirements for the 1995 revision:

B1. object initialization (WG5-N932)
B2. remove conflicts with IEC 559 (IEEE 754, IEEE 854)
B3. allocatable components in structures (WG5-N931)
B4. Miscellaneous minimal and exact field width editing specification of further obsolescent features (WG5-N917) comments in namelist and list-directed input

Further, that WG5 recognizes that it does not have adequate information to decide on the inclusion of the following, and possibly other, items in the 1995 revision, and that WG5 therefore requests that, within the limits of its resources, X3J3 investigate the following items in order that as much information as possible will be available at the 1994 WG5 meeting so that a decision may be made at that time on the final requirements:

C1. CPU-time intrinsic function
C2. KIND parameters for derived types
C3. allow some classes of user-defined functions in declarations
C4. support IEC 559 conforming or similar hardware
C5. exception handling
C6. object oriented programming
C7. derived type I/O

It is to be understood that each of the above lists the items are in order of decreasing priority. It is further understood that the results of the work of X3J3 on any of the above items may contribute to the final development of the 1995 revision. Finally, WG5 understands and expects that X3J3 may wish to delegate responsibility for some of these items.

Individual vote: 29-1-2 Country vote: 8-0-0

B10. Varying Length Character Strings in Fortran - Numbering of Standard
That WG5 confirms its intent that the proposed Varying Length Character Strings standard be ISO/IEC 1539-2.
Individual vote: 22-7-3 Country vote: 6-1-1

B11. Varying Length Character Strings in Fortran - Processing of Draft Standard
That WG5 establishes the following procedure for processing the Varying Length Character Strings draft standard:
the current version of the document (WG5-N905 as amended by WG5- N929) is to be edited and forwarded to the WG5 convenor by July 31, 1993;
the WG5 convenor is to conduct a letter ballot within WG5 on the document;
after satisfactory completion of this ballot the WG5 convenor is requested to forward the document to SC22 for DIS balloting.
Unanimous Consent

B12. Guidelines for Bindings to Fortran 90
That WG5 establishes the following procedure for progressing Guidelines for Bindings to Fortran 90 (WG5-N889):
the remaining minor edits are to be made and the document f orwarded to the WG5 convenor by July 31, 1993;
the WG5 convenor is to inform SC22 at its meeting on September 20- 24, 1993 of the document's completion and to forward it to the SC22 secretariat for distribution to SC22 language groups;
to facilitate access by potential users, the document is to be made available on the NCSA file server, and possibly other file servers.
Unanimous Consent

B13. WG5 Management Committee
That WG5 re-appoints the management committee defined in the Strategic Plan for Fortran Standardization consisting of a representative from the Canadian, German, Japanese, UK and US member bodies and the primary development body.

Further WG5 directs that the management committee communicate by e-mail to evaluate progress on WG5 activities at least every three months and that the members of WG5 be informed of the outcome of such communication.
Unanimous Consent

B14. Liaison With SC22/WG20, Internationalization
That WG5 appoints Miles Ellis as its liaison to WG20.
Unanimous Consent

B15. Appreciation of Technical Contributions
That WG5 records its thanks to X3J3 for work on maintenance of the international Fortran standard, to Lawrie Schonfelder and the German member body for their development of the Varying Length String Module, to Andrew Tait for acting as Defect Editor for Fortran and to David Muxworthy as editor on behalf of the British member body for producing the Guidelines for Bindings to Fortran 90 document.
Unanimous Consent

B16. Vote of Thanks for Support
That WG5 thanks the following organizations for generously supporting the meeting: Siemens Nixdorf, h.o.-Computer, International Science Foundation, DFG and DIN.
Unanimous Consent

B17. Vote of Thanks

That WG5 wishes to express its appreciation to the Convenor (Jeanne Martin), the vice chair (Bert Buckley), the secretary (Rich Kelble), the librarian and super-factotum (Annette Calkin), the drafting committee, the host (Karl- Heinz Rotthaeuser and the DIN Fortran Committee) and the staff of the Max-Peschel-Haus for their contributions to the success of the meeting.

Unanimous Consent

29 Adjournment

Jeanne Martin thanked the hosts who were applauded by the attendees.

Record of Votes - WG5 Berchtesgaden Meeting Resolutions

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Austria		**Y**						**Y**	**Y**	**Y**				
Schmitt		A						Y	Y	Y				
Ueberhuber		Y						Y	Y	Y				
Canada		**A**						**Y**	**Y**	**Y**				
Buckley		A						Y	Y	Y				
European Community														
Pollicini		N						Y	Y	A				
Shiers		A						Y	Y	Y				
Germany		**A**						**Y**	**Y**	**Y**				
Muenchausen		A						Y	Y	Y				
Rotthaeuser		A						Y	A	Y				
Shen		A						Y	A	Y				
Walter		A						Y	Y	Y				
Weber		A						Y	Y	Y				
Japan		**Y**						**Y**	**Y**	**Y**				
Takata		A						Y	Y	Y				
Wada		Y						Y	Y	Y				
Netherlands		**Y**						**Y**	**Y**	**Y**				
Ampt		A						Y	Y	Y				
van Waveren		Y						Y	Y	Y				
Russia		**Y**						**A**	**Y**	**A**				
Gorelik		Y						A	Y	A				
United Kingdom		**A**						**Y**	**Y**	**Y**				
Bartle		A						Y	Y	Y				
Cohen		N						Y	Y	Y				
Ellis		Y						Y	Y	Y				
Hopper		A						Y	Y	Y				
Morgan		A						Y	Y	Y				
Muxworthy		A						Y	Y	Y				
Reid		Y						N	Y	Y				
Schonfelder		A						Y	Y	Y				
United States		**Y**						**Y**	**Y**	**N**				
Adams		Y												
Bierman		Y						Y	Y	N				
Hirchert		Y						Y	Y	N				
Hoffert		Y						Y	Y	A				
Kelble		Y						Y	Y	N				
Lahey		Y						N	N	N				

Martin, J.		Y						Y	Y	N				
Philips		Y						Y	Y	N				
Wagener		Y						Y	Y	Y				
Weaver		Y						A	Y	N				
Totals (individual)	UC	16-2-15	UC	UC	UC	UC	UC	28-2-2	29-1-2	22-7-3	UC	UC	UC	UC
Totals (country)	UC	5-0-3	UC	UC	UC	UC	UC	7-0-1	8-0-0	6-1-1	UC	UC	UC	UC