

Subject: A HERE_I_AM subroutine
From: Van Snyder

1 **1 Number**

2 TBD

3 **2 Title**

4 A HERE_I_AM subroutine.

5 **3 Submitted By**

6 J3

7 **4 Status**

8 For consideration.

9 **5 Basic Functionality**

10 Provide a procedure that reports where it is called, reports where the procedure containing that call (if
11 any) was called, etc., i.e., what is commonly called a “walkback” or “traceback.”

12 **6 Rationale**

13 The DoD guests at J3 meeting 174 chastised the Fortran standard for failing to provide or require
14 adequate mechanisms to report the location and nature of errors. They were hoping that the processor
15 would detect more errors, and produce better messages when it detected them. This proposal advocates
16 to allow the program to report where it is executing, so at least if it detects an error it can indicate
17 where it is detected.

18 **7 Estimated Impact**

19 Very small. Probably at 3 on the JKR scale.

20 **8 Detailed requirements**

21 Provide a procedure that reports where it is called, reports where the procedure containing that call (if
22 any) was called, etc., i.e., what is commonly called a “walkback” or “traceback.”

23 **9 Detailed specification**

24 The name of the procedure is to be determined. The name used here is HERE_I_AM, but any sensible
25 alternative (e.g. EXECUTION_LOCATION) is acceptable. It could either be an intrinsic subroutine,
26 or be accessed by use association from ISO_FORTRAN_ENV. The remainder of the specification can be
27 trivially deduced from the edits.

28 **10 Edits**

29 Edits refer to 04-007. Page and line numbers are displayed in the margin. Absent other instructions, a
30 page and line number or line number range implies all of the indicated text is to be replaced by associated
31 text, while a page and line number followed by + (-) indicates that associated text is to be inserted after
32 (before) the indicated line. Remarks are noted in the margin, or appear between [and] in the text.

1 **13.7.43¹/₂ HERE_I_AM ([UNIT, IOSTAT, OFFSET]) or HERE_I_AM (* [, UNIT, 319:9+
2 IOSTAT])**

3 **Description.** Write the line number, program unit name if any, and other information that
4 specifies the location of this procedure's invocation (first form) or a specified statement (second
5 form) on the specified unit, as if by execution of a formatted WRITE statement. The format
6 of the output and the definitions of the terms "line number" and "location" are processor
7 dependent. One possibility for "location" is the name of the file containing the program unit in
8 which the invocation appears. The line number shall either be a line number within that file,
9 or within that program unit.

10 It is recommended that the displayed program unit names be completely qualified, by the module
11 name if they are module procedures, and by the (qualified) containing procedure name if they
12 are internal procedures.

13 It is recommended that the processor displays additional information that it determines to be
14 useful, including the locations and line numbers of invocations of procedures that are in a state
15 of execution, starting with the one that invoked this procedure and working backward to the
16 main program, if such additional information is available.

17 **Class.** Subroutine

18 **Arguments.**

19 UNIT (optional) shall be a scalar of type integer. It is an INTENT(IN) argument. Its value
20 shall be the number of a unit that is connected for sequential formatted
21 output. If UNIT is not present, the processor shall use ERROR_UNIT from
22 ISO_FORTRAN_ENV.

23 IOSTAT (optional) shall be a scalar variable of type integer. It is an INTENT(OUT) argument.
24 If IOSTAT is present, it shall become defined as specified in 9.10.4.

25 OFFSET (optional) shall be a scalar of type integer. It is an INTENT(IN) argument. If OFFSET
26 is present, the processor shall subtract its value from the line number of this
27 procedure's invocation and display that difference instead of the line number
28 of this procedure's invocation. [This optional argument can be deleted if its
29 presence is controversial.]

30 * shall be a statement label preceded by an asterisk. The processor shall report
31 the line number and location of the statement having the specified label.

32 **Examples.**

33 *Case (i):* ALLOCATE (WORK(N), STAT=STATUS)
34 IF (STATUS /= 0) THEN
35 WRITE (ERROR_UNIT, *) &
36 & 'UNABLE TO ALLOCATE WORK ARRAY, STATUS =', STATUS
37 CALL HERE_I_AM (OFFSET=4)
38 STOP
39 END IF

40 *Case (ii):* 86 ALLOCATE (WORK(N), STAT=STATUS)
41 IF (STATUS /= 0) THEN
42 WRITE (ERROR_UNIT, *) &
43 & 'UNABLE TO ALLOCATE WORK ARRAY, STATUS =', STATUS
44 CALL HERE_I_AM (*86)
45 STOP
46 END IF