Evaluation of Intrinsic Procedures

To: J3
From: Craig Dedo
Date: May 31, 2000
Subject: Interpretation 12 - Evaluation of Intrinsic Procedures

NUMBER: 000012
TITLE: Evaluation of Intrinsic Procedures
KEYWORDS: Algorithm, Mathematical, Computational
DEFECT TYPE: Interpretation
STATUS: J3 Consideration in Progress

QUESTION:

1. When the standard specifies an algorithm for computing a mathematical procedure, must a processor use the specified algorithm?

Example: ANINT is defined as INT (A + 0.5). On some processors ANINT (16 000 001.0) evaluates to 16 000 002.0 using this algorithm.

2. May a processor return a mathematically equivalent result in the evaluation of a numeric intrinsic procedure?

Example: If ANINT (16 000 001.0) can be computed as the more expected 16 000 001.0, may a processor do so?

ANSWER:

1. No, a processor is not required to use the algorithm from the standard.

2. Yes, a processor may return the mathematically equivalent result in the evaluation of any numeric intrinsic procedure.

DISCUSSION:

The use of an algorithm in the definitions for intrinsic procedures is intended to describe the end result. It is not intended to require that a processor use a particular method of achieving that result. Thus, an algorithm specifies the mathematical results, not the computational results, of the evaluation of intrinsic procedures.

This standard does not require a processor to use a particular accuracy or precision. Section 1.4, "Exclusions", states in part:

"This standard does not specify: . . .

(6) The physical properties of the representation of quantities and the method of rounding, approximating, or computing numeric values on a particular processor." [1:26, 1:37-38]

EDITS: None.

SUBMITTED BY: Keith H. Bierman

HISTORY:			
	95-247r1	m134	Submitted as F90 interp 000202 with proposed response, approved 9-4, subsumes F90 interp 000200.
	95-256	m134	Ballot failed, 10-6
	95-260	m135	Proposed response, no action
	96-023	m136	Proposed response, no action
	96-054	m137	Proposed response, no action
	96-117	m138	Proposed response, no action
	97-259r1	m143	Re-submitted as F95 interp 000012 with proposed response
	00-214	m153	Proposed response

[End of J3 / 00-214]