

Subject: Comments on clause 13  
 From: Van Snyder

## 1 Edits

2 Edits refer to 07-007. Page and line numbers are displayed in the margin. Absent other instructions, a  
 3 page and line number or line number range implies all of the indicated text is to be replaced by associated  
 4 text, while a page and line number followed by + (-) indicates that associated text is to be inserted after  
 5 (before) the indicated line. Remarks are noted in the margin, or appear between [ and ] in the text.

6	[Editor: Insert “undefined or” before “not associated”.]	341:9
7	[Editor: Insert “(A)” after “IS_CONTIGUOUS”.]	347:6
8	[It’s not clear when reading the table, until after reading it, what the bullets (●) are for. Editor: Move	351:1-2
9	[351:1-2] to [350:7+].]	
10	[Editor: Insert “or $n = 1$ ” after “absent”.]	354:21
11	[Editor: Insert “or $n = 1$ ” after “absent”.]	355:27
12	[Editor: Delete first “or”.]	362:32
13	[Editor: Replace “or” by a comma.]	363:0+1
14	[Editor: “result” ⇒ “RESULT”.]	364:13
15	[Editor: Insert “or $n = 1$ ” after “absent”.]	371:4
16	[Editor: Insert “and kinds” after “types”.]	375:5
17	[Editor: Insert the sentence “It is recommended that the processor compute the product in double	375:25
18	precision, rather than in single precision and then converted to double precision.”]	
19	[Editor: “omitted” ⇒ “absent”.]	377:0+3
20	[Editor: “The” ⇒ “If there is such a value, the”.]	381:5
21	[Editor: “The” ⇒ “If there is such a value, the”.]	381:12
22	[Editor: “Note that this” ⇒ “This”.]	381:35
23	[Editor: “Note . . . 1” ⇒ “This is independent of the declared lower bounds for B” (compare to [381:25]).]	381:39-40
24	[Editor: Exdent the paragraph and join to the previous line.]	382:20-22
25	[Editor: Append “, ONLY: IMAGE_TEAM”]	382:23
26	[Editor: “It . . . 0,” ⇒ “NUMBER is allowed to be zero”.]	384:5+2-3
27	[Editor: Delete “(optional)”].]	388:2+1
28	[Editor: Insert a space before “IBCLR”.]	388:32
29	[Editor: “it is” ⇒ “the result value is”.]	392:2
30	[Editor: Delete “and”.]	393:23
31	[Editor: “will have” ⇒ “has”.]	394:12
32	[Editor: “of type” ⇒ “or”.]	396:28
33	[Editor: “of type” ⇒ “or”.]	397:8
34	[Editor: “of type” ⇒ “or”.]	397:21

35	[Editor: “of type” ⇒ “or”.]	398:6
36	[Editor: “Note that this” ⇒ “This”.]	403:8
37	[Editor: “has” ⇒ “is of”.]	403:38
38	[Editor: “has” ⇒ “is of”.]	406:30
39	[Editor: “Note that this” ⇒ “This”.]	406:37
40	[Editor: “Note that this” ⇒ “This”.]	406:39
41	[Editor: “has” ⇒ “is of”.]	407:28
42	[Editor: Delete “Mold ... length” because it duplicates [412:5-6].]	412:8-10
43	[Editor: Delete final “the”.]	414:23
44	[Editor: Delete “variable”.]	416:33
45	[Editor: “8” ⇒ “16”.]	419:23
46	[Editor: insert “= ABS(FRACTION(X)) * RADIX(X) / EPSILON(X)” after “ $b^p$ ”.]	420:7
47	[Editor: Add a sentence to Note 13.20: “An unlimited polymorphic entity has no declared type.”]	420:20+2+
48	[Editor: “the ... If” ⇒ “or if”.]	425:31-33
49	[Editor: Insert “of” before “SUM”.]	429:16
50	[Editor: “-” (hyphen) ⇒ “-” (\$-\$).]	429:28+2
51	[Editor: “It” ⇒ “The corresponding actual argument”.]	431:4+2
52	[Editor: Move the sentence to the end of the paragraph at [433:18 since it’s a characteristic, not a value.]	433:20

**NOTE 13.23 $\frac{1}{2}$** 

435:28+

The types and procedures defined in standard intrinsic modules are not themselves intrinsic.

**53 2 Nouns and verbs**

54 Most but not all intrinsic function descriptions are nouns, while most but not all intrinsic subroutine  
 55 descriptions are imperative sentences in active voice. Make them consistent.

**56 2.1 Summaries in 13.5**

57	[Editor: “testing” ⇒ “test”.]	347:13
58	[Editor: Insert “and only if” after “if” twice.]	348:5-6
59	[Editor: “Whether” ⇒ “True if and only if” twice (compare [348:5-6]).]	349:2-3
60	[Editor: “Returns disassociated” ⇒ “Disassociated”.]	349:12
61	[Editor: “Returns” ⇒ “Generate”.]	349:17
62	[Editor: “Initializes” ⇒ “Initialize” and “restarts” ⇒ “restart”.]	349:18
63	[Editor: “Forms” ⇒ “Form”.]	349:25
64	[Editor: “Returns” ⇒ “Get”.]	349:25+1
65	[Editor: “Returns” ⇒ “Get”.]	349:26+1

**66 2.2 Detailed descriptions**

67	[Editor: “Returns the character” ⇒ “Character”.]	352:16
68	[Editor: Insert “toward zero” after “Truncation”.]	354:3
69	[Editor: “Determine ... in” ⇒ “Logical conjunction of elements of”.]	354:15
70	[Editor: “Indicate whether” ⇒ “True if and only if”.]	354:33+1
71	[Editor: “Determine ... in” ⇒ “Logical inclusive disjunction of elements of”.]	355:21
72	[Editor: “Returns ... target” ⇒ “True if and only if POINTER is associated or POINTER is associated	356:24-25
73	with TARGET”.]	
74	[Editor: “Returns the number” ⇒ “Number”.]	360:13
75	[Editor: “Convert” ⇒ “Conversion”.]	360:23
76	[Editor: “Return bits” ⇒ “Bits”.]	361:14
77	[Editor: “Tests ... value” ⇒ “True if and only if a specified bit of an integer or bits value is one.”]	361:26
78	[Editor: “Returns the least” ⇒ “Least”.]	362:3
79	[Editor: “Returns the character” ⇒ “Character”.]	362:13
80	[Editor: “Convert” ⇒ “Conversion”.]	362:29
81	[Editor: “values” ⇒ “corresponding elements of MASK”.]	363:11
82	[Editor: “value” ⇒ “corresponding element of MASK”.]	363:21
83	[Editor: “Returns all the lower” ⇒ “Lower”.]	364:16
84	[Editor: “Image” ⇒ “Determine the image”.]	365:6
85	[Editor: “Maximum” ⇒ “Determine the maximum”.]	365:16
86	[Editor: “Image” ⇒ “Determine the image”.]	366:6
87	[Editor: “Minimum” ⇒ “Determine the minimum”.]	366:16
88	[Editor: “Products” ⇒ “Compute the products”.]	367:6
89	[Editor: “Sums of” ⇒ “Sum”.]	367:17
90	[Editor: “Returns all the upper” ⇒ “Upper”.]	368:5
91	[Editor: “Returns the number” ⇒ “Number”.]	369:15
92	[Editor: “Count the number” ⇒ “Number”.]	370:26
93	[Editor: “Returns” ⇒ “Return”.]	371:18
94	[Editor: “Perform a circular” ⇒ “Circular” and delete “perform”.]	372:2
95	[Editor: “Convert” ⇒ “Conversion”.]	374:2
96	[Editor: “Returns” ⇒ “Return”.]	373:1
97	[Editor: “Returns the number” ⇒ “Number”.]	374:9
98	[Editor: “The ... zero” ⇒ “The maximum of X–Y and zero”.]	374:19
99	[Editor: “X ... otherwise” ⇒ “The maximum of X–Y and zero”.]	374:25
100	[Editor: “Performs dot” ⇒ “Dot”.]	374:28
101	[Editor: “Performs a combined” ⇒ “Combined”.]	375:28
102	[Editor: “Performs a combined” ⇒ “Combined”.]	376:7

103	[Editor: “Perform an end-off” ⇒ “End-off” and delete “perform”.]	376:21
104	[Editor: “Returns a positive” ⇒ “Positive”.]	377:19
105	[Editor: Insert “function” after “Exponential”.]	379:13
106	[Editor: “Returns the exponent” ⇒ “Exponent”.]	379:21
107	[Editor: “Inquire whether” ⇒ “True if and only if”.]	380:8
108	[Editor: “Determine the location” ⇒ “Location”.]	380:20
109	[Editor: “Returns the greatest” ⇒ “Greatest”.]	381:42
110	[Editor: “Returns the fractional” ⇒ “Fractional”.]	383:2
111	[Editor: “Returns” ⇒ “Get”.]	383:19
112	[Editor: “Returns ... argument” ⇒ “Get an argument from the command by which the program was	384:1
113	invoked”.]	
114	[Editor: “Gets” ⇒ “Get”.]	385:3
115	[Editor: “Returns the largest” ⇒ “Largest”.]	385:12
116	[Editor: “Returns the position” ⇒ “Position”.]	386:9
117	[Editor: “Performs a bitwise” ⇒ “Bitwise”.]	387:17
118	[Editor: “Clears ... to” ⇒ “Argument with specified bit replaced by”.]	388:23
119	[Editor: “Extracts a” ⇒ “Specified”.]	388:34
120	[Editor: “Sets ... to” ⇒ “Argument with specified bit replaced by”.]	389:10
121	[Editor: “Returns the position” ⇒ “Position”.]	389:21
122	[Editor: “Performs a bitwise” ⇒ “Bitwise”.]	390:3
123	[Editor: “Returns the index” ⇒ “Index”.]	390:15
124	[Editor: “Returns the starting” ⇒ “Starting”.]	391:2
125	[Editor: “Convert” ⇒ “Conversion”.]	391:24
126	[Editor: “Performs a bitwise” ⇒ “Bitwise”.]	392:5
127	[Editor: “Performs a logical” ⇒ “Logical”.]	393:16
128	[Editor: “Performs a circular” ⇒ “Circular”.]	393:29
129	[Editor: “Determine whether” ⇒ “True if and only if” thrice.]	394:7,15,22
130	[Editor: “Returns the value” ⇒ “Value”.]	394:29
131	[Editor: “Returns all lower” ⇒ “Lower”.]	395:3
132	[Editor: “Counts the number” ⇒ “Number”.]	395:23
133	[Editor: “Returns the length” ⇒ “Length”.]	395:33
134	[Editor: “Returns the length” ⇒ “Length”.]	396:13
135	[Editor: “Test whether” ⇒ “True if and only if”.]	396:24
136	[Editor: “Test whether” ⇒ “True if and only if” twice.]	397:4,17
137	[Editor: “Test whether” ⇒ “True if and only if”.]	398:3

138	[Editor: “Converts” ⇒ “Conversion”.]	399:11
139	[Editor: “Generate a left” ⇒ “Left”.]	399:28
140	[Editor: “Generate a right” ⇒ “Right”.]	400:8
141	[Editor: “Performs matrix multiplication” ⇒ “Matrix product”.]	400:18
142	[Editor: “Returns the maximum” ⇒ “Maximum”.]	401:32
143	[Editor: “Determine ... first” ⇒ “Location of an”.]	402:4
144	[Editor: “Choose ... mask” ⇒ “Value of TSOURCE or FSOURCE according to the value of MASK”.]	404:9
145	[Editor: insert “of” after “Merge”.]	404:22
146	[Editor: “Return the minimum” ⇒ “Minimum”.]	405:18
147	[Editor: “Determine ... first” ⇒ “Location of an”.]	405:27
148	[Editor: “Moves” ⇒ “Move”.]	408:22
149	[Editor: “Copies” ⇒ “Copy”.]	409:15
150	[Editor: “Returns the nearest” ⇒ “Nearest”.]	410:2
151	[Editor: “Returns a newline” ⇒ “Newline”.]	410:13
152	[Editor: “Performs a bitwise” ⇒ “Bitwise”.]	411:7
153	[Editor: “Returns ... constructor” ⇒ “Disassociated pointer of unallocated allocatable entity”.]	411:26-27
154	[Editor: “Returns the number” ⇒ “Number”.]	412:29
155	[Editor: “Pack ... one” ⇒ “Array of rank one packed”.]	413:13
156	[Editor: “Determine whether” ⇒ “True if and only if”.]	413:30
157	[Editor: “Returns the number” ⇒ “Number”.]	414:19
158	[Editor: “Return the bitwise” ⇒ “Bitwise”.]	414:30
159	[Editor: “Returns the decimal” ⇒ “Decimal”.]	415:2
160	[Editor: “Determine whether” ⇒ “True if and only if”.]	415:13
161	[Editor: “Returns the base” ⇒ “Base”.]	416:20
162	[Editor: “Returns” ⇒ “Generate”.]	416:30
163	[Editor: “Restarts or queries” ⇒ “Restart or query”.]	417:8
164	[Editor: “Returns the decimal” ⇒ “Decimal”.]	418:6
165	[Editor: “Convert” ⇒ “Conversion”.]	418:19
166	[Editor: “Concatenate” ⇒ “Concatenation”.]	419:8
167	[Editor: “Returns the reciprocal” ⇒ “Reciprocal”.]	420:3
168	[Editor: “Inquires whether” ⇒ “True if and only if”.]	420:13
169	[Editor: Delete “Returns”.]	420:22
170	[Editor: “Scan a string for” ⇒ “Position in a string of”.]	421:7
171	[Editor: “Returns a value” ⇒ “Value”.]	421:30
172	[Editor: “Returns the value” ⇒ “Value”.]	422:4

173	[Editor: “Returns a value” ⇒ “Value”.]	422:33
174	[Editor: “Returns a value” ⇒ “Value”.]	423:8
175	[Editor: “Returns the model” ⇒ “Model”.]	423:36
176	[Editor: “Returns the shape” ⇒ “Shape”.]	424:9
177	[Editor: “Performs a right” ⇒ “Right”.]	424:21
178	[Editor: “Performs a left” ⇒ “Left”.]	425:2
179	[Editor: “Performs a right” ⇒ “Right”.]	425:11
180	[Editor: “Returns the extent” ⇒ “Extent”.]	426:21
181	[Editor: “Returns the absolute” ⇒ “Absolute”.]	427:3
182	[Editor: “Replicates ... greater” ⇒ “Array with rank that is one greater than SOURCE formed by	427:14-16
183	broadcasting SOURCE along a specified dimension.]	
184	[Editor: “Returns the storage” ⇒ “Storage”.]	428:11
185	[Editor: Insert “of” after “Sum”.]	428:26
186	[Editor: “Returns” ⇒ “Return”.]	429:26
187	[Editor: “Returns a list” ⇒ “Rank one array of the indices of the images” (the result is certainly not an	430:24
188	array of images).]	
189	[Editor: “Returns the index” ⇒ “Index”.]	431:1
190	[Editor: “Returns the smallest” ⇒ “Smallest”.]	431:24
191	[Editor: “Count the number” ⇒ “Number”.]	432:3
192	[Editor: “Returns ... with” ⇒ “Data object having” and delete “interpreted”.]	432:12-13
193	[Editor: Insert “of” after “Transpose”.]	433:5
194	[Editor: “Returns the argument” ⇒ “Argument”.]	433:14
195	[Editor: “Returns all the upper” ⇒ “Upper”.]	433:23
196	[Editor: “Unpack ... into” ⇒ “Array of rank one unpacked from”.]	434:14
197	[Editor: “Verify ... position” ⇒ “Position” and “the first” ⇒ “a”.]	434:32-33
198	[Editor: “Returns a processor” ⇒ “Processor” twice.]	436:7,16
199	<b>3 Simplify argument descriptions</b>	
200	Argument descriptions are sometimes verbose, e.g., “shall be scalar and of type integer,” and sometimes	
201	terse, e.g., “shall be a scalar integer initialization expression.” The verbose ones could be simpler.	
202	[Editor: “of ... an” ⇒ “a logical”.]	354:18
203	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	354:18+1
204	[Editor: “of ... an” ⇒ “a logical array”.]	355:24
205	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	355:24+1
206	[Editor: “Y shall ... argument” ⇒ “no actual argument shall correspond to Y”	363:0-1
207	[Editor: “and” ⇒ comma, insert “and shape” after “parameters”, delete “, and shall ... CO_ARRAY”.]	365:19+1-2
208	[Editor: “type ... complex” ⇒ ‘numeric type’ twice.]	367:9+1,19+1

209	[Editor: “of ... an” ⇒ “a logical”.]	370:29
210	[Editor: “scalar and of type integer” ⇒ “an integer scalar”.]	370:29+1
211	[Editor: “scalar ... character” ⇒ “a default character scalar”.]	373:4+1
212	[Editor: “scalar ... character” ⇒ “a default character scalar”.]	373:5+1
213	[Editor: “scalar ... character” ⇒ “a default character scalar”.]	373:6+1
214	[Editor: “of ... one” ⇒ “a rank-one default integer array”.]	373:7+1
215	[Editor: “may ... array” ⇒ “shall be an array of any type”.]	376:28
216	[Editor: “scalar and of type integer” ⇒ “an integer scalar”.]	377:1+1
217	[Editor: “of type” ⇒ “a”, delete “and shall be”.]	379:3+1
218	[Editor: “of type” ⇒ “a”, delete “and shall be”.]	379:4+1
219	[Editor: “of type” ⇒ “a”, delete “and shall be a”.]	379:5+1
220	[Editor: “of type” ⇒ “a”, delete “and shall be a”.]	379:6+1
221	[Editor: “of type” ⇒ “a”, delete “and shall be a”.]	379:7+1
222	[Editor: “of ... array” ⇒ “an array of intrinsic type”.]	380:24
223	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	380:25+1
224	[Editor: “scalar ... logical” ⇒ “a logical scalar”.]	380:29
225	[Editor: “of ... integer” ⇒ “a rank-one integer array”.]	382:12+1
226	[Editor: “scalar ... integer” ⇒ “default integer scalar”.]	382:13+1
227	[Editor: “scalar ... integer” ⇒ “default character scalar”.]	382:14+1
228	[Editor: “scalar ... character” ⇒ “a default character scalar”.]	383:21+1
229	[Editor: “scalar ... integer” ⇒ “a default integer scalar”.]	383:22+1
230	[Editor: “scalar ... integer” ⇒ “a default integer scalar”.]	383:23+1
231	[Editor: “scalar ... integer” ⇒ “a default integer scalar”.]	384:4
232	[Editor: “scalar ... character” ⇒ “a default character scalar”.]	384:7+1
233	[Editor: “scalar ... integer” ⇒ “a default integer scalar”.]	384:8+1
234	[Editor: “scalar ... integer” ⇒ “a default integer scalar”.]	384:9+1
235	[Editor: “scalar ... character” ⇒ “a default character scalar”.]	385:5+1
236	[Editor: “scalar ... character” ⇒ “a default character scalar”.]	385:6+1
237	[Editor: “scalar ... integer” ⇒ “a default integer scalar”.]	385:7+1
238	[Editor: “scalar ... integer” ⇒ “a default integer scalar”.]	385:8+1
239	[Editor: “scalar ... logical” ⇒ “logical scalar”.]	385:9+1
240	[Editor: “a scalar ... integer” ⇒ “an integer scalar”.]	386:29+1
241	[Editor: “a scalar ... integer” ⇒ “an integer scalar”.]	388:2+1
242	[Editor: Insert “integer” before “array” and delete “and shall be of type integer”.]	390:18+1,19
243	[Editor: “a scalar ... integer” ⇒ “an integer scalar”.]	392:21+1

244	[Editor: “a scalar ... integer” ⇒ “an integer scalar”.]	395:6+1
245	[Editor: “of ... an” ⇒ “a character scalar or a character”.]	396:2+1
246	[Editor: “If ... two” ⇒ “MATRIX_A and MATRIX_B shall not both have rank one”.]	400:21+3-5
247	[Editor: Insert “an array” after first “be”, delete “It shall be an array.”]	402:8
248	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	402:8+1
249	[Editor: Insert “an array” after first “be”, delete “It shall be an array.”]	403:17
250	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	403:17+1
251	[Editor: Insert “an array” after first “be”, delete “It shall be an array.”]	405:31
252	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	405:31+1
253	[Editor: Insert “an array” after first “be”, delete “It shall be an array.”]	407:5
254	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	407:5+1
255	[Editor: “of ... array” ⇒ “a real array”.]	411:19
256	[Editor: “may ... array” ⇒ “shall be an array of any type”.]	413:16
257	[Editor: “of ... array” ⇒ “a logical array”.]	413:32+1
258	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	414:1+1
259	[Editor: Insert “of ... array” ⇒ “an array of numeric type”]	415:27
260	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	415:27+1
261	[Editor: “scalar ... character” ⇒ “a character scalar”.]	419:11
262	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	419:12
263	[Editor: “may ... array” ⇒ “shall be an array of any type”.]	419:21+1
264	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	421:32
265	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	422:36
266	[Editor: “scalar ... integer” ⇒ “an integer scalar” thrice.]	423:12-14
267	[Editor: “of ... array” ⇒ “a scalar or array of any type”.]	424:11+1
268	[Editor: “of ... array” ⇒ “an array of any type”.]	426:24+1
269	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	426:25+1
270	[Editor: “of ... array” ⇒ “a scalar or array of any type”.]	427:18+1
271	[Editor: “of ... array” ⇒ “a scalar or array of any type”.]	428:14+1
272	[Editor: “of ... array” ⇒ “an array of numeric type”.]	429:2
273	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	429:2+1
274	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	429:28+1
275	[Editor: “scalar ... real” ⇒ “an integer or real scalar”.]	429:29+1
276	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	429:30+1
277	[Editor: Delete ‘and may be’.]	431:4
278	[Editor: “scalar ... integer” ⇒ “a default integer scalar”.]	431:4+1



279	[Editor: “of type” ⇒ “a”, delete “. It may be a” and “an” giving “a real scalar or array”.]	431:27+1
280	[Editor: “of ... array“ ⇒ “a scalar or array of any type” twice.]	432:16-17
281	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	432:17+1
282	[Editor: “of type” ⇒ “a“, delete “and shall be”.]	433:16
283	[Editor: “may ... array” ⇒ “shall be an array of any type”.]	433:25+1
284	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	433:26+1
285	[Editor: “may ... one” ⇒ “shall be a rank-one array of any type”.]	434:16+1
286	[Editor: “an ... logical” ⇒ “a logical array”.]	434:18

## 287 4 Shapes are arrays, not lists

288 Editor: Replace the parentheses around shapes by square brackets at the following places:

354:21-22 355:27-28 371:4-5 372:8+2-372:9 381:2-3 386:34 388:7 392:25-26 400:28-31  
 402:16 403:21-22 406:6 407:9-10 414:4-5 415:31-32 429:6-7 433:9

## 289 5 Improper use of “absent”

290 In those intrinsic procedures that have two versions, usually having one with a DIM argument, the term  
 291 “absent” is used improperly: the DIM argument is not optional. Editor: Replace “is absent” by “does  
 292 not appear” at the following places:

381:1 386:33 388:6 392:25 402:14 403:21 406:4 407:9 415:31 429:6