

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: Replace three semicolons by commas.]	343:21-22
8	[Editor: Insert “(A)” after “IS_CONTIGUOUS”.]	347:6
9	[It’s not clear when reading the table, until after reading it, what the bullets (●) are for. Editor: Move	351:1-2
10	[351:1-2] to [350:7+].]	
11	[Editor: Insert “or $n = 1$ ” after “absent”.]	354:21
12	[Editor: Insert “or $n = 1$ ” after “absent”.]	355:27
13	[Editor: Delete first “or”.]	362:32
14	[Editor: Delete Replace “or” by a comma.]	363:0+1
15	[Editor: “result” $\Rightarrow$ “RESULT”.]	364:13
16	[Editor: What causes the blank numbered line?]	371:1
17	[Editor: Insert “or $n = 1$ ” after “absent”.]	371:3
18	[Editor: Insert “and kinds” after “types”.]	375:5
19	[Editor: Insert the sentence “It is recommended that the product be computed in double precision,	375:25
20	rather than being computed in single precision and then converted to double precision.”]	
21	[Editor: “omitted” $\Rightarrow$ “absent”.]	377:0+3
22	[Editor: “The” $\Rightarrow$ “If there is such a value, the”.]	381:5
23	[Editor: “The” $\Rightarrow$ “If there is such a value, the”.]	381:12
24	[Editor: “Note that this” $\Rightarrow$ “This”.]	381:35
25	[Editor: “Note ... 1” $\Rightarrow$ “This is independent of the declared lower bounds for B” (compare to [381:25]).]	381:39-40
26	[Editor: Exdent the paragraph.]	382:20-22
27	[Editor: Append “, ONLY: IMAGE_TEAM”]	382:23
28	[Editor: “It ... 0,” $\Rightarrow$ “NUMBER is allowed to be zero”.]	385+2-3
29	[Editor: Insert a space before “IBCLR”.]	388:32
30	[Editor: “it is” $\Rightarrow$ “the result value is”.]	392:2
31	[Editor: Delete “and”.]	393:23
32	[Editor: “will have” $\Rightarrow$ “has”.]	394:12
33	[Editor: “of type” $\Rightarrow$ “or”.]	396:28
34	[Editor: Insert “and only if” after “if”.]	396:33

35	[Editor: Delete “; otherwise the result is false”.]	397:1
36	[Editor: “of type” ⇒ “or”.]	397:8
37	[Editor: Insert “and only if” after “if”.]	397:13
38	[Editor: Delete “; otherwise the result is false”.]	397:14
39	[Editor: “of type” ⇒ “or”.]	397:21
40	[Editor: Insert “and only if” after “if”.]	397:26
41	[Editor: Delete “; otherwise the result is false”.]	397:27-28
42	[Editor: “of type” ⇒ “or”.]	398:6
43	[Editor: Insert “and only if” after “if”.]	398:11
44	[Editor: Delete “; otherwise the result is false”.]	398:12
45	[Editor: “Note that this” ⇒ “This”.]	403:8
46	[Editor: “has” ⇒ “is of”.]	403:38
47	[Editor: “has” ⇒ “is of”.]	406:30
48	[Editor: “Note that this” ⇒ “This”.]	406:37
49	[Editor: “Note that this” ⇒ “This”.]	406:39
50	[Editor: “has” ⇒ “is of”.]	407:28
51	[Editor: “component ... constructor” ⇒ “entity” since NULL() is a perfectly good actual argument	411:26-27
52	corresponding to an allocatable dummy argument.]	
53	[Editor: Delete “Mold ... length” because it duplicates [412:5-6].]	412:8-10
54	[Editor: “The following uses” ⇒ “Use”.]	413:3
55	[Editor: Delete final “the”.]	414:23
56	[Editor: “1 ... even” ⇒ “MOD(POPCNT(I),2)”.]	414:34
57	[Editor: Delete “variable”.]	416:33
58	[Editor: “8” ⇒ “16”.]	419:23
59	[Editor: Add a sentence to Note 13.20: “A disassociated or unallocated unlimited polymorphic variable	420:20+2+
60	has no type.”]	
61	[Editor: “the ... If” ⇒ “or if”.]	425:31-33
62	[Editor: Insert “of” before “SUM”.]	429:16
63	[Editor: “-” (hyphen) ⇒ “_” (\$-\$).]	429:28+2
64	[Editor: “It’ ⇒ “The correspondig actual argument”.]	431:4+2
65	[Editor: “The ... uses” ⇒ “Use”.]	431:19
66	[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<sup>1</sup>/<sub>2</sub>**

435:28+

The types and procedures defined in standard intrinsic modules are not themselves intrinsic.
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67 **2 Passive voice**

68 Most of the intrinsic procedure descriptions are simple declarations or are in active voice. Replace passive  
69 voice by simple declarations or active voice.

70 **2.1 Summaries in 13.5**

71	[Editor: “Conversion” ⇒ “Convert”.]	344:10
72	[Editor: “Conversion” ⇒ “Convert”.]	344:16
73	[Editor: “Conversion” ⇒ “Convert”.]	345:2
74	[Editor: “Bit testing” ⇒ “Test bit”.]	347:13
75	[Editor: “Bit extraction” ⇒ “Extract bit”.]	347:13
76	[Editor: “Copies” ⇒ “Copy”.]	347:27+1
77	[Editor: Insert “and only if” after “if” twice.]	348:5-6
78	[Editor: “Replicates” ⇒ “Replicate”.]	348:24
79	[Editor: Delete “of”.]	348:25
80	[Editor: “Whether” ⇒ “True if and only if” twice (compare [348:5-6]).]	349:2-3
81	[Editor: “Returns” ⇒ “Return”.]	349:12
82	[Editor: “Moves” ⇒ “Move”.]	349:14
83	[Editor: “Returns” ⇒ “Return”.]	349:17
84	[Editor: “Initializes” ⇒ “Initialize” and “restarts” ⇒ “restart”.]	349:18
85	[Editor: “Forms” ⇒ “Form”.]	349:25
86	[Editor: “Returns” ⇒ “Return”.]	349:25+1
87	[Editor: “Returns” ⇒ “Return”.]	349:26+1

88 **2.2 Detailed descriptions**

89	[Editor: “Returns” ⇒ “Return”. Better yet: “Returns the character” ⇒ “Character”.]	352:16
90	[Editor: “Truncation” ⇒ “Truncate toward zero”.]	354:3
91	[Editor: “Returns” ⇒ “Return”.]	356:24
92	[Editor: “Returns the number” ⇒ “Number”.]	360:13
93	[Editor: “Tests” ⇒ “Test”.]	361:26
94	[Editor: “Returns the least” ⇒ “Least”.]	362:3
95	[Editor: “Returns the character” ⇒ “Character”.]	362:13
96	[Editor: “Returns all the lower” ⇒ “Lower”.]	364:16
97	[Editor: “Returns all the upper” ⇒ “Upper”.]	368:5
98	[Editor: “Returns the number” ⇒ “Number”.]	369:15
99	[Editor: “Returns the processor” ⇒ “Processor”.]	371:18
100	[Editor: “Returns” ⇒ “Return”.]	373:1
101	[Editor: “Returns” ⇒ “Return”.]	374:9
102	[Editor: “The ... zero” ⇒ “MAX(X-Y,0)”].]	374:19

103	[Editor: “Y ... otherwise” ⇒ “MAX(X-Y,0)”.]	374:25
104	[Editor: “Performs dot” ⇒ “Dot”.]	374:28
105	[Editor: “Performs a combined” ⇒ “Combined”.]	375:28
106	[Editor: “Performs a combined” ⇒ “Combined”.]	376:7
107	[Editor: “Returns a positive” ⇒ “Positive”.]	377:19
108	[Editor: “Returns the exponent” ⇒ “Exponent”.]	379:21
109	[Editor: “Inquires” ⇒ “Inquire”.]	380:8
110	[Editor: “Returns the greatest” ⇒ “Greatest”.]	381:42
111	[Editor: “Returns the fractional” ⇒ “Fractional”.]	383:2
112	[Editor: “Returns the entire” ⇒ “Entire”.]	383:19
113	[Editor: “Returns a command” ⇒ “Command”.]	384:1
114	[Editor: “Gets the value” ⇒ “Value”.]	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” ⇒ “Clear”.]	388:23
119	[Editor: “Extracts” ⇒ “Extract”.]	388:34
120	[Editor: “Sets” ⇒ “Set”.]	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: “Performs a bitwise” ⇒ “Bitwise”.]	392:5
126	[Editor: “Performs a logical” ⇒ “Logical”.]	393:16
127	[Editor: “Performs a circular” ⇒ “Circular”.]	393:29
128	[Editor: “Returns the value” ⇒ “Value”.]	394:29
129	[Editor: “Returns all” ⇒ “All”.]	395:3
130	[Editor: “Returns the length” ⇒ “Length”.]	395:33
131	[Editor: “Returns the length” ⇒ “Length”.]	396:13
132	[Editor: “Converts” ⇒ “Convert”.]	399:11
133	[Editor: “Performs matrix multiplication” ⇒ “Matrix product”.]	400:18
134	[Editor: “Returns the maximum” ⇒ “Maximum”.]	401:32
135	[Editor: “Determine ... first” ⇒ “Location of an”.]	402:4
136	[Editor: “Determine ... first” ⇒ “Location of an”.]	405:27
137	[Editor: “Moves” ⇒ “Move”.]	408:22

138	[Editor: “Moves” ⇒ “Move”.]	409:15
139	[Editor: “Returns the nearest” ⇒ “Nearest”.]	410:2
140	[Editor: “Returns a newline” ⇒ “Newline”.]	410:13
141	[Editor: “Performs a bitwise” ⇒ “Bitwise”.]	411:7
142	[Editor: “Returns” ⇒ “Return” and “designates” ⇒ “designate”.]	411:26
143	[Editor: “Returns the number” ⇒ “Number”.]	412:29
144	[Editor: “Returns the number” ⇒ “Number”.]	414:19
145	[Editor: “Return the bitwise” ⇒ “Bitwise”.]	414:30
146	[Editor: “Returns the decimal” ⇒ “Decimal”.]	415:2
147	[Editor: “Returns the base” ⇒ “Base”.]	416:20
148	[Editor: “Returns one” ⇒ “One”.]	416:30
149	[Editor: “Restarts or queries” ⇒ “Restart or query”.]	417:8
150	[Editor: “Returns the decimal” ⇒ “Decimal”.]	418:6
151	[Editor: “Returns the reciprocal” ⇒ “Reciprocal”.]	420:3
152	[Editor: “Inquires” ⇒ “Inquire”.]	420:13
153	[Editor: “Returns” ⇒ “Return”.]	420:22
154	[Editor: “Returns a value” ⇒ “Value”. At least “a” ⇒ “the” since there’s only one kind type parameter	421:30
155	value for a given bit size.]	
156	[Editor: “Returns the value” ⇒ “Value”.]	422:4
157	[Editor: “Returns a value” ⇒ “A value”.]	422:33
158	[Editor: “Returns a value” ⇒ “A value”.]	423:8
159	[Editor: “Returns the model” ⇒ “Model”.]	423:36
160	[Editor: “Returns the shape” ⇒ “Shape”.]	424:9
161	[Editor: “Performs a right” ⇒ “Right”.]	424:21
162	[Editor: “Performs a left” ⇒ “Left”.]	425:2
163	[Editor: “Performs a right” ⇒ “Right”.]	425:11
164	[Editor: “Returns the extent” ⇒ “Extent”.]	426:21
165	[Editor: “Returns the absolute” ⇒ “Absolute”.]	427:3
166	[Editor: “Replicates” ⇒ “Replicate”, “Broadcasts” ⇒ “Broadcast” and “forms” ⇒ “form”.]	427:14-15
167	[Editor: “Returns the storage” ⇒ “Storage”.]	428:11
168	[Editor: “Returns numeric” ⇒ “Numeric”.]	429:26
169	[Editor: “Returns a list” ⇒ “List”.]	430:34
170	[Editor: “Returns the index” ⇒ “Index”.]	431:1
171	[Editor: “Returns the smallest” ⇒ “Smallest”.]	431:24
172	[Editor: “Count the number” ⇒ “Number”.]	432:3

173	[Editor: “Returns” ⇒ “Return”.]	432:12
174	[Editor: “Returns” ⇒ “Return”.]	433:14
175	[Editor: “Returns all the upper” ⇒ “Upper”.]	433:23
176	[Editor: “Returns a processor” ⇒ “Processor” twice.]	436:7,16
177	<b>3 Simplify argument descriptions</b>	
178	Argument descriptions are sometimes verbose, e.g., “shall be scalar and of type integer,” and sometimes	
179	terse, e.g., “shall be a scalar integer initialization expression.” The verbose ones could be simpler.	
180	[Editor: “of ... an” ⇒ “a logical”.]	354:18
181	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	354:18+1
182	[Editor: “of ... an” ⇒ “a logical array”.]	355:24
183	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	355:24+1
184	[Editor: “Y ... argument” ⇒ “an actual argument shall not correspond to Y”]	363:0+1-373:1
185	[Editor: “and” ⇒ comma, insert “and shape” after “parameters”, delete “, and shall ... CO_ARRAY”.]	365:19+1-2
186	[Editor: “of ... an” ⇒ “a logical”.]	370:29
187	[Editor: “scalar and of type integer” ⇒ “an integer scalar”.]	370:29+1
188	[Editor: “scalar ... character” ⇒ “a default character scalar”.]	373:4+1
189	[Editor: “scalar ... character” ⇒ “a default character scalar”.]	373:5+1
190	[Editor: “scalar ... character” ⇒ “a default character scalar”.]	373:6+1
191	[Editor: “of ... one” ⇒ “a rank-one default integer array”.]	373:7+1
192	[Editor: “may ... array” ⇒ “shall be an array of any type”.]	376:28
193	[Editor: “scalar and of type integer” ⇒ “an integer scalar”.]	377:1+1
194	[Editor: “of type” ⇒ “a”, delete “and shall be”.]	379:3+1
195	[Editor: “of type” ⇒ “a”, delete “and shall be”.]	379:4+1
196	[Editor: “of type” ⇒ “a”, delete “and shall be a”.]	379:5+1
197	[Editor: “of type” ⇒ “a”, delete “and shall be a”.]	379:6+1
198	[Editor: “of type” ⇒ “a”, delete “and shall be a”.]	379:7+1
199	[Editor: “of ... array” ⇒ “an array of intrinsic type”.]	380:24
200	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	380:25+1
201	[Editor: “scalar ... logical” ⇒ “a logical scalar”.]	380:25+1
202	[Editor: “of ... integer” ⇒ “a rank-one integer array”.]	382:12+1
203	[Editor: “scalar ... integer” ⇒ “default integer scalar” (but see section 6 below).]	382:13+1
204	[Editor: “scalar ... integer” ⇒ “default integer scalar” (but see section 6 below).]	382:14+1
205	[Editor: “scalar ... character” ⇒ “a default character scalar”.]	383:21+1
206	[Editor: “scalar ... integer” ⇒ “a default integer scalar” (but see section 6 below).]	383:22+1
207	[Editor: “scalar ... integer” ⇒ “a default integer scalar” (but see section 6 below).]	383:23+1

208	[Editor: “scalar ... integer” ⇒ “a default integer scalar” (but see section 6 below).]	384:4
209	[Editor: “scalar ... character” ⇒ “a default character scalar”.]	384:7+1
210	[Editor: “scalar ... integer” ⇒ “a default integer scalar” (but see section 6 below).]	384:8+1
211	[Editor: “scalar ... integer” ⇒ “a default integer scalar” (but see section 6 below).]	384:9+1
212	[Editor: “scalar ... character” ⇒ “a default character scalar”.]	385:5+1
213	[Editor: “scalar ... character” ⇒ “a default character scalar”.]	385:6+1
214	[Editor: “scalar ... integer” ⇒ “a default integer scalar” (but see section 6 below).]	385:7+1
215	[Editor: “scalar ... integer” ⇒ “a default integer scalar” (but see section 6 below).]	385:8+1
216	[Editor: “scalar ... logical” ⇒ “logical scalar”.]	385:9+1
217	[Editor: “a scalar ... integer” ⇒ “an integer scalar”.]	386:29+1
218	[Editor: “a scalar ... integer” ⇒ “an integer scalar”.]	388:2+1
219	[Editor: Insert “integer” before “array” and delete “and shall be of type integer”.]	390:18:1,19
220	[Editor: “a scalar ... integer” ⇒ “an integer scalar”.]	392:21+1
221	[Editor: “a scalar ... integer” ⇒ “an integer scalar”.]	395:6+1
222	[Editor: “of ... an” ⇒ “a character scalar or”.]	396:2+1
223	[Editor: “If ... two” ⇒ “MATRIX_A and MATRIX_B shall not both have rank one”.]	400:21+3-5
224	[Editor: Insert “an array” after first “be”, delete “It shall be an array.”]	402:8
225	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	402:8+1
226	[Editor: Insert “an array” after first “be”, delete “It shall be an array.”]	403:17
227	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	403:17+1
228	[Editor: Insert “an array” after first “be”, delete “It shall be an array.”]	405:31
229	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	405:31+1
230	[Editor: Insert “an array” after first “be”, delete “It shall be an array.”]	407:5
231	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	407:5+1
232	[Editor: “of ... array” ⇒ “a real array”.]	411:19
233	[Editor: “may ... array“ ⇒ “shall be an array of any type”.]	413:16
234	[Editor: “of ... array” ⇒ “an array of type logical”.]	413:32+1
235	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	414:1+1
236	[Editor: Insert “an array” before “of”, delete “It ... array.”]	415:27
237	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	415:27+1
238	[Editor: “scalar ... integer” ⇒ “a default integer scalar”.]	415:27+1
239	[Editor: “scalar ... character” ⇒ “a character scalar”.]	419:11
240	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	419:12
241	[Editor: “may ... array” ⇒ “shall be an array of any type”.]	419:21+1
242	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	421:32

243	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	421:36
244	[Editor: “scalar ... integer” ⇒ “an integer scalar” thrice.]	423:12-14
245	[Editor: “of ... array” ⇒ “a scalar or array of any type”.]	424:11+1
246	[Editor: “of ... array” ⇒ “an array of any type”.]	426:24+1
247	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	426:25+1
248	[Editor: “of ... array” ⇒ “a scalar or array of any type”.]	427:18+1
249	[Editor: “of ... array” ⇒ “a scalar or array of any type”.]	428:14+1
250	[Editor: “of ... array” ⇒ “an array of type integer, real or complex”.]	429:2
251	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	429:2+1
252	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	429:28+1
253	[Editor: “scalar ... real” ⇒ “an integer or real scalar” twice.]	429:29+1,30+1
254	[Editor: Delete ‘and may be’.]	430:4
255	[Editor: “scalar ... integer” ⇒ “a default integer scalar”.]	430:4+1
256	[Editor: “of type” ⇒ “a”, delete “. It may be a” and “an” giving “a real scalar or array”.]	430:27+1
257	[Editor: “of ... array” ⇒ “a scalar or array of any type” twice.]	432:16-17
258	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	432:17+1
259	[Editor: “of type” ⇒ “a”, delete “and shall be”.]	433:16
260	[Editor: “may ... array” ⇒ “shall be an array of any type”.]	433:25+1
261	[Editor: “scalar ... integer” ⇒ “an integer scalar”.]	433:26+1
262	[Editor: “may ... one” ⇒ “shall be a rank-one array of any type”.]	434:16+1
263	[Editor: “an ... logical” ⇒ “a logical array”.]	434:18

## 264 4 Shapes are arrays, not lists

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

354:21-22 355:27-28 371:4-5 372:8+2-372:9 381:2-3 386:24 388:7 392:25-26 400:28-31  
402:16 403:21-22 406:6 407:9-10 414:4-5 415:31-32 429:6-7 433:9

## 266 5 Improper use of “absent”

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

381:1 386:33 388:6 392:25 402:14 403:21 406:4 407:9 414:4  
415:31 429:6 431:4+2

## 270 6 Questions without answers (see 07-115)

271	Are collective subroutines pure?	341:15-19
272	Do we need to say it has the same shape on every image?	363:14



273	What team?	382:12+3
274	Why default integer instead of simply integer?	382:13+1,14+1
275	Why default integer instead of simply integer?	383:22+1,23+1
276	Why default integer instead of simply integer?	384:4-9+1
277	Why default integer instead of simply integer?	385:7-8+1
278	Did we really intend that an allocatable with the TARGET attribute has to keep track of all pointers	408:30-32
279	that have it as their target?	
280	Every other intrinsic that has an optional DIM argument specifies that the corresponding actual argument	431:4+2
281	shall not be an optional dummy argument. Why does THIS_IMAGE allow an optional dummy argument	
282	so long as it's not absent?	
283	Does the type IMAGE_TEAM have any parameters?	437:4-6