DISCUSSION

J. STEPHEN PASCOVER[1]—Mr. Payne is to be congratulated on a fine paper and on his "user-oriented" approach to fracture toughness testing. The present discussion is concerned, however, with the data reported in Table 7, item 7, on the 9Ni-4Co(200) alloy. This value for K_{Ic} of 70 ksi $\sqrt{\text{in.}}$ ($K_{Ic}/YS = 0.35$) is not representative of those normally obtained in this steel. Referring to the author's source,[2] the value reported represents:

1. a nontypical composition
2. excessive net section yielding
3. the properties of the weld metal

All three of these qualifications were pointed out in the original report.

While the integrity of the data was not essential in the context of the subject paper, the tendency to quote values from such compilations out of context makes it mandatory that more representative values be pointed out. Such data appear in Table 11.

[1] Research metallurgist, Republic Steel Corp., Cleveland, Ohio.

[2] First Quarterly Progress Report on AF Contract AF33(657)-11229, Development of Welding Procedures and Filler Materials for Joining High Strength Low Alloy Steels ER 5554, October, 1953 (unpublished).

TABLE 11—PROPERTIES OF 9 PER CENT NICKEL-4 PER CENT COBALT (200) MATERIALS.

Form	Tempering Temperature, deg F	Yield Strength, ksi	Ultimate Tensile Strength, ksi	K_{Ic}, ksi $\sqrt{\text{in.}}$	Notch Strength, ksi	Ref	Remarks
1-in. plate	400	193	259.4	111	142	[a]	surface-flawed specimen 3 in. wide and 1 in. thick. a = 0.27 in., l = 0.88 in.
1 in. plate.....	800	189	205.5	138	182	[a]	same specimen. a = 0.30 in., l = 0.90 in.
1-in. plate.....	1000	185	195	...	195	[a]	a = 0.34, l = 1.1 in.
1-in. plate.....	1000	193	202.5	139.4	300	[b]	slow bend specimen. 0.875 by 0.875 by 4 in.
Side center weld metal 1-in. plate.....	as TIG welded	173.0	203.0	118.3	253	[b]	slow bend specimen as above, avg. of three weldments

[a] *Aerospace Structure Metals Handbook*, Syracuse University Press, Syracuse. N. Y., 1964 edition, Section FeUH, Code 1221.

[b] E. A. Steigerwald, TAPCO group of Thompson-Ramo Wooldridge, private communication to J. G. Hill, United Technology Center, Oct. 25, 1963.

Copyright© 1965 by ASTM International www.astm.org