

## DISCUSSION

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*C. K. Chow*<sup>1</sup> (*written discussion*)—Does the measured upper shelf fracture toughness depend on the initial crack length of the burst specimen?

*T. Asada et al.* (*authors' closure*)—We think that the fracture toughness at the upper shelf depends on the initial crack length and the fracture stress of the burst specimen. When the initial crack is short and the fracture stress is higher than that of about  $0.5 \sigma_y$  ( $\sigma_y$ : yield stress), the fracture toughness will decrease with shortening of the initial crack length. On the other hand, when the initial crack is enough long (i.e., the fracture stress is lower than that of about  $0.5 \sigma_y$ ), the fracture toughness is independent of the initial crack length of the burst specimen.

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