Proposal for C2x
WG14 N2123

Title:	TS 18661-5 alternate exception-handling pragma
Author, affiliation:	C FP group
Date:	2017-03-05
Proposal category:	New features
Target audience:	Simpler handling of exceptional cases

Abstract: This proposal incorporates a pragma for alternate exception handling into C2x, as prescribed in ISO/IEC TS 18661-5. The pragma supports attributes recommended by the current IEC 60559 floating-point standard (2011) to allow portable handling of exceptional cases. The program can use the pragma to specify a list of exceptions and an action to be taken when any specified exception occurs. Some actions control whether flags are raised, one causes abrupt (to zero) underflow, others change the flow of control. The pragma is intended to allow the program to deal with exceptional cases without having to consider implementation details. The pragmas have the same form as the standard floating-point pragmas in current C. Other proposals cover the other features in TS 18661-5.

Prior art: Implementation-specific controls for abrupt underflow are commonplace. The standard FENV_ACCESS pragma and various implementation-specific controls allow not setting flags, though typically have other effects too. Several mechanisms have been used in programming languages to change the flow of control when exceptions occur.