

# PREFACE

Formal risk management has become an essential part of pipelining. As an engineered structure placed in a constantly changing natural environment, a pipeline can be a complex thing. Good risk assessment is an investigation into that complexity; providing an approachable, understandable, manageable incorporation of the physical processes potentially acting on a pipeline: external forces, corrosion, cracking, human errors, material changes, etc.

Recent work in the field of pipeline risk assessment has resulted in the development of methodologies that overcome limitations of the previous techniques while also reducing the cost of the analyses. Alternative approaches simply no longer compete. This more-defensible, more-efficient, more-useful, i.e., definitive, approach is detailed here.

This text recommends the abandonment of some previous risk assessment methodologies. Our reasons for building and using certain older models are no longer valid. We no longer have to take short-cuts to work around computer processing limitations or to approximate underlying scientific/engineering principles. We don't need extensive component failure histories to produce absolute estimates of risks, as once believed, nor do we have to use data that is so generalized that it does not fairly represent the specific assets being studied. We now have strong, reliable, and easily applied methods to estimate actual risks, and no longer must accept the compromises generated by intermediate scoring schemes or statistics-centric approaches.

A goal of this book is to provide an intuitive, transparent, and robust approach to help a reader put together an efficient risk assessment tool and, with that, optimize the management of pipeline risks.

Therefore, this book is also about risk management—not just risk assessment. Risk is a fuzzy topic, and managing risk involves numerous social and psychological issues. It is by no means a strictly technical endeavor. This book advocates a single, very efficient risk assessment methodology, developed and tuned over years of applications, as the starting point of risk management. The practice of risk assessment can now be fairly standardized.

However, it is a disservice to the reader to imply that there is only one correct risk management approach. Those embarking on a formal pipeline risk management process should realize that, once an improved risk understanding is obtained, they have many options with which to react to that risk. This should not be viewed as negative feature, in my opinion. The choices in technical, business, and social problem-solving surrounding risk management makes the process challenging and exciting.

So, my advice to the reader is simple: arm yourself with this 'next generation' knowledge of how to measure risk, adopt an investigative mind set—good risk management requires sleuthing!—and then, enjoy the journey!