Chapter 7
Oil Pipeline Risk

ABSTRACT

Nine types of risks and nine routes in the Oil Pipeline Network are simulated. Each route has three characteristics: diameter, mean pressure, and distance. For each type of risk and each route, two quantities are simulated: the number of events where that risk type occurs and the typical magnitude of such a risk. These are then accumulated to find the severities of the risk types, by route and total over all routes. Sufficient historical data is available to estimate regression equations relating the frequency and Mean magnitude of each risk type to the characteristics of the routes. The resulting coefficients are presented in Parameters and Errors. With Simulating Risk Frequency or Mean Risk Magnitude, the error coefficient is multiplied by a standard normal random variable to provide extra variability. Risk Frequencies are Poisson distributed with Means from Regressions. Event Magnitudes are lognormally distributed with Means from Regressions and Standard Deviations.

INTRODUCTION

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Oil prices have been steadily pulling back from six-month highs as trade worries intensify, with the U.S. threat to raise tariffs against Chinese goods appearing likely to become reality tonight. Both sides have been

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hardening their stance, and if we see an all-out tariff war, oil could slide lower along with a global rout in equities and commodity currencies.

The trade spat is raising global growth concerns, which could put a dent in the demand side of the argument for higher oil prices. If talks do not completely fall apart, we could see oil markets quickly focus on the geopolitical risks from Iran, Russia, Venezuela, and Libya.

The OANDA order book indicator showed just before the U.S. close that the percentage of open positions held by OANDA's clients was 63.7% short and 36.3% long, while 0.6% of pending sell orders are at the 1.3510 level.

LITERATURE

Miesner & Leffler (2021): In this edition of Oil and Gas Pipelines in Nontechnical Language, Tom Miesner and Bill Leffler leverage the hundreds of courses they have taught in the past decade, along with the interaction with their audiences, clients, and opposing attorneys to present an understandable view of pipeline inception, planning, construction, start-up, and operation. Those experiences allowed them to expand but simplify the complexities of pipelines, including a revised chapter on equipment that provides a complete view of pipeline components. A separate chapter on control systems updates this technology. An expanded discussion of pipeline integrity including the concept of risk management demonstrates how important the subjects of safety, reliability, efficiency, and environmental performance have become.

Timashev & Bushinskaya (2016): The book contains solutions to fundamental problems that arise due to the logic of the development of specific branches of science, which are related to pipeline safety, but mainly are subordinate to the needs of pipeline transportation. The book deploys important but not yet solved aspects of reliability and safety assurance of pipeline systems, which are vital aspects not only for the oil and gas industry and, in general, fuel and energy industries, but also for virtually all contemporary industries and technologies. The volume will be useful to specialists and experts in the field of diagnostics/ inspection, monitoring, reliability, and safety of critical infrastructures. First and foremost,