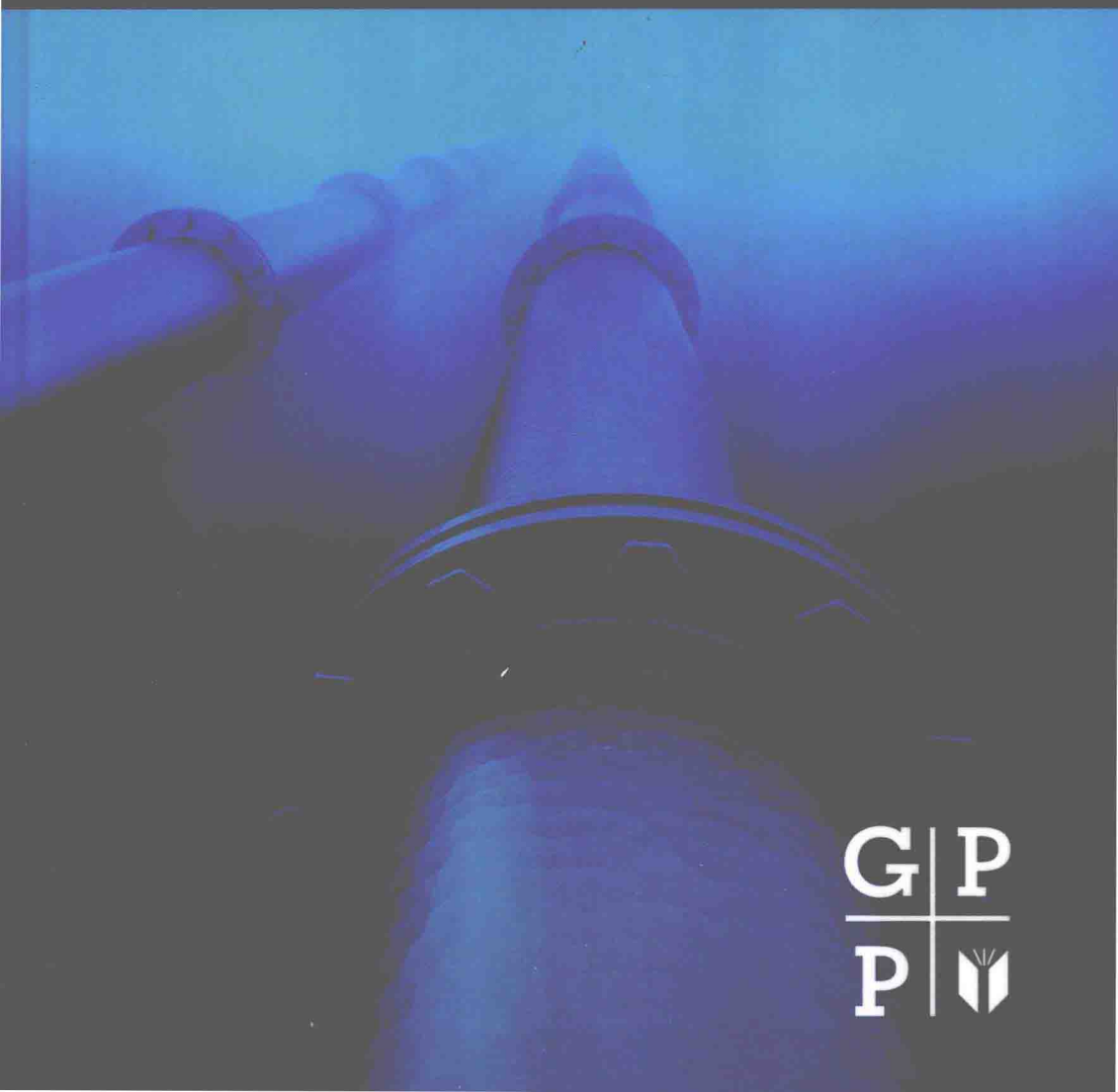
Subsea Pipeline Integrity and Risk Management

Yong Bai and Qiang Bai



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YONG BAI
QIANG BAI

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Summary: "In most subsea developments, oil and gas productions are transported from subsea well to platform in multiphase flow without separation process. Corrosion represents increasing challenges for the operation of subsea pipelines. Corrosion can be defined as a deterioration of a metal, due to chemical or electrochemical between the metal and its environment. The tendency of a metal to corrode depends on a given environment and the metal type"– Provided by publisher.

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FOREWORD

I am delighted to write a brief Foreword to this extensive handbook for subsea pipeline integrity and risk management. It is often a challenge to find a single book that discusses all aspects of subsea pipeline integrity and risk management in sufficient detail that the practicing engineer can have this book or volume of books as a desk reference for a large range of subsea topics, instead of the engineer having to search for specific subject matter in Conference Proceedings. And the authors have succeeded in accomplishing just that. The effort it took in writing well over a 450 pages of text and formulae and cross-checking was truly a labor of love and dedication to the profession of subsea pipeline engineers, and for those readers who wish to know more about a particular subject, the list of references at the end of each chapter is truly outstanding.

Frans Kopp, January 2014

PREFACE

It has been 8 years since our book "Subsea Pipelines and Risers" (SPR) was published by Elsevier. As a new sister book of "Subsea Pipeline Design, Analysis and Installation", this new book "Subsea Pipeline Integrity and Risk Management" reflects upon the new pipeline technologies in integrity and risk management developed by the oil and gas industry, where the authors apply them in design, consulting and integrity management. This book is written for engineers who work in the field of subsea pipeline engineering.

Pipeline integrity management has become matured and applied to the operation and maintenance. Risk and reliability management of pipelines became ever more critical in the subsea industry for QRA assessment, risk and environmental impact study as well as preparation of emergency response plans. The risk and reliability assessment has also been successfully applied for the determination of partial safety factors in design criteria.

The industry has been seeking new tools for subsea pipeline inspection and integrity management, whether the pig launchers are available or not. The authors have been also involved in the development of new tools for non-piggable pipelines, flexible pipelines and composite RTP pipelines.

We hope that these two books (Subsea Pipeline Design, Analysis and Installation, and Subsea Pipeline Integrity and Risk Management) are useful reference sources of subsea pipeline design, analysis, installation, integrity management and risk management for subsea engineers.

The authors would like to thank our graduate students, PhD and post-doctoral fellows at Zhejiang University and Harbin Engineering University, who provided editing assistance (Mr. Jiwei Tang, Mr. Carl Bai & Mr. Akira Bai) and initial technical writing (Mr. Gao Tang, Ms. Yin Zhang, Mr. Shiliang He, Mr. Hongdong Qiao, Mr. Weidong Ruan, Mr. Hui Shao, and Ms. Shahirah Abu Baka), thank Zhejiang University for their support for publishing this book.

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Dr. Qiang Bai & Prof. Yong Bai
Houston, USA

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PART 1

Pipeline Integrity Management