

MANAGING HUMAN RESOURCES IN THE OIL & GAS INDUSTRY

STEVE WERNER • ANDREW INKPEN • MICHAEL H. MOFFETT



Disclaimer

The recommendations, advice, descriptions, and the methods in this book are presented solely for educational purposes. The author and publisher assume no liability whatsoever for any loss or damage that results from the use of any of the material in this book. Use of the material in this book is solely at the risk of the user.

Copyright© 2016 by
PennWell Corporation
1421 South Sheridan Road
Tulsa, Oklahoma 74112-6600 USA

800.752.9764
+1.918.831.9421
sales@pennwell.com
www.pennwellbooks.com
www.pennwell.com

Marketing Manager: Sarah De Vos
National Account Executive: Barbara McGee Coons

Director: Mary McGee
Managing Editor: Stephen Hill
Production Manager: Sheila Brock
Production Editor: Tony Quinn
Book Designer: Susan E. Ormston
Cover Designer: Charles Thomas

Library of Congress Cataloging-in-Publication Data

Names: Werner, Steve, 1962- author. | Inkpen, Andrew C., author. | Moffett, Michael H., author.

Title: Managing human resources in the oil and gas industry / Steve Werner, Andrew Inkpen, Michael H. Moffett.

Description: Tulsa, OK : PennWell, 2016. | Includes bibliographical references and index.

Identifiers: LCCN 2015032602 | ISBN 9781593703622

Subjects: LCSH: Personnel management. | Oil industries--Management. | Gas industry--Management.

Classification: LCC HF5549 .W4377 2016 | DDC 622/.3380683--dc23

LC record available at <http://lcn.loc.gov/2015032602>

All rights reserved. No part of this book may be reproduced, stored in a retrieval system, or transcribed in any form or by any means, electronic or mechanical, including photocopying and recording, without the prior written permission of the publisher.

Printed in the United States of America

1 2 3 4 5 20 19 18 17 16

Contents

Chapter 1. Overview of the Management of Human Resources

Strategic Implications of Human Resource Management	3
Gaining and sustaining a competitive advantage	4
Satisfying multiple stakeholders	6
Managing Human Resources	8
Staffing	9
Key staffing decisions	11
Maximizing the effectiveness of staffing	15
Training and Development	17
Key training and development decisions	19
Maximizing the effectiveness of training	20
Performance Management	22
Key performance management decisions	23
Maximizing the effectiveness of performance management	25
Compensation and Benefits	27
Key compensation and benefits decisions	30
Maximizing the effectiveness of compensation and benefits	33
Format of the Book	35
References	36

Chapter 2. The Global Oil and Gas Industry

Oil and Gas Industry Background	41
Oil and gas reserves	43
Oil and Gas in the Global Economy	44
Oil and gas supply	44
Industry financial performance	46
The role of OPEC	47
The resource curse	49
Major Industry Players and Competitors	49
Integrated oil companies	51
National oil companies (NOCs)	53
Independents	56
Oil field service companies and other firms	57
The Oil and Gas Industry Value Chain	58
Upstream: Exploration, development, and production	58
Midstream: Trading and transportation	60

Downstream: Oil refining and marketing	61
Beyond Oil	64
Natural gas	64
Petrochemicals	67
Evolution of the Industry	68
Innovation and technology	68
Mergers and acquisitions	68
China and India	69
Unconventional oil and gas	69
Industry substitutes and alternative fuels	70
What's next for the global oil industry?	70
Conclusion	70
References	71

Chapter 3. The Global Nature of the Oil and Gas Industry

The Global Industry	73
Oil and gas resources	76
Proliferation of multinational partnerships	78
Managing Human Resources in the Global Environment	79
Staffing in This Global Environment	80
Which labor market in the global context?	80
Which recruiting method should be used in the global context?	84
Which selection method should be used in the global context?	87
Maximizing the effectiveness of staffing in the global context	90
Training in the Global Environment	91
Who gets trained in the global context?	91
What do we train in the global context?	92
How do we train in the global context?	94
Maximizing the effectiveness of training in the global context	97
Performance Management in the Global Environment	98
How is performance measured in the global context?	99
Who evaluates performance in the global context?	99
What format should be used in the global context?	100
Maximizing the effectiveness of performance management in the global context	101
Compensation in the Global Environment	102
Determining pay level in the global context	103
Determining pay mix in the global context	108

Determining the type of performance-based pay in a global context 109

Determining benefits in a global context 110

Maximizing the effectiveness of compensation in the global context 111

Conclusion. 113

References. 113

CASE 1. Employment in an Upstream African Project: The Case of the Chad-Cameroon Petroleum Development Project

Reinvestment 121

Structure of Employment. 123

Conclusion. 126

Chapter 4. The Importance of Health and Safety in the Oil and Gas Industry

Introduction 127

Occupational Safety and Health in the Oil and Gas Industry 129

 Personal safety and process safety 132

 Security 136

 Occupational disease 139

Safety through Human Resource Management. 140

Safety through Staffing 141

 Recruit applicants who tend to not take safety-related risks 143

 Select applicants who tend to not take safety-related risks 143

 Use a multiple-hurdles approach on safety-related selection tools ... 144

 Maximize the effectiveness of safety-related staffing 144

Safety through Training 145

 Who should receive safety training? 145

 The content of safety and health training 146

 Safety and health training methods 148

 Maximizing the effectiveness of safety and health training 149

Safety through Performance Management 150

 Measuring safety performance 150

 Who should be involved in measuring safety performance? 155

 The format for measuring safety performance 155

 Maximizing the effectiveness of safety performance management ... 156

Safety through Compensation 156

 Pay level and safety performance 156

 Pay mix and safety performance 157

Types of performance-based pay and safety performance 157
Benefits and safety performance 161
Maximizing the effectiveness of compensation for safety
performance 162
Conclusion. 162
References. 162

Chapter 5. Projects in the Oil and Gas Industry

Introduction 167
Project Development in the Oil and Gas Industry. 170
Phase 1: Project feasibility 172
Phase 2: Project analysis 172
Phase 3: Investment decision 173
Phase 4: Project execution 173
Managing Human Resources in Project-Oriented Companies 174
Staffing Projects. 176
Labor markets in project-oriented companies 176
Recruiting for project-oriented companies 177
Selecting in project-oriented companies 180
Combining tools in project-oriented companies. 182
Maximizing the effectiveness of staffing in project-oriented
companies. 183
Training for Projects 184
Who gets trained in project-oriented companies? 184
What do we train for in project-oriented companies? 186
How do we train in project-oriented companies? 189
Maximizing the effectiveness of training in project-oriented
companies. 191
Performance Management in Projects 192
How do we measure performance in project-oriented
companies? 192
Who is involved in performance management in project-oriented
firms? 197
What format should be used in project-oriented firms? 197
Maximizing the effectiveness of project management in project-
oriented firms. 198
Compensation in Projects 199
Pay level in project-oriented companies 199
Pay mix in project-oriented companies 200
Performance-based pay in project-oriented companies 200

Benefits in project-oriented companies203
 Maximizing the effectiveness of compensation in project-oriented
 companies.....204
Conclusion.....204
References.....205

Chapter 6. The Unconventional Workforce of the Oil and Gas Industry

The Workforce of the Oil and Gas Industry211
The Prevalence of Contractors.....211
Construction Contracts for Oil and Gas Projects.....214
 Contracts based on ownership214
 Contracts based on management.....215
Contractors and Safety216
Rotators in the Oil and Gas Industry217
 Rotators defined217
 Current rotator employment challenges219
Characteristics of the Current Workforce221
 An aging workforce.....221
 Male-dominated222
 Difficult working conditions227
 The skills gap227
**Managing the Unconventional Workforce of the Oil and Gas
 Industry**230
Staffing the Unconventional Workforce of the Oil and Gas Industry...230
 Labor markets231
 Recruiting234
 Selecting236
 Combining tools237
 Maximizing the effectiveness of staffing.....237
**Training the Unconventional Workforce of the Oil and Gas
 Industry**238
 Who gets trained?238
 What gets trained?239
 How do we train?.....240
 Maximizing the effectiveness of training241
**The Performance Management of the Unconventional Workforce
 of the Oil and Gas Industry**241
 How do we measure performance?242
 Who is involved and in what format?242
 Maximizing the effectiveness of performance management243

Compensating the Unconventional Workforce of the Oil and Gas Industry 243

 Pay level 243

 Pay mix 244

 Performance-based pay 245

 Benefits 245

 Maximizing the effectiveness of compensation 247

Conclusion 248

References 248

CASE 2. Skill Shortages in the Oil and Gas Industry: The Case of Australian LNG Development

The Labor Challenge 253

 Australia and project locations 254

 Staffing and skill requirements 257

 Gorgon’s cost blowout 259

 Strategic promise and challenge 260

Employment Structures and Strategies 261

 Indigenous skills development 261

 Capex versus sustainable skills 262

 The FIFO workforce 262

 Project sponsor employment investments 263

 Nontraditional employment sources 263

 Other alternatives 263

Summary 265

References 265

Chapter 7. The Proactive Stakeholders of the Oil and Gas Industry

The Influence of Stakeholders in the Oil and Gas Industry 267

Stakeholders in the Oil and Gas Industry 268

 Communities and society 268

 Owners and investors 275

 Employees 276

 Customers 277

 NGOs 278

 Unions 279

Corporate Ethics and Accountability 285

Human Resource Management from a Stakeholder Perspective 287

Staffing from a Stakeholder Perspective288

 Determining labor markets from a stakeholder perspective288

 Recruitment from a stakeholder perspective290

 Selection from a stakeholder perspective.....291

 Combining selection tools from a stakeholder perspective293

 Maximizing the effectiveness of staffing from a stakeholder perspective293

Training from a Stakeholder Perspective293

 Who gets trained from a stakeholder perspective?294

 What gets trained from a stakeholder perspective?.....295

 How do we train from a stakeholder perspective?.....296

 Maximizing the effectiveness of training from a stakeholder perspective297

Performance Management from a Stakeholder Perspective298

 How do we measure performance from a stakeholder perspective?298

 Who is involved in performance management from a stakeholder perspective?299

 What format should be used from a stakeholder perspective?300

Compensation from a Stakeholder Perspective302

 Pay level from a stakeholder perspective302

 Pay mix from a stakeholder perspective303

 Performance-based pay from a stakeholder perspective.....303

 Benefits from a stakeholder perspective.....303

 Maximizing the effectiveness of compensation from a stakeholder perspective304

Conclusion.....305

References.....305

Chapter 8. Government Involvement in the Oil and Gas Industry

The Influence of Governments in the Oil and Gas Industry309

 The importance of oil and gas to governments.....309

 Government ownership of companies311

 Government ownership of oil319

 Regulations322

 Government and private firm partnerships.....327

Improving Government Relations through Human Resources Management.....328

Improving Government Relations through Staffing 329

 Determining labor markets from a government relations perspective 332

 Recruiting for better government relations 333

 Selection for better government relations 334

 Combining selection tools for better government relations 334

 Maximizing the effectiveness of staffing for better government relations 335

Training for Better Government Relations 335

 Who gets trained for better government relations? 336

 What gets trained for better government relations? 336

 How to train for better government relations 337

 Maximizing the effectiveness of training from a government relations perspective 338

Performance Management for Better Government Relations 338

 How to measure performance for better government relations. 339

 Who is involved in performance management for better government relations? 340

 What format should be used for better government relations? 341

 Maximizing the effectiveness of performance management for better government relations. 342

Compensation for Better Government Relations 342

 Pay level for better government relations 343

 Pay mix for better government relations. 343

 Performance-based pay for better government relations 343

 Benefits for better government relations 344

 Maximizing the effectiveness of compensation from a government relations perspective 345

Conclusion. 346

References. 347

CASE 3. The Bakken Boom: Unconventional Oil and Employment

Unconventional Oil 351

 Unconventional oil in Bakken 352

 Unconventional oil and employment 353

Creating Boomtowns 355

 Boomtown wages and prices 356

 Boomtowns and societal impact 358

Conclusion. 360

Chapter 9. Final Thoughts on Managing Human Resources in the Oil and Gas Industry

Major Challenges Facing the Industry 361

- Continued crude oil and natural gas price volatility 361
- Resource access challenges for the majors and other exploration and production (E&P) firms 362
- Technological change 362
- Climate change action and legislation: Doing business in a greener world 363
- Continued cost pressure 363
- NOCs growing and evolving as global competitors 363
- Shrinking talent pools in the industrialized countries 364
- Risks and challenges enhanced by social media and information access 364

Skills Required to Deal with the Industry Challenges 364

Managing Human Resources in the Oil and Gas Industry 365

- Staffing in the oil and gas industry 365
- Training in the oil and gas industry 367
- Performance management in the oil and gas industry 368
- Compensation in the oil and gas industry 369

Conclusion 370

References 370

Index 371

About the Authors 391

Overview of the Management of Human Resources

The oil and gas industry is arguably the most important industry in the world. It provides energy for our vehicles, heat for our homes, and electricity to run our daily lives. It provides the raw material for countless products ranging from asphalt to zippers. A comprehensive list of all the products made from oil would include hundreds of products we use every day, including aspirin, balloons, clothes, dentures, eyeglasses, footballs, guitar strings, and hair spray.¹ The oil and gas industry also has important implications for national security, international relations, national and international politics, and the economic development of countries. It provides millions of jobs around the globe.

Unlike most industries, the oil and gas industry depends heavily on natural resources as well as capital resources. Like most industries, human resources are critical for the oil and gas industry to succeed. The people a company chooses as its employees and how they are managed will impact every aspect of the firm. The research on human resource management (HRM) is clear: How employees are selected, trained, compensated, and managed affects the bottom line of the firm as well as the productivity and well-being of the employees themselves.² Yet, because of the distinct differences of the oil and gas industry from other industries, the management of human resources in this industry also differs. This is where this book comes in. We look at the distinct differences between the oil and gas industry and other industries and show how these differences impact the management of human resources. These differences are outlined below:

1. **The global nature of oil and gas.** The oil and gas industry is one of the most global industries in the world. The products of the

facilitates learning; and the availability of resources that provide trainees with everything they need to actively participate. Some of the trainer and training session factors include clear communication; culturally relevant material; trainers who make the material meaningful; and sessions that allow for practice, provide feedback, and stimulate a feeling of accomplishment by trainees.⁴³ Table 1–3 summarizes these factors. The next aspect that helps your company’s training be successful is transferability to the job.

Table 1–3. Factors that maximize learning in training

Organizational Factors	Location Factors	Trainer Factors	Training Session Factors
A culture that accepts and rewards training	Convenience to encourage attendance	Clear communicator	Culturally relevant material
Supervisors that reward rather than punish employees who seek training	Comfortable, quiet, and private setting	Trainer makes material meaningful	Sessions allow practice
Adequate technological support	A workspace that facilitates learning	Trainer provides constructive feedback	Sessions that provide feeling of accomplishment
Giving trainees the opportunity to use what they’ve learned	Resources to encourage active participation	Respected and knowledgeable trainer	Sessions that motivate trainee to learn

Facilitate training transfer and performance maintenance. Even if trainees thoroughly learn the training session content, it will not benefit the company unless the learning is transferred to behaviors on the job. Therefore from the company’s view, creating an organizational and job environment that helps trainees use the learned material on the job and maintain high performance levels using the learned material is critical for training to be effective. Getting trainees to initially and regularly apply the learned content to their jobs can be accomplished in a number of ways, including setting up specific goals that require the use of the new skills, abilities, or knowledge; reinforcing the use of the new content through positive feedback; measuring performance; and providing regular feedback. These can be accomplished through a good performance management system, which we will discuss later in this chapter.

Monitor, evaluate effectiveness, and adjust. When making so many decisions regarding who, what, and how to train, it is unlikely that anyone would get all the decisions exactly right on the first try. Monitoring and evaluating the process and outcomes throughout will help determine if anything

2013 Rank	2012 Rank	Company	Market Capitalization (billion US\$)	Primary Business	HQ Country
25	26	Duke Energy	48.7	Electricity	United States
26	22	Reliance	46.8	R&M	India
27	38	Phillips 66	46.2	R&M	United States
28	39	EOG Resources	45.8	E&P	United States
29	40	Halliburton	43.0	Drilling & oilfield services	United States
30	33	ENEL	41.2	Electricity	Italy
31	27	ONGC	40.0	Integrated NOC	India
32	31	Anadarko	39.9	E&P	United States
33	44	Iberdrola	39.9	Low carbon power	Spain
34	45	Dominion	37.5	Gas/utilities	United States
35	32	Imperial Oil	37.5	Integrated IOC	Canada
36	28	Kinder Morgan	37.3	Midstream/infrastructure	United States
37	30	E.ON	37.0	Gas/utilities	Germany
38	35	NOVATEK	36.8	E&P	Russia
39	42	Canadian Natural	36.7	E&P	Canada
40	29	Southern	36.2	Electricity	United States
41	34	Enbridge	36.2	Midstream/infrastructure	Canada
42	43	Apache	34.3	E&P	United States
43	46	National Oilwell Varco	34.0	Equipment & EPC	United States
44	60	Endesa	34.0	Low carbon power	Spain
45	24	BHP Billiton*	33.1	Other	Australia
46	54	Repsol	32.9	Integrated IOC	Spain
47	37	TransCanada	32.3	Midstream/infrastructure	Canada
48	52	Sasol	31.8	Integrated IOC	South Africa
49	47	Husky	31.2	Integrated IOC	Canada
50	41	Surgutneftgaz	30.7	Integrated IOC	Russia

Source: IHS. IOC is integrated oil company; NOC is national oil company. Note: BHP Billiton is ranked based on a value of 19% of the company's total market capitalization, representing the contribution of its petroleum segment to total EBIT in the 12 months ended 6/30/2013.

Viewed from an ownership and corporate objective perspective, NOCs lead a complicated existence. As controlled by the state, they must serve a variety of different commercial and political objectives. (It is important to note that many NOCs are also publicly traded, but the governing government share—the *golden share*—remains with the government.) NOCs are often required to provide a secure supply of oil and gas for the country; provide

cycles.”¹² Refining margins for the US Gulf Coast, Northwestern Europe, and the Singapore markets are shown in figure 2-7.

The profitability of refining is driven primarily by the following factors

1. The costs of crude oil (by far the largest cost)
2. The cost of energy to run the refinery
3. The supply and demand for refinery products (i.e., if refining capacity is tight, refining margins usually rise)
4. Refinery product prices, which are set by a combination of the supply and demand of refinery products and crude oil prices
5. Refinery location and operational skills

After a so-called golden age of refining from 2002 to about 2007 (as seen by the large and positive spikes in refining margins in figure 2-7), refining entered a new era of change and consolidation. By 2014 many US and European refineries were either shut down or on the verge of closure. A report by A.T. Kearney concluded that by 2021, every refinery in Western Europe and North America would have to restructure, strategically reposition their assets, or leave the market.¹³ Interestingly, despite the closure of various refineries in North America, total refining capacity continued to rise through de-bottlenecking and expansions to existing sites.

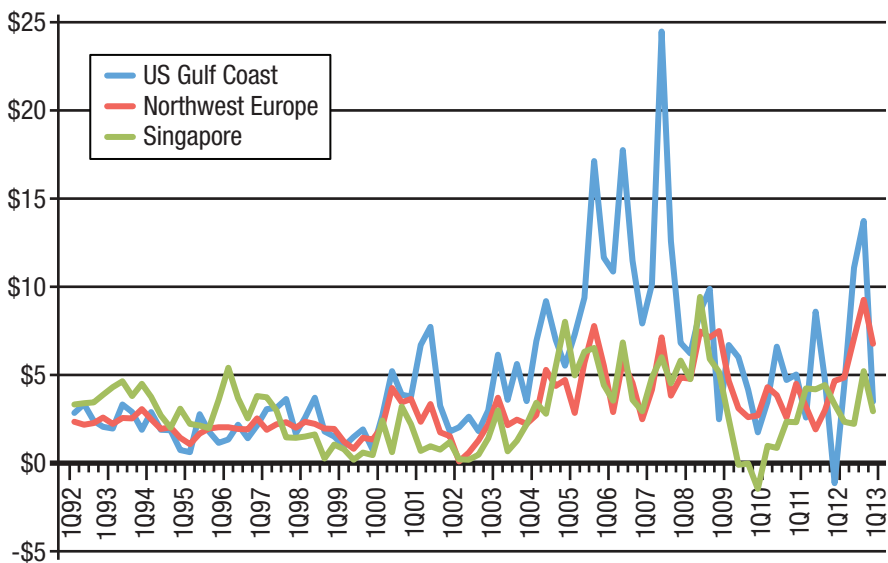


Fig. 2-7. Refining margins (US dollars per barrel)

Source: Constructed by authors based on data drawn from *BP Statistical Review of World Energy, 2013*.

Historically, the costs of LNG treatment and transportation were so huge that development of gas reserves was slow. In recent years, LNG has moved from being a niche product to a vital part of the global energy business. As more players take part in investment, both in the upstream and downstream, and as new technologies are adopted, the prices for construction of LNG plants, receiving terminals, and ships have fallen, making LNG a more competitive energy source. LNG ships are also getting much larger and more efficient. In addition, natural gas to liquid (GTL) technology provides an alternative to LNG and converts gas to liquid products, such as fuels and lubricants, which can be easily transported. Questions remained about the economic viability of GTL technology, and only a few major projects had been completed, including the largest one, Shell's approximately \$20 billion Pearl project in Qatar.

Major technological and structural changes continue to occur in the LNG business. The floating liquefied natural gas (FLNG) vessel is a technology that allows producers to commercialize offshore gas deposits without pipelines and onshore infrastructure. FLNGs create opportunities to commercialize gas fields that would otherwise be untouched. Another innovation is the floating natural gas liquefaction, regasification, and storage unit (FLRSU) vessel, which moves the various industrial processes offshore and makes the equipment available for redeployment at the end of the resource life.

Changes in the LNG market and in LNG shipping have increased flexibility for producers and consumers, and shorter contracts have been negotiated. The agreement to develop the huge Qatargas 2 project, jointly owned by ExxonMobil and Qatar Petroleum, was finalized without contracts for gas sales in place. An LNG ship can deliver its gas anywhere there is an LNG terminal, making LNG almost as flexible in delivery as crude oil. There is also speculation that the rapid growth in Middle East LNG supply could lead to a global convergence in gas pricing and markets, with LNG becoming a traded commodity. As well, buyers and sellers have been taking on new roles. Buyers have been investing in the upstream, including liquefaction plants. Producers, such as BP and Shell, have leased capacity at terminals and are extending their role into trading. New buyers have been emerging, including independent power producers.

Shale gas. The second factor that helps explain the increased importance of gas is *shale gas*. The impact of shale gas on US and global gas markets has resulted in what has been referred to as a game changer for US energy supply. As recently as 2003 the consensus was that the United States would have to import large quantities of LNG to satisfy gas demand. Less than a decade later, US production can easily meet domestic gas demand and